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CM1 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 C is included to describe the satellite space to space links

Part A: Space to Earth Downlink Data

The satellites contain a Ka-band and S-band transceiver for communication to Cesium ground stations.

Ka-band Satellite Transmitter Data

Transmit Frequency: 27.0 – 27.4 GHz, 27.1 – 27.3 GHz, 27.2 GHz, and 27.3 GHz		
Satellite Name: Cesium Satellite 1 (CS1), Cesium Satellite 2 (CS2)		
Data Field	Data Answer	Description/Comments
Polarization (XAP)	XAP = XAP01 L	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 = XAZ01 NB	NB= NARROWBEAM EC = EARTH COVERAGE
Antenna Dimension (XAD)	ANTENNA GAIN = 27 dBi BEAMWIDTH = 7 degrees XAD = XAD01 27G007B	(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 =	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___97.6 deg___, APOGEE IN KILOMETERS___550___, PERIGEE IN KILOMETERS___550___, ORBITAL PERIOD IN HOURS___1___ AND FRACTIONS OF HOURS IN DECIMAL___0.59___, THE NUMBER OF SATELLITES IN THE SYSTEM___2___, ORB = *ORB,97.6IN00550AP00550PE001.59H02NRT01	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

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Earth Station Data (Receiver) Ka-band #1		
State (RSC)	RSC = TX	
City Name (RAL)	RAL = Austin	
Latitude (DDMMSS)	Lat = 30° 18' 35.5" N	
Longitude (DDDMMSS)	Lon = 097° 56' 23.5" W	
Antenna Polarization (RAP)	RAP = RAP01 L	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 = RAZ01 V15	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimensions (RAD)	ANTENNA GAIN_____56.6 dBi_____, BEAMWIDTH_____0.25 degrees_____, AZIMUTHAL RANGE___0 to 360_____, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS _____290_____ THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS _____4.1_____ RAD = RAD01 57G0.3B000-360A00290H004	EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006
FCC notes: 1. Use S-Note S945. 2. REM AGN, Cubesat, (CS1, CS2)		

Earth Station Data (Receiver) Ka-band #2		
State (RSC)	RSC = CO	
City Name (RAL)	RAL = Broomfield	
Latitude (DDMMSS)	Lat = 39° 54 58.1" N	
Longitude (DDDMMSS)	Lon = 105° 07' 05.4" W	
Antenna Polarization (RAP)	RAP = L	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 = RAZ01 V15	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF

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		ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimensions (RAD)	ANTENNA GAIN_____56.6 dBi_____, BEAMWIDTH_____0.25 degrees_____, AZIMUTHAL RANGE___0 to 360_____, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS _____1701_____ THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS _____4.1_____ RAD = RAD01 57G0.3B000-360A01701H004	EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006
FCC notes: 1. Use S-Note S945. 2. REM AGN, Cubesat, (CS1, CS2)		

S-band Satellite Transmitter Data

Transmit Frequency: 2211 MHz and 2215 MHz		
Satellite Name: Cesium Satellite 1 (CS1), Cesium Satellite 2 (CS2)		
Data Field	Data Answer	Description/Comments
Polarization (XAP)	XAP = L	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 = EC	NB= NARROWBEAM EC = EARTH COVERAGE
Antenna Dimension (XAD)	ANTENNA GAIN = 7 dBi BEAMWIDTH = 80 degrees XAD = XAD01 07G080B	(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 =	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_____97.6 deg_____, APOGEE IN KILOMETERS_____550_____, PERIGEE IN KILOMETERS_____550_____, ORBITAL PERIOD IN HOURS___1___ AND FRACTIONS OF HOURS IN DECIMAL___0.59___,	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

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	THE NUMBER OF SATELLITES IN THE SYSTEM _____2_____, ORB = *ORB,97.6IN00550AP00550PE001.59H02NRT01	COMMUNICATIONS WITH ANOTHER NONGEOSTATIONARY SATELLITE ADD AN ADDITIONAL *ORB FOR IT ENDING IN R01, EXAMPLE, REM05 *ORB,72.9IN03209AP00655PE013.46H01NRR01
Earth Station Data (Receiver) S-band #1		
State (RSC)	RSC = TX	
City Name (RAL)	RAL = Austin	
Latitude (DDMMSS)	Lat = 30° 18' 35.5" N	
Longitude (DDDMMSS)	Lon = 097° 56' 23.5" W	
Antenna Polarization (RAP)	RAP = L	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 = RAZ01 V15	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimensions (RAD)	ANTENNA GAIN _____31 dBi_____, BEAMWIDTH _____5 degrees_____, AZIMUTHAL RANGE ____0 to 360_____, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS _____290_____ THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS _____3.6_____ RAD = RAD01 31G005B000-360A00290H004	EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006
FCC notes: 3. Use S-Note S945. 4. REM AGN, Cubesat, (CS1, CS2)		

Earth Station Data (Receiver) S-band #2		
State (RSC)	RSC = CO	
City Name (RAL)	RAL = Broomfield	
Latitude (DDMMSS)	Lat = 39° 54' 58.1" N	
Longitude (DDDMMSS)	Lon = 105° 07' 05.4" W	
Antenna Polarization (RAP)	RAP = L	POLARIZATIONS INCLUDE : H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL,

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		L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = RAZ01 V15	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimensions (RAD)	ANTENNA GAIN _____ 31 dBi _____, BEAMWIDTH _____ 5 degrees _____, AZIMUTHAL RANGE _____ 0 to 360 _____, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS _____ 1701 _____ THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS _____ 3.6 _____ RAD = RAD01 31G005B000-360A01701H004	EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006
FCC notes: 3. Use S-Note S945. 4. REM AGN, Cubesat, (CS1, CS2)		

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

Ka-band Earth Station Transmitter Data #1

Transmit Frequency: 27.0 – 27.4 GHz, 27.1 – 27.3 GHz, 27.2 GHz, and 27.3 GHz		
State (XSC)	XSC = TX	
City Name (XAL)	XAL = Austin	
Latitude (DDMMSS)	Lat = 30° 18' 35.5" N	
Longitude (DDMMSS)	Lon = 097° 56' 23.5" W	
Antenna Polarization (XAP)	XAP = L	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 = XAZ01 V15	THE EARTH STATION Transmitter ANTENNA AZIMUTH (XAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, XAZ01 V00
Antenna Dimensions (XAD)	ANTENNA GAIN _____ 56.6 dBi _____, BEAMWIDTH _____ 0.25 _____, AZIMUTHAL RANGE _____ 0 to 360 _____, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS _____ 290 _____ THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS _____ 4.1 _____ XAD = XAD01 57G0.3B000-360A00290H004	EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006
Satellite Receive Specifications		
Polarization (RAP)	RAP = L	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 = NB	NB= NARROWBEAM EC = EARTH COVERAGE
Dimension (RAD)	ANTENNA GAIN = 27 dBi BEAMWIDTH = 7 degrees RAD = RAD01 27G007B	(NTIA format (RAD), EXAMPLE, RAD01 16G030B)
Type of satellite (State = SP) City = G/No	Type = Nongeostationary	Choose either: Geostationary or Nongeostationary

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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)	INCLINATION ANGLE <u>97.6 deg</u> , APOGEE IN KILOMETERS <u>550</u> , PERIGEE IN KILOMETERS <u>550</u> , ORBITAL PERIOD IN HOURS <u>1</u> AND FRACTIONS OF HOURS IN DECIMAL <u>0.59</u> , THE NUMBER OF SATELLITES IN THE SYSTEM <u>2</u> , ORB = *ORB,97.6IN00550AP00550PE001.59H02NRT01	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

Ka-band Earth Station Transmitter Data #2

Transmit Frequency: 27.0 – 27.4 GHz, 27.1 – 27.3 GHz, 27.2 GHz, and 27.3 GHz		
State (XSC)	XSC = CO	
City Name (XAL)	XAL = Broomfield	
Latitude (DDMMSS)	Lat = 39° 54' 58.1" N	
Longitude (DDMMSS)	Lon = 105° 07' 05.4" W	
Antenna Polarization (XAP)	XAP = L	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 = XAZ01 V15	THE EARTH STATION Transmitter ANTENNA AZIMUTH (XAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, XAZ01 V00
Antenna Dimensions (XAD)	ANTENNA GAIN <u>56.6 dBi</u> , BEAMWIDTH <u>0.25</u> , AZIMUTHAL RANGE <u>0 to 360</u> , THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS <u>1701</u> , THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS <u>4.1</u> , XAD = XAD01 57G0.3B000-360A01701H004	EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006
Satellite Receive Specifications		
Polarization (RAP)	RAP = L	POLARIZATIONS INCLUDE : H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL,

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		L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Azimuth (RAZ)	RAZ = NB	NB= NARROWBEAM EC = EARTH COVERAGE
Dimension (RAD)	ANTENNA GAIN = 27 dBi BEAMWIDTH = 7 degrees RAD = RAD01 27G007B	(NTIA format (RAD), EXAMPLE, RAD01 16G030B)
Type of satellite (State = SP) City = G/No	Type = Nongeostationary	Choose either: Geostationary or 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)	INCLINATION ANGLE___97.6 deg___, APOGEE IN KILOMETERS___550___, PERIGEE IN KILOMETERS___550___, ORBITAL PERIOD IN HOURS___1___ AND FRACTIONS OF HOURS IN DECIMAL___0.59___, THE NUMBER OF SATELLITES IN THE SYSTEM___2___, ORB = *ORB,97.6IN00550AP00550PE001.59H02NRT01	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

S-band Earth Station Transmitter Data #1

Transmit Frequency: 2061.2 MHz		
State (XSC)	XSC = TX	
City Name (XAL)	XAL = Austin	
Latitude (DDMMSS)	Lat = 30° 18' 35.5" N	
Longitude (DDDMMSS)	Lon = 097° 56' 23.5" W	
Antenna Polarization (XAP)	XAP = L	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 = XAZ01 V15	THE EARTH STATION Transmitter ANTENNA AZIMUTH (XAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, XAZ01 V00
Antenna Dimensions (XAD)	ANTENNA GAIN___31 dBi___, BEAMWIDTH___5___, AZIMUTHAL RANGE___0 to 360___,	EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006

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	THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS ____290____ THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS ____3.6____ XAD = XAD01 31G005B000-360A00290H004	
Satellite Receive Specifications		
Polarization (RAP)	RAP = L	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 = EC	NB= NARROWBEAM EC = EARTH COVERAGE
Dimension (RAD)	ANTENNA GAIN = 6.8 dBi BEAMWIDTH = 80 degrees RAD = RAD01 07G080B	(NTIA format (RAD), EXAMPLE, RAD01 16G030B)
Type of satellite (State = SP) City = G/No	Type = Nongeostationary	Choose either: Geostationary or 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)	INCLINATION ANGLE ____97.6 deg____, APOGEE IN KILOMETERS ____550____, PERIGEE IN KILOMETERS ____550____, ORBITAL PERIOD IN HOURS ____1____ AND FRACTIONS OF HOURS IN DECIMAL ____0.59____, THE NUMBER OF SATELLITES IN THE SYSTEM ____2____, ORB = *ORB,97.6IN00550AP00550PE001.59H02NRT01	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

S-band Earth Station Transmitter Data #2

Transmit Frequency: 2061.2 MHz		
State (XSC)	XSC = CO	
City Name (XAL)	XAL = Broomfield	
Latitude (DDMMSS)	Lat = 39° 54' 58.1" N	
Longitude (DDMMSS)	Lon = 105° 07' 05.4" W	

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Antenna Polarization (XAP)	XAP = L	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 = XAZ01 V15	THE EARTH STATION Transmitter ANTENNA AZIMUTH (XAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, XAZ01 V00
Antenna Dimensions (XAD)	ANTENNA GAIN____31 dBi_____, BEAMWIDTH____5_____, AZIMUTHAL RANGE____0 to 360_____, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS ____1701_____ THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS ____3.6_____ XAD = XAD01 31G005B000-360A01701H004	EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006
Satellite Receive Specifications		
Polarization (RAP)	RAP = L	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 = EC	NB= NARROWBEAM EC = EARTH COVERAGE
Dimension (RAD)	ANTENNA GAIN = 6.8 dBi BEAMWIDTH = 80 degrees RAD = RAD01 07G080B	(NTIA format (RAD), EXAMPLE, RAD01 16G030B)
Type of satellite (State = SP) City = G/No	Type = Nongeostationary	Choose either: Geostationary or 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)	INCLINATION ANGLE____97.6 deg____, APOGEE IN KILOMETERS____550_____, PERIGEE IN KILOMETERS____550_____, ORBITAL PERIOD IN HOURS____1____ AND FRACTIONS OF HOURS IN DECIMAL____0.59____, THE NUMBER OF SATELLITES IN THE SYSTEM____2_____, ORB = *ORB,97.6IN00550AP00550PE001.59H02NRT01	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

Part C: Space to Space Downlink Data

The satellites contain a Simplex Transmitter, and a Duplex Transceiver, both operating with the Globalstar system. The satellites also contain a radio for inter-satellite link capabilities.

Satellite Simplex Transmitter Data

Transmit Frequency: 1616.25 MHz		
Satellite Name: Cesium Satellite 1 (CS1), Cesium Satellite 2 (CS2)		
Data Field	Data Answer	Description/Comments
Polarization (XAP)	XAP = XAP01 L	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= NARROWBEAM EC = EARTH COVERAGE
Antenna Dimension (XAD)	ANTENNA GAIN <u>4</u> BEAMWIDTH <u>100</u> XAD = XAD01 04G100B	(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 =	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 <u>97.6 deg</u> , APOGEE IN KILOMETERS <u>550</u> , PERIGEE IN KILOMETERS <u>550</u> , ORBITAL PERIOD IN HOURS <u>1</u> AND FRACTIONS OF HOURS IN DECIMAL <u>0.59</u> , THE NUMBER OF SATELLITES IN THE SYSTEM <u>2</u> , ORB = *ORB,97.6IN00550AP00550PE001.59H02NRT01 *ORB,52.0IN01414AP01414PE001.90H48NRR01	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

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Satellite Globalstar Receive Specifications		
Polarization (RAP)	RAP = RAP01 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 =	NB= NARROWBEAM EC = EARTH COVERAGE
Dimension (RAD)	ANTENNA GAIN__12____ BEAMWIDTH__37____ RAD = RAD01 12G037B	(NTIA format (RAD), EXAMPLE, RAD01 16G030B)
Type of satellite (State = SP) City = G/No	Type = Nongeostationary	Choose either: Geostationary or 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)	INCLINATION ANGLE__52.0 deg____, APOGEE IN KILOMETERS__1414____, PERIGEE IN KILOMETERS__1414____, ORBITAL PERIOD IN HOURS __1____AND FRACTIONS OF HOURS IN DECIMAL__0.9____, THE NUMBER OF SATELLITES IN THE SYSTEM__48____, ORB = *ORB,52.0IN01414AP01414PE001.90H48NRR01 *ORB,97.6IN00550AP00550PE001.59H02NRT01	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

Satellite Duplex Transmitter Data

Transmit Frequencies: 2 channels, 1615.65 MHz, and 1616.88 MHz		
Satellite Name: Cesium Satellite 1 (CS1), Cesium Satellite 2 (CS2)		
Data Field	Data Answer	Description/Comments
Polarization (XAP)	XAP = XAP01 L	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

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Orientation (XAZ)	XAZ =	NB= NARROWBEAM EC = EARTH COVERAGE
Antenna Dimension (XAD)	ANTENNA GAIN ____ 4.3 ____ BEAMWIDTH ____ 110 ____ XAD = XAD01 04G110B	(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 =	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 ____ 97.6 deg ____ , APOGEE IN KILOMETERS ____ 550 ____ , PERIGEE IN KILOMETERS ____ 550 ____ , ORBITAL PERIOD IN HOURS ____ 1 ____ AND FRACTIONS OF HOURS IN DECIMAL ____ 0.59 ____ , THE NUMBER OF SATELLITES IN THE SYSTEM ____ 2 ____ , ORB = *ORB,97.6IN00550AP00550PE001.59H02NRT01 *ORB,52.0IN01414AP01414PE001.90H48NRR01	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
Satellite Globalstar Receive Specifications		
Polarization (RAP)	RAP = RAP01 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 =	NB= NARROWBEAM EC = EARTH COVERAGE
Dimension (RAD)	ANTENNA GAIN ____ 12 ____ BEAMWIDTH ____ 37 ____ RAD = RAD01 12G037B	(NTIA format (RAD), EXAMPLE, RAD01 16G030B)
Type of satellite (State = SP) City = G/No	Type = Nongeostationary	Choose either: Geostationary or 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).

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For Nongeostationary (Orbital Data)	INCLINATION ANGLE___52.0 deg_____, APOGEE IN KILOMETERS___1414_____, PERIGEE IN KILOMETERS___1414_____, ORBITAL PERIOD IN HOURS __1____AND FRACTIONS OF HOURS IN DECIMAL___0.9_____, THE NUMBER OF SATELLITES IN THE SYSTEM___48_____, ORB = *ORB,52.0IN01414AP01414PE001.90H48NRR01 *ORB,97.6IN00550AP00550PE001.59H02NRT01	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
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Globalstar Constellation to Duplex Transmitter Data

Transmit Frequencies: (MHz) 2484.39 2485.62 2486.85 2488.08 2489.31 2490.54 2491.77 2493 2494.23 2495.46 2496.69 2497.92 2499.15		
State (XSC)	(satellite) XSC = SP	
City Name (XAL)	(nongeostationary) XAL = non	
Antenna Polarization (XAP)	XAP = XAP01 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 = XAZ01 NB	THE EARTH STATION Transmitter ANTENNA AZIMUTH (XAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, XAZ01 V00

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Antenna Dimensions (XAD)	ANTENNA GAIN____12_____, BEAMWIDTH____37_____, XAD = 12G037B	EXAMPLE ASSUMING NONGEOSTATIONARY, XAD01 16G030B000-360A00357H006
Satellite Duplex Receive Specifications		
Polarization (RAP)	RAP = RAP 01 L	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 =	NB= NARROWBEAM EC = EARTH COVERAGE
Dimension (RAD)	ANTENNA GAIN____4____ BEAMWIDTH____110____ RAD = RAD01 04G110B	(NTIA format (RAD), EXAMPLE, RAD01 16G030B)
Type of satellite (State = SP) City = G/No	Type = Nongeostationary	Choose either: Geostationary or 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)	INCLINATION ANGLE____97.6 deg____, APOGEE IN KILOMETERS____550____, PERIGEE IN KILOMETERS____550____, ORBITAL PERIOD IN HOURS __1____AND FRACTIONS OF HOURS IN DECIMAL____0.59____, THE NUMBER OF SATELLITES IN THE SYSTEM____2____, ORB = *ORB,97.6IN00550AP00550PE001.59H02NRR01 *ORB,52.0IN01414AP01414PE001.90H48NRT01	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

Spacecraft CommPack Inter-Satellite Link Transmitter Data (between both spacecraft in the system)

Transmit Frequency: 2455 MHz

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Satellite Name: Cesium Satellite 1 (CS1), Cesium Satellite 2 (CS2)		
Data Field	Data Answer	Description/Comments
Polarization (XAP)	XAP = XAP01 R	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= NARROWBEAM EC = EARTH COVERAGE
Antenna Dimension (XAD)	ANTENNA GAIN____9.7 dBi____ BEAMWIDTH = 31.2 deg (Phi = 0) 79.4 deg (Phi = 90) XAD = XAD01 10G079B	(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 =	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____97.6 deg____, APOGEE IN KILOMETERS____550____, PERIGEE IN KILOMETERS____550____, ORBITAL PERIOD IN HOURS ____1____AND FRACTIONS OF HOURS IN DECIMAL____0.59____, THE NUMBER OF SATELLITES IN THE SYSTEM____2____, ORB = *ORB,97.6IN00550AP00550PE001.59H02NRT01 *ORB,97.6IN00550AP00550PE001.59H02NRR01	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
Satellite Inter-Satellite Link Receive Specifications		
Polarization (RAP)	RAP = RAP01 R	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 =	NB= NARROWBEAM EC = EARTH COVERAGE

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Dimension (RAD)	ANTENNA GAIN____9.7 dBi____ BEAMWIDTH = 31.2 deg (Phi = 0) 79.4 deg (Phi = 90) RAD = RAD01 10G079B	(NTIA format (RAD), EXAMPLE, RAD01 16G030B)
Type of satellite (State = SP) City = G/No	Type = Nongeostationary	Choose either: Geostationary or 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)	INCLINATION ANGLE____97.6 deg____, APOGEE IN KILOMETERS____550____, PERIGEE IN KILOMETERS____550____, ORBITAL PERIOD IN HOURS __1____AND FRACTIONS OF HOURS IN DECIMAL____0.59____, THE NUMBER OF SATELLITES IN THE SYSTEM____2____, ORB = *ORB,97.6IN00550AP00550PE001.59H02NRR01 *ORB,97.6IN00550AP00550PE001.59H02NRT01	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