

From: Glenn Lightsey

To: Leann Nguyen

Date: February 12, 2013

Subject: FCC File# 0065-EX-PL-2013

Message:

- Is the satellite geostationary or non-geostationary?
Non-geostationary.

. If satellite is geostationary, please submit its latitude and longitude.
N/A

- If satellite is nongeostationary, please submit inclination angle, apogee (km)/perigee (km), orbit period (hours), fractions of hours in decimal and number of satellites in the system.
Inclination angle, apogee, perigee, and orbit period are unknown. It will be a single satellite. Orbit parameters have not been determined yet, however, the satellite will be deployed from an approximate ISS orbit (Perigee - 402 km; Apogee - 424 km; Inclination - 51.6 degrees; Orbital Period - 1.55 hours)

- Description of the satellite and how it will operate.
The Bevo-2 satellite is a 3 Unit Cubesat class satellite (34 cm x 10 cm x 10 cm, 4 kg) that will demonstrate relative navigation capabilities in tandem with another university satellite.

- An analysis transmitting between satellites to satellite.
The Bevo-2 satellite will transmit 1 W in the 902 - 928 MHz band at a data rate of 9600 bits/second using a commercially available frequency hopping radio for crosslink with its sister satellite during an approximately 3 day window after the separation event. After that time no further satellite to satellite communication will occur.

- An analysis transmitting between satellites to ground stations.
The Bevo-2 satellite will transmit 2.5 W at a discrete frequency within the amateur UHF band (435-438 MHz) at a data rate of 38400 bits/second throughout the mission life. The satellite antenna is an approximate dipole with an omni-directional radiation pattern. The UT Austin Ground Station will be the primary control station for the satellite and will communicate using up to 300 W of power on 145.950 MHz at a data rate of 9600 bits/second. The RF Output power will be tuned so that there is sufficient, but not excessive, uplink power. The Ground Station antenna is a Yagi antenna with a gain of 12.25 dBi.

- The orbital debris mitigation plan or replan, uplink/downlink and beacon frequencies.
The satellite's desired orbit will result in a total orbital lifetime of approximately 1 year before reentry. The satellite downlink and beacon frequency is being coordinated with the IARU Satellite Transmission Coordinator but will fall within the amateur satellite UHF band (435-438 MHz). The uplink frequency will be 145.950 MHz.

- Information of satellite transmitter antenna including gain, beamwidth, azimuthal range.
Satellite transmitter gain - approximate dipole (~2 dBi)
Half-Power Beamwidth: Approximately 78 degrees.
Azimuthal range: 360 degrees

- Information of earth station receiver antenna including gain, beamwidth, azimuthal range, elevation above mean sea level (m), minimum angle of elevation and antenna height above terrain (m).
Ground Station Receiver gain: 16.8 dBi.
Half-Power Beamwidth: 21 degrees
Azimuthal Range: 360 degrees

Elevation above mean sea level: ~149 m
Minimum angle of elevation: +5 degrees
Antenna height above terrain: 21 m

- Stop Buzzer information including name and telephone number of person who will terminate the system if having interference occurs.
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