FCC Part 5 Experimental STA Application
QuadSat

Quadsat requests a Special Temporary Authority (“STA”), from September 10, 2026 through March 10, 2027, to conduct up to seven (7) non-consecutive days of flight testing using a drone-mounted Ka-band test payload that emulates a MEO/LEO satellite for evaluation of a Northwood Space ground antenna. The drone transmits pre-determined pseudorandom number (“PRN”) codes in the 18–19 GHz band and receives the ground terminal’s 28 GHz uplink while flying trajectories that emulate low- and medium-earth orbit (“LEO” and “MEO”) satellites tracking geometry and power levels. QuadSat files only with the FCC for the drone-mounted transmitter; Northwood Space Corp. ("Northwood") is filing separately with the FCC for its ground terminal.

To emulate MEO/LEO satellite downlink signals and geometry (53° maximum elevation MEO profile and worst-case overhead passes) for risk reduction of future MEO Ka-band SATCOM services. This is antenna/terminal testing only — not operational SATCOM. No connection to any satellite or satellite network; all transmissions occur locally between the drone and the ground terminal within a 1 km radius of the test site.

Field	Entry
Applicant	**QuadSat370 Jay St, 7th FloorBrooklyn, NY 11201-3828, USA**
Best Contact	**Anne Sophie Van Den HoogenDirector of Business Development – Americas+45 30 20 42 31svdh@quadsat.com**
Class of Station / Service	**MO (Mobile) / Experimental**
Requested Period	**09/10/2026 – 03/10/2027 (active testing limited to no more than seven (7) non-consecutive days within the requested authorization period)**
Station Location	**Northwood Space Test Site815 Mission Rock RoadSanta Paula, Ventura County, California 9306034°18′54.4″ N; 119°06′17.1″ W (NAD83)Mobile operation within a 1 km radius of the test site.**
Elevation	**59 meters AMSL**
Equipment	**QuadSat QS 17-31 DL/UL1 unitExperimental: Yes**
Directional Antenna	**Yes. Half-power beamwidth (HPBW): 3°. The airborne antenna is continuously steered toward the ground terminal during flight; therefore, no fixed horizontal or vertical orientation applies. See Exhibit D.**
Antenna Height	**Yes — drone-mounted. Maximum operating altitude: 305 meters (1,000 feet) AGL. Flight operations will be conducted in accordance with all applicable FAA authorizations, including any required waiver of 14 CFR §107.51(b).**
Distance to Nearest Aircraft Landing Area	**5.3 km (Santa Paula Airport (SZP)).**
Shielding	**None. The antenna is mounted on an unmanned aircraft and operations will be conducted in accordance with all applicable FAA authorizations and operating limitations.**
Environmental Effect Certification	**No significant environmental effect.**
Radio-Frequency Exposure Analysis	**See Exhibit C.**

Exhibit A — Test Description

- Drone flies profiles emulating MEO (53° max elevation) and worst-case overhead LEO passes
- Bidirectional PRN code exchange: drone transmit 18–19 GHz / ground transmit 28 GHz
- Post-test comparison of PRN cross-correlation metrics (e.g., carrier-to-noise ratios, signal-to-noise ratios, bit error rate performance, and tracking error) confirms link performance.
- Drone speed ≤ 10 m/s; maximum altitude 1,000 ft AGL (FAA waiver pending, QuadSat); operations within a 1 km radius of the test site, limited to no more than seven (7) operational days during daylight hours.

Technical parameters of the test signals:

Parameter	Value
Transmit frequencies	Ground terminal: 28.0 GHz Quadsat Drone: 18.0–19.0 GHz (excluding 18.6–18.8 GHz, if required for coordination).
Receive frequencies	Ground terminal: 18.0–19.0 GHz. Quadsat Drone: 28.00 GHz
Emission designator	10M0G7D (CW/PRN), 50M0G7W (DVB-S2 modulated I/Q); occupied bandwidth will not extend beyond the requested band edges.
Modulation types	Predetermined PRN-coded CW and DVB-S2 I/Q test waveforms (test signals only; no user traffic).
Antenna gain	Ground terminal: 56.6 dBi (Prism-Ka 2.4 m parabolic) QuadSat Drone payload: 14.2 dBi
Polarization	Ground terminal: RHCP/LHCP Drone payload: RHCP/LHCP
EIRP (peak)	Ground terminal: 86.6 dBW maximum (actual operating ERP will be limited to the minimum necessary to complete the test). Drone payload: 60.9 mW ERP (maximum)
Beamwidth (half-power)	Ground terminal: 0.30° Tx / 0.48° Rx Drone payload: 3°
UAV/drone payload	Quadsat QS 17-31 DL/UL airborne Ka-band RF test payload.
Ground terminal	Northwood Prism-Ka 2.4 m parabolic antenna operating in transmit and receive test modes

Exhibit B — Interference Avoidance Analysis

The proposed experimental operation utilizes a directional, low-power airborne Ka-band RF test payload mounted on an unmanned aircraft and continuously steered toward the Northwood Space ground terminal. The combination of directional antenna characteristics, limited transmit power, low duty cycle, and a geographically and temporally confined test area significantly minimizes the potential for harmful interference to other authorized spectrum users.

QuadSat will operate using the minimum transmit power necessary to successfully complete the experimental testing. The occupied bandwidth will remain within the requested 18.0–19.0 GHz frequency band at all times. Prior to commencing operations, QuadSat will coordinate, as applicable, with the local Society of Broadcast Engineers (SBE) frequency coordinator, relevant Fixed Microwave Service (FMS) licensees, and other affected spectrum users operating within or adjacent to the requested frequency band. Where applicable, QuadSat will also notify relevant Upper Microwave Flexible Use Service (UMFUS) and Local Multipoint Distribution Service (LMDS) licensees.

QuadSat will continuously monitor the RF spectrum throughout the experimental operations and will immediately reduce power, suspend transmissions, or cease operations if any unexpected or harmful interference is observed or reported.

Stop Buzzer (24/7 Authority to Cease Operations)
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Exhibit C — RF Exposure (MPE) Analysis

Pursuant to 47 CFR §§ 1.1307(b) and 1.1310, the Quadsat QS 17-31 DL/UL airborne RF test payload has a transmitter output power of 3.8 mW, an antenna gain of 14.2 dBi, and maximum effective radiated power (ERP) of 60.9 mW. The calculated minimum safe separation distances are 0.013 m for occupational/controlled exposure (5 mW/cm²) and 0.029 m for general population/uncontrolled exposure (1 mW/cm²). The airborne transmitter operates over a controlled, access-restricted area, and a ground exclusion zone is enforced. Accordingly, the proposed operation complies with the applicable FCC Maximum Permissible Exposure (MPE) requirements.

Exhibit D — Antenna Patterns

The QuadSat QS 17-31 DL/UL airborne RF test payload employs a directional Ka-band antenna with an approximate half-power beamwidth (HPBW) of 3°. During flight operations, the antenna is continuously steered toward the Northwood Space ground terminal to maintain the desired RF link geometry throughout the experimental test.

An antenna installation drawing illustrating the airborne payload configuration, RF link geometry, maximum operating altitude (305 m / 1,000 ft AGL), and 1 km operating radius is attached as the Antenna Drawing exhibit.

Exhibit E — FAA Coordination

Quadsat will conduct all flight operations in accordance with applicable FAA regulations and authorizations at the Northwood Space test site. Operations above 400 feet AGL will be conducted only upon approval of the required FAA waiver under 14 CFR § 107.51(b). The FAA waiver application is pending, and the applicable waiver reference number will be provided upon issuance.