Response to April 22 Additional Information Request
Reference No. 61539
File No. 0061-EX-CM-2021
May 14, 2021

Questions and Answers:

(1) Please provide an updated NTIA Space Record Data form.

Attached are completed NTIA Space Record Data Forms for the proposed gateway transmit and receive links to the EG-1, EG-3, and Pathfinder II satellites.

(2) Questions on the EG-3 ODAR:

(a) What will the propulsion system be utilized for?

The EG-3 propulsion system was designed for the purpose of orbit raising after orbital insertion by the launch vehicle. As inferred in the ODAR (Sections 1, 4.3, and 5.1), if there is fuel remaining after orbit raising, additional maneuvers may be performed for orbital adjustment, maintenance, and end-of-life operations, although not required by analysis.

(b) Will the spacecraft perform stationkeeping (and if so, to what tolerances), orbit raising/lowering (and by how much/to what altitudes and when during the mission timeframe), collision avoidance or any additional functions?

Stationkeeping is not planned for this mission once it reaches its intended orbit of 650 km at 96° inclination. If there is remaining fuel after orbit raising, EchoStar Global may elect to utilize some of the remaining fuel to maintain orbital altitude and inclination to extend the mission life. EchoStar Global is unaware of any orbital tolerance requirements and therefore intends to operate the spacecraft as close to its intended orbit as possible, limited by natural forces experienced on orbit and the spacecraft's mechanical ability to compensate. Collision avoidance is typically performed by using the spacecraft surface to increase or decrease drag in the event that a collision avoidance maneuver is required. EchoStar Global will take appropriate action if predicted or notified by the Joint Space Operation Center and coordinated with another operator in the event of a close approach. As stated in Section 5.1 of the ODAR, using the propulsion system for collision avoidance is possible if required under extreme circumstances, although such use is not planned for the nominal mission.

(c) On page 18 of the ODAR, the area-to-mass is listed as 0.012 m^2/kg in the chart. All other references in the document show the area-to-mass as 0.0134 m^2/kg. Please provide an explanation for the difference.

The difference is a result of different estimates of fuel remaining after the mission is complete, which may or may not include a de-orbit maneuver and fuel depletion for passivation. Any residual propellant will disintegrate upon re-entry. The area-to-mass

ratio of 0.012 m^2/kg is a worst-case estimate assumed for a naturally degrading orbit to ensure compliance with a 25-year de-orbit requirement after the mission is complete, whereas 0.0134 m^2/kg is a nominal assumed area-to-mass ratio used for verifying disintegration of the spacecraft upon re-entry.

(d) On page 7 of the ODAR, the maximum insertion altitude of the spacecraft is indicated as 550 km, but everywhere else in the document all calculations are performed with a circular orbit of 650 km. Please provide an explanation for this difference.

EG-3 will be inserted into orbit at approximately 525 ±25 km, depending on the launch performance provided by the launch vehicle. Once initial satellite health checkout has completed, the spacecraft's propulsion system will be used to raise its orbit to 650 km at an inclination of 96°, as authorized by the Australian regulatory authority. Because the spacecraft will spend just a short time (*i.e.*, less than 30 days, based on the initial mission plan) at the maximum insertion altitude of 550 km, the ODAR analyses/calculations are performed for the planned mission altitude of 650 km.

*(e) Are there any plans to perform collision avoidance when transiting through the ISS (*International Space Station*) altitude? Or will there be coordination with any agencies, such as the 18th SPCS, NASA or others for purposes of tracking the spacecraft as it transits?*

The launch provider will ensure that the launch vehicle final stage has zero probability of colliding with the ISS, and has accomplished many similar launches safely with no threat of collision with the ISS. EG-3 will be inserted into a near-circular orbit at approximately 525 km altitude, well above the ISS.

(3) Questions on the Pathfinder II ODAR:

(a) Is the Pathfinder II still performing orbit lowering maneuvers or has it completed?

Pathfinder II has completed its orbit-lowering maneuvers.

(b) What is the projected remaining orbital lifetime of the spacecraft?

Based on its orbital decay profile, Pathfinder II is expected to re-enter the Earth's atmosphere in less than 15 years.

(c) What is the current altitude of the Pathfinder II?

Pathfinder II's current altitude is approximately 590 km.

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

Satellite Transmitter Data

Transmit Frequency: 7025 -7075 MHz		
Satellite Name: EchoStar Global-1 (Tyvak -0171)		
Data Field	**Data Answer**	**Description/Comments**
Polarization (XAP)	XAP = T	POLARIZATIONS INCLUDE : H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Orientation (XAZ)	XAZ = NB	NB= NARROWBEAM EC = EARTH COVERAGE
Antenna Dimension (XAD)	ANTENNA GAIN____7 dBi_____ BEAMWIDTH _____+/- 39°_____ XAD = 7G078B	(NTIA format (XAD), EXAMPLE, XAD01 16G030B)
Type of satellite (State = SP) (City = geo or non)	Type = Nongeostationary	Choose either: Geostationary or Nongeostationary
For Geostationary	Longitude = N/A	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)	INCLINATION ANGLE_____97.5°_____, APOGEE IN KILOMETERS____542_____, PERIGEE IN KILOMETERS____538_____, ORBITAL PERIOD IN HOURS ___1___AND FRACTIONS OF HOURS IN DECIMAL___0.59__, THE NUMBER OF SATELLITES IN THE SYSTEM_____3____, ORB = 97.5IN00542AP00538PE001.59H03NRT01	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, REM04 *ORB,98.0IN00510AP00510PE001.58H01NRT01, AND FOR SPACE-TO-SPACE COMMUNICATIONS WITH ANOTHER NONGEOSTATIONARY SATELLITE ADD AN ADDITIONAL *ORB FOR IT ENDING IN R01, EXAMPLE, REM05 *ORB,72.9IN03209AP00655PE013.46H01NRR01

Earth Station Data (Receiver)		
State (RSC)	RSC = MD	
City Name (RAL)	RAL = Germantown	
Latitude (DDMMSS)	Lat = 3910440N	
Longitude (DDDMMSS)	Lon = 7714495W	
Antenna Polarization (RAP)	RAP = T	POLARIZATIONS INCLUDE : H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = Azimuth range 0-360 Elevation range 0-90	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimensions (RAD)	ANTENNA GAIN_____39.9_____, BEAMWIDTH_____1.25°____, AZIMUTHAL RANGE____0-360___, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS ___137_____ THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS _____4_____ RAD = 39.9G1.25B000-360A00137H004	EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006
FCC notes:		

Part B: Ground Stations, Earth to Space link data:

Earth Station Transmitter Data

Transmit Frequency: 5150-5250 MHz		
State (XSC)	XSC = MD	
City Name (XAL)	XAL = Germantown	
Latitude (DDMMSS)	Lat = 3910440N	
Longitude (DDDMMSS)	Lon = 7714495W	
Antenna Polarization (XAP)	XAP = T	POLARIZATIONS INCLUDE : H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Antenna Azimuth (XAZ)	XAZ = Azimuth range 0-360 Elevation range 0-90	THE EARTH STATION Transmitter ANTENNA AZIMUTH (XAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, XAZ01 V00
Antenna Dimensions (XAD)	ANTENNA GAIN_____39.0_____, BEAMWIDTH_____1.25_____, AZIMUTHAL RANGE_____0-360_____, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS _____137_____ THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS _____4_____ XAD = 39G1.25B000-360A00137H004	EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006
Satellite Receive		
Specifications Polarization (RAP)	RAP = T	POLARIZATIONS INCLUDE : H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Azimuth (RAZ)	RAZ = Azimuth range 0-360 Elevation range 0-90	STATION RECEIVER ANTENNA AZIMUTH (XAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00
Dimension (RAD)	ANTENNA GAIN_____6.6 dBi____ BEAMWIDTH ___+/-40°__ RAD = 6.6G080B	(NTIA format (RAD), EXAMPLE, RAD01 16G030B)
Type of satellite (State = SP) City = G/No	Type = Nongeostationary	Choose either: Geostationary or Nongeostationary

For Geostationary	Longitude = N/A	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)	INCLINATION ANGLE_____97.5°_____, APOGEE IN KILOMETERS____542_____, PERIGEE IN KILOMETERS_____538_____, ORBITAL PERIOD IN HOURS ___1__AND FRACTIONS OF HOURS IN DECIMAL___0.59___, THE NUMBER OF SATELLITES IN THE SYSTEM_____3_____, ORB = 97.5IN00542AP00538PE001.59H03NRT01	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, REM04 *ORB,98.0IN00510AP00510PE001.58H01NRT01, AND FOR SPACE-TO-SPACE COMMUNICATIONS WITH ANOTHER NONGEOSTATIONARY SATELLITE ADD AN ADDITIONAL *ORB FOR IT ENDING IN R01, EXAMPLE, REM05 *ORB,72.9IN03209AP00655PE013.46H01NRR01

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

Satellite Transmitter Data

Transmit Frequency: 7025 -7075 MHz		
Satellite Name: EchoStar Global-3 (Tyvak -0173)		
Data Field	**Data Answer**	**Description/Comments**
Polarization (XAP)	XAP = T	POLARIZATIONS INCLUDE : H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Orientation (XAZ)	XAZ = NB	NB= NARROWBEAM EC = EARTH COVERAGE
Antenna Dimension (XAD)	ANTENNA GAIN____7 dBi_____ BEAMWIDTH _____+/- 39°_____ XAD = 7G078B	(NTIA format (XAD), EXAMPLE, XAD01 16G030B)
Type of satellite (State = SP) (City = geo or non)	Type = Nongeostationary	Choose either: Geostationary or Nongeostationary
For Geostationary	Longitude = N/A	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)	INCLINATION ANGLE_____96°_____, APOGEE IN KILOMETERS____650_____, PERIGEE IN KILOMETERS____650_____, ORBITAL PERIOD IN HOURS ___1___AND FRACTIONS OF HOURS IN DECIMAL___0.63__, THE NUMBER OF SATELLITES IN THE SYSTEM_____3____, ORB = 96IN00650AP00650PE001.63H03NRT01	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, REM04 *ORB,98.0IN00510AP00510PE001.58H01NRT01, AND FOR SPACE-TO-SPACE COMMUNICATIONS WITH ANOTHER NONGEOSTATIONARY SATELLITE ADD AN ADDITIONAL *ORB FOR IT ENDING IN R01, EXAMPLE, REM05 *ORB,72.9IN03209AP00655PE013.46H01NRR01

Earth Station Data (Receiver)		
State (RSC)	RSC = MD	
City Name (RAL)	RAL = Germantown	
Latitude (DDMMSS)	Lat = 3910440N	
Longitude (DDDMMSS)	Lon = 7714495W	
Antenna Polarization (RAP)	RAP = T	POLARIZATIONS INCLUDE : H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = Azimuth range 0-360 Elevation range 0-90	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimensions (RAD)	ANTENNA GAIN_____39.9_____, BEAMWIDTH_____1.25°____, AZIMUTHAL RANGE____0-360___, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS ___137_____ THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS _____4_____ RAD = 39.9G1.25B000-360A00137H004	EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006
FCC notes:		

Part B: Ground Stations, Earth to Space link data:

Earth Station Transmitter Data

Transmit Frequency: 5150-5250 MHz		
State (XSC)	XSC = MD	
City Name (XAL)	XAL = Germantown	
Latitude (DDMMSS)	Lat = 3910440N	
Longitude (DDDMMSS)	Lon = 7714495W	
Antenna Polarization (XAP)	XAP = T	POLARIZATIONS INCLUDE : H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Antenna Azimuth (XAZ)	XAZ = Azimuth range 0-360 Elevation range 0-90	THE EARTH STATION Transmitter ANTENNA AZIMUTH (XAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, XAZ01 V00
Antenna Dimensions (XAD)	ANTENNA GAIN_____39.0_____, BEAMWIDTH_____1.25_____, AZIMUTHAL RANGE_____0-360_____, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS _____137_____ THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS _____4_____ XAD = 39G1.25B000-360A00137H004	EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006
Satellite Receive		
Specifications Polarization (RAP)	RAP = T	POLARIZATIONS INCLUDE : H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Azimuth (RAZ)	RAZ = Azimuth range 0-360 Elevation range 0-90	STATION RECEIVER ANTENNA AZIMUTH (XAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00
Dimension (RAD)	ANTENNA GAIN_____6.6 dBi_____ BEAMWIDTH ___+/-40°___ RAD = 6.6G080B	(NTIA format (RAD), EXAMPLE, RAD01 16G030B)
Type of satellite (State = SP) City = G/No	Type = Nongeostationary	Choose either: Geostationary or Nongeostationary

For Geostationary	Longitude = N/A	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)	INCLINATION ANGLE_____96°_____, APOGEE IN KILOMETERS_____650_____, PERIGEE IN KILOMETERS_____650_____, ORBITAL PERIOD IN HOURS ___1__AND FRACTIONS OF HOURS IN DECIMAL___0.63___, THE NUMBER OF SATELLITES IN THE SYSTEM_____3_____, ORB = 96IN00650AP00650PE001.63H03NRT01	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, REM04 *ORB,98.0IN00510AP00510PE001.58H01NRT01, AND FOR SPACE-TO-SPACE COMMUNICATIONS WITH ANOTHER NONGEOSTATIONARY SATELLITE ADD AN ADDITIONAL *ORB FOR IT ENDING IN R01, EXAMPLE, REM05 *ORB,72.9IN03209AP00655PE013.46H01NRR01

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

Satellite Transmitter Data

Transmit Frequency: 7025 -7075 MHz		
Satellite Name: Pathfinder-2		
Data Field	**Data Answer**	**Description/Comments**
Polarization AP)	XAP T	POLARIZATIONS INCLUDE : H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Orientation (XAZ)	XAZ NB	NB= NARROWBEAM EC = EARTH COVERAGE
Antenna Dimension (XAD)	ANTENNA GAIN____7 dBi_____ BEAMWIDTH _____+/- 39°_____ XAD 7G078B	(NTIA format (XAD), EXAMPLE, XAD01 16G030B)
Type of satellite (State = SP) (City = geo or non)	Type Nongeostationary	Choose either: Geostationary or Nongeostationary
For Geostationary	Longitude N/A	IF NY ATELLITES RE EOSTATIONARY, EPORT ITS ATITUDE S 000000N (XLA AND/OR RLA) AND REPORT ITS LONGITUDE (XLG AND/OR RLG).
For Nongeostationary (Orbital Data)	INCLINATION ANGLE_____97.7°_____, APOGEE N KILOMETERS____597_____, PERIGEE KILOMETERS____579_____, ORBITAL PERIOD IN HOURS ___1___AND FRACTIONS OURS IN DECIMAL___0.6__, THE UMBER OF SATELLITES IN THE SYSTEM_____3____, ORB 97.7IN00597AP00579PE001.6H03NRT01	IF NY ATELLITES RE ONGEOSTATIONARY, REPORT ITS INCLINATION ANGLE, APOGEE IN ILOMETERS, ERIGEE ILOMETERS, ORBITAL PERIOD IN HOURS AND FRACTIONS OF HOURS IN DECIMAL, THE NUMBER OF SATELLITES IN HE YSTEM, HEN 01, XAMPLE, REM04 *ORB,98.0IN00510AP00510PE001.58H01NRT01, AND FOR SPACE TO SPACE COMMUNICATIONS WITH ANOTHER NONGEOSTATIONARY SATELLITE ADD AN ADDITIONAL *ORB FOR IT ENDING IN R01, EXAMPLE, REM05 *ORB,72.9IN03209AP00655PE013.46H01NRR01

Earth Station Data (Receiver)		
State (RSC)	RSC MD	
City ame (RAL)	RAL Germantown	
Latitude (DDMMSS)	Lat 3910440N	
Longitude (DDDMMSS)	Lon 7714495W	
Antenna Polarization (RAP)	RAP T	POLARIZATIONS INCLUDE : H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = Azimuth range 0 360 Elevation range 0 90	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimensions (RAD)	ANTENNA GAIN_____39.9_____, BEAMWIDTH_____1.25°____, AZIMUTHAL RANGE____0 360___, THE SITE EVATION ABOVE MEAN SEA LEVEL IN METERS ___137_____ THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS _____4_____ RAD 39.9G1.25B000-360A00137H004	EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000 360A00357H006
FCC notes:		

Part B: Ground Stations, Earth to Space link data:

Earth Station Transmitter Data

Transmit Frequency: 5150 - 5250 MHz		
State (XSC)	SC MD	
City ame (XAL)	XAL Germantown	
Latitude (DDMMSS)	Lat 3910440N	
Longitude (DDDMMSS)	Lon 7714495W	
Antenna Polarization (XAP)	XAP T	POLARIZATIONS INCLUDE : H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Antenna Azimuth (XAZ)	XAZ Azimuth range 0-360 Elevation range 0-90	THE EARTH STATION Transmitter ANTENNA AZIMUTH (XAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, XAZ01 V00
Antenna Dimensions (XAD)	ANTENNA GAIN_____39.0_____, BEAMWIDTH_____1.25_____, AZIMUTHAL RANGE_____0-360_____, HE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS _____137_____ THE TENNA HEIGHT ABOVE TERRAIN N METERS _____4_____ XAD 39G1.25B000-360A00137H004	EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000 360A00357H006
Satellite Receive		
Specifications Polarization (RAP)	RAP T	POLARIZATIONS INCLUDE : H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Azimuth (RAZ)	RAZ Azimuth range 0-360 Elevation range 0-90	STATION RECEIVER ANTENNA AZIMUTH (XAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00
Dimension RAD)	ANTENNA GAIN_____6.6 dBi_____ BEAMWIDTH ____+/-40°_____ RAD 6.6G080B	(NTIA format (RAD), EXAMPLE, RAD01 16G030B)
Type of satellite (State = SP) City = G/No	Type Nongeostationary	Choose either: Geostationary or Nongeostationary

For Geostationary	Longitude N/A	IF NY ATELLITES RE EOSTATIONARY, EPORT ITS ATITUDE S 00000N XLA ND/OR LA) ND REPORT ITS LONGITUDE (XLG AND/OR RLG).
For Nongeostationary (Orbital Data)	INCLINATION ANGLE_____97.7°_____, APOGEE N KILOMETERS_____597_____, PERIGEE IN KILOMETERS_____579_____, ORBITAL PERIOD IN HOURS ____1___AND FRACTIONS OURS IN DECIMAL___0.6___, THE UMBER OF SATELLITES IN THE SYSTEM_____3_____, ORB 97.7IN00597AP00579PE001.6H03NRT01	IF NY ATELLITES RE ONGEOSTATIONARY, REPORT ITS INCLINATION ANGLE, APOGEE IN ILOMETERS, ERIGEE ILOMETERS, ORBITAL PERIOD IN HOURS AND FRACTIONS OF HOURS IN DECIMAL, THE NUMBER OF SATELLITES IN HE YSTEM, HEN 01, XAMPLE, REM04 *ORB,98.0IN00510AP00510PE001.58H01NRT01, AND FOR SPACE TO SPACE COMMUNICATIONS WITH ANOTHER NONGEOSTATIONARY SATELLITE ADD AN ADDITIONAL *ORB FOR IT ENDING IN R01, EXAMPLE, REM05 *ORB,72.9IN03209AP00655PE013.46H01NRR01