Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Venturi Astrolab, Inc.	)	File No. SAT-AMD-20260120-00032
	)	
Amendment of Application for Authority to Launch and Operate a Short Duration Mission to Land a Technology Demonstration Rover on the Lunar Surface	))))	Call Sign: S00733

AMENDMENT APPLICATION

Venturi Astrolab, Inc. ("Astrolab") hereby amends the company's pending space station application ("Application")[1] and requests authority to revise the bandwidth for the X-band downlink from 3.7 to 5 MHz.[2]

After assessing the performance of integrated hardware and expected operations, Astrolab has refined the bandwidth of the X-band downlink channel to better reflect Astrolab's communication needs for the proposed operations. Astrolab will coordinate its revised frequency use with Federal spectrum managers and with NASA's Lunar Spectrum Management to ensure protection of existing Federal users and will conduct all operations subject to any conditions arising from such coordination. Consistent with the above changes, Astrolab also updates the DSN protection analysis and power flux density calculations in the revised Technical Annex

---

[1] *See* Application of Astrolab, ICFS File No. SAT-LOA-20250729-00192 (filed September 19, 2025) ("Application").

[2] Included with this application is an updated Schedule S to reflect the revised bandwidth. Astrolab is also contemporaneously submitting under separate cover an updated International Telecommunication Union filing reflecting this change.

attached to this application. The new bandwidth is shown in the revised Table 3: Frequency Plan, below.

Table 3: FLIP Frequency Plan

<table>
<tr><th>Purpose</th><th>Direction</th><th>Service</th><th>FLIP Gain</th><th>Freq. Min (MHz)</th><th>Freq. Max (MHz)</th><th>Freq. Center (MHz)</th><th>BW (MHz)</th><th>Pol.</th><th>Transmitter</th><th>Max EIRP (dBW)</th><th>Receiver</th></tr>
<tr><td rowspan="4">Payload Downlink & TT&C</td><td rowspan="4">Tx</td><td rowspan="4">SRS</td><td rowspan="4">4</td><td rowspan="4">8450</td><td rowspan="4">8500</td><td rowspan="4">8455</td><td rowspan="4">Previous: 3.7
Revised: 5</td><td rowspan="4">Lin</td><td rowspan="4">FLIP X-MGA</td><td rowspan="4">12</td><td>13 m GS</td></tr>
<tr><td>15 m GS</td></tr>
<tr><td>18 m GS</td></tr>
<tr><td>32 m GS</td></tr>
<tr><td rowspan="4">TT&C Downlink, Backup Payload Downlink</td><td rowspan="4">Tx</td><td rowspan="4">SRS</td><td rowspan="4">2</td><td rowspan="4">2200</td><td rowspan="4">2290</td><td rowspan="4">2247.024869</td><td rowspan="4">3.7</td><td rowspan="4">RC</td><td rowspan="4">FLIP S-LGA (Patch)</td><td rowspan="4">10</td><td>13 m GS</td></tr>
<tr><td>15 m GS</td></tr>
<tr><td>18 m GS</td></tr>
<tr><td>32 m GS</td></tr>
<tr><td rowspan="4">TT&C Uplink</td><td rowspan="4">Rx</td><td rowspan="4">SRS</td><td rowspan="4">3</td><td rowspan="4">2025</td><td rowspan="4">2110</td><td rowspan="4">2069.1354</td><td rowspan="4">3.7</td><td rowspan="4">RC</td><td>13 m GS</td><td>67.5</td><td rowspan="4">FLIP S-LGA (Helix)</td></tr>
<tr><td>15 m GS</td><td>73</td></tr>
<tr><td>18 m GS</td><td>74.6</td></tr>
<tr><td>32 m GS</td><td>80</td></tr>
<tr><td>Lander Egress</td><td>Tx/Rx</td><td>ISM</td><td>2</td><td>2400</td><td>2483.5</td><td>2462</td><td>20</td><td>Lin</td><td>Lander/FLIP</td><td>3.6</td><td>Lander/FLIP</td></tr>
</table>

Astrolab requests that the FCC grant the Application, as amended, prior to May 2026, to ensure that Astrolab is able to meet relevant deadlines associated with the scheduled July launch. Except as stated specifically in this application and corresponding filings, Astrolab is not requesting any other changes to the Application.

Respectfully submitted,

/s/ Kevin Drumm

Emma Marion
DLA Piper LLP (US)
500 8th St., NW
Washington, DC 20004
emma.marion@us.dlapiper.com
+1 (212)-335-4626

Counsel for Astrolab

Devin Drumm
Interplanetary Communications Lead
Venturi Astrolab, Inc.
12536 Chadron Ave
Hawthorne, CA 90250
+1 (323)-675-0266

Dated: January 21, 2026

Attachment

TECHNICAL ANNEX

(revised January 2026)

I. SCOPE AND PURPOSE

The FLEX Lunar Innovation Platform ("FLIP") mission, operated by Astrolab, aims to deploy a demonstration rover on the lunar surface to validate innovative technologies for mobility and logistics. This Technical Annex supplements the information provided in the Schedule S.

II. FREQUENCY TOLERANCE

All transmitted signals will be operated with a ± 0.002% frequency tolerance. Accordingly, the FLIP rover complies with 47 C.F.R. § 25.202(e).

III. OUT-OF-BAND EMISSIONS

FLIP's communication systems are designed, using filters and advanced modulation techniques, to minimize out-of-band emissions, ensuring compliance with §25.202(f).

IV. CESSATION OF EMISSIONS

Astrolab can command the FLIP rover to cease all transmissions. At the mission's conclusion, all onboard communication systems will be passivated. Accordingly, the FLIP rover complies with 47 C.F.R. § 25.207.

V. SPECTRUM SHARING

The FLIP mission is very short duration, with a nominal mission duration of 15 days and an extended mission of no more than 90 days from mission start if the rover can be successfully reactivated following the hibernation period. At the conclusion of its mission FLIP's battery will be passivated and the rover will be shut down permanently, eliminating any risk of interference thereafter. Accordingly, all frequency use will be for an extremely limited duration and will not constrain current or future uses of the relevant spectrum bands.

Further, Astrolab has taken multiple steps to ensure the FLIP mission minimizes the risk of harmful interference to other operations, as described below:

1. Spread-spectrum, low-density signal
    a. Every 3.7 MHz and 5 MHz channel (S-band uplink, S-band downlink, and X-band downlink) is transmitted using direct-sequence spread spectrum. This mitigates the impact of lunar-surface multipath and spreads power across the channel, reducing peak power-flux density and facilitating sharing with Federal incumbents.
2. Coordination with NASA & Federal Spectrum Managers
    a. Astrolab has worked with NASA's Lunar Spectrum Management Office to align frequencies with existing lunar and deep-space allocations and to satisfy footnote US347 case-by-case requirements. As discussed above, Astrolab will also complete coordination of its frequency use with Federal spectrum managers and with NASA's Lunar Spectrum Management to ensure protection of existing Federal users and will conduct all operations subject to any conditions arising from such coordination.
3. High-gain ground stations
    a. Partner Earth stations (13 m-32 m apertures) provide substantial link margin, allowing minimal transmitter power on the rover and lowering the signal's spectral footprint.
4. Very-low data rates

a. Command and telemetry links operate at low-kbps rates, further reducing required EIRP and spectral occupancy.

5. Low duty cycle

   a. The rover transmits only on command; routine housekeeping frames are buffered and sent in short bursts, keeping on-air time to an absolute minimum. Transmissions will also only occur during sunlit periods and will be quiescent during the lunar night.

Together, these measures ensure that FLIP's short-lived transmissions remain will not cause interference or constrain current or future users of the requested frequency bands. Further, as provided above, in the case of a report of harmful interference, the FLIP rover is capable of ceasing transmissions where required.

VI. POWER FLUX DENSITY

Power flux density ("PFD") calculations confirm compliance with 47 C.F.R. § 25.208 and ITU rules, ensuring no harmful interference with terrestrial or orbital systems. Maximum PFD values are calculated based on the rover's highest gain antenna at full transmission power during surface operations. The technical showings for both the S-band and the X-band transmissions are provided below.

A. S-band

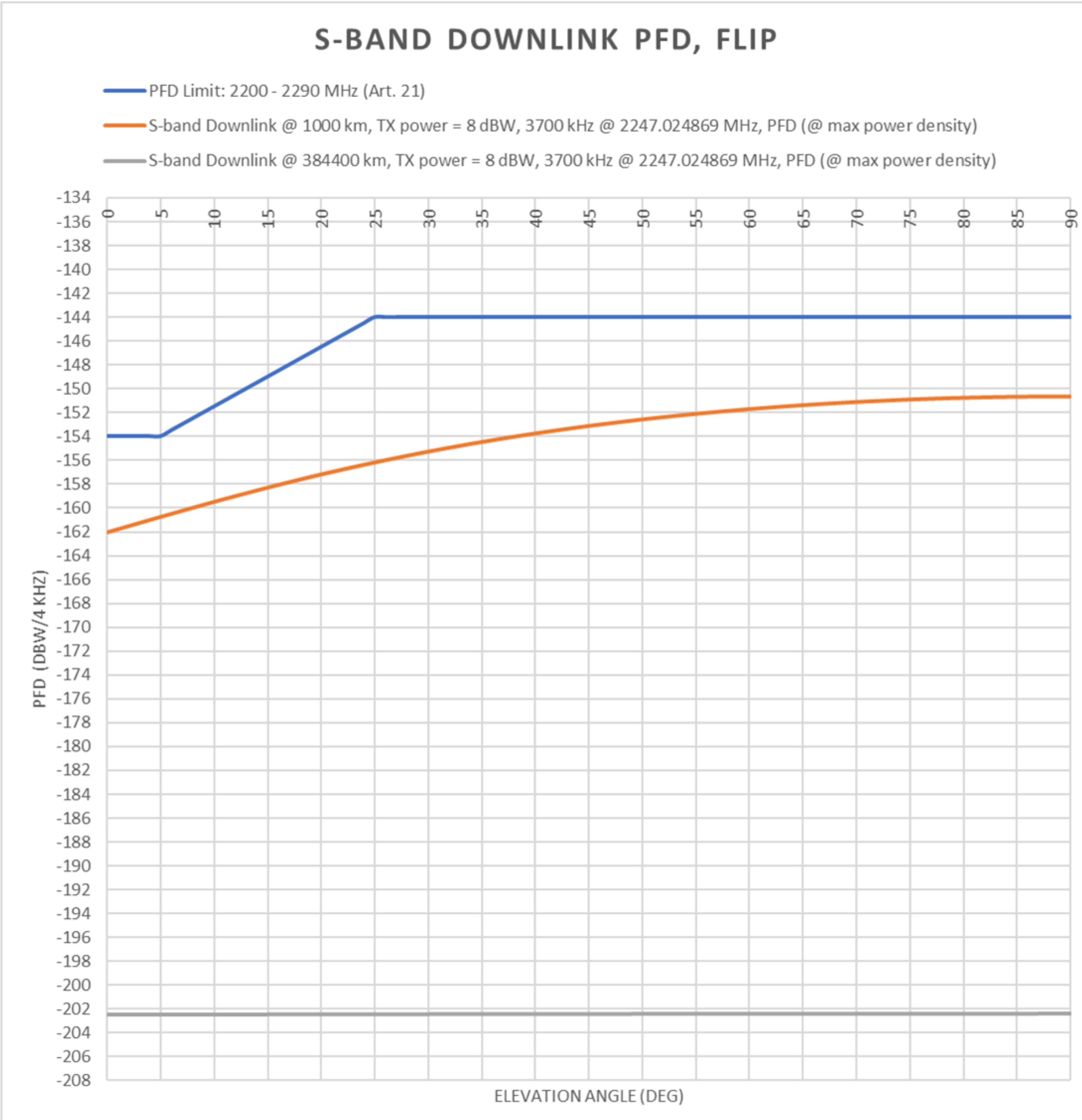


Figure 1: S-band downlink power flux density (PFD) from the FLIP rover assuming 10 dBW peak EIRP. Only free-space path loss is included. Values are shown for two slant ranges: 1000 km (minimum altitude during transit checkout phase) and 384400 km (approximate distance to lunar south pole at perigee).

B. X-band

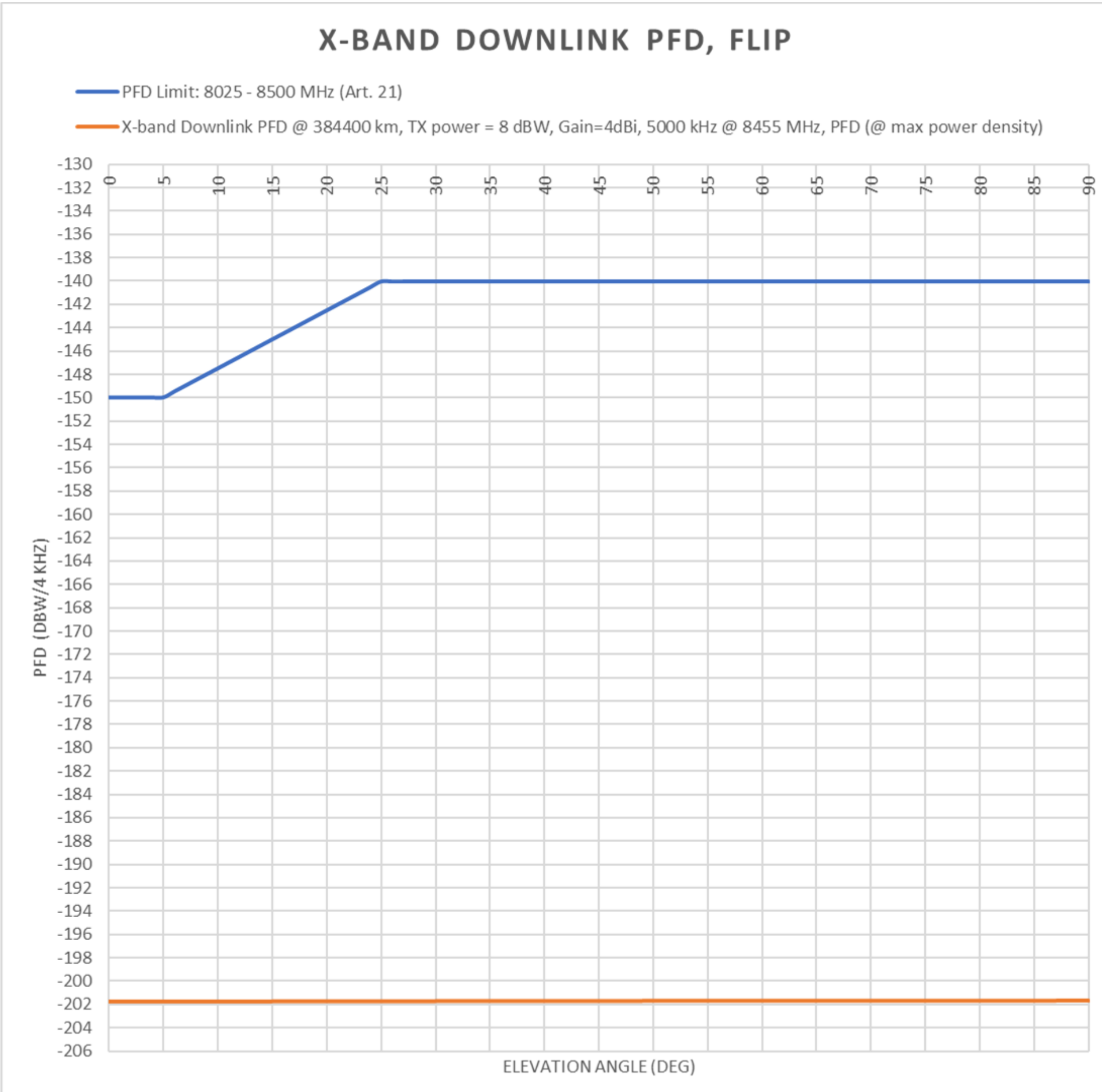


Figure 2: X-band downlink power flux density (PFD) from the FLIP rover assuming 12 dBW peak EIRP. Only free-space path loss is included. Value is shown for transmission from the lunar south pole only.

VII. DSN PROTECTION CRITERIA

ITU-R Recommendation SA.1157-1 provides specific protection criteria to ensure that the radioastronomy service can safely perform observations within the 2.9-3.0 GHz and 8.40-8.45 GHz bands without harmful interference. This Recommendation specifies a maximum allowable interference power-spectral flux density at the Earth's surface to protect ground receivers in the deep-space research band. FLIP complies with these limits. As shown below, the power output into these bands by FLIP's transmissions falls below the limits set by ITU-R Rec. SA.1157-1.

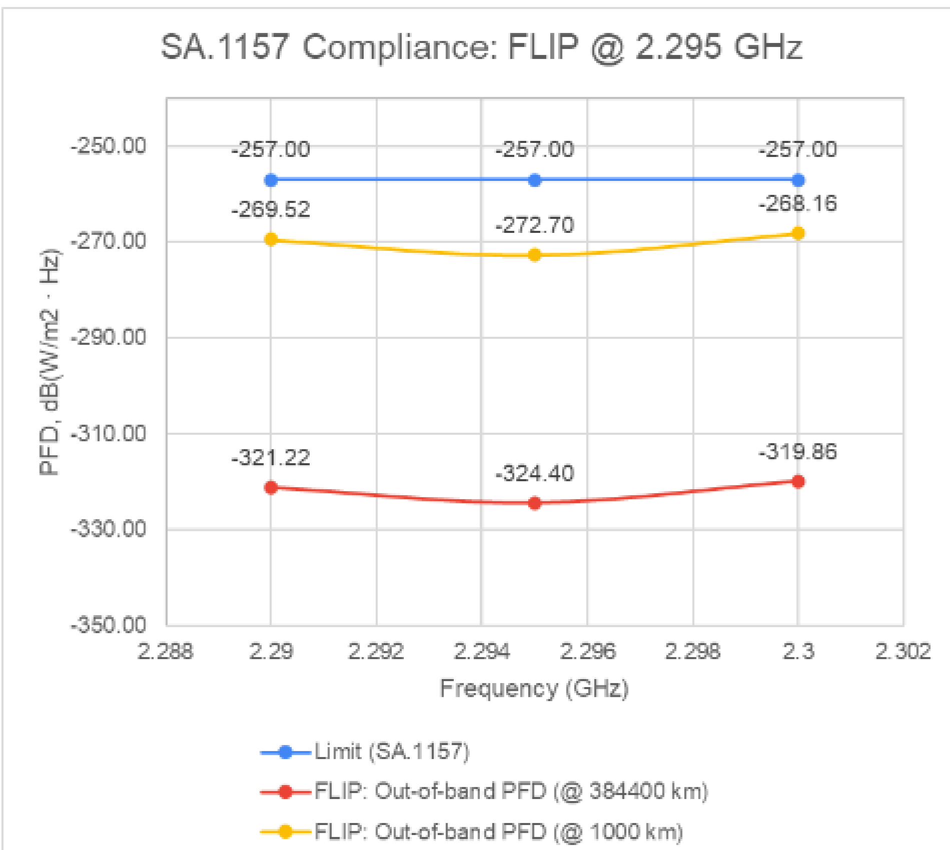


Figure 3: Measurements of FLIP's out-of-band power were mapped to a nominal PFD at both 1000 km (minimum altitude during transit checkout phase) and 384400 km (approximate distance to lunar south pole at perigee). To calculate PFD, FLIP's peak gain (S-band) was used, and only free space loss was considered.

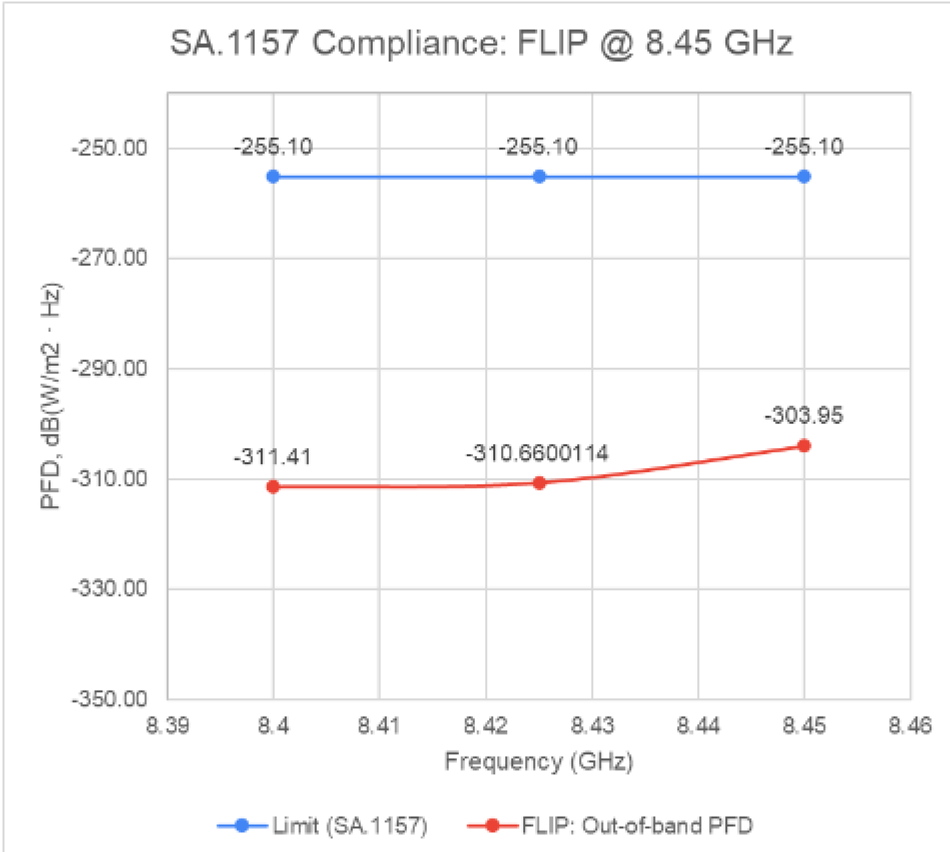


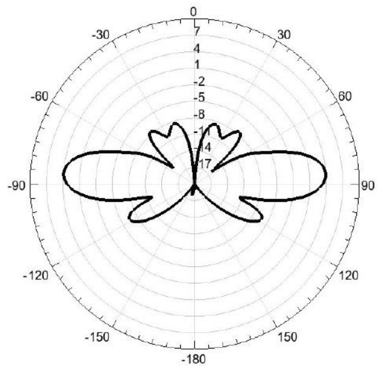
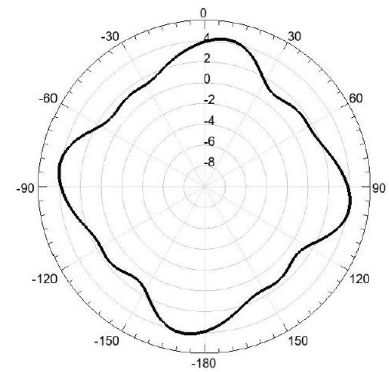
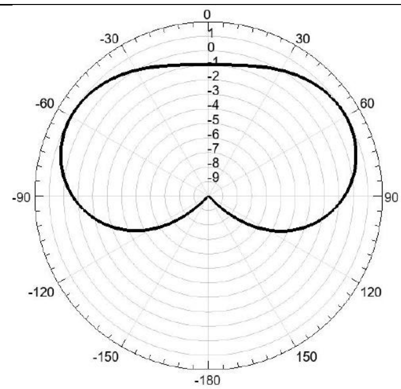
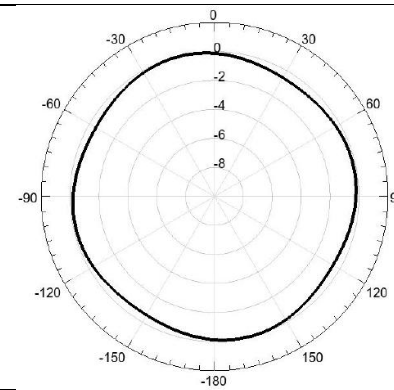
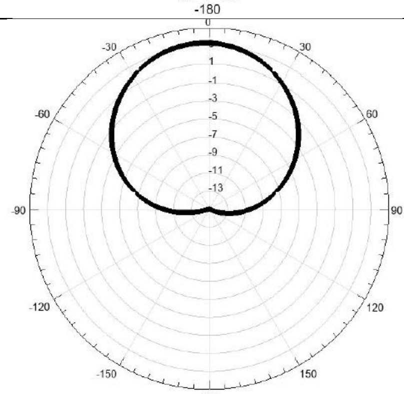
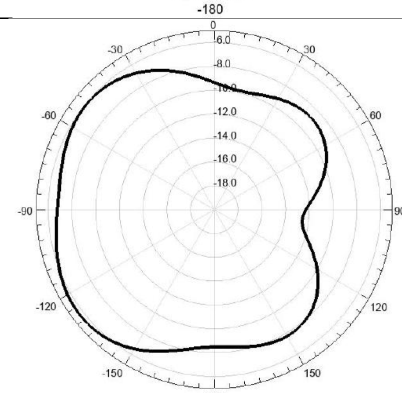
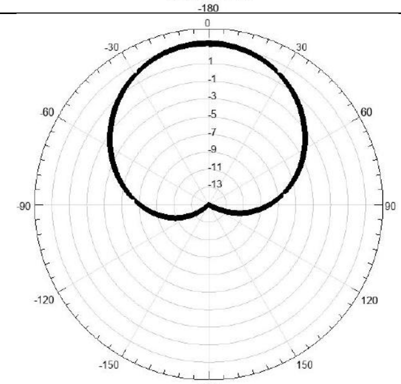
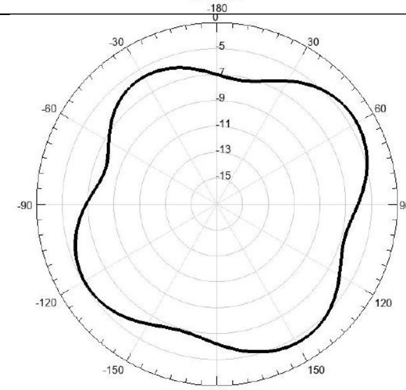
Figure 4: Measurements of FLIP's out-of-band power were mapped to a nominal PFD at 384400 km (approximate distance to lunar south pole at perigee). To calculate PFD, FLIP's peak gain (X-band) was used, and only free space loss was considered.

VIII. ANTENNA CHARACTERISTICS

Antenna gain patterns for both S-band and X-band systems are provided here. The omnidirectional beams ensure continuous coverage for rover-to-lander links and higher-gain, Earth-directed beams for higher data rate telemetry.

C. Radiation Patterns

Table 1: Antenna Radiation Patterns

Antenna	Elevation Cut	Azimuth Cut at 5° Elevation
X-band Whip (TX): RHCP Gain		
S-band Helix (RX): RHCP Gain		
S-band Patch (RX): RHCP Gain		
S-band Patch (TX): RHCP Gain		

D. Contour Plots

Due to the large Earth-Moon distance and the relatively low directivity of FLIP's antennas, there are no perceivable contours at the normal -2 dB, -4 dB, -6 dB, -8 dB, -10 dB, -15 dB, or -20 dB levels that can be seen on the Earth's surface.