UltiSat Inc.
Application for Experimental
Special Temporary Authorization ("STA")

NARRATIVE DESCRIPTION

Pursuant to Sections 5.54(a)(1) and 5.61 of the Commission rules,[1] UltiSat Inc. ("UltiSat") respectfully requests experimental special temporary authorization ("STA") for a period of six months, commencing on November 23, 2018, or as soon as practicable thereafter, to further evaluate and demonstrate an earth station aboard aircraft ("ESAA") terminal that has previously operated pursuant to experimental authority and that provides cost-efficient, secure and reliable solutions for United States Government ("USG") operations. As described herein, grant of this request is consistent with Commission precedent and will serve the public interest.

I. Background/Purpose of Operations

UltiSat, an existing FCC licensee that provides diverse satellite services for USG and commercial customers, seeks this STA to further evaluate the functionality and performance of up to 10 Ku-band ESAA terminals – the Skytech Model BB30. UltiSat was previously granted authority to operate the BB45 terminal, a larger but otherwise technically identical terminal, under a prior experimental STA.[2] UltiSat also operated the BB30 within the same operational envelope pursuant to the Commission's experimental licensing rules.[3]

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[1] 47 C.F.R. §§ 5.54(a)(1) & 5.61.

[2] *See* UltiSat Inc., File No. 0201-EX-ST-2018, Call Sign WM9XHN (expired on September 2, 2018) ("*UltiSat Experimental STA*").

[3] *See* Section 5.77 Letter to Anthony Serafini, *Addition of New Antenna Type for Experimental Testing and Demonstration* (June 5, 2018) (notification of BB30 terminal operation).

The BB45 experimental STA recently expired but UltiSat operates the BB45 terminal pursuant to commercial ESAA authority by the FCC International Bureau under Section 25.227 of the Commission's rules.[4] In anticipation of additional testing and demonstration of the BB30 terminal, UltiSat seeks experimental STA authority until it is able to obtain similar commercial ESAA operating authority for the terminal.[5]

UltiSat seeks to operate the BB30 terminal in the 14.2-14.47 GHz (Earth-to-space)[6] and 11.7-12.2 GHz (space-to-Earth) bands with certain U.S.-licensed geostationary satellite orbit ("GSO") fixed-satellite service ("FSS") satellites and foreign satellites approved for U.S. market access.[7] The operating parameters of each proposed satellite point of communication have been previously reviewed and approved.

The BB30 terminal is an airborne stabilized antenna system that provides high-quality broadband satellite communications for aeronautical application and is designed to provide mission-critical delivery of voice, video and data communications. The antenna is

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[4] *See* UltiSat, Inc., File Nos. SES-STA-20180621-01477 & SES-STA-20180724-01969; *see also* UltiSat, Inc., File No. SES-LIC-20180726-02089, Call Sign E181298 (pending).

[5] UltiSat intends to add the BB30 terminal to its blanket ESAA license for the BB45 terminal after that license is granted, which is expected shortly. However, given required public notice and processing time, experimental STA is required for the BB30 to participate in further USG testing and demonstration activities.

[6] UltiSat does not seek authority to operate in the 14.0-14.2 GHz band to ensure no harmful interference into existing NASA TDRSS facilities on Guam or White Sands, New Mexico. Similarly, UltiSat does not seek authority to operate in the 14.47-14.5 GHz band in order to protect the radioastronomy observatories listed in Section 25.226(d)(2) of the Commission's rules.

[7] UltiSat proposes to conduct testing and demonstration while communication the following satellites: EUTELSAT 117WA (located at 117° W.L.); Sky B-1 (located at 317° E.L.); Intelsat 29e (located at 310° E.L.); SES-1 (located at 101° W.L.); and AMC-21 (located at 125° W.L.). All of these satellites are either U.S.-licensed or on the FCC's Permitted List.

mechanically steerable and is intended for tail or fuselage-mounting. UltiSat seeks to further test the performance of its BB30 ESAA terminal on certain USG aircraft to evaluate the technical feasibilities and logistical implications of proposed use of the BB30 terminal for USG security and other applications.

Before the prior experimental STA expired, UltiSat tested BB30 terminal's reliability and performance in the context of stationary demonstrations. UltiSat seeks to conduct further testing in stationary and in-flight modes for interested USG entities to examine the integration and operation of the terminal in multiple aircraft configurations that are directly supporting USG missions. UltiSat's primary need for this experimental authority will be to further evaluate its state-of-the-art aeronautical communications terminal utilizing innovative satellite technologies for more efficient management and use of critical USG resources in preparation for regular operations of the terminal.

II. Discussion

UltiSat provides the attached Technical Appendix [8] and FCC Form 442 for information relating to the operational parameters and other technical specifications of its proposed ESAA operations. The BB30 antenna will operate within the same emissions envelope as the previously authorized BB45 antenna, and UltiSat will otherwise conform to the conditions of the *UltiSat Experimental STA.* In addition to operating consistent with Part 5 of the Commission's rules governing experimental operations, UltiSat will operate the BB30 terminal consistent with Section 25.227 of the Commission's rules governing ESAA operations.[9]

[8] The Technical Appendix includes a data sheet for the BB30 terminal as well as antenna performance plots confirming compliance with FCC operational rules.
[9] 47 C.F.R. § 25.227.

UltiSat will adhere to its obligations under Part 5 of the Commission's rules to continue to avoid interference to existing authorized spectrum users and will operate on an unprotected, non-interference basis during the term of the STA. If UltiSat learns its experimental operations are causing interference into existing spectrum users, it will not resume transmissions until it establishes to the satisfaction of the Commission that further harmful interference will not be caused to any authorized radio service.[10]

The control point operator will maintain command of all transmissions and will cease transmission immediately upon request of the satellite operator or on request of the adjacent satellite operators. The stop buzzer contact during experimental operations is:

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During testing, UltiSat will operate the BB30 terminal within the off-axis EIRP spectral density ("ESD") limits set forth in Section 25.227 of the Commission's rules. UltiSat will operate the BB30 terminal at off-axis ESD levels that are compliant with the Commission's two-degree spacing policy and thus it will protect co-frequency operations from harmful interference. In the Technical Appendix, UltiSat provides off-axis ESD plots pursuant to Section 25.209 of the Commission's rules,[11] demonstrating compliance with the Commission's ESD mask. UltiSat experienced no interference or other issues during prior experimental operation of the BB30 terminal and none are anticipated here.

[10] 47 C.F.R. § 5.84.

[11] 47 C.F.R. § 25.209.

In accordance with Section 5.63(c)(1) of the Commission rules,[12] UltiSat anticipates that its proposed experimental operations will contribute greatly to the radio art and serve the public interest. The proposed evaluations will help demonstrate the capabilities of a smaller, innovative 30cm ESAA terminal in the USG context and promote real-world implementation of the potential solutions examined in the trials.

In addition, grant of the requested authority will allow UltiSat and its USG partners to develop important information about equipment capabilities and limitations, customer acceptance and integration of its service and equipment with other USG applications and operations. The public interest will also be served by facilitating UltiSat's ability to provide advanced, versatile and easily deployable ESAA terminal solutions for USG entities to the benefit of the U.S. public.

III. Conclusion

Based on the foregoing, UltiSat respectfully requests that the Commission grant this request for a six-month STA to test and evaluate the BB30 ESAA terminal to support USG operations, commencing no later than November 23, 2018.

[12] 47 C.F.R. § 5.63(c)(1).