

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554**

In the Matter of	)	
	)	
Application of UltiSat Inc. for a Ku-band	)	Call Sign: _____
Earth Station Aboard Aircraft (“ESAA”)	)	File No. SES-LIC-_____
Blanket License	)	

**ESAA BLANKET LICENSE APPLICATION**

UltiSat Inc. (“UltiSat”), pursuant to Sections 25.115 and 25.227 of the Commission’s rules, 47 C.F.R. §§ 25.115 and 25.227, respectfully seeks an earth station aboard aircraft (“ESAA”) blanket license to operate up to 250 Ku-band ESAA terminals to provide intelligence, surveillance, and reconnaissance (“ISR”) services supporting United States Government (“USG”) security operations. UltiSat seeks to operate the subject terminals – the Skytech Model BB45 (“BB45”) – in the 14.0-14.5 GHz (Earth-to-space)<sup>1</sup> and 10.95-11.2 GHz, 11.45-11.7 GHz and 11.7-12.2 GHz (space-to-Earth) bands to deliver immediate, mission-critical ISR support for USG customers. Grant of the requested authority is consistent with Section 25.227 of the Commission’s rules, 47 C.F.R. § 25.227, governing ESAA operations, will serve the public interest by enhancing competition in the in-flight connectivity market, and will further enhance U.S. leadership in satellite-based, mobile broadband services.

**I. BACKGROUND**

---

<sup>1</sup> UltiSat will coordinate operations in the 14.0-14.2 GHz bands with potentially affected NASA TDRSS facilities, as well as operations in the 14.47-14.5 GHz band with potentially affected radioastronomy operations, before operating in these bands within the exclusion zones specified in the Commission rules. *See* 47 C.F.R. § 25.227(c) and (d).

UltiSat, an existing FCC licensee that provides diverse satellite services for government and commercial customers, currently holds an experimental STA to evaluate the functionality and performance of the BB45 terminal,<sup>2</sup> as well as a commercial 60-day STA to operate the BB45 terminal in the Ku-band with a limited number of U.S.-licensed and foreign-licensed geostationary satellite orbit (“GSO”) fixed-satellite service (“FSS”) satellites authorized by the Commission.<sup>3</sup> The *Existing 60-Day STA* currently permits the operation of the terminal to provide immediate mission support to its USG customers in advance of this request for regular commercial authority to operate the terminal pursuant to an ESAA blanket license. Although this application includes a broader range of satellites and frequencies, the operations proposed herein are essentially identical to those previously approved by the Commission in the *Existing 60-Day STA*.

Due to the highly sensitive nature and security implications of the proposed operations, UltiSat respectfully refers the Commission to certain information relating to its government contract and project scope provided in the *Experimental STA* docket which has been treated as confidential.<sup>4</sup> Along with the technical and operational description included in the present application, the USG contract and operational scope information establishes the pressing need for long-term operating authority to continue the already granted STA authority.<sup>5</sup>

---

<sup>2</sup> See *UltiSat Inc.*, File No. 0201-EX-ST-2018, WM9XHN (“*Experimental STA*”).

<sup>3</sup> See *UltiSat Inc.*, File No. SES-STA-20180621-01477 (“*Existing 60-Day STA*”).

<sup>4</sup> See *Experimental STA*, Confidential Treatment Request & Exhibit 1.

<sup>5</sup> Out of an abundance of caution, UltiSat has also filed a second 60-day STA application, requesting identical authority to that conveyed in the *Existing 60-Day STA*, to ensure continuity of operations while giving the Commission sufficient time to process this blanket license request. See File No. SES-STA-20180724-01969.

UltiSat provides the FCC Form 312 Schedule B and Technical Appendix for information relating to the proposed ESAA operations. As demonstrated in these materials, UltiSat will operate the BB45 terminal consistent with Section 25.227 of the Commission's rules governing ESAA operations, 47 C.F.R. § 25.227, and will otherwise operate consistent with Commission policies. Grant of this application will allow UltiSat to provide long-term support for important national security missions.

## **II. DISCUSSION**

UltiSat's ESAA system will consist of three segments: (i) ESAA Segment, (ii) Space Segment, and (iii) Ground Segment. The ESAA Segment consists of BB45 ESAA terminals mounted on USG customer aircraft. The Space Segment consists of U.S.-licensed satellites and non-U.S. licensed satellites on the Commission's Permitted Space Station List ("Permitted List"). The Ground Segment consists of UltiSat's owned or leased teleport antennas which provide uplink and downlink connectivity via iDirect hubs. The ESAA network is controlled using UltiSat's Network Operations Center in Gaithersburg, Maryland. The following sections describe UltiSat's proposed ESAA system in detail.

### **A. ESAA Segment**

The BB45 terminal is an airborne stabilized antenna system that provides high-quality broadband satellite communications for aeronautical applications and is designed to operate in Ku-band frequencies to provide mission-critical delivery of voice, video, and data communications. The antenna is mechanically steerable and is intended for tail or fuselage-mounting. UltiSat seeks to operate the BB45 ESAA terminal on certain U.S.-registered aircraft for national security and mission-critical ISR applications in U.S. and international airspace, subject to compliance with the regulations of overflown nations governing Ku-band ESAA operations. This blanket license will

allow UltiSat to pursue full commercial integration of the terminal into multiple aircraft and to support long-term services for U.S. government national security and safety operations.

At all times, UltiSat will operate the BB45 terminal within the off-axis EIRP spectral density (“ESD”) limits set forth in Section 25.227 of the Commission’s rules. Specifically, UltiSat will operate the BB45 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.<sup>6</sup> In addition, the BB45 terminal fully meets the pointing accuracy requirements of Section 25.227(a)(1)(ii)(A) with a pointing accuracy of less than or equal to 0.2° between the orbital location of the target satellite and the axis of the main lobe of the ESAA antenna. Moreover, in accordance with Section 25.227(a)(1)(iii)(A), the BB45 terminal design ensures that all emissions from the ESAA automatically cease within 100 milliseconds if the angle between the orbital location of the target satellite and the axis of the main lobe of the ESAA antenna exceeds 0.5°, and transmission will not resume until such angle is less than or equal to 0.2°.

In the Technical Appendix and Form 312 Schedule B, UltiSat provides additional exhibits and information documenting the operational characteristics of the BB45 terminal and demonstrating that it will otherwise operate in compliance with the Commission’s ESAA rules and policies. The BB45 terminal has operated in the United States pursuant to Commission authority on an experimental and short-term commercial basis without any reported interference and in compliance with the ESAA rules embodied in Section 25.227. Thus, operation of the BB45 terminal under the proposed ESAA blanket license will not increase the potential for interference to other lawfully operating spectrum users.

---

<sup>6</sup> In the Technical Appendix at Section III, UltiSat provides off-axis ESD plots pursuant to Section 25.227 of the Commission’s rules, 47 C.F.R. § 25.227, demonstrating compliance with the Commission’s ESD mask.

## B. Space Segment

UltiSat seeks authority to operate the BB45 terminal with any U.S.-licensed satellite and non-U.S. licensed satellite on the Permitted List.<sup>7</sup> This differs from the previously granted STA authority in which UltiSat requested and was granted authority to communicate with specific satellite points of communication.

Permitted List authority is appropriate here because UltiSat will operate the ESAA terminal at all times within the relevant off-axis ESD limits in Section 25.227(a)(1) of the Commission's rules, which are consistent with two-degree spacing levels. Accordingly, there is no potential for interference into adjacent GSO FSS satellite operations.<sup>8</sup>

The operating parameters of Permitted List satellites have been previously reviewed and approved by the Commission,<sup>9</sup> and will support UltiSat's operations throughout U.S., foreign,<sup>10</sup> and international airspace for USG national security projects. The frequencies requested in this application are available for Permitted List operations.<sup>11</sup> Notional coverage maps for UltiSat's ESAA system have been included in the attached Technical Appendix at Section I.

---

<sup>7</sup> UltiSat respectfully reserves the right to supplement this ESAA application with specific satellite and frequency information, to the extent available, if deemed necessary by the Commission.

<sup>8</sup> See Section 47 C.F.R. § 25.227(a)(12). To the extent UltiSat seeks to operate with any particular satellite at power levels above two-degree spacing levels, it will apply to add that satellite as an individual satellite point of communication with supporting information relating to the coordination status of such higher-power operations.

<sup>9</sup> All of these satellites have been previously authorized by the Commission to operate in the United States. See Approved Space Station List, available at: <https://www.fcc.gov/approved-space-station-list>, and Permitted Space Station List, available at: <https://www.fcc.gov/permited-space-station-list>.

<sup>10</sup> UltiSat acknowledges that its ESAA operations in foreign airspace are subject to compliance with applicable regulations of overflown nations.

<sup>11</sup> See Section 47 C.F.R. § 25.2115(k)(1).

### **C. Ground Segment**

UltiSat will use only approved gateway earth stations to communicate with the Ku-band FSS satellites that support its ESAA system. Because UltiSat seeks Permitted List authority and a range of gateways may be utilized to communicate with each of these satellites, UltiSat is not including a definitive gateway-satellite list in this application.<sup>12</sup> At this time, however, UltiSat only seeks to utilize gateway earth stations located in the United States.

UltiSat will maintain control of all transmissions and will cease transmissions immediately upon request of the satellite operator or other notice of potential interference. The UltiSat point of contact with control over the proposed ESAA operations is:

UltiSat Network Operations Center  
Attn: Tim Wiegand  
708 Quince Orchard Rd., Suite 120  
Gaithersburg, MD, 20878, USA  
[NOC@ultisat.com](mailto:NOC@ultisat.com)  
+1.240.243.5138 (Office)  
+1 240.949.6011 (Skype)

UltiSat's U.S.-based network control facility is consistent with Commission requirements for control of Ku-band mobility operations.<sup>13</sup>

### **D. Public Interest Considerations**

In this application, including this narrative, FCC Form 312, Technical Appendix and related information, UltiSat has demonstrated compliance with Section 25.227 of the Commission's rules governing ESAA operations. UltiSat has also demonstrated compliance through interference-free operations under the previously granted *Existing 60-Day STA* and

---

<sup>12</sup> UltiSat respectfully reserves the right to supplement this ESAA application with specific gateway information, to the extent available, if deemed necessary by the Commission.

<sup>13</sup> See, e.g., 47 C.F.R. §25.222(a)(7).

*Experimental STA* authority. Thus, UltiSat requests a long-term blanket license to continue its operations to support critical U.S. government national security and safety operations.

UltiSat's proposed operations will serve the public interest by permitting long-term support for national security missions and promoting real-world implementation of the solutions being developed under the *Existing 60-Day STA* and *Experimental STA*. In addition, grant of the requested authority will permit UltiSat and its government partners to fully transition BB45 operations to commercial applications, and allow integration of its service and equipment with long-term government missions. The public interest will also be served by facilitating UltiSat's ability to provide advanced, versatile, and easily deployable ESAA terminal solutions for U.S. government entities to the benefit of the U.S. public.

### **III. CONCLUSION**

In view of the foregoing, including compliance with the Commission's ESAA rules, the public interest would be served by a grant of the requested blanket ESAA license at the earliest practicable time to allow UltiSat to operate the BB45 terminal in support of its USG customers.

## Technical Certification

I, David Bryant, hereby certify that I am the technically qualified person responsible for the preparation of the technical information contained in the ESAA blanket license application of UltiSat Inc. and the accompanying Technical Appendix, that I am familiar with Part 25 of the Commission's Rules (47 C.F.R. Part 25), and that I have either prepared or reviewed the technical information submitted in this application and found it to be complete and accurate to the best of my knowledge and belief.

By:           s/ David Bryant          

David Bryant  
UltiSat Inc.

July 26, 2018