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.

Data below for Varisat-1A and Varisat-1B, two identical satellites deployed together

Part A: Space to Earth Downlink Data

Satellite Transmitter Data (Required for Each Frequency)

Transmit Frequency:			
24.585 MHz	24.585 MHz		
24.5864 MHz			
24.687 MHz	24.687 MHz		
24.6884 MHz			
All data same for all frequencies			
Satellite Name: Varisat-1A and Varisat-1B			
Data Field	Data Answer	Description/Comments	

Data Field	Data Answer	Description/Comments
Transmit Power (PWR)	PWR = PWR01 1.91 W	TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2 TRANSMIT POWER UNITS INCLUDE: W = WATT, K = KILOWATT, M = MEGAWATT
Necessary Bandwidth	2.4 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	PSK or CW	THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.
Data Rate	1000 baud, max	INFORMATION DATA RATE
Forward Error Correction Coding	Is FEC used? Yes ⊠ No □ FEC Type: _Reed-Solomon, with Viterbi type decoder, both coder outputs being sent successively, 2x2x160 interleave FEC Rate: R(Rate)=1/2, K (Constraint length)=7_,	
Total Symbol Rate	1000 Symbols/second, max	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
have a beacon	No ⊠	REGULAR AND PERIODIC SHORT DURATION
mode?	NO 🖾	TRANSMISSION THAT IS OFTEN USED TO ASSIST WITH TRACKING, DOPPLER COMPENSATION, OR
mode:		SMALL SATELLITE IDENTIFICATION WHOSE
		TRANSMISSIONS ARE NOT LIMITED TO
		DURATIONS WHEN SUPPORTING GROUND STATIONS ARE VISIBLE.
If transmitter has	Yes □	STATIONS ARE VISIBLE.
a beacon mode,	No 🗆	
can the beacon be		
commanded off?		
Transmit Antenna	XAP = V	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 = EC	NB= NARROWBEAM
Orientation (XAZ)		EC = EARTH COVERAGE
Transmit Antenna	ANTENNA GAIN3,	NTIA FORMAT (XAD), EXAMPLE, FOR 16 DBI
Dimension (XAD)	BEAMWIDTH60,	ANTENNA GAIN AND 30 DEGREE BEAMWIDTH XAD01 16G030B
	XAD = XAD01 03G060B	AAD01 100030B
Type of satellite	Type = Nongeo	CHOOSE EITHER:
(State = SPCE)		GEOSTATIONARY OR NONGEOSTATIONARY
(City = Geo or		
Nongeo)		
For Geostationary	Longitude =	IF ANY SATELLITES ARE GEOSTATIONARY, REPORT
Satellites		ITS LATITUDE AS 000000N (XLA AND/OR RLA) AND REPORT ITS LONGITUDE IN DDDMMSS FORMAT
		(XLG AND/OR RLG).
For	INCLINATION ANGLE114,	IF ANY SATELLITES ARE NONGEOSTATIONARY, REPORT ITS INCLINATION ANGLE, APOGEE
Nongeostationary	APOGEE IN KILOMETERS_350,	IN KILOMETERS, PERIGEE IN KILOMETERS,
(Orbital Data)	PERIGEE IN KILOMETERS200,	ORBITAL PERIOD IN HOURS AND FRACTIONS OF
	ORBITAL PERIOD IN HOURS1AND	HOURS IN DECIMAL, THE NUMBER OF SATELLITES IN THE SYSTEM, THEN TO1, EXAMPLE,
	FRACTIONS OF HOURS IN	REM04
	DECIMAL50,	*ORB,98.0IN00510AP00510PE001.58H01NRT01,
	THE NUMBER OF SATELLITES IN THE	AND FOR SPACE-TO-SPACE COMMUNICATIONS WITH ANOTHER
	SYSTEM2,	NONGEOSTATIONARY SATELLITE ADD AN
		ADDITIONAL *ORB FOR IT ENDING IN R01, EXAMPLE, REM05
	ORB =	*ORB,72.9IN03209AP00655PE013.46H01NRR01
_	ORB,114IN00350AP00200PE001.49H02NRT01	MITAN IS THE ANGLE DETWEEN AN OCCUPY
For	Mean Local Time of Ascending Node	MLTAN IS THE ANGLE BETWEEN AN ORBIT'S ASCENDING NODE AND THE MEAN SUN, OFTEN
SunSynchronous	(MLTAN) =	EXPRESSED AS UNIT OF TIME (HH:MM)
Nongeostationary		
Orbits		
Forth Station Dat	(Passiver) at Each Fouth Station asst:	<u> </u>
	a (Receiver) at Each Earth Station Location	UII
State (RSC)	RSC = WV	

City Name (RAL)	RAL = HILLSBORO	
Latitude	Lat = 380645 NORTH	
(DDMMSS)		
Longitude (DDDMMSS)	Lon = 0801558 WEST	
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 = RAZ01 V05	THE EARTH STATION RECEIVER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (RAZ), V00 TO V90, EXAMPLE, RAZ01 V00
Receive Antenna Dimensions (RAD)	ANTENNA GAIN2.5, BEAMWIDTH60, AZIMUTHAL RANGE000-360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS975 THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS12 RAD = RAD01 02G060B000-360A00975H012	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 DIAMETER, ANTENNA EFFICIENCY, Not parabolic	
Number of Satellite Contacts Supported Per Day	5	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	17 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 S945.	

2. REM AGN, Cubesat, Varisat-1

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

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

Transmit Frequency	<i>/</i> :	
24.585 MHz		
24.5864 MHz		
24.687 MHz		
24.6884 MHz		
All data same for all	l frequencies	
State (XSC)	XSC = WV	
City Name (XAL)	XAL = Hillsboro	
Latitude	Lat = 380645 NORTH	
(DDMMSS)		
Longitude	Lon = 0801558 WEST	
(DDDMMSS)		
Transmit Power	PWR at Ant Term = 178 W	TRANSMIT POWER SUPPLIED TO THE ANTENNA
(PWR)		INPUT TERMINAL, EXAMPLE, PWR01 W2 TRANSMIT POWER UNITS INCLUDE:
		W = WATT,
		K = KILOWATT,
Nococcany	2.4 kHz	M = MEGAWATT THE WIDTH OF FREQUENCY BAND WHICH IS JUST
Necessary Bandwidth	2.4 KHZ	SUFFICIENT TO SUCCESSFULLY TRANSFER DATA.
Dalluwiutii		FORMULAS CAN BE FOUND IN ANNEX J OF THE
RF Emissions Data	N/A	NTIA MANUAL. 2-SIDED EMISSION BANDWIDTH VALUES
-3 dB bandwidth	14/4	1
-20 dB bandwidth		-
-40 dB bandwidth		-
		-
-60 dB bandwidth	DCK	THE METHOD USED TO SUPERIMPOSE DATA ON
Modulation Type	PSK	THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.
Data Rate	1000 baud	INFORMATION DATA RATE
Forward Error	Is FEC used? Yes $oxtimes$ No $oxtimes$	
Correction Coding	FEC Type: _Reed-Solomon, with Viterbi	
	type decoder, both coder outputs being	
	sent successively, 2x2x160 interleave	
	FEC Rate: R(Rate)=1/2, K (Constraint	
	length)=7_,	
Total Symbol Rate	1000 Symbols/second	DATA RATE COMBINED WITH FEC AND FRAME
		OVERHEAD RESULTING IN THE TOTAL SYMBOL RATE AT THE INPUTE TO THE SYMBOL
		MAPPER/MODULATOR.
Transmit Antenna	XAP = L	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 Orientation (XAZ)	XAZ = XAZ01 V05	THE EARTH STATION TRANSMITTER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (XAZ), V00 TO V90, EXAMPLE, XAZ01 V00
Transmit Antenna Dimensions (XAD)	ANTENNA GAIN2.5, BEAMWIDTH60, AZIMUTHAL RANGE000-360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS975 THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS12 XAD = XAD01 02G060B000-360A00975H012	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, Not Parabolic	
Number of Satellite Contacts Supported Per Day	5	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	17 minutes	AVERAGE DURATION OF EACH CONTACT
Satellite Receive Sp	Decifications	
Receive Antenna Polarization (RAP)	RAP = V	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 GAIN3 BEAMWIDTH60 RAD = RAD01 03G060B	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 = Nongeo	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	INCLINATION ANGLE 114 ,	IF ANY SATELLITES ARE NONGEOSTATIONARY,
Nongeostationary	APOGEE IN KILOMETERS 350 ,	REPORT ITS INCLINATION ANGLE, APOGEE IN KILOMETERS, PERIGEE IN KILOMETERS,
(Orbital Data)	PERIGEE IN KILOMETERS200,	ORBITAL PERIOD IN HOURS AND FRACTIONS OF
	ORBITAL PERIOD IN HOURS1AND	HOURS IN DECIMAL, THE NUMBER OF SATELLITES
	FRACTIONS OF HOURS IN	IN THE SYSTEM, THEN TO1, EXAMPLE, REMO4
	DECIMAL49,	*ORB,98.0IN00510AP00510PE001.58H01NRT01,
	THE NUMBER OF SATELLITES IN THE	AND FOR SPACE-TO-SPACE COMMUNICATIONS WITH ANOTHER
	SYSTEM2,	NONGEOSTATIONARY SATELLITE ADD AN
		ADDITIONAL
	ORB =	*ORB FOR IT ENDING IN R01, EXAMPLE, REM05 *ORB,72.9IN03209AP00655PE013.46H01NRR01
	ORB,114IN00350AP00200PE001.49H02NRR01	5115,72.511105205A1 000551 E015.40110111111101
For	Mean Local Time of Ascending Node	MLTAN IS THE ANGLE BETWEEN AN ORBIT'S
SunSynchronous	(MLTAN) =	ASCENDING NODE AND THE MEAN SUN, OFTEN EXPRESSED AS UNIT OF TIME (HH:MM)
Nongeostationary		
Orbits	Not Sun Sync	