

Capella Radar Calibration STA Request

Capella Space Corp. requests Special Temporary Authority to operate an experimental ground-based system for calibrating Capella synthetic aperture radar systems following deployment of the radars in space. This request is limited to brief periods of transmission of a low power signal from the ground to the spacecraft. The spacecraft communications and radar operation will occur only pursuant to separate FCC authorization (application for such authorization is currently pending under IBFS File No. SAT-LOA-20210119-00012).

The ground-based system will transmit a calibrated CW tone in the direction of the spacecraft as it passes overhead. The tone will be tuned to the frequency of the Capella radar and the power level carefully controlled. The ground-station antenna will track the spacecraft using a commercial off-the-shelf computer-controlled telescope mount. The power received by the spacecraft radar receiver will be used to radiometrically calibrate radar measurements.

The ground station will follow the spacecraft as the spacecraft traverses the sky but transmit only when the spacecraft is more than 10 degrees above the horizon. Orientation of the ground station antenna in the horizontal plane (degrees from true north) and orientation in the vertical plane (degrees from horizontal) will vary continuously as the ground station transmits.

Transmitter Location:

San Francisco, CA

Within 50 miles of 37° 46' 26" N, 122° 25' 52" W

Height: < 6m

RF Characteristics:

Frequency: 9.4 – 9.9 GHz +/- 0.00025%

Output Power: 25W / 1412.5 W EIRP (Peak)

Beamwidth at the half-power point: 12°