### 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

Transmit Frequency	y:	
137.920 MHz		
Satellite Name:		
BEE		
Data Field	Data Answer	Description/Comments
Polarization (XAP)	XAP = 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
Orientation (XAZ)	XAZ = EC	NB= NARROWBEAM
Antonno	ANTENNA CAIN - 2 15 dD:	EC = EARTH COVERAGE (NTIA format (XAD), EXAMPLE, XAD01 16G030B)
Antenna	ANTENNA GAIN = 2.15 dBi	(WHA TOTHLE (MAD), EMAINT EE, MADOL 100000)
Dimension (XAD)	BEAMWIDTH = Toroidal	
	HPBW = $60 \times 360$ degrees	
	XAD = XAD01 02GDIPOLE	
Type of satellite	Type = Nongeostationary	Choose either: Geostationary or
(State = SP)	State = SP	Nongeostationary
(City = geo or	City = non	,
non)		
For Geostationary	Longitude =	IF ANY SATELLITES ARE GEOSTATIONARY, REPORT
,		ITS LATITUDE AS 000000N (XLA AND/OR RLA) AND
Fa.:	INCLINATION ANGLE	REPORT ITS LONGITUDE (XLG AND/OR RLG).  IF ANY SATELLITES ARE NONGEOSTATIONARY,
For	INCLINATION ANGLE85,	REPORT ITS INCLINATION ANGLE, APOGEE
Nongeostationary	APOGEE IN KILOMETERS500,	IN KILOMETERS, PERIGEE IN KILOMETERS,
(Orbital Data)	PERIGEE IN KILOMETERS500,	ORBITAL PERIOD IN HOURS AND FRACTIONS OF HOURS IN DECIMAL, THE NUMBER OF SATELLITES
	ORBITAL PERIOD IN HOURS1_AND	IN THE SYSTEM, THEN TO1, EXAMPLE,
	FRACTIONS OF HOURS IN	REM04
	DECIMAL0.577,	*ORB,98.0IN00510AP00510PE001.58H01NRT01,
	THE NUMBER OF SATELLITES IN THE	AND FOR SPACE-TO-SPACE COMMUNICATIONS WITH ANOTHER
	SYSTEM,	NONGEOSTATIONARY SATELLITE ADD AN
		ADDITIONAL
	ORB =	*ORB FOR IT ENDING IN R01, EXAMPLE, REM05
	ORB,085.0IN00500AP00500PE0001.58H0	*ORB,72.9IN03209AP00655PE013.46H01NRR01
	4NRT01	

Dimensions (RAD)  BEAMWIDTH180,  AZIMUTHAL RANGE 0 to 360,  THE SITE ELEVATION ABOVE MEAN SEA  LEVEL IN METERS42  THE ANTENNA HEIGHT ABOVE TERRAIN  IN METERS3  RAD = RAD01 02GDIPOLE			
State (RSC) RSC = CA  City Name (RAL) RAL = Menlo Park  Latitude (DDMMSS)  Longitude (DDDMMSS)  Antenna Polarization (RAP)  RAP = V  RAP = V  RAZ = 0-360 V00 to V90 (Azimuth = 0 to 360, Elevation 0 to 90)  Antenna Dimensions (RAD)  ANTENNA GAIN 2.15 BEAMWIDTH 180 AZIMUTHAL RANGE 0 to 360 THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 42 THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS 3 RAD = RADO1 02GDIPOLE			
City Name (RAL)  RAL = Menlo Park  Latitude (DDMMSS)  Longitude (DDDMMSS)  Antenna Polarization (RAP)  RAP = V  RAP = V  Polarization (RAP)  RAZ = 0-360 V00 to V90 (Azimuth = 0 to 360, Elevation 0 to 90)  Antenna Dimensions (RAD)  ANTENNA GAIN	Earth Station Dat	a (Receiver) #1	
Latitude (DDMMSS)  Longitude (DDDMMSS)  Antenna Polarization (RAP)  RAP = V  RAP = V  Polarizations include: H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, T = RIGHT HAND CIRCULAR, T = RIGHT HAND CIRCULAR, T = RIGHT HAND CIRCULAR, J = LINEAR POLARIZATION RECEIVER ANTENNA AZIMUTH (RAZ)  ANTENNA GAIN  ANTENNA GAIN  AZIMUTHAL RANGE Dimensions (RAD)  BEAMWIDTH 180  AZIMUTHAL RANGE O to 360  THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 42  THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS 3  RAD = RADO1 02GDIPOLE	State (RSC)	RSC = CA	
(DDMMSS)  Longitude (DDDMMSS)  Antenna Polarization (RAP)  RAP = V  RAP = V  Polarization (RAP)  Polarization (RAP)  RAP = V  Polarization (RAP)  Rap = Rapotation (RAP)  Polarization (RAP)  The EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00  Polarization (RAP)  The EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00  Polarization (RAP)  The EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00  Polarization (RAP)  The EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00  Polarization (RAP)  The EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00  Polarization (RAP)  The EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00  Polarization (RAD)  The EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00  Polarization (RAD)  The EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00  The EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00  Polarization (RAZ)  The EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE	City Name (RAL)	RAL = Menlo Park	
DDDMMSS    Antenna   Polarization (RAP)   RAP = V     Polarization (RAP)   Polarization (RAP)   RAP = V   Polarization (RAP)   Polari		Lat = 37 26 11 N	
Polarization (RAP)    H = HORIZONTAL,	•	Lon = 122 12 44 W	
(RAZ)  V00 to V90 (Azimuth = 0 to 360, Elevation 0 to 90)  Antenna Dimensions (RAD)  ANTENNA GAIN  BEAMWIDTH  180  AZIMUTHAL RANGE  0 to 360  THE SITE ELEVATION ABOVE MEAN SEA  LEVEL IN METERS  42  THE ANTENNA HEIGHT ABOVE TERRAIN  IN METERS  3  RAD = RAD01 02GDIPOLE		RAP = V	H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR,
Dimensions (RAD)  BEAMWIDTH180, AZIMUTHAL RANGE0 to 360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS42 THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS3  RAD = RAD01 02GDIPOLE	,	V00 to V90	AZIMUTH (RAZ), THE MINIMUM ANGLE OF
	Antenna Dimensions (RAD)	BEAMWIDTH180	,
	FCC notes:	KAD = KADU1 UZGDIPOLE	

- 1. Use S-Note S945.
- 2. REM AGN, Cubesat, (SWARM BEE)

Earth Station Data	a (Receiver) #2	
State (RSC)	RSC = GA	
City Name (RAL)	RAL = Buford	
Latitude	Lat = 34 05 05 N	
(DDMMSS)		
Longitude	Lon = 083 56 51 W	
(DDDMMSS)		
Antenna	RAP = V	POLARIZATIONS INCLUDE :
Polarization (RAP)		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 = 0-360	THE EARTH STATION RECEIVER ANTENNA
(RAZ)	V00 to V90	AZIMUTH (RAZ), THE MINIMUM ANGLE OF
(11/12)	V00 t0 V30	ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00

	(Azimuth = 0 to 360, Elevation 0 to 90)	
Antenna Dimensions (RAD)	ANTENNA GAIN2.15, BEAMWIDTH180, AZIMUTHAL RANGE0 to 360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS366 THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS3	EXAMPLE ASSUMING NONGEOSTATIONARY, RAD01 16G030B000-360A00357H006
	RAD = RAD01 02GDIPOLE	

### FCC notes:

- 1. Use S-Note S945.
- 2. REM AGN, Cubesat, (SWARM BEE)

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

Earth Station Transmitter Data #1

Transmit Frequency	v: 149 500 MHz	
State (XSC)	XSC = CA	
City Name (XAL)	XAL = Los Altos	
Latitude	Lat = 37 22 54 N	
(DDMMSS)		
Longitude	Lon = 122 5 50 W	
(DDDMMSS)		
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
Antenna Azimuth	XAZ = 0-360	THE EARTH STATION Transmitter ANTENNA
(XAZ)	V00 to V90	AZIMUTH (XAZ), THE MINIMUM ANGLE OF
	(Azimuth = 0 to 360, Elevation 0 to 90)	ELEVATION, V00 TO V90, EXAMPLE, XAZ01 V00
Antenna	ANTENNA GAIN 2.15 ,	EXAMPLE ASSUMING NONGEOSTATIONARY,
Dimensions (RAD)	BEAMWIDTH180,	XAD01 16G030B000-360A00357H006
	AZIMUTHAL RANGE 0 to 360	
	THE SITE ELEVATION ABOVE MEAN SEA	
	LEVEL IN METERS48	
	THE ANTENNA HEIGHT ABOVE TERRAIN	
	IN METERS3	
	DAD DADOL OZCOJDOLE	
Catallita Bassina Co	RAD = RAD01 02GDIPOLE	
Satellite Receive Sp	Decifications	
Polarization (RAP)	RAP = V	POLARIZATIONS INCLUDE :
Totalization (IVAL)	IVAL - V	H = HORIZONTAL,
		V = VERTICAL,
		S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR,
		R = RIGHT HAND CIRCULAR,
		T = RIGHT AND LEFT HAND CIRCULAR,
A : 11 (DAZ)	247 50	J = LINEAR POLARIZATION  STATION RECEIVED ANTENNA AZIMUTH (VAZ)
Azimuth (RAZ)	RAZ = EC	STATION RECEIVER ANTENNA AZIMUTH (XAZ), THE MINIMUM ANGLE OF
		ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00
Dimension (XAD)	ANTENNA GAIN = 2.15 dBi	(NTIA format (RAD), EXAMPLE, RAD01 16G030B)
Difficusion (AAD)	BEAMWIDTH = Toroidal	, , , , , , , , , , , , , , , , , , , ,
	HPBW = 60 x 360 degrees.	
	<u> </u>	
T of a - t - 11:t -	XAD = XAD01 02GDIPOLE	Choose either:
Type of satellite	Type = Nongeostationary	Geostationary or
(State = SP)	State = SP	Nongeostationary

City = G/No	City = non	
For Geostationary	Longitude =	IF ANY SATELLITES ARE GEOSTATIONARY, REPORT ITS LATITUDE AS 000000N (XLA AND/OR RLA) AND REPORT ITS LONGITUDE (XLG AND/OR RLG). IF ANY SATELLITES ARE NONGEOSTATIONARY,
Nongeostationary (Orbital Data)	INCLINATION ANGLE85.0, APOGEE IN KILOMETERS500, PERIGEE IN KILOMETERS500, ORBITAL PERIOD IN HOURS1AND FRACTIONS OF HOURS IN DECIMAL0.577, THE NUMBER OF SATELLITES IN THE SYSTEM4, ORB = ORB,085.0IN00500AP00500PE0001.58H0 4NRR01	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

#### Earth Station Transmitter Data #2

Transmit Frequency	: 148.500 MHz	
State (XSC)	XSC = GA	
City Name (XAL)	XAL = Buford	
Latitude	Lat = 34 05 05 N	
(DDMMSS)		
Longitude	Lon = 083 56 51 W	
(DDDMMSS)		
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,
A	V47 0 200	J = LINEAR POLARIZATION  THE EARTH STATION Transmitter ANTENNA
Antenna Azimuth	XAZ = 0-360	AZIMUTH (XAZ), THE MINIMUM ANGLE OF
(XAZ)	V00 to V90	ELEVATION, V00 TO V90, EXAMPLE, XAZ01 V00
	(Azimuth = 0 to 360, Elevation 0 to 90)	
Antenna	AANTENNA GAIN2.15,	EXAMPLE ASSUMING NONGEOSTATIONARY,
Dimensions (RAD)	BEAMWIDTH180,	XAD01 16G030B000-360A00357H006
	AZIMUTHAL RANGE 0 to 360 ,	
	THE SITE ELEVATION ABOVE MEAN SEA	
	LEVEL IN METERS 48	
	THE ANTENNA HEIGHT ABOVE TERRAIN	
	IN METERS 3	
	RAD = RAD01 02GDIPOLE	
	ecifications	

Polarization (RAP)  Azimuth (RAZ)	RAP = V  RAZ = EC	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 STATION RECEIVER ANTENNA AZIMUTH (XAZ),
		THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00
Dimension (XAD)	ANTENNA GAIN = 2.15 dBi BEAMWIDTH = Toroidal HPBW = 60 x 360 degrees. XAD = XAD01 02GDIPOLE	(NTIA format (RAD), EXAMPLE, RAD01 16G030B)
Type of satellite	Type = Nongeostationary	Choose either:
(State = SP)	State = SP	Geostationary or Nongeostationary
City = G/No	City = non	rengeostationary
For Geostationary	Longitude =	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 ANGLE85.0, APOGEE IN KILOMETERS500, PERIGEE IN KILOMETERS500, ORBITAL PERIOD IN HOURS1AND FRACTIONS OF HOURS IN DECIMAL0.577, THE NUMBER OF SATELLITES IN THE SYSTEM4, ORB = ORB,085.0IN00500AP00500PE0001.58H0 4NNRR01	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