

## Exhibit A

### Legal Narrative

ViaSat, Inc. (“ViaSat”) seeks authority to modify its Ka-band aeronautical earth station blanket license, Call Sign E120075 (the “License”), to allow it to operate its licensed aeronautical earth stations on additional Ka-band frequencies. The currently authorized frequencies include the 28.35-29.1 GHz and 29.5-30.0 GHz band segments for uplink communications and the 18.3-19.3 GHz and 19.7-20.2 GHz band segments for downlink communications. By this application, ViaSat seeks to add authority to operate the aeronautical earth stations authorized under the License on additional uplink frequencies in the 28.1-28.35 GHz portion of the Ka band on a non-harmful interference basis with respect to primary Local Multipoint Distribution Service (“LMDS”) operations. In the 28.1-28.35 GHz band segment (and only in that band segment), the aeronautical earth stations would operate with ViaSat-1 at 115.1° W.L. as a point of communication and not with their other authorized satellite points of communication. No other modifications to the License are proposed by this application.<sup>1</sup>

#### **I. PUBLIC INTEREST STATEMENT**

Since the Commission granted ViaSat’s Ka-band aeronautical earth station license in 2013, demand for in-flight connectivity has increased dramatically. Passengers and crew not only expect a broadband connection everywhere, including while on board aircraft, but also have come to expect a level of service quality while on board that matches their broadband experience within the home. And, as mobile data and Wi-Fi networks on-board aircraft have become more prevalent, consumers increasingly demand support for video streaming services,<sup>2</sup> which now account for more than 50 percent of peak downstream traffic.<sup>3</sup>

Leveraging its existing Ka-band broadband satellite infrastructure for mobile applications, ViaSat now delivers to passengers and crew on board aircraft the same high-quality

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<sup>1</sup> Separately pending before the Commission is an application to add an additional type of aeronautical antenna to the License. *See* File No. SES-MOD-20150911-00584. This application seeks to include the 28.1-28.35 GHz frequencies on each of the antenna types authorized under the License when this application is granted.

<sup>2</sup> For example, Netflix recently announced a partnership with Virgin America that enables consumers to stream the full Netflix service to their personal devices on Virgin America aircraft, explaining: “Partnerships like this advance our goal to bring Netflix streaming to members wherever they are and whenever they want.” [http://files.shareholder.com/downloads/NFLX/870355637x0x854558/9B28F30F-BF2F-4C5D-AAFF-AA9AA8F4779D/FINAL\\_Q3\\_15\\_Letter\\_to\\_Shareholders\\_With\\_Tables\\_.pdf](http://files.shareholder.com/downloads/NFLX/870355637x0x854558/9B28F30F-BF2F-4C5D-AAFF-AA9AA8F4779D/FINAL_Q3_15_Letter_to_Shareholders_With_Tables_.pdf). These aircraft will be served by ViaSat’s broadband service.

<sup>3</sup> *See* Sandvine, *Global Internet Phenomena Report: Latin America & North America*, at 4, Table 1 (May 2015) (showing Netflix with 36.48% share and YouTube with 15.56% share of peak downstream traffic over fixed facilities in North America).

broadband services provided terrestrially to subscribers of its Exede service. Through this service, passengers and crew typically communicate with their computers, smartphones, tablets, and other personal devices through Wi-Fi (using unlicensed frequencies) to a wireless access point, which then connects to the aeronautical earth station, which in turn ultimately connects to the terrestrial network. Thus, the aeronautical earth station backhauls aggregated traffic from the aircraft to terrestrial facilities that interconnect with the Internet backbone.

In order to meet increasing consumer demand, and maintain the quality of its aeronautical broadband service, ViaSat seeks to increase the amount of uplink (or backhaul) spectrum available for use on its Ka band aeronautical earth stations by adding access to the 28.1-28.35 GHz band segment. Grant of this application would advance the public interest by providing greater aeronautical broadband capacity to meet growing consumer demand without causing harmful interference to other authorized spectrum users.

## **II. GRANT OF THIS APPLICATION IS CONSISTENT WITH COMMISSION PRECEDENT**

The Commission has enabled revolutionary advances in satellite broadband services by allowing the Commission's band plan for the Ka band to evolve over the last 20 years. Namely, recognizing the dramatic evolution of satellite technology, and in order to facilitate the efficient use of underutilized spectrum resources, the Commission has granted a number of waivers of the Ka-band band plan and the U.S. Table of Frequency Allocations. Among other things, that policy approach has enabled the operation of mobility-based services such as those proposed here.<sup>4</sup>

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<sup>4</sup> See, e.g., ViaSat, Inc., File No. SES-LIC-20140427-00404, Call Sign E120075 (granted July 17, 2013) ("*ViaSat Ka band Aeronautical Authorization*") (authorizing aeronautical terminals in the 28.35-29.1 GHz and 29.5-30.0 GHz uplink band segments and the 18.3-19.3 GHz and 19.7-20.2 GHz downlink segments allocated to the FSS); ISAT US Inc., File No. SES-LIC-20141030-00832, Call Sign E140114 (granted Aug. 11, 2015) (granting waiver for aeronautical use of FSS spectrum over Inmarsat 5-F2) ("*ISAT Aeronautical Authorization*"); ISAT US Inc., File No. SES-LIC-20140224-00098, Call Sign E140029 (granted Sept. 29, 2015) ("*ISAT Maritime Authorization*") (granting waiver for maritime use of FSS spectrum on vessels over Inmarsat 5-F2); Inmarsat Mobile Networks, Inc., 30 FCC Rcd 2770 ¶¶ 21-27 (2015) ("*Inmarsat 5-F2 Market Access Grant*") (granting waivers to allow GSO FSS downlink operations over Inmarsat 5-F2 in bands designated primarily for NGSO FSS, fixed service and NGSO MSS feeder links); ViaSat, Inc., File No. SAT-LOI-20080107-0006, as amended (granted Aug. 18, 2009) ("*ViaSat-1 Authorization*") (granting waiver of the Ka-band band plan to allow GSO FSS downlink operations in 18.8-19.3 GHz frequencies designated for NGSO FSS downlinks, and authorizing secondary uplink operations in frequencies designated primarily for NGSO FSS (28.6-29.1 GHz) and LMDS (28.1-28.35 GHz)); see also O3b Limited, File No. SES-LIC-20100723-00952, Call Sign E100088 (granted Sept. 25, 2012) ("*O3b Market Access Grant*") (authorizing operations on a secondary basis in spectrum designated primarily for LMDS and GSO FSS and granting waiver of the Ka-

Indeed, since the Ka-band band plan was adopted, satellite antenna technology has evolved significantly, and a number of spectrum sharing techniques have been proven effective in enabling more efficient use of spectrum without causing harmful interference to the primary users in a given band segment. The Commission not only has authorized mobile operations in Ka-band spectrum designated for the FSS, but also more generally has enabled more intensive spectrum use by granting authority on a secondary basis and through waivers. These decisions are consistent with the Commission's original decision to keep the door open for new sharing opportunities, including future technologies that allow new satellite applications to share with terrestrial operations in the 27.5-28.35 GHz band segment designated for LMDS on a primary basis.<sup>5</sup>

By this application, ViaSat requests that the Commission continue to promote efficient spectrum use by authorizing ViaSat's aeronautical earth stations in the 28.1-28.35 GHz band segment on a secondary basis, and, to the extent necessary, under a waiver of the Commission's 28 GHz band plan and Section 2.106 of the Commission's rules. Specifically, the requested authority would be used on aircraft to, among other things, backhaul aggregated communications from passengers and crew to the Internet backbone. "Good cause" exists for such a waiver,<sup>6</sup> which would serve the public interest by providing access to greater bandwidth and capacity for aeronautical broadband services, and thereby meeting consumer demand, and otherwise would be fully consistent with Commission precedent.

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band band plan to allow NGSO FSS operations in spectrum designated for fixed service and GSO FSS); Hughes Network Systems, LLC, File No. SAT-MOD-20141210-00127, Call Sign S2834 (granted June 23, 2015) (granting waiver of the Ka-band band plan to allow GSO FSS downlink operations in frequencies designated for NGSO FSS downlinks, and authorizing secondary operations in frequencies designated primarily for NGSO FSS and LMDS).

<sup>5</sup> *Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services*, First Report and Order, 11 FCC Rcd 19005 ¶ 27 (1996) ("28 GHz First Report and Order") (committing to reevaluate the feasibility of co-frequency sharing between ubiquitously deployed FSS and LMDS terminals, "if future technology becomes available to facilitate this type of sharing").

<sup>6</sup> *See* 47 C.F.R. § 1.3; *see also* *WAIT Radio v. FCC*, 418 F.2d 1153, 1157 (D.C. Cir. 1969) (granting waiver where such grant "would better serve the public interest than strict adherence to the general rule"); *Northeast Cellular Tel. Co. v. FCC*, 897 F.2d 1166 (D.C. Cir. 1990) (grant of a waiver is warranted where the requested waiver "would not undermine the policy objective of the rule in question and would otherwise serve the public interest"); *Fugro-Chance, Inc.*, 10 FCC Rcd 2860 ¶ 2 (1995) (waiver of U.S. Table of Frequency Allocations appropriate "when there is little potential for interference into any service authorized under the Table of Frequency Allocations and when the non-conforming operator accepts any interference from authorized services.").

As an initial matter, it is now well-established in the industry and in Commission precedent that flexible use of GSO FSS uplink spectrum resources for service from mobile platforms can be accomplished without causing any more interference than a traditional FSS antenna.<sup>7</sup> As the Commission has recognized, sophisticated antenna technologies and highly accurate pointing mechanisms are commercially available to ensure that the transmissions from an earth station remain focused on the desired GSO FSS space station even while the earth station is mounted on a moving platform, such as an aircraft. The Commission has granted ViaSat (and others) authority to operate aeronautical earth stations in Ka band and Ku band FSS spectrum on a non-interfering basis, and ViaSat has proven its ability to provide mobile applications of the FSS without creating an increased risk of interference to any other spectrum user.<sup>8</sup>

Moreover, the Commission already has licensed earth stations in the 28.1-28.35 GHz segment of the Ka band when the operation of such stations is shown to be compatible with LMDS operations, which are designated as the primary use of the band.<sup>9</sup> Indeed, this was the Commission's basis for adopting the secondary designation for FSS operations in that band segment.<sup>10</sup> The Commission has granted authority to ViaSat and others for dozens of earth station antennas that rely on such a secondary FSS designation, finding that LMDS licensees

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<sup>7</sup> See, e.g., *ViaSat Ka band Aeronautical Authorization; ISAT Aeronautical Authorization; see also Service Rules and Procedures to Govern the Use of Aeronautical Mobile Satellite Service Earth Stations in Frequency Bands Allocated to the Fixed Satellite Service*, IB Docket No. 05-20, Notice of Proposed Rulemaking, 20 FCC Rcd 2906 (2005).

<sup>8</sup> See, e.g., *ViaSat Ka band Aeronautical Authorization; ViaSat, Inc., Application for Blanket Authority for Operation of Up to 1,000 Technically Identical Ku-Band Aircraft Earth Stations in the United States and Over Territorial Waters*, 22 FCC Rcd 19964 (2007); see also *ISAT Aeronautical Authorization; Panasonic Avionics Corporation, Application for Authority to Operate Up to 50 Technically Identical Aeronautical Mobile-Satellite Service Aircraft Earth Stations in the 14.0-14.4 GHz and 11.7-12.2 GHz Frequency Bands*, 26 FCC Rcd 12557 (2011); *Row 44, Inc., Application for Blanket Authority to Operate up to 1,000 Technically Identical Aeronautical Mobile Satellite Service Transmit/Receive Earth Stations Aboard Commercial and Private Aircraft*, 24 FCC Rcd 10223 (2009); *ARINC Incorporated Application for Blanket Authority for Operation of up to One Thousand Technically Identical Ku-Band Transmit/Receive Airborne Mobile States Aboard Aircraft Operating in the United States and Adjacent Waters*, 20 FCC Rcd 7553 (2005); *Boeing Company Application for Blanket Authority to Operate Up to Eight Hundred Technically-Identical Transmit and Receive Mobile Earth Stations Aboard Aircraft in the 14.0-14.5 GHz and 11.7-12.2 GHz Frequency Bands*, 16 FCC Rcd 22634 (2001).

<sup>9</sup> 28 GHz First Report and Order ¶ 45.

<sup>10</sup> *Id.* ¶ 10 n.3.

would be protected from harmful interference.<sup>11</sup> Those earth stations have operated now for more than four years, and ViaSat is not aware of any reported interference into LMDS operations. Applications for over a dozen more such earth stations are now pending.<sup>12</sup>

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<sup>11</sup> The Commission has granted ViaSat licenses for 16 earth station terminals in the 28.1-28.35 GHz band segment. *See* ViaSat, Inc., File Nos. SES-LIC-20110211-00150, Call Sign E110015 (granted Oct. 21, 2011); SES-LIC-20110228-00212, Call Sign E110026 (granted Oct. 21, 2011); File Nos. SES-LIC-20110318-00318, Call Sign E110033 (granted Oct. 21, 2011); SES-LIC-20110318-00323, Call Sign E110036 (granted Oct. 21, 2011); SES-LIC-20110328-00373, Call Sign E110043 (granted Oct. 21, 2011); SES-LIC-20110328-00374, Call Sign E110044 (granted Oct. 21, 2011); SES-LIC-20110328-00375, Call Sign E110045 (granted Oct. 21, 2011); SES-LIC-20110328-00376, Call Sign E110046 (granted Oct. 21, 2011); SES-LIC-20110328-00378, Call Sign E110047 (granted Oct. 21, 2011); SES-LIC-20110328-00379, Call Sign E110048 (granted Oct. 21, 2011); SES-LIC-20110328-00380, Call Sign E110049 (granted Oct. 21, 2011); SES-LIC-20110328-00381, Call Sign E110050 (granted Oct. 21, 2011); SES-LIC-20110328-00382, Call Sign E110051 (granted Oct. 21, 2011); SES-LIC-20110328-00383, Call Sign E110052 (granted Oct. 21, 2011); SES-LIC-20110418-00474, Call Sign E110064 (granted Oct. 21, 2011); SES-LIC-20110419-00488, Call Sign E110065 (granted Oct. 21, 2011). *See also Inmarsat 5-F2 Market Access Grant* ¶ 12 (granting authority for earth station to communicate with Inmarsat 5-F2 including 27.5-28.35 GHz frequencies). The Commission also granted O3b licenses for 12 earth stations operating in the 27.6-28.35 GHz band segment on a secondary basis. *See O3b Market Access Grant* (authorizing operations of three earth station antennas on a secondary basis in the 27.6-28.35 GHz frequencies); O3b Limited, File Nos., SES-LIC-20130124-00089, Call Sign E130021 (granted June 20, 2013) (authorizing three earth station antennas using the 27.6-28.35 GHz frequencies); SES-LIC-20130618-00516, Call Sign E130107 (granted June 24, 2015) (authorizing two earth station antennas using the 27.6-28.35 GHz frequencies); SES-LIC-20141022-00809, Call Sign E140107 (granted June 5, 2015) (authorizing two earth station antennas using the 27.6-28.35 GHz frequencies); SES-LIC-20150310-00138, Call Sign E150018 (granted Sept. 30, 2015) (authorizing two earth station antennas using the 27.6-28.35 GHz frequencies).

<sup>12</sup> HNS License Sub, LLC has pending applications for authority to operate 17 earth stations in the 27.85-28.35 GHz band segment. *See* HNS License Sub, LLC, File Nos. SES-LIC-20150604-00332, Call Sign E150076 (filed May 28, 2015); File Nos. SES-LIC-20150604-00333, Call Sign E150077 (filed May 28, 2015); SES-LIC-20150604-00334, Call Sign E150078 (filed May 28, 2015); SES-LIC-20150604-00335, Call Sign E150079 (filed May 28, 2015); SES-LIC-20150604-00336, Call Sign E150080 (filed May 28, 2015); SES-LIC-20150604-00337, Call Sign E150081 (filed May 28, 2015); SES-LIC-20150604-00338, Call Sign E150082 (filed May 28, 2015); SES-LIC-20150604-00339, Call Sign E150083 (filed May 28, 2015); SES-LIC-20150604-00340, Call Sign E150084 (filed May 28, 2015); SES-LIC-20150604-00341, Call Sign E150085 (filed May 28, 2015); SES-LIC-20150604-00342, Call Sign E150086 (filed May 28, 2015); SES-LIC-20150604-00343, Call Sign E150087 (filed May 28, 2015); SES-LIC-20150604-00344, Call Sign E150088 (filed May 28, 2015); SES-LIC-20150604-00345, Call Sign E150089

ViaSat's Ka-band aeronautical earth stations will operate in a manner that is consistent with the Commission's secondary designation for FSS earth stations in the 28.1-28.35 GHz segment of the Ka band. Specifically, ViaSat proposes to operate in this band segment in a manner that will not cause harmful interference to existing or future LMDS operations. As detailed in the attached Technical Analysis, ViaSat's proposed operations in the 28.1-28.35 GHz band will be able to co-exist successfully with primary LMDS operations because the beam from the aeronautical earth station typically will not be aligned with an LMDS receiver, and even when it is, the aircraft itself will provide a substantial amount of signal blockage, such that no harmful interference will occur under the proposed operations at altitudes of 10,000 feet and above. Moreover, the aeronautical earth stations in ViaSat's network are dynamically controlled and monitored by ViaSat's Network Operations Center, such that the operations of each earth station and its location while transmitting can be tracked and managed to ensure that the proposed operations remain within authorized parameters and protect LMDS operations. ViaSat would accept any interference from primary LMDS operations in this band.

The technical specifications and performance of the aeronautical earth stations are the same in the 28.1-28.35 GHz band segment as they are in the already-authorized 28.35-29.1 GHz and 29.5-30.0 GHz portions of the Ka band. The antenna patterns and radiation hazard analysis that are on file with the Commission for Call Sign E120075 also remain unchanged.

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(filed May 28, 2015); SES-LIC-20150604-00346, Call Sign E150090 (filed May 28, 2015); SES-LIC-20150604-00347, Call Sign E150091 (filed May 28, 2015); SES-LIC-20150604-00348, E150092 (filed May 28, 2015).