FCC Part 5 Experimental STA Application
Northwood Space Corp.

Northwood Space Corp. ("Northwood") requests Special Temporary Authority ("STA"), between September 10, 2026 and March 10, 2027, for a week-long test to operate a 2.4-meter parabolic dish antenna in Ka-band ("Prism-Ka") at its Ventura, California site to communicate with a QuadSat drone-mounted radio-frequency payload that emulates low- and medium-earth orbit ("LEO" and "MEO") satellites. The test will validate the Prism-Ka antenna's acquisition, tracking, and link performance against realistic LEO/MEO geometries and power levels ahead of on-orbit service to Northwood's future Ka-band satellite communications ("SATCOM") customers. Additional information and technical specifications are provided in Table 1, below, and Exhibits A–D, attached.

Northwood currently holds a Part 25 baseline earth station license at its Ventura, California site (Call Sign E260035)[1] in the federally coordinated S- and X-bands. The Ka-band operations requested in the instant application are experimental, involve no federal coordination, involve no satellite communications, and are outside the scope of the existing baseline license. Northwood's application is only for its own Prism-Ka antenna, while QuadSat is filing a concomitant Part 5 application (c.f., File No. 1402-EX-ST-2026) for its Ka-band drone payload. QuadSat also separately holds responsibility for drone flight authorizations with the FAA.

The tests will enable Northwood to characterize Prism-Ka signal acquisition and tracking performance (e.g., carrier-to-noise ratios, signal-to-noise ratios, bit error rate performance, and antenna pointing accuracy) against a drone that can emulate LEO and MEO SATCOM signals. For example, the drone-based radio-frequency payload coupled with the drone's velocity and altitude can model a 53° elevation MEO satellite and worst-case overhead LEO passes from the perspective of the Prism-Ka ground-based antenna.

To be clear, this test is for ground-based antenna/terminal testing with the Prism-Ka antenna only — no satellite communications will be conducted, and no signal is directed at, received from, or relayed by any satellite during the test. All radio frequency is exchanged between the ground antenna and the drone operating within the test area.

Prompt grant of this application will serve the public interest. The proposed testing de-risks Ka-band ground infrastructure for future SATCOM customers while strengthening the security, resiliency, and reliability of space-based communications. Northwood is developing an innovative, software-defined, global ground station network that supports TT&C and connectivity for navigation, remote sensing, scientific missions, weather forecasting, and satellite communications, furthering the Commission's space safety and sustainability goals and adding critically needed capacity on the West Coast. Expeditious grant will allow this limited, short-duration experimental test to proceed on schedule in September 2026.

[1] Northwood Space Corp. Earth Station Authorization, File No. SES-LIC-20260121-00612 (granted Mar. 23, 2026).

Table 1. Experiment Details and Specifications.

Field	Entry
Applicant	Northwood Space Corp. 90701 Manhattan Place Torrance, CA 90501
Best contact	Kyle Wesson RF Regulatory Licensing Manager kwesson@northwoodspace.io
Class of station / service	FX (Fixed) / 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's existing Ventura, California site 815 Mission Rock Rd Santa Paula, Ventura County, CA; 34-18-54.4N; 119-06-17.1W (NAD83) Fixed site (same as Call Sign E260035, File No. SES-LIC-20260121-00612) Mobile drone operations within a 1 km radius of the test site.
Elevation	59 meters AMSL
Equipment	Northwood Prism-Ka, 2.4 m parabolic antenna, 1 unit, Experimental: Yes Interference analyses are attached in Exhibit B and antenna gain patterns are attached in Exhibit D.
Directional antenna?	Yes. HPBW 0.30° (Transmit) / 0.48° (Receive); horizontal orientation: 0–360° vertical: 5–90° (tracking; 5° minimum elevation)
Antenna > 6 m above ground/structure?	No — maximum overall antenna structure height 3.15 m (124 in) above ground level, below the 6.1 m threshold No FAA notification required (47 C.F.R. §§ 17.2, 17.7(e)) Nearest Aircraft Landing Zone 5.3 km (Santa Paula Airport (SZP)).
Environmental effect certification	No significant environmental effect (47 CFR 1.1301–1.1319) Radio Frequency exposure analysis at Exhibit C
Radio-Frequency Exposure Analysis	See Exhibit C.

Exhibit A — Test Description

The test will undertake the following steps, with technical parameters of the test signals provided in further detail in Table A1, below.

- Ground antenna transmits pre-determined pseudorandom ("PRN") codes at 28 GHz (between 10–50 MHz bandwidth) to the drone to emulate Earth-to-space transmissions
- The drone transmits PRN codes in the 18–19 GHz Ka-band to the ground antenna (authorized under QuadSat's companion STA) to emulate space-to-Earth transmissions from a satellite in LEO and/or MEO
- For example, flight profiles can emulate a MEO satellite at 53° maximum elevation and worst-case overhead geometries, with typical tracking dynamics and received power levels.
- 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.
- 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.

Table A1. Technical Parameters of 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), 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/satellite traffic).
Antenna gain	Ground terminal: 56.6 dBi (Prism-Ka 2.4 m parabolic) QuadSat Drone payload: 40 dBi
Polarization	Ground terminal: RHCP/LHCP Drone payload: RHCP/LHCP
EIRP (peak)	Ground terminal: 86.6 dBW max (antenna upper bound performance specification; EIRP will be reduced to minimum necessary power to close link budget and complete test) Drone payload: up to 50 dBm
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

Northwood's 2.4 m parabolic antennas are fully compliant with ITU-R Recommendation S.465-6, which specifies the reference earth-station radiation pattern for coordination and interference assessment in the 2–30 GHz range.

Additionally, the Prism-Ka is a highly directional 2.4-m parabolic antenna (half-power beamwidth of 0.30° and 56.6 dBi gain) with the main beam directed skyward at the drone (elevation ≥ 5°). With a 0.30° beamwidth, the main beam is confined to the drone flight volume, and sidelobes and out-of-band emissions are minimized by design.

Further interference mitigation is provided by the limited duty cycle and a geographically and temporally confined test area. Northwood will use the lowest available transmit power that ensures testing success. Northwood will monitor the real-time spectrum throughout the test and will suspend transmissions immediately upon any anomaly.

Northwood has pre-coordinated with UMFUS and LMDS licensees at the Ventura, California site on the Ka-band. At the proposed test frequency of 28 GHz, no UMFUS operator is known.

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 proposed Prism-Ka antenna will operate at the minimum power necessary to successfully complete the experimental testing.

The Prism-Ka antenna is a ground-based fixed transmitter operating in a controlled, access-restricted test area. During all test operations, personnel and members of the public will remain outside the controlled operating area and well beyond any applicable FCC minimum radio-frequency exposure distances. The directional antenna is continuously steered toward the airborne drone-based receive antenna, further minimizing potential exposure to personnel.

Based on the maximum operating parameters of the Prism-Ka radio-frequency test payload, the proposed operation complies with the applicable FCC Maximum Permissible Exposure ("MPE") limits specified in 47 CFR §§ 1.1307(b) and 1.1310.

Exhibit D — Antenna Patterns

The Prism-Ka antenna is a highly directional Ka-band antenna with an approximate half-power beamwidth ("HPBW") of 0.30°. During flight operations, the antenna is continuously steered toward the QuadSat drone to maintain the desired radio-frequency link geometry throughout the experimental test. The Prism-Ka antenna gain patterns are shown in Figure D1 and Figure D2, below.

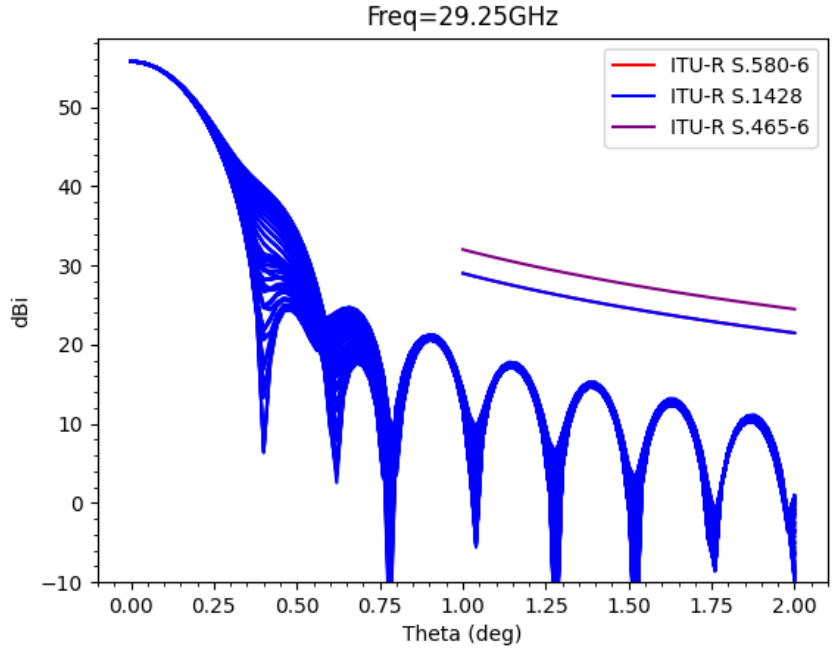

Figure D1. Northwood Prism-Ka antenna transmitter gain pattern.

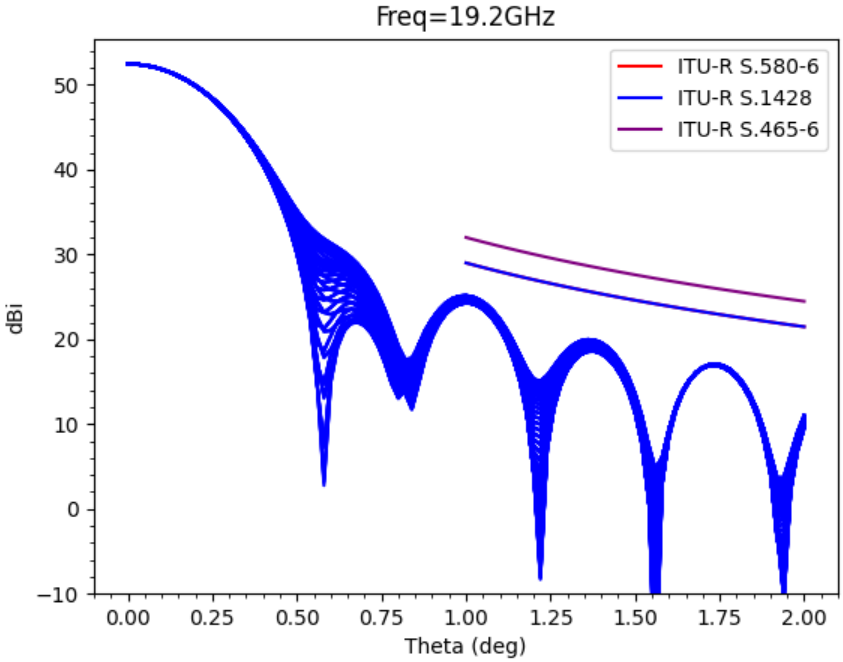

Figure D2. Northwood Prism-Ka antenna receiver gain pattern.

An antenna installation drawing illustrating the airborne payload configuration, radio-frequency link geometry, maximum operating altitude (305 m / 1,000 ft AGL), and 1 km operating radius is shown in Figure D3, below.

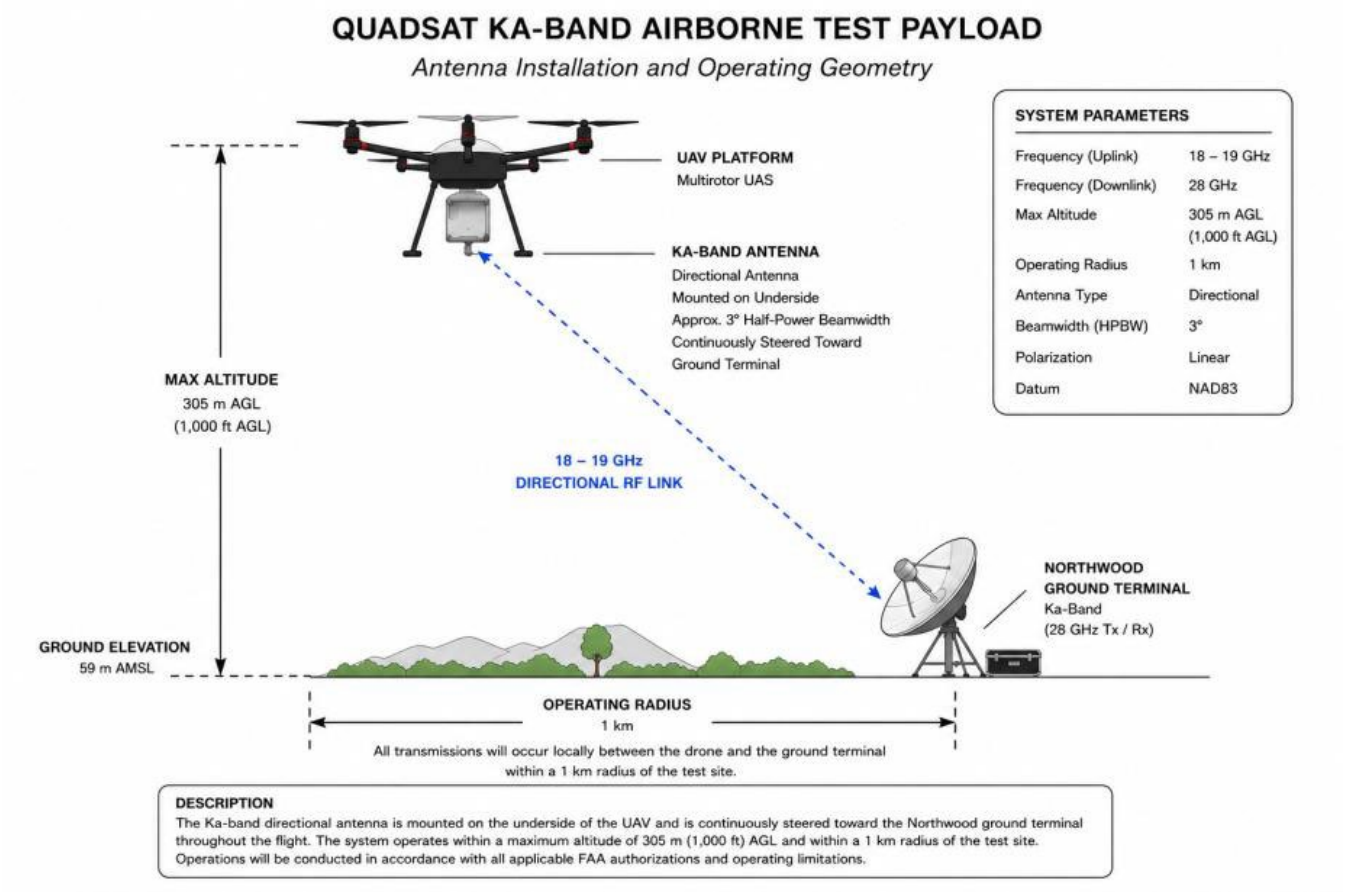

Figure D3. Airborne test geometry.