#### 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.

NOTE THAT LLITED HAS TWO INDEPENDENT RADIOS (THE ADV RADIO AND THE SDR RADIO) ON THE SATELLITE AND ALSO IN EACH GROUND STATION, BUT ONLY ONE IS USED AT A TIME. BOTH OPERATE HALF-DUPLEX AND BOTH USE THE SAME FIXED FREQUENCY. THE SATELLITE HAS A PATCH ANTENNA FOR EACH RADIO AND BECAUSE IT IS HALF-DUPLEX, THAT ONE PATCH ANTENNA IS FOR SEND AND RECEIVE. AT THE GROUND STATION, THE SAME PHYSICAL PARABOLIC ANTENNA IS USED FOR SEND AND RECEIVE.

### Part A: Space to Earth Downlink Data

Satellite Transmitter Data (Required for Each Frequency)

#### LLITED Satellite Transmitter 1 = ADV radio + dedicated patch antenna on satellite

Transmit Frequency: 914.7 MHz (LLITED satellite radio #1: ADV radio)		
Satellite Name: LLITED		
Data Field	Data Answer	Description/Comments
Transmit Power (PWR)	PWR = 1.3 W	TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2 TRANSMIT POWER UNITS INCLUDE: W = WATT, K = KILOWATT, M = MEGAWATT
Necessary Bandwidth	1.09 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		2-SIDED EMISSION BANDWIDTH VALUES
-3 dB bandwidth	1 MHz	
-20 dB bandwidth	1.1 MHz	
-40 dB bandwidth	1.6 MHz	
-60 dB bandwidth	2.0 MHz	
Modulation Type	2-MSK	THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.
Data Rate	500 Kbps	INFORMATION DATA RATE
Forward Error	Is FEC used? Yes $\square$ No $\boxtimes$	
Correction Coding	FEC Type:, FEC Rate:,	
Total Symbol Rate	500 Kbps	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)	XAP01 J	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 EC	NB= NARROWBEAM EC = EARTH COVERAGE
Transmit Antenna Dimension (XAD)	ANTENNA GAIN = 0 dBi BEAMWIDTH = OMNI XAD01 00G090B	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 = 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 Nongeostationary (Orbital Data)	INCLINATION ANGLE 96.5, APOGEE IN KILOMETERS 510 km, PERIGEE IN KILOMETERS 510 km, ORBITAL PERIOD IN HOURS 1 AND FRACTIONS OF HOURS IN DECIMAL 0.58, THE NUMBER OF SATELLITES IN THE SYSTEM 2, *ORB,96.5IN00510AP00510PE001.58H02 NRT01	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, 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) = N/A - not sun sync	MLTAN IS THE ANGLE BETWEEN AN ORBIT'S ASCENDING NODE AND THE MEAN SUN, OFTEN EXPRESSED AS UNIT OF TIME (HH:MM)

# **LLITED Satellite Transmitter 2 = SDR radio + dedicated patch antenna on satellite**

Transmit Frequency: 914.7 MHz (LLITED satellite radio #2: SDR radio)		
Satellite Name: LLITED		
Data Field	Data Answer	Description/Comments
Transmit Power (PWR)	PWR = 1.3 W	TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2 TRANSMIT POWER UNITS INCLUDE: W = WATT, K = KILOWATT, M = MEGAWATT
Necessary Bandwidth	1.23 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		2-SIDED EMISSION BANDWIDTH VALUES
-3 dB bandwidth	1.0 MHz	
-20 dB bandwidth	1.1 MHz	
-40 dB bandwidth	1.2 MHz	
-60 dB bandwidth	1.2 MHz	
Modulation Type	QPSK	THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.
Data Rate	500 Kbps	INFORMATION DATA RATE
Forward Error Correction Coding	Is FEC used? Yes ⊠ No ⊠ FEC Type: Turbo FEC Rate: 1/2	
Total Symbol Rate	1000 Kbps	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)	XAP02 J	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)	XAZ02 EC	NB= NARROWBEAM EC = EARTH COVERAGE

Transmit Antenna Dimension (XAD)  Type of satellite (State = SPCE) (City = Geo or Nongeo)	ANTENNA GAIN = 0 dBi BEAMWIDTH = OMNI XAD02 00G090B Type = Nongeo	NTIA FORMAT (XAD), EXAMPLE, FOR 16 DBI ANTENNA GAIN AND 30 DEGREE BEAMWIDTH XAD01 16G030B  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 96.5, APOGEE IN KILOMETERS 510 km, PERIGEE IN KILOMETERS 510 km, ORBITAL PERIOD IN HOURS 1 AND FRACTIONS OF HOURS IN DECIMAL 0.58, THE NUMBER OF SATELLITES IN THE SYSTEM 2, *ORB,96.5IN00510AP00510PE001.58H02 NRT01	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) = N/A - not sun sync	MLTAN IS THE ANGLE BETWEEN AN ORBIT'S ASCENDING NODE AND THE MEAN SUN, OFTEN EXPRESSED AS UNIT OF TIME (HH:MM)

<b>Earth Station Dat</b>	a (Receiver) at Each Earth Station Locatio	on
State (RSC)	RSC01 California	
	RSC02 Texas	
	RSC03 Florida	
	RSC04 Hawaii	
	RSC05 California	
	RSC06 California	
	RSC07 Minnesota	
	RSC08 Maine	
	RSC09 Washington	
City Name (RAL)	RAL01 El Segundo	
	RAL02 College Station	
	RAL03 Gainesville	
	RAL04 Kihei	
	RAL05 Mt. Wilson	
	RAL06 Vandenberg	
	RAL07 Orr	
	RAL08 Limestone	
	RAL09 Spokane	
Latitude	Lat01 335508	
(DDMMSS)	Lat02 303835	
/	Lat03 293737	
	Lat04 204448	
	Lat05 341329	
	Lat06 343855	
	Lat07 482245	
	Lat08 465628	
	Lat09 473805	
Longitude	Lon01 1182241W	
(DDDMMSS)	Lon02 0962821W	
(555)	Lon03 0822139W	
	Lon04 1562553W	
	Lon05 1180322W	
	Lon06 1203653W	
	Lon07 0924956W	
	Lon08 0675358W	
	Lon09 1173758W	

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Receive Antenna	RAP01 R	POLARIZATIONS INCLUDE:
Polarization (RAP)	RAP02 R	H = HORIZONTAL,
,	RAP03 R	V = VERTICAL, S = HORIZONTAL AND VERTICAL,
		L = LEFT HAND CIRCULAR,
	RAP04 R	R = RIGHT HAND CIRCULAR,
	RAP05 R	T = RIGHT AND LEFT HAND CIRCULAR,
	RAP06 R	J = LINEAR POLARIZATION
	RAP07 R	
	RAP08 R	
	RAP09 R	
Receive Antenna	RAZ01 V02	THE EARTH STATION RECEIVER ANTENNA
Orientation (RAZ)	RAZ02 V02	MINIMUM OPERATING ANGLE OF
Offeritation (NAZ)		ELEVATION (RAZ), V00 TO V90, EXAMPLE, RAZ01
	RAZ03 V02	V00
	RAZ04 V02	
	RAZ05 V02	
	RAZ06 V02	
	RAZ07 V02	
	· · · · · · · · · · · · · · · · · · ·	
	RAZ08 V02	
	RAZ09 V02	
Receive Antenna	RAD01 31G005B000-360A00023H017	EXAMPLE ASSUMING NONGEOSTATIONARY, 16
	RAD02 23G012B000-360A00107H002	DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL
Dimensions (RAD)		RANGE FROM 001-360, SITE ELEVATION OF 357
	RAD03 23G012B000-360A00036H002	METERS, AND ANTENNA HEIGHT ABOVE TERRAIN
	RAD04 23G012B000-360A00010H002	OF 6 METERS: RAD01 16G030B001-360A00357H006
	RAD05 23G012B000-360A01736H002	KADUI 1000308001-300A00337H000
	RAD06 23G012B000-360A00025H002	
	RAD07 23G012B000-360A00372H002	
	RAD08 23G012B000-360A00159H002	
	RAD09 23G012B000-360A00562H002	
Receive Antenna	ANTENNA DIAMETER = 5 m, ANTENNA	
Additional	EFFICIENCY = 60%,	
	LITICILINGI - 00/0,	
Information (For		
Parabolic	ANTENNA DIAMETER = 1.8 m, ANTENNA	
Antennas)	EFFICIENCY = 60%,	
Number of	2 per ground station	NUMBER OF TIMES THE SATELLITE WILL
	2 per ground station	COMMUNICATE WITH THE EARTH STATION IN THE
Satellite Contacts		SPACE TO EARTH DIRECTION (DOWNLINKS) EACH
Supported Per		DAY
Day		
Expected	10 minutes per ground station	AVERAGE DURATION OF EACH CONTACT
Duration of Each		
Contact		CATELLITE LIE ALTH AND CTATUS TO STATE
Supported	Satellite Health and Status Data ⊠	SATELLITE HEALTH AND STATUS TELEMETRY
Operations	Mission Payload Data ⊠	AND/OR MISSION PAYLOAD DATA
FCC notes:	,	I
1. Use S-Note S945.		
2. REM AGN, Cubesat, (LLITED)		

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

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

## Transmitter 1 (ADV radio) installed in all ground stations

Transmit Frequency:		
State (XSC)	XSC01 California XSC02 Texas XSC03 Florida XSC04 Hawaii XSC05 California XSC06 California XSC06 Maine XSC08 Maine XSC09 Washington	
City Name (XAL)	XAL01 El Segundo XAL02 College Station XAL03 Gainesville XAL04 Kihei XAL05 Mt. Wilson XAL06 Vandenberg XAL07 Orr XAL08 Limestone XAL09 Spokane	
Latitude (DDMMSS)	Lat01 335508 Lat02 303835 Lat03 293737 Lat04 204448 Lat05 341329 Lat06 343855 Lat07 482245 Lat08 465628 Lat09 473805	
Longitude (DDDMMSS)	Lon01 1182241W Lon02 0962821W Lon03 0822139W Lon04 1562553W Lon05 1180322W Lon06 1203653W Lon07 0924956W Lon08 0675358W Lon09 1173758W	

Transmit Power (PWR)	PWR = 9W for all ground stations	TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2 TRANSMIT POWER UNITS INCLUDE: W = WATT, K = KILOWATT, M = MEGAWATT
Necessary Bandwidth	1.09 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		2-SIDED EMISSION BANDWIDTH VALUES
-3 dB bandwidth	1 MHz	
-20 dB bandwidth	1.1 MHz	
-40 dB bandwidth	1.6 MHz	
-60 dB bandwidth	2.0 MHz	
Modulation Type	2-MSK	THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.
Data Rate	500 Kbps	INFORMATION DATA RATE
Forward Error Correction Coding	Is FEC used? Yes □ No ☒  FEC Type:,  FEC Rate:,	
Total Symbol Rate	500 Kbps	DATA RATE COMBINED WITH FEC AND FRAME OVERHEAD RESULTING IN THE TOTAL SYMBOL RATE AT THE INPUTE TO THE SYMBOL MAPPER/MODULATOR.
Transmit Antenna	XAP01 R	POLARIZATIONS INCLUDE: H = HORIZONTAL,
Polarization (XAP)	XAP02 R	V = VERTICAL,
	XAP03 R	S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR,
	XAP04 R	R = RIGHT HAND CIRCULAR,
	XAPOS R	T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
	XAP06 R XAP07 R	J = LINEAR POLARIZATION
	XAPO7 R	
	XAPO9 R	
	70.1.05 10	
Transmit Antenna	XAZ01 V02	THE EARTH STATION TRANSMITTER ANTENNA
Orientation (XAZ)	XAZ02 V02	MINIMUM OPERATING ANGLE OF ELEVATION (XAZ), V00 TO V90, EXAMPLE, XAZ01
	XAZ03 V02	V00
	XAZ04 V02	
	XAZ05 V02	
	XAZ06 V02	
	XAZ07 V02	
	XAZ08 V02 XAZ09 V02	
	77.203 402	

Transmit Antenna Dimensions (XAD)	XAD01 31G005B000-360A00023H017 XAD02 23G012B000-360A00107H002 XAD03 23G012B000-360A00036H002 XAD04 23G012B000-360A00010H002 XAD05 23G012B000-360A01736H002 XAD06 23G012B000-360A00025H002 XAD07 23G012B000-360A00372H002 XAD08 23G012B000-360A00159H002 XAD09 23G012B000-360A00562H002	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 = 5 m, ANTENNA EFFICIENCY = 60%, ANTENNA DIAMETER = 1.8 m, ANTENNA EFFICIENCY = 60%,	
Number of Satellite Contacts Supported Per Day	2 per ground station	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	10 minutes per ground station	AVERAGE DURATION OF EACH CONTACT
Satellite Receive Sp	pecifications	
Receive Antenna Polarization (RAP)	RAP01 = J	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 = EC	NB= NARROWBEAM EC = EARTH COVERAGE
Receive Antenna Dimension (RAD)	RAD01 00G090B	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 Nongeostationary (Orbital Data)	INCLINATION ANGLE 96.5, APOGEE IN KILOMETERS 510 km, PERIGEE IN KILOMETERS 510 km, ORBITAL PERIOD IN HOURS 1 AND FRACTIONS OF HOURS IN DECIMAL 0.58, THE NUMBER OF SATELLITES IN THE SYSTEM 2, *ORB,96.5IN00510AP00510PE001.58H02 NRT01	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) = N/A - not sun sync	MLTAN IS THE ANGLE BETWEEN AN ORBIT'S ASCENDING NODE AND THE MEAN SUN, OFTEN EXPRESSED AS UNIT OF TIME (HH:MM)

# Transmitter 2 (SDR radio) installed in all ground stations

Transmit Frequency	<i>y</i> :	
State (XSC)	XSC01 California	
	XSC02 Texas	
	XSC03 Florida	
	XSC04 Hawaii	
	XSC05 California	
	XSC06 California	
	XSC07 Minnesota	
	XSC08 Maine	
	XSC09 Washington	
City Name (XAL)	XAL01 El Segundo	
	XAL02 College Station	
	XAL03 Gainesville	
	XAL04 Kihei	
	XAL05 Mt. Wilson	
	XAL06 Vandenberg	
	XAL07 Orr	
	XAL08 Limestone	
	XAL09 Spokane	

Latitude	Lat01 335508	
(DDMMSS)	Lat02 303835	
	Lat03 293737	
	Lat04 204448	
	Lat05 341329	
	Lat06 343855	
	Lat07 482245	
	Lat08 465628	
	Lat09 473805	
	Lato 473803	
Longitude	Lon01 1182241W	
(DDDMMSS)	Lon02 0962821W	
	Lon03 0822139W	
	Lon04 1562553W	
	Lon05 1180322W	
	Lon06 1203653W	
	Lon07 0924956W	
	Lon08 0675358W	
	Lon09 1173758W	
Transmit Power	PWR = 9W for all ground stations	TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2
(PWR)		TRANSMIT POWER UNITS INCLUDE:
		W = WATT,
		K = KILOWATT, M = MEGAWATT
Necessary	1.23 MHz	THE WIDTH OF FREQUENCY BAND WHICH IS JUST
Bandwidth	1.23 141112	SUFFICIENT TO SUCCESSFULLY TRANSFER DATA.
Barrawratii		FORMULAS CAN BE FOUND IN ANNEX J OF THE NTIA MANUAL.
RF Emissions Data		2-SIDED EMISSION BANDWIDTH VALUES
-3 dB bandwidth	1.0 MHz	
-20 dB bandwidth	1.1 MHz	
-40 dB bandwidth	1.2 MHz	
-60 dB bandwidth	1.2 MHz	
Modulation Type	QPSK	THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.
Data Rate	500 Kbps	INFORMATION DATA RATE
Forward Error	Is FEC used? Yes ⊠ No ⊠	
Correction Coding	FEC Type: Turbo	
	FEC Rate: 1/2	
Total Symbol Rate	1000 Kbps	DATA RATE COMBINED WITH FEC AND FRAME OVERHEAD RESULTING IN THE TOTAL SYMBOL
		RATE AT THE INPUTE TO THE SYMBOL
		MAPPER/MODULATOR.

	T			
Transmit Antenna	XAP01 R	POLARIZATIONS INCLUDE:		
Polarization (XAP)	XAP02 R	H = HORIZONTAL, V = VERTICAL,		
, ,	XAP03 R	S = HORIZONTAL AND VERTICAL,		
	XAP04 R	L = LEFT HAND CIRCULAR,		
		R = RIGHT HAND CIRCULAR,		
	XAP05 R	T = RIGHT AND LEFT HAND CIRCULAR,		
	XAP06 R	J = LINEAR POLARIZATION		
	XAP07 R			
	XAP08 R			
	XAP09 R			
Transmit Antenna	XAZ01 V02	THE EARTH STATION TRANSMITTER ANTENNA		
		MINIMUM OPERATING ANGLE OF		
Orientation (XAZ)	XAZ02 V02	ELEVATION (XAZ), V00 TO V90, EXAMPLE, XAZ01		
	XAZ03 V02	V00		
	XAZ04 V02			
	XAZ05 V02			
	XAZ06 V02			
	XAZ07 V02			
	XAZ08 V02			
	XAZ09 V02			
		SWAAR SACGUARING NONGSOCTATIONARY AS		
Transmit Antenna	XAD01 31G005B000-360A00023H017	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL		
Dimensions (XAD)	XAD02 23G012B000-360A00107H002	RANGE FROM 001-360, SITE ELEVATION OF 357		
	XAD03 23G012B000-360A00036H002	METERS, AND ANTENNA HEIGHT ABOVE TERRAIN		
	XAD04 23G012B000-360A00010H002	OF 6 METERS:		
	XAD05 23G012B000-360A01736H002	XAD01 16G030B001-360A00357H006		
	XAD06 23G012B000-360A00025H002			
	XAD07 23G012B000-360A00372H002			
	XAD08 23G012B000-360A00159H002			
	XAD09 23G012B000-360A00562H002			
Transmit Antenna	ANTENNA DIAMETER = 5 m, ANTENNA			
Additional	EFFICIENCY = 60%,			
Information (For	2070)			
· ·	ANTENNA DIAMETER 4.0 ANTENNA			
Parabolic	ANTENNA DIAMETER = 1.8 m, ANTENNA			
Antennas)	EFFICIENCY = 60%,			
Number of	2 per ground station	NUMBER OF TIMES THE EARTH STATION WILL		
Satellite Contacts		COMMUNICATE WITH THE STATELLITE IN THE EARTH TO SPACE DIRECTION (UPINKS) EACH DAY		
Supported Per		LAMIT TO SPACE DIRECTION (OPTING) EACH DAY		
Day				
	10 minutes per ground station	AVERAGE DURATION OF EACH CONTACT		
Expected	To minutes per ground station	THE SECOND OF EACH CONTACT		
Duration of Each				
Contact				
Satellite Receive Sp	Satellite Receive Specifications			

Receive Antenna	RAP02 = J	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	RAZ02 = EC	NB= NARROWBEAM EC = EARTH COVERAGE
Orientation (RAZ)		
Receive Antenna	RAD02 00G090B	NTIA FORMAT(RAD), EXAMPLE, FOR 16 DBI
Dimension (RAD)		ANTENNA GAIN AND 30 DEGREE BEAMWIDTH
		RAD01 16G030B
Type of satellite	Type = Nongeo	CHOOSE EITHER:
(State = SPCE)		GEOSTATIONARY OR NONGEOSTATIONARY
City = Geo or		
Nongeo		
		IF ANY SATELLITES ARE GEOSTATIONARY, REPORT
For Geostationary	Longitude =	ITS LATITUDE AS 000000N (XLA AND/OR RLA) AND
Satellites		REPORT ITS LONGITUDE IN DDDMMSS FORMAT
		(XLG AND/OR RLG).
For	INCLINATION ANGLE 96.5,	IF ANY SATELLITES ARE NONGEOSTATIONARY,
Nongeostationary	APOGEE IN KILOMETERS 510 km, PERIGEE	REPORT ITS INCLINATION ANGLE, APOGEE
,	·	IN KILOMETERS, PERIGEE IN KILOMETERS,
(Orbital Data)	IN KILOMETERS 510 km,	ORBITAL PERIOD IN HOURS AND FRACTIONS OF HOURS IN DECIMAL, THE NUMBER OF SATELLITES
	ORBITAL PERIOD IN HOURS 1 AND	IN THE SYSTEM, THEN TO1, EXAMPLE,
	FRACTIONS OF HOURS IN DECIMAL 0.58,	REM04
	THE NUMBER OF SATELLITES IN THE	*ORB,98.0IN00510AP00510PE001.58H01NRT01,
	SYSTEM 2,	AND FOR SPACE-TO-SPACE
	JIJILIVI Z,	COMMUNICATIONS WITH ANOTHER
		NONGEOSTATIONARY SATELLITE ADD AN
	*ORB,96.5IN00510AP00510PE001.58H02	ADDITIONAL
	NRT01	*ORB FOR IT ENDING IN R01, EXAMPLE, REM05 *ORB,72.9IN03209AP00655PE013.46H01NRR01
		OND, / 2.3IINO3203AF00033FE013.40H01NRR01
For	Mean Local Time of Ascending Node	MLTAN IS THE ANGLE BETWEEN AN ORBIT'S
SunSynchronous	(MLTAN) = N/A - not sun sync	ASCENDING NODE AND THE MEAN SUN, OFTEN EXPRESSED AS UNIT OF TIME (HH:MM)
Nongeostationary	,	EXTRESSED AS OIGH OF THEIR (THE INTERVITOR)
Orbits		
OIDILS		