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 (Required for Each Frequency)

Transmit Frequency: 2294.75 MHz		
Satellite Name: DEEPSPACE-2S		
Data Field	**Data Answer**	**Description/Comments**
Transmit Power (PWR)	PWR = PWR01 W87 PWR02 W87 PWR03 W87 PWR04 W87	TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2 TRANSMIT POWER UNITS INCLUDE: W = WATT, K = KILOWATT, M = MEGAWATT
Necessary Bandwidth	NBW01 2.5 MHz NBW02 1.3 MHz NBW03 800 kHz NBW04 150 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		2-SIDED EMISSION BANDWIDTH VALUES
-3 dB bandwidth		
-20 dB bandwidth		
-40 dB bandwidth		
-60 dB bandwidth		
Modulation Type	MOD01 PCM/PM/BPSK MOD02 PCM/PM/BPSK MOD03 PCM/PM/BPSK MOD04 PCM/PM/BPSK	THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.
Data Rate	DR01 1 kbps DR02 1 kbps DR03 512 kbps DR04 1 kbps	INFORMATION DATA RATE
Forward Error Correction Coding	Is FEC used? Yes ☒ No ☐ FEC Type: __Turbo_____, FEC Rate: __½____,	
Total Symbol Rate	SR01 1 ksps SR02 1 ksps SR03 512 ksps SR04 1 ksps	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 a beacon mode, can the beacon be commanded off?	Yes ☐ No ☐	
Transmit 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
Transmit Antenna Orientation (XAZ)	XAZ = EC	NB= NARROWBEAM EC = EARTH COVERAGE
Transmit Antenna Dimension (XAD)	ANTENNA GAIN_____, BEAMWIDTH _____, XAD01 06G080B	NTIA FORMAT (XAD), EXAMPLE, FOR 16 DBI ANTENNA GAIN AND 30 DEGREE BEAMWIDTH XAD01 16G030B
Type of satellite (State = SPCE) (City = Geo or Nongeo)	Type =DEEP SPACE	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 ANGLE_____, APOGEE IN KILOMETERS_____, PERIGEE IN KILOMETERS_____, ORBITAL PERIOD IN HOURS _____AND FRACTIONS OF HOURS IN DECIMAL_____, THE NUMBER OF SATELLITES IN THE SYSTEM_____, ORB = DEEP SPACE	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) =_____	MLTAN IS THE ANGLE BETWEEN AN ORBIT'S ASCENDING NODE AND THE MEAN SUN, OFTEN EXPRESSED AS UNIT OF TIME (HH:MM)

Earth Station Data (Receiver) at Each Earth Station Location		
State (RSC)	RSC01 =Australia RSC02 =New Zealand RSC03 = India RSC04 = Australia RSC05 = South Africa RSC06 =Canada RSC07 =Mauritius RSC08 =India RSC09 =Chile RSC10 = Norway RSC11 = Portugal RSC12 = New Zealand RSC13 = New Zealand RSC14 = South Africa	
City Name (RAL)	RAL01 =Geraldton RAL02 =Awarua RAL03 = Bangalore RAL04 = Mingenew RAL05 = Hartebeesthoek RAL06 =Inuvik RAL07 =Port Louis RAL08 = Bangalore RAL09 =Punta Arena RAL10 = Longyearbyen RAL11 = Santa Maria RAL12 = Warkworth RAL13 = Warkworth RAL14 = Hartebeesthoek	
Latitude (DDMMSS)	LAT01 =29S0614 LAT02 =46S3142 LAT03 =12N5411 LAT04 =29S0036 LAT05 =25S5311 LAT06 =68N1909 LAT07 =20S3004 LAT08 =12N5357 LAT09 =52S5610 LAT10 =78N1333 LAT11 =36N5947 LAT12 = 36S2616 LAT13 = 36S2558 LAT14 = 25S5301	

Longitude (DDDMMSS)	LON01 =115E2030 LON02 =168E2248 LON03 =077E0210 LON04 =115E2027 LON05 =027E4151 LON06 =133W3256 LON07 =057E2704 LON08 =077E2203 LON09 =070W5205 LON10 =015E2515 LON11 =025W0811 LON12 = 174E3946 LON13 = 174E3946 LON14 = 027E4242	
Receive Antenna Polarization (RAP)	RAP01 =L RAP02 =L RAP03 =L RAP04 =L RAP05 =L RAP06 =L RAP07 =L RAP08 =L RAP09 =L RAP10 =L RAP11 =L RAP12 =L RAP13 =L RAP14 =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
Receive Antenna Orientation (RAZ)	RAZ01 V05 RAZ02 V05 RAZ03 V05 RAZ04 V05 RAZ05 V05 RAZ06 V05 RAZ07 V05 RAZ08 V05 RAZ09 V05 RAZ10 V05 RAZ11 V05 RAZ12 V05 RAZ13 V05 RAZ14 V05	THE EARTH STATION RECEIVER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (RAZ), V00 TO V90, EXAMPLE, RAZ01 V00
Receive Antenna Dimensions (RAD)	ANTENNA GAIN_____, BEAMWIDTH_____, AZIMUTHAL RANGE_____,	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357

	THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS _____, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS _____, RAD01 39G002B001-360A00268H006 RAD02 36G002B001-360A00012H006 RAD03 54G001B001-360A01000H006 RAD04 39G002B001-360A00242H006 RAD05 46G001B001-360A01339H006 RAD06 46G001B001-360A00015H006 RAD07 40G002B001-360A00010H006 RAD08 50G001B001-360A01000H006 RAD09 45G001B001-360A00014H006 RAD10 47G001B001-360A00450H006 RAD11 48G001B001-360A00081H006 RAD12 46G001B001-360A00084H006 RAD13 54G001B001-360A00084H006 RAD14 52G001B001-360A01339H006	METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: RAD01 16G030B001-360A00357H006
Receive Antenna Additional Information (For Parabolic Antennas)	ANTENNA DIAMETER_____, ANTENNA EFFICIENCY_____, AD01 005 AD02 003 AD03 032 AD04 005 AD05 012 AD06 013 AD07 006 AD08 018 AD09 011 AD10 013 AD11 015 AD12 012 AD13 030 AD14 026 AE01 060 AE02 060 AE03 060 AE04 060 AE05 060 AE06 060 AE07 060 AE08 060 AE09 060 AE10 060	

	AE11 060 AE12 060 AE13 060 AE14 060	
Number of Satellite Contacts Supported Per Day	Continuous for first 144 hours after launch, then one 4 hour contact every two days	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	4 hours	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 S945. REM AGN, Cubesat, DEEPSPACE-2S		

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

Earth Station Transmitter Data (Required for Each Frequency at Each Earth Station Location)

Transmit Frequency: 2113.082292 MHz		
State (XSC)	XSC01 =Australia XSC02 =New Zealand XSC03 = India XSC04 = Australia XSC05 = South Africa XSC06 =Canada XSC07 =Mauritius XSC08 =India XSC09 =Chile XSC10 = Norway XSC11 = Portugal XSC12 = New Zealand XSC13 = New Zealand	
City Name (XAL)	XAL01 =Geraldton XAL02 =Awarua XAL03 = Bangalore XAL04 = Mingenew XAL05 = Hartebeesthoek XAL06 =Inuvik XAL07 =Port Louis XAL08 = Bangalore XAL09 =Punta Arena XAL10 = Longyearbyen XAL11 = Santa Maria XAL12 = Warkworth XAL13 = Warkworth	
Latitude (DDMMSS)	LAT01 =29S0614 LAT02 =46S3142 LAT03 =12N5411 LAT04 =29S0036 LAT05 =25S5311 LAT06 =68N1909 LAT07 =20S3004 LAT08 =12N5357 LAT09 =52S5610 LAT10 =78N1333 LAT11 =36N5947 LAT12 = 36S2616 LAT13 = 36S2558	

Longitude (DDDMMSS)	LON01 =115E2030 LON02 =168E2248 LON03 =077E0210 LON04 =115E2027 LON05 =027E4151 LON06 =133W3256 LON07 =057E2704 LON08 =077E2203 LON09 =070W5205 LON10 =015E2515 LON11 =025W0811 LON12 = 174E3946 LON13 = 174E3946	
Transmit Power (PWR)	PWR01 W30 PWR02 W6 PWR03 W834 PWR04 W25 PWR05 W300 PWR06 W125 PWR07 W33 PWR08 W250 PWR09 W37 PWR10 W300 PWR11 W300 PWR12 W12 PWR13 W25	TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2 TRANSMIT POWER UNITS INCLUDE: W = WATT, K = KILOWATT, M = MEGAWATT
Necessary Bandwidth	NBW01 2.5 MHz NBW02 500 kHz NBW03 32.0 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		2-SIDED EMISSION BANDWIDTH VALUES
-3 dB bandwidth		
-20 dB bandwidth		
-40 dB bandwidth		
-60 dB bandwidth		
Modulation Type	MOD01 PCM/PM/BPSK MOD02 BPSK MOD03 PCM/PM/BPSK	THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.
Data Rate	DR01 64 kbps DR02 500 kbps DR03 1 kbps	INFORMATION DATA RATE
Forward Error Correction Coding	Is FEC used? Yes ☒ No ☐ FEC Type: __BCH, LDPC_____, FEC Rate: __(512,256), 1/2____,	

Total Symbol Rate	SR01 64 ksps SR02 500 ksps SR03 1 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)	XAP01 =L XAP02 =L XAP03 =L XAP04 =L XAP05 =L XAP06 =L XAP07 =L XAP08 =L XAP09 =L XAP10 =L XAP11 =L XAP12 =L XAP13 =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
Transmit Antenna Orientation (XAZ)	XAZ01 V05 XAZ02 V05 XAZ03 V05 XAZ04 V05 XAZ05 V05 XAZ06 V05 XAZ07 V05 XAZ08 V05 XAZ09 V05 XAZ10 V05 XAZ11 V05 XAZ12 V05 XAZ13 V05	THE EARTH STATION TRANSMITTER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (XAZ), V00 TO V90, EXAMPLE, XAZ01 V00

Transmit Antenna Dimensions (XAD)	ANTENNA GAIN_____, BEAMWIDTH_____, AZIMUTHAL RANGE_____, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS _____, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS _____, XAD01 39G002B001-360A00268H006 XAD02 36G002B001-360A00012H006 XAD03 54G001B001-360A01000H006 XAD04 39G002B001-360A00242H006 XAD05 46G001B001-360A01339H006 XAD06 46G001B001-360A00015H006 XAD07 40G002B001-360A00010H006 XAD08 50G001B001-360A01000H006 XAD09 45G001B001-360A00014H006 XAD10 47G001B001-360A00450H006 XAD11 48G001B001-360A00081H006 XAD12 46G001B001-360A00084H006 XAD13 54G001B001-360A00084H006	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 Additional Information (For Parabolic Antennas)	ANTENNA DIAMETER_____, ANTENNA EFFICIENCY_____, AD01 005 AD02 003 AD03 032 AD04 005 AD05 012 AD06 013 AD07 006 AD08 018 AD09 011 AD10 013 AD11 015 AD12 012 AD13 030 AE01 060 AE02 060 AE03 060 AE04 060 AE05 060 AE06 060 AE07 060 AE08 060 AE09 060 AE10 060 AE11 060 AE12 060 AE13 060	
Number of Satellite Contacts Supported Per Day	Continuous for first 144 hours after launch, then one 4 hour contact every two days	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	4 hours	AVERAGE DURATION OF EACH CONTACT
Satellite Receive Specifications		
Receive 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

Receive Antenna Orientation (RAZ)	RAZ = EC	NB= NARROWBEAM EC = EARTH COVERAGE
Receive Antenna Dimension (RAD)	ANTENNA GAIN_____, BEAMWIDTH _____, RAD01 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 = DEEP SPACE	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 ANGLE_____, APOGEE IN KILOMETERS_____, PERIGEE IN KILOMETERS_____, ORBITAL PERIOD IN HOURS _____AND FRACTIONS OF HOURS IN DECIMAL_____, THE NUMBER OF SATELLITES IN THE SYSTEM_____, ORB = DEEP SPACE	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) =_____	MLTAN IS THE ANGLE BETWEEN AN ORBIT'S ASCENDING NODE AND THE MEAN SUN, OFTEN EXPRESSED AS UNIT OF TIME (HH:MM)