NTIA Space record data form OwlSat

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.

OwlSat uses UHF Amateur band for one downlink and one uplink, frequency coordinated with IARU SatCoord Committee.

Part A: Space to Earth Downlink Data

Satellite Transmitter Data (Required for Each Frequency)

Transmit Frequency: 436.975 MHz		
Satellite Name: OwlSat		
Data Field	**Data Answer**	**Description/Comments**
Transmit Power (PWR)	PWR = PWR01 W0.49	TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2 TRANSMIT POWER UNITS INCLUDE: W = WATT, K = KILOWATT, M = MEGAWATT
Necessary Bandwidth	14.4 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	GMSK	THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.
Data Rate	9600 bits/second	INFORMATION DATA RATE
Forward Error Correction Coding	Is FEC used? Yes ☐ No ☒ FEC Type: _____, FEC Rate: _____,	
Total Symbol Rate	9600 symbols/second	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 = 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 = NB	NB= NARROWBEAM EC = EARTH COVERAGE
Transmit Antenna Dimension (XAD)	ANTENNA GAIN___2.2_____, BEAMWIDTH ____085_____, XAD = 02G085B	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____97.6_____, APOGEE IN KILOMETERS__565____, PERIGEE IN KILOMETERS___565_____, ORBITAL PERIOD IN HOURS _1___AND FRACTIONS OF HOURS IN DECIMAL__.6_, THE NUMBER OF SATELLITES IN THE SYSTEM__1_____, ORB = ORB,97.6IN00565AP00565PE001.60H01NRT01	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) =_____05:40_____	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)	RSC = TX	
City Name (RAL)	RAL = Houston	
Latitude (DDMMSS)	Lat = 294312 N	
Longitude (DDDMMSS)	Lon = 0952403 W	

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 = RAZ01 V15	THE EARTH STATION RECEIVER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (RAZ), V00 TO V90, EXAMPLE, RAZ01 V00
Receive Antenna Dimensions (RAD)	ANTENNA GAIN__15.5_____, BEAMWIDTH_28_____, AZIMUTHAL RANGE__001-360_____, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS _15 m__, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS _15 m__, RAD = RAD01 15G028B001-360A00015H015	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_____, N/A	
Number of Satellite Contacts Supported Per Day	8 passes maximum per day	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	10 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 S945. 2. REM AGN, Cubesat, OWLSAT		

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

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

Transmit Frequency: 436.975 MHz		
State (XSC)	XSC = TX	
City Name (XAL)	XAL = HOUSTON	
Latitude (DDMMSS)	Lat = 294312 N	
Longitude (DDDMMSS)	Lon = 0952403 W	
Transmit Power (PWR)	PWR = PWR01 W24	TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2 TRANSMIT POWER UNITS INCLUDE: W = WATT, K = KILOWATT, M = MEGAWATT
Necessary Bandwidth	1.8 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	GMSK	THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.
Data Rate	1200	INFORMATION DATA RATE
Forward Error Correction Coding	Is FEC used? Yes ☐ No ☒ FEC Type: _____, FEC Rate: _____,	
Total Symbol Rate	1200 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 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 = XAZ01 V15	THE EARTH STATION TRANSMITTER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (XAZ), V00 TO V90, EXAMPLE, XAZ01 V00

Transmit Antenna Dimensions (XAD)	ANTENNA GAIN___15.5_____, BEAMWIDTH___28_____, AZIMUTHAL RANGE___001-360_____, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS ___15 m___, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS ____15m____, XAD = 15G028B001-360A00015H015	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_____, N/A	
Number of Satellite Contacts Supported Per Day	8 passes maximum per day	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	AVERAGE DURATION OF EACH CONTACT
Satellite Receive Specifications		
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 GAIN__2.2____, BEAMWIDTH __085_____, RAD = 02G085B	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____97.6_____, APOGEE IN KILOMETERS_____565____, PERIGEE IN KILOMETERS_____565_____, ORBITAL PERIOD IN HOURS _1__AND FRACTIONS OF HOURS IN DECIMAL__.6__, THE NUMBER OF SATELLITES IN THE SYSTEM____1_____, ORB = ORB,97.6IN00565AP00565PE001.60H01NRR01	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) =____05:40_____	MLTAN IS THE ANGLE BETWEEN AN ORBIT'S ASCENDING NODE AND THE MEAN SUN, OFTEN EXPRESSED AS UNIT OF TIME (HH:MM)