

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 on-orbit. Such operations will be strictly limited to brief periods after deployment of a Capella satellite as well as infrequent situations where a satellite must be recalibrated on orbit.¹ These operations, in the unusual event that they are required, would be further limited to less than 10 minutes per spacecraft per month. Moreover, the ground station will follow the spacecraft as the spacecraft traverses the sky and transmit only when the target spacecraft is more than 10 degrees above the horizon.

The ground-based system will transmit a calibrated CW directed at 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 computer-controlled mount. As a result, 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.

Note that this application seeks authorization only for Earth-to-space transmission of the calibration tone. Capella spacecraft communications and radar operation will occur only pursuant to separate FCC authorization, as appropriate.

Transmitter Location:

San Francisco, CA
Within 50 miles of 37° 46' 26" N, 122° 25' 52" W
Height: < 6m

RF Characteristics:

Frequency:	9.3 – 9.9 GHz +/- 0.00025%
Output Power:	25W / 1412.5 W EIRP (Peak)
Beamwidth at the half-power point:	12°
Emission Designator:	0H00N0N
EIRP:	1412.5 W
EIRP Density:	N/A – Continuous Tone with 0 Hz bandwidth
Antenna Manufacturer:	Capella Space Corp.
Antenna Model:	NA
Antenna Size:	0.17 meters

¹ These satellites would include currently licensed Capella satellites operating under the callsigns S3073, S3080, and S3100 in addition to other Capella satellites that may be authorized in the future.

Transmit Gain: 17.5 dB
Input Power at the Antenna Flange: 25 W