

## **Douglas Young**

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**From:** Douglas Young  
**Sent:** Friday, October 19, 2018 2:04 PM  
**To:** 'jgj@h-bar.com'  
**Subject:** Request for Info - File #0651-EX-CN-2018  
**Attachments:** REVSatDataNTIA.DOCX

**Importance:** High

Submit the data requested in the attached document for the transmit and receive sections for the downlink and uplink.

The items indicated above must be submitted before processing can continue on the above referenced application. Failure to provide the requested information within 30 days of October 19, 2018 may result in application dismissal pursuant to Section 5.67 and forfeiture of the filing fee pursuant to Section 1.1108.

## 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:                                      |                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Satellite Name:                                          |                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Data Field                                               | Data Answer                                                                                                                                                                                                                              | Description/Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Polarization (XAP)                                       | XAP =                                                                                                                                                                                                                                    | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION                                                                                                                                                                                                                                                                    |
| Orientation (XAZ)                                        | XAZ =                                                                                                                                                                                                                                    | NB= NARROWBEAM<br>EC = EARTH COVERAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Antenna Dimension (XAD)                                  | ANTENNA GAIN _____<br>BEAMWIDTH _____<br>XAD =                                                                                                                                                                                           | (NTIA format (XAD), EXAMPLE, XAD01 16G030B)                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Type of satellite<br>(State = SP)<br>(City = geo or non) | Type =                                                                                                                                                                                                                                   | Choose either:<br>Geostationary or<br>Nongeostationary                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 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<br>(Orbital Data)                   | INCLINATION ANGLE _____,<br>APOGEE IN KILOMETERS _____,<br>PERIGEE IN KILOMETERS _____,<br>ORBITAL PERIOD IN HOURS _____ AND<br>FRACTIONS OF HOURS IN<br>DECIMAL _____,<br>THE NUMBER OF SATELLITES IN THE<br>SYSTEM _____,<br><br>ORB = | 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<br>*ORB,98.0IN00510AP00510PE001.58H01NRT01,<br>AND FOR SPACE-TO-SPACE COMMUNICATIONS WITH ANOTHER NONGEOSTATIONARY SATELLITE ADD AN ADDITIONAL<br>*ORB FOR IT ENDING IN R01, EXAMPLE, REM05<br>*ORB,72.9IN03209AP00655PE013.46H01NRR01 |
|                                                          |                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                                          |                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

| Earth Station Data (Receiver)                                           |                                                                                                                                                                                                     |                                                                                                                                                                                                                    |
|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State (RSC)                                                             | RSC =                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| City Name (RAL)                                                         | RAL =                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                                                       | Lat =                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                                                     | Lon =                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Antenna Polarization (RAP)                                              | RAP =                                                                                                                                                                                               | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (RAZ)                                                   | RAZ =                                                                                                                                                                                               | THE EARTH STATION RECEIVER ANTENNA<br>AZIMUTH (RAZ), THE MINIMUM ANGLE OF<br>ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                             |
| Antenna Dimensions (RAD)                                                | ANTENNA GAIN _____,<br>BEAMWIDTH _____,<br>AZIMUTHAL RANGE _____,<br>THE SITE ELEVATION ABOVE MEAN SEA<br>LEVEL IN METERS _____<br>THE ANTENNA HEIGHT ABOVE TERRAIN<br>IN METERS _____<br><br>RAD = | EXAMPLE ASSUMING NONGEOSTATIONARY,<br>RAD01 16G030B000-360A00357H006                                                                                                                                               |
| FCC notes:<br>1. Use S-Note S945.<br>2. REM AGN, Cubesat, (insert name) |                                                                                                                                                                                                     |                                                                                                                                                                                                                    |

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

### Earth Station Transmitter Data

|                                               |                                                                                                                                                                                               |                                                                                                                                                                                                                    |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Transmit Frequency:                           |                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| State (XSC)                                   | XSC =                                                                                                                                                                                         |                                                                                                                                                                                                                    |
| City Name (XAL)                               | XAL =                                                                                                                                                                                         |                                                                                                                                                                                                                    |
| Latitude (DDMMSS)                             | Lat =                                                                                                                                                                                         |                                                                                                                                                                                                                    |
| Longitude (DDDMMSS)                           | Lon =                                                                                                                                                                                         |                                                                                                                                                                                                                    |
| Antenna Polarization (XAP)                    | XAP =                                                                                                                                                                                         | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Antenna Azimuth (XAZ)                         | XAZ =                                                                                                                                                                                         | THE EARTH STATION Transmitter ANTENNA AZIMUTH (XAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, XAZ01 V00                                                                                                |
| Antenna Dimensions (XAD)                      | ANTENNA GAIN _____,<br>BEAMWIDTH _____,<br>AZIMUTHAL RANGE _____,<br>THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS _____<br>THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS _____<br><br>XAD = | EXAMPLE ASSUMING NONGEOSTATIONARY,<br>XAD01 16G030B000-360A00357H006                                                                                                                                               |
| <b>Satellite Receive Specifications</b>       |                                                                                                                                                                                               |                                                                                                                                                                                                                    |
| Polarization (RAP)                            | RAP =                                                                                                                                                                                         | POLARIZATIONS INCLUDE :<br>H = HORIZONTAL,<br>V = VERTICAL,<br>S = HORIZONTAL AND VERTICAL,<br>L = LEFT HAND CIRCULAR,<br>R = RIGHT HAND CIRCULAR,<br>T = RIGHT AND LEFT HAND CIRCULAR,<br>J = LINEAR POLARIZATION |
| Azimuth (RAZ)                                 | RAZ =                                                                                                                                                                                         | STATION RECEIVER ANTENNA AZIMUTH (XAZ), THE MINIMUM ANGLE OF ELEVATION, V00 TO V90, EXAMPLE, RAZ01 V00                                                                                                             |
| Dimension (RAD)                               | ANTENNA GAIN _____<br>BEAMWIDTH _____<br>RAD =                                                                                                                                                | (NTIA format (RAD), EXAMPLE, RAD01 16G030B)                                                                                                                                                                        |
| Type of satellite (State = SP)<br>City = G/No | Type =                                                                                                                                                                                        | Choose either:<br>Geostationary or<br>Nongeostationary                                                                                                                                                             |

|                                     |                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 ANGLE _____,<br>APOGEE IN KILOMETERS _____,<br>PERIGEE IN KILOMETERS _____,<br>ORBITAL PERIOD IN HOURS _____ AND<br>FRACTIONS OF HOURS IN<br>DECIMAL _____,<br>THE NUMBER OF SATELLITES IN THE<br>SYSTEM _____, | 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<br>*ORB,98.0IN00510AP00510PE001.58H01NRT01,<br>AND FOR SPACE-TO-SPACE COMMUNICATIONS WITH ANOTHER NONGEOSTATIONARY SATELLITE ADD AN ADDITIONAL<br>*ORB FOR IT ENDING IN R01, EXAMPLE, REM05<br>*ORB,72.9IN03209AP00655PE013.46H01NRR01 |
|                                     |                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |