

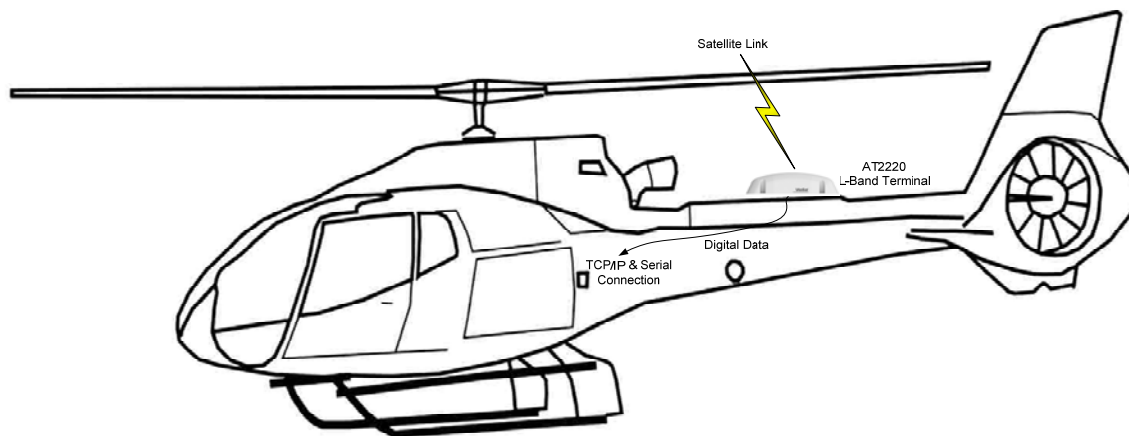
**Exhibit A**  
**Description of Application**

ViaSat, Inc. (“ViaSat”) seeks blanket authority to operate up to 50,000 electrically identical satellite mobile earth terminals (“METs”) to communicate with the SkyTerra-1 satellite, utilizing L-Band frequencies at 1525-1559 MHz and 1626.5-1660.5, but excluding the 1544-1545 MHz and 1645.5-1646.5 MHz bands, which are reserved for safety and distress communications services. SkyTerra-1 is operated by LightSquared Subsidiary LLC (“LightSquared”), and is authorized to use these bands to serve the United States. As discussed below, these METs comply with all applicable Commission technical requirements.

**A. The ViaSat AT2220 Aviation Earth Terminal**

ViaSat is a leading provider of innovative satellite broadband services, and a leading manufacturer of innovative satellite communication products. The AT2220 represents yet another example of such innovation, delivering dependable, IP-based communication services to small form factor, remote platforms via satellite. The terminals may be mounted on top of helicopters and light aircraft. Figure 1 illustrates a typical configuration in which the antenna is installed on a helicopter. The exact mounting location will vary depending on aircraft. It will be shown in this report for this analytical case that the RF exposure hazard environment is benign for personnel on the ground or in the cabin when the aircraft is in a clear area.

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**Figure 1: Aircraft Integrated SATCOM Terminal**

The ViaSat Aviation Terminal 2220 is one of the smallest and lightest full-duplex aviation terminals on the market. The single line replaceable unit combines an antenna, RF front-end and modem into one assembly. This makes installation easy, eliminating expensive RF cables, and reducing installation time and complexity. In order to provide the most affordable communications the terminal relies on remarkably efficient bandwidth usage, low latency IP networking and optimized power consumption. In addition, the terminal includes embedded, beyond-line-of-sight voice connectivity for communications between the aircraft and end users through Point-To-Point or Push-To-Talk call groups. The remote terminals are typically sold to original equipment manufacturers (OEM) that install them on end-user platforms.

ViaSat AT2220 offering the highest data rates among satellite terminals of its size. Examples of services are:

- **Flight Following:** Embedded AVL server provides real time aircraft location updates
- **In-cabin Communication:** Supports voice, text and mail using your own smartphone or tablet
- **In-flight Weather:** On-demand, real-time data
- **Telemetry and Status:** Provides equipment health and status while in-flight for predictive data analytics
- **Emergency Medical:** Two-way networking enabling real time Emergency Medical Services (EMS): monitoring of patient vital signs: ECG, blood pressure, respiratory rate, etc. and communications with hospital staff.

### **Compliance with Out-of-Band and Spurious Emissions Lists**

The level of out-of-band and spurious emissions from all METs that are the subject of this application will conform to the requirements of Sections 25.202(f) and 25.216 of the Commission's rules.<sup>1</sup>

#### **B. Compliance with Section 25.287(a)**

The METs covered by this application address the Commission's requirements for ensuring the priority and real-time preemption requirements necessary to protect the GMDSS in the following manner:<sup>2</sup>

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<sup>1</sup> See 47 C.F.R. §§25.202(f), 25.216. Because this application seeks authority to operate mobile earth stations in the mobile satellite service ("MSS"), questions E15 and E16 in Schedule B of the Form 312, which pertain to FSS terminal compliance with Sections 25.209(a) and (b), are inapplicable.

1. *47 C.F.R. § 25.287(a)(1): All MES transmissions shall have a priority assigned to them that preserves the priority and pre-emptive access given to maritime distress and safety communications sharing the band.*

Transmissions to authorized METs are classified as having no priority relative to GMDSS communications. This classification is controlled by ViaSat's Network Operation Center ("NOC"), which is located in Carlsbad, California.

2. *47 C.F.R. § 25.287(a)(2): Each MES with a requirement to handle maritime distress and safety data communications shall be capable of either: (i) recognizing messages and call priority identification when transmitted from its associated Land Earth Station (LES); or (ii) accepting message and call priority identification embedded in the message or call when transmitted from its associated LES and passing the identification to shipboard data message processing equipment.*

This requirement does not apply to the proposed mobile METs.

3. *47 C.F.R. § 25.287(a)(3): Each MES shall be assigned a unique terminal identification number that will be transmitted upon any attempt to gain access to a system.*

Each MET will be assigned a unique fixed terminal identifier (FTI) at the time the terminal is manufactured. This unique identifier is transmitted by the transceiver upon every entry to the ArcLight network and is required to gain access to the network. ViaSat's NOC will maintain an authorization database for all subscriber METs, and will grant or deny access accordingly.

4. *47 C.F.R. § 25.287(a)(4): After an MES has gained access to a system, the mobile terminal shall be under control of a LES and shall obtain all channel assignments from it.*

Any MET that has gained access to the VMS network will be subject to the control of ViaSat's NOC. Each MET will receive and act upon commands issued to it by the NOC. The NOC assigns all channel frequencies, including those to be used for signalling-only purposes.

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<sup>2</sup> See 47 C.F.R. §2.106, n. US315; 47 C.F.R. §25.287(a).

5. *47 C.F.R. § 25.287(a)(5): All MESs that do not continuously monitor a separate signaling channel or signaling within the communications channel shall monitor the signaling channel at the end of each transmission.*

The AT2220 is a full-duplex MET and continuously monitors the signalling channel from the NOC.

6. *47 C.F.R. § 25.287(a)(6): Each MES must automatically inhibit its transmissions if it is not correctly receiving separate signaling channel or signaling within the communications channel from its associated LES.*

MET transmissions will be inhibited unless the MET is correctly receiving either a signalling channel or the correct communications channel according to specified criteria. More specifically, if the AT2220 cannot correctly receive the forward link from the NOC, the transceiver automatically terminates transmissions.

7. *47 C.F.R. § 25.287(a)(7): Each MES shall automatically inhibit its transmissions on any or all channels upon receiving a channel shut-off command on a signaling or communications channel it is receiving from its associated LES.*

In the event that a preemption is required, the NOC can shut down transmissions of all AT2220 terminals by disabling the forward link. As noted above, if the AT2220 cannot correctly receive the forward link from the NOC, the transceiver automatically terminates transmissions. In addition, the NOC can also inhibit transmission on any specific terminal or all terminals via an over the air command message.

8. *47 C.F.R. § 25.287(a)(8): Each MES with a requirement to handle maritime distress and safety communications shall have the capability within the station to automatically pre-empt lower precedence traffic.*

This requirement does not apply to the proposed terrestrial mobile METs.

### **C. Compliance with AMS(R)S Pre-emption Requirements**

The METs covered by this application address the Commission's requirements for ensuring the priority and real-time pre-emption requirements necessary to protect AMS(R) Service<sup>3</sup> as discussed below:

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<sup>3</sup> See 47 C.F.R. §2.106 n. US308; *In re Application of AMSC Subsidiary Corporation*, 10 FCC Rcd 9507, 9511 (IB 1995).

1. *All MES transmissions shall have a priority assigned to them that preserves the priority and preemptive access given to distress and safety communications sharing the band.*

Transmissions to authorized METs are classified as having no priority relative to AMS(R)S communications. This classification is controlled by ViaSat's NOC. In addition, LightSquared, like all other MSS operators, protects AMS(R) Service transmissions in the band by a frequency planning and management process.

2. *Each MES with a requirement to handle distress and safety communications shall be capable of recognizing messages and call priority identification when transmitted from its associated LES.*

This requirement does not apply to the proposed terrestrial mobile METs.

3. *Each MES shall be assigned a unique terminal identification number that will be transmitted upon any attempt to gain access to the system.*

Each MET will be assigned a unique fixed terminal identifier (FTI). This unique identifier is transmitted by the transceiver upon every entry to the VMS network and is required to gain access to the network. ViaSat's NOC will maintain an authorization database for all subscriber METs, and will grant or deny access accordingly.

4. *After an MES has gained access to a system, the mobile terminal shall be under control of a LES and shall obtain all channel assignments from it.*

Any MET that has gained access to the VMS network will be subject to the control of ViaSat's NOC. Each MET will receive and act upon commands issued to it by the NOC. The NOC assigns all channel frequencies, including those to be used for signalling-only purposes.

5. *All MESs that do not continuously monitor a separate signaling channel shall have provision for signaling within the communications channel.*

The AT2220 is a full-duplex MET and continuously monitors the signaling channel from the NOC.

6. *Each MES shall automatically inhibit its transmissions if it is not correctly receiving a separate signaling channel or signaling within the communications channel from its associated LES.*

MET transmissions will be inhibited unless the MET is correctly receiving either a signaling channel or the correct communications channel according to specified criteria. More specifically, if the AT2220 cannot correctly receive the forward link from the NOC, the transceiver automatically terminates transmissions.

7. *Each MES shall automatically inhibit its transmissions on any or all channels upon receiving a channel shut-off command on a signaling or communications channel it is receiving from its associated LES.*

In the event that a preemption is required, the NOC can shut down transmissions of all AT2220 terminals by disabling the forward link. As noted above, if the AT2220 cannot correctly receive the forward link from the NOC, the transceiver automatically terminates transmissions. In addition, the NOC can also inhibit transmission on any specific terminal or all terminals via an over the air command message.

8. *Each MES with a requirement to handle distress and safety communications shall have the capability within the station to automatically preempt lower precedence traffic.*

This requirement does not apply to the proposed terrestrial mobile METs.

#### **D. Radiation Hazard Study**

A radiation hazard analysis for the proposed MET type is attached hereto as Exhibit B. As demonstrated by the results of the analysis, the maximum permissible exposure limit (MPE) for protection of the General Population/Uncontrolled Exposures,  $1 \text{ mW/cm}^2$  averaged over a thirty minute period, is met.<sup>4</sup>

#### **E. Remote Control Point**

ViaSat will remotely control the AT2220 from the NOC facilities located in Carlsbad, California. The control facilities can be reached by telephone at (760) 602-5656 or (866) 659-9702, or by email at NOC-Carlsbad@viasat.com.

#### **F. Public Interest Showing**

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<sup>4</sup> The AT2220 is not a “portable device,” in that it is not designed to be used within 20 centimeters of the operator’s body. As such, the equipment authorization requirements set forth in Section 25.129 of the Commission’s rules are inapplicable. See 47 C.F.R. § 25.129.

As noted above, the AT2220 relies on efficient bandwidth allocation, low-latency IP networking, and low required satellite power to enable real-time mobile communications more affordably than ever. The AT2220 compact size and weight and low cost will allow it to be installed on small aircrafts, bringing reliable and affordable two-way communications to commercial helicopters and light aircrafts that had not been available or affordable before. In doing so, the AT2220 will facilitate much needed applications on these aircrafts such as in-flight weather update, real-time emergency medical communications, aircraft location updates, etc.. For these reasons, grant of this application is in the public interest.

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For the foregoing reasons, ViaSat respectfully requests that this application be granted.