

## NTIA Space Record Data Form

NTIA requires the following data for space related experiments using government shared spectrum. For each transmit frequency, please provide the data for both ends of the transmit-receive link. Use Part A to describe the satellite to ground information. Part B is for all ground to space transmit links.

### Part A: Space to Earth Downlink Data

|                                                  |                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Transmit Frequency: <b>400.4MHz</b>              |                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Satellite Name: <b>Screech 1 (Transmitter 1)</b> |                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Transmit Power (PWR)                             | PWR = <b>0.562 W</b>                                                                                                                                                                                                                                                                                                                                                                    | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                                                                                                                                                                                                                                                                                                                                                                           |
| RF Emissions                                     | Emissions Designator <b>13K0F1D</b><br>Necessary Bandwidth <b>13.0 kHz</b><br>-3 dB Bandwidth <b>4.64 kHz</b><br>-20 dB Bandwidth <b>12.1 kHz</b><br>-40 dB Bandwidth <b>14.3 kHz</b><br>-60 dB Bandwidth <b>43.1 kHz</b><br>Modulation Type <b>Binary GFSK</b><br>Data Rate <b>9.60 kbps</b><br>Forward Error Correction <b>None</b><br>Coding<br>Total Symbol Rate <b>9.60 ksym/s</b> | NECESSARY BANDWIDTH:<br>THE WIDTH OF FREQUENCY BAND WHICH IS JUST SUFFICIENT TO SUCCESSFULLY TRANSFER DATA.<br>FORMULAS CAN BE FOUND IN ANNEX J OF THE NTIA MANUAL.<br><br>-3 / -20 / -40 / -60 dB BANDWIDTHS:<br>2-SIDED EMISSION BANDWIDTH VALUES<br><br>MODULATION TYPE:<br>THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.<br><br>DATA RATE:<br>INFORMATION DATA RATE<br><br>TOTAL SYMBOL RATE:<br>DATA RATE COMBINED WITH FEC AND FRAME OVERHEAD RESULTING IN THE TOTAL SYMBOL RATE AT THE INPUT TO THE SYMBOL MAPPER/MODULATOR. |
| Does transmitter have a beacon mode?             | <b>Yes</b>                                                                                                                                                                                                                                                                                                                                                                              | BEACON MODE IS NORMALLY CONSIDERED A REGULAR AND PERIODIC SHORT DURATION TRANSMISSION THAT IS OFTEN USED TO ASSIST WITH TRACKING, DOPPLER COMPENSATION, OR SMALL                                                                                                                                                                                                                                                                                                                                                                                                     |

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|                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                              | SATELLITE IDENTIFICATION WHOSE TRANSMISSIONS ARE NOT LIMITED TO DURATIONS WHEN SUPPORTING GROUND                                                                                                                                                                                                  |
| If transmitter has a beacon mode, can the beacon be commanded off? | Yes                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                   |
| Polarization (XAP)                                                 | XAP = XAP01 J                                                                                                                                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION                                                                                |
| Orientation (XAZ)                                                  | XAZ = XAZ01 EC                                                                                                                                                                                                                                                                                                                                                                                                               | NB= NARROWBEAM<br>EC = EARTH COVERAGE                                                                                                                                                                                                                                                             |
| Antenna Dimension (XAD)                                            | ANTENNA GAIN(dBi) 2.1 dBi<br>BEAMWIDTH@ ½ Power 110.0 degrees<br><br>XAD = XAD01 02G110B                                                                                                                                                                                                                                                                                                                                     | (NTIA format (XAD), EXAMPLE, XAD01 16G030B)                                                                                                                                                                                                                                                       |
| Type of satellite (State = SP)<br>(City = geo or non)              | Type = Nongeostationary                                                                                                                                                                                                                                                                                                                                                                                                      | Choose either:<br>Geostationary or<br>Nongeostationary                                                                                                                                                                                                                                            |
| For Geostationary                                                  | Longitude =                                                                                                                                                                                                                                                                                                                                                                                                                  | IF ANY SATELLITES ARE GEOSTATIONARY, REPORT ITS LATITUDE AS 000000N (XLA AND/OR RLA) AND REPORT ITS LONGITUDE (XLG AND/OR RLG).                                                                                                                                                                   |
| For Nongeostationary<br>(Orbital Data)                             | The single spacecraft will operate at multiple orbits described below:<br><br>INCLINATION ANGLE 50.0 degrees<br>APOGEE IN KILOMETERS 500 km<br>PERIGEE IN KILOMETERS 500 km<br>ORBITAL PERIOD IN HOURS 1<br>AND FRACTIONS OF HOURS IN DECIMAL 59<br>NUMBER OF SATELLITES IN THE SYSTEM 1<br><br>INCLINATION ANGLE 50.0 degrees<br>APOGEE IN KILOMETERS 6000 km<br>PERIGEE IN KILOMETERS 6000 km<br>ORBITAL PERIOD IN HOURS 3 | IF ANY SATELLITES ARE NONGEOSTATIONARY, REPORT ITS INCLINATION ANGLE, APOGEE IN KILOMETERS, PERIGEE IN KILOMETERS, ORBITAL PERIOD IN HOURS AND FRACTIONS OF HOURS IN DECIMAL, THE NUMBER OF SATELLITES IN THE SYSTEM, THEN T01, EXAMPLE,<br><br>REM04 *ORB,<br>98.0IN00510AP00510PE001.58H01NRT01 |

|                                                |                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                          |
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|                                                | <p>AND FRACTIONS OF HOURS IN DECIMAL 80<br/>NUMBER OF SATELLITES IN THE SYSTEM 1</p> <p>REM01<br/>*ORB,50.0IN00500AP00500PE001.59H01NRT01</p> <p>REM02<br/>*ORB,50.0IN06000AP06000PE003.80H01NRT01</p> |                                                                                                                                                                                                                                                                                          |
| For SunSynchronous Nongeostationary Orbits     | Mean Local Time of Ascending Node (MLTAN) =                                                                                                                                                            | MLTAN IS THE ANGLE BETWEEN AN ORBIT'S ASCENDING NODE AND THE MEAN SUN, OFTEN EXPRESSED AS UNIT OF TIME (HH:MM)                                                                                                                                                                           |
| Number of Satellite Contacts Supported Per Day | <p>At 500km x 500km: If needed, backup only.</p> <p>At 6000km x 6000km: If needed, backup only.</p>                                                                                                    | <p>NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY</p> <p>Note: This number specifies total contacts per day for this transmitter, which will be distributed across the receivers listed in this section.</p> |
| Expected Duration of Each Contact              | <p>At 500km x 500km: If needed, backup only.</p> <p>At 6000km x 6000km: If needed, backup only.</p>                                                                                                    | AVERAGE DURATION OF EACH CONTACT                                                                                                                                                                                                                                                         |

| Earth Station Data – AnySignal Selfoss Iceland (Receiver 1) |                 |                                                                                                                                                                                                                                     |
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| State (RSC)                                                 | RSC = Iceland   |                                                                                                                                                                                                                                     |
| City Name (RAL)                                             | RAL = Selfoss   |                                                                                                                                                                                                                                     |
| Latitude (DDMMSS)                                           | Lat = 640304 N  |                                                                                                                                                                                                                                     |
| Longitude (DDDMMSS)                                         | Lon = 0202518 W |                                                                                                                                                                                                                                     |
| Antenna Polarization (RAP)                                  | RAP = RAP01 R   | <p>POLARIZATIONS INCLUDE :</p> <p>H = HORIZONTAL,<br/>V = VERTICAL,<br/>S = HORIZONTAL AND VERTICAL,<br/>L = LEFT HAND CIRCULAR,<br/>R = RIGHT HAND CIRCULAR,<br/>T = RIGHT AND LEFT HAND CIRCULAR,<br/>J = LINEAR POLARIZATION</p> |
| Antenna Azimuth (RAZ)                                       | RAZ = RAZ01 V10 | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                                    |

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| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <b>16.2 dBi</b><br>BEAMWIDTH@ ½ Power <b>30.0 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>125.3 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>2.0 meters</b><br><br>RAD = <b>RAD01 16G030B000-360A00125H002</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006 |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <b>3.15 m</b><br>ANTENNA EFFICIENCY <b>90.0%</b>                                                                                                                                                                                                        |                                                                   |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input type="checkbox"/>                                                                                                                                                    | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA |

| Earth Station Data – AnySignal Colorado Springs Colorado (Receiver 2) |                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                    |
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| State (RSC)                                                           | RSC = <b>Colorado</b>                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                    |
| City Name (RAL)                                                       | RAL = <b>Colorado Springs</b>                                                                                                                                                                                                                                             |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                     | Lat = <b>385638 N</b>                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                                    | Lon = <b>1044446 W</b>                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                            | RAP = <b>RAP02 R</b>                                                                                                                                                                                                                                                      | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                                 | RAZ = <b>RAZ02 V10</b>                                                                                                                                                                                                                                                    | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                              | ANTENNA GAIN(dBi) <b>16.2 dBi</b><br>BEAMWIDTH@ ½ Power <b>30.0 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>2076.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>2.0 meters</b><br><br>RAD = <b>RAD02 16G030B000-360A02076H002</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional                                            | ANTENNA DIAMETER <b>3.15 m</b><br>ANTENNA EFFICIENCY <b>90.0%</b>                                                                                                                                                                                                         |                                                                                                                                                                                                                    |

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| Information<br>(For Parabolic Antennas) |                                                                                                                       |                                                                         |
| Supported Operations                    | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

#### Earth Station Data – AnySignal Pitea Sweden (Receiver 3)

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| State (RSC)                                                     | RSC = Sweden                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = Pitea                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = 652016 N                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                             | Lon = 0212531 E                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP03 R                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ03 V10                                                                                                                                                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 16.2 dBi<br>BEAMWIDTH@ ½ Power 30.0 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 9.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.0 meters<br><br>RAD = RAD03 16G030B000-360A00009H002 | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, RAD01<br>16G030B000-360A00357H006                                                                                                                                            |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.15 m<br>ANTENNA EFFICIENCY 90.0%                                                                                                                                                                          |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input type="checkbox"/>                                                                                                        | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

#### Earth Station Data – AnySignal Pretoria South Africa (Receiver 4)

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| State (RSC) | RSC = South Africa |  |
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| City Name (RAL)                                                 | RAL = Pretoria                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = 255137 S                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = 0282714 E                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP04 R                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ04 V10                                                                                                                                                                                                                 | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 16.2 dBi<br>BEAMWIDTH@ ½ Power 30.0 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 1393.5 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.0 meters<br><br>RAD = RAD04 16G030B000-360A01394H002 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.15 m<br>ANTENNA EFFICIENCY 90.0%                                                                                                                                                                             |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input type="checkbox"/>                                                                                                           | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

#### Earth Station Data – AnySignal Torrance California (Receiver 5)

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|--------------------|------------------|-------------------------------------------------------------|
| State (RSC)        | RSC = California |                                                             |
| City Name (RAL)    | RAL = Torrance   |                                                             |
| Latitude (DDMMSS)  | Lat = 334827 N   |                                                             |
| Longitude (DDMMSS) | Lon = 1182100 W  |                                                             |
|                    | RAP = RAP05 R    | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL, |

|                                                                 |                                                                                                                                                                                                                               |                                                                                                                                                     |
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| Antenna Polarization (RAP)                                      |                                                                                                                                                                                                                               | S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ05 V10                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                    |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 16.2 dBi<br>BEAMWIDTH@ ½ Power 30.0 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 25.2 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.0 meters<br><br>RAD = RAD05 16G030B000-360A00025H002 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                   |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.15 m<br>ANTENNA EFFICIENCY 90.0%                                                                                                                                                                           |                                                                                                                                                     |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input type="checkbox"/>                                                                                                         | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                   |

#### Earth Station Data – AnySignal Umea Sweden (Receiver 6)

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| State (RSC)                | RSC = Sweden    |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = Umea      |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 635114 N  |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)        | Lon = 0201229 E |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP06 R   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = RAZ06 V10 | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |

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| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <b>16.2 dBi</b><br>BEAMWIDTH@ ½ Power <b>30.0 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>30.7 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>2.0 meters</b><br><br>RAD = <b>RAD06 16G030B000-360A00031H002</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006 |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <b>3.15 m</b><br>ANTENNA EFFICIENCY <b>90.0%</b>                                                                                                                                                                                                       |                                                                   |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input type="checkbox"/>                                                                                                                                                   | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA |

| Earth Station Data – AnySignal Awarua New Zealand (Receiver 7) |                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                    |
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| State (RSC)                                                    | RSC = <b>New Zealand</b>                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| City Name (RAL)                                                | RAL = <b>Awarua</b>                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                              | Lat = <b>463144 S</b>                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                             | Lon = <b>1682251 E</b>                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                     | RAP = <b>RAP07 R</b>                                                                                                                                                                                                                                                    | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                          | RAZ = <b>RAZ07 V10</b>                                                                                                                                                                                                                                                  | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                       | ANTENNA GAIN(dBi) <b>16.2 dBi</b><br>BEAMWIDTH@ ½ Power <b>30.0 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>10.8 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>2.0 meters</b><br><br>RAD = <b>RAD07 16G030B000-360A00011H002</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional                                     | ANTENNA DIAMETER <b>3.15 m</b><br>ANTENNA EFFICIENCY <b>90.0%</b>                                                                                                                                                                                                       |                                                                                                                                                                                                                    |



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| Information<br>(For Parabolic Antennas) |                                                                                                                       |                                                                         |
| Supported Operations                    | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – AnySignal Punta Arenas Chile (Receiver 8)  |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
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| State (RSC)                                                     | RSC = <a href="#">Chile</a>                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = <a href="#">Punta Arenas</a>                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">530703 S</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">0705339 W</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP08 R</a>                                                                                                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ08 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">16.2 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">30.0 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">29.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.0 meters</a><br><br>RAD = <a href="#">RAD08 16G030B000-360A00029H002</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.15 m</a><br>ANTENNA EFFICIENCY <a href="#">90.0%</a>                                                                                                                                                                                                                                           |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input type="checkbox"/>                                                                                                                                                                                                         | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

| Earth Station Data – AnySignal North Pole Alaska (Receiver 9) |                              |
|---------------------------------------------------------------|------------------------------|
| State (RSC)                                                   | RSC = <a href="#">Alaska</a> |

|                                                                                |                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| City Name<br>(RAL)                                                             | RAL = North Pole                                                                                                                                                                                                               |                                                                                                                                                                                                                       |
| Latitude<br>(DDMMSS)                                                           | Lat = 644549 N                                                                                                                                                                                                                 |                                                                                                                                                                                                                       |
| Longitude<br>(DDMMSS)                                                          | Lon = 1472213 W                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
| Antenna<br>Polarization<br>(RAP)                                               | RAP = RAP09 R                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND<br>CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna<br>Azimuth<br>(RAZ)                                                    | RAZ = RAZ09 V10                                                                                                                                                                                                                | THE EARTH STATION RECEIVER<br>ANTENNA AZIMUTH (RAZ), THE<br>MINIMUM ANGLE OF ELEVATION, V00<br>TO V90, EXAMPLE, RAZ01 V00                                                                                             |
| Antenna<br>Dimensions<br>(RAD)                                                 | ANTENNA GAIN(dBi) 16.2 dBi<br>BEAMWIDTH@ ½ Power 30.0 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 148.7 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.0 meters<br><br>RAD = RAD09 16G030B000-360A00149H002 | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, RAD01<br>16G030B000-360A00357H006                                                                                                                                               |
| Receive<br>Antenna<br>Additional<br>Information<br>(For Parabolic<br>Antennas) | ANTENNA DIAMETER 3.15 m<br>ANTENNA EFFICIENCY 90.0%                                                                                                                                                                            |                                                                                                                                                                                                                       |
| Supported<br>Operations                                                        | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input type="checkbox"/>                                                                                                          | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                               |

|                                           |                                                             |                                                                                                                                                                  |
|-------------------------------------------|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Transmit Frequency: 2222MHz</b>        |                                                             |                                                                                                                                                                  |
| Satellite Name: Screech 1 (Transmitter 2) |                                                             |                                                                                                                                                                  |
| Transmit<br>Power (PWR)                   | PWR = 0.568 W                                               | TRANSMIT POWER SUPPLIED TO THE<br>ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT |
| RF Emissions                              | Emissions Designator 130KG1D<br>Necessary Bandwidth 130 kHz | NECESSARY BANDWIDTH:<br>THE WIDTH OF FREQUENCY BAND<br>WHICH IS JUST                                                                                             |

|                                 |                                  |
|---------------------------------|----------------------------------|
| -3 dB Bandwidth                 | 80.3 kHz                         |
| -20 dB Bandwidth                | 125 kHz                          |
| -40 dB Bandwidth                | 223 kHz                          |
| -60 dB Bandwidth                | 1.33 MHz                         |
| Modulation Type                 | QPSK                             |
| Data Rate                       | 84.2 kbps                        |
| Forward Error Correction Coding | Convolutional 1/2 + RS (255,223) |
| Total Symbol Rate               | 193 ksym/s                       |

|                                 |                                  |
|---------------------------------|----------------------------------|
| Emissions Designator            | 185KG1D                          |
| Necessary Bandwidth             | 185 kHz                          |
| -3 dB Bandwidth                 | 122 kHz                          |
| -20 dB Bandwidth                | 175 kHz                          |
| -40 dB Bandwidth                | 307 kHz                          |
| -60 dB Bandwidth                | 1.70 MHz                         |
| Modulation Type                 | QPSK                             |
| Data Rate                       | 120 kbps                         |
| Forward Error Correction Coding | Convolutional 1/2 + RS (255,223) |
| Total Symbol Rate               | 274 ksym/s                       |

|                                 |                                  |
|---------------------------------|----------------------------------|
| Emissions Designator            | 22K0G1D                          |
| Necessary Bandwidth             | 22.0 kHz                         |
| -3 dB Bandwidth                 | 15.5 kHz                         |
| -20 dB Bandwidth                | 21.3 kHz                         |
| -40 dB Bandwidth                | 29.3 kHz                         |
| -60 dB Bandwidth                | 752 kHz                          |
| Modulation Type                 | QPSK                             |
| Data Rate                       | 14.3 kbps                        |
| Forward Error Correction Coding | Convolutional 1/2 + RS (255,223) |
| Total Symbol Rate               | 32.6 ksym/s                      |

|                                 |                                  |
|---------------------------------|----------------------------------|
| Emissions Designator            | 2M00G1D                          |
| Necessary Bandwidth             | 2.00 MHz                         |
| -3 dB Bandwidth                 | 1.45 MHz                         |
| -20 dB Bandwidth                | 1.75 MHz                         |
| -40 dB Bandwidth                | 2.38 MHz                         |
| -60 dB Bandwidth                | 7.48 MHz                         |
| Modulation Type                 | QPSK                             |
| Data Rate                       | 1.30 Mbps                        |
| Forward Error Correction Coding | Convolutional 1/2 + RS (255,223) |
| Total Symbol Rate               | 2.96 Msym/s                      |

|                      |          |
|----------------------|----------|
| Emissions Designator | 40K0G1D  |
| Necessary Bandwidth  | 40.0 kHz |

SUFFICIENT TO SUCCESSFULLY TRANSFER DATA. FORMULAS CAN BE FOUND IN ANNEX J OF THE NTIA MANUAL.

-3 / -20 / -40 / -60 dB BANDWIDTHS: 2-SIDED EMISSION BANDWIDTH VALUES

MODULATION TYPE: THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.

DATA RATE: INFORMATION DATA RATE

TOTAL SYMBOL RATE: DATA RATE COMBINED WITH FEC AND FRAME OVERHEAD RESULTING IN THE TOTAL SYMBOL RATE AT THE INPUT TO THE SYMBOL MAPPER/MODULATOR.

|                                 |                                  |
|---------------------------------|----------------------------------|
| -3 dB Bandwidth                 | 28.6 kHz                         |
| -20 dB Bandwidth                | 39.8 kHz                         |
| -40 dB Bandwidth                | 56.3 kHz                         |
| -60 dB Bandwidth                | 898 kHz                          |
| Modulation Type                 | QPSK                             |
| Data Rate                       | 25.9 kbps                        |
| Forward Error Correction Coding | Convolutional 1/2 + RS (255,223) |
| Total Symbol Rate               | 59.2 ksym/s                      |
| <hr/>                           |                                  |
| Emissions Designator            | 550KG1D                          |
| Necessary Bandwidth             | 550 kHz                          |
| -3 dB Bandwidth                 | 401 kHz                          |
| -20 dB Bandwidth                | 484 kHz                          |
| -40 dB Bandwidth                | 950 kHz                          |
| -60 dB Bandwidth                | 2.62 MHz                         |
| Modulation Type                 | QPSK                             |
| Data Rate                       | 356 kbps                         |
| Forward Error Correction Coding | Convolutional 1/2 + RS (255,223) |
| Total Symbol Rate               | 815 ksym/s                       |
| <hr/>                           |                                  |
| Emissions Designator            | 750KG1D                          |
| Necessary Bandwidth             | 750 kHz                          |
| -3 dB Bandwidth                 | 542 kHz                          |
| -20 dB Bandwidth                | 660 kHz                          |
| -40 dB Bandwidth                | 1.24 MHz                         |
| -60 dB Bandwidth                | 2.92 MHz                         |
| Modulation Type                 | QPSK                             |
| Data Rate                       | 486 kbps                         |
| Forward Error Correction Coding | Convolutional 1/2 + RS (255,223) |
| Total Symbol Rate               | 1.11 Msym/s                      |
| <hr/>                           |                                  |
| Emissions Designator            | 80K0G1D                          |
| Necessary Bandwidth             | 80.0 kHz                         |
| -3 dB Bandwidth                 | 52.2 kHz                         |
| -20 dB Bandwidth                | 78.3 kHz                         |
| -40 dB Bandwidth                | 142 kHz                          |
| -60 dB Bandwidth                | 1.21 MHz                         |
| Modulation Type                 | QPSK                             |
| Data Rate                       | 51.8 kbps                        |
| Forward Error Correction Coding | Convolutional 1/2 + RS (255,223) |
| Total Symbol Rate               | 119 ksym/s                       |
| <hr/>                           |                                  |
| Emissions Designator            | 86K0G1D                          |
| Necessary Bandwidth             | 86.0 kHz                         |

|                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                   |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                    | <div> <div>-3 dB Bandwidth</div> <div>53.8 kHz</div> </div> <div> <div>-20 dB Bandwidth</div> <div>84.9 kHz</div> </div> <div> <div>-40 dB Bandwidth</div> <div>151 kHz</div> </div> <div> <div>-60 dB Bandwidth</div> <div>1.34 MHz</div> </div> <div> <div>Modulation Type</div> <div>QPSK</div> </div> <div> <div>Data Rate</div> <div>55.7 kbps</div> </div> <div> <div>Forward Error Correction Coding</div> <div>Convolutional 1/2 + RS (255,223)</div> </div> <div> <div>Total Symbol Rate</div> <div>127 ksym/s</div> </div> <hr/> <div> <div>Emissions Designator</div> <div>90K0G1D</div> </div> <div> <div>Necessary Bandwidth</div> <div>90.0 kHz</div> </div> <div> <div>-3 dB Bandwidth</div> <div>55.9 kHz</div> </div> <div> <div>-20 dB Bandwidth</div> <div>96.4 kHz</div> </div> <div> <div>-40 dB Bandwidth</div> <div>151 kHz</div> </div> <div> <div>-60 dB Bandwidth</div> <div>1.31 MHz</div> </div> <div> <div>Modulation Type</div> <div>QPSK</div> </div> <div> <div>Data Rate</div> <div>58.3 kbps</div> </div> <div> <div>Forward Error Correction Coding</div> <div>Convolutional 1/2 + RS (255,223)</div> </div> <div> <div>Total Symbol Rate</div> <div>133 ksym/s</div> </div> |                                                                                                                                                                                                                                                                   |
| Does transmitter have a beacon mode?                               | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | BEACON MODE IS NORMALLY CONSIDERED A REGULAR AND PERIODIC SHORT DURATION TRANSMISSION THAT IS OFTEN USED TO ASSIST WITH TRACKING, DOPPLER COMPENSATION, OR SMALL SATELLITE IDENTIFICATION WHOSE TRANSMISSIONS ARE NOT LIMITED TO DURATIONS WHEN SUPPORTING GROUND |
| If transmitter has a beacon mode, can the beacon be commanded off? | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                   |
| Polarization (XAP)                                                 | XAP = XAP02 R                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION                                                |
| Orientation (XAZ)                                                  | XAZ = XAZ02 EC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | NB= NARROWBEAM<br>EC = EARTH COVERAGE                                                                                                                                                                                                                             |

|                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                           |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Antenna Dimension (XAD)                            | <p>ANTENNA GAIN(dBi) <b>6.56 dBi</b></p> <p>BEAMWIDTH@ ½ Power <b>111.0 degrees</b></p> <p>XAD = <b>XAD02 07G111B</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | (NTIA format (XAD), EXAMPLE, XAD01 16G030B)                                                                                                                                                                                                                                                               |
| Type of satellite (State = SP) (City = geo or non) | Type = <b>Nongeostationary</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Choose either:<br>Geostationary or<br>Nongeostationary                                                                                                                                                                                                                                                    |
| For Geostationary                                  | Longitude =                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | IF ANY SATELLITES ARE GEOSTATIONARY, REPORT ITS LATITUDE AS 000000N (XLA AND/OR RLA) AND REPORT ITS LONGITUDE (XLG AND/OR RLG).                                                                                                                                                                           |
| For Nongeostationary (Orbital Data)                | <p>The single spacecraft will operate at multiple orbits described below:</p> <p>INCLINATION ANGLE <b>50.0 degrees</b></p> <p>APOGEE IN KILOMETERS <b>500 km</b></p> <p>PERIGEE IN KILOMETERS <b>500 km</b></p> <p>ORBITAL PERIOD IN HOURS <b>1</b></p> <p>AND FRACTIONS OF HOURS IN DECIMAL <b>59</b></p> <p>NUMBER OF SATELLITES IN THE SYSTEM <b>1</b></p> <p>INCLINATION ANGLE <b>50.0 degrees</b></p> <p>APOGEE IN KILOMETERS <b>6000 km</b></p> <p>PERIGEE IN KILOMETERS <b>6000 km</b></p> <p>ORBITAL PERIOD IN HOURS <b>3</b></p> <p>AND FRACTIONS OF HOURS IN DECIMAL <b>80</b></p> <p>NUMBER OF SATELLITES IN THE SYSTEM <b>1</b></p> <p><b>REM01</b><br/><b>*ORB, 50.0IN00500AP00500PE001.59H01NRT01</b></p> <p><b>REM02</b><br/><b>*ORB, 50.0IN06000AP06000PE003.80H01NRT01</b></p> | <p>IF ANY SATELLITES ARE NONGEOSTATIONARY, REPORT ITS INCLINATION ANGLE, APOGEE IN KILOMETERS, PERIGEE IN KILOMETERS, ORBITAL PERIOD IN HOURS AND FRACTIONS OF HOURS IN DECIMAL, THE NUMBER OF SATELLITES IN THE SYSTEM, THEN T01, EXAMPLE,</p> <p>REM04 *ORB,<br/>98.0IN00510AP00510PE001.58H01NRT01</p> |
| For SunSynchronous Nongeostationary Orbits         | Mean Local Time of Ascending Node (MLTAN) =                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | MLTAN IS THE ANGLE BETWEEN AN ORBIT'S ASCENDING NODE AND THE MEAN SUN, OFTEN EXPRESSED AS UNIT OF TIME (HH:MM)                                                                                                                                                                                            |
| Number of Satellite Contacts Supported Per Day     | <p><b>At 500km x 500km: 55 contacts per day across all receivers.</b></p> <p><b>At 6000km x 6000km: 29 contacts per day across all receivers.</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p>NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY</p> <p><b>Note: This number specifies total contacts per day for this transmitter, which will be</b></p>                                                                    |

|                                   |                                                                                       |                                                          |
|-----------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------------------|
|                                   |                                                                                       | distributed across the receivers listed in this section. |
| Expected Duration of Each Contact | At 500km x 500km: 6 minutes per contact<br>At 6000km x 6000km: 30 minutes per contact | AVERAGE DURATION OF EACH CONTACT                         |

| Earth Station Data – Leaf Peterborough Southern Australia (Receiver 10) |                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                             | RSC = Southern Australia                                                                                                                                                                                                      |                                                                                                                                                                                                                    |
| City Name (RAL)                                                         | RAL = Peterborough                                                                                                                                                                                                            |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                       | Lat = 325743 S                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                                     | Lon = 1385058 E                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                              | RAP = RAP10 R                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                                   | RAZ = RAZ10 V10                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                                | ANTENNA GAIN(dBi) 34.6 dBi<br>BEAMWIDTH@ ½ Power 2.4 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 539.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.2 meters<br><br>RAD = RAD10 35G002B000-360A00539H002 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas)         | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                                                                                                                            |                                                                                                                                                                                                                    |
| Supported Operations                                                    | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                              | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

| Earth Station Data – Leaf Nangetty Western Australia (Receiver 11) |                         |
|--------------------------------------------------------------------|-------------------------|
| State (RSC)                                                        | RSC = Western Australia |

|                                                                 |                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| City Name (RAL)                                                 | RAL = Nangetty                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = 290037 S                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = 1152032 E                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP11 R                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ11 V10                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 34.6 dBi<br>BEAMWIDTH@ ½ Power 2.4 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 270.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.2 meters<br><br>RAD = RAD11 35G002B000-360A00270H002 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                                                                                                                            |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                              | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – Leaf Nangetty Western Australia (Receiver 12)

|                    |                         |                                                             |
|--------------------|-------------------------|-------------------------------------------------------------|
| State (RSC)        | RSC = Western Australia |                                                             |
| City Name (RAL)    | RAL = Nangetty          |                                                             |
| Latitude (DDMMSS)  | Lat = 290039 S          |                                                             |
| Longitude (DDMMSS) | Lon = 1152033 E         |                                                             |
|                    | RAP = RAP12 R           | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL, |



|                                                                 |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                     |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Antenna Polarization (RAP)                                      |                                                                                                                                                                                                                                                                                                                               | S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ12 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                    |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">34.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.4 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">272.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.2 meters</a><br><br>RAD = <a href="#">RAD12 35G002B000-360A00272H002</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                   |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                                                                                                                                                                            |                                                                                                                                                     |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                              | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                   |

#### Earth Station Data – Leaf Absheron Azerbaijan (Receiver 13)

|                            |                                  |                                                                                                                                                                                                                    |
|----------------------------|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = <a href="#">Azerbaijan</a> |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = <a href="#">Absheron</a>   |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = <a href="#">402759 N</a>   |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)        | Lon = <a href="#">0492910 E</a>  |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = <a href="#">RAP13 R</a>    | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = <a href="#">RAZ13 V10</a>  | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |

|                                                                 |                                                                                                                                                                                                                                                                         |                                                                         |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <b>34.6 dBi</b><br>BEAMWIDTH@ ½ Power <b>2.4 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>210.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>2.2 meters</b><br><br>RAD = <b>RAD13 35G002B000-360A00210H002</b> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, RAD01<br>16G030B000-360A00357H006 |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <b>3.7 m</b><br>ANTENNA EFFICIENCY <b>70.0%</b>                                                                                                                                                                                                        |                                                                         |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                        | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – Leaf Absheron Azerbaijan (Receiver 14) |                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                    |
|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                 | RSC = <b>Azerbaijan</b>                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| City Name (RAL)                                             | RAL = <b>Absheron</b>                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                           | Lat = <b>402758 N</b>                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                          | Lon = <b>0492911 E</b>                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                  | RAP = <b>RAP14 R</b>                                                                                                                                                                                                                                                    | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                       | RAZ = <b>RAZ14 V10</b>                                                                                                                                                                                                                                                  | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                    | ANTENNA GAIN(dBi) <b>34.6 dBi</b><br>BEAMWIDTH@ ½ Power <b>2.4 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>210.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>2.2 meters</b><br><br>RAD = <b>RAD14 35G002B000-360A00210H002</b> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, RAD01<br>16G030B000-360A00357H006                                                                                                                                            |
| Receive Antenna Additional                                  | ANTENNA DIAMETER <b>3.7 m</b><br>ANTENNA EFFICIENCY <b>70.0%</b>                                                                                                                                                                                                        |                                                                                                                                                                                                                    |

|                                         |                                                                                                                                  |                                                                         |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Information<br>(For Parabolic Antennas) |                                                                                                                                  |                                                                         |
| Supported Operations                    | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – Leaf Punta Arenas Chile (Receiver 15)      |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                     | RSC = <a href="#">Chile</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = <a href="#">Punta Arenas</a>                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">530230 S</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                             | Lon = <a href="#">0705049 W</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP15 R</a>                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ15 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">34.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.4 degrees</a><br>AZIMUTHAL RANGE 0-360 <a href="#">degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">36.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.2 meters</a><br><br>RAD = <a href="#">RAD15 35G002B000-360A00036H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, RAD01<br>16G030B000-360A00357H006                                                                                                                                            |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                                                                                                                                                                           |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                             | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

| Earth Station Data – Leaf Punta Arenas Chile (Receiver 16) |                             |
|------------------------------------------------------------|-----------------------------|
| State (RSC)                                                | RSC = <a href="#">Chile</a> |

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| City Name (RAL)                                                 | RAL = <a href="#">Punta Arenas</a>                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">530231 S</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">0705046 W</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP16 R</a>                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ16 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">34.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.4 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">36.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.2 meters</a><br><br>RAD = <a href="#">RAD16 35G002B000-360A00036H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                                                                                                                                                                           |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                             | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – Leaf Punta Arenas Chile (Receiver 17)

|                    |                                    |                                                             |
|--------------------|------------------------------------|-------------------------------------------------------------|
| State (RSC)        | RSC = <a href="#">Chile</a>        |                                                             |
| City Name (RAL)    | RAL = <a href="#">Punta Arenas</a> |                                                             |
| Latitude (DDMMSS)  | Lat = <a href="#">530230 S</a>     |                                                             |
| Longitude (DDMMSS) | Lon = <a href="#">0705048 W</a>    |                                                             |
|                    | RAP = <a href="#">RAP17 R</a>      | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL, |

|                                                                 |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                     |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Antenna Polarization (RAP)                                      |                                                                                                                                                                                                                                                                                                                               | S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ17 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                    |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">36.8 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.55 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">36.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.2 meters</a><br><br>RAD = <a href="#">RAD17 37G003B000-360A00036H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                   |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                                                                                                                                                                            |                                                                                                                                                     |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                              | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                   |

#### Earth Station Data – Leaf Punta Arenas Chile (Receiver 18)

|                            |                                    |                                                                                                                                                                                                                    |
|----------------------------|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = <a href="#">Chile</a>        |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = <a href="#">Punta Arenas</a> |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = <a href="#">530230 S</a>     |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)        | Lon = <a href="#">0705045 W</a>    |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = <a href="#">RAP18 R</a>      | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = <a href="#">RAZ18 V10</a>    | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |

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| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <b>34.6 dBi</b><br>BEAMWIDTH@ ½ Power <b>2.4 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>36.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>3.2 meters</b><br><br>RAD = <b>RAD18 35G002B000-360A00036H003</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006 |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <b>3.7 m</b><br>ANTENNA EFFICIENCY <b>70.0%</b>                                                                                                                                                                                                       |                                                                   |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                       | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA |

| Earth Station Data – Leaf Punta Arenas Chile (Receiver 19) |                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                    |
|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                | RSC = <b>Chile</b>                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                    |
| City Name (RAL)                                            | RAL = <b>Punta Arenas</b>                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                          | Lat = <b>530229 S</b>                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                         | Lon = <b>0705047 W</b>                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                 | RAP = <b>RAP19 R</b>                                                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                      | RAZ = <b>RAZ19 V10</b>                                                                                                                                                                                                                                                 | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                   | ANTENNA GAIN(dBi) <b>34.6 dBi</b><br>BEAMWIDTH@ ½ Power <b>2.4 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>36.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>3.2 meters</b><br><br>RAD = <b>RAD19 35G002B000-360A00036H003</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional                                 | ANTENNA DIAMETER <b>3.7 m</b><br>ANTENNA EFFICIENCY <b>70.0%</b>                                                                                                                                                                                                       |                                                                                                                                                                                                                    |

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|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Information<br>(For Parabolic Antennas) |                                                                                                                                  |                                                                         |
| Supported Operations                    | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – Leaf Santiago Chile (Receiver 20)          |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                     | RSC = <a href="#">Chile</a>                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = <a href="#">Santiago</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">332153 S</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                             | Lon = <a href="#">0704620 W</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP20 R</a>                                                                                                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ20 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">34.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.4 degrees</a><br>AZIMUTHAL RANGE 0-360 <a href="#">degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">464.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.2 meters</a><br><br>RAD = <a href="#">RAD20 35G002B000-360A00464H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, RAD01<br>16G030B000-360A00357H006                                                                                                                                            |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                                                                                                                                                                            |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                              | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

| Earth Station Data – Leaf Santiago Chile (Receiver 21) |                             |
|--------------------------------------------------------|-----------------------------|
| State (RSC)                                            | RSC = <a href="#">Chile</a> |

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| City Name (RAL)                                                 | RAL = <a href="#">Santiago</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">332153 S</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">0704621 W</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP21 R</a>                                                                                                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ21 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">34.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.4 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">464.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.2 meters</a><br><br>RAD = <a href="#">RAD21 35G002B000-360A00464H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                                                                                                                                                                            |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                              | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – Leaf Santiago Chile (Receiver 22)

|                    |                                 |                                                             |
|--------------------|---------------------------------|-------------------------------------------------------------|
| State (RSC)        | RSC = <a href="#">Chile</a>     |                                                             |
| City Name (RAL)    | RAL = <a href="#">Santiago</a>  |                                                             |
| Latitude (DDMMSS)  | Lat = <a href="#">332154 S</a>  |                                                             |
| Longitude (DDMMSS) | Lon = <a href="#">0704622 W</a> |                                                             |
|                    | RAP = <a href="#">RAP22 R</a>   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL, |



|                                                                 |                                                                                                                                                                                                                               |                                                                                                                                                     |
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| Antenna Polarization (RAP)                                      |                                                                                                                                                                                                                               | S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ22 V10                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                    |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 34.6 dBi<br>BEAMWIDTH@ ½ Power 2.4 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 464.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.2 meters<br><br>RAD = RAD22 35G002B000-360A00464H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                   |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                                                                                                                            |                                                                                                                                                     |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                              | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                   |

#### Earth Station Data – Leaf Blonduos Iceland (Receiver 23)

|                            |                 |                                                                                                                                                                                                                    |
|----------------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = Iceland   |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = Blonduos  |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 653850 N  |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)        | Lon = 0201442 W |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP23 R   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = RAZ23 V10 | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |

|                                                                 |                                                                                                                                                                                                                                                                        |                                                                   |
|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <b>34.6 dBi</b><br>BEAMWIDTH@ ½ Power <b>2.4 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>53.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>2.2 meters</b><br><br>RAD = <b>RAD23 35G002B000-360A00053H002</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006 |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <b>3.7 m</b><br>ANTENNA EFFICIENCY <b>70.0%</b>                                                                                                                                                                                                       |                                                                   |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                       | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA |

| Earth Station Data – Leaf Blonduos Iceland (Receiver 24) |                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                    |
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| State (RSC)                                              | RSC = <b>Iceland</b>                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| City Name (RAL)                                          | RAL = <b>Blonduos</b>                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                        | Lat = <b>653851 N</b>                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                       | Lon = <b>0201441 W</b>                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                               | RAP = <b>RAP24 R</b>                                                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                    | RAZ = <b>RAZ24 V10</b>                                                                                                                                                                                                                                                 | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                 | ANTENNA GAIN(dBi) <b>37.7 dBi</b><br>BEAMWIDTH@ ½ Power <b>2.1 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>53.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>2.5 meters</b><br><br>RAD = <b>RAD24 38G002B000-360A00053H003</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional                               | ANTENNA DIAMETER <b>3.9 m</b><br>ANTENNA EFFICIENCY <b>70.0%</b>                                                                                                                                                                                                       |                                                                                                                                                                                                                    |

|                                         |                                                                                                                                  |                                                                         |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Information<br>(For Parabolic Antennas) |                                                                                                                                  |                                                                         |
| Supported Operations                    | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – Leaf Blonduos Iceland (Receiver 25)        |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                     | RSC = <a href="#">Iceland</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = <a href="#">Blonduos</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">653850 N</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                             | Lon = <a href="#">0201421 W</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP25 R</a>                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ25 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">37.7 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.1 degrees</a><br>AZIMUTHAL RANGE 0-360 <a href="#">degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">55.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.3 meters</a><br><br>RAD = <a href="#">RAD25 38G002B000-360A00055H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, RAD01<br>16G030B000-360A00357H006                                                                                                                                            |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.9 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                                                                                                                                                                           |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                             | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

| Earth Station Data – Leaf Blonduos Iceland (Receiver 26) |                               |
|----------------------------------------------------------|-------------------------------|
| State (RSC)                                              | RSC = <a href="#">Iceland</a> |

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| City Name (RAL)                                                 | RAL = <a href="#">Blonduos</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">653851 N</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">0201421 W</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP26 R</a>                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ26 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">34.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.4 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">55.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>RAD = <a href="#">RAD26 35G002B000-360A00055H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                                                                                                                                                                           |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                             | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – Leaf Blonduos Iceland (Receiver 27)

|                    |                                 |                                                             |
|--------------------|---------------------------------|-------------------------------------------------------------|
| State (RSC)        | RSC = <a href="#">Iceland</a>   |                                                             |
| City Name (RAL)    | RAL = <a href="#">Blonduos</a>  |                                                             |
| Latitude (DDMMSS)  | Lat = <a href="#">653850 N</a>  |                                                             |
| Longitude (DDMMSS) | Lon = <a href="#">0201419 W</a> |                                                             |
|                    | RAP = <a href="#">RAP27 R</a>   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL, |

|                                                                 |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                     |
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| Antenna Polarization (RAP)                                      |                                                                                                                                                                                                                                                                                                                              | S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ27 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                    |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">34.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.4 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">55.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>RAD = <a href="#">RAD27 35G002B000-360A00055H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                   |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                                                                                                                                                                           |                                                                                                                                                     |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                             | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                   |

#### Earth Station Data – Leaf Kandy Sri Lanka (Receiver 28)

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|----------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = <a href="#">Sri Lanka</a> |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = <a href="#">Kandy</a>     |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = <a href="#">071627 N</a>  |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)        | Lon = <a href="#">0804329 E</a> |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = <a href="#">RAP28 R</a>   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = <a href="#">RAZ28 V10</a> | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |

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| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <b>34.6 dBi</b><br>BEAMWIDTH@ ½ Power <b>2.4 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>456.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>2.2 meters</b><br><br>RAD = <b>RAD28 35G002B000-360A00456H002</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006 |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <b>3.7 m</b><br>ANTENNA EFFICIENCY <b>70.0%</b>                                                                                                                                                                                                        |                                                                   |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                        | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA |

| Earth Station Data – Leaf Mon Loisir Mauritius (Receiver 29) |                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                    |
|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                  | RSC = <b>Mauritius</b>                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| City Name (RAL)                                              | RAL = <b>Mon Loisir</b>                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                            | Lat = <b>200822 S</b>                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                           | Lon = <b>0574113 E</b>                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                   | RAP = <b>RAP29 R</b>                                                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                        | RAZ = <b>RAZ29 V10</b>                                                                                                                                                                                                                                                 | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                     | ANTENNA GAIN(dBi) <b>37.7 dBi</b><br>BEAMWIDTH@ ½ Power <b>2.1 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>96.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>3.3 meters</b><br><br>RAD = <b>RAD29 38G002B000-360A00096H003</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional                                   | ANTENNA DIAMETER <b>3.9 m</b><br>ANTENNA EFFICIENCY <b>70.0%</b>                                                                                                                                                                                                       |                                                                                                                                                                                                                    |

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| Information<br>(For Parabolic<br>Antennas) |                                                                                                                                  |                                                                         |
| Supported<br>Operations                    | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – Leaf La Paz Mexico (Receiver 30)                          |                                                                                                                                                                                                                              |                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                                    | RSC = Mexico                                                                                                                                                                                                                 |                                                                                                                                                                                                                       |
| City Name<br>(RAL)                                                             | RAL = La Paz                                                                                                                                                                                                                 |                                                                                                                                                                                                                       |
| Latitude<br>(DDMMSS)                                                           | Lat = 240559 N                                                                                                                                                                                                               |                                                                                                                                                                                                                       |
| Longitude<br>(DDDMMSS)                                                         | Lon = 1102311 W                                                                                                                                                                                                              |                                                                                                                                                                                                                       |
| Antenna<br>Polarization<br>(RAP)                                               | RAP = RAP30 R                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND<br>CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna<br>Azimuth<br>(RAZ)                                                    | RAZ = RAZ30 V10                                                                                                                                                                                                              | THE EARTH STATION RECEIVER<br>ANTENNA AZIMUTH (RAZ), THE<br>MINIMUM ANGLE OF ELEVATION, V00<br>TO V90, EXAMPLE, RAZ01 V00                                                                                             |
| Antenna<br>Dimensions<br>(RAD)                                                 | ANTENNA GAIN(dBi) 35.22 dBi<br>BEAMWIDTH@ ½ Power 2.5 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 4.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.3 meters<br><br>RAD = RAD30 35G003B000-360A00004H003 | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, RAD01<br>16G030B000-360A00357H006                                                                                                                                               |
| Receive<br>Antenna<br>Additional<br>Information<br>(For Parabolic<br>Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                                                                                                                           |                                                                                                                                                                                                                       |
| Supported<br>Operations                                                        | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                             | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                               |

| Earth Station Data – Leaf La Paz Mexico (Receiver 31) |              |
|-------------------------------------------------------|--------------|
| State (RSC)                                           | RSC = Mexico |

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| City Name (RAL)                                                 | RAL = <a href="#">La Paz</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">240600 N</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">1102311 W</a>                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP31 R</a>                                                                                                                                                                                                                                                                                               | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ31 V10</a>                                                                                                                                                                                                                                                                                             | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">34.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.4 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">4.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.3 meters</a><br><br>RAD = <a href="#">RAD31 35G002B000-360A00004H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                                                                                                                                                                          |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                            | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – Leaf Awarua New Zealand (Receiver 32)

|                    |                                   |                                                             |
|--------------------|-----------------------------------|-------------------------------------------------------------|
| State (RSC)        | RSC = <a href="#">New Zealand</a> |                                                             |
| City Name (RAL)    | RAL = <a href="#">Awarua</a>      |                                                             |
| Latitude (DDMMSS)  | Lat = <a href="#">463141 S</a>    |                                                             |
| Longitude (DDMMSS) | Lon = <a href="#">1682245 E</a>   |                                                             |
|                    | RAP = <a href="#">RAP32 R</a>     | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL, |



|                                                                 |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                     |
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| Antenna Polarization (RAP)                                      |                                                                                                                                                                                                                                                                                                                              | S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ32 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                    |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">34.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.4 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">10.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.2 meters</a><br><br>RAD = <a href="#">RAD32 35G002B000-360A00010H002</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                   |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                                                                                                                                                                           |                                                                                                                                                     |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                             | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                   |

#### Earth Station Data – Leaf Awarua New Zealand (Receiver 33)

|                            |                                   |                                                                                                                                                                                                                    |
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| State (RSC)                | RSC = <a href="#">New Zealand</a> |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = <a href="#">Awarua</a>      |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = <a href="#">463158 S</a>    |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)        | Lon = <a href="#">1682304 E</a>   |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = <a href="#">RAP33 R</a>     | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = <a href="#">RAZ33 V10</a>   | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |

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| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <b>34.6 dBi</b><br>BEAMWIDTH@ ½ Power <b>2.4 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>8.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>2.2 meters</b><br><br>RAD = <b>RAD33 35G002B000-360A00008H002</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006       |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <b>3.7 m</b><br>ANTENNA EFFICIENCY <b>70.0%</b>                                                                                                                                                                                                      |                                                                         |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                      | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – Leaf Awarua New Zealand (Receiver 34) |                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                    |
|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                | RSC = <b>New Zealand</b>                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| City Name (RAL)                                            | RAL = <b>Awarua</b>                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                          | Lat = <b>463158 S</b>                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                         | Lon = <b>1682303 E</b>                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                 | RAP = <b>RAP34 R</b>                                                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                      | RAZ = <b>RAZ34 V10</b>                                                                                                                                                                                                                                                 | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                   | ANTENNA GAIN(dBi) <b>36.8 dBi</b><br>BEAMWIDTH@ ½ Power <b>2.55 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>8.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>2.2 meters</b><br><br>RAD = <b>RAD34 37G003B000-360A00008H002</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional                                 | ANTENNA DIAMETER <b>3.7 m</b><br>ANTENNA EFFICIENCY <b>70.0%</b>                                                                                                                                                                                                       |                                                                                                                                                                                                                    |

|                                         |                                                                                                                                  |                                                                         |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Information<br>(For Parabolic Antennas) |                                                                                                                                  |                                                                         |
| Supported Operations                    | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

#### Earth Station Data – Leaf Awarua New Zealand (Receiver 35)

|                                                                 |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                     | RSC = <a href="#">New Zealand</a>                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = <a href="#">Awarua</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">463155 S</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                             | Lon = <a href="#">1682303 E</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP35 R</a>                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ35 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">34.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.4 degrees</a><br>AZIMUTHAL RANGE 0-360 <a href="#">degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">10.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.2 meters</a><br><br>RAD = <a href="#">RAD35 35G002B000-360A00010H002</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, RAD01<br>16G030B000-360A00357H006                                                                                                                                            |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                                                                                                                                                                           |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                             | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

#### Earth Station Data – Leaf Santa Maria Azores (Receiver 36)

|             |                              |  |
|-------------|------------------------------|--|
| State (RSC) | RSC = <a href="#">Azores</a> |  |
|-------------|------------------------------|--|

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| City Name (RAL)                                                 | RAL = <a href="#">Santa Maria</a>                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">365951 N</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">0250814 W</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP36 R</a>                                                                                                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ36 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">34.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.4 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">194.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.2 meters</a><br><br>RAD = <a href="#">RAD36 35G002B000-360A00194H002</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                                                                                                                                                                            |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                              | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – Leaf Santa Maria Azores (Receiver 37)

|                    |                                   |                                                             |
|--------------------|-----------------------------------|-------------------------------------------------------------|
| State (RSC)        | RSC = <a href="#">Azores</a>      |                                                             |
| City Name (RAL)    | RAL = <a href="#">Santa Maria</a> |                                                             |
| Latitude (DDMMSS)  | Lat = <a href="#">365950 N</a>    |                                                             |
| Longitude (DDMMSS) | Lon = <a href="#">0250814 W</a>   |                                                             |
|                    | RAP = <a href="#">RAP37 R</a>     | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL, |

|                                                                 |                                                                                                                                                                                                                               |                                                                                                                                                     |
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| Antenna Polarization (RAP)                                      |                                                                                                                                                                                                                               | S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ37 V10                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                    |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 34.6 dBi<br>BEAMWIDTH@ ½ Power 2.4 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 195.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.2 meters<br><br>RAD = RAD37 35G002B000-360A00195H002 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                   |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                                                                                                                            |                                                                                                                                                     |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                              | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                   |

#### Earth Station Data – Leaf Pretoria South Africa (Receiver 38)

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|----------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = South Africa |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = Pretoria     |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 255137 S     |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)        | Lon = 0282713 E    |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP38 R      | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = RAZ38 V10    | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |

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| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <b>34.6 dBi</b><br>BEAMWIDTH@ ½ Power <b>2.4 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>1389.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>3.2 meters</b><br><br>RAD = <b>RAD38 35G002B000-360A01389H003</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006 |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <b>3.7 m</b><br>ANTENNA EFFICIENCY <b>70.0%</b>                                                                                                                                                                                                         |                                                                   |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                         | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA |

| Earth Station Data – Leaf Pretoria South Africa (Receiver 39) |                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                    |
|---------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                   | RSC = <b>South Africa</b>                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| City Name (RAL)                                               | RAL = <b>Pretoria</b>                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                             | Lat = <b>255137 S</b>                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                            | Lon = <b>0282712 E</b>                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                    | RAP = <b>RAP39 R</b>                                                                                                                                                                                                                                                     | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                         | RAZ = <b>RAZ39 V10</b>                                                                                                                                                                                                                                                   | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                      | ANTENNA GAIN(dBi) <b>34.6 dBi</b><br>BEAMWIDTH@ ½ Power <b>2.4 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>1389.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>3.2 meters</b><br><br>RAD = <b>RAD39 35G002B000-360A01389H003</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional                                    | ANTENNA DIAMETER <b>3.7 m</b><br>ANTENNA EFFICIENCY <b>70.0%</b>                                                                                                                                                                                                         |                                                                                                                                                                                                                    |

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| Information<br>(For Parabolic<br>Antennas) |                                                                                                                                  |                                                                         |
| Supported<br>Operations                    | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – Leaf Nova Scotia Canada (Receiver 40)                     |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                                    | RSC = <a href="#">Canada</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                       |
| City Name<br>(RAL)                                                             | RAL = <a href="#">Nova Scotia</a>                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                       |
| Latitude<br>(DDMMSS)                                                           | Lat = <a href="#">451904 N</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                       |
| Longitude<br>(DDDMMSS)                                                         | Lon = <a href="#">0610209 W</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                       |
| Antenna<br>Polarization<br>(RAP)                                               | RAP = <a href="#">RAP40 R</a>                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND<br>CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna<br>Azimuth<br>(RAZ)                                                    | RAZ = <a href="#">RAZ40 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION RECEIVER<br>ANTENNA AZIMUTH (RAZ), THE<br>MINIMUM ANGLE OF ELEVATION, V00<br>TO V90, EXAMPLE, RAZ01 V00                                                                                             |
| Antenna<br>Dimensions<br>(RAD)                                                 | ANTENNA GAIN(dBi) <a href="#">34.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.4 degrees</a><br>AZIMUTHAL RANGE 0-360 <a href="#">degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">25.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.2 meters</a><br><br>RAD = <a href="#">RAD40 35G002B000-360A00025H002</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, RAD01<br>16G030B000-360A00357H006                                                                                                                                               |
| Receive<br>Antenna<br>Additional<br>Information<br>(For Parabolic<br>Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                                                                                                                                                                           |                                                                                                                                                                                                                       |
| Supported<br>Operations                                                        | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                             | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                               |

| Earth Station Data – Leaf Al Ain United Arab Emirates (Receiver 41) |                                            |
|---------------------------------------------------------------------|--------------------------------------------|
| State (RSC)                                                         | RSC = <a href="#">United Arab Emirates</a> |

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| City Name (RAL)                                                 | RAL = <a href="#">Al Ain</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">241156 N</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">0554100 E</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP41 R</a>                                                                                                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ41 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">36.4 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.6 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">247.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.2 meters</a><br><br>RAD = <a href="#">RAD41 36G003B000-360A00247H002</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                                                                                                                                                                            |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                              | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – Leaf Al Ain United Arab Emirates (Receiver 42)

|                    |                                            |                                                             |
|--------------------|--------------------------------------------|-------------------------------------------------------------|
| State (RSC)        | RSC = <a href="#">United Arab Emirates</a> |                                                             |
| City Name (RAL)    | RAL = <a href="#">Al Ain</a>               |                                                             |
| Latitude (DDMMSS)  | Lat = <a href="#">241155 N</a>             |                                                             |
| Longitude (DDMMSS) | Lon = <a href="#">0554100 E</a>            |                                                             |
|                    | RAP = <a href="#">RAP42 R</a>              | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL, |



|                                                                 |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                     |
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| Antenna Polarization (RAP)                                      |                                                                                                                                                                                                                                                                                                                               | S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ42 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                    |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">36.4 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.6 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">248.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.2 meters</a><br><br>RAD = <a href="#">RAD42 36G003B000-360A00248H002</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                   |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                                                                                                                                                                            |                                                                                                                                                     |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                              | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                   |

#### Earth Station Data – AnySignal Selfoss Iceland (Receiver 43)

|                            |                                 |                                                                                                                                                                                                                    |
|----------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = <a href="#">Iceland</a>   |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = <a href="#">Selfoss</a>   |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = <a href="#">640304 N</a>  |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)        | Lon = <a href="#">0202518 W</a> |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = <a href="#">RAP43 R</a>   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = <a href="#">RAZ43 V10</a> | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |

|                                                                 |                                                                                                                                                                                                                                                                         |                                                                   |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <b>31.2 dBi</b><br>BEAMWIDTH@ ½ Power <b>3.1 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>125.3 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>2.0 meters</b><br><br>RAD = <b>RAD43 31G003B000-360A00125H002</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006 |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <b>3.7 m</b><br>ANTENNA EFFICIENCY <b>70.0%</b>                                                                                                                                                                                                        |                                                                   |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                        | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA |

| Earth Station Data – AnySignal Pitea Sweden (Receiver 44) |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                    |
|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                               | RSC = <b>Sweden</b>                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| City Name (RAL)                                           | RAL = <b>Pitea</b>                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                         | Lat = <b>652016 N</b>                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                        | Lon = <b>0212531 E</b>                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                | RAP = <b>RAP44 R</b>                                                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                     | RAZ = <b>RAZ44 V10</b>                                                                                                                                                                                                                                                | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                  | ANTENNA GAIN(dBi) <b>31.2 dBi</b><br>BEAMWIDTH@ ½ Power <b>3.1 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>9.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>2.0 meters</b><br><br>RAD = <b>RAD44 31G003B000-360A00009H002</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional                                | ANTENNA DIAMETER <b>3.7 m</b><br>ANTENNA EFFICIENCY <b>70.0%</b>                                                                                                                                                                                                      |                                                                                                                                                                                                                    |

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|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Information<br>(For Parabolic<br>Antennas) |                                                                                                                                  |                                                                         |
| Supported<br>Operations                    | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

#### Earth Station Data – AnySignal Pretoria South Africa (Receiver 45)

|                                                                                |                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                                    | RSC = <a href="#">South Africa</a>                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                       |
| City Name<br>(RAL)                                                             | RAL = <a href="#">Pretoria</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                       |
| Latitude<br>(DDMMSS)                                                           | Lat = <a href="#">255137 S</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                       |
| Longitude<br>(DDDMMSS)                                                         | Lon = <a href="#">0282714 E</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
| Antenna<br>Polarization<br>(RAP)                                               | RAP = <a href="#">RAP45 R</a>                                                                                                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND<br>CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna<br>Azimuth<br>(RAZ)                                                    | RAZ = <a href="#">RAZ45 V10</a>                                                                                                                                                                                                                                                                                                | THE EARTH STATION RECEIVER<br>ANTENNA AZIMUTH (RAZ), THE<br>MINIMUM ANGLE OF ELEVATION, V00<br>TO V90, EXAMPLE, RAZ01 V00                                                                                             |
| Antenna<br>Dimensions<br>(RAD)                                                 | ANTENNA GAIN(dBi) <a href="#">31.2 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">3.1 degrees</a><br>AZIMUTHAL RANGE 0-360 <a href="#">degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">1393.5 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.0 meters</a><br><br>RAD = <a href="#">RAD45 31G003B000-360A01394H002</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, RAD01<br>16G030B000-360A00357H006                                                                                                                                               |
| Receive<br>Antenna<br>Additional<br>Information<br>(For Parabolic<br>Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                                                                                                                                                                             |                                                                                                                                                                                                                       |
| Supported<br>Operations                                                        | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                               | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                               |

#### Earth Station Data – AnySignal Awarua New Zealand (Receiver 46)

|             |                                   |  |
|-------------|-----------------------------------|--|
| State (RSC) | RSC = <a href="#">New Zealand</a> |  |
|-------------|-----------------------------------|--|

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| City Name (RAL)                                                 | RAL = <a href="#">Awarua</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">463144 S</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">1682251 E</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP46 R</a>                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ46 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">31.2 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">3.1 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">10.8 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.0 meters</a><br><br>RAD = <a href="#">RAD46 31G003B000-360A00011H002</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                                                                                                                                                                           |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                             | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – AnySignal Punta Arenas Chile (Receiver 47)

|                    |                                    |                                                             |
|--------------------|------------------------------------|-------------------------------------------------------------|
| State (RSC)        | RSC = <a href="#">Chile</a>        |                                                             |
| City Name (RAL)    | RAL = <a href="#">Punta Arenas</a> |                                                             |
| Latitude (DDMMSS)  | Lat = <a href="#">530703 S</a>     |                                                             |
| Longitude (DDMMSS) | Lon = <a href="#">0705339 W</a>    |                                                             |
|                    | RAP = <a href="#">RAP47 R</a>      | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL, |

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| Antenna Polarization (RAP)                                      |                                                                                                                                                                                                                                                                                                                              | S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ47 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                    |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">31.2 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">3.1 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">29.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.0 meters</a><br><br>RAD = <a href="#">RAD47 31G003B000-360A00029H002</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                   |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                                                                                                                                                                           |                                                                                                                                                     |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                             | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                   |

#### Earth Station Data – Northwood Vodno Bulgaria (Receiver 48)

|                            |                                 |                                                                                                                                                                                                                    |
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| State (RSC)                | RSC = <a href="#">Bulgaria</a>  |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = <a href="#">Vodno</a>     |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = <a href="#">435141 N</a>  |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)        | Lon = <a href="#">0270903 E</a> |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = <a href="#">RAP48 R</a>   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = <a href="#">RAZ48 V10</a> | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |

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| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">32.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">5.3 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">219.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.0 meters</a><br><br>RAD = <a href="#">RAD48 33G005B000-360A00219H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006 |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">2.4 m</a><br>ANTENNA EFFICIENCY <a href="#">65.0%</a>                                                                                                                                                                                                                                            |                                                                   |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                              | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA |

| Earth Station Data – Northwood Neu Poserin Germany (Receiver 49) |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
|------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                      | RSC = <a href="#">Germany</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| City Name (RAL)                                                  | RAL = <a href="#">Neu Poserin</a>                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                | Lat = <a href="#">533315 N</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                               | Lon = <a href="#">0121327 E</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                       | RAP = <a href="#">RAP49 R</a>                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                            | RAZ = <a href="#">RAZ49 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                         | ANTENNA GAIN(dBi) <a href="#">32.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">5.3 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">54.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.0 meters</a><br><br>RAD = <a href="#">RAD49 33G005B000-360A00054H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional                                       | ANTENNA DIAMETER <a href="#">2.4 m</a><br>ANTENNA EFFICIENCY <a href="#">65.0%</a>                                                                                                                                                                                                                                           |                                                                                                                                                                                                                    |

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| Information<br>(For Parabolic Antennas) |                                                                                                                                  |                                                                         |
| Supported Operations                    | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – Northwood Rio Gallegos Argentina (Receiver 50) |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
|---------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                         | RSC = <a href="#">Argentina</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| City Name (RAL)                                                     | RAL = <a href="#">Rio Gallegos</a>                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                   | Lat = <a href="#">514003 S</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                                 | Lon = <a href="#">0691551 W</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                          | RAP = <a href="#">RAP50 R</a>                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                               | RAZ = <a href="#">RAZ50 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                            | ANTENNA GAIN(dBi) <a href="#">32.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">5.3 degrees</a><br>AZIMUTHAL RANGE 0-360 <a href="#">degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">21.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.0 meters</a><br><br>RAD = <a href="#">RAD50 33G005B000-360A00021H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, RAD01<br>16G030B000-360A00357H006                                                                                                                                            |
| Receive Antenna Additional Information (For Parabolic Antennas)     | ANTENNA DIAMETER <a href="#">2.4 m</a><br>ANTENNA EFFICIENCY <a href="#">65.0%</a>                                                                                                                                                                                                                                           |                                                                                                                                                                                                                    |
| Supported Operations                                                | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                             | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

| Earth Station Data – KSAT Athens Greece (Receiver 51) |                              |
|-------------------------------------------------------|------------------------------|
| State (RSC)                                           | RSC = <a href="#">Greece</a> |

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| City Name (RAL)                                                 | RAL = Athens                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = 375043 N                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = 0223726 E                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP51 R                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ51 V10                                                                                                                                                                                                                | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 34.66 dBi<br>BEAMWIDTH@ ½ Power 2.5 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 281.6 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>RAD = RAD51 35G003B000-360A00282H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 60.0%                                                                                                                                                                             |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                               | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – KSAT Jeju South Korea (Receiver 52)

|                    |                   |                                                             |
|--------------------|-------------------|-------------------------------------------------------------|
| State (RSC)        | RSC = South Korea |                                                             |
| City Name (RAL)    | RAL = Jeju        |                                                             |
| Latitude (DDMMSS)  | Lat = 332314 N    |                                                             |
| Longitude (DDMMSS) | Lon = 1261901 E   |                                                             |
|                    | RAP = RAP52 R     | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL, |



|                                                                 |                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                     |
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| Antenna Polarization (RAP)                                      |                                                                                                                                                                                                                                                                                                                                  | S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ52 V10</a>                                                                                                                                                                                                                                                                                                  | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                    |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">34.66 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.5 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">240.497 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>RAD = <a href="#">RAD52 35G003B000-360A00240H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                   |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                               |                                                                                                                                                     |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                                 | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                   |

#### Earth Station Data – KSAT Jeju South Korea (Receiver 53)

|                            |                                   |                                                                                                                                                                                                                    |
|----------------------------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = <a href="#">South Korea</a> |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = <a href="#">Jeju</a>        |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = <a href="#">332314 N</a>    |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)        | Lon = <a href="#">1261904 E</a>   |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = <a href="#">RAP53 R</a>     | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = <a href="#">RAZ53 V10</a>   | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |

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| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">34.66 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.5 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">239.946 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>RAD = <a href="#">RAD53 35G003B000-360A00240H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006 |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                               |                                                                   |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                                 | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA |

| Earth Station Data – KSAT Jeju South Korea (Receiver 54) |                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                              | RSC = <a href="#">South Korea</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| City Name (RAL)                                          | RAL = <a href="#">Jeju</a>                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                        | Lat = <a href="#">332315 N</a>                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                       | Lon = <a href="#">1261902 E</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                               | RAP = <a href="#">RAP54 R</a>                                                                                                                                                                                                                                                                                                    | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                    | RAZ = <a href="#">RAZ54 V10</a>                                                                                                                                                                                                                                                                                                  | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                 | ANTENNA GAIN(dBi) <a href="#">34.66 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.5 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">238.992 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>RAD = <a href="#">RAD54 35G003B000-360A00239H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional                               | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |

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| Information<br>(For Parabolic<br>Antennas) |                                                                                                                                  |                                                                         |
| Supported<br>Operations                    | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – KSAT Bel Ombre Mauritius (Receiver 55)                    |                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                                    | RSC = <a href="#">Mauritius</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                       |
| City Name<br>(RAL)                                                             | RAL = <a href="#">Bel Ombre</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                       |
| Latitude<br>(DDMMSS)                                                           | Lat = <a href="#">203002 S</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                       |
| Longitude<br>(DDMMSS)                                                          | Lon = <a href="#">0572703 E</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                       |
| Antenna<br>Polarization<br>(RAP)                                               | RAP = <a href="#">RAP55 R</a>                                                                                                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND<br>CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna<br>Azimuth<br>(RAZ)                                                    | RAZ = <a href="#">RAZ55 V10</a>                                                                                                                                                                                                                                                                                                 | THE EARTH STATION RECEIVER<br>ANTENNA AZIMUTH (RAZ), THE<br>MINIMUM ANGLE OF ELEVATION, V00<br>TO V90, EXAMPLE, RAZ01 V00                                                                                             |
| Antenna<br>Dimensions<br>(RAD)                                                 | ANTENNA GAIN(dBi) <a href="#">34.66 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.5 degrees</a><br>AZIMUTHAL RANGE 0-360 <a href="#">degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">26.221 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>RAD = <a href="#">RAD55 35G003B000-360A00026H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, RAD01<br>16G030B000-360A00357H006                                                                                                                                               |
| Receive<br>Antenna<br>Additional<br>Information<br>(For Parabolic<br>Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                              |                                                                                                                                                                                                                       |
| Supported<br>Operations                                                        | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                                | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                               |

| Earth Station Data – KSAT Mingenew Australia (Receiver 56) |                                 |
|------------------------------------------------------------|---------------------------------|
| State (RSC)                                                | RSC = <a href="#">Australia</a> |

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| City Name (RAL)                                                 | RAL = <a href="#">Mingenew</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">290039 S</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">1152029 E</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP56 R</a>                                                                                                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ56 V10</a>                                                                                                                                                                                                                                                                                                | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">34.66 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.5 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">265.5 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>RAD = <a href="#">RAD56 35G003B000-360A00266H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                             |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                               | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – KSAT Mingenew Australia (Receiver 57)

|                    |                                 |                                                             |
|--------------------|---------------------------------|-------------------------------------------------------------|
| State (RSC)        | RSC = <a href="#">Australia</a> |                                                             |
| City Name (RAL)    | RAL = <a href="#">Mingenew</a>  |                                                             |
| Latitude (DDMMSS)  | Lat = <a href="#">290040 S</a>  |                                                             |
| Longitude (DDMMSS) | Lon = <a href="#">1152030 E</a> |                                                             |
|                    | RAP = <a href="#">RAP57 R</a>   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL, |

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| Antenna Polarization (RAP)                                      |                                                                                                                                                                                                                                                                                                                                | S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ57 V10</a>                                                                                                                                                                                                                                                                                                | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                    |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">34.66 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.5 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">266.3 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>RAD = <a href="#">RAD57 35G003B000-360A00266H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                   |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                             |                                                                                                                                                     |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                               | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                   |

#### Earth Station Data – KSAT Mingenew Australia (Receiver 58)

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|----------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = <a href="#">Australia</a> |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = <a href="#">Mingenew</a>  |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = <a href="#">290040 S</a>  |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)        | Lon = <a href="#">1152032 E</a> |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = <a href="#">RAP58 R</a>   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = <a href="#">RAZ58 V10</a> | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |

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| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">34.66 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.5 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">266.7 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>RAD = <a href="#">RAD58 35G003B000-360A00267H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006 |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                             |                                                                   |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                               | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA |

| Earth Station Data – KSAT Mingenew Australia (Receiver 59) |                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
|------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                | RSC = <a href="#">Australia</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| City Name (RAL)                                            | RAL = <a href="#">Mingenew</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                          | Lat = <a href="#">290040 S</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                         | Lon = <a href="#">1152033 E</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                 | RAP = <a href="#">RAP59 R</a>                                                                                                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                      | RAZ = <a href="#">RAZ59 V10</a>                                                                                                                                                                                                                                                                                                | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                   | ANTENNA GAIN(dBi) <a href="#">34.66 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.5 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">267.2 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>RAD = <a href="#">RAD59 35G003B000-360A00267H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional                                 | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                             |                                                                                                                                                                                                                    |

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| Information<br>(For Parabolic<br>Antennas) |                                                                                                                                  |                                                                         |
| Supported<br>Operations                    | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – KSAT Awarua New Zealand (Receiver 60)                     |                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                                    | RSC = <a href="#">New Zealand</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                       |
| City Name<br>(RAL)                                                             | RAL = <a href="#">Awarua</a>                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                       |
| Latitude<br>(DDMMSS)                                                           | Lat = <a href="#">463142 S</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                       |
| Longitude<br>(DDDMMSS)                                                         | Lon = <a href="#">1682244 E</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                       |
| Antenna<br>Polarization<br>(RAP)                                               | RAP = <a href="#">RAP60 R</a>                                                                                                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND<br>CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna<br>Azimuth<br>(RAZ)                                                    | RAZ = <a href="#">RAZ60 V10</a>                                                                                                                                                                                                                                                                                                 | THE EARTH STATION RECEIVER<br>ANTENNA AZIMUTH (RAZ), THE<br>MINIMUM ANGLE OF ELEVATION, V00<br>TO V90, EXAMPLE, RAZ01 V00                                                                                             |
| Antenna<br>Dimensions<br>(RAD)                                                 | ANTENNA GAIN(dBi) <a href="#">34.66 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.5 degrees</a><br>AZIMUTHAL RANGE 0-360 <a href="#">degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">12.559 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>RAD = <a href="#">RAD60 35G003B000-360A00013H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, RAD01<br>16G030B000-360A00357H006                                                                                                                                               |
| Receive<br>Antenna<br>Additional<br>Information<br>(For Parabolic<br>Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                              |                                                                                                                                                                                                                       |
| Supported<br>Operations                                                        | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                                | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                               |

| Earth Station Data – KSAT Awarua New Zealand (Receiver 61) |                                   |
|------------------------------------------------------------|-----------------------------------|
| State (RSC)                                                | RSC = <a href="#">New Zealand</a> |

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| City Name (RAL)                                                 | RAL = <a href="#">Awarua</a>                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">463146 S</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">1682250 E</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP61 R</a>                                                                                                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ61 V10</a>                                                                                                                                                                                                                                                                                                 | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">34.66 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.5 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">12.294 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>RAD = <a href="#">RAD61 35G003B000-360A00012H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                                | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – KSAT Awarua New Zealand (Receiver 62)

|                    |                                   |                                                             |
|--------------------|-----------------------------------|-------------------------------------------------------------|
| State (RSC)        | RSC = <a href="#">New Zealand</a> |                                                             |
| City Name (RAL)    | RAL = <a href="#">Awarua</a>      |                                                             |
| Latitude (DDMMSS)  | Lat = <a href="#">463156 S</a>    |                                                             |
| Longitude (DDMMSS) | Lon = <a href="#">1682304 E</a>   |                                                             |
|                    | RAP = <a href="#">RAP62 R</a>     | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL, |



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| Antenna Polarization (RAP)                                      |                                                                                                                                                                                                                                                                                                                                | S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ62 V10</a>                                                                                                                                                                                                                                                                                                | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                    |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">34.66 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.5 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">9.244 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>RAD = <a href="#">RAD62 35G003B000-360A00009H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                   |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                             |                                                                                                                                                     |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                               | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                   |

#### Earth Station Data – KSAT Awarua New Zealand (Receiver 63)

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|----------------------------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = <a href="#">New Zealand</a> |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = <a href="#">Awarua</a>      |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = <a href="#">463157 S</a>    |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)        | Lon = <a href="#">1682302 E</a>   |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = <a href="#">RAP63 R</a>     | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = <a href="#">RAZ63 V10</a>   | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |

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| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <b>35.24 dBi</b><br>BEAMWIDTH@ ½ Power <b>2.12 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>9.226 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>2.5 meters</b><br><br>RAD = <b>RAD63 35G002B000-360A00009H003</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006 |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <b>3.9 m</b><br>ANTENNA EFFICIENCY <b>60.0%</b>                                                                                                                                                                                                          |                                                                   |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                          | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA |

| Earth Station Data – KSAT Punta Arenas Chile (Receiver 64) |                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                    |
|------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                | RSC = <b>Chile</b>                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                    |
| City Name (RAL)                                            | RAL = <b>Punta Arenas</b>                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                          | Lat = <b>525608 S</b>                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                         | Lon = <b>0705224 W</b>                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                 | RAP = <b>RAP64 R</b>                                                                                                                                                                                                                                                      | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                      | RAZ = <b>RAZ64 V10</b>                                                                                                                                                                                                                                                    | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                   | ANTENNA GAIN(dBi) <b>34.66 dBi</b><br>BEAMWIDTH@ ½ Power <b>2.5 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>25.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>4.096 meters</b><br><br>RAD = <b>RAD64 35G003B000-360A00025H004</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional                                 | ANTENNA DIAMETER <b>3.7 m</b><br>ANTENNA EFFICIENCY <b>60.0%</b>                                                                                                                                                                                                          |                                                                                                                                                                                                                    |

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|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Information<br>(For Parabolic Antennas) |                                                                                                                                  |                                                                         |
| Supported Operations                    | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – KSAT Punta Arenas Chile (Receiver 65)      |                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                     | RSC = <a href="#">Chile</a>                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = <a href="#">Punta Arenas</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">525608 S</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                             | Lon = <a href="#">0705225 W</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP65 R</a>                                                                                                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ65 V10</a>                                                                                                                                                                                                                                                                                                 | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">34.66 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.5 degrees</a><br>AZIMUTHAL RANGE 0-360 <a href="#">degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">25.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">4.129 meters</a><br><br>RAD = <a href="#">RAD65 35G003B000-360A00025H004</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, RAD01<br>16G030B000-360A00357H006                                                                                                                                            |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                                | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

| Earth Station Data – KSAT Punta Arenas Chile (Receiver 66) |                             |
|------------------------------------------------------------|-----------------------------|
| State (RSC)                                                | RSC = <a href="#">Chile</a> |

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| City Name (RAL)                                                 | RAL = <a href="#">Punta Arenas</a>                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">525603 S</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">0705224 W</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP66 R</a>                                                                                                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ66 V10</a>                                                                                                                                                                                                                                                                                                | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">35.24 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.12 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">25.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">4.5 meters</a><br><br>RAD = <a href="#">RAD66 35G002B000-360A00025H005</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.9 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                             |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                               | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – KSAT Puertollano Spain (Receiver 67)

|                    |                                   |                                                             |
|--------------------|-----------------------------------|-------------------------------------------------------------|
| State (RSC)        | RSC = <a href="#">Spain</a>       |                                                             |
| City Name (RAL)    | RAL = <a href="#">Puertollano</a> |                                                             |
| Latitude (DDMMSS)  | Lat = <a href="#">384020 N</a>    |                                                             |
| Longitude (DDMMSS) | Lon = <a href="#">0040946 W</a>   |                                                             |
|                    | RAP = <a href="#">RAP67 R</a>     | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL, |

|                                                                 |                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                     |
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| Antenna Polarization (RAP)                                      |                                                                                                                                                                                                                                                                                                                                  | S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ67 V10</a>                                                                                                                                                                                                                                                                                                  | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                    |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">34.66 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.5 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">685.841 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">4.5 meters</a><br><br>RAD = <a href="#">RAD67 35G003B000-360A00686H005</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                   |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                               |                                                                                                                                                     |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                                 | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                   |

#### Earth Station Data – KSAT Puertollano Spain (Receiver 68)

|                            |                                   |                                                                                                                                                                                                                    |
|----------------------------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = <a href="#">Spain</a>       |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = <a href="#">Puertollano</a> |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = <a href="#">384019 N</a>    |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)        | Lon = <a href="#">0040946 W</a>   |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = <a href="#">RAP68 R</a>     | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = <a href="#">RAZ68 V10</a>   | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |

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| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <b>34.66 dBi</b><br>BEAMWIDTH@ ½ Power <b>2.5 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>684.597 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>4.5 meters</b><br><br>RAD = <b>RAD68 35G003B000-360A00685H005</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006 |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <b>3.7 m</b><br>ANTENNA EFFICIENCY <b>60.0%</b>                                                                                                                                                                                                           |                                                                   |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                           | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA |

| Earth Station Data – KSAT Hartebeesthoek South Africa (Receiver 69) |                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                    |
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| State (RSC)                                                         | RSC = <b>South Africa</b>                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| City Name (RAL)                                                     | RAL = <b>Hartebeesthoek</b>                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                   | Lat = <b>255310 S</b>                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                                  | Lon = <b>0274222 E</b>                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                          | RAP = <b>RAP69 R</b>                                                                                                                                                                                                                                                       | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                               | RAZ = <b>RAZ69 V10</b>                                                                                                                                                                                                                                                     | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                            | ANTENNA GAIN(dBi) <b>34.66 dBi</b><br>BEAMWIDTH@ ½ Power <b>2.5 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>1564.73 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>2.5 meters</b><br><br>RAD = <b>RAD69 35G003B000-360A01565H003</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional                                          | ANTENNA DIAMETER <b>3.7 m</b><br>ANTENNA EFFICIENCY <b>60.0%</b>                                                                                                                                                                                                           |                                                                                                                                                                                                                    |

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| Information<br>(For Parabolic Antennas) |                                                                                                                                  |                                                                         |
| Supported Operations                    | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – KSAT Hartebeesthoek South Africa (Receiver 70) |                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
|---------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                         | RSC = <a href="#">South Africa</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| City Name (RAL)                                                     | RAL = <a href="#">Hartebeesthoek</a>                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                   | Lat = <a href="#">255312 S</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                                 | Lon = <a href="#">0274222 E</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                          | RAP = <a href="#">RAP70 R</a>                                                                                                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                               | RAZ = <a href="#">RAZ70 V10</a>                                                                                                                                                                                                                                                                                                 | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                            | ANTENNA GAIN(dBi) <a href="#">34.66 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.5 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">1568.5 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>RAD = <a href="#">RAD70 35G003B000-360A01569H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, RAD01<br>16G030B000-360A00357H006                                                                                                                                            |
| Receive Antenna Additional Information (For Parabolic Antennas)     | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Supported Operations                                                | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                                | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

| Earth Station Data – KSAT Tromso Norway (Receiver 71) |                              |
|-------------------------------------------------------|------------------------------|
| State (RSC)                                           | RSC = <a href="#">Norway</a> |

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| City Name (RAL)                                                 | RAL = <a href="#">Tromso</a>                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">693944 N</a>                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">0185629 E</a>                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP71 R</a>                                                                                                                                                                                                                                                                                                     | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ71 V10</a>                                                                                                                                                                                                                                                                                                   | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">33.08 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">3.0 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">135.4527 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>RAD = <a href="#">RAD71 33G003B000-360A00135H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.0 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                                  | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – KSAT Dublin Ireland (Receiver 72)

|                    |                                 |                                                             |
|--------------------|---------------------------------|-------------------------------------------------------------|
| State (RSC)        | RSC = <a href="#">Ireland</a>   |                                                             |
| City Name (RAL)    | RAL = <a href="#">Dublin</a>    |                                                             |
| Latitude (DDMMSS)  | Lat = <a href="#">532424 N</a>  |                                                             |
| Longitude (DDMMSS) | Lon = <a href="#">0061328 W</a> |                                                             |
|                    | RAP = <a href="#">RAP72 R</a>   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL, |



|                                                                 |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                     |
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| Antenna Polarization (RAP)                                      |                                                                                                                                                                                                                                                                                                                               | S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ72 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                    |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">38.4 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">1.74 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">84.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>RAD = <a href="#">RAD72 38G002B000-360A00084H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                   |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">5.4 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                            |                                                                                                                                                     |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                              | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                   |

#### Earth Station Data – KSAT Punta Arenas Chile (Receiver 73)

|                            |                                    |                                                                                                                                                                                                                    |
|----------------------------|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = <a href="#">Chile</a>        |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = <a href="#">Punta Arenas</a> |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = <a href="#">525632 S</a>     |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)        | Lon = <a href="#">0705059 W</a>    |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = <a href="#">RAP73 R</a>      | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = <a href="#">RAZ73 V10</a>    | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |

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| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <b>38.4 dBi</b><br>BEAMWIDTH@ ½ Power <b>1.74 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>4.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>2.5 meters</b><br><br>RAD = <b>RAD73 38G002B000-360A00004H003</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006 |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <b>5.4 m</b><br>ANTENNA EFFICIENCY <b>60.0%</b>                                                                                                                                                                                                       |                                                                   |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                       | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA |

| Earth Station Data – KSAT Singapore Singapore (Receiver 74) |                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                    |
|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                 | RSC = <b>Singapore</b>                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| City Name (RAL)                                             | RAL = <b>Singapore</b>                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                           | Lat = <b>011859 N</b>                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                          | Lon = <b>1034203 E</b>                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                  | RAP = <b>RAP74 R</b>                                                                                                                                                                                                                                                    | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                       | RAZ = <b>RAZ74 V10</b>                                                                                                                                                                                                                                                  | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                    | ANTENNA GAIN(dBi) <b>38.4 dBi</b><br>BEAMWIDTH@ ½ Power <b>1.74 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>82.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>2.5 meters</b><br><br>RAD = <b>RAD74 38G002B000-360A00082H003</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional                                  | ANTENNA DIAMETER <b>5.4 m</b><br>ANTENNA EFFICIENCY <b>60.0%</b>                                                                                                                                                                                                        |                                                                                                                                                                                                                    |

|                                         |                                                                                                                                  |                                                                         |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Information<br>(For Parabolic Antennas) |                                                                                                                                  |                                                                         |
| Supported Operations                    | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – KSAT Stockholm Sweden (Receiver 75)        |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                     | RSC = <a href="#">Sweden</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = <a href="#">Stockholm</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">593857 N</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                             | Lon = <a href="#">0163505 E</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP75 R</a>                                                                                                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ75 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">38.4 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">1.74 degrees</a><br>AZIMUTHAL RANGE 0-360 <a href="#">degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">39.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>RAD = <a href="#">RAD75 38G002B000-360A00039H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, RAD01<br>16G030B000-360A00357H006                                                                                                                                            |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">5.4 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                            |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                              | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

| Earth Station Data – KSAT Sydney Australia (Receiver 76) |                                 |
|----------------------------------------------------------|---------------------------------|
| State (RSC)                                              | RSC = <a href="#">Australia</a> |

|                                                                 |                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| City Name (RAL)                                                 | RAL = <a href="#">Sydney</a>                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">321031 S</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">1483656 E</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP76 R</a>                                                                                                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ76 V10</a>                                                                                                                                                                                                                                                                                                | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">38.4 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">1.74 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">284.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>RAD = <a href="#">RAD76 38G002B000-360A00284H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">5.4 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                             |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                               | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – KSAT Cape Town South Africa (Receiver 77)

|                    |                                    |                                                             |
|--------------------|------------------------------------|-------------------------------------------------------------|
| State (RSC)        | RSC = <a href="#">South Africa</a> |                                                             |
| City Name (RAL)    | RAL = <a href="#">Cape Town</a>    |                                                             |
| Latitude (DDMMSS)  | Lat = <a href="#">340139 S</a>     |                                                             |
| Longitude (DDMMSS) | Lon = <a href="#">0184307 E</a>    |                                                             |
|                    | RAP = <a href="#">RAP77 R</a>      | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL, |

|                                                                 |                                                                                                                                                                                                                               |                                                                                                                                                     |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Antenna Polarization (RAP)                                      |                                                                                                                                                                                                                               | S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ77 V10                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                    |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 38.4 dBi<br>BEAMWIDTH@ ½ Power 1.74 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 10.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>RAD = RAD77 38G002B000-360A00010H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                   |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 5.4 m<br>ANTENNA EFFICIENCY 60.0%                                                                                                                                                                            |                                                                                                                                                     |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                              | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                             |

|                                           |                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                               |
|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Transmit Frequency: 8480MHz</b>        |                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                               |
| Satellite Name: Screech 1 (Transmitter 3) |                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                               |
| Transmit Power (PWR)                      | PWR = 1.578 W                                                                                                                                                                                                                                                                                                                       | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                                                                                                                       |
| RF Emissions                              | Emissions Designator 10M0G1D<br>Necessary Bandwidth 10.0 MHz<br>-3 dB Bandwidth 6.68 MHz<br>-20 dB Bandwidth 9.50 MHz<br>-40 dB Bandwidth 24.2 MHz<br>-60 dB Bandwidth 52.9 MHz<br>Modulation Type QPSK (DVB-S2 MODCOD 3)<br>Data Rate 5.85 Mbps<br>Forward Error Correction LDPC 2/5 + BCH Coding<br>Total Symbol Rate 14.8 Msym/s | NECESSARY BANDWIDTH:<br>THE WIDTH OF FREQUENCY BAND WHICH IS JUST SUFFICIENT TO SUCCESSFULLY TRANSFER DATA.<br>FORMULAS CAN BE FOUND IN ANNEX J OF THE NTIA MANUAL.<br><br>-3 / -20 / -40 / -60 dB BANDWIDTHS:<br>2-SIDED EMISSION BANDWIDTH VALUES<br><br>MODULATION TYPE:<br>THE METHOD USED TO SUPERIMPOSE |

|                                    |                        |                                                                                                                                                                                                                                                                                |
|------------------------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Emissions Designator               | 2M50G1D                | DATA ON<br>THE CARRIER, EXAMPLE, BPSK,<br>QPSK, GMSK.<br><br>DATA RATE:<br>INFORMATION DATA RATE<br><br>TOTAL SYMBOL RATE:<br>DATA RATE COMBINED WITH FEC<br>AND FRAME<br>OVERHEAD RESULTING IN THE<br>TOTAL SYMBOL<br>RATE AT THE INPUT TO THE<br>SYMBOL<br>MAPPER/MODULATOR. |
| Necessary Bandwidth                | 2.50 MHz               |                                                                                                                                                                                                                                                                                |
| -3 dB Bandwidth                    | 1.78 MHz               |                                                                                                                                                                                                                                                                                |
| -20 dB Bandwidth                   | 2.38 MHz               |                                                                                                                                                                                                                                                                                |
| -40 dB Bandwidth                   | 6.05 MHz               |                                                                                                                                                                                                                                                                                |
| -60 dB Bandwidth                   | 13.2 MHz               |                                                                                                                                                                                                                                                                                |
| Modulation Type                    | QPSK (DVB-S2 MODCOD 2) |                                                                                                                                                                                                                                                                                |
| Data Rate                          | 1.22 Mbps              |                                                                                                                                                                                                                                                                                |
| Forward Error Correction<br>Coding | LDPC 1/3 + BCH         |                                                                                                                                                                                                                                                                                |
| Total Symbol Rate                  | 3.70 Msym/s            |                                                                                                                                                                                                                                                                                |
| Emissions Designator               | 4M00G1D                |                                                                                                                                                                                                                                                                                |
| Necessary Bandwidth                | 4.00 MHz               |                                                                                                                                                                                                                                                                                |
| -3 dB Bandwidth                    | 2.89 MHz               |                                                                                                                                                                                                                                                                                |
| -20 dB Bandwidth                   | 3.82 MHz               |                                                                                                                                                                                                                                                                                |
| -40 dB Bandwidth                   | 9.68 MHz               |                                                                                                                                                                                                                                                                                |
| -60 dB Bandwidth                   | 21.2 MHz               |                                                                                                                                                                                                                                                                                |
| Modulation Type                    | QPSK (DVB-S2 MODCOD 2) |                                                                                                                                                                                                                                                                                |
| Data Rate                          | 1.95 Mbps              |                                                                                                                                                                                                                                                                                |
| Forward Error Correction<br>Coding | LDPC 1/3 + BCH         |                                                                                                                                                                                                                                                                                |
| Total Symbol Rate                  | 5.93 Msym/s            |                                                                                                                                                                                                                                                                                |
| Emissions Designator               | 4M40G1D                |                                                                                                                                                                                                                                                                                |
| Necessary Bandwidth                | 4.40 MHz               |                                                                                                                                                                                                                                                                                |
| -3 dB Bandwidth                    | 3.05 MHz               |                                                                                                                                                                                                                                                                                |
| -20 dB Bandwidth                   | 4.20 MHz               |                                                                                                                                                                                                                                                                                |
| -40 dB Bandwidth                   | 10.6 MHz               |                                                                                                                                                                                                                                                                                |
| -60 dB Bandwidth                   | 23.2 MHz               |                                                                                                                                                                                                                                                                                |
| Modulation Type                    | QPSK (DVB-S2 MODCOD 2) |                                                                                                                                                                                                                                                                                |
| Data Rate                          | 2.14 Mbps              |                                                                                                                                                                                                                                                                                |
| Forward Error Correction<br>Coding | LDPC 1/3 + BCH         |                                                                                                                                                                                                                                                                                |
| Total Symbol Rate                  | 6.52 Msym/s            |                                                                                                                                                                                                                                                                                |
| Emissions Designator               | 9M30G1D                |                                                                                                                                                                                                                                                                                |
| Necessary Bandwidth                | 9.30 MHz               |                                                                                                                                                                                                                                                                                |
| -3 dB Bandwidth                    | 6.31 MHz               |                                                                                                                                                                                                                                                                                |
| -20 dB Bandwidth                   | 8.83 MHz               |                                                                                                                                                                                                                                                                                |
| -40 dB Bandwidth                   | 22.5 MHz               |                                                                                                                                                                                                                                                                                |
| -60 dB Bandwidth                   | 49.2 MHz               |                                                                                                                                                                                                                                                                                |
| Modulation Type                    | QPSK (DVB-S2 MODCOD 2) |                                                                                                                                                                                                                                                                                |
| Data Rate                          | 4.52 Mbps              |                                                                                                                                                                                                                                                                                |
| Forward Error Correction<br>Coding | LDPC 1/3 + BCH         |                                                                                                                                                                                                                                                                                |
| Total Symbol Rate                  | 13.8 Msym/s            |                                                                                                                                                                                                                                                                                |

|                                                                    |                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                   |
|--------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Does transmitter have a beacon mode?                               | No                                                                                                                                                                                                       | BEACON MODE IS NORMALLY CONSIDERED A REGULAR AND PERIODIC SHORT DURATION TRANSMISSION THAT IS OFTEN USED TO ASSIST WITH TRACKING, DOPPLER COMPENSATION, OR SMALL SATELLITE IDENTIFICATION WHOSE TRANSMISSIONS ARE NOT LIMITED TO DURATIONS WHEN SUPPORTING GROUND |
| If transmitter has a beacon mode, can the beacon be commanded off? | N/A                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                   |
| Polarization (XAP)                                                 | XAP = XAP03 R                                                                                                                                                                                            | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION                                                |
| Orientation (XAZ)                                                  | XAZ = XAZ03 EC                                                                                                                                                                                           | NB= NARROWBEAM<br>EC = EARTH COVERAGE                                                                                                                                                                                                                             |
| Antenna Dimension (XAD)                                            | ANTENNA GAIN(dBi) 8.12 dBi<br>BEAMWIDTH@ ½ Power 84.0 degrees<br><br>XAD = XAD03 08G084B                                                                                                                 | (NTIA format (XAD), EXAMPLE, XAD01 16G030B)                                                                                                                                                                                                                       |
| Type of satellite (State = SP) (City = geo or non)                 | Type = Nongeostationary                                                                                                                                                                                  | Choose either:<br>Geostationary or<br>Nongeostationary                                                                                                                                                                                                            |
| For Geostationary                                                  | Longitude =                                                                                                                                                                                              | IF ANY SATELLITES ARE GEOSTATIONARY, REPORT ITS LATITUDE AS 000000N (XLA AND/OR RLA) AND REPORT ITS LONGITUDE (XLG AND/OR RLG).                                                                                                                                   |
| For Nongeostationary (Orbital Data)                                | The single spacecraft will operate at multiple orbits described below:<br><br>INCLINATION ANGLE 50.0 degrees<br>APOGEE IN KILOMETERS 500 km<br>PERIGEE IN KILOMETERS 500 km<br>ORBITAL PERIOD IN HOURS 1 | IF ANY SATELLITES ARE NONGEOSTATIONARY, REPORT ITS INCLINATION ANGLE, APOGEE IN KILOMETERS, PERIGEE IN KILOMETERS, ORBITAL PERIOD IN HOURS AND FRACTIONS OF HOURS IN DECIMAL, THE NUMBER OF SATELLITES IN THE SYSTEM, THEN T01, EXAMPLE,                          |

|                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                          |
|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                | <p>AND FRACTIONS OF HOURS IN DECIMAL 59<br/>NUMBER OF SATELLITES IN THE SYSTEM 1</p> <p>INCLINATION ANGLE 50.0 degrees<br/>APOGEE IN KILOMETERS 6000 km<br/>PERIGEE IN KILOMETERS 6000 km<br/>ORBITAL PERIOD IN HOURS 3<br/>AND FRACTIONS OF HOURS IN DECIMAL 80<br/>NUMBER OF SATELLITES IN THE SYSTEM 1</p> <p>REM01<br/>*ORB,50.0IN00500AP00500PE001.59H01NRT01</p> <p>REM02<br/>*ORB,50.0IN06000AP06000PE003.80H01NRT01</p> | <p>REM04 *ORB,<br/>98.0IN00510AP00510PE001.58H01NRT01</p>                                                                                                                                                                                                                                |
| For SunSynchronous Nongeostationary Orbits     | Mean Local Time of Ascending Node (MLTAN) =                                                                                                                                                                                                                                                                                                                                                                                     | MLTAN IS THE ANGLE BETWEEN AN ORBIT'S ASCENDING NODE AND THE MEAN SUN, OFTEN EXPRESSED AS UNIT OF TIME (HH:MM)                                                                                                                                                                           |
| Number of Satellite Contacts Supported Per Day | <p>At 500km x 500km: 55 contacts per day across all receivers.<br/>At 6000km x 6000km: 29 contacts per day across all receivers.</p>                                                                                                                                                                                                                                                                                            | <p>NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY</p> <p>Note: This number specifies total contacts per day for this transmitter, which will be distributed across the receivers listed in this section.</p> |
| Expected Duration of Each Contact              | <p>At 500km x 500km: 6 minutes per contact<br/>At 6000km x 6000km: 30 minutes per contact</p>                                                                                                                                                                                                                                                                                                                                   | AVERAGE DURATION OF EACH CONTACT                                                                                                                                                                                                                                                         |

| Earth Station Data – Leaf Peterborough Southern Australia (Receiver 78) |                          |                                                                                                                                                                   |
|-------------------------------------------------------------------------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                             | RSC = Southern Australia |                                                                                                                                                                   |
| City Name (RAL)                                                         | RAL = Peterborough       |                                                                                                                                                                   |
| Latitude (DDMMSS)                                                       | Lat = 325743 S           |                                                                                                                                                                   |
| Longitude (DDDMMSS)                                                     | Lon = 1385058 E          |                                                                                                                                                                   |
| Antenna Polarization (RAP)                                              | RAP = RAP78 R            | <p>POLARIZATIONS INCLUDE :</p> <p>H = HORIZONTAL,<br/>V = VERTICAL,<br/>S = HORIZONTAL AND VERTICAL,<br/>L = LEFT HAND CIRCULAR,<br/>R = RIGHT HAND CIRCULAR,</p> |



|                                                                 |                                                                                                                                                                                                                               |                                                                                                                  |
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|                                                                 |                                                                                                                                                                                                                               | T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION                                                     |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ78 V10                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00 |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 47.0 dBi<br>BEAMWIDTH@ ½ Power 0.6 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 539.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.2 meters<br><br>RAD = RAD78 47G001B000-360A00539H002 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                                                                                                                            |                                                                                                                  |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                              | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                |

#### Earth Station Data – Leaf Nangetty Western Australia (Receiver 79)

|                            |                                                                                               |                                                                                                                                                                                                                    |
|----------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = Western Australia                                                                       |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = Nangetty                                                                                |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 290037 S                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 1152032 E                                                                               |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP79 R                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = RAZ79 V10                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)   | ANTENNA GAIN(dBi) 47.0 dBi<br>BEAMWIDTH@ ½ Power 0.6 degrees<br>AZIMUTHAL RANGE 0-360 degrees | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |

|                                                                 |                                                                                                                                  |                                                                         |
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|                                                                 | SITE ELEVATION ABOVE MSL 270.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.2 meters<br><br>RAD = RAD79 47G001B000-360A00270H002     |                                                                         |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                               |                                                                         |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – Leaf Nangetty Western Australia (Receiver 80) |                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
|--------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                        | RSC = Western Australia                                                                                                                                                                                                       |                                                                                                                                                                                                                    |
| City Name (RAL)                                                    | RAL = Nangetty                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                  | Lat = 290039 S                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                                | Lon = 1152033 E                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                         | RAP = RAP80 R                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                              | RAZ = RAZ80 V10                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                           | ANTENNA GAIN(dBi) 47.0 dBi<br>BEAMWIDTH@ ½ Power 0.6 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 272.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.2 meters<br><br>RAD = RAD80 47G001B000-360A00272H002 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas)    | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                                                                                                                            |                                                                                                                                                                                                                    |

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| Supported Operations | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |
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#### Earth Station Data – Leaf Absheron Azerbaijan (Receiver 81)

|                                                                 |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
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| State (RSC)                                                     | RSC = <a href="#">Azerbaijan</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = <a href="#">Absheron</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">402759 N</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">0492910 E</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP81 R</a>                                                                                                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ81 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">47.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">0.6 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">210.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.2 meters</a><br><br>RAD = <a href="#">RAD81 47G001B000-360A00210H002</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                                                                                                                                                                            |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                              | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

#### Earth Station Data – Leaf Absheron Azerbaijan (Receiver 82)

|                 |                                  |  |
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| State (RSC)     | RSC = <a href="#">Azerbaijan</a> |  |
| City Name (RAL) | RAL = <a href="#">Absheron</a>   |  |

|                                                                 |                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
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| Latitude (DDMMSS)                                               | Lat = 402758 N                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = 0492911 E                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP82 R                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ82 V10                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 47.0 dBi<br>BEAMWIDTH@ ½ Power 0.6 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 210.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.2 meters<br><br>RAD = RAD82 47G001B000-360A00210H002 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                                                                                                                            |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                              | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – Leaf Punta Arenas Chile (Receiver 83)

|                            |                    |                                                                                                                                                    |
|----------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = Chile        |                                                                                                                                                    |
| City Name (RAL)            | RAL = Punta Arenas |                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 530230 S     |                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 0705049 W    |                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP83 R      | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR, |

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|                                                                 |                                                                                                                                                                                                                              | T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION                                                     |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ83 V10                                                                                                                                                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00 |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 47.0 dBi<br>BEAMWIDTH@ ½ Power 0.6 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 36.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.2 meters<br><br>RAD = RAD83 47G001B000-360A00036H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                                                                                                                           |                                                                                                                  |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                             | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                |

#### Earth Station Data – Leaf Punta Arenas Chile (Receiver 84)

|                            |                                                                                               |                                                                                                                                                                                                                    |
|----------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = Chile                                                                                   |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = Punta Arenas                                                                            |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 530231 S                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 0705046 W                                                                               |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP84 R                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = RAZ84 V10                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)   | ANTENNA GAIN(dBi) 47.0 dBi<br>BEAMWIDTH@ ½ Power 0.6 degrees<br>AZIMUTHAL RANGE 0-360 degrees | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |

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|                                                                 | SITE ELEVATION ABOVE MSL 36.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.2 meters<br><br>RAD = RAD84 47G001B000-360A00036H003      |                                                                         |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                               |                                                                         |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – Leaf Punta Arenas Chile (Receiver 85)      |                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                     | RSC = Chile                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = Punta Arenas                                                                                                                                                                                                           |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = 530230 S                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = 0705048 W                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP85 R                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ85 V10                                                                                                                                                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 47.9 dBi<br>BEAMWIDTH@ ½ Power 0.7 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 36.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.2 meters<br><br>RAD = RAD85 48G001B000-360A00036H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                                                                                                                           |                                                                                                                                                                                                                    |

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| Supported Operations | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |
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#### Earth Station Data – Leaf Punta Arenas Chile (Receiver 86)

|                                                                 |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
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| State (RSC)                                                     | RSC = <a href="#">Chile</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = <a href="#">Punta Arenas</a>                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">530230 S</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">0705045 W</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP86 R</a>                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ86 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">47.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">0.6 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">36.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.2 meters</a><br><br>RAD = <a href="#">RAD86 47G001B000-360A00036H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                                                                                                                                                                           |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                             | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

#### Earth Station Data – Leaf Punta Arenas Chile (Receiver 87)

|                 |                                    |  |
|-----------------|------------------------------------|--|
| State (RSC)     | RSC = <a href="#">Chile</a>        |  |
| City Name (RAL) | RAL = <a href="#">Punta Arenas</a> |  |

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| Latitude (DDMMSS)                                               | Lat = 530229 S                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = 0705047 W                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP87 R                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ87 V10                                                                                                                                                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 47.0 dBi<br>BEAMWIDTH@ ½ Power 0.6 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 36.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.2 meters<br><br>RAD = RAD87 47G001B000-360A00036H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                                                                                                                           |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                             | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – Leaf Santiago Chile (Receiver 88)

|                            |                 |                                                                                                                                                    |
|----------------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = Chile     |                                                                                                                                                    |
| City Name (RAL)            | RAL = Santiago  |                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 332153 S  |                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 0704620 W |                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP88 R   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR, |



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|                                                                 |                                                                                                                                                                                                                               | T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION                                                     |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ88 V10                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00 |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 47.0 dBi<br>BEAMWIDTH@ ½ Power 0.6 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 464.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.2 meters<br><br>RAD = RAD88 47G001B000-360A00464H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                                                                                                                            |                                                                                                                  |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                              | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                |

#### Earth Station Data – Leaf Santiago Chile (Receiver 89)

|                            |                                                                                               |                                                                                                                                                                                                                    |
|----------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = Chile                                                                                   |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = Santiago                                                                                |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 332153 S                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 0704621 W                                                                               |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP89 R                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = RAZ89 V10                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)   | ANTENNA GAIN(dBi) 47.0 dBi<br>BEAMWIDTH@ ½ Power 0.6 degrees<br>AZIMUTHAL RANGE 0-360 degrees | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |

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|                                                                 | SITE ELEVATION ABOVE MSL 464.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.2 meters<br><br>RAD = RAD89 47G001B000-360A00464H003     |                                                                         |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                               |                                                                         |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – Leaf Santiago Chile (Receiver 90)          |                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                     | RSC = Chile                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = Santiago                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = 332154 S                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = 0704622 W                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP90 R                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ90 V10                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 47.0 dBi<br>BEAMWIDTH@ ½ Power 0.6 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 464.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.2 meters<br><br>RAD = RAD90 47G001B000-360A00464H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                                                                                                                            |                                                                                                                                                                                                                    |

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| Supported Operations | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |
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#### Earth Station Data – Leaf Blonduos Iceland (Receiver 91)

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| State (RSC)                                                     | RSC = <a href="#">Iceland</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = <a href="#">Blonduos</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">653850 N</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">0201442 W</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP91 R</a>                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ91 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">47.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">0.6 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">53.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.2 meters</a><br><br>RAD = <a href="#">RAD91 47G001B000-360A00053H002</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                                                                                                                                                                           |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                             | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

#### Earth Station Data – Leaf Blonduos Iceland (Receiver 92)

|                 |                                |  |
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| State (RSC)     | RSC = <a href="#">Iceland</a>  |  |
| City Name (RAL) | RAL = <a href="#">Blonduos</a> |  |

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| Latitude (DDMMSS)                                               | Lat = 653851 N                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = 0201441 W                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP92 R                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ92 V10                                                                                                                                                                                                                 | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 49.47 dBi<br>BEAMWIDTH@ ½ Power 0.576 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 53.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>RAD = RAD92 49G001B000-360A00053H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.9 m<br>ANTENNA EFFICIENCY 70.0%                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – Leaf Blonduos Iceland (Receiver 93)

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| State (RSC)                | RSC = Iceland   |                                                                                                                                                    |
| City Name (RAL)            | RAL = Blonduos  |                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 653850 N  |                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 0201421 W |                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP93 R   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR, |

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|                                                                 |                                                                                                                                                                                                                                                                                                                                | T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION                                                     |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ93 V10</a>                                                                                                                                                                                                                                                                                                | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00 |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">49.7 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">0.576 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">55.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.3 meters</a><br><br>RAD = <a href="#">RAD93 50G001B000-360A00055H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.9 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                                                                                                                                                                             |                                                                                                                  |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                               | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                |

#### Earth Station Data – Leaf Blonduos Iceland (Receiver 94)

|                            |                                                                                                                                               |                                                                                                                                                                                                                    |
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| State (RSC)                | RSC = <a href="#">Iceland</a>                                                                                                                 |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = <a href="#">Blonduos</a>                                                                                                                |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = <a href="#">653851 N</a>                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = <a href="#">0201421 W</a>                                                                                                               |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = <a href="#">RAP94 R</a>                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = <a href="#">RAZ94 V10</a>                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)   | ANTENNA GAIN(dBi) <a href="#">47.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">0.6 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |

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|                                                                 | SITE ELEVATION ABOVE MSL 55.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>RAD = RAD94 47G001B000-360A00055H003      |                                                                         |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                               |                                                                         |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – Leaf Blonduos Iceland (Receiver 95)        |                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
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| State (RSC)                                                     | RSC = Iceland                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = Blonduos                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = 653850 N                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                             | Lon = 0201419 W                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP95 R                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ95 V10                                                                                                                                                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 47.0 dBi<br>BEAMWIDTH@ ½ Power 0.6 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 55.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>RAD = RAD95 47G001B000-360A00055H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                                                                                                                           |                                                                                                                                                                                                                    |

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| Supported Operations | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |
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#### Earth Station Data – Leaf Kandy Sri Lanka (Receiver 96)

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| State (RSC)                                                     | RSC = <a href="#">Sri Lanka</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = <a href="#">Kandy</a>                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">071627 N</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">0804329 E</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP96 R</a>                                                                                                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ96 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">47.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">0.6 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">456.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.2 meters</a><br><br>RAD = <a href="#">RAD96 47G001B000-360A00456H002</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                                                                                                                                                                            |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                              | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

#### Earth Station Data – Leaf Mon Loisir Mauritius (Receiver 97)

|                 |                                  |  |
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| State (RSC)     | RSC = <a href="#">Mauritius</a>  |  |
| City Name (RAL) | RAL = <a href="#">Mon Loisir</a> |  |

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| Latitude (DDMMSS)                                               | Lat = 200822 S                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = 0574113 E                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP97 R                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ97 V10                                                                                                                                                                                                                 | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 49.47 dBi<br>BEAMWIDTH@ ½ Power 0.576 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 96.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.3 meters<br><br>RAD = RAD97 49G001B000-360A00096H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.9 m<br>ANTENNA EFFICIENCY 70.0%                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

| Earth Station Data – Leaf La Paz Mexico (Receiver 98) |                 |                                                                                                                                                    |
|-------------------------------------------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                           | RSC = Mexico    |                                                                                                                                                    |
| City Name (RAL)                                       | RAL = La Paz    |                                                                                                                                                    |
| Latitude (DDMMSS)                                     | Lat = 240559 N  |                                                                                                                                                    |
| Longitude (DDMMSS)                                    | Lon = 1102311 W |                                                                                                                                                    |
| Antenna Polarization (RAP)                            | RAP = RAP98 R   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR, |



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|                                                                 |                                                                                                                                                                                                                             | T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION                                                     |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ98 V10                                                                                                                                                                                                             | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00 |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 47.7 dBi<br>BEAMWIDTH@ ½ Power 0.6 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 4.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.3 meters<br><br>RAD = RAD98 48G001B000-360A00004H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                                                                                                                          |                                                                                                                  |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                            | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                |

#### Earth Station Data – Leaf La Paz Mexico (Receiver 99)

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| State (RSC)                | RSC = Mexico                                                                                  |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = La Paz                                                                                  |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 240600 N                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 1102311 W                                                                               |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP99 R                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = RAZ99 V10                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)   | ANTENNA GAIN(dBi) 47.0 dBi<br>BEAMWIDTH@ ½ Power 0.6 degrees<br>AZIMUTHAL RANGE 0-360 degrees | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |

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|                                                                 | SITE ELEVATION ABOVE MSL 4.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.3 meters<br><br>RAD = RAD99 47G001B000-360A00004H003       |                                                                         |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                               |                                                                         |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – Leaf Awarua New Zealand (Receiver 100)     |                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
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| State (RSC)                                                     | RSC = New Zealand                                                                                                                                                                                                             |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = Awarua                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = 463141 S                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = 1682245 E                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP100 R                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ100 V10                                                                                                                                                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 47.0 dBi<br>BEAMWIDTH@ ½ Power 0.6 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 10.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.2 meters<br><br>RAD = RAD100 47G001B000-360A00010H002 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                                                                                                                            |                                                                                                                                                                                                                    |

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| Supported Operations | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |
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| Earth Station Data – Leaf Awarua New Zealand (Receiver 101)     |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
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| State (RSC)                                                     | RSC = <a href="#">New Zealand</a>                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = <a href="#">Awarua</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">463158 S</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">1682304 E</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP101 R</a>                                                                                                                                                                                                                                                                                               | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ101 V10</a>                                                                                                                                                                                                                                                                                             | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">47.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">0.6 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">8.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.2 meters</a><br><br>RAD = <a href="#">RAD101 47G001B000-360A00008H002</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, RAD01<br>16G030B000-360A00357H006                                                                                                                                            |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                                                                                                                                                                           |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                             | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

| Earth Station Data – Leaf Awarua New Zealand (Receiver 102) |                                   |
|-------------------------------------------------------------|-----------------------------------|
| State (RSC)                                                 | RSC = <a href="#">New Zealand</a> |
| City Name (RAL)                                             | RAL = <a href="#">Awarua</a>      |

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| Latitude (DDMMSS)                                               | Lat = 463158 S                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = 1682303 E                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP102 R                                                                                                                                                                                                               | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ102 V10                                                                                                                                                                                                             | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 47.9 dBi<br>BEAMWIDTH@ ½ Power 0.7 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 8.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.2 meters<br><br>RAD = RAD102 48G001B000-360A00008H002 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                                                                                                                           |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                             | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – Leaf Awarua New Zealand (Receiver 103)

|                            |                   |                                                                                                                                                    |
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| State (RSC)                | RSC = New Zealand |                                                                                                                                                    |
| City Name (RAL)            | RAL = Awarua      |                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 463155 S    |                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 1682303 E   |                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP103 R    | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR, |

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|                                                                 |                                                                                                                                                                                                                               | T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION                                                     |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ103 V10                                                                                                                                                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00 |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 47.0 dBi<br>BEAMWIDTH@ ½ Power 0.6 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 10.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.2 meters<br><br>RAD = RAD103 47G001B000-360A00010H002 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                                                                                                                            |                                                                                                                  |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                              | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                |

#### Earth Station Data – Leaf Santa Maria Azores (Receiver 104)

|                            |                                                                                               |                                                                                                                                                                                                                    |
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| State (RSC)                | RSC = Azores                                                                                  |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = Santa Maria                                                                             |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 365951 N                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 0250814 W                                                                               |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP104 R                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = RAZ104 V10                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)   | ANTENNA GAIN(dBi) 47.0 dBi<br>BEAMWIDTH@ ½ Power 0.6 degrees<br>AZIMUTHAL RANGE 0-360 degrees | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |

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|                                                                 | SITE ELEVATION ABOVE MSL <a href="#">194.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.2 meters</a><br><br>RAD = <a href="#">RAD104 47G001B000-360A00194H002</a> |                                                                         |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                            |                                                                         |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                              | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – Leaf Santa Maria Azores (Receiver 105)     |                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
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| State (RSC)                                                     | RSC = <a href="#">Azores</a>                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = <a href="#">Santa Maria</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">365950 N</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">0250814 W</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP105 R</a>                                                                                                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ105 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">47.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">0.6 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">195.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.2 meters</a><br><br>RAD = <a href="#">RAD105 47G001B000-360A00195H002</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                                                                                                                                                                             |                                                                                                                                                                                                                    |

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| Supported Operations | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |
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#### Earth Station Data – Leaf Talkeetna Alaska (Receiver 106)

|                                                                 |                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
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| State (RSC)                                                     | RSC = <a href="#">Alaska</a>                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = <a href="#">Talkeetna</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">621955 N</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">1500157 W</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP106 R</a>                                                                                                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ106 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">47.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">0.6 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">143.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.5 meters</a><br><br>RAD = <a href="#">RAD106 47G001B000-360A00143H004</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                                                                                                                                                                             |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                               | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

#### Earth Station Data – Leaf Pretoria South Africa (Receiver 107)

|                 |                                    |  |
|-----------------|------------------------------------|--|
| State (RSC)     | RSC = <a href="#">South Africa</a> |  |
| City Name (RAL) | RAL = <a href="#">Pretoria</a>     |  |

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| Latitude (DDMMSS)                                               | Lat = 255137 S                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = 0282713 E                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP107 R                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ107 V10                                                                                                                                                                                                                | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 47.0 dBi<br>BEAMWIDTH@ ½ Power 0.6 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 1389.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.2 meters<br><br>RAD = RAD107 47G001B000-360A01389H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – Leaf Pretoria South Africa (Receiver 108)

|                            |                    |                                                                                                                                                    |
|----------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = South Africa |                                                                                                                                                    |
| City Name (RAL)            | RAL = Pretoria     |                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 255137 S     |                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 0282712 E    |                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP108 R     | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR, |



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|                                                                 |                                                                                                                                                                                                                                 | T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION                                                     |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ108 V10                                                                                                                                                                                                                | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00 |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 47.0 dBi<br>BEAMWIDTH@ ½ Power 0.6 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 1389.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.2 meters<br><br>RAD = RAD108 47G001B000-360A01389H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                                                                                                                              |                                                                                                                  |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                |

#### Earth Station Data – Leaf Nova Scotia Canada (Receiver 109)

|                            |                                                                                               |                                                                                                                                                                                                                    |
|----------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = Canada                                                                                  |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = Nova Scotia                                                                             |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 451904 N                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 0610209 W                                                                               |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP109 R                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = RAZ109 V10                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)   | ANTENNA GAIN(dBi) 47.0 dBi<br>BEAMWIDTH@ ½ Power 0.6 degrees<br>AZIMUTHAL RANGE 0-360 degrees | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |

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|                                                                 | SITE ELEVATION ABOVE MSL 25.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.2 meters<br><br>RAD = RAD109 47G001B000-360A00025H002     |                                                                         |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                               |                                                                         |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – Leaf Al Ain United Arab Emirates (Receiver 110) |                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                          | RSC = United Arab Emirates                                                                                                                                                                                                      |                                                                                                                                                                                                                    |
| City Name (RAL)                                                      | RAL = Al Ain                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                    | Lat = 241156 N                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                                   | Lon = 0554100 E                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                           | RAP = RAP110 R                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                                | RAZ = RAZ110 V10                                                                                                                                                                                                                | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                             | ANTENNA GAIN(dBi) 46.7 dBi<br>BEAMWIDTH@ ½ Power 0.74 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 247.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.2 meters<br><br>RAD = RAD110 47G001B000-360A00247H002 | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, RAD01<br>16G030B000-360A00357H006                                                                                                                                            |
| Receive Antenna Additional Information (For Parabolic Antennas)      | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                                                                                                                              |                                                                                                                                                                                                                    |

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| Supported Operations | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |
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| Earth Station Data – Leaf Al Ain United Arab Emirates (Receiver 111) |                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
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| State (RSC)                                                          | RSC = <a href="#">United Arab Emirates</a>                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                    |
| City Name (RAL)                                                      | RAL = <a href="#">Al Ain</a>                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                    | Lat = <a href="#">241155 N</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                                   | Lon = <a href="#">0554100 E</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                           | RAP = <a href="#">RAP111 R</a>                                                                                                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                                | RAZ = <a href="#">RAZ111 V10</a>                                                                                                                                                                                                                                                                                                | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                             | ANTENNA GAIN(dBi) <a href="#">46.7 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">0.74 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">248.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.2 meters</a><br><br>RAD = <a href="#">RAD111 47G001B000-360A00248H002</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas)      | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Supported Operations                                                 | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                                | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

| Earth Station Data – AnySignal Selfoss Iceland (Receiver 112) |                               |
|---------------------------------------------------------------|-------------------------------|
| State (RSC)                                                   | RSC = <a href="#">Iceland</a> |
| City Name (RAL)                                               | RAL = <a href="#">Selfoss</a> |

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| Latitude (DDMMSS)                                               | Lat = 640304 N                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = 0202518 W                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP112 R                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ112 V10                                                                                                                                                                                                                | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 43.7 dBi<br>BEAMWIDTH@ ½ Power 0.85 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 125.3 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.0 meters<br><br>RAD = RAD112 44G001B000-360A00125H002 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – AnySignal Colorado Springs Colorado (Receiver 113)

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|----------------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = Colorado         |                                                                                                                                                    |
| City Name (RAL)            | RAL = Colorado Springs |                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 385638 N         |                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 1044446 W        |                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP113 R         | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR, |

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|                                                                 |                                                                                                                                                                                                                                  | T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION                                                     |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ113 V10                                                                                                                                                                                                                 | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00 |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 43.7 dBi<br>BEAMWIDTH@ ½ Power 0.85 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 2076.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.0 meters<br><br>RAD = RAD113 44G001B000-360A02076H002 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                                                                                                                               |                                                                                                                  |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                 | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                |

#### Earth Station Data – AnySignal Pitea Sweden (Receiver 114)

|                            |                                                                                                |                                                                                                                                                                                                                    |
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| State (RSC)                | RSC = Sweden                                                                                   |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = Pitea                                                                                    |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 652016 N                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 0212531 E                                                                                |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP114 R                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = RAZ114 V10                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)   | ANTENNA GAIN(dBi) 43.7 dBi<br>BEAMWIDTH@ ½ Power 0.85 degrees<br>AZIMUTHAL RANGE 0-360 degrees | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |

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|                                                                 | SITE ELEVATION ABOVE MSL 9.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.0 meters<br><br>RAD = RAD114 44G001B000-360A00009H002      |                                                                         |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                               |                                                                         |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – AnySignal Pretoria South Africa (Receiver 115) |                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
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| State (RSC)                                                         | RSC = South Africa                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| City Name (RAL)                                                     | RAL = Pretoria                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                   | Lat = 255137 S                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                                  | Lon = 0282714 E                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                          | RAP = RAP115 R                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                               | RAZ = RAZ115 V10                                                                                                                                                                                                                 | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                            | ANTENNA GAIN(dBi) 43.7 dBi<br>BEAMWIDTH@ ½ Power 0.85 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 1393.5 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.0 meters<br><br>RAD = RAD115 44G001B000-360A01394H002 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas)     | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                                                                                                                               |                                                                                                                                                                                                                    |

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| Supported Operations | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |
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#### Earth Station Data – AnySignal Torrance California (Receiver 116)

|                                                                 |                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
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| State (RSC)                                                     | RSC = <a href="#">California</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = <a href="#">Torrance</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">334827 N</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">1182100 W</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP116 R</a>                                                                                                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ116 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">43.7 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">0.85 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">25.2 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.0 meters</a><br><br>RAD = <a href="#">RAD116 44G001B000-360A00025H002</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">70.0%</a>                                                                                                                                                                                                                                             |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                               | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

#### Earth Station Data – AnySignal Awarua New Zealand (Receiver 117)

|                 |                                   |  |
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| State (RSC)     | RSC = <a href="#">New Zealand</a> |  |
| City Name (RAL) | RAL = <a href="#">Awarua</a>      |  |

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| Latitude (DDMMSS)                                               | Lat = 463144 S                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = 1682251 E                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP117 R                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ117 V10                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 43.7 dBi<br>BEAMWIDTH@ ½ Power 0.85 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 10.8 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.0 meters<br><br>RAD = RAD117 44G001B000-360A00011H002 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                                                                                                                             |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                               | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – AnySignal Punta Arenas Chile (Receiver 118)

|                            |                    |                                                                                                                                                    |
|----------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = Chile        |                                                                                                                                                    |
| City Name (RAL)            | RAL = Punta Arenas |                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 530703 S     |                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 0705339 W    |                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP118 R     | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR, |



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|                                                                 |                                                                                                                                                                                                                                | T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION                                                     |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ118 V10                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00 |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 43.7 dBi<br>BEAMWIDTH@ ½ Power 0.85 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 29.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.0 meters<br><br>RAD = RAD118 44G001B000-360A00029H002 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                                                                                                                             |                                                                                                                  |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                               | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                |

#### Earth Station Data – AnySignal North Pole Alaska (Receiver 119)

|                            |                                                                                                |                                                                                                                                                                                                                    |
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| State (RSC)                | RSC = Alaska                                                                                   |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = North Pole                                                                               |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 644549 N                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 1472213 W                                                                                |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP119 R                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = RAZ119 V10                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)   | ANTENNA GAIN(dBi) 43.7 dBi<br>BEAMWIDTH@ ½ Power 0.85 degrees<br>AZIMUTHAL RANGE 0-360 degrees | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |

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|                                                                 | SITE ELEVATION ABOVE MSL 148.7 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.0 meters<br><br>RAD = RAD119 44G001B000-360A00149H002    |                                                                         |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 70.0%                                                                               |                                                                         |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – Northwood Bismarck North Dakota (Receiver 120) |                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
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| State (RSC)                                                         | RSC = North Dakota                                                                                                                                                                                                             |                                                                                                                                                                                                                    |
| City Name (RAL)                                                     | RAL = Bismarck                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                   | Lat = 465256 N                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                                  | Lon = 1004817 W                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                          | RAP = RAP120 R                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                               | RAZ = RAZ120 V10                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                            | ANTENNA GAIN(dBi) 40.0 dBi<br>BEAMWIDTH@ ½ Power 1.0 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 591.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.0 meters<br><br>RAD = RAD120 40G001B000-360A00591H003 | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, RAD01<br>16G030B000-360A00357H006                                                                                                                                            |
| Receive Antenna Additional Information (For Parabolic Antennas)     | ANTENNA DIAMETER 2.4 m<br>ANTENNA EFFICIENCY 65.0%                                                                                                                                                                             |                                                                                                                                                                                                                    |

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| Supported Operations | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |
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#### Earth Station Data – Northwood Loring Maine (Receiver 121)

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| State (RSC)                                                     | RSC = <a href="#">Maine</a>                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = <a href="#">Loring</a>                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">465601 N</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">0675434 W</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP121 R</a>                                                                                                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ121 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">40.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">1.0 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">207.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.0 meters</a><br><br>RAD = <a href="#">RAD121 40G001B000-360A00207H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, RAD01<br>16G030B000-360A00357H006                                                                                                                                            |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">2.4 m</a><br>ANTENNA EFFICIENCY <a href="#">65.0%</a>                                                                                                                                                                                                                                             |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                               | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

#### Earth Station Data – Northwood Kihei Hawaii (Receiver 122)

|                 |                              |  |
|-----------------|------------------------------|--|
| State (RSC)     | RSC = <a href="#">Hawaii</a> |  |
| City Name (RAL) | RAL = <a href="#">Kihei</a>  |  |

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| Latitude (DDMMSS)                                               | Lat = 204444 N                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = 1562613 W                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP122 R                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ122 V10                                                                                                                                                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 40.0 dBi<br>BEAMWIDTH@ ½ Power 1.0 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 59.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.0 meters<br><br>RAD = RAD122 40G001B000-360A00059H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 2.4 m<br>ANTENNA EFFICIENCY 65.0%                                                                                                                                                                            |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                              | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – Northwood Vodno Bulgaria (Receiver 123)

|                            |                 |                                                                                                                                                    |
|----------------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = Bulgaria  |                                                                                                                                                    |
| City Name (RAL)            | RAL = Vodno     |                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 435141 N  |                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 0270903 E |                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP123 R  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR, |

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|                                                                 |                                                                                                                                                                                                                                | T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION                                                     |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ123 V10                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00 |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 40.0 dBi<br>BEAMWIDTH@ ½ Power 1.0 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 219.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.0 meters<br><br>RAD = RAD123 40G001B000-360A00219H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 2.4 m<br>ANTENNA EFFICIENCY 65.0%                                                                                                                                                                             |                                                                                                                  |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                               | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                |

#### Earth Station Data – Northwood Neu Poserin Germany (Receiver 124)

|                            |                                                                                               |                                                                                                                                                                                                                    |
|----------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = Germany                                                                                 |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = Neu Poserin                                                                             |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 533315 N                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 0121327 E                                                                               |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP124 R                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = RAZ124 V10                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)   | ANTENNA GAIN(dBi) 40.0 dBi<br>BEAMWIDTH@ ½ Power 1.0 degrees<br>AZIMUTHAL RANGE 0-360 degrees | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |

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|                                                                 | SITE ELEVATION ABOVE MSL 54.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.0 meters<br><br>RAD = RAD124 40G001B000-360A00054H003     |                                                                         |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 2.4 m<br>ANTENNA EFFICIENCY 65.0%                                                                               |                                                                         |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – Northwood Rio Gallegos Argentina (Receiver 125) |                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                          | RSC = Argentina                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| City Name (RAL)                                                      | RAL = Rio Gallegos                                                                                                                                                                                                            |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                    | Lat = 514003 S                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                                  | Lon = 0691551 W                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                           | RAP = RAP125 R                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                                | RAZ = RAZ125 V10                                                                                                                                                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                             | ANTENNA GAIN(dBi) 40.0 dBi<br>BEAMWIDTH@ ½ Power 1.0 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 21.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.0 meters<br><br>RAD = RAD125 40G001B000-360A00021H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas)      | ANTENNA DIAMETER 2.4 m<br>ANTENNA EFFICIENCY 65.0%                                                                                                                                                                            |                                                                                                                                                                                                                    |

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| Supported Operations | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |
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#### Earth Station Data – KSAT Athens Greece (Receiver 126)

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| State (RSC)                                                     | RSC = <a href="#">Greece</a>                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = <a href="#">Athens</a>                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">375043 N</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">0223726 E</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP126 R</a>                                                                                                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ126 V10</a>                                                                                                                                                                                                                                                                                                | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">47.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">0.66 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">281.6 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>RAD = <a href="#">RAD126 48G001B000-360A00282H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                                | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

#### Earth Station Data – KSAT Fairbanks Alaska (Receiver 127)

|                 |                                 |  |
|-----------------|---------------------------------|--|
| State (RSC)     | RSC = <a href="#">Alaska</a>    |  |
| City Name (RAL) | RAL = <a href="#">Fairbanks</a> |  |

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| Latitude (DDMMSS)                                               | Lat = 644904 N                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = 1474330 W                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP127 R                                                                                                                                                                                                                    | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ127 V10                                                                                                                                                                                                                  | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 47.2 dBi<br>BEAMWIDTH@ ½ Power 0.58 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 135.484 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>RAD = RAD127 47G001B000-360A00135H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.9 m<br>ANTENNA EFFICIENCY 60.0%                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                  | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – KSAT Jeju South Korea (Receiver 128)

|                            |                   |                                                                                                                                                    |
|----------------------------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = South Korea |                                                                                                                                                    |
| City Name (RAL)            | RAL = Jeju        |                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 332314 N    |                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 1261901 E   |                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP128 R    | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR, |



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|                                                                 |                                                                                                                                                                                                                                   | T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION                                                     |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ128 V10                                                                                                                                                                                                                  | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00 |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 47.6 dBi<br>BEAMWIDTH@ ½ Power 0.66 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 240.497 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>RAD = RAD128 48G001B000-360A00240H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 60.0%                                                                                                                                                                                |                                                                                                                  |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                  | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                |

#### Earth Station Data – KSAT Jeju South Korea (Receiver 129)

|                            |                                                                                                |                                                                                                                                                                                                                    |
|----------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = South Korea                                                                              |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = Jeju                                                                                     |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 332314 N                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 1261904 E                                                                                |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP129 R                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = RAZ129 V10                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)   | ANTENNA GAIN(dBi) 47.6 dBi<br>BEAMWIDTH@ ½ Power 0.66 degrees<br>AZIMUTHAL RANGE 0-360 degrees | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |

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|                                                                 | SITE ELEVATION ABOVE MSL 239.946 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>RAD = RAD129 48G001B000-360A00240H003  |                                                                         |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 60.0%                                                                               |                                                                         |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – KSAT Jeju South Korea (Receiver 130)       |                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                     | RSC = South Korea                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = Jeju                                                                                                                                                                                                                        |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = 332315 N                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                             | Lon = 1261902 E                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP130 R                                                                                                                                                                                                                    | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ130 V10                                                                                                                                                                                                                  | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 47.6 dBi<br>BEAMWIDTH@ ½ Power 0.66 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 238.992 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>RAD = RAD130 48G001B000-360A00239H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 60.0%                                                                                                                                                                                |                                                                                                                                                                                                                    |

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| Supported Operations | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |
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#### Earth Station Data – KSAT Bel Ombre Mauritius (Receiver 131)

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| State (RSC)                                                     | RSC = <a href="#">Mauritius</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = <a href="#">Bel Ombre</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">203002 S</a>                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">0572703 E</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP131 R</a>                                                                                                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ131 V10</a>                                                                                                                                                                                                                                                                                                 | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">47.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">0.66 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">26.221 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>RAD = <a href="#">RAD131 48G001B000-360A00026H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                                 | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

#### Earth Station Data – KSAT Mingenew Australia (Receiver 132)

|                 |                                 |  |
|-----------------|---------------------------------|--|
| State (RSC)     | RSC = <a href="#">Australia</a> |  |
| City Name (RAL) | RAL = <a href="#">Mingenew</a>  |  |

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| Latitude (DDMMSS)                                               | Lat = 290039 S                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = 1152029 E                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP132 R                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ132 V10                                                                                                                                                                                                                | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 47.6 dBi<br>BEAMWIDTH@ ½ Power 0.66 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 265.5 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>RAD = RAD132 48G001B000-360A00266H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 60.0%                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – KSAT Mingenew Australia (Receiver 133)

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|----------------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = Australia |                                                                                                                                                    |
| City Name (RAL)            | RAL = Mingenew  |                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 290040 S  |                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 1152030 E |                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP133 R  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR, |

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|                                                                 |                                                                                                                                                                                                                                 | T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION                                                     |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ133 V10                                                                                                                                                                                                                | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00 |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 47.6 dBi<br>BEAMWIDTH@ ½ Power 0.66 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 266.3 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>RAD = RAD133 48G001B000-360A00266H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 60.0%                                                                                                                                                                              |                                                                                                                  |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                |

#### Earth Station Data – KSAT Mingenew Australia (Receiver 134)

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|----------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = Australia                                                                                |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = Mingenew                                                                                 |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 290040 S                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 1152032 E                                                                                |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP134 R                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = RAZ134 V10                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)   | ANTENNA GAIN(dBi) 47.6 dBi<br>BEAMWIDTH@ ½ Power 0.66 degrees<br>AZIMUTHAL RANGE 0-360 degrees | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |

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|                                                                 | SITE ELEVATION ABOVE MSL 266.7 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>RAD = RAD134 48G001B000-360A00267H003    |                                                                         |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 60.0%                                                                               |                                                                         |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – KSAT Mingenew Australia (Receiver 135)     |                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
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| State (RSC)                                                     | RSC = Australia                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = Mingenew                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = 290040 S                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = 1152033 E                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP135 R                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ135 V10                                                                                                                                                                                                                | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 47.6 dBi<br>BEAMWIDTH@ ½ Power 0.66 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 267.2 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>RAD = RAD135 48G001B000-360A00267H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 60.0%                                                                                                                                                                              |                                                                                                                                                                                                                    |

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| Supported Operations | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |
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| Earth Station Data – KSAT Awarua New Zealand (Receiver 136)     |                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
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| State (RSC)                                                     | RSC = <a href="#">New Zealand</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = <a href="#">Awarua</a>                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">463142 S</a>                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">1682244 E</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP136 R</a>                                                                                                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ136 V10</a>                                                                                                                                                                                                                                                                                                 | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">47.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">0.66 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">12.559 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>RAD = <a href="#">RAD136 48G001B000-360A00013H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                                 | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

| Earth Station Data – KSAT Awarua New Zealand (Receiver 137) |                                   |
|-------------------------------------------------------------|-----------------------------------|
| State (RSC)                                                 | RSC = <a href="#">New Zealand</a> |
| City Name (RAL)                                             | RAL = <a href="#">Awarua</a>      |

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| Latitude (DDMMSS)                                               | Lat = 463146 S                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = 1682250 E                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP137 R                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ137 V10                                                                                                                                                                                                                 | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 47.6 dBi<br>BEAMWIDTH@ ½ Power 0.66 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 12.294 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>RAD = RAD137 48G001B000-360A00012H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 60.0%                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                 | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – KSAT Awarua New Zealand (Receiver 138)

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|----------------------------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = New Zealand |                                                                                                                                                    |
| City Name (RAL)            | RAL = Awarua      |                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 463156 S    |                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 1682304 E   |                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP138 R    | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR, |



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|                                                                 |                                                                                                                                                                                                                                                                                                                                 | T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION                                                     |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ138 V10</a>                                                                                                                                                                                                                                                                                                | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00 |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">47.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">0.66 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">9.244 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>RAD = <a href="#">RAD138 48G001B000-360A00009H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                              |                                                                                                                  |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                                | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                |

#### Earth Station Data – KSAT Awarua New Zealand (Receiver 139)

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| State (RSC)                | RSC = <a href="#">New Zealand</a>                                                                                                              |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = <a href="#">Awarua</a>                                                                                                                   |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = <a href="#">463157 S</a>                                                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = <a href="#">1682302 E</a>                                                                                                                |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = <a href="#">RAP139 R</a>                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = <a href="#">RAZ139 V10</a>                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)   | ANTENNA GAIN(dBi) <a href="#">47.2 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">0.58 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |

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|                                                                 | SITE ELEVATION ABOVE MSL 9.226 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>RAD = RAD139 47G001B000-360A00009H003    |                                                                         |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.9 m<br>ANTENNA EFFICIENCY 60.0%                                                                               |                                                                         |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – KSAT Punta Arenas Chile (Receiver 140)     |                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                     | RSC = Chile                                                                                                                                                                                                                      |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = Punta Arenas                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = 525608 S                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = 0705224 W                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP140 R                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ140 V10                                                                                                                                                                                                                 | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 47.6 dBi<br>BEAMWIDTH@ ½ Power 0.66 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 25.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 4.096 meters<br><br>RAD = RAD140 48G001B000-360A00025H004 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 60.0%                                                                                                                                                                               |                                                                                                                                                                                                                    |

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| Supported Operations | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |
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#### Earth Station Data – KSAT Punta Arenas Chile (Receiver 141)

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| State (RSC)                                                     | RSC = <a href="#">Chile</a>                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = <a href="#">Punta Arenas</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">525608 S</a>                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">0705225 W</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP141 R</a>                                                                                                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ141 V10</a>                                                                                                                                                                                                                                                                                                 | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">47.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">0.66 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">25.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">4.129 meters</a><br><br>RAD = <a href="#">RAD141 48G001B000-360A00025H004</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                                 | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

#### Earth Station Data – KSAT Punta Arenas Chile (Receiver 142)

|                 |                                    |  |
|-----------------|------------------------------------|--|
| State (RSC)     | RSC = <a href="#">Chile</a>        |  |
| City Name (RAL) | RAL = <a href="#">Punta Arenas</a> |  |

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| Latitude (DDMMSS)                                               | Lat = 525603 S                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = 0705224 W                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP142 R                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ142 V10                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 47.2 dBi<br>BEAMWIDTH@ ½ Power 0.58 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 25.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 4.5 meters<br><br>RAD = RAD142 47G001B000-360A00025H005 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.9 m<br>ANTENNA EFFICIENCY 60.0%                                                                                                                                                                             |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                               | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – KSAT Puertollano Spain (Receiver 143)

|                            |                   |                                                                                                                                                    |
|----------------------------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = Spain       |                                                                                                                                                    |
| City Name (RAL)            | RAL = Puertollano |                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 384020 N    |                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 0040946 W   |                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP143 R    | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR, |

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|                                                                 |                                                                                                                                                                                                                                   | T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION                                                     |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ143 V10                                                                                                                                                                                                                  | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00 |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 47.6 dBi<br>BEAMWIDTH@ ½ Power 0.66 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 685.841 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 4.5 meters<br><br>RAD = RAD143 48G001B000-360A00686H005 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 60.0%                                                                                                                                                                                |                                                                                                                  |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                  | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                |

#### Earth Station Data – KSAT Puertollano Spain (Receiver 144)

|                            |                                                                                                |                                                                                                                                                                                                                    |
|----------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = Spain                                                                                    |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = Puertollano                                                                              |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 384019 N                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 0040946 W                                                                                |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP144 R                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = RAZ144 V10                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)   | ANTENNA GAIN(dBi) 47.6 dBi<br>BEAMWIDTH@ ½ Power 0.66 degrees<br>AZIMUTHAL RANGE 0-360 degrees | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |

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|                                                                 | SITE ELEVATION ABOVE MSL 684.597 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 4.5 meters<br><br>RAD = RAD144 48G001B000-360A00685H005  |                                                                         |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 60.0%                                                                               |                                                                         |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – KSAT Hartebeesthoek South Africa (Receiver 145) |                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                          | RSC = South Africa                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| City Name (RAL)                                                      | RAL = Hartebeesthoek                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                    | Lat = 255310 S                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                                   | Lon = 0274222 E                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                           | RAP = RAP145 R                                                                                                                                                                                                                    | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                                | RAZ = RAZ145 V10                                                                                                                                                                                                                  | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                             | ANTENNA GAIN(dBi) 47.6 dBi<br>BEAMWIDTH@ ½ Power 0.66 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 1564.73 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>RAD = RAD145 48G001B000-360A01565H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas)      | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 60.0%                                                                                                                                                                                |                                                                                                                                                                                                                    |

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| Supported Operations | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |
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#### Earth Station Data – KSAT Hartebeesthoek South Africa (Receiver 146)

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| State (RSC)                                                     | RSC = <a href="#">South Africa</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = <a href="#">Hartebeesthoek</a>                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">255312 S</a>                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">0274222 E</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP146 R</a>                                                                                                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ146 V10</a>                                                                                                                                                                                                                                                                                                 | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">47.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">0.66 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">1568.5 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>RAD = <a href="#">RAD146 48G001B000-360A01569H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                                 | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

#### Earth Station Data – KSAT Puunene Hawaii (Receiver 147)

|                 |                               |  |
|-----------------|-------------------------------|--|
| State (RSC)     | RSC = <a href="#">Hawaii</a>  |  |
| City Name (RAL) | RAL = <a href="#">Puunene</a> |  |

|                                                                 |                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
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| Latitude (DDMMSS)                                               | Lat = 204902 N                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = 1562717 W                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP147 R                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ147 V10                                                                                                                                                                                                                 | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 47.6 dBi<br>BEAMWIDTH@ ½ Power 0.66 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 43.46 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 5.66 meters<br><br>RAD = RAD147 48G001B000-360A00043H006 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 60.0%                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                 | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

| Earth Station Data – KSAT Puunene Hawaii (Receiver 148) |                 |                                                                                                                                                    |
|---------------------------------------------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                             | RSC = Hawaii    |                                                                                                                                                    |
| City Name (RAL)                                         | RAL = Puunene   |                                                                                                                                                    |
| Latitude (DDMMSS)                                       | Lat = 204901 N  |                                                                                                                                                    |
| Longitude (DDMMSS)                                      | Lon = 1562716 W |                                                                                                                                                    |
| Antenna Polarization (RAP)                              | RAP = RAP148 R  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR, |



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|                                                                 |                                                                                                                                                                                                                                  | T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION                                                     |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ148 V10                                                                                                                                                                                                                 | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00 |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 47.6 dBi<br>BEAMWIDTH@ ½ Power 0.66 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 43.46 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 5.66 meters<br><br>RAD = RAD148 48G001B000-360A00043H006 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 60.0%                                                                                                                                                                               |                                                                                                                  |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                 | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                |

#### Earth Station Data – KSAT Puunene Hawaii (Receiver 149)

|                            |                                                                                                |                                                                                                                                                                                                                    |
|----------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = Hawaii                                                                                   |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = Puunene                                                                                  |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 204903 N                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 1562716 W                                                                                |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP149 R                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = RAZ149 V10                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)   | ANTENNA GAIN(dBi) 47.6 dBi<br>BEAMWIDTH@ ½ Power 0.66 degrees<br>AZIMUTHAL RANGE 0-360 degrees | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |

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|                                                                 | SITE ELEVATION ABOVE MSL 43.33 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 5.23 meters<br><br>RAD = RAD149 48G001B000-360A00043H005   |                                                                         |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 60.0%                                                                               |                                                                         |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – KSAT Tromso Norway (Receiver 150)          |                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                     | RSC = Norway                                                                                                                                                                                                                      |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = Tromso                                                                                                                                                                                                                      |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = 693944 N                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = 0185629 E                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP150 R                                                                                                                                                                                                                    | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ150 V10                                                                                                                                                                                                                  | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 46.0 dBi<br>BEAMWIDTH@ ½ Power 0.8 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 135.4527 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>RAD = RAD150 46G001B000-360A00135H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.0 m<br>ANTENNA EFFICIENCY 60.0%                                                                                                                                                                                |                                                                                                                                                                                                                    |

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| Supported Operations | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |
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#### Earth Station Data – KSAT Dublin Ireland (Receiver 151)

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|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                     | RSC = <a href="#">Ireland</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = <a href="#">Dublin</a>                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">532424 N</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">0061328 W</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP151 R</a>                                                                                                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ151 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">51.1 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">0.49 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">84.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>RAD = <a href="#">RAD151 51G001B000-360A00084H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">5.4 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                             |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                               | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

#### Earth Station Data – KSAT Columbus Ohio (Receiver 152)

|                 |                                |  |
|-----------------|--------------------------------|--|
| State (RSC)     | RSC = <a href="#">Ohio</a>     |  |
| City Name (RAL) | RAL = <a href="#">Columbus</a> |  |

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| Latitude (DDMMSS)                                               | Lat = 400603 N                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = 0831151 W                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP152 R                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ152 V10                                                                                                                                                                                                                | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 51.1 dBi<br>BEAMWIDTH@ ½ Power 0.49 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 282.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>RAD = RAD152 51G001B000-360A00282H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 5.4 m<br>ANTENNA EFFICIENCY 60.0%                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – KSAT Boardman Oregon (Receiver 153)

|                            |                 |                                                                                                                                                    |
|----------------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = Oregon    |                                                                                                                                                    |
| City Name (RAL)            | RAL = Boardman  |                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 455116 N  |                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 1193755 W |                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP153 R  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR, |

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|                                                                 |                                                                                                                                                                                                                                 | T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION                                                     |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ153 V10                                                                                                                                                                                                                | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00 |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 51.1 dBi<br>BEAMWIDTH@ ½ Power 0.49 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 101.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>RAD = RAD153 51G001B000-360A00101H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 5.4 m<br>ANTENNA EFFICIENCY 60.0%                                                                                                                                                                              |                                                                                                                  |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                |

#### Earth Station Data – KSAT Kapolei Hawaii (Receiver 154)

|                            |                                                                                                |                                                                                                                                                                                                                    |
|----------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = Hawaii                                                                                   |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = Kapolei                                                                                  |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 212012 N                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 1580524 W                                                                                |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP154 R                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = RAZ154 V10                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)   | ANTENNA GAIN(dBi) 51.1 dBi<br>BEAMWIDTH@ ½ Power 0.49 degrees<br>AZIMUTHAL RANGE 0-360 degrees | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |

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|                                                                 | SITE ELEVATION ABOVE MSL 52.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>RAD = RAD154 51G001B000-360A00052H003     |                                                                         |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 5.4 m<br>ANTENNA EFFICIENCY 60.0%                                                                               |                                                                         |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – KSAT Punta Arenas Chile (Receiver 155)     |                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                     | RSC = Chile                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = Punta Arenas                                                                                                                                                                                                            |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = 525632 S                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = 0705059 W                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP155 R                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ155 V10                                                                                                                                                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 51.1 dBi<br>BEAMWIDTH@ ½ Power 0.49 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 4.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>RAD = RAD155 51G001B000-360A00004H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 5.4 m<br>ANTENNA EFFICIENCY 60.0%                                                                                                                                                                            |                                                                                                                                                                                                                    |

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| Supported Operations | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |
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#### Earth Station Data – KSAT Deadhorse Alaska (Receiver 156)

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|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                     | RSC = <a href="#">Alaska</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = <a href="#">Deadhorse</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">701214 N</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">1482824 W</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP156 R</a>                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ156 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">51.1 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">0.49 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">5.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>RAD = <a href="#">RAD156 51G001B000-360A00005H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">5.4 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                            |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                              | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

#### Earth Station Data – KSAT Singapore Singapore (Receiver 157)

|                 |                                 |  |
|-----------------|---------------------------------|--|
| State (RSC)     | RSC = <a href="#">Singapore</a> |  |
| City Name (RAL) | RAL = <a href="#">Singapore</a> |  |

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| Latitude (DDMMSS)                                               | Lat = 011859 N                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = 1034203 E                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP157 R                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ157 V10                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 51.1 dBi<br>BEAMWIDTH@ ½ Power 0.49 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 82.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>RAD = RAD157 51G001B000-360A00082H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 5.4 m<br>ANTENNA EFFICIENCY 60.0%                                                                                                                                                                             |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                               | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – KSAT Stockholm Sweden (Receiver 158)

|                            |                 |                                                                                                                                                    |
|----------------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = Sweden    |                                                                                                                                                    |
| City Name (RAL)            | RAL = Stockholm |                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 593857 N  |                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 0163505 E |                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP158 R  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR, |



|                                                                 |                                                                                                                                                                                                                                |                                                                                                                  |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
|                                                                 |                                                                                                                                                                                                                                | T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION                                                     |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ158 V10                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00 |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 51.1 dBi<br>BEAMWIDTH@ ½ Power 0.49 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 39.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>RAD = RAD158 51G001B000-360A00039H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 5.4 m<br>ANTENNA EFFICIENCY 60.0%                                                                                                                                                                             |                                                                                                                  |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                               | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                |

#### Earth Station Data – KSAT Sydney Australia (Receiver 159)

|                            |                                                                                                |                                                                                                                                                                                                                    |
|----------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = Australia                                                                                |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = Sydney                                                                                   |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = 321031 S                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 1483656 E                                                                                |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = RAP159 R                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = RAZ159 V10                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)   | ANTENNA GAIN(dBi) 51.1 dBi<br>BEAMWIDTH@ ½ Power 0.49 degrees<br>AZIMUTHAL RANGE 0-360 degrees | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |

|                                                                 |                                                                                                                                  |                                                                         |
|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
|                                                                 | SITE ELEVATION ABOVE MSL 284.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>RAD = RAD159 51G001B000-360A00284H003    |                                                                         |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 5.4 m<br>ANTENNA EFFICIENCY 60.0%                                                                               |                                                                         |
| Supported Operations                                            | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – KSAT Cape Town South Africa (Receiver 160) |                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                     | RSC = South Africa                                                                                                                                                                                                             |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = Cape Town                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = 340139 S                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = 0184307 E                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP160 R                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ160 V10                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 51.1 dBi<br>BEAMWIDTH@ ½ Power 0.49 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 10.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>RAD = RAD160 51G001B000-360A00010H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 5.4 m<br>ANTENNA EFFICIENCY 60.0%                                                                                                                                                                             |                                                                                                                                                                                                                    |

|                      |                                                                                                                                  |                                                                         |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Supported Operations | Satellite Health and Status Data <input checked="" type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

|                                                           |                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Transmit Frequency: 2232.5MHz, 2242.5MHz</b>           |                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Satellite Name: <a href="#">Screech 1 (Transmitter 4)</a> |                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Transmit Power (PWR)                                      | PWR = 0.724 W                                                                    | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                                                                                                                                                                                                                                                                                                                                                                           |
| RF Emissions                                              | Emissions Designator <a href="#">1M70G1D</a>                                     | NECESSARY BANDWIDTH:<br>THE WIDTH OF FREQUENCY BAND WHICH IS JUST SUFFICIENT TO SUCCESSFULLY TRANSFER DATA.<br>FORMULAS CAN BE FOUND IN ANNEX J OF THE NTIA MANUAL.<br><br>-3 / -20 / -40 / -60 dB BANDWIDTHS:<br>2-SIDED EMISSION BANDWIDTH VALUES<br><br>MODULATION TYPE:<br>THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.<br><br>DATA RATE:<br>INFORMATION DATA RATE<br><br>TOTAL SYMBOL RATE:<br>DATA RATE COMBINED WITH FEC AND FRAME OVERHEAD RESULTING IN THE TOTAL SYMBOL RATE AT THE INPUT TO THE SYMBOL MAPPER/MODULATOR. |
|                                                           | Necessary Bandwidth <a href="#">1.70 MHz</a>                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                           | -3 dB Bandwidth <a href="#">1.20 MHz</a>                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                           | -20 dB Bandwidth <a href="#">1.70 MHz</a>                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                           | -40 dB Bandwidth <a href="#">3.80 MHz</a>                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                           | -60 dB Bandwidth <a href="#">8.90 MHz</a>                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                           | Modulation Type <a href="#">QPSK</a>                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                           | Data Rate <a href="#">1.10 Mbps</a>                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                           | Forward Error Correction Coding <a href="#">Convolutional 1/2 + RS (255,223)</a> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                           | Total Symbol Rate <a href="#">2.52 Msym/s</a>                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                           | Emissions Designator <a href="#">400KG1D</a>                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                           | Necessary Bandwidth <a href="#">400 kHz</a>                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                           | -3 dB Bandwidth <a href="#">280 kHz</a>                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                           | -20 dB Bandwidth <a href="#">390 kHz</a>                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                           | -40 dB Bandwidth <a href="#">930 kHz</a>                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                           | -60 dB Bandwidth <a href="#">1.00 MHz</a>                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                           | Modulation Type <a href="#">QPSK</a>                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                           | Data Rate <a href="#">259 kbps</a>                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                           | Forward Error Correction Coding <a href="#">Convolutional 1/2 + RS (255,223)</a> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                           | Total Symbol Rate <a href="#">593 ksym/s</a>                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                           | Emissions Designator <a href="#">5M00G1D</a>                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                           | Necessary Bandwidth <a href="#">5.00 MHz</a>                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                           | -3 dB Bandwidth <a href="#">3.40 MHz</a>                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                           | -20 dB Bandwidth <a href="#">4.80 MHz</a>                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                           | -40 dB Bandwidth <a href="#">12.0 MHz</a>                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                           | -60 dB Bandwidth <a href="#">32.0 MHz</a>                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                           | Modulation Type <a href="#">QPSK</a>                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                           | Data Rate <a href="#">3.24 Mbps</a>                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                           | Forward Error Correction Coding <a href="#">Convolutional 1/2 + RS (255,223)</a> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

|                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                   |
|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                    | <div> <div>Total Symbol Rate7.41 Msym/s</div> <div> <div>Emissions Designator700KG1D</div> <div>Necessary Bandwidth700 kHz</div> <div>-3 dB Bandwidth480 kHz</div> <div>-20 dB Bandwidth680 kHz</div> <div>-40 dB Bandwidth1.60 MHz</div> <div>-60 dB Bandwidth3.20 MHz</div> <div>Modulation TypeQPSK</div> <div>Data Rate453 kbps</div> <div>Forward Error Correction Convolutional 1/2 + RS</div> <div>Coding(255,223)</div> <div>Total Symbol Rate1.04 Msym/s</div> </div> </div> |                                                                                                                                                                                                                                                                   |
| Does transmitter have a beacon mode?                               | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | BEACON MODE IS NORMALLY CONSIDERED A REGULAR AND PERIODIC SHORT DURATION TRANSMISSION THAT IS OFTEN USED TO ASSIST WITH TRACKING, DOPPLER COMPENSATION, OR SMALL SATELLITE IDENTIFICATION WHOSE TRANSMISSIONS ARE NOT LIMITED TO DURATIONS WHEN SUPPORTING GROUND |
| If transmitter has a beacon mode, can the beacon be commanded off? | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                   |
| Polarization (XAP)                                                 | XAP = XAP04 T                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION                                                |
| Orientation (XAZ)                                                  | XAZ = XAZ04 EC                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | NB= NARROWBEAM<br>EC = EARTH COVERAGE                                                                                                                                                                                                                             |
| Antenna Dimension (XAD)                                            | ANTENNA GAIN(dBi) 18.4 dBi<br>BEAMWIDTH@ ½ Power 5.0 degrees<br><br>XAD = XAD04 18G005B                                                                                                                                                                                                                                                                                                                                                                                               | (NTIA format (XAD), EXAMPLE, XAD01 16G030B)                                                                                                                                                                                                                       |
| Type of satellite (State = SP) (City = geo or non)                 | Type = Nongeostationary                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Choose either:<br>Geostationary or<br>Nongeostationary                                                                                                                                                                                                            |

|                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                            |
|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| For Geostationary                              | Longitude =                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | IF ANY SATELLITES ARE GEOSTATIONARY, REPORT ITS LATITUDE AS 000000N (XLA AND/OR RLA) AND REPORT ITS LONGITUDE (XLG AND/OR RLG).                                                                                                                                                                            |
| For Nongeostationary (Orbital Data)            | <p>The single spacecraft will operate at multiple orbits described below:</p> <p>INCLINATION ANGLE 50.0 degrees<br/> APOGEE IN KILOMETERS 500 km<br/> PERIGEE IN KILOMETERS 500 km<br/> ORBITAL PERIOD IN HOURS 1<br/> AND FRACTIONS OF HOURS IN DECIMAL 59<br/> NUMBER OF SATELLITES IN THE SYSTEM 1</p> <p>INCLINATION ANGLE 50.0 degrees<br/> APOGEE IN KILOMETERS 6000 km<br/> PERIGEE IN KILOMETERS 6000 km<br/> ORBITAL PERIOD IN HOURS 3<br/> AND FRACTIONS OF HOURS IN DECIMAL 80<br/> NUMBER OF SATELLITES IN THE SYSTEM 1</p> <p>REM01<br/> *ORB, 50.0IN00500AP00500PE001.59H01NRT01</p> <p>REM02<br/> *ORB, 50.0IN06000AP06000PE003.80H01NRT01</p> | <p>IF ANY SATELLITES ARE NONGEOSTATIONARY, REPORT ITS INCLINATION ANGLE, APOGEE IN KILOMETERS, PERIGEE IN KILOMETERS, ORBITAL PERIOD IN HOURS AND FRACTIONS OF HOURS IN DECIMAL, THE NUMBER OF SATELLITES IN THE SYSTEM, THEN T01, EXAMPLE,</p> <p>REM04 *ORB,<br/> 98.0IN00510AP00510PE001.58H01NRT01</p> |
| For SunSynchronous Nongeostationary Orbits     | Mean Local Time of Ascending Node (MLTAN) =                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | MLTAN IS THE ANGLE BETWEEN AN ORBIT'S ASCENDING NODE AND THE MEAN SUN, OFTEN EXPRESSED AS UNIT OF TIME (HH:MM)                                                                                                                                                                                             |
| Number of Satellite Contacts Supported Per Day | <p>At 500km x 500km: 20 contacts per day across all receivers.<br/> At 6000km x 6000km: 4 contacts per day across all receivers.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <p>NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY</p> <p>Note: This number specifies total contacts per day for this transmitter, which will be distributed across the receivers listed in this section.</p>                   |
| Expected Duration of Each Contact              | <p>At 500km x 500km: 6 minutes per contact.<br/> At 6000km x 6000km: 50 minutes per contact.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | AVERAGE DURATION OF EACH CONTACT                                                                                                                                                                                                                                                                           |

#### Earth Station Data – Northwood Vodno Bulgaria (Receiver 161)

|             |                |
|-------------|----------------|
| State (RSC) | RSC = Bulgaria |
|-------------|----------------|

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|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| City Name (RAL)                                                 | RAL = <a href="#">Vodno</a>                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">435141 N</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">0270903 E</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP161 T</a>                                                                                                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ161 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">32.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">5.3 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">219.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.0 meters</a><br><br>RAD = <a href="#">RAD161 33G005B000-360A00219H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">2.4 m</a><br>ANTENNA EFFICIENCY <a href="#">65.0%</a>                                                                                                                                                                                                                                             |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                                          | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – Northwood Neu Poserin Germany (Receiver 162)

|                    |                                   |                                                             |
|--------------------|-----------------------------------|-------------------------------------------------------------|
| State (RSC)        | RSC = <a href="#">Germany</a>     |                                                             |
| City Name (RAL)    | RAL = <a href="#">Neu Poserin</a> |                                                             |
| Latitude (DDMMSS)  | Lat = <a href="#">533315 N</a>    |                                                             |
| Longitude (DDMMSS) | Lon = <a href="#">0121327 E</a>   |                                                             |
|                    | RAP = <a href="#">RAP162 T</a>    | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL, |

|                                                                 |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                     |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Antenna Polarization (RAP)                                      |                                                                                                                                                                                                                                                                                                                               | S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ162 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                    |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">32.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">5.3 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">54.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.0 meters</a><br><br>RAD = <a href="#">RAD162 33G005B000-360A00054H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                   |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">2.4 m</a><br>ANTENNA EFFICIENCY <a href="#">65.0%</a>                                                                                                                                                                                                                                            |                                                                                                                                                     |
| Supported Operations                                            | Satellite Health and Status Data <input type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                                         | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                   |

#### Earth Station Data – Northwood Rio Gallegos Argentina (Receiver 163)

|                            |                                    |                                                                                                                                                                                                                    |
|----------------------------|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = <a href="#">Argentina</a>    |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = <a href="#">Rio Gallegos</a> |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = <a href="#">514003 S</a>     |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)        | Lon = <a href="#">0691551 W</a>    |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = <a href="#">RAP163 T</a>     | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = <a href="#">RAZ163 V10</a>   | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |

|                                                                 |                                                                                                                                                                                                                                                                         |                                                                   |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <b>32.6 dBi</b><br>BEAMWIDTH@ ½ Power <b>5.3 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>21.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>3.0 meters</b><br><br>RAD = <b>RAD163 33G005B000-360A00021H003</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006 |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <b>2.4 m</b><br>ANTENNA EFFICIENCY <b>65.0%</b>                                                                                                                                                                                                        |                                                                   |
| Supported Operations                                            | Satellite Health and Status Data <input type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                   | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA |

| Earth Station Data – KSAT Tromso Norway (Receiver 164) |                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                            | RSC = <b>Norway</b>                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                    |
| City Name (RAL)                                        | RAL = <b>Tromso</b>                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                      | Lat = <b>693944 N</b>                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                     | Lon = <b>0185629 E</b>                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                             | RAP = <b>RAP164 T</b>                                                                                                                                                                                                                                                        | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                  | RAZ = <b>RAZ164 V10</b>                                                                                                                                                                                                                                                      | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                               | ANTENNA GAIN(dBi) <b>33.08 dBi</b><br>BEAMWIDTH@ ½ Power <b>3.0 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>135.4527 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>2.5 meters</b><br><br>RAD = <b>RAD164 33G003B000-360A00135H003</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional                             | ANTENNA DIAMETER <b>3.0 m</b><br>ANTENNA EFFICIENCY <b>60.0%</b>                                                                                                                                                                                                             |                                                                                                                                                                                                                    |



|                                            |                                                                                                                       |                                                                         |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Information<br>(For Parabolic<br>Antennas) |                                                                                                                       |                                                                         |
| Supported<br>Operations                    | Satellite Health and Status Data <input type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – KSAT Punta Arenas Chile (Receiver 165)                    |                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                                    | RSC = <a href="#">Chile</a>                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                       |
| City Name<br>(RAL)                                                             | RAL = <a href="#">Punta Arenas</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                       |
| Latitude<br>(DDMMSS)                                                           | Lat = <a href="#">525608 S</a>                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                       |
| Longitude<br>(DDDMMSS)                                                         | Lon = <a href="#">0705224 W</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                       |
| Antenna<br>Polarization<br>(RAP)                                               | RAP = <a href="#">RAP165 T</a>                                                                                                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND<br>CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna<br>Azimuth<br>(RAZ)                                                    | RAZ = <a href="#">RAZ165 V10</a>                                                                                                                                                                                                                                                                                                 | THE EARTH STATION RECEIVER<br>ANTENNA AZIMUTH (RAZ), THE<br>MINIMUM ANGLE OF ELEVATION, V00<br>TO V90, EXAMPLE, RAZ01 V00                                                                                             |
| Antenna<br>Dimensions<br>(RAD)                                                 | ANTENNA GAIN(dBi) <a href="#">34.66 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.5 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">25.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">4.096 meters</a><br><br>RAD = <a href="#">RAD165 35G003B000-360A00025H004</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, RAD01<br>16G030B000-360A00357H006                                                                                                                                               |
| Receive<br>Antenna<br>Additional<br>Information<br>(For Parabolic<br>Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                               |                                                                                                                                                                                                                       |
| Supported<br>Operations                                                        | Satellite Health and Status Data <input type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                                            | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                               |

| Earth Station Data – KSAT Punta Arenas Chile (Receiver 166) |                             |
|-------------------------------------------------------------|-----------------------------|
| State (RSC)                                                 | RSC = <a href="#">Chile</a> |

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| City Name (RAL)                                                 | RAL = <a href="#">Punta Arenas</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">525608 S</a>                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">0705225 W</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP166 T</a>                                                                                                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ166 V10</a>                                                                                                                                                                                                                                                                                                 | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">34.66 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.5 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">25.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">4.129 meters</a><br><br>RAD = <a href="#">RAD166 35G003B000-360A00025H004</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                                            | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

#### Earth Station Data – KSAT Punta Arenas Chile (Receiver 167)

|                    |                                    |                                                             |
|--------------------|------------------------------------|-------------------------------------------------------------|
| State (RSC)        | RSC = <a href="#">Chile</a>        |                                                             |
| City Name (RAL)    | RAL = <a href="#">Punta Arenas</a> |                                                             |
| Latitude (DDMMSS)  | Lat = <a href="#">525603 S</a>     |                                                             |
| Longitude (DDMMSS) | Lon = <a href="#">0705224 W</a>    |                                                             |
|                    | RAP = <a href="#">RAP167 T</a>     | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL, |

|                                                                 |                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                     |
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| Antenna Polarization (RAP)                                      |                                                                                                                                                                                                                                                                                                                                 | S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ167 V10</a>                                                                                                                                                                                                                                                                                                | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                    |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">35.24 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.12 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">25.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">4.5 meters</a><br><br>RAD = <a href="#">RAD167 35G002B000-360A00025H005</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                   |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.9 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                              |                                                                                                                                                     |
| Supported Operations                                            | Satellite Health and Status Data <input type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                                           | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                   |

#### Earth Station Data – KSAT Awarua New Zealand (Receiver 168)

|                            |                                   |                                                                                                                                                                                                                    |
|----------------------------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                | RSC = <a href="#">New Zealand</a> |                                                                                                                                                                                                                    |
| City Name (RAL)            | RAL = <a href="#">Awarua</a>      |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)          | Lat = <a href="#">463142 S</a>    |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)        | Lon = <a href="#">1682244 E</a>   |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP) | RAP = <a href="#">RAP168 T</a>    | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)      | RAZ = <a href="#">RAZ168 V10</a>  | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |

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|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <b>34.66 dBi</b><br>BEAMWIDTH@ ½ Power <b>2.5 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>12.559 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>2.5 meters</b><br><br>RAD = <b>RAD168 35G003B000-360A00013H003</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006 |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <b>3.7 m</b><br>ANTENNA EFFICIENCY <b>60.0%</b>                                                                                                                                                                                                           |                                                                   |
| Supported Operations                                            | Satellite Health and Status Data <input type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                      | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA |

| Earth Station Data – KSAT Awarua New Zealand (Receiver 169) |                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                    |
|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                 | RSC = <b>New Zealand</b>                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| City Name (RAL)                                             | RAL = <b>Awarua</b>                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                           | Lat = <b>463146 S</b>                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                          | Lon = <b>1682250 E</b>                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                  | RAP = <b>RAP169 T</b>                                                                                                                                                                                                                                                      | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                       | RAZ = <b>RAZ169 V10</b>                                                                                                                                                                                                                                                    | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                    | ANTENNA GAIN(dBi) <b>34.66 dBi</b><br>BEAMWIDTH@ ½ Power <b>2.5 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>12.294 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>2.5 meters</b><br><br>RAD = <b>RAD169 35G003B000-360A00012H003</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional                                  | ANTENNA DIAMETER <b>3.7 m</b><br>ANTENNA EFFICIENCY <b>60.0%</b>                                                                                                                                                                                                           |                                                                                                                                                                                                                    |

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| Information<br>(For Parabolic Antennas) |                                                                                                                       |                                                                         |
| Supported Operations                    | Satellite Health and Status Data <input type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – KSAT Awarua New Zealand (Receiver 170)     |                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                     | RSC = <a href="#">New Zealand</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = <a href="#">Awarua</a>                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">463156 S</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                             | Lon = <a href="#">1682304 E</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP170 T</a>                                                                                                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ170 V10</a>                                                                                                                                                                                                                                                                                                | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">34.66 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.5 degrees</a><br>AZIMUTHAL RANGE 0-360 <a href="#">degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">9.244 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>RAD = <a href="#">RAD170 35G003B000-360A00009H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, RAD01<br>16G030B000-360A00357H006                                                                                                                                            |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                                           | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

| Earth Station Data – KSAT Awarua New Zealand (Receiver 171) |                                   |
|-------------------------------------------------------------|-----------------------------------|
| State (RSC)                                                 | RSC = <a href="#">New Zealand</a> |

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| City Name<br>(RAL)                                                             | RAL = <a href="#">Awarua</a>                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                       |
| Latitude<br>(DDMMSS)                                                           | Lat = <a href="#">463157 S</a>                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                       |
| Longitude<br>(DDMMSS)                                                          | Lon = <a href="#">1682302 E</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                       |
| Antenna<br>Polarization<br>(RAP)                                               | RAP = <a href="#">RAP171 T</a>                                                                                                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND<br>CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna<br>Azimuth<br>(RAZ)                                                    | RAZ = <a href="#">RAZ171 V10</a>                                                                                                                                                                                                                                                                                                 | THE EARTH STATION RECEIVER<br>ANTENNA AZIMUTH (RAZ), THE<br>MINIMUM ANGLE OF ELEVATION, V00<br>TO V90, EXAMPLE, RAZ01 V00                                                                                             |
| Antenna<br>Dimensions<br>(RAD)                                                 | ANTENNA GAIN(dBi) <a href="#">35.24 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.12 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">9.226 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>RAD = <a href="#">RAD171 35G002B000-360A00009H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, RAD01<br>16G030B000-360A00357H006                                                                                                                                               |
| Receive<br>Antenna<br>Additional<br>Information<br>(For Parabolic<br>Antennas) | ANTENNA DIAMETER <a href="#">3.9 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                               |                                                                                                                                                                                                                       |
| Supported<br>Operations                                                        | Satellite Health and Status Data <input type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                                            | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                               |

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|-----------------------------------------------------------|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Transmit Frequency: <a href="#">2232.5MHz</a></b>      |                                                                                             |                                                                                                                                                                  |
| Satellite Name: <a href="#">Screech 1 (Transmitter 5)</a> |                                                                                             |                                                                                                                                                                  |
| Transmit<br>Power (PWR)                                   | PWR = <a href="#">5.546 W</a>                                                               | TRANSMIT POWER SUPPLIED TO THE<br>ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT |
| RF Emissions                                              | Emissions Designator <a href="#">200KG1D</a><br>Necessary Bandwidth <a href="#">200 kHz</a> | NECESSARY BANDWIDTH:<br>THE WIDTH OF FREQUENCY BAND<br>WHICH IS JUST                                                                                             |

|  |                                                                                                                                                                                                                                                                                                                                          |
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|  | <div> <div> -3 dB Bandwidth180 kHz</div> <div>-20 dB Bandwidth270 kHz</div> <div>-40 dB Bandwidth970 kHz</div> <div>-60 dB Bandwidth1.70 MHz</div> </div> <div> Modulation TypeQPSK</div> <div>Data Rate130 kbps</div> <div>Forward Error Correction CodingConvolutional 1/2 + RS (255,223)</div> <div>Total Symbol Rate296 ksym/s</div> |
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Emissions Designator2M00G1D

Necessary Bandwidth2.00 MHz

-3 dB Bandwidth1.35 MHz

-20 dB Bandwidth2.10 MHz

-40 dB Bandwidth4.90 MHz

-60 dB Bandwidth14.7 MHz

Modulation TypeQPSK (DVB-S2 MODCOD 3)

Data Rate1.17 Mbps

Forward Error Correction CodingLDPC 2/5 + BCH

Total Symbol Rate2.96 Msym/s

Emissions Designator850KG1D

Necessary Bandwidth850 kHz

-3 dB Bandwidth770 kHz

-20 dB Bandwidth1.10 MHz

-40 dB Bandwidth2.80 MHz

-60 dB Bandwidth6.20 MHz

Modulation TypeQPSK

Data Rate551 kbps

Forward Error Correction CodingConvolutional 1/2 + RS (255,223)

Total Symbol Rate1.26 Msym/s

|                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                           |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Polarization (XAP)                                 | XAP = <a href="#">XAP05 R</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION                                                                                        |
| Orientation (XAZ)                                  | XAZ = <a href="#">XAZ05 EC</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | NB= NARROWBEAM<br>EC = EARTH COVERAGE                                                                                                                                                                                                                                                                     |
| Antenna Dimension (XAD)                            | ANTENNA GAIN(dBi) <a href="#">6.56 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">111.0 degrees</a><br><br>XAD = <a href="#">XAD05 07G111B</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | (NTIA format (XAD), EXAMPLE, XAD01 16G030B)                                                                                                                                                                                                                                                               |
| Type of satellite (State = SP) (City = geo or non) | Type = <a href="#">Nongeostationary</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Choose either:<br>Geostationary or<br>Nongeostationary                                                                                                                                                                                                                                                    |
| For Geostationary                                  | Longitude =                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | IF ANY SATELLITES ARE GEOSTATIONARY, REPORT ITS LATITUDE AS 000000N (XLA AND/OR RLA) AND REPORT ITS LONGITUDE (XLG AND/OR RLG).                                                                                                                                                                           |
| For Nongeostationary (Orbital Data)                | <p>The single spacecraft will operate at multiple orbits described below:</p> <p>INCLINATION ANGLE <a href="#">50.0 degrees</a><br/>APOGEE IN KILOMETERS <a href="#">500 km</a><br/>PERIGEE IN KILOMETERS <a href="#">500 km</a><br/>ORBITAL PERIOD IN HOURS <a href="#">1</a><br/>AND FRACTIONS OF HOURS IN DECIMAL <a href="#">59</a><br/>NUMBER OF SATELLITES IN THE SYSTEM <a href="#">1</a></p> <p>INCLINATION ANGLE <a href="#">50.0 degrees</a><br/>APOGEE IN KILOMETERS <a href="#">6000 km</a><br/>PERIGEE IN KILOMETERS <a href="#">6000 km</a><br/>ORBITAL PERIOD IN HOURS <a href="#">3</a><br/>AND FRACTIONS OF HOURS IN DECIMAL <a href="#">80</a><br/>NUMBER OF SATELLITES IN THE SYSTEM <a href="#">1</a></p> <p><a href="#">REM01</a><br/><a href="#">*ORB, 50.0IN00500AP00500PE001.59H01NRT01</a></p> <p><a href="#">REM02</a><br/><a href="#">*ORB, 50.0IN06000AP06000PE003.80H01NRT01</a></p> | <p>IF ANY SATELLITES ARE NONGEOSTATIONARY, REPORT ITS INCLINATION ANGLE, APOGEE IN KILOMETERS, PERIGEE IN KILOMETERS, ORBITAL PERIOD IN HOURS AND FRACTIONS OF HOURS IN DECIMAL, THE NUMBER OF SATELLITES IN THE SYSTEM, THEN T01, EXAMPLE,</p> <p>REM04 *ORB,<br/>98.0IN00510AP00510PE001.58H01NRT01</p> |



|                                                |                                                                                                                             |                                                                                                                                                                                                                                                                               |
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| For SunSynchronous Nongeostationary Orbits     | Mean Local Time of Ascending Node (MLTAN) =                                                                                 | MLTAN IS THE ANGLE BETWEEN AN ORBIT'S ASCENDING NODE AND THE MEAN SUN, OFTEN EXPRESSED AS UNIT OF TIME (HH:MM)                                                                                                                                                                |
| Number of Satellite Contacts Supported Per Day | At 500km x 500km: 20 contacts per day across all receivers.<br>At 6000km x 6000km: 4 contacts per day across all receivers. | NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY<br>Note: This number specifies total contacts per day for this transmitter, which will be distributed across the receivers listed in this section. |
| Expected Duration of Each Contact              | At 500km x 500km: 6 minutes per contact.<br>At 6000km x 6000km: 50 minutes per contact.                                     | AVERAGE DURATION OF EACH CONTACT                                                                                                                                                                                                                                              |

| Earth Station Data – Northwood Vodno Bulgaria (Receiver 172) |                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
|--------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                  | RSC = Bulgaria                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| City Name (RAL)                                              | RAL = Vodno                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                            | Lat = 435141 N                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                          | Lon = 0270903 E                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                   | RAP = RAP172 R                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                        | RAZ = RAZ172 V10                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                     | ANTENNA GAIN(dBi) 32.6 dBi<br>BEAMWIDTH@ ½ Power 5.3 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 219.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.0 meters<br><br>RAD = RAD172 33G005B000-360A00219H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna                                              | ANTENNA DIAMETER 2.4 m<br>ANTENNA EFFICIENCY 65.0%                                                                                                                                                                             |                                                                                                                                                                                                                    |

|                                                    |                                                                                                                       |                                                                         |
|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Additional Information<br>(For Parabolic Antennas) |                                                                                                                       |                                                                         |
| Supported Operations                               | Satellite Health and Status Data <input type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – Northwood Neu Poserin Germany (Receiver 173) |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
|-------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                       | RSC = <a href="#">Germany</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| City Name (RAL)                                                   | RAL = <a href="#">Neu Poserin</a>                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                 | Lat = <a href="#">533315 N</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                                | Lon = <a href="#">0121327 E</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                        | RAP = <a href="#">RAP173 R</a>                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                             | RAZ = <a href="#">RAZ173 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                          | ANTENNA GAIN(dBi) <a href="#">32.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">5.3 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">54.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.0 meters</a><br><br>RAD = <a href="#">RAD173 33G005B000-360A00054H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas)   | ANTENNA DIAMETER <a href="#">2.4 m</a><br>ANTENNA EFFICIENCY <a href="#">65.0%</a>                                                                                                                                                                                                                                            |                                                                                                                                                                                                                    |
| Supported Operations                                              | Satellite Health and Status Data <input type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                                         | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

| Earth Station Data – Northwood Rio Gallegos Argentina (Receiver 174) |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                          | RSC = <a href="#">Argentina</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| City Name (RAL)                                                      | RAL = <a href="#">Rio Gallegos</a>                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                    | Lat = <a href="#">514003 S</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                                   | Lon = <a href="#">0691551 W</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                           | RAP = <a href="#">RAP174 R</a>                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                                | RAZ = <a href="#">RAZ174 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                             | ANTENNA GAIN(dBi) <a href="#">32.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">5.3 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">21.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.0 meters</a><br><br>RAD = <a href="#">RAD174 33G005B000-360A00021H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas)      | ANTENNA DIAMETER <a href="#">2.4 m</a><br>ANTENNA EFFICIENCY <a href="#">65.0%</a>                                                                                                                                                                                                                                            |                                                                                                                                                                                                                    |
| Supported Operations                                                 | Satellite Health and Status Data <input type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                                         | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

| Earth Station Data – KSAT Tromso Norway (Receiver 175) |                                 |
|--------------------------------------------------------|---------------------------------|
| State (RSC)                                            | RSC = <a href="#">Norway</a>    |
| City Name (RAL)                                        | RAL = <a href="#">Tromso</a>    |
| Latitude (DDMMSS)                                      | Lat = <a href="#">693944 N</a>  |
| Longitude (DDMMSS)                                     | Lon = <a href="#">0185629 E</a> |

|                                                                 |                                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
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| Antenna Polarization (RAP)                                      | RAP = RAP175 R                                                                                                                                                                                                                     | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ175 V10                                                                                                                                                                                                                   | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 33.08 dBi<br>BEAMWIDTH@ ½ Power 3.0 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 135.4527 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>RAD = RAD175 33G003B000-360A00135H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.0 m<br>ANTENNA EFFICIENCY 60.0%                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                              | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

| Earth Station Data – KSAT Punta Arenas Chile (Receiver 176) |                    |                                                                                                                                                                                                                    |
|-------------------------------------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                 | RSC = Chile        |                                                                                                                                                                                                                    |
| City Name (RAL)                                             | RAL = Punta Arenas |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                           | Lat = 525608 S     |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                          | Lon = 0705224 W    |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                  | RAP = RAP176 R     | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
|                                                             | RAZ = RAZ176 V10   | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE                                                                                                                                                              |

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|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Antenna Azimuth (RAZ)                                           |                                                                                                                                                                                                                                                                            | MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00        |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <b>34.66 dBi</b><br>BEAMWIDTH@ ½ Power <b>2.5 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>25.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>4.096 meters</b><br><br>RAD = <b>RAD176 35G003B000-360A00025H004</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006 |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <b>3.7 m</b><br>ANTENNA EFFICIENCY <b>60.0%</b>                                                                                                                                                                                                           |                                                                   |
| Supported Operations                                            | Satellite Health and Status Data <input type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                      | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA |

| Earth Station Data – KSAT Punta Arenas Chile (Receiver 177) |                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                    |
|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                 | RSC = <b>Chile</b>                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                    |
| City Name (RAL)                                             | RAL = <b>Punta Arenas</b>                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                           | Lat = <b>525608 S</b>                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                         | Lon = <b>0705225 W</b>                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                  | RAP = <b>RAP177 R</b>                                                                                                                                                                                                                                                      | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                       | RAZ = <b>RAZ177 V10</b>                                                                                                                                                                                                                                                    | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                    | ANTENNA GAIN(dBi) <b>34.66 dBi</b><br>BEAMWIDTH@ ½ Power <b>2.5 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>25.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>4.129 meters</b><br><br>RAD = <b>RAD177 35G003B000-360A00025H004</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |

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| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 60.0%                                                                    |                                                                         |
| Supported Operations                                            | Satellite Health and Status Data <input type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – KSAT Punta Arenas Chile (Receiver 178)     |                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                     | RSC = Chile                                                                                                                                                                                                                     |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = Punta Arenas                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = 525603 S                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = 0705224 W                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP178 R                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ178 V10                                                                                                                                                                                                                | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 35.24 dBi<br>BEAMWIDTH@ ½ Power 2.12 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 25.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 4.5 meters<br><br>RAD = RAD178 35G002B000-360A00025H005 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.9 m<br>ANTENNA EFFICIENCY 60.0%                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                           | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

| Earth Station Data – KSAT Awarua New Zealand (Receiver 179)     |                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                     | RSC = <a href="#">New Zealand</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = <a href="#">Awarua</a>                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">463142 S</a>                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">1682244 E</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = <a href="#">RAP179 R</a>                                                                                                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = <a href="#">RAZ179 V10</a>                                                                                                                                                                                                                                                                                                 | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <a href="#">34.66 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.5 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">12.559 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>RAD = <a href="#">RAD179 35G003B000-360A00013H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <a href="#">3.7 m</a><br>ANTENNA EFFICIENCY <a href="#">60.0%</a>                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                                                                            | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

| Earth Station Data – KSAT Awarua New Zealand (Receiver 180) |                                   |  |
|-------------------------------------------------------------|-----------------------------------|--|
| State (RSC)                                                 | RSC = <a href="#">New Zealand</a> |  |
| City Name (RAL)                                             | RAL = <a href="#">Awarua</a>      |  |
| Latitude (DDMMSS)                                           | Lat = <a href="#">463146 S</a>    |  |
| Longitude (DDMMSS)                                          | Lon = <a href="#">1682250 E</a>   |  |

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|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Antenna Polarization (RAP)                                      | RAP = RAP180 R                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ180 V10                                                                                                                                                                                                                 | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 34.66 dBi<br>BEAMWIDTH@ ½ Power 2.5 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 12.294 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>RAD = RAD180 35G003B000-360A00012H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.7 m<br>ANTENNA EFFICIENCY 60.0%                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                            | SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA                                                                                                                                                  |

| Earth Station Data – KSAT Awarua New Zealand (Receiver 181) |                   |                                                                                                                                                                                                                    |
|-------------------------------------------------------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                 | RSC = New Zealand |                                                                                                                                                                                                                    |
| City Name (RAL)                                             | RAL = Awarua      |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                           | Lat = 463156 S    |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                          | Lon = 1682304 E   |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                  | RAP = RAP181 R    | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
|                                                             | RAZ = RAZ181 V10  | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE                                                                                                                                                              |



|                                                                 |                                                                                                                                                                                                                                                                           |                                                                         |
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| Antenna Azimuth (RAZ)                                           |                                                                                                                                                                                                                                                                           | MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00              |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <b>34.66 dBi</b><br>BEAMWIDTH@ ½ Power <b>2.5 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>9.244 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>2.5 meters</b><br><br>RAD = <b>RAD181 35G003B000-360A00009H003</b> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, RAD01<br>16G030B000-360A00357H006 |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <b>3.7 m</b><br>ANTENNA EFFICIENCY <b>60.0%</b>                                                                                                                                                                                                          |                                                                         |
| Supported Operations                                            | Satellite Health and Status Data <input type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                     | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – KSAT Awarua New Zealand (Receiver 182) |                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                    |
|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                 | RSC = <b>New Zealand</b>                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| City Name (RAL)                                             | RAL = <b>Awarua</b>                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                           | Lat = <b>463157 S</b>                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                          | Lon = <b>1682302 E</b>                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                  | RAP = <b>RAP182 R</b>                                                                                                                                                                                                                                                      | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                       | RAZ = <b>RAZ182 V10</b>                                                                                                                                                                                                                                                    | THE EARTH STATION RECEIVER<br>ANTENNA AZIMUTH (RAZ), THE<br>MINIMUM ANGLE OF ELEVATION, V00<br>TO V90, EXAMPLE, RAZ01 V00                                                                                          |
| Antenna Dimensions (RAD)                                    | ANTENNA GAIN(dBi) <b>35.24 dBi</b><br>BEAMWIDTH@ ½ Power <b>2.12 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>9.226 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>2.5 meters</b><br><br>RAD = <b>RAD182 35G002B000-360A00009H003</b> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, RAD01<br>16G030B000-360A00357H006                                                                                                                                            |

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|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 3.9 m<br>ANTENNA EFFICIENCY 60.0%                                                                    |                                                                         |
| Supported Operations                                            | Satellite Health and Status Data <input type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

|                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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| <b>Transmit Frequency: 19950MHz</b>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Satellite Name: Screech 1 (Transmitter 6) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Transmit Power (PWR)                      | PWR = 4.786 W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                                                                                                                                                                                                                                                                                                                                                                           |
| RF Emissions                              | <div> Emissions Designator 20M0G1D<br/> Necessary Bandwidth 20.0 MHz<br/> -3 dB Bandwidth 13.4 MHz<br/> -20 dB Bandwidth 20.1 MHz<br/> -40 dB Bandwidth 75.0 MHz<br/> -60 dB Bandwidth 170 MHz<br/> Modulation Type QPSK (DVB-S2 MODCOD 3)<br/> Data Rate 11.7 Mbps<br/> Forward Error Correction LDPC 2/5 + BCH Coding<br/> Total Symbol Rate 29.6 Msym/s </div> <hr/> <div> Emissions Designator 2M00G1D<br/> Necessary Bandwidth 2.00 MHz<br/> -3 dB Bandwidth 1.35 MHz<br/> -20 dB Bandwidth 2.10 MHz<br/> -40 dB Bandwidth 4.90 MHz<br/> -60 dB Bandwidth 14.7 MHz<br/> Modulation Type QPSK (DVB-S2 MODCOD 3)<br/> Data Rate 1.17 Mbps<br/> Forward Error Correction LDPC 2/5 + BCH Coding<br/> Total Symbol Rate 2.96 Msym/s </div> | NECESSARY BANDWIDTH:<br>THE WIDTH OF FREQUENCY BAND WHICH IS JUST SUFFICIENT TO SUCCESSFULLY TRANSFER DATA.<br>FORMULAS CAN BE FOUND IN ANNEX J OF THE NTIA MANUAL.<br><br>-3 / -20 / -40 / -60 dB BANDWIDTHS:<br>2-SIDED EMISSION BANDWIDTH VALUES<br><br>MODULATION TYPE:<br>THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.<br><br>DATA RATE:<br>INFORMATION DATA RATE<br><br>TOTAL SYMBOL RATE:<br>DATA RATE COMBINED WITH FEC AND FRAME OVERHEAD RESULTING IN THE TOTAL SYMBOL RATE AT THE INPUT TO THE SYMBOL MAPPER/MODULATOR. |
| Does transmitter                          | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | BEACON MODE IS NORMALLY CONSIDERED A REGULAR AND PERIODIC SHORT DURATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

|                                                                    |                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                   |
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| have a beacon mode?                                                |                                                                                                                                                                                                                                                                                                                                                                | TRANSMISSION THAT IS OFTEN USED TO ASSIST WITH TRACKING, DOPPLER COMPENSATION, OR SMALL SATELLITE IDENTIFICATION WHOSE TRANSMISSIONS ARE NOT LIMITED TO DURATIONS WHEN SUPPORTING GROUND                                                                                                          |
| If transmitter has a beacon mode, can the beacon be commanded off? | N/A                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                   |
| Polarization (XAP)                                                 | XAP = XAP06 T                                                                                                                                                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION                                                                                |
| Orientation (XAZ)                                                  | XAZ = XAZ06 EC                                                                                                                                                                                                                                                                                                                                                 | NB= NARROWBEAM<br>EC = EARTH COVERAGE                                                                                                                                                                                                                                                             |
| Antenna Dimension (XAD)                                            | ANTENNA GAIN(dBi) 20.0 dBi<br>BEAMWIDTH@ ½ Power 12.0 degrees<br><br>XAD = XAD06 20G012B                                                                                                                                                                                                                                                                       | (NTIA format (XAD), EXAMPLE, XAD01 16G030B)                                                                                                                                                                                                                                                       |
| Type of satellite (State = SP) (City = geo or non)                 | Type = Nongeostationary                                                                                                                                                                                                                                                                                                                                        | Choose either:<br>Geostationary or<br>Nongeostationary                                                                                                                                                                                                                                            |
| For Geostationary                                                  | Longitude =                                                                                                                                                                                                                                                                                                                                                    | IF ANY SATELLITES ARE GEOSTATIONARY, REPORT ITS LATITUDE AS 000000N (XLA AND/OR RLA) AND REPORT ITS LONGITUDE (XLG AND/OR RLG).                                                                                                                                                                   |
| For Nongeostationary (Orbital Data)                                | The single spacecraft will operate at multiple orbits described below:<br><br>INCLINATION ANGLE 50.0 degrees<br>APOGEE IN KILOMETERS 500 km<br>PERIGEE IN KILOMETERS 500 km<br>ORBITAL PERIOD IN HOURS 1<br>AND FRACTIONS OF HOURS IN DECIMAL 59<br>NUMBER OF SATELLITES IN THE SYSTEM 1<br><br>INCLINATION ANGLE 50.0 degrees<br>APOGEE IN KILOMETERS 6000 km | IF ANY SATELLITES ARE NONGEOSTATIONARY, REPORT ITS INCLINATION ANGLE, APOGEE IN KILOMETERS, PERIGEE IN KILOMETERS, ORBITAL PERIOD IN HOURS AND FRACTIONS OF HOURS IN DECIMAL, THE NUMBER OF SATELLITES IN THE SYSTEM, THEN T01, EXAMPLE,<br><br>REM04 *ORB,<br>98.0IN00510AP00510PE001.58H01NRT01 |

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|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                | <p>PERIGEE IN KILOMETERS <a href="#">6000 km</a></p> <p>ORBITAL PERIOD IN HOURS <a href="#">3</a></p> <p>AND FRACTIONS OF HOURS IN DECIMAL <a href="#">80</a></p> <p>NUMBER OF SATELLITES IN THE SYSTEM <a href="#">1</a></p> <p>REM01<br/>*ORB,50.0IN00500AP00500PE001.59H01NRT01</p> <p>REM02<br/>*ORB,50.0IN06000AP06000PE003.80H01NRT01</p> |                                                                                                                                                                                                                                                                                          |
| For SunSynchronous Nongeostationary Orbits     | Mean Local Time of Ascending Node (MLTAN) =                                                                                                                                                                                                                                                                                                     | MLTAN IS THE ANGLE BETWEEN AN ORBIT'S ASCENDING NODE AND THE MEAN SUN, OFTEN EXPRESSED AS UNIT OF TIME (HH:MM)                                                                                                                                                                           |
| Number of Satellite Contacts Supported Per Day | <p>At 500km x 500km: <a href="#">5 contacts per day across all receivers.</a></p> <p>At 6000km x 6000km: <a href="#">10 contacts per day across all receivers.</a></p>                                                                                                                                                                          | <p>NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY</p> <p>Note: This number specifies total contacts per day for this transmitter, which will be distributed across the receivers listed in this section.</p> |
| Expected Duration of Each Contact              | <p>At 500km x 500km: <a href="#">2 minutes per contact.</a></p> <p>At 6000km x 6000km: <a href="#">30 minutes per contact.</a></p>                                                                                                                                                                                                              | AVERAGE DURATION OF EACH CONTACT                                                                                                                                                                                                                                                         |

| Earth Station Data – Northwood Brewster Washington (Receiver 183) |                                  |                                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                       | RSC = <a href="#">Washington</a> |                                                                                                                                                                                                                                                       |
| City Name (RAL)                                                   | RAL = <a href="#">Brewster</a>   |                                                                                                                                                                                                                                                       |
| Latitude (DDMMSS)                                                 | Lat = <a href="#">480847 N</a>   |                                                                                                                                                                                                                                                       |
| Longitude (DDMMSS)                                                | Lon = <a href="#">1194200 W</a>  |                                                                                                                                                                                                                                                       |
| Antenna Polarization (RAP)                                        | RAP = <a href="#">RAP183 T</a>   | <p>POLARIZATIONS INCLUDE :</p> <p>H = HORIZONTAL,</p> <p>V = VERTICAL,</p> <p>S = HORIZONTAL AND VERTICAL,</p> <p>L = LEFT HAND CIRCULAR,</p> <p>R = RIGHT HAND CIRCULAR,</p> <p>T = RIGHT AND LEFT HAND CIRCULAR,</p> <p>J = LINEAR POLARIZATION</p> |
|                                                                   | RAZ = <a href="#">RAZ183 V10</a> | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE                                                                                                                                                                                                 |

|                                                                 |                                                                                                                                                                                                                                                                           |                                                                         |
|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Antenna Azimuth (RAZ)                                           |                                                                                                                                                                                                                                                                           | MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00              |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) <b>50.3 dBi</b><br>BEAMWIDTH@ ½ Power <b>0.48 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>382.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>3.0 meters</b><br><br>RAD = <b>RAD183 50G001B000-360A00382H003</b> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, RAD01<br>16G030B000-360A00357H006 |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER <b>2.4 m</b><br>ANTENNA EFFICIENCY <b>65.0%</b>                                                                                                                                                                                                          |                                                                         |
| Supported Operations                                            | Satellite Health and Status Data <input type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                                                                     | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – Northwood Loring Maine (Receiver 184) |                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                    |
|------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                | RSC = <b>Maine</b>                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                    |
| City Name (RAL)                                            | RAL = <b>Loring</b>                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                          | Lat = <b>465601 N</b>                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                         | Lon = <b>0675434 W</b>                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                 | RAP = <b>RAP184 T</b>                                                                                                                                                                                                                                                     | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                      | RAZ = <b>RAZ184 V10</b>                                                                                                                                                                                                                                                   | THE EARTH STATION RECEIVER<br>ANTENNA AZIMUTH (RAZ), THE<br>MINIMUM ANGLE OF ELEVATION, V00<br>TO V90, EXAMPLE, RAZ01 V00                                                                                          |
| Antenna Dimensions (RAD)                                   | ANTENNA GAIN(dBi) <b>50.3 dBi</b><br>BEAMWIDTH@ ½ Power <b>0.48 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>207.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>3.0 meters</b><br><br>RAD = <b>RAD184 50G001B000-360A00207H003</b> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, RAD01<br>16G030B000-360A00357H006                                                                                                                                            |

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| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 2.4 m<br>ANTENNA EFFICIENCY 65.0%                                                                    |                                                                         |
| Supported Operations                                            | Satellite Health and Status Data <input type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/> | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA |

| Earth Station Data – Northwood Kihei Hawaii (Receiver 185)      |                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                     | RSC = Hawaii                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| City Name (RAL)                                                 | RAL = Kihei                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = 204444 N                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = 1562613 W                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                      | RAP = RAP185 T                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                           | RAZ = RAZ185 V10                                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                   |
| Antenna Dimensions (RAD)                                        | ANTENNA GAIN(dBi) 50.3 dBi<br>BEAMWIDTH@ ½ Power 0.48 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 59.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.0 meters<br><br>RAD = RAD185 50G001B000-360A00059H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006                                                                                                                                                  |
| Receive Antenna Additional Information (For Parabolic Antennas) | ANTENNA DIAMETER 2.4 m<br>ANTENNA EFFICIENCY 65.0%                                                                                                                                                                             |                                                                                                                                                                                                                    |
| Supported Operations                                            | Satellite Health and Status Data <input type="checkbox"/><br>Mission Payload Data <input checked="" type="checkbox"/>                                                                                                          | SATELLITE HEALTH AND STATUS<br>TELEMETRY AND/OR MISSION<br>PAYLOAD DATA                                                                                                                                            |

## Part B: Earth to Space Uplink Data

|                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Transmit Frequency: <b>2040MHz</b>                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                |
| Satellite Name: <b>Screech 1 (Receiver 1)</b>      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                |
| Polarization (RAP)                                 | RAP = <b>RAP01 R</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION             |
| Orientation (RAZ)                                  | RAZ = <b>RAZ01 EC</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | NB= NARROWBEAM<br>EC = EARTH COVERAGE                                                                                                                                                                                          |
| Antenna Dimension (RAD)                            | ANTENNA GAIN(dBi) <b>6.56 dBi</b><br>BEAMWIDTH@ ½ Power <b>111.0 degrees</b><br><br>RAD = <b>RAD01 07G111B</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | (NTIA format, EXAMPLE, RAD01 16G030B)                                                                                                                                                                                          |
| Type of satellite (State = SP) (City = geo or non) | Type = <b>Nongeostationary</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Choose either:<br>Geostationary or<br>Nongeostationary                                                                                                                                                                         |
| For Nongeostationary (Orbital Data)                | <p>The single spacecraft will operate at multiple orbits described below:</p> <p>INCLINATION ANGLE <b>50.0 degrees</b><br/>APOGEE IN KILOMETERS <b>500 km</b><br/>PERIGEE IN KILOMETERS <b>500 km</b><br/>ORBITAL PERIOD IN HOURS <b>1</b><br/>AND FRACTIONS OF HOURS IN DECIMAL <b>59</b><br/>NUMBER OF SATELLITES IN THE SYSTEM <b>1</b></p> <p>INCLINATION ANGLE <b>50.0 degrees</b><br/>APOGEE IN KILOMETERS <b>6000 km</b><br/>PERIGEE IN KILOMETERS <b>6000 km</b><br/>ORBITAL PERIOD IN HOURS <b>3</b><br/>AND FRACTIONS OF HOURS IN DECIMAL <b>80</b><br/>NUMBER OF SATELLITES IN THE SYSTEM <b>1</b></p> <p>REM01<br/>*ORB,50.0IN00500AP00500PE001.59H01NRT01</p> <p>REM02<br/>*ORB,50.0IN06000AP06000PE003.80H01NRT01</p> | IF ANY SATELLITES ARE NONGEOSTATIONARY, REPORT ITS INCLINATION ANGLE, APOGEE IN KILOMETERS, PERIGEE IN KILOMETERS, ORBITAL PERIOD IN HOURS AND FRACTIONS OF HOURS IN DECIMAL, THE NUMBER OF SATELLITES IN THE SYSTEM, THEN T01 |
|                                                    | Mean Local Time of Ascending Node (MLTAN) =                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                |

|                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                             |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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| For SunSynchronous Nongeostationary Orbits     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | MLTAN IS THE ANGLE BETWEEN AN ORBIT'S ASCENDING NODE AND THE MEAN SUN, OFTEN EXPRESSED AS UNIT OF TIME (HH:MM)                                                                                                                                                              |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Number of Satellite Contacts Supported Per Day | At 500km x 500km: 55 contacts per day across all transmitters.<br>At 6000km x 6000km: 29 contacts per day across all receivers.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE EARTH TO SPACE DIRECTION (UPLINKS) EACH DAY<br>Note: This number specifies total contacts per day for this receiver, which will be distributed across the transmitters listed in this section. |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Expected Duration of Each Contact              | At 500km x 500km: 6 minutes per contact<br>At 6000km x 6000km: 30 minutes per contact                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | AVERAGE DURATION OF EACH CONTACT                                                                                                                                                                                                                                            |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| RF Emissions                                   | <table><tr><td>Emissions Designator</td><td>100KG1D</td></tr><tr><td>Necessary Bandwidth</td><td>100 kHz</td></tr><tr><td>-3 dB Bandwidth</td><td>100 kHz</td></tr><tr><td>-20 dB Bandwidth</td><td>—</td></tr><tr><td>-40 dB Bandwidth</td><td>—</td></tr><tr><td>-60 dB Bandwidth</td><td>—</td></tr><tr><td>Modulation Type</td><td>QPSK</td></tr><tr><td>Data Rate</td><td>64.8 kbps</td></tr><tr><td>Forward Error Correction Coding</td><td>Convolutional 1/2 + RS (255,223)</td></tr><tr><td>Total Symbol Rate</td><td>148 ksym/s</td></tr></table> <table><tr><td>Emissions Designator</td><td>2M00G1D</td></tr><tr><td>Necessary Bandwidth</td><td>2.00 MHz</td></tr><tr><td>-3 dB Bandwidth</td><td>2.00 MHz</td></tr><tr><td>-20 dB Bandwidth</td><td>—</td></tr><tr><td>-40 dB Bandwidth</td><td>—</td></tr><tr><td>-60 dB Bandwidth</td><td>—</td></tr><tr><td>Modulation Type</td><td>QPSK</td></tr><tr><td>Data Rate</td><td>1.30 Mbps</td></tr><tr><td>Forward Error Correction Coding</td><td>Convolutional 1/2 + RS (255,223)</td></tr><tr><td>Total Symbol Rate</td><td>2.96 Msym/s</td></tr></table> <table><tr><td>Emissions Designator</td><td>400KG1D</td></tr><tr><td>Necessary Bandwidth</td><td>400 kHz</td></tr><tr><td>-3 dB Bandwidth</td><td>400 kHz</td></tr><tr><td>-20 dB Bandwidth</td><td>—</td></tr><tr><td>-40 dB Bandwidth</td><td>—</td></tr><tr><td>-60 dB Bandwidth</td><td>—</td></tr><tr><td>Modulation Type</td><td>QPSK</td></tr></table> | Emissions Designator                                                                                                                                                                                                                                                        | 100KG1D | Necessary Bandwidth | 100 kHz | -3 dB Bandwidth | 100 kHz | -20 dB Bandwidth | — | -40 dB Bandwidth | — | -60 dB Bandwidth | — | Modulation Type | QPSK | Data Rate | 64.8 kbps | Forward Error Correction Coding | Convolutional 1/2 + RS (255,223) | Total Symbol Rate | 148 ksym/s | Emissions Designator | 2M00G1D | Necessary Bandwidth | 2.00 MHz | -3 dB Bandwidth | 2.00 MHz | -20 dB Bandwidth | — | -40 dB Bandwidth | — | -60 dB Bandwidth | — | Modulation Type | QPSK | Data Rate | 1.30 Mbps | Forward Error Correction Coding | Convolutional 1/2 + RS (255,223) | Total Symbol Rate | 2.96 Msym/s | Emissions Designator | 400KG1D | Necessary Bandwidth | 400 kHz | -3 dB Bandwidth | 400 kHz | -20 dB Bandwidth | — | -40 dB Bandwidth | — | -60 dB Bandwidth | — | Modulation Type | QPSK | NECESSARY BANDWIDTH:<br>THE WIDTH OF FREQUENCY BAND WHICH IS JUST SUFFICIENT TO SUCCESSFULLY TRANSFER DATA.<br>FORMULAS CAN BE FOUND IN ANNEX J OF THE NTIA MANUAL.<br><br>-3 / -20 / -40 / -60 dB BANDWIDTHS:<br>2-SIDED EMISSION BANDWIDTH VALUES<br><br>MODULATION TYPE:<br>THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.<br><br>DATA RATE:<br>INFORMATION DATA RATE<br><br>TOTAL SYMBOL RATE:<br>DATA RATE COMBINED WITH FEC AND FRAME OVERHEAD RESULTING IN THE TOTAL SYMBOL RATE AT THE INPUT TO THE SYMBOL MAPPER/MODULATOR.<br>Note: All transmitters in this section transmit the same emissions designators. |
| Emissions Designator                           | 100KG1D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                             |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Necessary Bandwidth                            | 100 kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                             |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| -3 dB Bandwidth                                | 100 kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                             |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| -20 dB Bandwidth                               | —                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                             |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| -40 dB Bandwidth                               | —                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                             |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| -60 dB Bandwidth                               | —                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                             |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Modulation Type                                | QPSK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                             |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Data Rate                                      | 64.8 kbps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                             |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Forward Error Correction Coding                | Convolutional 1/2 + RS (255,223)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                             |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Total Symbol Rate                              | 148 ksym/s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                             |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Emissions Designator                           | 2M00G1D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                             |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Necessary Bandwidth                            | 2.00 MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                             |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| -3 dB Bandwidth                                | 2.00 MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                             |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| -20 dB Bandwidth                               | —                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                             |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| -40 dB Bandwidth                               | —                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                             |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| -60 dB Bandwidth                               | —                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                             |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Modulation Type                                | QPSK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                             |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Data Rate                                      | 1.30 Mbps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                             |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Forward Error Correction Coding                | Convolutional 1/2 + RS (255,223)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                             |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Total Symbol Rate                              | 2.96 Msym/s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                             |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Emissions Designator                           | 400KG1D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                             |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Necessary Bandwidth                            | 400 kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                             |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| -3 dB Bandwidth                                | 400 kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                             |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| -20 dB Bandwidth                               | —                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                             |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| -40 dB Bandwidth                               | —                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                             |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| -60 dB Bandwidth                               | —                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                             |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Modulation Type                                | QPSK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                             |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |



|                                 |                                  |
|---------------------------------|----------------------------------|
| Data Rate                       | 259 kbps                         |
| Forward Error Correction Coding | Convolutional 1/2 + RS (255,223) |
| Total Symbol Rate               | 593 ksym/s                       |
| Emissions Designator            | 640KG1D                          |
| Necessary Bandwidth             | 640 kHz                          |
| -3 dB Bandwidth                 | 640 kHz                          |
| -20 dB Bandwidth                | —                                |
| -40 dB Bandwidth                | —                                |
| -60 dB Bandwidth                | —                                |
| Modulation Type                 | QPSK                             |
| Data Rate                       | 415 kbps                         |
| Forward Error Correction Coding | Convolutional 1/2 + RS (255,223) |
| Total Symbol Rate               | 948 ksym/s                       |
| Emissions Designator            | 920KG1D                          |
| Necessary Bandwidth             | 920 kHz                          |
| -3 dB Bandwidth                 | 920 kHz                          |
| -20 dB Bandwidth                | —                                |
| -40 dB Bandwidth                | —                                |
| -60 dB Bandwidth                | —                                |
| Modulation Type                 | QPSK                             |
| Data Rate                       | 596 kbps                         |
| Forward Error Correction Coding | Convolutional 1/2 + RS (255,223) |
| Total Symbol Rate               | 1.36 Msym/s                      |

| Earth Station Data – Leaf Peterborough Southern Australia (Transmitter 1) |                          |                                                                                                                                                         |
|---------------------------------------------------------------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                               | XSC = Southern Australia |                                                                                                                                                         |
| City Name (XAL)                                                           | XAL = Peterborough       |                                                                                                                                                         |
| Latitude (DDMMSS)                                                         | Lat = 325743 S           |                                                                                                                                                         |
| Longitude (DDMMSS)                                                        | Lon = 1385058 E          |                                                                                                                                                         |
| Transmit Power (PWR)                                                      | PWR = 31.623 W           | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT |
|                                                                           | XAP = XAP01 R            | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,                                                                                                              |

|                            |                                                                                                                                                                                                                                |                                                                                                                                                                      |
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| Antenna Polarization (XAP) |                                                                                                                                                                                                                                | V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = XAZ01 V10                                                                                                                                                                                                                | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                            |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) 35.0 dBi<br>BEAMWIDTH@ ½ Power 2.76 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 539.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.2 meters<br><br>XAD = XAD01 35G003B000-360A00539H002 | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                              |

| Earth Station Data – Leaf Nangetty Western Australia (Transmitter 2) |                                                                                                |                                                                                                                                                                                                                    |
|----------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                          | XSC = Western Australia                                                                        |                                                                                                                                                                                                                    |
| City Name (XAL)                                                      | XAL = Nangetty                                                                                 |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                    | Lat = 290037 S                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                                  | Lon = 1152032 E                                                                                |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                                 | PWR = 31.623 W                                                                                 | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                           | XAP = XAP02 R                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                                | XAZ = XAZ02 V10                                                                                | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
|                                                                      | ANTENNA GAIN(dBi) 35.0 dBi<br>BEAMWIDTH@ ½ Power 2.76 degrees<br>AZIMUTHAL RANGE 0-360 degrees | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

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| Antenna Dimensions (XAD) | SITE ELEVATION ABOVE MSL 270.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.2 meters<br><br>XAD = XAD02 35G003B000-360A00270H002 |  |
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| Earth Station Data – Leaf Nangetty Western Australia (Transmitter 3) |                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                          | XSC = Western Australia                                                                                                                                                                                                        |                                                                                                                                                                                                                    |
| City Name (XAL)                                                      | XAL = Nangetty                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                    | Lat = 290039 S                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                                   | Lon = 1152033 E                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                                 | PWR = 31.623 W                                                                                                                                                                                                                 | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                           | XAP = XAP03 R                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                                | XAZ = XAZ03 V10                                                                                                                                                                                                                | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                             | ANTENNA GAIN(dBi) 35.0 dBi<br>BEAMWIDTH@ ½ Power 2.76 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 272.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.2 meters<br><br>XAD = XAD03 35G003B000-360A00272H002 | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – Leaf Absheron Azerbaijan (Transmitter 4) |                  |  |
|---------------------------------------------------------------|------------------|--|
| State (XSC)                                                   | XSC = Azerbaijan |  |
| City Name (XAL)                                               | XAL = Absheron   |  |
|                                                               | Lat = 402759 N   |  |

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| Latitude (DDMMSS)          |                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 0492910 E                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Transmit Power (PWR)       | PWR = 31.623 W                                                                                                                                                                                                                 | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP) | XAP = XAP04 R                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = XAZ04 V10                                                                                                                                                                                                                | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) 35.0 dBi<br>BEAMWIDTH@ ½ Power 2.76 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 210.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.2 meters<br><br>XAD = XAD04 35G003B000-360A00210H002 | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                                                                                  |

#### Earth Station Data – Leaf Absheron Azerbaijan (Transmitter 5)

|                      |                  |                                                                                                                                                         |
|----------------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)          | XSC = Azerbaijan |                                                                                                                                                         |
| City Name (XAL)      | XAL = Absheron   |                                                                                                                                                         |
| Latitude (DDMMSS)    | Lat = 402758 N   |                                                                                                                                                         |
| Longitude (DDMMSS)   | Lon = 0492911 E  |                                                                                                                                                         |
| Transmit Power (PWR) | PWR = 31.623 W   | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT |

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| Antenna Polarization (XAP) | XAP = <a href="#">XAP05 R</a>                                                                                                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = <a href="#">XAZ05 V10</a>                                                                                                                                                                                                                                                                                                | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) <a href="#">35.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.76 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">210.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.2 meters</a><br><br>XAD = <a href="#">XAD05 35G003B000-360A00210H002</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                                                                                  |

| Earth Station Data – Leaf Punta Arenas Chile (Transmitter 6) |                                    |                                                                                                                                                                                                                    |
|--------------------------------------------------------------|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                  | XSC = <a href="#">Chile</a>        |                                                                                                                                                                                                                    |
| City Name (XAL)                                              | XAL = <a href="#">Punta Arenas</a> |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                            | Lat = <a href="#">530230 S</a>     |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                          | Lon = <a href="#">0705049 W</a>    |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                         | PWR = <a href="#">31.623 W</a>     | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP)                                   | XAP = <a href="#">XAP06 R</a>      | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                        | XAZ = <a href="#">XAZ06 V10</a>    | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |

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| Antenna Dimensions (XAD) | ANTENNA GAIN(dBi) <b>35.0 dBi</b><br>BEAMWIDTH@ ½ Power <b>2.76 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>36.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>3.2 meters</b><br><br>XAD = <b>XAD06 35G003B000-360A00036H003</b> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006 |
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| Earth Station Data – Leaf Punta Arenas Chile (Transmitter 7) |                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                    |
|--------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                  | XSC = <b>Chile</b>                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                    |
| City Name (XAL)                                              | XAL = <b>Punta Arenas</b>                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                            | Lat = <b>530231 S</b>                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                          | Lon = <b>0705046 W</b>                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                         | PWR = <b>31.623 W</b>                                                                                                                                                                                                                                                   | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                   | XAP = <b>XAP07 R</b>                                                                                                                                                                                                                                                    | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                        | XAZ = <b>XAZ07 V10</b>                                                                                                                                                                                                                                                  | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                     | ANTENNA GAIN(dBi) <b>35.0 dBi</b><br>BEAMWIDTH@ ½ Power <b>2.76 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>36.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>3.2 meters</b><br><br>XAD = <b>XAD07 35G003B000-360A00036H003</b> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – Leaf Punta Arenas Chile (Transmitter 8) |                           |
|--------------------------------------------------------------|---------------------------|
| State (XSC)                                                  | XSC = <b>Chile</b>        |
|                                                              | XAL = <b>Punta Arenas</b> |

|                                  |                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| City Name<br>(XAL)               |                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Latitude<br>(DDMMSS)             | Lat = 530230 S                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude<br>(DDMMSS)            | Lon = 0705048 W                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Transmit<br>Power (PWR)          | PWR = 23.442 W                                                                                                                                                                                                               | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna<br>Polarization<br>(XAP) | XAP = XAP08 R                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna<br>Azimuth<br>(XAZ)      | XAZ = XAZ08 V10                                                                                                                                                                                                              | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna<br>Dimensions<br>(XAD)   | ANTENNA GAIN(dBi) 36.3 dBi<br>BEAMWIDTH@ ½ Power 2.7 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 36.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.2 meters<br><br>XAD = XAD08 36G003B000-360A00036H003 | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – Leaf Punta Arenas Chile (Transmitter 9) |                    |                                                                                                                           |
|--------------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                  | XSC = Chile        |                                                                                                                           |
| City Name<br>(XAL)                                           | XAL = Punta Arenas |                                                                                                                           |
| Latitude<br>(DDMMSS)                                         | Lat = 530230 S     |                                                                                                                           |
| Longitude<br>(DDMMSS)                                        | Lon = 0705045 W    |                                                                                                                           |
| Transmit<br>Power (PWR)                                      | PWR = 31.623 W     | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT, |

|                            |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
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|                            |                                                                                                                                                                                                                                                                                                                               | K = KILOWATT,<br>M = MEGAWATT                                                                                                                                                                                      |
| Antenna Polarization (XAP) | XAP = <a href="#">XAP09 R</a>                                                                                                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = <a href="#">XAZ09 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) <a href="#">35.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.76 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">36.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.2 meters</a><br><br>XAD = <a href="#">XAD09 35G003B000-360A00036H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – Leaf Punta Arenas Chile (Transmitter 10) |                                    |                                                                                                                                                                                                                    |
|---------------------------------------------------------------|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                   | XSC = <a href="#">Chile</a>        |                                                                                                                                                                                                                    |
| City Name (XAL)                                               | XAL = <a href="#">Punta Arenas</a> |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                             | Lat = <a href="#">530229 S</a>     |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                           | Lon = <a href="#">0705047 W</a>    |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                          | PWR = <a href="#">31.623 W</a>     | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP)                                    | XAP = <a href="#">XAP10 R</a>      | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
|                                                               | XAZ = <a href="#">XAZ10 V10</a>    |                                                                                                                                                                                                                    |



|                          |                                                                                                                                                                                                                                                                         |                                                                                           |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| Antenna Azimuth (XAZ)    |                                                                                                                                                                                                                                                                         | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90 |
| Antenna Dimensions (XAD) | ANTENNA GAIN(dBi) <b>35.0 dBi</b><br>BEAMWIDTH@ ½ Power <b>2.76 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>36.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>3.2 meters</b><br><br>XAD = <b>XAD10 35G003B000-360A00036H003</b> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                   |

| Earth Station Data – Leaf Santiago Chile (Transmitter 11) |                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                    |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                               | XSC = <b>Chile</b>                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                    |
| City Name (XAL)                                           | XAL = <b>Santiago</b>                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                         | Lat = <b>332153 S</b>                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                        | Lon = <b>0704620 W</b>                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                      | PWR = <b>31.623 W</b>                                                                                                                                                                                                                                                    | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                | XAP = <b>XAP11 R</b>                                                                                                                                                                                                                                                     | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                     | XAZ = <b>XAZ11 V10</b>                                                                                                                                                                                                                                                   | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                  | ANTENNA GAIN(dBi) <b>35.0 dBi</b><br>BEAMWIDTH@ ½ Power <b>2.76 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>464.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>3.2 meters</b><br><br>XAD = <b>XAD11 35G003B000-360A00464H003</b> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – Leaf Santiago Chile (Transmitter 12) |                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                               | XSC = <a href="#">Chile</a>                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| City Name (XAL)                                           | XAL = <a href="#">Santiago</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                         | Lat = <a href="#">332153 S</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                       | Lon = <a href="#">0704621 W</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                      | PWR = <a href="#">31.623 W</a>                                                                                                                                                                                                                                                                                                 | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                | XAP = <a href="#">XAP12 R</a>                                                                                                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                     | XAZ = <a href="#">XAZ12 V10</a>                                                                                                                                                                                                                                                                                                | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                  | ANTENNA GAIN(dBi) <a href="#">35.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.76 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">464.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.2 meters</a><br><br>XAD = <a href="#">XAD12 35G003B000-360A00464H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – Leaf Santiago Chile (Transmitter 13) |                                 |                                        |
|-----------------------------------------------------------|---------------------------------|----------------------------------------|
| State (XSC)                                               | XSC = <a href="#">Chile</a>     |                                        |
| City Name (XAL)                                           | XAL = <a href="#">Santiago</a>  |                                        |
| Latitude (DDMMSS)                                         | Lat = <a href="#">332154 S</a>  |                                        |
| Longitude (DDDMMSS)                                       | Lon = <a href="#">0704622 W</a> |                                        |
| Transmit Power (PWR)                                      | PWR = <a href="#">31.623 W</a>  | TRANSMIT POWER SUPPLIED TO THE ANTENNA |

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|                            |                                                                                                                                                                                                                                                                                                                                | INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                                                                |
| Antenna Polarization (XAP) | XAP = <a href="#">XAP13 R</a>                                                                                                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = <a href="#">XAZ13 V10</a>                                                                                                                                                                                                                                                                                                | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) <a href="#">35.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.76 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">464.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.2 meters</a><br><br>XAD = <a href="#">XAD13 35G003B000-360A00464H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

#### Earth Station Data – Leaf Blonduos Iceland (Transmitter 14)

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|----------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                | XSC = <a href="#">Iceland</a>   |                                                                                                                                                                               |
| City Name (XAL)            | XAL = <a href="#">Blonduos</a>  |                                                                                                                                                                               |
| Latitude (DDMMSS)          | Lat = <a href="#">653850 N</a>  |                                                                                                                                                                               |
| Longitude (DDMMSS)         | Lon = <a href="#">0201442 W</a> |                                                                                                                                                                               |
| Transmit Power (PWR)       | PWR = <a href="#">31.623 W</a>  | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                 |
| Antenna Polarization (XAP) | XAP = <a href="#">XAP14 R</a>   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND |

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| Antenna Azimuth (XAZ)    | XAZ = XAZ14 V10                                                                                                                                                                                                               | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90 |
| Antenna Dimensions (XAD) | ANTENNA GAIN(dBi) 35.0 dBi<br>BEAMWIDTH@ ½ Power 2.76 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 53.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.2 meters<br><br>XAD = XAD14 35G003B000-360A00053H002 | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                         |

| Earth Station Data – Leaf Blonduos Iceland (Transmitter 15) |                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                 | XSC = Iceland                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| City Name (XAL)                                             | XAL = Blonduos                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                           | Lat = 653851 N                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                         | Lon = 0201441 W                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                        | PWR = 6.310 W                                                                                                                                                                                                                | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP)                                  | XAP = XAP15 R                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                       | XAZ = XAZ15 V10                                                                                                                                                                                                              | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                    | ANTENNA GAIN(dBi) 37.0 dBi<br>BEAMWIDTH@ ½ Power 2.3 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 53.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>XAD = XAD15 37G002B000-360A00053H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                                                                                  |

| Earth Station Data – Leaf Blonduos Iceland (Transmitter 16) |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
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| State (XSC)                                                 | XSC = <a href="#">Iceland</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| City Name (XAL)                                             | XAL = <a href="#">Blonduos</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                           | Lat = <a href="#">653850 N</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                         | Lon = <a href="#">0201421 W</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                        | PWR = <a href="#">6.310 W</a>                                                                                                                                                                                                                                                                                                | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP)                                  | XAP = <a href="#">XAP16 R</a>                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                       | XAZ = <a href="#">XAZ16 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                    | ANTENNA GAIN(dBi) <a href="#">37.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.3 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">55.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.3 meters</a><br><br>XAD = <a href="#">XAD16 37G002B000-360A00055H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                                                                                  |

| Earth Station Data – Leaf Blonduos Iceland (Transmitter 17) |                                 |                                        |
|-------------------------------------------------------------|---------------------------------|----------------------------------------|
| State (XSC)                                                 | XSC = <a href="#">Iceland</a>   |                                        |
| City Name (XAL)                                             | XAL = <a href="#">Blonduos</a>  |                                        |
| Latitude (DDMMSS)                                           | Lat = <a href="#">653851 N</a>  |                                        |
| Longitude (DDDMMSS)                                         | Lon = <a href="#">0201421 W</a> |                                        |
| Transmit Power (PWR)                                        | PWR = <a href="#">31.623 W</a>  | TRANSMIT POWER SUPPLIED TO THE ANTENNA |

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|                            |                                                                                                                                                                                                                                                                                                                               | INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                                                                |
| Antenna Polarization (XAP) | XAP = <a href="#">XAP17 R</a>                                                                                                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = <a href="#">XAZ17 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) <a href="#">35.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.76 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">55.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>XAD = <a href="#">XAD17 35G003B000-360A00055H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – Leaf Blonduos Iceland (Transmitter 18) |                                 |                                                                                                                                                                               |
|-------------------------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                 | XSC = <a href="#">Iceland</a>   |                                                                                                                                                                               |
| City Name (XAL)                                             | XAL = <a href="#">Blonduos</a>  |                                                                                                                                                                               |
| Latitude (DDMMSS)                                           | Lat = <a href="#">653850 N</a>  |                                                                                                                                                                               |
| Longitude (DDMMSS)                                          | Lon = <a href="#">0201419 W</a> |                                                                                                                                                                               |
| Transmit Power (PWR)                                        | PWR = <a href="#">31.623 W</a>  | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                 |
| Antenna Polarization (XAP)                                  | XAP = <a href="#">XAP18 R</a>   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND |

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| Antenna Azimuth (XAZ)    | XAZ = XAZ18 V10                                                                                                                                                                                                               | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90 |
| Antenna Dimensions (XAD) | ANTENNA GAIN(dBi) 35.0 dBi<br>BEAMWIDTH@ ½ Power 2.76 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 55.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>XAD = XAD18 35G003B000-360A00055H003 | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                   |

| Earth Station Data – Leaf Kandy Sri Lanka (Transmitter 19) |                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
|------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                | XSC = Sri Lanka                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| City Name (XAL)                                            | XAL = Kandy                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                          | Lat = 071627 N                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                        | Lon = 0804329 E                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                       | PWR = 31.623 W                                                                                                                                                                                                                 | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                 | XAP = XAP19 R                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                      | XAZ = XAZ19 V10                                                                                                                                                                                                                | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                   | ANTENNA GAIN(dBi) 35.0 dBi<br>BEAMWIDTH@ ½ Power 2.76 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 456.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.2 meters<br><br>XAD = XAD19 35G003B000-360A00456H002 | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – Leaf Mon Loisir Mauritius (Transmitter 20) |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
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| State (XSC)                                                     | XSC = <a href="#">Mauritius</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| City Name (XAL)                                                 | XAL = <a href="#">Mon Loisir</a>                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">200822 S</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                              | Lon = <a href="#">0574113 E</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                            | PWR = <a href="#">19.953 W</a>                                                                                                                                                                                                                                                                                               | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                      | XAP = <a href="#">XAP20 R</a>                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                           | XAZ = <a href="#">XAZ20 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                        | ANTENNA GAIN(dBi) <a href="#">37.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.3 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">96.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.3 meters</a><br><br>XAD = <a href="#">XAD20 37G002B000-360A00096H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – Leaf La Paz Mexico (Transmitter 21) |                                 |                                        |
|----------------------------------------------------------|---------------------------------|----------------------------------------|
| State (XSC)                                              | XSC = <a href="#">Mexico</a>    |                                        |
| City Name (XAL)                                          | XAL = <a href="#">La Paz</a>    |                                        |
| Latitude (DDMMSS)                                        | Lat = <a href="#">240559 N</a>  |                                        |
| Longitude (DDMMSS)                                       | Lon = <a href="#">1102311 W</a> |                                        |
| Transmit Power (PWR)                                     | PWR = <a href="#">26.424 W</a>  | TRANSMIT POWER SUPPLIED TO THE ANTENNA |



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| Antenna Polarization (XAP) | XAP = XAP21 R                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = XAZ21 V10                                                                                                                                                                                                               | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) 36.28 dBi<br>BEAMWIDTH@ ½ Power 2.75 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 4.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.3 meters<br><br>XAD = XAD21 36G003B000-360A00004H003 | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

#### Earth Station Data – Leaf La Paz Mexico (Transmitter 22)

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| State (XSC)                | XSC = Mexico    |                                                                                                                                                                               |
| City Name (XAL)            | XAL = La Paz    |                                                                                                                                                                               |
| Latitude (DDMMSS)          | Lat = 240600 N  |                                                                                                                                                                               |
| Longitude (DDMMSS)         | Lon = 1102311 W |                                                                                                                                                                               |
| Transmit Power (PWR)       | PWR = 31.623 W  | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                 |
| Antenna Polarization (XAP) | XAP = XAP22 R   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND |

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| Antenna Azimuth (XAZ)    | XAZ = <a href="#">XAZ22 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90 |
| Antenna Dimensions (XAD) | ANTENNA GAIN(dBi) <a href="#">35.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.76 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">4.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.3 meters</a><br><br>XAD = <a href="#">XAD22 35G003B000-360A00004H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                         |

| Earth Station Data – Leaf Awarua New Zealand (Transmitter 23) |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
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| State (XSC)                                                   | XSC = <a href="#">New Zealand</a>                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                    |
| City Name (XAL)                                               | XAL = <a href="#">Awarua</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                             | Lat = <a href="#">463141 S</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                           | Lon = <a href="#">1682245 E</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                          | PWR = <a href="#">31.623 W</a>                                                                                                                                                                                                                                                                                                | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP)                                    | XAP = <a href="#">XAP23 R</a>                                                                                                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                         | XAZ = <a href="#">XAZ23 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                      | ANTENNA GAIN(dBi) <a href="#">35.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.76 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">10.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.2 meters</a><br><br>XAD = <a href="#">XAD23 35G003B000-360A00010H002</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                                                                                  |

| Earth Station Data – Leaf Awarua New Zealand (Transmitter 24) |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
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| State (XSC)                                                   | XSC = <a href="#">New Zealand</a>                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                    |
| City Name (XAL)                                               | XAL = <a href="#">Awarua</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                             | Lat = <a href="#">463158 S</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                            | Lon = <a href="#">1682304 E</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                          | PWR = <a href="#">31.623 W</a>                                                                                                                                                                                                                                                                                               | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                    | XAP = <a href="#">XAP24 R</a>                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                         | XAZ = <a href="#">XAZ24 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                      | ANTENNA GAIN(dBi) <a href="#">35.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.76 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">8.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.2 meters</a><br><br>XAD = <a href="#">XAD24 35G003B000-360A00008H002</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – Leaf Awarua New Zealand (Transmitter 25) |                                   |                                        |
|---------------------------------------------------------------|-----------------------------------|----------------------------------------|
| State (XSC)                                                   | XSC = <a href="#">New Zealand</a> |                                        |
| City Name (XAL)                                               | XAL = <a href="#">Awarua</a>      |                                        |
| Latitude (DDMMSS)                                             | Lat = <a href="#">463158 S</a>    |                                        |
| Longitude (DDMMSS)                                            | Lon = <a href="#">1682303 E</a>   |                                        |
| Transmit Power (PWR)                                          | PWR = <a href="#">23.442 W</a>    | TRANSMIT POWER SUPPLIED TO THE ANTENNA |

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|                            |                                                                                                                                                                                                                             | INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                                                                |
| Antenna Polarization (XAP) | XAP = XAP25 R                                                                                                                                                                                                               | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = XAZ25 V10                                                                                                                                                                                                             | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) 36.3 dBi<br>BEAMWIDTH@ ½ Power 2.7 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 8.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.2 meters<br><br>XAD = XAD25 36G003B000-360A00008H002 | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – Leaf Awarua New Zealand (Transmitter 26) |                   |                                                                                                                                                                               |
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| State (XSC)                                                   | XSC = New Zealand |                                                                                                                                                                               |
| City Name (XAL)                                               | XAL = Awarua      |                                                                                                                                                                               |
| Latitude (DDMMSS)                                             | Lat = 463155 S    |                                                                                                                                                                               |
| Longitude (DDMMSS)                                            | Lon = 1682303 E   |                                                                                                                                                                               |
| Transmit Power (PWR)                                          | PWR = 31.623 W    | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                 |
| Antenna Polarization (XAP)                                    | XAP = XAP26 R     | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND |

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| Antenna Azimuth (XAZ)    | XAZ = XAZ26 V10                                                                                                                                                                                                               | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90 |
| Antenna Dimensions (XAD) | ANTENNA GAIN(dBi) 35.0 dBi<br>BEAMWIDTH@ ½ Power 2.76 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 10.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.2 meters<br><br>XAD = XAD26 35G003B000-360A00010H002 | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                   |

| Earth Station Data – Leaf Santa Maria Azores (Transmitter 27) |                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
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| State (XSC)                                                   | XSC = Azores                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| City Name (XAL)                                               | XAL = Santa Maria                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                             | Lat = 365951 N                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                           | Lon = 0250814 W                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                          | PWR = 31.623 W                                                                                                                                                                                                                 | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                    | XAP = XAP27 R                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                         | XAZ = XAZ27 V10                                                                                                                                                                                                                | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                      | ANTENNA GAIN(dBi) 35.0 dBi<br>BEAMWIDTH@ ½ Power 2.76 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 194.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.2 meters<br><br>XAD = XAD27 35G003B000-360A00194H002 | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – Leaf Santa Maria Azores (Transmitter 28) |                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
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| State (XSC)                                                   | XSC = <a href="#">Azores</a>                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| City Name (XAL)                                               | XAL = <a href="#">Santa Maria</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                             | Lat = <a href="#">365950 N</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                            | Lon = <a href="#">0250814 W</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                          | PWR = <a href="#">31.623 W</a>                                                                                                                                                                                                                                                                                                 | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP)                                    | XAP = <a href="#">XAP28 R</a>                                                                                                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                         | XAZ = <a href="#">XAZ28 V10</a>                                                                                                                                                                                                                                                                                                | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                      | ANTENNA GAIN(dBi) <a href="#">35.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.76 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">195.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.2 meters</a><br><br>XAD = <a href="#">XAD28 35G003B000-360A00195H002</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                                                                                  |

| Earth Station Data – Leaf Talkeetna Alaska (Transmitter 29) |                                 |                                        |
|-------------------------------------------------------------|---------------------------------|----------------------------------------|
| State (XSC)                                                 | XSC = <a href="#">Alaska</a>    |                                        |
| City Name (XAL)                                             | XAL = <a href="#">Talkeetna</a> |                                        |
| Latitude (DDMMSS)                                           | Lat = <a href="#">621955 N</a>  |                                        |
| Longitude (DDMMSS)                                          | Lon = <a href="#">1500157 W</a> |                                        |
| Transmit Power (PWR)                                        | PWR = <a href="#">31.623 W</a>  | TRANSMIT POWER SUPPLIED TO THE ANTENNA |

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|                            |                                                                                                                                                                                                                                                                                                                                | INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                                                                |
| Antenna Polarization (XAP) | XAP = <a href="#">XAP29 R</a>                                                                                                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = <a href="#">XAZ29 V10</a>                                                                                                                                                                                                                                                                                                | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) <a href="#">35.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.76 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">143.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.5 meters</a><br><br>XAD = <a href="#">XAD29 35G003B000-360A00143H004</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

#### Earth Station Data – Leaf Pretoria South Africa (Transmitter 30)

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| State (XSC)                | XSC = <a href="#">South Africa</a> |                                                                                                                                                                               |
| City Name (XAL)            | XAL = <a href="#">Pretoria</a>     |                                                                                                                                                                               |
| Latitude (DDMMSS)          | Lat = <a href="#">255137 S</a>     |                                                                                                                                                                               |
| Longitude (DDMMSS)         | Lon = <a href="#">0282713 E</a>    |                                                                                                                                                                               |
| Transmit Power (PWR)       | PWR = <a href="#">31.623 W</a>     | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                 |
| Antenna Polarization (XAP) | XAP = <a href="#">XAP30 R</a>      | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND |

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| Antenna Azimuth (XAZ)    | XAZ = <a href="#">XAZ30 V10</a>                                                                                                                                                                                                                                                                                                 | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90 |
| Antenna Dimensions (XAD) | ANTENNA GAIN(dBi) <a href="#">35.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.76 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">1389.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.2 meters</a><br><br>XAD = <a href="#">XAD30 35G003B000-360A01389H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                         |

| Earth Station Data – Leaf Pretoria South Africa (Transmitter 31) |                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
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| State (XSC)                                                      | XSC = <a href="#">South Africa</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| City Name (XAL)                                                  | XAL = <a href="#">Pretoria</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                | Lat = <a href="#">255137 S</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                              | Lon = <a href="#">0282712 E</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                             | PWR = <a href="#">31.623 W</a>                                                                                                                                                                                                                                                                                                  | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                       | XAP = <a href="#">XAP31 R</a>                                                                                                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                            | XAZ = <a href="#">XAZ31 V10</a>                                                                                                                                                                                                                                                                                                 | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                         | ANTENNA GAIN(dBi) <a href="#">35.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.76 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">1389.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.2 meters</a><br><br>XAD = <a href="#">XAD31 35G003B000-360A01389H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                                                                                  |



| Earth Station Data – Leaf Nova Scotia Canada (Transmitter 32) |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
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| State (XSC)                                                   | XSC = <a href="#">Canada</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| City Name (XAL)                                               | XAL = <a href="#">Nova Scotia</a>                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                             | Lat = <a href="#">451904 N</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                            | Lon = <a href="#">0610209 W</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                          | PWR = <a href="#">31.623 W</a>                                                                                                                                                                                                                                                                                                | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                    | XAP = <a href="#">XAP32 R</a>                                                                                                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                         | XAZ = <a href="#">XAZ32 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                      | ANTENNA GAIN(dBi) <a href="#">35.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.76 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">25.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.2 meters</a><br><br>XAD = <a href="#">XAD32 35G003B000-360A00025H002</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – Leaf Al Ain United Arab Emirates (Transmitter 33) |                                            |                                        |
|------------------------------------------------------------------------|--------------------------------------------|----------------------------------------|
| State (XSC)                                                            | XSC = <a href="#">United Arab Emirates</a> |                                        |
| City Name (XAL)                                                        | XAL = <a href="#">Al Ain</a>               |                                        |
| Latitude (DDMMSS)                                                      | Lat = <a href="#">241156 N</a>             |                                        |
| Longitude (DDMMSS)                                                     | Lon = <a href="#">0554100 E</a>            |                                        |
| Transmit Power (PWR)                                                   | PWR = <a href="#">27.542 W</a>             | TRANSMIT POWER SUPPLIED TO THE ANTENNA |

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| Antenna Polarization (XAP) | XAP = <a href="#">XAP33 R</a>                                                                                                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = <a href="#">XAZ33 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) <a href="#">35.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.8 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">247.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.2 meters</a><br><br>XAD = <a href="#">XAD33 36G003B000-360A00247H002</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – Leaf Al Ain United Arab Emirates (Transmitter 34) |                                            |                                                                                                                                                                               |
|------------------------------------------------------------------------|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                            | XSC = <a href="#">United Arab Emirates</a> |                                                                                                                                                                               |
| City Name (XAL)                                                        | XAL = <a href="#">Al Ain</a>               |                                                                                                                                                                               |
| Latitude (DDMMSS)                                                      | Lat = <a href="#">241155 N</a>             |                                                                                                                                                                               |
| Longitude (DDMMSS)                                                     | Lon = <a href="#">0554100 E</a>            |                                                                                                                                                                               |
| Transmit Power (PWR)                                                   | PWR = <a href="#">27.542 W</a>             | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                 |
| Antenna Polarization (XAP)                                             | XAP = <a href="#">XAP34 R</a>              | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND |

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|                          |                                                                                                                                                                                                                                                                                                                               | CIRCULAR,<br>J = LINEAR POLARIZATION                                                      |
| Antenna Azimuth (XAZ)    | XAZ = <a href="#">XAZ34 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90 |
| Antenna Dimensions (XAD) | ANTENNA GAIN(dBi) <a href="#">35.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.8 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">248.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.2 meters</a><br><br>XAD = <a href="#">XAD34 36G003B000-360A00248H002</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                         |

| Earth Station Data – AnySignal Selfoss Iceland (Transmitter 35) |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
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| State (XSC)                                                     | XSC = <a href="#">Iceland</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| City Name (XAL)                                                 | XAL = <a href="#">Selfoss</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <a href="#">640304 N</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                             | Lon = <a href="#">0202518 W</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                            | PWR = <a href="#">69.984 W</a>                                                                                                                                                                                                                                                                                                | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP)                                      | XAP = <a href="#">XAP35 R</a>                                                                                                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                           | XAZ = <a href="#">XAZ35 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                        | ANTENNA GAIN(dBi) <a href="#">33.3 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">3.1 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">125.3 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.0 meters</a><br><br>XAD = <a href="#">XAD35 33G003B000-360A00125H002</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                                                                                  |

| Earth Station Data – AnySignal Colorado Springs Colorado (Transmitter 36) |                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
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| State (XSC)                                                               | XSC = <a href="#">Colorado</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| City Name (XAL)                                                           | XAL = <a href="#">Colorado Springs</a>                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                         | Lat = <a href="#">385638 N</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                                       | Lon = <a href="#">1044446 W</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                                      | PWR = <a href="#">69.984 W</a>                                                                                                                                                                                                                                                                                                 | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                                | XAP = <a href="#">XAP36 R</a>                                                                                                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                                     | XAZ = <a href="#">XAZ36 V10</a>                                                                                                                                                                                                                                                                                                | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                                  | ANTENNA GAIN(dBi) <a href="#">33.3 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">3.1 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">2076.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.0 meters</a><br><br>XAD = <a href="#">XAD36 33G003B000-360A02076H002</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – AnySignal Pitea Sweden (Transmitter 37) |                                 |                                        |
|--------------------------------------------------------------|---------------------------------|----------------------------------------|
| State (XSC)                                                  | XSC = <a href="#">Sweden</a>    |                                        |
| City Name (XAL)                                              | XAL = <a href="#">Pitea</a>     |                                        |
| Latitude (DDMMSS)                                            | Lat = <a href="#">652016 N</a>  |                                        |
| Longitude (DDDMMSS)                                          | Lon = <a href="#">0212531 E</a> |                                        |
| Transmit Power (PWR)                                         | PWR = <a href="#">69.984 W</a>  | TRANSMIT POWER SUPPLIED TO THE ANTENNA |

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|                            |                                                                                                                                                                                                                                                                                                                             | INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                                                                |
| Antenna Polarization (XAP) | XAP = <a href="#">XAP37 R</a>                                                                                                                                                                                                                                                                                               | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = <a href="#">XAZ37 V10</a>                                                                                                                                                                                                                                                                                             | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) <a href="#">33.3 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">3.1 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">9.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.0 meters</a><br><br>XAD = <a href="#">XAD37 33G003B000-360A00009H002</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – AnySignal Pretoria South Africa (Transmitter 38) |                                    |                                                                                                                                                                               |
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| State (XSC)                                                           | XSC = <a href="#">South Africa</a> |                                                                                                                                                                               |
| City Name (XAL)                                                       | XAL = <a href="#">Pretoria</a>     |                                                                                                                                                                               |
| Latitude (DDMMSS)                                                     | Lat = <a href="#">255137 S</a>     |                                                                                                                                                                               |
| Longitude (DDMMSS)                                                    | Lon = <a href="#">0282714 E</a>    |                                                                                                                                                                               |
| Transmit Power (PWR)                                                  | PWR = <a href="#">69.984 W</a>     | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                 |
| Antenna Polarization (XAP)                                            | XAP = <a href="#">XAP38 R</a>      | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND |

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| Antenna Azimuth (XAZ)    | XAZ = <a href="#">XAZ38 V10</a>                                                                                                                                                                                                                                                                                                | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90 |
| Antenna Dimensions (XAD) | ANTENNA GAIN(dBi) <a href="#">33.3 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">3.1 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">1393.5 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.0 meters</a><br><br>XAD = <a href="#">XAD38 33G003B000-360A01394H002</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                         |

| Earth Station Data – AnySignal Torrance California (Transmitter 39) |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
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| State (XSC)                                                         | XSC = <a href="#">California</a>                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                    |
| City Name (XAL)                                                     | XAL = <a href="#">Torrance</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                   | Lat = <a href="#">334827 N</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                                 | Lon = <a href="#">1182100 W</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                                | PWR = <a href="#">69.984 W</a>                                                                                                                                                                                                                                                                                               | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP)                                          | XAP = <a href="#">XAP39 R</a>                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                               | XAZ = <a href="#">XAZ39 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                            | ANTENNA GAIN(dBi) <a href="#">33.3 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">3.1 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">25.2 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.0 meters</a><br><br>XAD = <a href="#">XAD39 33G003B000-360A00025H002</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                                                                                  |

| Earth Station Data – AnySignal Awarua New Zealand (Transmitter 40) |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
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| State (XSC)                                                        | XSC = <a href="#">New Zealand</a>                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                    |
| City Name (XAL)                                                    | XAL = <a href="#">Awarua</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                  | Lat = <a href="#">463144 S</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                                 | Lon = <a href="#">1682251 E</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                               | PWR = <a href="#">69.984 W</a>                                                                                                                                                                                                                                                                                               | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                         | XAP = <a href="#">XAP40 R</a>                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                              | XAZ = <a href="#">XAZ40 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                           | ANTENNA GAIN(dBi) <a href="#">33.3 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">3.1 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">10.8 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.0 meters</a><br><br>XAD = <a href="#">XAD40 33G003B000-360A00011H002</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – AnySignal Punta Arenas Chile (Transmitter 41) |                                    |                                        |
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| State (XSC)                                                        | XSC = <a href="#">Chile</a>        |                                        |
| City Name (XAL)                                                    | XAL = <a href="#">Punta Arenas</a> |                                        |
| Latitude (DDMMSS)                                                  | Lat = <a href="#">530703 S</a>     |                                        |
| Longitude (DDMMSS)                                                 | Lon = <a href="#">0705339 W</a>    |                                        |
| Transmit Power (PWR)                                               | PWR = <a href="#">69.984 W</a>     | TRANSMIT POWER SUPPLIED TO THE ANTENNA |

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|                            |                                                                                                                                                                                                                                                                                                                              | INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                                                                |
| Antenna Polarization (XAP) | XAP = <a href="#">XAP41 R</a>                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = <a href="#">XAZ41 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) <a href="#">33.3 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">3.1 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">29.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.0 meters</a><br><br>XAD = <a href="#">XAD41 33G003B000-360A00029H002</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – AnySignal North Pole Alaska (Transmitter 42) |                                  |                                                                                                                                                                               |
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| State (XSC)                                                       | XSC = <a href="#">Alaska</a>     |                                                                                                                                                                               |
| City Name (XAL)                                                   | XAL = <a href="#">North Pole</a> |                                                                                                                                                                               |
| Latitude (DDMMSS)                                                 | Lat = <a href="#">644549 N</a>   |                                                                                                                                                                               |
| Longitude (DDMMSS)                                                | Lon = <a href="#">1472213 W</a>  |                                                                                                                                                                               |
| Transmit Power (PWR)                                              | PWR = <a href="#">69.984 W</a>   | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                 |
| Antenna Polarization (XAP)                                        | XAP = <a href="#">XAP42 R</a>    | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND |



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| Antenna Azimuth (XAZ)    | XAZ = <a href="#">XAZ42 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90 |
| Antenna Dimensions (XAD) | ANTENNA GAIN(dBi) <a href="#">33.3 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">3.1 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">148.7 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.0 meters</a><br><br>XAD = <a href="#">XAD42 33G003B000-360A00149H002</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                         |

| Earth Station Data – Northwood Bismarck North Dakota (Transmitter 43) |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
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| State (XSC)                                                           | XSC = <a href="#">North Dakota</a>                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                    |
| City Name (XAL)                                                       | XAL = <a href="#">Bismarck</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                     | Lat = <a href="#">465256 N</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                                   | Lon = <a href="#">1004817 W</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                                  | PWR = <a href="#">64.565 W</a>                                                                                                                                                                                                                                                                                                | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP)                                            | XAP = <a href="#">XAP43 R</a>                                                                                                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                                 | XAZ = <a href="#">XAZ43 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                              | ANTENNA GAIN(dBi) <a href="#">32.5 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">3.9 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">591.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.0 meters</a><br><br>XAD = <a href="#">XAD43 33G004B000-360A00591H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                                                                                  |

| Earth Station Data – Northwood Loring Maine (Transmitter 44) |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
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| State (XSC)                                                  | XSC = <a href="#">Maine</a>                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| City Name (XAL)                                              | XAL = <a href="#">Loring</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                            | Lat = <a href="#">465601 N</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                           | Lon = <a href="#">0675434 W</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                         | PWR = <a href="#">64.565 W</a>                                                                                                                                                                                                                                                                                                | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                   | XAP = <a href="#">XAP44 R</a>                                                                                                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                        | XAZ = <a href="#">XAZ44 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                     | ANTENNA GAIN(dBi) <a href="#">32.5 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">3.9 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">207.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.0 meters</a><br><br>XAD = <a href="#">XAD44 33G004B000-360A00207H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – Northwood Kihei Hawaii (Transmitter 45) |                                 |                                        |
|--------------------------------------------------------------|---------------------------------|----------------------------------------|
| State (XSC)                                                  | XSC = <a href="#">Hawaii</a>    |                                        |
| City Name (XAL)                                              | XAL = <a href="#">Kihei</a>     |                                        |
| Latitude (DDMMSS)                                            | Lat = <a href="#">204444 N</a>  |                                        |
| Longitude (DDMMSS)                                           | Lon = <a href="#">1562613 W</a> |                                        |
| Transmit Power (PWR)                                         | PWR = <a href="#">64.565 W</a>  | TRANSMIT POWER SUPPLIED TO THE ANTENNA |

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|                            |                                                                                                                                                                                                                                                                                                                              | INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                                                                |
| Antenna Polarization (XAP) | XAP = <a href="#">XAP45 R</a>                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = <a href="#">XAZ45 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) <a href="#">32.5 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">3.9 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">59.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.0 meters</a><br><br>XAD = <a href="#">XAD45 33G004B000-360A00059H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – Northwood Vodno Bulgaria (Transmitter 46) |                                 |                                                                                                                                                                               |
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| State (XSC)                                                    | XSC = <a href="#">Bulgaria</a>  |                                                                                                                                                                               |
| City Name (XAL)                                                | XAL = <a href="#">Vodno</a>     |                                                                                                                                                                               |
| Latitude (DDMMSS)                                              | Lat = <a href="#">435141 N</a>  |                                                                                                                                                                               |
| Longitude (DDMMSS)                                             | Lon = <a href="#">0270903 E</a> |                                                                                                                                                                               |
| Transmit Power (PWR)                                           | PWR = <a href="#">64.565 W</a>  | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                 |
| Antenna Polarization (XAP)                                     | XAP = <a href="#">XAP46 R</a>   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND |

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| Antenna Azimuth (XAZ)    | XAZ = XAZ46 V10                                                                                                                                                                                                               | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90 |
| Antenna Dimensions (XAD) | ANTENNA GAIN(dBi) 32.5 dBi<br>BEAMWIDTH@ ½ Power 3.9 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 219.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.0 meters<br><br>XAD = XAD46 33G004B000-360A00219H003 | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                   |

| Earth Station Data – Northwood Neu Poserin Germany (Transmitter 47) |                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
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| State (XSC)                                                         | XSC = Germany                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| City Name (XAL)                                                     | XAL = Neu Poserin                                                                                                                                                                                                            |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                   | Lat = 533315 N                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                                 | Lon = 0121327 E                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                                | PWR = 64.565 W                                                                                                                                                                                                               | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                          | XAP = XAP47 R                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                               | XAZ = XAZ47 V10                                                                                                                                                                                                              | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                            | ANTENNA GAIN(dBi) 32.5 dBi<br>BEAMWIDTH@ ½ Power 3.9 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 54.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.0 meters<br><br>XAD = XAD47 33G004B000-360A00054H003 | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – Northwood Rio Gallegos Argentina (Transmitter 48) |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
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| State (XSC)                                                            | XSC = <a href="#">Argentina</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| City Name (XAL)                                                        | XAL = <a href="#">Rio Gallegos</a>                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                      | Lat = <a href="#">514003 S</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                                    | Lon = <a href="#">0691551 W</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                                   | PWR = <a href="#">64.565 W</a>                                                                                                                                                                                                                                                                                               | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP)                                             | XAP = <a href="#">XAP48 R</a>                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                                  | XAZ = <a href="#">XAZ48 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                               | ANTENNA GAIN(dBi) <a href="#">32.5 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">3.9 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">21.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.0 meters</a><br><br>XAD = <a href="#">XAD48 33G004B000-360A00021H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                                                                                  |

| Earth Station Data – KSAT Athens Greece (Transmitter 49) |                                 |                                        |
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| State (XSC)                                              | XSC = <a href="#">Greece</a>    |                                        |
| City Name (XAL)                                          | XAL = <a href="#">Athens</a>    |                                        |
| Latitude (DDMMSS)                                        | Lat = <a href="#">375043 N</a>  |                                        |
| Longitude (DDDMMSS)                                      | Lon = <a href="#">0223726 E</a> |                                        |
| Transmit Power (PWR)                                     | PWR = <a href="#">10.000 W</a>  | TRANSMIT POWER SUPPLIED TO THE ANTENNA |

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|                            |                                                                                                                                                                                                                                                                                                                                | INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                                                                |
| Antenna Polarization (XAP) | XAP = <a href="#">XAP49 R</a>                                                                                                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = <a href="#">XAZ49 V10</a>                                                                                                                                                                                                                                                                                                | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) <a href="#">34.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.71 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">281.6 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>XAD = <a href="#">XAD49 34G003B000-360A00282H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

#### Earth Station Data – KSAT Fairbanks Alaska (Transmitter 50)

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| State (XSC)                | XSC = <a href="#">Alaska</a>    |                                                                                                                                                                               |
| City Name (XAL)            | XAL = <a href="#">Fairbanks</a> |                                                                                                                                                                               |
| Latitude (DDMMSS)          | Lat = <a href="#">644904 N</a>  |                                                                                                                                                                               |
| Longitude (DDMMSS)         | Lon = <a href="#">1474330 W</a> |                                                                                                                                                                               |
| Transmit Power (PWR)       | PWR = <a href="#">8.710 W</a>   | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                 |
| Antenna Polarization (XAP) | XAP = <a href="#">XAP50 R</a>   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND |

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| Antenna Azimuth (XAZ)    | XAZ = XAZ50 V10                                                                                                                                                                                                                 | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90 |
| Antenna Dimensions (XAD) | ANTENNA GAIN(dBi) 35.6 dBi<br>BEAMWIDTH@ ½ Power 2.3 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 135.484 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>XAD = XAD50 36G002B000-360A00135H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                         |

| Earth Station Data – KSAT Jeju South Korea (Transmitter 51) |                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
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| State (XSC)                                                 | XSC = South Korea                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| City Name (XAL)                                             | XAL = Jeju                                                                                                                                                                                                                       |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                           | Lat = 332314 N                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                         | Lon = 1261901 E                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                        | PWR = 10.000 W                                                                                                                                                                                                                   | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP)                                  | XAP = XAP51 R                                                                                                                                                                                                                    | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                       | XAZ = XAZ51 V10                                                                                                                                                                                                                  | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                    | ANTENNA GAIN(dBi) 34.0 dBi<br>BEAMWIDTH@ ½ Power 2.71 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 240.497 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>XAD = XAD51 34G003B000-360A00240H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                                                                                  |

| Earth Station Data – KSAT Jeju South Korea (Transmitter 52) |                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
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| State (XSC)                                                 | XSC = <a href="#">South Korea</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| City Name (XAL)                                             | XAL = <a href="#">Jeju</a>                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                           | Lat = <a href="#">332314 N</a>                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                          | Lon = <a href="#">1261904 E</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                        | PWR = <a href="#">10.000 W</a>                                                                                                                                                                                                                                                                                                   | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                  | XAP = <a href="#">XAP52 R</a>                                                                                                                                                                                                                                                                                                    | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                       | XAZ = <a href="#">XAZ52 V10</a>                                                                                                                                                                                                                                                                                                  | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                    | ANTENNA GAIN(dBi) <a href="#">34.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.71 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">239.946 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>XAD = <a href="#">XAD52 34G003B000-360A00240H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – KSAT Jeju South Korea (Transmitter 53) |                                   |                                        |
|-------------------------------------------------------------|-----------------------------------|----------------------------------------|
| State (XSC)                                                 | XSC = <a href="#">South Korea</a> |                                        |
| City Name (XAL)                                             | XAL = <a href="#">Jeju</a>        |                                        |
| Latitude (DDMMSS)                                           | Lat = <a href="#">332315 N</a>    |                                        |
| Longitude (DDMMSS)                                          | Lon = <a href="#">1261902 E</a>   |                                        |
| Transmit Power (PWR)                                        | PWR = <a href="#">10.000 W</a>    | TRANSMIT POWER SUPPLIED TO THE ANTENNA |



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|                            |                                                                                                                                                                                                                                                                                                                                  | INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                                                                |
| Antenna Polarization (XAP) | XAP = <a href="#">XAP53 R</a>                                                                                                                                                                                                                                                                                                    | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = <a href="#">XAZ53 V10</a>                                                                                                                                                                                                                                                                                                  | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) <a href="#">34.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.71 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">238.992 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>XAD = <a href="#">XAD53 34G003B000-360A00239H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – KSAT Bel Ombre Mauritius (Transmitter 54) |                                 |                                                                                                                                                                               |
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| State (XSC)                                                    | XSC = <a href="#">Mauritius</a> |                                                                                                                                                                               |
| City Name (XAL)                                                | XAL = <a href="#">Bel Ombre</a> |                                                                                                                                                                               |
| Latitude (DDMMSS)                                              | Lat = <a href="#">203002 S</a>  |                                                                                                                                                                               |
| Longitude (DDMMSS)                                             | Lon = <a href="#">0572703 E</a> |                                                                                                                                                                               |
| Transmit Power (PWR)                                           | PWR = <a href="#">10.000 W</a>  | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                 |
| Antenna Polarization (XAP)                                     | XAP = <a href="#">XAP54 R</a>   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND |

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| Antenna Azimuth (XAZ)    | XAZ = <a href="#">XAZ54 V10</a>                                                                                                                                                                                                                                                                                                 | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90 |
| Antenna Dimensions (XAD) | ANTENNA GAIN(dBi) <a href="#">34.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.71 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">26.221 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>XAD = <a href="#">XAD54 34G003B000-360A00026H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                         |

| Earth Station Data – KSAT Mingenew Australia (Transmitter 55) |                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
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| State (XSC)                                                   | XSC = <a href="#">Australia</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| City Name (XAL)                                               | XAL = <a href="#">Mingenew</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                             | Lat = <a href="#">290039 S</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                           | Lon = <a href="#">1152029 E</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                          | PWR = <a href="#">10.000 W</a>                                                                                                                                                                                                                                                                                                 | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP)                                    | XAP = <a href="#">XAP55 R</a>                                                                                                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                         | XAZ = <a href="#">XAZ55 V10</a>                                                                                                                                                                                                                                                                                                | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                      | ANTENNA GAIN(dBi) <a href="#">34.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.71 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">265.5 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>XAD = <a href="#">XAD55 34G003B000-360A00266H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                                                                                  |

| Earth Station Data – KSAT Mingenew Australia (Transmitter 56) |                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
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| State (XSC)                                                   | XSC = <a href="#">Australia</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| City Name (XAL)                                               | XAL = <a href="#">Mingenew</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                             | Lat = <a href="#">290040 S</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                            | Lon = <a href="#">1152030 E</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                          | PWR = <a href="#">10.000 W</a>                                                                                                                                                                                                                                                                                                 | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                    | XAP = <a href="#">XAP56 R</a>                                                                                                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                         | XAZ = <a href="#">XAZ56 V10</a>                                                                                                                                                                                                                                                                                                | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                      | ANTENNA GAIN(dBi) <a href="#">34.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.71 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">266.3 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>XAD = <a href="#">XAD56 34G003B000-360A00266H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – KSAT Mingenew Australia (Transmitter 57) |                                 |                                        |
|---------------------------------------------------------------|---------------------------------|----------------------------------------|
| State (XSC)                                                   | XSC = <a href="#">Australia</a> |                                        |
| City Name (XAL)                                               | XAL = <a href="#">Mingenew</a>  |                                        |
| Latitude (DDMMSS)                                             | Lat = <a href="#">290040 S</a>  |                                        |
| Longitude (DDMMSS)                                            | Lon = <a href="#">1152032 E</a> |                                        |
| Transmit Power (PWR)                                          | PWR = <a href="#">10.000 W</a>  | TRANSMIT POWER SUPPLIED TO THE ANTENNA |

|                            |                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
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|                            |                                                                                                                                                                                                                                | INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                                                                   |
| Antenna Polarization (XAP) | XAP = XAP57 R                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = XAZ57 V10                                                                                                                                                                                                                | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) 34.0 dBi<br>BEAMWIDTH@ ½ Power 2.71 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 266.7 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>XAD = XAD57 34G003B000-360A00267H003 | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – KSAT Mingenew Australia (Transmitter 58) |                 |                                                                                                                                                                               |
|---------------------------------------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                   | XSC = Australia |                                                                                                                                                                               |
| City Name (XAL)                                               | XAL = Mingenew  |                                                                                                                                                                               |
| Latitude (DDMMSS)                                             | Lat = 290040 S  |                                                                                                                                                                               |
| Longitude (DDMMSS)                                            | Lon = 1152033 E |                                                                                                                                                                               |
| Transmit Power (PWR)                                          | PWR = 10.000 W  | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                    |
| Antenna Polarization (XAP)                                    | XAP = XAP58 R   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND |

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| Antenna Azimuth (XAZ)    | XAZ = <a href="#">XAZ58 V10</a>                                                                                                                                                                                                                                                                                                | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90 |
| Antenna Dimensions (XAD) | ANTENNA GAIN(dBi) <a href="#">34.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.71 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">267.2 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>XAD = <a href="#">XAD58 34G003B000-360A00267H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                         |

| Earth Station Data – KSAT Awarua New Zealand (Transmitter 59) |                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                   | XSC = <a href="#">New Zealand</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| City Name (XAL)                                               | XAL = <a href="#">Awarua</a>                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                             | Lat = <a href="#">463142 S</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                           | Lon = <a href="#">1682244 E</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                          | PWR = <a href="#">10.000 W</a>                                                                                                                                                                                                                                                                                                  | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP)                                    | XAP = <a href="#">XAP59 R</a>                                                                                                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                         | XAZ = <a href="#">XAZ59 V10</a>                                                                                                                                                                                                                                                                                                 | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                      | ANTENNA GAIN(dBi) <a href="#">34.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.71 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">12.559 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>XAD = <a href="#">XAD59 34G003B000-360A00013H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                                                                                  |

| Earth Station Data – KSAT Awarua New Zealand (Transmitter 60) |                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
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| State (XSC)                                                   | XSC = <a href="#">New Zealand</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| City Name (XAL)                                               | XAL = <a href="#">Awarua</a>                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                             | Lat = <a href="#">463146 S</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                            | Lon = <a href="#">1682250 E</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                          | PWR = <a href="#">10.000 W</a>                                                                                                                                                                                                                                                                                                  | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                    | XAP = <a href="#">XAP60 R</a>                                                                                                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                         | XAZ = <a href="#">XAZ60 V10</a>                                                                                                                                                                                                                                                                                                 | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                      | ANTENNA GAIN(dBi) <a href="#">34.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.71 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">12.294 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>XAD = <a href="#">XAD60 34G003B000-360A00012H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – KSAT Awarua New Zealand (Transmitter 61) |                                   |                                        |
|---------------------------------------------------------------|-----------------------------------|----------------------------------------|
| State (XSC)                                                   | XSC = <a href="#">New Zealand</a> |                                        |
| City Name (XAL)                                               | XAL = <a href="#">Awarua</a>      |                                        |
| Latitude (DDMMSS)                                             | Lat = <a href="#">463156 S</a>    |                                        |
| Longitude (DDMMSS)                                            | Lon = <a href="#">1682304 E</a>   |                                        |
| Transmit Power (PWR)                                          | PWR = <a href="#">10.000 W</a>    | TRANSMIT POWER SUPPLIED TO THE ANTENNA |

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|                            |                                                                                                                                                                                                                                | INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                                                                |
| Antenna Polarization (XAP) | XAP = XAP61 R                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = XAZ61 V10                                                                                                                                                                                                                | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) 34.0 dBi<br>BEAMWIDTH@ ½ Power 2.71 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 9.244 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>XAD = XAD61 34G003B000-360A00009H003 | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – KSAT Awarua New Zealand (Transmitter 62) |                   |                                                                                                                                                                               |
|---------------------------------------------------------------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                   | XSC = New Zealand |                                                                                                                                                                               |
| City Name (XAL)                                               | XAL = Awarua      |                                                                                                                                                                               |
| Latitude (DDMMSS)                                             | Lat = 463157 S    |                                                                                                                                                                               |
| Longitude (DDMMSS)                                            | Lon = 1682302 E   |                                                                                                                                                                               |
| Transmit Power (PWR)                                          | PWR = 8.710 W     | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                 |
| Antenna Polarization (XAP)                                    | XAP = XAP62 R     | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND |

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|                          |                                                                                                                                                                                                                                                                                                                               | CIRCULAR,<br>J = LINEAR POLARIZATION                                                      |
| Antenna Azimuth (XAZ)    | XAZ = <a href="#">XAZ62 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90 |
| Antenna Dimensions (XAD) | ANTENNA GAIN(dBi) <a href="#">35.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.3 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">9.226 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>XAD = <a href="#">XAD62 36G002B000-360A00009H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                         |

| Earth Station Data – KSAT Punta Arenas Chile (Transmitter 63) |                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                   | XSC = <a href="#">Chile</a>                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                    |
| City Name (XAL)                                               | XAL = <a href="#">Punta Arenas</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                             | Lat = <a href="#">525608 S</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                           | Lon = <a href="#">0705224 W</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                          | PWR = <a href="#">10.000 W</a>                                                                                                                                                                                                                                                                                                  | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP)                                    | XAP = <a href="#">XAP63 R</a>                                                                                                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                         | XAZ = <a href="#">XAZ63 V10</a>                                                                                                                                                                                                                                                                                                 | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                      | ANTENNA GAIN(dBi) <a href="#">34.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.71 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">25.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">4.096 meters</a><br><br>XAD = <a href="#">XAD63 34G003B000-360A00025H004</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                                                                                  |



| Earth Station Data – KSAT Punta Arenas Chile (Transmitter 64) |                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
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| State (XSC)                                                   | XSC = <a href="#">Chile</a>                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                    |
| City Name (XAL)                                               | XAL = <a href="#">Punta Arenas</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                             | Lat = <a href="#">525608 S</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                           | Lon = <a href="#">0705225 W</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                          | PWR = <a href="#">10.000 W</a>                                                                                                                                                                                                                                                                                                  | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                    | XAP = <a href="#">XAP64 R</a>                                                                                                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                         | XAZ = <a href="#">XAZ64 V10</a>                                                                                                                                                                                                                                                                                                 | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                      | ANTENNA GAIN(dBi) <a href="#">34.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.71 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">25.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">4.129 meters</a><br><br>XAD = <a href="#">XAD64 34G003B000-360A00025H004</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – KSAT Punta Arenas Chile (Transmitter 65) |                                    |                                        |
|---------------------------------------------------------------|------------------------------------|----------------------------------------|
| State (XSC)                                                   | XSC = <a href="#">Chile</a>        |                                        |
| City Name (XAL)                                               | XAL = <a href="#">Punta Arenas</a> |                                        |
| Latitude (DDMMSS)                                             | Lat = <a href="#">525603 S</a>     |                                        |
| Longitude (DDDMMSS)                                           | Lon = <a href="#">0705224 W</a>    |                                        |
| Transmit Power (PWR)                                          | PWR = <a href="#">8.710 W</a>      | TRANSMIT POWER SUPPLIED TO THE ANTENNA |

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| Antenna Polarization (XAP) | XAP = XAP65 R                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = XAZ65 V10                                                                                                                                                                                                              | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) 35.6 dBi<br>BEAMWIDTH@ ½ Power 2.3 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 25.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 4.5 meters<br><br>XAD = XAD65 36G002B000-360A00025H005 | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – KSAT Puertollano Spain (Transmitter 66) |                   |                                                                                                                                                                               |
|--------------------------------------------------------------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                  | XSC = Spain       |                                                                                                                                                                               |
| City Name (XAL)                                              | XAL = Puertollano |                                                                                                                                                                               |
| Latitude (DDMMSS)                                            | Lat = 384020 N    |                                                                                                                                                                               |
| Longitude (DDMMSS)                                           | Lon = 0040946 W   |                                                                                                                                                                               |
| Transmit Power (PWR)                                         | PWR = 10.000 W    | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                 |
| Antenna Polarization (XAP)                                   | XAP = XAP66 R     | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND |

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| Antenna Azimuth (XAZ)    | XAZ = <a href="#">XAZ66 V10</a>                                                                                                                                                                                                                                                                                                  | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90 |
| Antenna Dimensions (XAD) | ANTENNA GAIN(dBi) <a href="#">34.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.71 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">685.841 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">4.5 meters</a><br><br>XAD = <a href="#">XAD66 34G003B000-360A00686H005</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                         |

| Earth Station Data – KSAT Puertollano Spain (Transmitter 67) |                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
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| State (XSC)                                                  | XSC = <a href="#">Spain</a>                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                    |
| City Name (XAL)                                              | XAL = <a href="#">Puertollano</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                            | Lat = <a href="#">384019 N</a>                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                          | Lon = <a href="#">0040946 W</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                         | PWR = <a href="#">10.000 W</a>                                                                                                                                                                                                                                                                                                   | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP)                                   | XAP = <a href="#">XAP67 R</a>                                                                                                                                                                                                                                                                                                    | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                        | XAZ = <a href="#">XAZ67 V10</a>                                                                                                                                                                                                                                                                                                  | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                     | ANTENNA GAIN(dBi) <a href="#">34.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.71 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">684.597 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">4.5 meters</a><br><br>XAD = <a href="#">XAD67 34G003B000-360A00685H005</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                                                                                  |

| Earth Station Data – KSAT Hartebeesthoek South Africa (Transmitter 68) |                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                            | XSC = <a href="#">South Africa</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| City Name (XAL)                                                        | XAL = <a href="#">Hartebeesthoek</a>                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                      | Lat = <a href="#">255310 S</a>                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                                     | Lon = <a href="#">0274222 E</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                                   | PWR = <a href="#">10.000 W</a>                                                                                                                                                                                                                                                                                                   | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP)                                             | XAP = <a href="#">XAP68 R</a>                                                                                                                                                                                                                                                                                                    | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                                  | XAZ = <a href="#">XAZ68 V10</a>                                                                                                                                                                                                                                                                                                  | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                               | ANTENNA GAIN(dBi) <a href="#">34.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.71 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">1564.73 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>XAD = <a href="#">XAD68 34G003B000-360A01565H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                                                                                  |

| Earth Station Data – KSAT Hartebeesthoek South Africa (Transmitter 69) |                                      |                                        |
|------------------------------------------------------------------------|--------------------------------------|----------------------------------------|
| State (XSC)                                                            | XSC = <a href="#">South Africa</a>   |                                        |
| City Name (XAL)                                                        | XAL = <a href="#">Hartebeesthoek</a> |                                        |
| Latitude (DDMMSS)                                                      | Lat = <a href="#">255312 S</a>       |                                        |
| Longitude (DDMMSS)                                                     | Lon = <a href="#">0274222 E</a>      |                                        |
| Transmit Power (PWR)                                                   | PWR = <a href="#">10.000 W</a>       | TRANSMIT POWER SUPPLIED TO THE ANTENNA |

|                            |                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
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|                            |                                                                                                                                                                                                                                 | INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                                                                |
| Antenna Polarization (XAP) | XAP = XAP69 R                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = XAZ69 V10                                                                                                                                                                                                                 | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) 34.0 dBi<br>BEAMWIDTH@ ½ Power 2.71 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 1568.5 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>XAD = XAD69 34G003B000-360A01569H003 | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – KSAT Puunene Hawaii (Transmitter 70) |                 |                                                                                                                                                                               |
|-----------------------------------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                               | XSC = Hawaii    |                                                                                                                                                                               |
| City Name (XAL)                                           | XAL = Puunene   |                                                                                                                                                                               |
| Latitude (DDMMSS)                                         | Lat = 204902 N  |                                                                                                                                                                               |
| Longitude (DDMMSS)                                        | Lon = 1562717 W |                                                                                                                                                                               |
| Transmit Power (PWR)                                      | PWR = 10.000 W  | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                 |
| Antenna Polarization (XAP)                                | XAP = XAP70 R   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND |

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| Antenna Azimuth (XAZ)    | XAZ = <a href="#">XAZ70 V10</a>                                                                                                                                                                                                                                                                                                 | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90 |
| Antenna Dimensions (XAD) | ANTENNA GAIN(dBi) <a href="#">34.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.71 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">43.46 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">5.66 meters</a><br><br>XAD = <a href="#">XAD70 34G003B000-360A00043H006</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                         |

| Earth Station Data – KSAT Puunene Hawaii (Transmitter 71) |                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                               | XSC = <a href="#">Hawaii</a>                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| City Name (XAL)                                           | XAL = <a href="#">Puunene</a>                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                         | Lat = <a href="#">204901 N</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                       | Lon = <a href="#">1562716 W</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                      | PWR = <a href="#">10.000 W</a>                                                                                                                                                                                                                                                                                                  | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP)                                | XAP = <a href="#">XAP71 R</a>                                                                                                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                     | XAZ = <a href="#">XAZ71 V10</a>                                                                                                                                                                                                                                                                                                 | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                  | ANTENNA GAIN(dBi) <a href="#">34.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.71 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">43.46 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">5.66 meters</a><br><br>XAD = <a href="#">XAD71 34G003B000-360A00043H006</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                                                                                  |

| Earth Station Data – KSAT Puunene Hawaii (Transmitter 72) |                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                               | XSC = <a href="#">Hawaii</a>                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| City Name (XAL)                                           | XAL = <a href="#">Puunene</a>                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                         | Lat = <a href="#">204903 N</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                        | Lon = <a href="#">1562716 W</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                      | PWR = <a href="#">10.000 W</a>                                                                                                                                                                                                                                                                                                  | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                | XAP = <a href="#">XAP72 R</a>                                                                                                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                     | XAZ = <a href="#">XAZ72 V10</a>                                                                                                                                                                                                                                                                                                 | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                  | ANTENNA GAIN(dBi) <a href="#">34.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.71 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">43.33 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">5.23 meters</a><br><br>XAD = <a href="#">XAD72 34G003B000-360A00043H005</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – KSAT Tromso Norway (Transmitter 73) |                                 |                                        |
|----------------------------------------------------------|---------------------------------|----------------------------------------|
| State (XSC)                                              | XSC = <a href="#">Norway</a>    |                                        |
| City Name (XAL)                                          | XAL = <a href="#">Tromso</a>    |                                        |
| Latitude (DDMMSS)                                        | Lat = <a href="#">693944 N</a>  |                                        |
| Longitude (DDMMSS)                                       | Lon = <a href="#">0185629 E</a> |                                        |
| Transmit Power (PWR)                                     | PWR = <a href="#">10.000 W</a>  | TRANSMIT POWER SUPPLIED TO THE ANTENNA |

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| Antenna Polarization (XAP) | XAP = <a href="#">XAP73 R</a>                                                                                                                                                                                                                                                                                                     | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = <a href="#">XAZ73 V10</a>                                                                                                                                                                                                                                                                                                   | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) <a href="#">32.4 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">3.26 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">135.4527 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>XAD = <a href="#">XAD73 32G003B000-360A00135H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

#### Earth Station Data – KSAT Dublin Ireland (Transmitter 74)

|                            |                                 |                                                                                                                                                                               |
|----------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                | XSC = <a href="#">Ireland</a>   |                                                                                                                                                                               |
| City Name (XAL)            | XAL = <a href="#">Dublin</a>    |                                                                                                                                                                               |
| Latitude (DDMMSS)          | Lat = <a href="#">532424 N</a>  |                                                                                                                                                                               |
| Longitude (DDMMSS)         | Lon = <a href="#">0061328 W</a> |                                                                                                                                                                               |
| Transmit Power (PWR)       | PWR = <a href="#">16.982 W</a>  | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                 |
| Antenna Polarization (XAP) | XAP = <a href="#">XAP74 R</a>   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND |



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| Antenna Azimuth (XAZ)    | XAZ = <a href="#">XAZ74 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90 |
| Antenna Dimensions (XAD) | ANTENNA GAIN(dBi) <a href="#">37.7 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">1.9 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">84.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>XAD = <a href="#">XAD74 38G002B000-360A00084H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                         |

| Earth Station Data – KSAT Columbus Ohio (Transmitter 75) |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
|----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                              | XSC = <a href="#">Ohio</a>                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| City Name (XAL)                                          | XAL = <a href="#">Columbus</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                        | Lat = <a href="#">400603 N</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                      | Lon = <a href="#">0831151 W</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                     | PWR = <a href="#">16.982 W</a>                                                                                                                                                                                                                                                                                                | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP)                               | XAP = <a href="#">XAP75 R</a>                                                                                                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                    | XAZ = <a href="#">XAZ75 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                 | ANTENNA GAIN(dBi) <a href="#">37.7 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">1.9 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">282.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>XAD = <a href="#">XAD75 38G002B000-360A00282H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                                                                                  |

| Earth Station Data – KSAT Boardman Oregon (Transmitter 76) |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                | XSC = <a href="#">Oregon</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| City Name (XAL)                                            | XAL = <a href="#">Boardman</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                          | Lat = <a href="#">455116 N</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                        | Lon = <a href="#">1193755 W</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                       | PWR = <a href="#">16.982 W</a>                                                                                                                                                                                                                                                                                                | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                 | XAP = <a href="#">XAP76 R</a>                                                                                                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                      | XAZ = <a href="#">XAZ76 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                   | ANTENNA GAIN(dBi) <a href="#">37.7 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">1.9 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">101.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>XAD = <a href="#">XAD76 38G002B000-360A00101H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – KSAT Kapolei Hawaii (Transmitter 77) |                                 |                                        |
|-----------------------------------------------------------|---------------------------------|----------------------------------------|
| State (XSC)                                               | XSC = <a href="#">Hawaii</a>    |                                        |
| City Name (XAL)                                           | XAL = <a href="#">Kapolei</a>   |                                        |
| Latitude (DDMMSS)                                         | Lat = <a href="#">212012 N</a>  |                                        |
| Longitude (DDDMMSS)                                       | Lon = <a href="#">1580524 W</a> |                                        |
| Transmit Power (PWR)                                      | PWR = <a href="#">16.982 W</a>  | TRANSMIT POWER SUPPLIED TO THE ANTENNA |

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| Antenna Polarization (XAP) | XAP = <a href="#">XAP77 R</a>                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = <a href="#">XAZ77 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) <a href="#">37.7 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">1.9 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">52.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>XAD = <a href="#">XAD77 38G002B000-360A00052H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – KSAT Punta Arenas Chile (Transmitter 78) |                                    |                                                                                                                                                                               |
|---------------------------------------------------------------|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                   | XSC = <a href="#">Chile</a>        |                                                                                                                                                                               |
| City Name (XAL)                                               | XAL = <a href="#">Punta Arenas</a> |                                                                                                                                                                               |
| Latitude (DDMMSS)                                             | Lat = <a href="#">525632 S</a>     |                                                                                                                                                                               |
| Longitude (DDMMSS)                                            | Lon = <a href="#">0705059 W</a>    |                                                                                                                                                                               |
| Transmit Power (PWR)                                          | PWR = <a href="#">16.982 W</a>     | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                 |
| Antenna Polarization (XAP)                                    | XAP = <a href="#">XAP78 R</a>      | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND |

|                          |                                                                                                                                                                                                                                                                                                                             |                                                                                           |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
|                          |                                                                                                                                                                                                                                                                                                                             | CIRCULAR,<br>J = LINEAR POLARIZATION                                                      |
| Antenna Azimuth (XAZ)    | XAZ = <a href="#">XAZ78 V10</a>                                                                                                                                                                                                                                                                                             | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90 |
| Antenna Dimensions (XAD) | ANTENNA GAIN(dBi) <a href="#">37.7 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">1.9 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">4.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>XAD = <a href="#">XAD78 38G002B000-360A00004H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                         |

| Earth Station Data – KSAT Deadhorse Alaska (Transmitter 79) |                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                    |
|-------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                 | XSC = <a href="#">Alaska</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| City Name (XAL)                                             | XAL = <a href="#">Deadhorse</a>                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                           | Lat = <a href="#">701214 N</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                         | Lon = <a href="#">1482824 W</a>                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                        | PWR = <a href="#">16.982 W</a>                                                                                                                                                                                                                                                                                              | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP)                                  | XAP = <a href="#">XAP79 R</a>                                                                                                                                                                                                                                                                                               | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                       | XAZ = <a href="#">XAZ79 V10</a>                                                                                                                                                                                                                                                                                             | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                    | ANTENNA GAIN(dBi) <a href="#">37.7 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">1.9 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">5.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>XAD = <a href="#">XAD79 38G002B000-360A00005H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                                                                                  |

| Earth Station Data – KSAT Singapore Singapore (Transmitter 80) |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                    | XSC = <a href="#">Singapore</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| City Name (XAL)                                                | XAL = <a href="#">Singapore</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                              | Lat = <a href="#">011859 N</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                             | Lon = <a href="#">1034203 E</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                           | PWR = <a href="#">16.982 W</a>                                                                                                                                                                                                                                                                                               | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                     | XAP = <a href="#">XAP80 R</a>                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                          | XAZ = <a href="#">XAZ80 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                       | ANTENNA GAIN(dBi) <a href="#">37.7 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">1.9 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">82.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>XAD = <a href="#">XAD80 38G002B000-360A00082H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – KSAT Stockholm Sweden (Transmitter 81) |                                 |                                        |
|-------------------------------------------------------------|---------------------------------|----------------------------------------|
| State (XSC)                                                 | XSC = <a href="#">Sweden</a>    |                                        |
| City Name (XAL)                                             | XAL = <a href="#">Stockholm</a> |                                        |
| Latitude (DDMMSS)                                           | Lat = <a href="#">593857 N</a>  |                                        |
| Longitude (DDMMSS)                                          | Lon = <a href="#">0163505 E</a> |                                        |
| Transmit Power (PWR)                                        | PWR = <a href="#">16.982 W</a>  | TRANSMIT POWER SUPPLIED TO THE ANTENNA |

|                            |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                            |                                                                                                                                                                                                                                                                                                                              | INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                                                                |
| Antenna Polarization (XAP) | XAP = <a href="#">XAP81 R</a>                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = <a href="#">XAZ81 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) <a href="#">37.7 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">1.9 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">39.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>XAD = <a href="#">XAD81 38G002B000-360A00039H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

#### Earth Station Data – KSAT Sydney Australia (Transmitter 82)

|                            |                                 |                                                                                                                                                                               |
|----------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                | XSC = <a href="#">Australia</a> |                                                                                                                                                                               |
| City Name (XAL)            | XAL = <a href="#">Sydney</a>    |                                                                                                                                                                               |
| Latitude (DDMMSS)          | Lat = <a href="#">321031 S</a>  |                                                                                                                                                                               |
| Longitude (DDMMSS)         | Lon = <a href="#">1483656 E</a> |                                                                                                                                                                               |
| Transmit Power (PWR)       | PWR = <a href="#">16.982 W</a>  | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                 |
| Antenna Polarization (XAP) | XAP = <a href="#">XAP82 R</a>   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND |

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|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
|                          |                                                                                                                                                                                                                                                                                                                               | CIRCULAR,<br>J = LINEAR POLARIZATION                                                      |
| Antenna Azimuth (XAZ)    | XAZ = <a href="#">XAZ82 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90 |
| Antenna Dimensions (XAD) | ANTENNA GAIN(dBi) <a href="#">37.7 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">1.9 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">284.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>XAD = <a href="#">XAD82 38G002B000-360A00284H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                         |

| Earth Station Data – KSAT Cape Town South Africa (Transmitter 83) |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                       | XSC = <a href="#">South Africa</a>                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                    |
| City Name (XAL)                                                   | XAL = <a href="#">Cape Town</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                 | Lat = <a href="#">340139 S</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                               | Lon = <a href="#">0184307 E</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                              | PWR = <a href="#">16.982 W</a>                                                                                                                                                                                                                                                                                               | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                        | XAP = <a href="#">XAP83 R</a>                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                             | XAZ = <a href="#">XAZ83 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                          | ANTENNA GAIN(dBi) <a href="#">37.7 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">1.9 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">10.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>XAD = <a href="#">XAD83 38G002B000-360A00010H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                                                                                  |

|                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Transmit Frequency: 2052MHz, 2062MHz               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                |
| Satellite Name: Screech 1 (Receiver 2)             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                |
| Polarization (RAP)                                 | RAP = RAP02 T                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION             |
| Orientation (RAZ)                                  | RAZ = RAZ02 EC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | NB= NARROWBEAM<br>EC = EARTH COVERAGE                                                                                                                                                                                          |
| Antenna Dimension (RAD)                            | ANTENNA GAIN(dBi) 18.4 dBi<br>BEAMWIDTH@ ½ Power 5.0 degrees<br><br>RAD = RAD02 18G005B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | (NTIA format, EXAMPLE, RAD01 16G030B)                                                                                                                                                                                          |
| Type of satellite (State = SP) (City = geo or non) | Type = Nongeostationary                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Choose either:<br>Geostationary or<br>Nongeostationary                                                                                                                                                                         |
| For Nongeostationary (Orbital Data)                | <p>The single spacecraft will operate at multiple orbits described below:</p> <p>INCLINATION ANGLE 50.0 degrees<br/>APOGEE IN KILOMETERS 500 km<br/>PERIGEE IN KILOMETERS 500 km<br/>ORBITAL PERIOD IN HOURS 1<br/>AND FRACTIONS OF HOURS IN DECIMAL 59<br/>NUMBER OF SATELLITES IN THE SYSTEM 1</p> <p>INCLINATION ANGLE 50.0 degrees<br/>APOGEE IN KILOMETERS 6000 km<br/>PERIGEE IN KILOMETERS 6000 km<br/>ORBITAL PERIOD IN HOURS 3<br/>AND FRACTIONS OF HOURS IN DECIMAL 80<br/>NUMBER OF SATELLITES IN THE SYSTEM 1</p> <p>REM01<br/>*ORB,50.0IN00500AP00500PE001.59H01NRT01</p> <p>REM02<br/>*ORB,50.0IN06000AP06000PE003.80H01NRT01</p> | IF ANY SATELLITES ARE NONGEOSTATIONARY, REPORT ITS INCLINATION ANGLE, APOGEE IN KILOMETERS, PERIGEE IN KILOMETERS, ORBITAL PERIOD IN HOURS AND FRACTIONS OF HOURS IN DECIMAL, THE NUMBER OF SATELLITES IN THE SYSTEM, THEN T01 |
| For SunSynchronous                                 | Mean Local Time of Ascending Node (MLTAN) =                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | MLTAN IS THE ANGLE BETWEEN AN ORBIT'S ASCENDING NODE AND THE                                                                                                                                                                   |



|                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------------------|----------|-----------------|----------|------------------|---|------------------|---|------------------|---|-----------------|------|-----------|-----------|---------------------------------|----------------------------------|-------------------|-------------|----------------------|---------|---------------------|---------|-----------------|---------|------------------|---|------------------|---|------------------|---|-----------------|------|-----------|----------|---------------------------------|----------------------------------|-------------------|------------|----------------------|---------|---------------------|----------|-----------------|----------|------------------|---|------------------|---|------------------|---|-----------------|------|-----------|-----------|---------------------------------|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nongeostationary Orbits                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | MEAN SUN, OFTEN EXPRESSED AS UNIT OF TIME (HH:MM)                                                                                                                                                                                                                                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Number of Satellite Contacts Supported Per Day | <p>At 500km x 500km: 20 contacts per day across all transmitters.</p> <p>At 6000km x 6000km: 4 contacts per day across all transmitters.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p>NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE EARTH TO SPACE DIRECTION (UPLINKS) EACH DAY</p> <p>Note: This number specifies total contacts per day for this receiver, which will be distributed across the transmitters listed in this section.</p> |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Expected Duration of Each Contact              | <p>At 500km x 500km: 6 minutes per contact.</p> <p>At 6000km x 6000km: 50 minutes per contact.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | AVERAGE DURATION OF EACH CONTACT                                                                                                                                                                                                                                                       |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| RF Emissions                                   | <table><tr><td>Emissions Designator</td><td>1M70G1D</td></tr><tr><td>Necessary Bandwidth</td><td>1.70 MHz</td></tr><tr><td>-3 dB Bandwidth</td><td>1.70 MHz</td></tr><tr><td>-20 dB Bandwidth</td><td>—</td></tr><tr><td>-40 dB Bandwidth</td><td>—</td></tr><tr><td>-60 dB Bandwidth</td><td>—</td></tr><tr><td>Modulation Type</td><td>QPSK</td></tr><tr><td>Data Rate</td><td>1.10 Mbps</td></tr><tr><td>Forward Error Correction Coding</td><td>Convolutional 1/2 + RS (255,223)</td></tr><tr><td>Total Symbol Rate</td><td>2.52 Msym/s</td></tr></table> <table><tr><td>Emissions Designator</td><td>400KG1D</td></tr><tr><td>Necessary Bandwidth</td><td>400 kHz</td></tr><tr><td>-3 dB Bandwidth</td><td>400 kHz</td></tr><tr><td>-20 dB Bandwidth</td><td>—</td></tr><tr><td>-40 dB Bandwidth</td><td>—</td></tr><tr><td>-60 dB Bandwidth</td><td>—</td></tr><tr><td>Modulation Type</td><td>QPSK</td></tr><tr><td>Data Rate</td><td>259 kbps</td></tr><tr><td>Forward Error Correction Coding</td><td>Convolutional 1/2 + RS (255,223)</td></tr><tr><td>Total Symbol Rate</td><td>593 ksym/s</td></tr></table> <table><tr><td>Emissions Designator</td><td>5M00G1D</td></tr><tr><td>Necessary Bandwidth</td><td>5.00 MHz</td></tr><tr><td>-3 dB Bandwidth</td><td>5.00 MHz</td></tr><tr><td>-20 dB Bandwidth</td><td>—</td></tr><tr><td>-40 dB Bandwidth</td><td>—</td></tr><tr><td>-60 dB Bandwidth</td><td>—</td></tr><tr><td>Modulation Type</td><td>QPSK</td></tr><tr><td>Data Rate</td><td>3.24 Mbps</td></tr><tr><td>Forward Error Correction Coding</td><td>Convolutional 1/2 + RS (255,223)</td></tr></table> | Emissions Designator                                                                                                                                                                                                                                                                   | 1M70G1D | Necessary Bandwidth | 1.70 MHz | -3 dB Bandwidth | 1.70 MHz | -20 dB Bandwidth | — | -40 dB Bandwidth | — | -60 dB Bandwidth | — | Modulation Type | QPSK | Data Rate | 1.10 Mbps | Forward Error Correction Coding | Convolutional 1/2 + RS (255,223) | Total Symbol Rate | 2.52 Msym/s | Emissions Designator | 400KG1D | Necessary Bandwidth | 400 kHz | -3 dB Bandwidth | 400 kHz | -20 dB Bandwidth | — | -40 dB Bandwidth | — | -60 dB Bandwidth | — | Modulation Type | QPSK | Data Rate | 259 kbps | Forward Error Correction Coding | Convolutional 1/2 + RS (255,223) | Total Symbol Rate | 593 ksym/s | Emissions Designator | 5M00G1D | Necessary Bandwidth | 5.00 MHz | -3 dB Bandwidth | 5.00 MHz | -20 dB Bandwidth | — | -40 dB Bandwidth | — | -60 dB Bandwidth | — | Modulation Type | QPSK | Data Rate | 3.24 Mbps | Forward Error Correction Coding | Convolutional 1/2 + RS (255,223) | <p>NECESSARY BANDWIDTH: THE WIDTH OF FREQUENCY BAND WHICH IS JUST SUFFICIENT TO SUCCESSFULLY TRANSFER DATA. FORMULAS CAN BE FOUND IN ANNEX J OF THE NTIA MANUAL.</p> <p>-3 / -20 / -40 / -60 dB BANDWIDTHS: 2-SIDED EMISSION BANDWIDTH VALUES</p> <p>MODULATION TYPE: THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.</p> <p>DATA RATE: INFORMATION DATA RATE</p> <p>TOTAL SYMBOL RATE: DATA RATE COMBINED WITH FEC AND FRAME OVERHEAD RESULTING IN THE TOTAL SYMBOL RATE AT THE INPUT TO THE SYMBOL MAPPER/MODULATOR.</p> <p>Note: All transmitters in this section transmit the same emissions designators.</p> |
| Emissions Designator                           | 1M70G1D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Necessary Bandwidth                            | 1.70 MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| -3 dB Bandwidth                                | 1.70 MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| -20 dB Bandwidth                               | —                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| -40 dB Bandwidth                               | —                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| -60 dB Bandwidth                               | —                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Modulation Type                                | QPSK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Data Rate                                      | 1.10 Mbps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Forward Error Correction Coding                | Convolutional 1/2 + RS (255,223)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Total Symbol Rate                              | 2.52 Msym/s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Emissions Designator                           | 400KG1D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Necessary Bandwidth                            | 400 kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| -3 dB Bandwidth                                | 400 kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| -20 dB Bandwidth                               | —                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| -40 dB Bandwidth                               | —                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| -60 dB Bandwidth                               | —                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Modulation Type                                | QPSK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Data Rate                                      | 259 kbps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Forward Error Correction Coding                | Convolutional 1/2 + RS (255,223)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Total Symbol Rate                              | 593 ksym/s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Emissions Designator                           | 5M00G1D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Necessary Bandwidth                            | 5.00 MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| -3 dB Bandwidth                                | 5.00 MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| -20 dB Bandwidth                               | —                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| -40 dB Bandwidth                               | —                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| -60 dB Bandwidth                               | —                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Modulation Type                                | QPSK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Data Rate                                      | 3.24 Mbps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Forward Error Correction Coding                | Convolutional 1/2 + RS (255,223)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                        |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                   |             |                      |         |                     |         |                 |         |                  |   |                  |   |                  |   |                 |      |           |          |                                 |                                  |                   |            |                      |         |                     |          |                 |          |                  |   |                  |   |                  |   |                 |      |           |           |                                 |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

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|--------------------------|------------------------|--|
| Total Symbol Rate        | 7.41 Msym/s            |  |
| Emissions Designator     | 700KG1D                |  |
| Necessary Bandwidth      | 700 kHz                |  |
| -3 dB Bandwidth          | 700 kHz                |  |
| -20 dB Bandwidth         | —                      |  |
| -40 dB Bandwidth         | —                      |  |
| -60 dB Bandwidth         | —                      |  |
| Modulation Type          | QPSK                   |  |
| Data Rate                | 453 kbps               |  |
| Forward Error Correction | Convolutional 1/2 + RS |  |
| Coding                   | (255,223)              |  |
| Total Symbol Rate        | 1.04 Msym/s            |  |

| Earth Station Data – Northwood Bismarck North Dakota (Transmitter 84) |                                                                                                                                                                                   |                                                                                                                                                                                                                    |
|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                           | XSC = North Dakota                                                                                                                                                                |                                                                                                                                                                                                                    |
| City Name (XAL)                                                       | XAL = Bismarck                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                     | Lat = 465256 N                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                                    | Lon = 1004817 W                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                                  | PWR = 64.565 W                                                                                                                                                                    | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP)                                            | XAP = XAP84 T                                                                                                                                                                     | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                                 | XAZ = XAZ84 V10                                                                                                                                                                   | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                              | ANTENNA GAIN(dBi) 32.5 dBi<br>BEAMWIDTH@ ½ Power 3.9 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 591.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.0 meters | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                                                                                  |

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|--|--------------------------------------|--|
|  | XAD = XAD84 33G004B000-360A00591H003 |  |
|--|--------------------------------------|--|

| Earth Station Data – Northwood Loring Maine (Transmitter 85) |                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
|--------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                  | XSC = Maine                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| City Name (XAL)                                              | XAL = Loring                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                            | Lat = 465601 N                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                           | Lon = 0675434 W                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                         | PWR = 64.565 W                                                                                                                                                                                                                | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP)                                   | XAP = XAP85 T                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                        | XAZ = XAZ85 V10                                                                                                                                                                                                               | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                     | ANTENNA GAIN(dBi) 32.5 dBi<br>BEAMWIDTH@ ½ Power 3.9 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 207.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.0 meters<br><br>XAD = XAD85 33G004B000-360A00207H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                                                                                  |

| Earth Station Data – Northwood Kihei Hawaii (Transmitter 86) |                 |  |
|--------------------------------------------------------------|-----------------|--|
| State (XSC)                                                  | XSC = Hawaii    |  |
| City Name (XAL)                                              | XAL = Kihei     |  |
| Latitude (DDMMSS)                                            | Lat = 204444 N  |  |
|                                                              | Lon = 1562613 W |  |

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|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Longitude<br>(DDMMSS)            |                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Transmit<br>Power (PWR)          | PWR = 64.565 W                                                                                                                                                                                                               | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna<br>Polarization<br>(XAP) | XAP = XAP86 T                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna<br>Azimuth<br>(XAZ)      | XAZ = XAZ86 V10                                                                                                                                                                                                              | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna<br>Dimensions<br>(XAD)   | ANTENNA GAIN(dBi) 32.5 dBi<br>BEAMWIDTH@ ½ Power 3.9 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 59.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.0 meters<br><br>XAD = XAD86 33G004B000-360A00059H003 | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – Northwood Vodno Bulgaria (Transmitter 87) |                 |                                                                                                                                                            |
|----------------------------------------------------------------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                    | XSC = Bulgaria  |                                                                                                                                                            |
| City Name<br>(XAL)                                             | XAL = Vodno     |                                                                                                                                                            |
| Latitude<br>(DDMMSS)                                           | Lat = 435141 N  |                                                                                                                                                            |
| Longitude<br>(DDMMSS)                                          | Lon = 0270903 E |                                                                                                                                                            |
| Transmit<br>Power (PWR)                                        | PWR = 64.565 W  | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT |
|                                                                | XAP = XAP87 T   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,                                                                                                |

|                            |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                     |
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| Antenna Polarization (XAP) |                                                                                                                                                                                                                                                                                                                               | S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = <a href="#">XAZ87 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                           |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) <a href="#">32.5 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">3.9 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">219.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.0 meters</a><br><br>XAD = <a href="#">XAD87 33G004B000-360A00219H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                   |

| Earth Station Data – Northwood Neu Poserin Germany (Transmitter 88) |                                                                                                                                                                                                       |                                                                                                                                                                                                                    |
|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                         | XSC = <a href="#">Germany</a>                                                                                                                                                                         |                                                                                                                                                                                                                    |
| City Name (XAL)                                                     | XAL = <a href="#">Neu Poserin</a>                                                                                                                                                                     |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                   | Lat = <a href="#">533315 N</a>                                                                                                                                                                        |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                                 | Lon = <a href="#">0121327 E</a>                                                                                                                                                                       |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                                | PWR = <a href="#">64.565 W</a>                                                                                                                                                                        | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP)                                          | XAP = <a href="#">XAP88 T</a>                                                                                                                                                                         | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                               | XAZ = <a href="#">XAZ88 V10</a>                                                                                                                                                                       | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                            | ANTENNA GAIN(dBi) <a href="#">32.5 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">3.9 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">54.0 meters</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                                                                                  |

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|  | ANTENNA HEIGHT ABOVE TERRAIN 3.0 meters |  |
|  | XAD = XAD88 33G004B000-360A00054H003    |  |

| Earth Station Data – Northwood Rio Gallegos Argentina (Transmitter 89) |                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
|------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                            | XSC = Argentina                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| City Name (XAL)                                                        | XAL = Rio Gallegos                                                                                                                                                                                                           |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                      | Lat = 514003 S                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                                     | Lon = 0691551 W                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                                   | PWR = 64.565 W                                                                                                                                                                                                               | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                             | XAP = XAP89 T                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                                  | XAZ = XAZ89 V10                                                                                                                                                                                                              | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                               | ANTENNA GAIN(dBi) 32.5 dBi<br>BEAMWIDTH@ ½ Power 3.9 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 21.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.0 meters<br><br>XAD = XAD89 33G004B000-360A00021H003 | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – KSAT Tromso Norway (Transmitter 90) |                |  |
|----------------------------------------------------------|----------------|--|
| State (XSC)                                              | XSC = Norway   |  |
| City Name (XAL)                                          | XAL = Tromso   |  |
| Latitude (DDMMSS)                                        | Lat = 693944 N |  |

|                                  |                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Longitude<br>(DDMMSS)            | Lon = 0185629 E                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Transmit<br>Power (PWR)          | PWR = 10.000 W                                                                                                                                                                                                                    | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna<br>Polarization<br>(XAP) | XAP = XAP90 T                                                                                                                                                                                                                     | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna<br>Azimuth<br>(XAZ)      | XAZ = XAZ90 V10                                                                                                                                                                                                                   | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna<br>Dimensions<br>(XAD)   | ANTENNA GAIN(dBi) 32.4 dBi<br>BEAMWIDTH@ ½ Power 3.26 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 135.4527 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>XAD = XAD90 32G003B000-360A00135H003 | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

#### Earth Station Data – KSAT Punta Arenas Chile (Transmitter 91)

|                         |                    |                                                                                                                                                            |
|-------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)             | XSC = Chile        |                                                                                                                                                            |
| City Name<br>(XAL)      | XAL = Punta Arenas |                                                                                                                                                            |
| Latitude<br>(DDMMSS)    | Lat = 525608 S     |                                                                                                                                                            |
| Longitude<br>(DDMMSS)   | Lon = 0705224 W    |                                                                                                                                                            |
| Transmit<br>Power (PWR) | PWR = 10.000 W     | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT |
|                         | XAP = XAP91 T      | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,                                                                                                |

|                            |                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                     |
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| Antenna Polarization (XAP) |                                                                                                                                                                                                                                                                                                                                 | S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = <a href="#">XAZ91 V10</a>                                                                                                                                                                                                                                                                                                 | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                           |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) <a href="#">34.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.71 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">25.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">4.096 meters</a><br><br>XAD = <a href="#">XAD91 34G003B000-360A00025H004</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                   |

| Earth Station Data – KSAT Punta Arenas Chile (Transmitter 92) |                                                                                                                                                                                                        |                                                                                                                                                                                                                    |
|---------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                   | XSC = <a href="#">Chile</a>                                                                                                                                                                            |                                                                                                                                                                                                                    |
| City Name (XAL)                                               | XAL = <a href="#">Punta Arenas</a>                                                                                                                                                                     |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                             | Lat = <a href="#">525608 S</a>                                                                                                                                                                         |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                           | Lon = <a href="#">0705225 W</a>                                                                                                                                                                        |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                          | PWR = <a href="#">10.000 W</a>                                                                                                                                                                         | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP)                                    | XAP = <a href="#">XAP92 T</a>                                                                                                                                                                          | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                         | XAZ = <a href="#">XAZ92 V10</a>                                                                                                                                                                        | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                      | ANTENNA GAIN(dBi) <a href="#">34.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.71 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">25.0 meters</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                                                                                  |



|  |                                                           |  |
|--|-----------------------------------------------------------|--|
|  | ANTENNA HEIGHT ABOVE TERRAIN <a href="#">4.129 meters</a> |  |
|  | XAD = <a href="#">XAD92 34G003B000-360A00025H004</a>      |  |

| Earth Station Data – KSAT Punta Arenas Chile (Transmitter 93) |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                   | XSC = <a href="#">Chile</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| City Name (XAL)                                               | XAL = <a href="#">Punta Arenas</a>                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                             | Lat = <a href="#">525603 S</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                            | Lon = <a href="#">0705224 W</a>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                          | PWR = <a href="#">8.710 W</a>                                                                                                                                                                                                                                                                                                | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                    | XAP = <a href="#">XAP93 T</a>                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                         | XAZ = <a href="#">XAZ93 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                      | ANTENNA GAIN(dBi) <a href="#">35.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.3 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">25.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">4.5 meters</a><br><br>XAD = <a href="#">XAD93 36G002B000-360A00025H005</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – KSAT Awarua New Zealand (Transmitter 94) |                                   |  |
|---------------------------------------------------------------|-----------------------------------|--|
| State (XSC)                                                   | XSC = <a href="#">New Zealand</a> |  |
| City Name (XAL)                                               | XAL = <a href="#">Awarua</a>      |  |
| Latitude (DDMMSS)                                             | Lat = <a href="#">463142 S</a>    |  |

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| Longitude<br>(DDMMSS)            | Lon = 1682244 E                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Transmit<br>Power (PWR)          | PWR = 10.000 W                                                                                                                                                                                                                  | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna<br>Polarization<br>(XAP) | XAP = XAP94 T                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna<br>Azimuth<br>(XAZ)      | XAZ = XAZ94 V10                                                                                                                                                                                                                 | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna<br>Dimensions<br>(XAD)   | ANTENNA GAIN(dBi) 34.0 dBi<br>BEAMWIDTH@ ½ Power 2.71 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 12.559 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>XAD = XAD94 34G003B000-360A00013H003 | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – KSAT Awarua New Zealand (Transmitter 95) |                   |                                                                                                                                                            |
|---------------------------------------------------------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                   | XSC = New Zealand |                                                                                                                                                            |
| City Name<br>(XAL)                                            | XAL = Awarua      |                                                                                                                                                            |
| Latitude<br>(DDMMSS)                                          | Lat = 463146 S    |                                                                                                                                                            |
| Longitude<br>(DDMMSS)                                         | Lon = 1682250 E   |                                                                                                                                                            |
| Transmit<br>Power (PWR)                                       | PWR = 10.000 W    | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT |
|                                                               | XAP = XAP95 T     | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,                                                                                                |

|                            |                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                     |
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| Antenna Polarization (XAP) |                                                                                                                                                                                                                                                                                                                                 | S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = <a href="#">XAZ95 V10</a>                                                                                                                                                                                                                                                                                                 | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                           |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) <a href="#">34.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.71 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">12.294 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>XAD = <a href="#">XAD95 34G003B000-360A00012H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                   |

| Earth Station Data – KSAT Awarua New Zealand (Transmitter 96) |                                                                                                                                                                                                         |                                                                                                                                                                                                                    |
|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                   | XSC = <a href="#">New Zealand</a>                                                                                                                                                                       |                                                                                                                                                                                                                    |
| City Name (XAL)                                               | XAL = <a href="#">Awarua</a>                                                                                                                                                                            |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                             | Lat = <a href="#">463156 S</a>                                                                                                                                                                          |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                           | Lon = <a href="#">1682304 E</a>                                                                                                                                                                         |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                          | PWR = <a href="#">10.000 W</a>                                                                                                                                                                          | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP)                                    | XAP = <a href="#">XAP96 T</a>                                                                                                                                                                           | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                         | XAZ = <a href="#">XAZ96 V10</a>                                                                                                                                                                         | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                      | ANTENNA GAIN(dBi) <a href="#">34.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.71 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">9.244 meters</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                                                                                  |

|  |                                         |  |
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|  | ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters |  |
|  | XAD = XAD96 34G003B000-360A00009H003    |  |

| Earth Station Data – KSAT Awarua New Zealand (Transmitter 97) |                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
|---------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                   | XSC = New Zealand                                                                                                                                                                                                             |                                                                                                                                                                                                                    |
| City Name (XAL)                                               | XAL = Awarua                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                             | Lat = 463157 S                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                            | Lon = 1682302 E                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                          | PWR = 8.710 W                                                                                                                                                                                                                 | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                    | XAP = XAP97 T                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                         | XAZ = XAZ97 V10                                                                                                                                                                                                               | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                      | ANTENNA GAIN(dBi) 35.6 dBi<br>BEAMWIDTH@ ½ Power 2.3 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 9.226 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>XAD = XAD97 36G002B000-360A00009H003 | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Transmit Frequency: 2052MHz            |               |                                                                                                                                                    |
|----------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Satellite Name: Screech 1 (Receiver 3) |               |                                                                                                                                                    |
| Polarization (RAP)                     | RAP = RAP03 R | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR, |

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|                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION                                                                                                                                                                   |
| Orientation (RAZ)                                     | RAZ = RAZ03 EC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | NB= NARROWBEAM<br>EC = EARTH COVERAGE                                                                                                                                                                                          |
| Antenna Dimension (RAD)                               | ANTENNA GAIN(dBi) 6.56 dBi<br>BEAMWIDTH@ ½ Power 111.0 degrees<br><br>RAD = RAD03 07G111B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | (NTIA format, EXAMPLE, RAD01 16G030B)                                                                                                                                                                                          |
| Type of satellite (State = SP)<br>(City = geo or non) | Type = Nongeostationary                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Choose either:<br>Geostationary or<br>Nongeostationary                                                                                                                                                                         |
| For Nongeostationary<br>(Orbital Data)                | <p>The single spacecraft will operate at multiple orbits described below:</p> <p>INCLINATION ANGLE 50.0 degrees<br/>APOGEE IN KILOMETERS 500 km<br/>PERIGEE IN KILOMETERS 500 km<br/>ORBITAL PERIOD IN HOURS 1<br/>AND FRACTIONS OF HOURS IN DECIMAL 59<br/>NUMBER OF SATELLITES IN THE SYSTEM 1</p> <p>INCLINATION ANGLE 50.0 degrees<br/>APOGEE IN KILOMETERS 6000 km<br/>PERIGEE IN KILOMETERS 6000 km<br/>ORBITAL PERIOD IN HOURS 3<br/>AND FRACTIONS OF HOURS IN DECIMAL 80<br/>NUMBER OF SATELLITES IN THE SYSTEM 1</p> <p>REM01<br/>*ORB,50.0IN00500AP00500PE001.59H01NRT01</p> <p>REM02<br/>*ORB,50.0IN06000AP06000PE003.80H01NRT01</p> | IF ANY SATELLITES ARE NONGEOSTATIONARY, REPORT ITS INCLINATION ANGLE, APOGEE IN KILOMETERS, PERIGEE IN KILOMETERS, ORBITAL PERIOD IN HOURS AND FRACTIONS OF HOURS IN DECIMAL, THE NUMBER OF SATELLITES IN THE SYSTEM, THEN T01 |
| For SunSynchronous<br>Nongeostationary Orbits         | Mean Local Time of Ascending Node (MLTAN) =                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | MLTAN IS THE ANGLE BETWEEN AN ORBIT'S ASCENDING NODE AND THE MEAN SUN, OFTEN EXPRESSED AS UNIT OF TIME (HH:MM)                                                                                                                 |
| Number of Satellite Contacts Supported Per Day        | At 500km x 500km: 20 contacts per day across all transmitters.<br>At 6000km x 6000km: 4 contacts per day across all transmitters.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE EARTH TO SPACE DIRECTION (UPLINKS) EACH DAY<br><br>Note: This number specifies total contacts per day for this receiver, which will be            |

|                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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|                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | distributed across the transmitters listed in this section.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Expected Duration of Each Contact | At 500km x 500km: 6 minutes per contact.<br>At 6000km x 6000km: 50 minutes per contact.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | AVERAGE DURATION OF EACH CONTACT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| RF Emissions                      | <div> Emissions Designator      200KG1D<br/> Necessary Bandwidth      200 kHz<br/> -3 dB Bandwidth      200 kHz<br/> -20 dB Bandwidth      —<br/> -40 dB Bandwidth      —<br/> -60 dB Bandwidth      —<br/> Modulation Type      QPSK<br/> Data Rate      130 kbps<br/> Forward Error Correction Coding      Convolutional 1/2 + RS (255,223)<br/> Total Symbol Rate      296 ksym/s </div> <hr/> <div> Emissions Designator      2M00G1D<br/> Necessary Bandwidth      2.00 MHz<br/> -3 dB Bandwidth      2.00 MHz<br/> -20 dB Bandwidth      —<br/> -40 dB Bandwidth      —<br/> -60 dB Bandwidth      —<br/> Modulation Type      QPSK (DVB-S2 MODCOD 3)<br/> Data Rate      1.17 Mbps<br/> Forward Error Correction Coding      LDPC 2/5 + BCH<br/> Total Symbol Rate      2.96 Msym/s </div> <hr/> <div> Emissions Designator      850KG1D<br/> Necessary Bandwidth      850 kHz<br/> -3 dB Bandwidth      850 kHz<br/> -20 dB Bandwidth      —<br/> -40 dB Bandwidth      —<br/> -60 dB Bandwidth      —<br/> Modulation Type      QPSK<br/> Data Rate      551 kbps<br/> Forward Error Correction Coding      Convolutional 1/2 + RS (255,223)<br/> Total Symbol Rate      1.26 Msym/s </div> | <p>NECESSARY BANDWIDTH:<br/>THE WIDTH OF FREQUENCY BAND WHICH IS JUST SUFFICIENT TO SUCCESSFULLY TRANSFER DATA. FORMULAS CAN BE FOUND IN ANNEX J OF THE NTIA MANUAL.</p> <p>-3 / -20 / -40 / -60 dB BANDWIDTHS:<br/>2-SIDED EMISSION BANDWIDTH VALUES</p> <p>MODULATION TYPE:<br/>THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.</p> <p>DATA RATE:<br/>INFORMATION DATA RATE</p> <p>TOTAL SYMBOL RATE:<br/>DATA RATE COMBINED WITH FEC AND FRAME OVERHEAD RESULTING IN THE TOTAL SYMBOL RATE AT THE INPUT TO THE SYMBOL MAPPER/MODULATOR.</p> <p>Note: All transmitters in this section transmit the same emissions designators.</p> |

| Earth Station Data – Northwood Bismarck North Dakota (Transmitter 98) |                    |
|-----------------------------------------------------------------------|--------------------|
| State (XSC)                                                           | XSC = North Dakota |
| City Name (XAL)                                                       | XAL = Bismarck     |

|                            |                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Latitude (DDMMSS)          | Lat = 465256 N                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)         | Lon = 1004817 W                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Transmit Power (PWR)       | PWR = 64.565 W                                                                                                                                                                                                                | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP) | XAP = XAP98 R                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = XAZ98 V10                                                                                                                                                                                                               | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) 32.5 dBi<br>BEAMWIDTH@ ½ Power 3.9 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 591.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.0 meters<br><br>XAD = XAD98 33G004B000-360A00591H003 | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                                                                                  |

| Earth Station Data – Northwood Loring Maine (Transmitter 99) |                 |                                                                                                                                                         |
|--------------------------------------------------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                  | XSC = Maine     |                                                                                                                                                         |
| City Name (XAL)                                              | XAL = Loring    |                                                                                                                                                         |
| Latitude (DDMMSS)                                            | Lat = 465601 N  |                                                                                                                                                         |
| Longitude (DDMMSS)                                           | Lon = 0675434 W |                                                                                                                                                         |
| Transmit Power (PWR)                                         | PWR = 64.565 W  | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT |

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| Antenna Polarization (XAP) | XAP = <a href="#">XAP99 R</a>                                                                                                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = <a href="#">XAZ99 V10</a>                                                                                                                                                                                                                                                                                               | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) <a href="#">32.5 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">3.9 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">207.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.0 meters</a><br><br>XAD = <a href="#">XAD99 33G004B000-360A00207H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – Northwood Kihei Hawaii (Transmitter 100) |                                  |                                                                                                                                                                                                                    |
|---------------------------------------------------------------|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                   | XSC = <a href="#">Hawaii</a>     |                                                                                                                                                                                                                    |
| City Name (XAL)                                               | XAL = <a href="#">Kihei</a>      |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                             | Lat = <a href="#">204444 N</a>   |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                           | Lon = <a href="#">1562613 W</a>  |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                          | PWR = <a href="#">64.565 W</a>   | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP)                                    | XAP = <a href="#">XAP100 R</a>   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                         | XAZ = <a href="#">XAZ100 V10</a> | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |



|                          |                                                                                                                                                                                                                                                                         |                                                                         |
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| Antenna Dimensions (XAD) | ANTENNA GAIN(dBi) <b>32.5 dBi</b><br>BEAMWIDTH@ ½ Power <b>3.9 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>59.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>3.0 meters</b><br><br>XAD = <b>XAD100 33G004B000-360A00059H003</b> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006 |
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| Earth Station Data – Northwood Vodno Bulgaria (Transmitter 101) |                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                    |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                     | XSC = <b>Bulgaria</b>                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| City Name (XAL)                                                 | XAL = <b>Vodno</b>                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                               | Lat = <b>435141 N</b>                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                             | Lon = <b>0270903 E</b>                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                            | PWR = <b>64.565 W</b>                                                                                                                                                                                                                                                    | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                      | XAP = <b>XAP101 R</b>                                                                                                                                                                                                                                                    | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                           | XAZ = <b>XAZ101 V10</b>                                                                                                                                                                                                                                                  | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                        | ANTENNA GAIN(dBi) <b>32.5 dBi</b><br>BEAMWIDTH@ ½ Power <b>3.9 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>219.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>3.0 meters</b><br><br>XAD = <b>XAD101 33G004B000-360A00219H003</b> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – Northwood Neu Poserin Germany (Transmitter 102) |                          |  |
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| State (XSC)                                                          | XSC = <b>Germany</b>     |  |
|                                                                      | XAL = <b>Neu Poserin</b> |  |

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| City Name<br>(XAL)               |                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Latitude<br>(DDMMSS)             | Lat = 533315 N                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude<br>(DDDMMSS)           | Lon = 0121327 E                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Transmit<br>Power (PWR)          | PWR = 64.565 W                                                                                                                                                                                                                | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna<br>Polarization<br>(XAP) | XAP = XAP102 R                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna<br>Azimuth<br>(XAZ)      | XAZ = XAZ102 V10                                                                                                                                                                                                              | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna<br>Dimensions<br>(XAD)   | ANTENNA GAIN(dBi) 32.5 dBi<br>BEAMWIDTH@ ½ Power 3.9 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 54.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.0 meters<br><br>XAD = XAD102 33G004B000-360A00054H003 | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – Northwood Rio Gallegos Argentina (Transmitter 103) |                    |                                                                                                                           |
|-------------------------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                             | XSC = Argentina    |                                                                                                                           |
| City Name<br>(XAL)                                                      | XAL = Rio Gallegos |                                                                                                                           |
| Latitude<br>(DDMMSS)                                                    | Lat = 514003 S     |                                                                                                                           |
| Longitude<br>(DDDMMSS)                                                  | Lon = 0691551 W    |                                                                                                                           |
| Transmit<br>Power (PWR)                                                 | PWR = 64.565 W     | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT, |

|                            |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
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|                            |                                                                                                                                                                                                                                                                                                                               | K = KILOWATT,<br>M = MEGAWATT                                                                                                                                                                                      |
| Antenna Polarization (XAP) | XAP = <a href="#">XAP103 R</a>                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = <a href="#">XAZ103 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) <a href="#">32.5 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">3.9 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">21.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">3.0 meters</a><br><br>XAD = <a href="#">XAD103 33G004B000-360A00021H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – KSAT Tromso Norway (Transmitter 104) |                                  |                                                                                                                                                                                                                    |
|-----------------------------------------------------------|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                               | XSC = <a href="#">Norway</a>     |                                                                                                                                                                                                                    |
| City Name (XAL)                                           | XAL = <a href="#">Tromso</a>     |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                         | Lat = <a href="#">693944 N</a>   |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                        | Lon = <a href="#">0185629 E</a>  |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                      | PWR = <a href="#">10.000 W</a>   | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP)                                | XAP = <a href="#">XAP104 R</a>   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
|                                                           | XAZ = <a href="#">XAZ104 V10</a> |                                                                                                                                                                                                                    |

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| Antenna Azimuth (XAZ)    |                                                                                                                                                                                                                                                                              | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90 |
| Antenna Dimensions (XAD) | ANTENNA GAIN(dBi) <b>32.4 dBi</b><br>BEAMWIDTH@ ½ Power <b>3.26 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>135.4527 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>2.5 meters</b><br><br>XAD = <b>XAD104 32G003B000-360A00135H003</b> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                   |

| Earth Station Data – KSAT Punta Arenas Chile (Transmitter 105) |                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                    |
|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                    | XSC = <b>Chile</b>                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                    |
| City Name (XAL)                                                | XAL = <b>Punta Arenas</b>                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                              | Lat = <b>525608 S</b>                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                             | Lon = <b>0705224 W</b>                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                           | PWR = <b>10.000 W</b>                                                                                                                                                                                                                                                      | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                     | XAP = <b>XAP105 R</b>                                                                                                                                                                                                                                                      | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                          | XAZ = <b>XAZ105 V10</b>                                                                                                                                                                                                                                                    | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                       | ANTENNA GAIN(dBi) <b>34.0 dBi</b><br>BEAMWIDTH@ ½ Power <b>2.71 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>25.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>4.096 meters</b><br><br>XAD = <b>XAD105 34G003B000-360A00025H004</b> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – KSAT Punta Arenas Chile (Transmitter 106) |                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                    | XSC = <a href="#">Chile</a>                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                    |
| City Name (XAL)                                                | XAL = <a href="#">Punta Arenas</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                              | Lat = <a href="#">525608 S</a>                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Longitude (DDMMSS)                                             | Lon = <a href="#">0705225 W</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                           | PWR = <a href="#">10.000 W</a>                                                                                                                                                                                                                                                                                                   | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                     | XAP = <a href="#">XAP106 R</a>                                                                                                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                          | XAZ = <a href="#">XAZ106 V10</a>                                                                                                                                                                                                                                                                                                 | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                       | ANTENNA GAIN(dBi) <a href="#">34.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.71 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">25.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">4.129 meters</a><br><br>XAD = <a href="#">XAD106 34G003B000-360A00025H004</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – KSAT Punta Arenas Chile (Transmitter 107) |                                    |                                        |
|----------------------------------------------------------------|------------------------------------|----------------------------------------|
| State (XSC)                                                    | XSC = <a href="#">Chile</a>        |                                        |
| City Name (XAL)                                                | XAL = <a href="#">Punta Arenas</a> |                                        |
| Latitude (DDMMSS)                                              | Lat = <a href="#">525603 S</a>     |                                        |
| Longitude (DDMMSS)                                             | Lon = <a href="#">0705224 W</a>    |                                        |
| Transmit Power (PWR)                                           | PWR = <a href="#">8.710 W</a>      | TRANSMIT POWER SUPPLIED TO THE ANTENNA |

|                            |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
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|                            |                                                                                                                                                                                                                                                                                                                               | INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                                                                |
| Antenna Polarization (XAP) | XAP = <a href="#">XAP107 R</a>                                                                                                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = <a href="#">XAZ107 V10</a>                                                                                                                                                                                                                                                                                              | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) <a href="#">35.6 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.3 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">25.0 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">4.5 meters</a><br><br>XAD = <a href="#">XAD107 36G002B000-360A00025H005</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

#### Earth Station Data – KSAT Awarua New Zealand (Transmitter 108)

|                            |                                   |                                                                                                                                                                               |
|----------------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                | XSC = <a href="#">New Zealand</a> |                                                                                                                                                                               |
| City Name (XAL)            | XAL = <a href="#">Awarua</a>      |                                                                                                                                                                               |
| Latitude (DDMMSS)          | Lat = <a href="#">463142 S</a>    |                                                                                                                                                                               |
| Longitude (DDMMSS)         | Lon = <a href="#">1682244 E</a>   |                                                                                                                                                                               |
| Transmit Power (PWR)       | PWR = <a href="#">10.000 W</a>    | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                 |
| Antenna Polarization (XAP) | XAP = <a href="#">XAP108 R</a>    | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND |

|                          |                                                                                                                                                                                                                                                                                                                                  |                                                                                           |
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|                          |                                                                                                                                                                                                                                                                                                                                  | CIRCULAR,<br>J = LINEAR POLARIZATION                                                      |
| Antenna Azimuth (XAZ)    | XAZ = <a href="#">XAZ108 V10</a>                                                                                                                                                                                                                                                                                                 | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90 |
| Antenna Dimensions (XAD) | ANTENNA GAIN(dBi) <a href="#">34.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.71 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">12.559 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>XAD = <a href="#">XAD108 34G003B000-360A00013H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                         |

| Earth Station Data – KSAT Awarua New Zealand (Transmitter 109) |                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                    | XSC = <a href="#">New Zealand</a>                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| City Name (XAL)                                                | XAL = <a href="#">Awarua</a>                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                              | Lat = <a href="#">463146 S</a>                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                            | Lon = <a href="#">1682250 E</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                           | PWR = <a href="#">10.000 W</a>                                                                                                                                                                                                                                                                                                   | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP)                                     | XAP = <a href="#">XAP109 R</a>                                                                                                                                                                                                                                                                                                   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                          | XAZ = <a href="#">XAZ109 V10</a>                                                                                                                                                                                                                                                                                                 | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                       | ANTENNA GAIN(dBi) <a href="#">34.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.71 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">12.294 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>XAD = <a href="#">XAD109 34G003B000-360A00012H003</a> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                                                                                  |

| Earth Station Data – KSAT Awarua New Zealand (Transmitter 110) |                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
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| State (XSC)                                                    | XSC = <a href="#">New Zealand</a>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| City Name (XAL)                                                | XAL = <a href="#">Awarua</a>                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                              | Lat = <a href="#">463156 S</a>                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                            | Lon = <a href="#">1682304 E</a>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                           | PWR = <a href="#">10.000 W</a>                                                                                                                                                                                                                                                                                                  | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna Polarization (XAP)                                     | XAP = <a href="#">XAP110 R</a>                                                                                                                                                                                                                                                                                                  | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                          | XAZ = <a href="#">XAZ110 V10</a>                                                                                                                                                                                                                                                                                                | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                       | ANTENNA GAIN(dBi) <a href="#">34.0 dBi</a><br>BEAMWIDTH@ ½ Power <a href="#">2.71 degrees</a><br>AZIMUTHAL RANGE <a href="#">0-360 degrees</a><br>SITE ELEVATION ABOVE MSL <a href="#">9.244 meters</a><br>ANTENNA HEIGHT ABOVE TERRAIN <a href="#">2.5 meters</a><br><br>XAD = <a href="#">XAD110 34G003B000-360A00009H003</a> | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

| Earth Station Data – KSAT Awarua New Zealand (Transmitter 111) |                                   |                                        |
|----------------------------------------------------------------|-----------------------------------|----------------------------------------|
| State (XSC)                                                    | XSC = <a href="#">New Zealand</a> |                                        |
| City Name (XAL)                                                | XAL = <a href="#">Awarua</a>      |                                        |
| Latitude (DDMMSS)                                              | Lat = <a href="#">463157 S</a>    |                                        |
| Longitude (DDDMMSS)                                            | Lon = <a href="#">1682302 E</a>   |                                        |
| Transmit Power (PWR)                                           | PWR = <a href="#">8.710 W</a>     | TRANSMIT POWER SUPPLIED TO THE ANTENNA |



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|                            |                                                                                                                                                                                                                                | INPUT TERMINAL, EXAMPLE, PWR01<br>W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                                                                |
| Antenna Polarization (XAP) | XAP = XAP111 R                                                                                                                                                                                                                 | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)      | XAZ = XAZ111 V10                                                                                                                                                                                                               | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)   | ANTENNA GAIN(dBi) 35.6 dBi<br>BEAMWIDTH@ ½ Power 2.3 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 9.226 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 2.5 meters<br><br>XAD = XAD111 36G002B000-360A00009H003 | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |

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| <b>Transmit Frequency: 29750MHz</b>                   |                                                                                          |                                                                                                                                                                                                                    |
| Satellite Name: Screech 1 (Receiver 4)                |                                                                                          |                                                                                                                                                                                                                    |
| Polarization (RAP)                                    | RAP = RAP04 T                                                                            | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Orientation (RAZ)                                     | RAZ = RAZ04 EC                                                                           | NB= NARROWBEAM<br>EC = EARTH COVERAGE                                                                                                                                                                              |
| Antenna Dimension (RAD)                               | ANTENNA GAIN(dBi) 20.0 dBi<br>BEAMWIDTH@ ½ Power 12.0 degrees<br><br>RAD = RAD04 20G012B | (NTIA format, EXAMPLE, RAD01<br>16G030B)                                                                                                                                                                           |
| Type of satellite (State = SP)<br>(City = geo or non) | Type = Nongeostationary                                                                  | Choose either:<br>Geostationary or<br>Nongeostationary                                                                                                                                                             |
|                                                       |                                                                                          | IF ANY SATELLITES ARE<br>NONGEOSTATIONARY, REPORT ITS                                                                                                                                                              |

|                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                        |
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| For Nongeostationary (Orbital Data)            | <p>The single spacecraft will operate at multiple orbits described below:</p> <p>INCLINATION ANGLE 50.0 degrees<br/> APOGEE IN KILOMETERS 500 km<br/> PERIGEE IN KILOMETERS 500 km<br/> ORBITAL PERIOD IN HOURS 1<br/> AND FRACTIONS OF HOURS IN DECIMAL 59<br/> NUMBER OF SATELLITES IN THE SYSTEM 1</p> <p>INCLINATION ANGLE 50.0 degrees<br/> APOGEE IN KILOMETERS 6000 km<br/> PERIGEE IN KILOMETERS 6000 km<br/> ORBITAL PERIOD IN HOURS 3<br/> AND FRACTIONS OF HOURS IN DECIMAL 80<br/> NUMBER OF SATELLITES IN THE SYSTEM 1</p> <p>REM01<br/> *ORB,50.0IN00500AP00500PE001.59H01NRT01</p> <p>REM02<br/> *ORB,50.0IN06000AP06000PE003.80H01NRT01</p> | INCLINATION ANGLE, APOGEE IN KILOMETERS, PERIGEE IN KILOMETERS, ORBITAL PERIOD IN HOURS AND FRACTIONS OF HOURS IN DECIMAL, THE NUMBER OF SATELLITES IN THE SYSTEM, THEN T01                                                                                                            |
| For SunSynchronous Nongeostationary Orbits     | Mean Local Time of Ascending Node (MLTAN) =                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | MLTAN IS THE ANGLE BETWEEN AN ORBIT'S ASCENDING NODE AND THE MEAN SUN, OFTEN EXPRESSED AS UNIT OF TIME (HH:MM)                                                                                                                                                                         |
| Number of Satellite Contacts Supported Per Day | <p>At 500km x 500km: 5 contacts per day across all transmitters.<br/> At 6000km x 6000km: 10 contacts per day across all transmitters.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <p>NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE EARTH TO SPACE DIRECTION (UPLINKS) EACH DAY</p> <p>Note: This number specifies total contacts per day for this receiver, which will be distributed across the transmitters listed in this section.</p> |
| Expected Duration of Each Contact              | <p>At 500km x 500km: 2 minutes per contact.<br/> At 6000km x 6000km: 30 minutes per contact.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | AVERAGE DURATION OF EACH CONTACT                                                                                                                                                                                                                                                       |
| RF Emissions                                   | <p>Emissions Designator 20M0G1D<br/> Necessary Bandwidth 20.0 MHz<br/> -3 dB Bandwidth 20.0 MHz<br/> -20 dB Bandwidth —<br/> -40 dB Bandwidth —<br/> -60 dB Bandwidth —<br/> Modulation Type QPSK (DVB-S2 MODCOD 3)<br/> Data Rate 11.7 Mbps</p>                                                                                                                                                                                                                                                                                                                                                                                                            | <p>NECESSARY BANDWIDTH: THE WIDTH OF FREQUENCY BAND WHICH IS JUST SUFFICIENT TO SUCCESSFULLY TRANSFER DATA. FORMULAS CAN BE FOUND IN ANNEX J OF THE NTIA MANUAL.</p> <p>-3 / -20 / -40 / -60 dB BANDWIDTHS: 2-SIDED EMISSION BANDWIDTH</p>                                             |

|  |                                 |                        |                                                                                                                                                                                                                                                                                                                                                                                                            |
|--|---------------------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Forward Error Correction Coding | LDPC 2/5 + BCH         | VALUES<br><br>MODULATION TYPE:<br>THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.<br><br>DATA RATE:<br>INFORMATION DATA RATE<br><br>TOTAL SYMBOL RATE:<br>DATA RATE COMBINED WITH FEC AND FRAME OVERHEAD RESULTING IN THE TOTAL SYMBOL RATE AT THE INPUT TO THE SYMBOL MAPPER/MODULATOR.<br>Note: All transmitters in this section transmit the same emissions designators. |
|  | Total Symbol Rate               | 29.6 Msym/s            |                                                                                                                                                                                                                                                                                                                                                                                                            |
|  | Emissions Designator            | 2M00G1D                |                                                                                                                                                                                                                                                                                                                                                                                                            |
|  | Necessary Bandwidth             | 2.00 MHz               |                                                                                                                                                                                                                                                                                                                                                                                                            |
|  | -3 dB Bandwidth                 | 2.00 MHz               |                                                                                                                                                                                                                                                                                                                                                                                                            |
|  | -20 dB Bandwidth                | —                      |                                                                                                                                                                                                                                                                                                                                                                                                            |
|  | -40 dB Bandwidth                | —                      |                                                                                                                                                                                                                                                                                                                                                                                                            |
|  | -60 dB Bandwidth                | —                      |                                                                                                                                                                                                                                                                                                                                                                                                            |
|  | Modulation Type                 | QPSK (DVB-S2 MODCOD 3) |                                                                                                                                                                                                                                                                                                                                                                                                            |
|  | Data Rate                       | 1.17 Mbps              |                                                                                                                                                                                                                                                                                                                                                                                                            |
|  | Forward Error Correction Coding | LDPC 2/5 + BCH         |                                                                                                                                                                                                                                                                                                                                                                                                            |
|  | Total Symbol Rate               | 2.96 Msym/s            |                                                                                                                                                                                                                                                                                                                                                                                                            |

| Earth Station Data – Northwood Brewster Washington (Transmitter 112) |                  |                                                                                                                                                                                                                    |
|----------------------------------------------------------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                          | XSC = Washington |                                                                                                                                                                                                                    |
| City Name (XAL)                                                      | XAL = Brewster   |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                    | Lat = 480847 N   |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                                  | Lon = 1194200 W  |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                                 | PWR = 9.120 W    | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP)                                           | XAP = XAP112 T   | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                                | XAZ = XAZ112 V10 | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |

|                          |                                                                                                                                                                                                                                                                          |                                                                   |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Antenna Dimensions (XAD) | ANTENNA GAIN(dBi) <b>56.6 dBi</b><br>BEAMWIDTH@ ½ Power <b>0.3 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>382.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>3.0 meters</b><br><br>XAD = <b>XAD112 57G001B000-360A00382H003</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006 |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|

| Earth Station Data – Northwood Loring Maine (Transmitter 113) |                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                    |
|---------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (XSC)                                                   | XSC = <b>Maine</b>                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                    |
| City Name (XAL)                                               | XAL = <b>Loring</b>                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                             | Lat = <b>465601 N</b>                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                           | Lon = <b>0675434 W</b>                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
| Transmit Power (PWR)                                          | PWR = <b>9.120 W</b>                                                                                                                                                                                                                                                     | TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                            |
| Antenna Polarization (XAP)                                    | XAP = <b>XAP113 T</b>                                                                                                                                                                                                                                                    | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                                         | XAZ = <b>XAZ113 V10</b>                                                                                                                                                                                                                                                  | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna Dimensions (XAD)                                      | ANTENNA GAIN(dBi) <b>56.6 dBi</b><br>BEAMWIDTH@ ½ Power <b>0.3 degrees</b><br>AZIMUTHAL RANGE <b>0-360 degrees</b><br>SITE ELEVATION ABOVE MSL <b>207.0 meters</b><br>ANTENNA HEIGHT ABOVE TERRAIN <b>3.0 meters</b><br><br>XAD = <b>XAD113 57G001B000-360A00207H003</b> | EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006                                                                                                                                                  |

| Earth Station Data – Northwood Kihei Hawaii (Transmitter 114) |                     |  |
|---------------------------------------------------------------|---------------------|--|
| State (XSC)                                                   | XSC = <b>Hawaii</b> |  |
|                                                               | XAL = <b>Kihei</b>  |  |

|                                  |                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| City Name<br>(XAL)               |                                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Latitude<br>(DDMMSS)             | Lat = 204444 N                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| Longitude<br>(DDMMSS)            | Lon = 1562613 W                                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Transmit<br>Power (PWR)          | PWR = 9.120 W                                                                                                                                                                                                                 | TRANSMIT POWER SUPPLIED TO THE ANTENNA<br>INPUT TERMINAL, EXAMPLE, PWR01 W2<br>TRANSMIT POWER UNITS INCLUDE:<br>W = WATT,<br>K = KILOWATT,<br>M = MEGAWATT                                                         |
| Antenna<br>Polarization<br>(XAP) | XAP = XAP114 T                                                                                                                                                                                                                | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna<br>Azimuth<br>(XAZ)      | XAZ = XAZ114 V10                                                                                                                                                                                                              | THE EARTH STATION TRANSMITTER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION, V00 TO V90                                                                                                                          |
| Antenna<br>Dimensions<br>(XAD)   | ANTENNA GAIN(dBi) 56.6 dBi<br>BEAMWIDTH@ ½ Power 0.3 degrees<br>AZIMUTHAL RANGE 0-360 degrees<br>SITE ELEVATION ABOVE MSL 59.0 meters<br>ANTENNA HEIGHT ABOVE TERRAIN 3.0 meters<br><br>XAD = XAD114 57G001B000-360A00059H003 | EXAMPLE ASSUMING<br>NONGEOSTATIONARY, XAD01<br>16G030B000-360A00357H006                                                                                                                                            |