

April 24, 2019

Secretary
Office of the Secretary
Federal Communications Commission
445 Twelfth Street, S.W.
Washington, D.C. 20554

Subject: Amendment of FCC Experimental Application

Reference: FCC Experimental Application – ELS File Number: 0011-EX-CN-2019

Dear FCC Secretary,

Space Sciences & Engineering (SSE), doing business as PlanetiQ, hereby amends its above-referenced experimental license application submitted on January 3, 2019 to reflect the changes to our frequency plan and orbit debris assessment.

As a secondary payload on a launch vehicle, PlanetiQ has little control over the launch schedule. As such, the schedule for our original launch described in our FCC narrative in January 2019 was delayed indefinitely. To provide data to our NOAA customer in a timely manner, we designed a satellite system that is flexible in our orbital characteristics and plan to employ one of three PSLV launches scheduled for Q4 2019. These launches vary in altitude and inclination, and thus cascade into many differences to our operational system than what was proposed in our original application. The summary of the differences are shown below, with specific details described in the updated narrative and application.

Orbital changes

- Instead of launching to a SSO orbit at 630 km, PlanetiQ plans to launch on a PSLV to one of the following orbits:
 - 530 km SSO
 - 555 km at 37° inclination
 - 730 km SSO
- PlanetiQ still plans to launch with a propulsion system that allows for altitude and inclination changes, node adjustment, phasing, orbit maintenance, and reentry acceleration
- The nominal operational altitude for the GNOMES constellation was reduced from 800 km to 650 km to ensure reentry within 25 years
- The Theory of Operations section was updated to reflect that GNOMES-1 plans to operate at its injection altitude from its launch vehicle for a period of up to 18 months, then eventual altitude adjustment to 650 km

- The data coverage charts (Figures 2.1-2 and 2.1-3) were removed as orbital inclination dictates the data distribution
- The PFD and transmission footprints were updated to reflect the new orbital characteristics
- Additional potential ground stations from ATLAS were added to accommodate lower inclined orbits
- The ground station pass length distributions were updated to reflect the new orbit and ground station information

Radio frequency changes

- The bandwidth for the S-band radio was reduced from 450 kHz to 200 kHz based upon updated operational information from the radio supplier
- The maximum power for the X-band transmitter was reduced from 2.5 W to 2.0 W, and the frequency tolerance was updated from 0.001% to 4 ppm (0.0004%) based upon updated operational information from the radio supplier
- The X-band antenna pattern model was revised. New radio patterns from Haigh-Farr were used in SpaceCap analysis (submitted contemporaneously with this amendment)

Other changes

- An updated satellite design resulted in larger mass and area, subsequently changing the area-to-mass ratio
- References to Space Sciences & Engineering (SSE) were changed to PlanetiQ throughout the application

Please address any correspondence to the following point of contact:

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Sincerely,

Erin Griggs