

## NTIA Space Record 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

Transmit Frequency: 8447.6MHz		
Satellite Name: CU-E3		
Data Field	Data Answer	Description/Comments
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
Orientation (XAZ)	XAZ = EC	NB= NARROWBEAM EC = EARTH COVERAGE
Antenna Dimension (XAD)	ANTENNA GAIN __22.3dBi_____ BEAMWIDTH __8_____ XAD = 22G008B	(NTIA format (XAD), EXAMPLE, XAD01 16G030B)
Type of satellite (State = SP) (City = geo or non)	Type = DEEP SPACE	Choose either: Geostationary or Nongeostationary
For Geostationary	Longitude = DEEP SPACE	IF ANY SATELLITES ARE GEOSTATIONARY, REPORT ITS LATITUDE AS 000000N (XLA AND/OR RLA) AND REPORT ITS LONGITUDE (XLG AND/OR RLG).
For Nongeostationary (Orbital Data)	INCLINATION ANGLE__N/A_____, APOGEE IN KILOMETERS__N/A_____, PERIGEE IN KILOMETERS__N/A_____, ORBITAL PERIOD IN HOURS __N/A _AND FRACTIONS OF HOURS IN DECIMAL_ N/A _____, 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

Transmit Frequency: 8447.6MHz		
Satellite Name: CU-E3		
Data Field	Data Answer	Description/Comments
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
Orientation (XAZ)	XAZ = EC	NB= NARROWBEAM EC = EARTH COVERAGE
Antenna Dimension (XAD)	ANTENNA GAIN__ 12.6dBi_____ BEAMWIDTH __ 44 _____ XAD = 13G044B	(NTIA format (XAD), EXAMPLE, XAD01 16G030B)
Type of satellite (State = SP) (City = geo or non)	Type = DEEP SPACE	Choose either: Geostationary or Nongeostationary
For Geostationary	Longitude = DEEP SPACE	IF ANY SATELLITES ARE GEOSTATIONARY, REPORT ITS LATITUDE AS 000000N (XLA AND/OR RLA) AND REPORT ITS LONGITUDE (XLG AND/OR RLG).
For Nongeostationary (Orbital Data)	INCLINATION ANGLE__ N/A_____, APOGEE IN KILOMETERS__ N/A _____, PERIGEE IN KILOMETERS__ N/A _____, ORBITAL PERIOD IN HOURS __ N/A _AND FRACTIONS OF HOURS IN DECIMAL_ N/A _____, 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

<b>Earth Station Data (Brewster 8447.6 MHz Receiver)</b>		
State (RSC)	RSC = Brewster	
City Name (RAL)	RAL = WA	
Latitude (DDMMSS)	Lat = 480851N	
Longitude (DDDMMSS)	Lon = 1194148W	
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
Antenna Azimuth (RAZ)	RAZ = V05	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimensions (RAD)	ANTENNA GAIN___53.4dBi_____, BEAMWIDTH___0.5°_____, AZIMUTHAL RANGE__0-360_____, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS ___382.8 meters____ THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS _____3.8 meters_____	EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006
FCC notes: 1. Use S-Note S945. 2. REM AGN, Cubesat, CU-E3 RAD = =54G001B000-360A00383H004		

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

Earth Station Transmitter Data (Brewster, WA)

Transmit Frequency: 5182MHz		
State (XSC)	XSC = Washington	
City Name (XAL)	XAL = Brewster	
Latitude (DDMMSS)	Lat = 480851N	
Longitude (DDDMMSS)	Lon = 1194148W	
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
Antenna Azimuth (XAZ)	XAZ = V05	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimensions (XAD)	ANTENNA GAIN___50.3dBi_____, BEAMWIDTH___0.4°_____, AZIMUTHAL RANGE__0-360_____, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS ___382.8 meters_____ THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS ___11.9 meters_____  RAD = 50G001B000-360A00383H012	EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006

Satellite Receive Specifications 5182MHz		
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
Orientation (RAZ)	RAZ = EC	NB= NARROWBEAM EC = EARTH COVERAGE
Antenna Dimension (RAD)	ANTENNA GAIN ___ 9.4dBi _____ BEAMWIDTH ___ 50° _____ XAD = 09G050B	(NTIA format (XAD), EXAMPLE, XAD01 16G030B)
Type of satellite (State = SP) (City = geo or non)	Type = DEEP SPACE	Choose either: Geostationary or Nongeostationary
For Geostationary	Longitude = DEEP SPACE	IF ANY SATELLITES ARE GEOSTATIONARY, REPORT ITS LATITUDE AS 000000N (XLA AND/OR RLA) AND REPORT ITS LONGITUDE (XLG AND/OR RLG).
For Nongeostationary (Orbital Data)	INCLINATION ANGLE ___ N/A _____, APOGEE IN KILOMETERS ___ N/A _____, PERIGEE IN KILOMETERS ___ N/A _____, ORBITAL PERIOD IN HOURS ___ N/A _AND FRACTIONS OF HOURS IN DECIMAL_ N/A _____, 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