
September 14, 2020

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SUBJECT: PFD Analysis Revision B

Mr. Sangani:

Please find below our analysis of power-flux density for the Hatchling Canary downlink band (468.45-469 MHz) at the Earth's surface and the results of our search for other operators in this band.

1. Power Flux Density at the Surface of the Earth in the 468.45-469 MHz Band

The power-flux density limit at the Earth's surface for satellites operating in the meteorological satellite service located in the 460-470 MHz band is given in the FCC frequency tables under footnote US289, which states, "*The power flux density produced at the Earth's surface by any space station in this band shall not exceed $-152 \text{ dBW/m}^2/4 \text{ kHz}$.*"

Canary Hatchling will only be operated above the continental United States. It will not be operated when it has dropped below an orbit of 350 km, shortly after which it will burn up. From a 350 km minimum operational orbit, with a 1 W transmit power and 2.15 dBi gain, the maximum power-flux density at the Earth's surface is $-152.1 \text{ dBW/m}^2/4 \text{ kHz}$.

With power-flux density below the maximum specified in US289 at the surface of the Earth, Canary Hatchling is compatible with ground operators in the 468.45-469 MHz band.

2. Power Flux Density at the Geostationary Satellite Orbit in the 468.45-469 MHz Band

From a 575 km maximum operational orbit, with a 1 W transmit power and 2.15 dBi gain, the maximum power-flux density at the geostationary Earth orbit is less than $-192.1 \text{ dBW/m}^2/4 \text{ kHz}$.

With power-flux density (up) of less than $-192.1 \text{ dBW/m}^2/4 \text{ kHz}$ at geostationary Earth orbit, Canary Hatchling is expected to be compatible with geostationary satellites in the 468.45-469 MHz band.

3. Interference with Earth Exploration Satellite Service and Meteorological Satellite Service

Interference between Canary Hatchling satellites and those of other systems is very unlikely because Earth exploration satellite and meteorological satellite systems operating in the 468.45-469 MHz band normally transmit only in short periods of time while visible from the dedicated receiving earth stations. For the interference to happen, satellites belonging to different systems would have to travel through the antenna beam of the receiving earth station and transmit at the same time. In such a very unlikely event, the interference can still be avoided by coordinating the satellite transmissions so that they do not occur simultaneously.