

## Exhibit 1

**File No. SAT-MOD-20070531-00076**

**File No. SAT-STA-20070919-00127**

**Narrative Exhibit  
ORBCOMM License Corp.  
FCC Call Sign S2103  
Supplemental Authorization Request for  
Limited Operations of Bi-Directional  
435 MHz TT&C Links**

ORBCOMM License Corp. (“ORBCOMM”), the holder of the Commission authorization issued under Call Sign S2103 for the ORBCOMM Non-Voice, Non-Geostationary Mobile Satellite Service (“NVNG MSS”) system (the “ORBCOMM System”), pursuant to the instructions of the Commission hereby supplements its pending Modification Application<sup>1</sup> (which is incorporated herein by reference) to clarify and reiterate its request for authorization to launch and operate on a limited short-term basis bi-directional tracking, telemetry and control (“TT&C”) links in the 435 MHz band. These links will be utilized only for initial deployment operations and possible future emergency restoration capability on ORBCOMM’s first plane of up to seven replacement

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<sup>1</sup> File No. SAT-MOD-20070531-00076, FCC Public Notice Report No. SAT-00475 (October 5, 2007) (“Modification Application”); *see also*, Letter from Robert G. Nelson to Stephen L. Goodman & Walter H. Sonnenfeldt, DA 07-4160 (October 5, 2007) (the “Commission’s October 5 Letter”). No filing fee is due in connection with this submission. Commission’s October 5 Letter, at 3, FN 12 (*citing* 47 C.F.R. § 1.1109(d)). ORBCOMM’s Modification Application completed the requisite 30-day Public Notice period on November 4, 2007. No oppositions were filed, rendering ORBCOMM’s Modification Application ripe for grant under the Commission’s new expedited satellite processing rules. ORBCOMM also has pending a request for Special Temporary Authority relating to launch and initial operation of its first plane of replacement satellites. *See*, ORBCOMM License Corp. Request for Special Temporary Authority, File No. SAT-STA-20070919-00127 (filed September 19, 2007) (“STA Application”). The Commission has yet to act on this request, which may provide the most administratively efficient solution to resolve authorization matters relating to the operation of 435 MHz links prior to the currently scheduled December 20, 2007 launch date for the first plane of replacement spacecraft. ORBCOMM would prefer to proceed by a grant of the Modification Application, but given the short timeframe before the scheduled December 20, 2007 launch, and the limited short-term use of these links as explained herein, an STA in connection with the launch and operation of the 435 MHz links for these satellites could also be an acceptable solution.

satellites.<sup>2</sup> As ORBCOMM has previously informed the Commission, the launch of the first plane of replacement satellites is currently scheduled for December 20, 2007, on a COSMOS 3M rocket, to be launched from Kapustin Yar, Russia.<sup>3</sup> To the extent necessary, ORBCOMM seeks an STA and/or waiver of the Commission's Rules<sup>4</sup> to permit the requested TT&C operations in the 435 MHz band. As demonstrated below, the public interest will be well-served by prompt Commission grant of this request in connection with disposition of ORBCOMM's Modification Application.

ORBCOMM's Modification Application provided information on the 435 MHz operations on the initial plane of ORBCOMM replacement satellites, but did not request authorization to operate these links on an ongoing basis in the United States.<sup>5</sup> This is because these links will only be used by contractors in Russia and Germany during the initial spacecraft deployment and testing phase prior to commencement of regular commercial operations.<sup>6</sup> The Modification Application also noted that these links could be used in the future for emergency restoration in the event of a satellite malfunction.<sup>7</sup> This submission provides additional details regarding the 435 MHz operations on ORBCOMM's initial plane of replacements satellites, in accordance with the analysis and guidance provided in the Commission's October 5 Letter.

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<sup>2</sup> ORBCOMM's first plane of satellites will consist of the U.S. Coast Guard Demonstration satellite and up to six (6) "Quick Launch" satellites. Modification Application, Narrative at 5. STA Application, Narrative, at 1-3. In the unlikely event that Commission authorization of future use of these 435 MHz TT&C links for emergency restoration might delay timely Commission action prior to the upcoming launch, this matter could be deferred for later consideration.

<sup>3</sup> There is a possibility that this launch may have to be delayed, if, among other things, the requisite Commission authorization is not issued sufficiently prior to December 20th. ORBCOMM urges prompt action by the Commission to avoid a delay due to regulatory 'red tape'.

<sup>4</sup> ORBCOMM's Modification Application requested waiver of the Commission's Rules to the extent necessary to accommodate ORBCOMM's next-generation proposals. Modification Application, Narrative at 38-41. *Cf.*, *GE American Communications, Inc.*, 16 FCC Rcd 11038 (2001), at ¶ 9 (FCC granted waiver on its own motion). ORBCOMM intended its request to include any Rule waiver that may be necessary to allow the 435 MHz TT&C operations on the initial plane of replacement satellites. By this submission, ORBCOMM clarifies and reiterates that request.

<sup>5</sup> ORBCOMM Modification Application, Narrative at 3-4, FN 6.

<sup>6</sup> *Id.*

<sup>7</sup> *Id.*

As ORBCOMM has previously informed the Commission, expedited construction of the initial plane of satellites was made possible by using payload components that the original ORBCOMM satellite manufacturer still had on hand.<sup>8</sup> The satellite buses used for these initial satellites are a standard “off-the-shelf” design produced by Polyot, a leading Russian satellite manufacturer. The 435 MHz TT&C links are an embedded component of the Polyot bus design, and have been used for many years on multiple Polyot satellite missions.<sup>9</sup> These links provide the *only* available TT&C connectivity during the initial spacecraft deployment phase, and are required to command deployment of the ORBCOMM communications payload, including the communications payload antennas.

The 435 MHz package on the Polyot satellite bus consists of a pair of redundant half-duplex transceivers with 15 kHz channels operating at 435.465 MHz and 435.515 MHz center frequencies. Immediately following launch, the satellites transmit a beacon signal on one of the 435 MHz transmitters. As soon as the 435 MHz beacon signal initially transmitted by each satellite is acquired by one of the ground stations, the 435 MHz transmitter on that satellite is commanded to cease transmissions. The 435 MHz satellite transceivers are then placed in a default receive mode. 435 MHz transmissions from the satellites can then only be enabled by ground station command. The selected 435 MHz satellite transceiver then transmits the requested data stream to the earth station. Only one 435 MHz transmit channel per satellite can be active at any one time, and the duration of a transmission is normally only a fraction of the eleven (11) minute pass time over the earth station. The 435 MHz satellite transmitters remain inactive at all other times.

For these reasons, the possibility of harmful interference to other authorized systems from these operations is minimal; and is limited to, at most, a few minutes at a time, in a relatively small geographic area (the coverage area of the given satellite while in view of an earth station, and the interference radius of the earth station). There are two existing earth stations in Russia that will be used for the initial deployment and testing operations for ORBCOMM’s first plane of replacement satellites – one in Kaluga (near Moscow), and one in Omsk.<sup>10</sup> Polyot reports that it has conducted similar 435 MHz operations on multiple satellite missions over many years using the earth stations in Russia, without harmful interference resulting from any such space segment or ground segment operations. Accordingly, there is no basis for concern about harmful

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<sup>8</sup> STA Application, Narrative at 1, FN 1.

<sup>9</sup> Polyot has informed ORBCOMM that it has satisfied all regulatory compliance requirements in Russia relating to its operation of 435 MHz transmitting and receiving ground segment. As the owner and operator of the ORBCOMM System, ORBCOMM has assumed responsibility for regulatory compliance relating to all space segment operations (including the 435 MHz TT&C operations).

<sup>10</sup> A third 435 MHz earth station may be installed in Germany to provide additional connectivity, subject to operational requirements and local regulatory compliance.

interference resulting from the limited short-term 435 MHz TT&C operations on ORBCOMM’s initial plane of replacement satellites.

All TT&C functions will be transferred to ORBCOMM’s regular in-band NVNG MSS gateway links on the communications payloads once the initial deployment and testing phase for the subject spacecraft is complete. It is anticipated that this process will be completed for all of the satellites in the initial replacement plane within four (4) weeks following launch. The 435 MHz satellite transmission capability will be disabled once the regular ORBCOMM VHF gateway links are operational, but can be activated in the future for emergency restoration in the event of a gateway link failure. If emergency restoration is necessary, this would entail a very limited short-term use of the 435 MHz transceiver on the affected spacecraft (*i.e.*, to enable stabilization of the satellite and a ‘reboot’ of the communications payload; a process that should be possible to accomplish in one communication session during a single pass of the satellite over the earth station). Table 1 provides additional information on the operating characteristics of the 435 MHz TT&C satellite transceiver.

<b>Table 1</b>		
<b>ORBCOMM</b>		
<b>USCG Demonstration &amp; Quick Launch</b>		
<b>435 MHz TT&amp;C</b>		
<b>Spacecraft Transceiver Characteristics</b>		
<b>Frequency Band</b>		435 MHz
<b>Channel Center Frequency</b>		435.465 MHz or 435.515 MHz
<b>Signal Bandwidth</b>		15 kHz
<b>Mode</b>		Half-Duplex Bi-Directional
<b>Simultaneous Transmit Channels per Satellite</b>		1 (second channel is used as redundant backup)
<b>Max Transmit Power</b>		5 W
<b>Max Transmit EIRP</b>		6.3 dBW
<b>Max Data Rate</b>		9.6 kbps
<b>Emission Type</b>		F1D

The Commission has pointed out that, absent grant of a waiver, ORBCOMM’s 435 MHz TT&C operations would be non-compliant with the Commission’s Rules.<sup>11</sup> As discussed below, to the extent waiver of the Commission’s Rules is necessary, there is good cause for grant of such waiver.

<sup>11</sup> Commission’s October 5 Letter, at 1-2.

**No Harmful Interference Should Result.** The potential for harmful interference to other authorized systems from the 435 MHz TT&C operations of ORBCOMM's initial plane of replacement satellites is mitigated to minimal, acceptable levels due to the combination of:

- The short duration (about four (4) weeks) of the satellite deployment and testing phase when the limited 435 MHz TT&C operations will be conducted;
- The unlikely event of *very* short duration emergency restoration operations in the future;
- The limited geographic area affected by satellite transmissions that can only be enabled by a command from a ground station;
- The relatively low power satellite transmit EIRP;
- The long history of Polyot TT&C operations in these bands without incidences of harmful interference to other authorized systems;
- The worldwide co-frequency primary allocated service is Radiolocation, which is far more likely to interfere with ORBCOMM than to be the victim of interference from ORBCOMM;
- The long existence of numerous amateur radio satellites in these frequencies that have operated successfully without causing or receiving harmful interference, both in Region 1 where the Amateur service is primary and in Regions 2 & 3 where the Amateur service is secondary; and
- The similar permissible use in the 432-438 MHz band under footnote US397 for pre-operational testing *within the United States* in the Earth exploration-satellite service. 47 C.F.R §2.106, FN US397.

**The Public Interest Will be Well-Served.** Prompt grant of ORBCOMM's Modification Application, including any requisite STA and/or waiver of the Commission Rules to allow limited 435 MHz TT&C operations for ORBCOMM's initial plane of replacement satellites, will allow ORBCOMM to proceed with launch and operation of its next-generation constellation. As the record before the Commission demonstrates, ORBCOMM presently provides a number of valuable non-voice services using its low-Earth orbit satellite system. ORBCOMM offers two-way messaging, machine-to-machine ("M2M") communications, asset tracking and monitoring services. The ORBCOMM System is utilized by a growing number of Value-Added Resellers that offer a wide range of end user applications targeted to specific industry needs. These include tracking, monitoring and messaging for trucking and heavy construction equipment fleets, weather reports and fleet monitoring for the fishing industry, and fixed asset monitoring of sensors in remote areas, such as oil pipelines and propane tanks.

One of the benefits of ORBCOMM's low-Earth orbit constellation is the availability of ORBCOMM's services nearly everywhere on the planet. ORBCOMM is able to provide these services in very remote areas that are otherwise underserved by

other communications capabilities. Indeed, many of ORBCOMM's Supervisory Control and Data Acquisition ("SCADA") services are provided in remote areas where there are few, if any cost-effective alternatives. In addition, the ORBCOMM System is ideally suited to tracking a vehicle or piece of equipment that travels between countries or transoceanic. Moreover, within the United States the ORBCOMM System can augment terrestrial mobile tracking, messaging and M2M offerings as a supplement in territories not served by cellular, paging or other terrestrial wireless services. The timely replenishment and enhancement of the ORBCOMM constellation will allow ORBCOMM to continue to offer these valuable services in a robust and reliable manner.

Importantly, ORBCOMM's next-generation satellites also incorporate an Automatic Identification System ("AIS") receiver payload. The U.S. Coast Guard has identified a clear requirement to increase its capability to monitor vessels within U.S. waters and beyond for homeland security and safety purposes. In 2004, ORBCOMM was awarded a contract by the U.S. Coast Guard to develop and demonstrate the ability to receive, collect and forward AIS data over the ORBCOMM satellite system. Current terrestrial-based AIS monitoring systems provide limited coverage and are not able to provide the expanded coverage capability desired by the U.S. Coast Guard to meet defined homeland security requirements. By using AIS receivers deployed on the next-generation ORBCOMM satellites, the U.S. Coast Guard is expected to be able to collect and process AIS data well beyond the coast of the United States in a cost effective and timely fashion.<sup>12</sup> ORBCOMM's new satellites will be uniquely capable of near-real-time AIS signal reception throughout their combined global coverage area, and grant of the Modification Application along with any necessary STA and/or waiver will allow ORBCOMM to fulfill that mission and assist the U.S. Coast Guard in these critical homeland security monitoring efforts. Moreover, the timely launch and operation of these satellites will allow ORBCOMM to refine the AIS-monitoring payload on the subsequent ORBCOMM replacement satellites, if necessary. For all of these reasons, grant of ORBCOMM's Modification Application as clarified herein will well-serve the public interest.

In addition, as demonstrated in the Modification Application and this supplement, ORBCOMM's next-generation satellites comply with the technical requirements for the NVNG MSS. As explained above, there will be no measurable risk of harmful interference from the limited 435 MHz operations. Moreover, the initial plane of satellites utilize the same communications components as the currently-flying satellites (along with an AIS receiver), and there have been no complaints of interference in the adjacent bands or in the shared uplink and downlink bands. ORBCOMM has selected an orbit that will avoid potential conflicts with any other non-geostationary satellite systems. Finally, as explained in the Modification Application, all of ORBCOMM's next-generation satellites comply with the Commission's orbital debris mitigation guidelines.

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<sup>12</sup> The Commission recognized the important role of AIS in homeland security when it recently designated Channels 87B and 88B for exclusive AIS use. *Amendment of the Commission's Rules Regarding Maritime Automatic Identification Systems*, 21 FCC Rcd 8892 (2006) at ¶ 23.

Thus, grant of the Modification Application will allow a timely launch of the replacement and replenishment satellites presents no added risks, while providing numerous benefits to the public.

For all of the above-stated reasons, timely grant of ORBCOMM's Modification Application, along with any necessary STA and/or waiver, will serve the public interest, convenience, and necessity. Accordingly, ORBCOMM respectfully requests expeditious grant of the requested authorization.