Mars Outpost 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.

Mars Outpost: a two hour hosted mission on SpaceX second stage. S Band up and down to McMurdo, Svalbard and White Sands; X Band down to McMurdo and Svalbard.

Part A: Space to Earth Downlink Data

Satellite Transmitter Data (Required for Each Frequency)

Satellite Transmitter S Band

Transmit Frequency: 2209.2 MHz			
Satellite Name: Ma	Satellite Name: Mars Outpost		
Data Field	Data Answer	Description/Comments	
Transmit Power (PWR)	Power = 1.59 W PWR01 W2	TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2 TRANSMIT POWER UNITS INCLUDE: W = WATT, K = KILOWATT, M = MEGAWATT	
Necessary Bandwidth	2 MHz	THE WIDTH OF FREQUENCY BAND WHICH IS JUST SUFFICIENT TO SUCCESSFULLY TRANSFER DATA. FORMULAS CAN BE FOUND IN ANNEX J OF THE NTIA MANUAL.	
RF Emissions Data -3 dB bandwidth -20 dB bandwidth	N/A	2-SIDED EMISSION BANDWIDTH VALUES	
-40 dB bandwidth			
Modulation Type	OQPSK	THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.	
Data Rate	1 Mbps	INFORMATION DATA RATE	
Forward Error Correction Coding	Is FEC used? Yes ⊠ No □ FEC Type: _Convolutional Encoding, FEC Rate:R ½ K=7,		
Total Symbol Rate	2 Mbps	DATA RATE COMBINED WITH FEC AND FRAME OVERHEAD RESULTING IN THE TOTAL SYMBOL RATE AT THE INPUTE TO THE SYMBOL MAPPER/MODULATOR.	
Does transmitter have a beacon mode?	Yes □ 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 STATIONS ARE VISIBLE.	

If transmitter has	Yes 🗆		
a beacon mode,	No □		
can the beacon be			
commanded off?			
Transmit Antenna Polarization (XAP)	XAP = 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	
Transmit Antenna	XAZ = NB	NB= NARROWBEAM EC = EARTH COVERAGE	
Orientation (XAZ)	ANTENNA CAINI	NTIA FORMAT (XAD), EXAMPLE, FOR 16 DBI	
Transmit Antenna Dimension (XAD)	ANTENNA GAIN6, BEAMWIDTH75, XAD = 06G075B	ANTENNA GAIN AND 30 DEGREE BEAMWIDTH XAD01 16G030B	
Type of satellite (State = SPCE) (City = Geo or Nongeo)	Type = NONGEOSTATIONARY	CHOOSE EITHER: GEOSTATIONARY OR NONGEOSTATIONARY	
For Geostationary Satellites	Longitude =	IF ANY SATELLITES ARE GEOSTATIONARY, REPORT ITS LATITUDE AS 000000N (XLA AND/OR RLA) AND REPORT ITS LONGITUDE IN DDDMMSS FORMAT (XLG AND/OR RLG).	
For Nongeostationary (Orbital Data)	INCLINATION ANGLE97.5, APOGEE IN KILOMETERS538, PERIGEE IN KILOMETERS531, ORBITAL PERIOD IN HOURS _1AND FRACTIONS OF HOURS IN DECIMAL59, THE NUMBER OF SATELLITES IN THE SYSTEM1, ORB = 97.5IN00538AP00531PE001.59H01NRT01	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	
For SunSynchronous Nongeostationary Orbits	Mean Local Time of Ascending Node (MLTAN) =22:22	MLTAN IS THE ANGLE BETWEEN AN ORBIT'S ASCENDING NODE AND THE MEAN SUN, OFTEN EXPRESSED AS UNIT OF TIME (HH:MM)	
	L		
	a (Receiver) at Each Earth Station Location at Each Earth Station Location, Ross Island, Antarctica	on	
	NEN Svalbard, Norway		
NEN White Sands,	•		
1			

State (RSC)	RSC = Ross Island, Antarctica	
City Name (RAL)	RAL =	
Latitude	Lat = 775021 S	
(DDMMSS)		
Longitude (DDDMMSS)	Lon = 1664001 E	
Receive Antenna Polarization (RAP)	XAP = 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
Receive Antenna Orientation (RAZ)	RAZ = RAZ01 V00	THE EARTH STATION RECEIVER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (RAZ), V00 TO V90, EXAMPLE, RAZ01 V00
Receive Antenna Dimensions (RAD)	ANTENNA GAIN44, BEAMWIDTH0.91, AZIMUTHAL RANGE000-360_, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS143 THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS10	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: RAD01 16G030B001-360A00357H006
Receive Antenna Additional Information (For Parabolic Antennas)	ANTENNA DIAMETER10, ANTENNA EFFICIENCY60,	
Number of Satellite Contacts Supported Per Day	1	NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY
Expected Duration of Each Contact	6 Minutes	AVERAGE DURATION OF EACH CONTACT
Supported	Satellite Health and Status Data ⊠ Mission Payload Data ⊠	SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA

NEN Svalbard, No	orway S Receive	
State (RSC)	RSC = Svalbard, Norway	
City Name (RAL)	RAL =	
Latitude	Lat = 781351 N	
(DDMMSS)		
Longitude (DDDMMSS)	Lon = 0152322 E	
Receive Antenna	XAP = R	POLARIZATIONS INCLUDE:
Polarization (RAP)		H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR,
		R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR,
Receive Antenna	RAZ = RAZ01 V00	J = LINEAR POLARIZATION THE EARTH STATION RECEIVER ANTENNA
Orientation (RAZ)	MAZ - MAZOT VOO	MINIMUM OPERATING ANGLE OF ELEVATION (RAZ), V00 TO V90, EXAMPLE, RAZ01 V00
Receive Antenna		EXAMPLE ASSUMING NONGEOSTATIONARY, 16
Dimensions (RAD)	ANTENNA GAIN44.6,	DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357
	BEAMWIDTH0.8,	METERS, AND ANTENNA HEIGHT ABOVE TERRAIN
	AZIMUTHAL RANGE000-360_,	OF 6 METERS: RAD01 16G030B001-360A00357H006
	THE SITE ELEVATION ABOVE MEAN SEA	NADOT 1000300001 300A0033711000
	LEVEL IN METERS500	
	THE ANTENNA HEIGHT ABOVE TERRAIN	
	IN METERS10	
	RAD = edit all these	
	RAD01 45G001B001-360A00500H010	
Receive Antenna	ANTENNA DIAMETER 11.3 m ,	
Additional	ANTENNA EFFICIENCY 60%,	
Information (For	//// EI/// EI// EI// EI// EI// EI// EI/	
Parabolic		
Antennas)		
Number of	1	NUMBER OF TIMES THE SATELLITE WILL
Satellite Contacts		COMMUNICATE WITH THE EARTH STATION IN THE
Supported Per		SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY
Day		
Expected	6 Minutes	AVERAGE DURATION OF EACH CONTACT
Duration of Each		
Contact		
Supported	Satellite Health and Status Data ⊠	SATELLITE HEALTH AND STATUS TELEMETRY
Operations	Mission Payload Data ⊠	AND/OR MISSION PAYLOAD DATA
FCC notes: 1. Use S-Note	s \$945.	

2. REM AGN, Hosted Payload, Mars Outpost

NEN White Sands	, New Mexico S Receive	
State (RSC)	RSC = NM	
City Name (RAL)	RAL = White Sands	
Latitude (DDMMSS)	Lat = 323227 North	
Longitude (DDDMMSS)	Lon = 1063644 West	
Receive Antenna Polarization (RAP)	XAP = 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
Receive Antenna Orientation (RAZ)	RAZ = RAZ01 V00	THE EARTH STATION RECEIVER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (RAZ), V00 TO V90, EXAMPLE, RAZ01 V00
Receive Antenna Dimensions (RAD)	ANTENNA GAIN49, BEAMWIDTH0.5, AZIMUTHAL RANGE000-360 _, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS1480m, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS25m, RAD =	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: RAD01 16G030B001-360A00357H006
Receive Antenna Additional Information (For Parabolic Antennas)	RAD02 49G001B001-360A01480H025 ANTENNA DIAMETER18.3, ANTENNA EFFICIENCY60,	
Number of Satellite Contacts Supported Per Day	1	NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY
Expected Duration of Each Contact	6 Minutes	AVERAGE DURATION OF EACH CONTACT
Supported Operations	Satellite Health and Status Data ⊠ Mission Payload Data ⊠	SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA

Satellite Transmitter X Band

Transmit Frequency: 8045 MHz		
Satellite Name: Mars Outpost		
Data Field	Data Answer	Description/Comments
Transmit Power (PWR)	Power = 1.59 W PWR01 W2	TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2 TRANSMIT POWER UNITS INCLUDE: W = WATT, K = KILOWATT, M = MEGAWATT
Necessary Bandwidth	16 MHz	THE WIDTH OF FREQUENCY BAND WHICH IS JUST SUFFICIENT TO SUCCESSFULLY TRANSFER DATA. FORMULAS CAN BE FOUND IN ANNEX J OF THE NTIA MANUAL.
RF Emissions Data	N/A	2-SIDED EMISSION BANDWIDTH VALUES
-3 dB bandwidth		
-20 dB bandwidth		
-40 dB bandwidth		
-60 dB bandwidth		
Modulation Type	OQPSK	THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.
Data Rate	8 Mbps	INFORMATION DATA RATE
Forward Error	Is FEC used? Yes ⊠ No □	
Correction Coding	FEC Type: _Convolutional Encoding, FEC Rate:R ½ K=7,	
Total Symbol Rate	16 Mbps	DATA RATE COMBINED WITH FEC AND FRAME OVERHEAD RESULTING IN THE TOTAL SYMBOL RATE AT THE INPUTE TO THE SYMBOL MAPPER/MODULATOR.
Does transmitter	Yes 🗆	BEACON MODE IS NORMALLY CONSIDERED A REGULAR AND PERIODIC SHORT DURATION
have a beacon mode?	No ⊠	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 STATIONS ARE VISIBLE.
If transmitter has	Yes 🗆	
a beacon mode,	No □	
can the beacon be		
commanded off?		
Transmit Antenna	XAP = R	POLARIZATIONS INCLUDE:
Polarization (XAP)		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
Transmit Antenna	XAZ = NB	NB= NARROWBEAM
Orientation (XAZ)		EC = EARTH COVERAGE
Transmit Antenna	ANTENNA GAIN6,	NTIA FORMAT (XAD), EXAMPLE, FOR 16 DBI
Dimension (XAD)	BEAMWIDTH 80 ,	ANTENNA GAIN AND 30 DEGREE BEAMWIDTH XAD01 16G030B
, ,	XAD = 06G080B	VUDOT 100030B

Type of satellite (State = SPCE) (City = Geo or Nongeo)	Type = NONGEOSTATIONARY	CHOOSE EITHER: GEOSTATIONARY OR NONGEOSTATIONARY
For Geostationary Satellites	Longitude =	IF ANY SATELLITES ARE GEOSTATIONARY, REPORT ITS LATITUDE AS 000000N (XLA AND/OR RLA) AND REPORT ITS LONGITUDE IN DDDMMSS FORMAT (XLG AND/OR RLG).
For Nongeostationary (Orbital Data)	INCLINATION ANGLE97.5, APOGEE IN KILOMETERS538, PERIGEE IN KILOMETERS531, ORBITAL PERIOD IN HOURS _1AND FRACTIONS OF HOURS IN DECIMAL59, THE NUMBER OF SATELLITES IN THE SYSTEM1, ORB = 97.5IN00538AP00531PE001.59H01NRT02	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 TO1, EXAMPLE, REMO4 *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
For SunSynchronous Nongeostationary Orbits	Mean Local Time of Ascending Node (MLTAN) =22:22	MLTAN IS THE ANGLE BETWEEN AN ORBIT'S ASCENDING NODE AND THE MEAN SUN, OFTEN EXPRESSED AS UNIT OF TIME (HH:MM)
	a (X Band Receiver) at Each Earth Station ation, Ross Island, Antarctica	Location

NEN McMurdo Station, Ross Island, Antarctica X Band Receive RSC = Ross Island, Antarctica State (RSC) City Name (RAL) RAL = Latitude Lat = 775021 S (DDMMSS) Longitude Lon = 1664001 E (DDDMMSS) POLARIZATIONS INCLUDE: Receive Antenna XAP = RH = HORIZONTAL, Polarization (RAP) V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION

Receive Antenna Orientation (RAZ)	RAZ = RAZ01 V00	THE EARTH STATION RECEIVER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (RAZ), V00 TO V90, EXAMPLE, RAZ01 V00
Receive Antenna Dimensions (RAD)	ANTENNA GAIN56, BEAMWIDTH0.26, AZIMUTHAL RANGE000-360_, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS143, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS10, RAD = RAD01 56G001B001-360A00143H010	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: RAD01 16G030B001-360A00357H006
Receive Antenna Additional Information (For Parabolic Antennas)	ANTENNA DIAMETER10, ANTENNA EFFICIENCY60,	
Number of Satellite Contacts Supported Per Day	1	NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY
Expected Duration of Each Contact	6 Minutes	AVERAGE DURATION OF EACH CONTACT
Supported Operations	Satellite Health and Status Data ⊠ Mission Payload Data ⊠	SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA
FCC notes: 3. Use S-Note 4. REM AGN, I	e S945. Hosted Payload,Mars Outpost	

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NEN Svalbard, No	orway X Receive	
State (RSC)	RSC = Svalbard, Norway	
City Name (RAL)	RAL =	
Latitude	Lat = 781351 N	
(DDMMSS)		
Longitude	Lon = 0152322 E	
(DDDMMSS) Receive Antenna	XAP = R	POLARIZATIONS INCLUDE:
Polarization (RAP)	XAP = K	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
Receive Antenna Orientation (RAZ)	RAZ = RAZ01 V00	THE EARTH STATION RECEIVER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (RAZ), V00 TO V90, EXAMPLE, RAZ01 V00
Receive Antenna Dimensions (RAD) Receive Antenna Additional	ANTENNA GAIN57.5, BEAMWIDTH0.2, AZIMUTHAL RANGE000-360_, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS500 THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS10 RAD = RAD01 57G001B001-360A00500H010 ANTENNA DIAMETER 11.3	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: RAD01 16G030B001-360A00357H006
Information (For Parabolic Antennas)	ANTENNA EFFICIENCY55%,	
Number of Satellite Contacts Supported Per Day	1	NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY
Expected Duration of Each Contact	6 Minutes	AVERAGE DURATION OF EACH CONTACT
Supported Operations	Satellite Health and Status Data ⊠ Mission Payload Data ⊠	SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA
FCC notes: 1. Use S-Note	e \$945.	

2. REM AGN, Hosted Payload, Mars Outpost

Part B: Ground Stations, Earth to Space link data: 3 S Band Uplink Stations

NEN McMurdo Station, Ross Island, Antarctica NEN Svalbard, Norway NEN White Sands, New Mexico

NEN McMurdo Station, Ross Island, Antarctica

Transmit Frequency	γ: 2079.2 MHz	
State (XSC)	XSC = Ross Island, Antarctica	
City Name (XAL)	XAL =	
Latitude (DDMMSS)	Lat = 775021 S	
Longitude (DDDMMSS)	Lon = 1664001 E	
Transmit Power (PWR)	PWR = PWR01 W80	TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2 TRANSMIT POWER UNITS INCLUDE: W = WATT, K = KILOWATT, M = MEGAWATT
Necessary Bandwidth	256 KhZ	THE WIDTH OF FREQUENCY BAND WHICH IS JUST SUFFICIENT TO SUCCESSFULLY TRANSFER DATA. FORMULAS CAN BE FOUND IN ANNEX J OF THE NTIA MANUAL.
RF Emissions Data	N/A	2-SIDED EMISSION BANDWIDTH VALUES
-3 dB bandwidth		
-20 dB bandwidth		
-40 dB bandwidth		
-60 dB bandwidth		
Modulation Type	PCM/PM/Bip-L (same for all 3 uplinks)	THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.
Data Rate	256 kbps	INFORMATION DATA RATE
Forward Error	Is FEC used? Yes \square No \boxtimes	
Correction Coding	FEC Type:,	
	FEC Rate:	
Total Symbol Rate	256 ksps	DATA RATE COMBINED WITH FEC AND FRAME OVERHEAD RESULTING IN THE TOTAL SYMBOL RATE AT THE INPUTE TO THE SYMBOL MAPPER/MODULATOR.
Transmit Antenna Polarization (XAP)	XAP = 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
Transmit Antenna Orientation (XAZ)	XAZ = 5° XAZ01 V05	THE EARTH STATION TRANSMITTER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (XAZ), V00 TO V90, EXAMPLE, XAZ01 V00

Transmit Antenna Dimensions (XAD)	ANTENNA GAIN 44, BEAMWIDTH 1.05, AZIMUTHAL RANGE 000-360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 143 THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS 10	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: XAD01 16G030B001-360A00357H006
Transmit Antenna	XAD = XAD01 44G001001-360A00143H010 ANTENNA DIAMETER10,	
Additional Information (For Parabolic Antennas)	ANTENNA EFFICIENCY60,	
Number of Satellite Contacts Supported Per Day	1	NUMBER OF TIMES THE EARTH STATION WILL COMMUNICATE WITH THE STATELLITE IN THE EARTH TO SPACE DIRECTION (UPINKS) EACH DAY
Expected Duration of Each Contact	6	AVERAGE DURATION OF EACH CONTACT
Satellite Receive Sp	pecifications	
Receive Antenna Polarization (RAP)	RAP = 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
Receive Antenna Orientation (RAZ)	RAZ = NB	NB= NARROWBEAM EC = EARTH COVERAGE
Receive Antenna Dimension (RAD)	ANTENNA GAIN6, BEAMWIDTH75, RAD = 06G075B	NTIA FORMAT(RAD), EXAMPLE, FOR 16 DBI ANTENNA GAIN AND 30 DEGREE BEAMWIDTH RAD01 16G030B
Type of satellite (State = SPCE) City = Geo or Nongeo	Type = NONGEOSTATIONARY	CHOOSE EITHER: GEOSTATIONARY OR NONGEOSTATIONARY
For Geostationary Satellites	Longitude =	IF ANY SATELLITES ARE GEOSTATIONARY, REPORT ITS LATITUDE AS 000000N (XLA AND/OR RLA) AND REPORT ITS LONGITUDE IN DDDMMSS FORMAT (XLG AND/OR RLG).

For Nongeostationary (Orbital Data)	INCLINATION ANGLE97.5, APOGEE IN KILOMETERS 538, PERIGEE IN KILOMETERS 531, ORBITAL PERIOD IN HOURS _1 AND FRACTIONS OF HOURS IN DECIMAL 59, THE NUMBER OF SATELLITES IN THE SYSTEM 1, ORB = 97.5IN00538AP00531PE001.59H01NRR01	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 TO1, EXAMPLE, REMO4 *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
For SunSynchronous Nongeostationary Orbits	Mean Local Time of Ascending Node (MLTAN) =22:22	MLTAN IS THE ANGLE BETWEEN AN ORBIT'S ASCENDING NODE AND THE MEAN SUN, OFTEN EXPRESSED AS UNIT OF TIME (HH:MM)

NEN Svalbard, Norway S Band Transmit

Transmit Frequency	y: 2079.2 MHz	
State (XSC)	XSC = Svalbard, Norway	
City Name (XAL)	XAL =	
Latitude (DDMMSS)	Lat = 781351 N	
Longitude (DDDMMSS)	Lon = 0152322 E	
Transmit Power (PWR)	PWR = 78 W PWR01 W78	TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2 TRANSMIT POWER UNITS INCLUDE: W = WATT, K = KILOWATT, M = MEGAWATT
Necessary Bandwidth	256 KhZ	THE WIDTH OF FREQUENCY BAND WHICH IS JUST SUFFICIENT TO SUCCESSFULLY TRANSFER DATA. FORMULAS CAN BE FOUND IN ANNEX J OF THE NTIA MANUAL.
RF Emissions Data	N/A	2-SIDED EMISSION BANDWIDTH VALUES
-3 dB bandwidth		
-20 dB bandwidth		
-40 dB bandwidth		
-60 dB bandwidth		THE METHOD HISED TO SUPERIM POSE DATA ON
Modulation Type	PCM/PM/Bip-L (same for all 3 uplinks)	THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.
Data Rate	256 kbps	INFORMATION DATA RATE
Forward Error	Is FEC used? Yes □ No ⊠	
Correction Coding	FEC Type:, FEC Rate:,	
Total Symbol Rate	256 ksps	DATA RATE COMBINED WITH FEC AND FRAME OVERHEAD RESULTING IN THE TOTAL SYMBOL RATE AT THE INPUTE TO THE SYMBOL MAPPER/MODULATOR.
Transmit Antenna Polarization (XAP)	XAP = 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
Transmit Antenna	XAZ = 5°	THE EARTH STATION TRANSMITTER ANTENNA
Orientation (XAZ)	XAZ01 V05	MINIMUM OPERATING ANGLE OF ELEVATION (XAZ), V00 TO V90, EXAMPLE, XAZ01 V00

Transmit Antenna Dimensions (XAD)	ANTENNA GAIN44.6, BEAMWIDTH0.3, AZIMUTHAL RANGE000-360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS500 THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS10	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: XAD01 16G030B001-360A00357H006
	XAD =	
	XAD01 45G001001-360A00500H010	
Transmit Antenna	ANTENNA DIAMETER11.3,	
Additional	ANTENNA EFFICIENCY60,	
Information (For		
Parabolic Antennas)		
Number of	1	NUMBER OF TIMES THE EARTH STATION WILL
Satellite Contacts	1	COMMUNICATE WITH THE STATELLITE IN THE
Supported Per		EARTH TO SPACE DIRECTION (UPINKS) EACH DAY
Day		
Expected	6	AVERAGE DURATION OF EACH CONTACT
Duration of Each		
Contact		
Satellite Receive Sp	pecifications	
	Ta.a. a	POLADIZATIONS INCLUDE:
Receive Antenna	RAP = R	POLARIZATIONS INCLUDE: H = HORIZONTAL,
Polarization (RAP)		V = VERTICAL, S = HORIZONTAL AND VERTICAL,
		L = LEFT HAND CIRCULAR,
		R = RIGHT HAND CIRCULAR,
		T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Receive Antenna	RAZ = NB	NB= NARROWBEAM
Orientation (RAZ)		EC = EARTH COVERAGE
Receive Antenna	ANTENNA GAIN6,	NTIA FORMAT(RAD), EXAMPLE, FOR 16 DBI
Dimension (RAD)	BEAMWIDTH75,	ANTENNA GAIN AND 30 DEGREE BEAMWIDTH RAD01 16G030B
	RAD = 06G075B	
Type of satellite	Type =	CHOOSE EITHER: GEOSTATIONARY OR NONGEOSTATIONARY
(State = SPCE)	NONGEOSTATIONARY	SESSIATIONALI OLI MONGEOSTATIONALI
City = Geo or		
Nongeo		IF ANN CATELLITIS ARE COCCUTATION AND COCCUTAT
For Geostationary Satellites	Longitude =	IF ANY SATELLITES ARE GEOSTATIONARY, REPORT ITS LATITUDE AS 000000N (XLA AND/OR RLA) AND REPORT ITS LONGITUDE IN DDDMMSS FORMAT (XLG AND/OR RLG).

For Nongeostationary (Orbital Data)	INCLINATION ANGLE97.5, APOGEE IN KILOMETERS 538, PERIGEE IN KILOMETERS 531, ORBITAL PERIOD IN HOURS _1 AND FRACTIONS OF HOURS IN DECIMAL 59, THE NUMBER OF SATELLITES IN THE SYSTEM 1, ORB = 97.5IN00538AP00531PE001.59H01NRR01	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 TO1, EXAMPLE, REMO4 *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
For SunSynchronous Nongeostationary Orbits	Mean Local Time of Ascending Node (MLTAN) =22:22	MLTAN IS THE ANGLE BETWEEN AN ORBIT'S ASCENDING NODE AND THE MEAN SUN, OFTEN EXPRESSED AS UNIT OF TIME (HH:MM)

NEN White Sands, New Mexico

Transmit Frequency	y: 2079.2 MHz	
State (XSC)	XSC = NM	
City Name (XAL)	XAL = White Sands	
Latitude (DDMMSS)	Lat = 323227 North	
Longitude (DDDMMSS)	Lon = 1063644 West	
Transmit Power (PWR)	PWR = PWR02 W200	TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2 TRANSMIT POWER UNITS INCLUDE: W = WATT, K = KILOWATT, M = MEGAWATT
Necessary Bandwidth	256 kHz	THE WIDTH OF FREQUENCY BAND WHICH IS JUST SUFFICIENT TO SUCCESSFULLY TRANSFER DATA. FORMULAS CAN BE FOUND IN ANNEX J OF THE NTIA MANUAL.
RF Emissions Data -3 dB bandwidth	N/A	2-SIDED EMISSION BANDWIDTH VALUES
-20 dB bandwidth		
-40 dB bandwidth		
-60 dB bandwidth Modulation Type	PCM/PM/Bip-L (same for all 3 uplinks)	THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.
Data Rate	256 kbps	INFORMATION DATA RATE
Forward Error Correction Coding	Is FEC used? Yes □ No ⊠ FEC Type:, FEC Rate:,	
Total Symbol Rate	256 ksps	DATA RATE COMBINED WITH FEC AND FRAME OVERHEAD RESULTING IN THE TOTAL SYMBOL RATE AT THE INPUTE TO THE SYMBOL MAPPER/MODULATOR.
Transmit Antenna Polarization (XAP)	XAP = 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
Transmit Antenna Orientation (XAZ)	XAZ = 5° XAZ02 V05	THE EARTH STATION TRANSMITTER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (XAZ), V00 TO V90, EXAMPLE, XAZ01 V00

Transmit Antenna Dimensions (XAD)	ANTENNA GAIN49, BEAMWIDTH3, AZIMUTHAL RANGE000-360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS1480m, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS25m, XAD = XAD02 49G003B001-360A01480H025	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: XAD01 16G030B001-360A00357H006
Transmit Antenna	ANTENNA	
Additional	DIAMETER3.7, ANTENNA EFFICIENCY60,	
Information (For	ANTENNA EFFICIENCY60,	
Parabolic		
Antennas)		NUMBER OF TIMES THE EARTH STATION WILL
Number of	1	COMMUNICATE WITH THE STATELLITE IN THE
Satellite Contacts		EARTH TO SPACE DIRECTION (UPINKS) EACH DAY
Supported Per Day		
Expected	6 minutes	AVERAGE DURATION OF EACH CONTACT
Duration of Each	o minutes	
Contact		
Satellite Receive Sp	pecifications	
-		
Receive Antenna	RAP = R	POLARIZATIONS INCLUDE:
Polarization (RAP)		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
Receive Antenna	RAZ = NB	NB= NARROWBEAM
Orientation (RAZ)		EC = EARTH COVERAGE
Receive Antenna	ANTENNA GAIN6,	NTIA FORMAT(RAD), EXAMPLE, FOR 16 DBI ANTENNA GAIN AND 30 DEGREE BEAMWIDTH
Dimension (RAD)	BEAMWIDTH75,	RAD01 16G030B
	RAD = 06G075B	
Type of satellite	Type =	CHOOSE EITHER: GEOSTATIONARY OR NONGEOSTATIONARY
(State = SPCE)	NONGEOSTATIONARY	SESSIMILATION OF MONOCOSTATIONAL
City = Geo or		
Nongeo		
For Geostationary	Longitude =	IF ANY SATELLITES ARE GEOSTATIONARY, REPORT ITS LATITUDE AS 000000N (XLA AND/OR RLA) AND
Satellites		REPORT ITS LONGITUDE IN DDDMMSS FORMAT
		(XLG AND/OR RLG).

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	97.5IN00538AP00531PE001.59H01NRR01	
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