SOUTHERN STARS
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An Experimental License is sought by Kubos Corporation of Denton, TX under FCC file no. 0489-EX-CN-2017. The research to be conducted under this license is a test flight of small satellite software technology developed by Kubos and its commercial partners.

The satellite is a 1U CubeSat called Hamilton-1. Hamilton-1 is scheduled for launch aboard an ISRO Polar Satellite Launch Vehicle (PSLV) from the Satish Dhawan Space Center at Sriharikota, India, no earlier than 1 April 2018. Approximate orbital parameters are 600 km altitude, 98° inclination. The satellite has a mass of 1.5 kg, and stowed dimensions of approx. 10 x 10 x 11 cm. Its expected orbital lifetime is approximately 18 years, with an active mission duration of 2 years. Post-mission disposal will be accomplished by uncontrolled atmospheric re-entry.

Hamilton-1 is a space test flight of Kubos's flight control open-source flight control and mission management software. The satellite contains a UHF/VFH radio transceiver, microcontroller-based flight computer, fixed body-mounted solar panels, electrical power system with 18650 LiPo batteries, and a magnetorquer-based attitude determination and control system. Hamilton-1 carries no cameras or any other Earth-imaging subsystem. The only deployable component is the radio antenna; Hamilton-1 will not intentionally jettison or discard any materials on orbit. There is no propulsion system, nor any pressurized containers; there are no toxic, hazardous, or radioactive materials on-board.

The satellite is entirely owned and operated by Kubos Corporation, and not by any US or foreign government agency.

Hamilton-1 carries a single radio communication system. That radio, and the associated ground station architecture, is as follows:

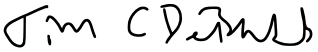
1. In space, Hamilton-1 will utilize, a full-duplex TRXVU commercial CubeSat radio, manufactured by Integrated Solutions In Space. The space radio will transmit on 449 MHz, via an isotropic dipole antenna with a peak gain of approximately 2 dBiC. The peak Equivalent Isotropic Radiated Power is 2 Watts (i.e, 33 dBm). The transmitted signal is GFSK-modulated, with a data rate of 9600 bps.

2. On the ground, Kubos intends to construct an Earth station for command and control of the spacecraft near its corporate headquarters at 608 E. Hickory St., ste 108, Denton TX 76205. The Earth station will use a stacked Yagi antenna mounted on an alt-az rotor system. This antenna is highly directional, with a peak gain of approximately 13 dBiC, and a half-power beam width of approximately 30°. The transmit power is 50 Watts (i.e. 37 dBm), giving an EIRP of 10 kilowatts (i.e.70 dBm) at the peak gain of the antenna radiation pattern. The antenna will be mounted at a height less than 6 meters above ground level. The intended transmit frequency is 149 MHz; the transmitted signal will use AFSK modulation at a data rate of 1200 bps.

This Experimental License application is intended to cover both the mobile station in Low Earth Orbit, and the fixed Earth station to be constructed at Denton, TX for mission operations.

You can reach me at (415) 463-0750 or timd@southernstars.com if you have any questions.

Sincerely,



Tim C. DeBenedictis