Applications: 0226-EX-CN-2018 and 0343-EX-CN-2018

Comment:

1) **Please ask the applicant to update the form 442 to indicate the requested frequency change.**

   Form 422 uplink has been updated to the correct range: 402.65 – 402.70 MHz.

2) **The uplink frequency change needs to be corrected in the SpaceCap as well as the Nature of service.**

   The uplink frequency has been changed on applications: 0226-EX-CN-2018 and 0343-EX-CN-2018. Both satellites have been reclassified to EW (Earth Exploration Satellites). Updated SpaceCAP files have been uploaded to:

   Link: https://uofi.box.com/s/h45ae8struhpl3y22n0nhz30ec6p3x0r

3) **Verify that the downlink maximum peak power is 0dBw**

   Please see table below, which references the GOMSpace AX100UL radio data sheet, stating that the peak transmit power is 1.0W or 0 dBW. This is the same radio being used on 0226-EX-CN-2018 and 0343-EX-CN-2018.

10.1 Downlink

Parameter:	Value:	Units:
Spacecraft:		
Spacecraft Transmitter Power Output:	1,0	watts
In dBW:	0	dBW
In dBm:	30,0	dBm
Spacecraft Total Transmission Line Losses:	0,5	dB
Spacecraft Antenna Gain:	0	dBi
Spacecraft EIRP:	**-0,5**	dBW
Downlink Path:		
Spacecraft Antenna Pointing Loss:	0	dB
S/C-to-Ground Antenna Polarization Loss:	3	dB
Path Loss:	153	dB
Atmospheric Loss:	2,1	dB
Ionospheric Loss:	0,4	dB
Rain Loss:	0,0	dB
Isotropic Signal Level at Ground Station:	**-159,0**	dBW
Ground Station (EbNo Method):		
Ground Station Antenna Pointing Loss:	0,5	dB
Ground Station Antenna Gain:	17	dBi
Ground Station Total Transmission Line Losses:	0,5	dB
Ground Station Effective Noise Temperature:	1003[5]	K
Ground Station Figure of Merrit (G/T):	-13,5	dB/K
G.S. Signal-to-Noise Power Density (S/No):	59,7	dBHz
System Desired Data Rate:	9600	bps
In dBHz:	39,8	dBHz
Telemetry System Eb/No for the Downlink:	15,8	dB
Demodulation Method Selected:	GMSK	
Forward Error Correction Coding Used:	Conv. R=1/2,K=7 & R.S. (255,223)	
System Allowed or Specified Bit-Error-Rate:	1,0E-05	

[5] For a very noisy city environment

GOMSpace AX100UL Data Sheet:
https://gomspace.com/UserFiles/Subsystems/datasheet/gs-ds-nanocom-ax100-33.pdf

4) **In addition to the EMC analysis provided, the EMC should include an ITU SNS research for Earthstations operating in Canada, Mexico and Caribbean.**

The ITU SNS research system located at https://www.itu.int/sns/ is a subscription service for ITU members only. The University of Illinois is not a member of the ITU. Upon investigation, there are only 5 US universities that are: Gallaudet University, George Mason University, Georgia Institute of Technology, John Hopkins University, and University of New Hampshire. Finally, our ground station will be broadcasting in the United States only, and our satellites attempting communication during passes over the United States as well.

5) **NOAA may have concerns. Operator may want to discuss directly with NOAA. The point of contact is: Mr. Carmelo Rivera carmelo.rivera@noaa.gov**

We have initiated discussion with Mr. Carmelo Rivera to discuss our uplink change to 402.65 – 402.70 MHz.