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SUBJECT: Operators and Power-flux Density Analysis in the 468.45-469 MHz Band.

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.

Analysis of Power-flux Density at Earth's Surface

Canary Hatchling transmits with a nearly isotropic (dipole) antenna, so the maximum power-flux density is possible anywhere the satellite transmits overhead. Canary Hatchling 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 is -152.1 dBW/m^2/4 kHz.

Canary Hatchling will be operated from the ground, only downlinking packets as requested from Care Weather's Springville, Utah ground station. Communications will only be so initiated for times when Canary Hatchling will be above 20° elevation from the viewpoint of the ground station. This results in a ground circle, centered in Springville, Utah with radius 783 km, over which the satellite may transmit directly overhead on a given pass. This ground circle is shown in Figure 1. Inside this circle, the power-flux density is **less than or equal to** -152.1 dBW/m^2/4 kHz for all passes. Outside this circle, the power-flux density is **less than** -152.1 dBW/m^2/4 kHz. For Canary Hatchling operations, the power-flux density at the Earth's surface will never be greater -152.1 dBW/m^2/4 kHz

Ground Operators in the 468.45-469 MHz Band

Because Hatchling Canary will only transmit over the United States, the FCC ELS database was searched for ground operators in the 468.45-469 MHz band. The following granted licenses were identified in the region

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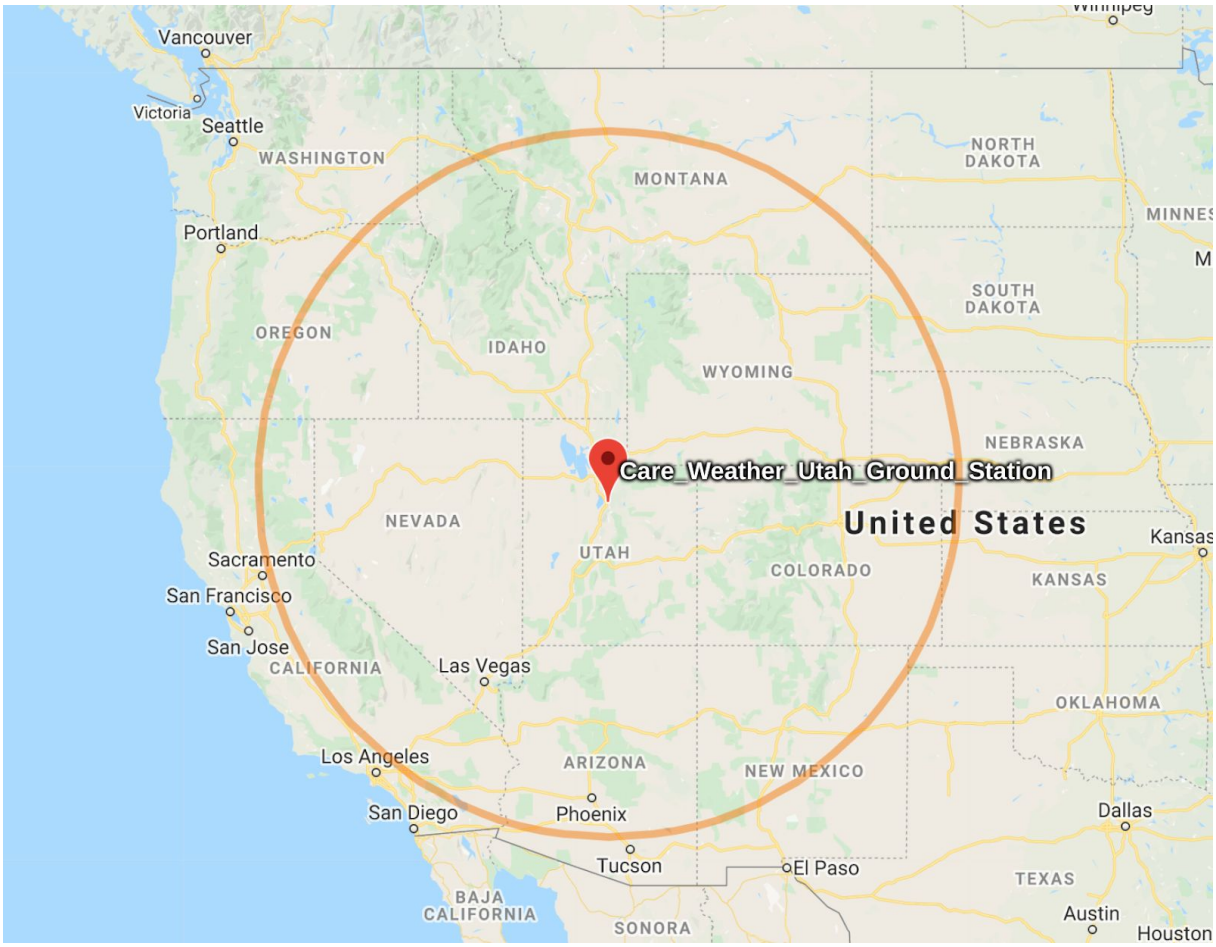

Figure 1. Range of Earth's surface where the power-flux density from Canary Hatchling may be up to -152.1 dBW/m^2/4 kHz. This is the range of locations where the satellite may be overhead when it is elevated more than 20° over the horizon as viewed from Care Weather's Springville, Utah ground station.

1. Washington: None in Figure 1 region.
2. Idaho: None
3. Montana: 0175-EX-CR-2019
4. Oregon: None in Figure 1 region.
5. Wyoming: None
6. South Dakota: None
7. Nebraska: None
8. California: 0277-EX-CR-2020
9. Nevada: None

10. Utah: 0927-EX-CN-2019
11. Colorado: 0640-EX-CR-2019, 0641-EX-CR-2019
12. Kansas: None in Figure 1 region.
13. Arizona: 0298-EX-CR-2019, 0604-EX-CR-2019, 0039-EX-TU-2019, 0452-EX-CR-2020
14. New Mexico: 0298-EX-CR-2019
15. Oklahoma: None in Figure 1 region.

Space Operators in the 468.45-469 MHz Band

The FCC ELS database was searched for CubeSat, Inmarsat, Big LEO, Little LEO, Satellite (General), SATCOM-on-the-move, and Space (other than cubesats) filings in the 468.45-469 MHz band. The only satellite in these searches in the 468.45-469 MHz band is

1. Blue Canyon Technologies CubeSat with filing number 0641-EX-CR-2019.

The ITU satellite network list was searched for United States satellites in this band. The following systems were identified:

1. GOES-2
2. GOES-4
3. GOES-5
4. Dice
5. Cerex
6. Dellingr
7. STF-1
8. Harp