

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Comprehensive Review of Licensing and	)	IB Docket No. 12-267
Operating Rules for Satellite Services	)	
	)	
	)	
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**REPLY COMMENTS OF AVIATION SPECTRUM RESOURCES, INC.**

Aviation Spectrum Resources, Inc. (“ASRI”) hereby replies to comments of ORBCOMM Inc. (“ORBCOMM”)<sup>1</sup> on the Federal Communications Commission’s (the “Commission’s”) Notice of Proposed Rulemaking in the above-captioned proceeding that aims to update, streamline, and harmonize its licensing and operating rules for satellite services (the “*Notice*”).<sup>2</sup> ASRI applauds the Commission’s ongoing commitment to simplifying and streamlining its Part 25 satellite rules, allowing applicants and the agency to save time, effort, and costs. However, ASRI opposes ORBCOMM’s attempt to divert this streamlining proceeding by introducing substantive changes to Part 25 rules that risk causing harmful interference to civil aviation operations in the 108 – 137 MHz band critical to safety of life and property.

ASRI is the communications company of the U.S. air transport industry, and is owned by U.S. airlines and other airspace users. It is the licensee for U.S. aeronautical operational control (“AOC”) frequencies<sup>3</sup> and the sponsor of the Aeronautical Frequency Committee (“AFC”).<sup>4</sup>

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<sup>1</sup> Comments of ORBCOMM Inc., IB Docket No. 12-267 (filed Jan. 14, 2013) (“ORBCOMM Comments”).

<sup>2</sup> *Comprehensive Review of Licensing and Operating Rules for Satellite Services*, Notice of Proposed Rulemaking, 27 FCC Rcd 11619 (2012) (“*Comprehensive Review NPRM*”).

<sup>3</sup> 128.825 – 132.0 MHz and 136.5 – 136.975 MHz in VHF.

<sup>4</sup> Membership includes: Airlines for America (“A4A”); Aircraft Owners and Pilots Association (“AOPA”); Helicopter Safety and Advisory Conference; National Business Aviation

This enables ASRI to draw on expertise and opinions from across the U.S. aviation sector, promoting the safe and efficient operation of commercial aviation radio communications systems operating within the U.S. By coordinating with the AFC, ASRI also supports the safe operation of U.S. aviation in an international environment through participation with the International Civil Aviation Organization (“ICAO”), the International Air Transport Association (“IATA”), and International Telecommunication Union Radiocommunications Sector (“ITU-R”).

The 108 – 137 MHz band has long been reserved for aeronautical safety and navigation communications.<sup>5</sup> It is one of the critical bands for aircraft radionavigation and the principal band for air-to-ground communication for civil aviation. Most importantly, this includes air traffic control (“ATC”) and AOC, each vital to safety of life and property.<sup>6</sup> This frequency band is harmonized worldwide by the ITU.<sup>7</sup>

The adjacent 137 – 138 MHz band is allocated to the non-voice, non-geostationary (“NVNG”) mobile-satellite service (“MSS”) as a downlink band.<sup>8</sup> Recognizing that “the receiver portion of the portable transceiver may emit unintentional radiation in the 108 to 137 MHz band”<sup>9</sup> that could interfere with vital aircraft safety and navigation communications,

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Association (“NBAA”); National Air Transport Association (“NATA”); Helicopter Association International (“HAI”); Federal Aviation Administration (“FAA”); and all major U.S. airlines and helicopter operators.

<sup>5</sup> 47 C.F.R. §§ 2.106 footnotes US26; US28; US30; US31; US32; US33; US244; 87.173(b) (2011).

<sup>6</sup> 47 C.F.R. § 87.185(a) (2011).

<sup>7</sup> See ITU Regulations, Article 5 (2012).

<sup>8</sup> See *Amendment of the Commission’s Rules to Establish Rules and Policies Pertaining to a Non-Voice, Non-Geostationary Mobile Satellite Service*, Report and Order, 8 FCC Rcd 8450 (1993).

<sup>9</sup> *Amendment of the Commission’s Rules to Establish Rules and Policies Pertaining to a Non-Voice, Non-Geostationary Mobile Satellite Service*, Notice of Proposed Rulemaking, 8 FCC Rcd 6330, ¶ 27 (1993) (“*NVNG MSS NPRM*”).

Section 25.135(b) of the rules prohibits the operation of NVNG MSS transceiver units on board civil aircraft, unless such devices are incapable of radiating in the critical 108 – 137 MHz frequency band.<sup>10</sup> The *Notice* proposes no substantive changes to Section 25.135(b) but suggests moving the provision to proposed new Section 25.285.<sup>11</sup>

In its opening comments, ORBCOMM proposes substantive revisions to new Section 25.285. Specifically, ORBCOMM seeks to lift the existing prohibition codified in Section 25.135(b) to allow the operation of NVNG MSS devices capable of radiating in the 108 -137 MHz band aboard civil aircraft.<sup>12</sup> ASRI limits its reply to the ORBCOMM proposal and submits that: (1) ORBCOMM’s request is improperly made in this proceeding and should be promptly dismissed as such; and (2) the Commission should not revise the proposed new section 25.285 and should continue to prevent the operation of NVNG MSS devices capable of radiating in the 108 – 137 MHz band aboard civil aircraft.

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<sup>10</sup> 47 C.F.R. § 25.135(b) (2011).

<sup>11</sup> See *Comprehensive Review NPRM*, Appendix A, ¶ 55 (“Operation of any of the following devices aboard aircraft is prohibited, unless the device is installed in a manner approved by the Federal Aviation Administration or is used by the pilot or with the pilot’s consent...Earth stations used for non-voice, non-geostationary Mobile-Satellite Service communication that can emit radiation in the 108-137 MHz band.”).

<sup>12</sup> See ORBCOMM Comments at 9-11 (“§ 25.285 [Revised Proposed] Operation of portable transmitters or transceivers on board aircraft. (a) Operation of any of the following devices aboard civil aircraft is prohibited, unless the device is ~~installed~~ **operated** in a manner ~~approved~~ **permitted** by the Federal Aviation Administration or is used by the pilot or with the pilot’s consent: (1) Earth stations capable of transmitting in the 1.5/1.6 GHz, 1.6/2.4 GHz, or 2 GHz Mobile-Satellite Service frequency bands; (2) ATC terminals capable of transmitting in the 1.5/1.6 GHz, 1.6/2.4 GHz, or 2 GHz MSS bands; (3) Earth stations used for non-voice, non-geostationary Mobile-Satellite Service communication that ~~can emit radiation in~~ **do not comply with the FAA’s harmful interference protection criteria established for aeronautical radio system receivers operating in** the 108-137 MHz band.” (emphasis in original)).

**I. ORBCOMM’S REQUEST TO REVISE NEW SECTION 25.285 IS IMPROPERLY MADE IN THE INSTANT PROCEEDING AND SHOULD BE PROMPTLY DISMISSED**

ORBCOMM’s suggested re-write of proposed new Section 25.285 falls outside the scope of the instant proceeding. The Commission established this docket to streamline regulatory requirements and eliminate unnecessary technical and information filing requirements for applicants requesting space and earth station licenses. ORBCOMM’s substantive suggestion, however, goes beyond form and instead seeks to invert a two decade rule. This is the antithesis of streamlining and seemingly bypasses the notice requirements of the Administrative Procedures Act (“APA”).<sup>13</sup>

Of course, the Commission’s rules provide proper opportunities to request changes to existing rules.<sup>14</sup> By making its substantive request in the instant proceeding, however, ORBCOMM left no time to demonstrate the risks of harmful interference to aircraft safety and navigation communications that would occur should Section 25.135(b) be relaxed and NVNG MSS transceivers be allowed aboard civil aircraft. Indeed, ORBCOMM itself fails to provide any engineering analysis to support its request for rule change. In light of the above, ORBCOMM’s request should be dismissed as contrary to the spirit of this proceeding.

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<sup>13</sup> 5 U.S.C. § 500 *et seq.* In rulemaking proceedings, the APA requires that an agency provide public notice of “either the terms or substance of the proposed rules or a description of the subjects and issues involved.” 5 U.S.C. § 553(b)(3) (2011). Although agencies are permitted some flexibility to adopt modified rules, in order for the notice requirement to be met, the rules adopted generally must be a “logical outgrowth” of the rule that was originally proposed. *See, e.g., Ne. Md. Waste Disposal Auth. v. EPA*, 358 F.3d 936, 951-52 (D.C. Cir. 2004); *International Union, United Mine Workers of America v. Mine Safety & Health Admin.*, 407 F.3d 1250, 1259 (D.C. Cir. 2005). In this instance, adoption of a substantive rule change, reversing settled protection for safety of life and property communications, is not a “logical outgrowth” of a proposal to streamline existing rules.

<sup>14</sup> *See* 47 C.F.R. § 1.401 (2011).

## **II. THE COMMISSION SHOULD NOT ALLOW THE OPERATION ABOARD CIVIL AIRCRAFT OF NVNG MSS DEVICES WHOSE TRANSCEIVERS ARE CAPABLE OF RADIATING IN THE 108 – 137 MHZ FREQUENCY BANDS**

The Commission should reject ORBCOMM’s requested revision of proposed new rule Section 25.285. NVNG MSS devices capable of emitting radiation in the 108 – 137 MHz band have never been permitted aboard civil aircraft. ORBCOMM’s supposed “refinements” of Section 25.285 actually threaten aircraft safety and navigation communications critical to ensuring safety of life and property.

### **A. ORBCOMM Fails to Offer a Compelling Justification for Revising New Section 25.285**

ORBCOMM does not suggest any change in circumstances that would justify revisiting the Commission’s rule. Rather, ORBCOMM argues that Section 25.135(b) is a “longstanding source of confusion and ambiguity with respect to the regulation of NVNG MSS MES operations on civil aircraft that should be corrected.”<sup>15</sup> There is no confusion or ambiguity. The rule is plain: NVNG MSS transceivers may not be operated aboard civil aircraft unless the devices are incapable of radiating in the 108 – 137 MHz frequency bands. If anything, ORBCOMM seeks to complicate the rule by introducing uncertainty with regard to when a transceiver may be operated aboard civil aircraft and by referencing vague interference protection criteria.

The reasons for adopting the rule in question also are clear and unambiguous. Section 25.135(b) was designed to prevent interference by NVNG MSS devices into the adjacent 108 – 137 MHz band for aeronautical safety communications and navigation, especially in light of the need to protect communications critical to safety of life and property. Indeed, ironically, the

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<sup>15</sup> ORBCOMM Comments at 9.

Commission's rule followed an extensive negotiated rulemaking to which ORBCOMM was an active party.<sup>16</sup>

ORBCOMM also attempts to argue that the Federal Aviation Administration ("FAA") "has developed appropriate protection criteria that guard against harmful interference in the subject frequency bands from out of bands emissions."<sup>17</sup> However, it offers no insight into what those criteria are, nor does ORBCOMM cite any particular FAA rules or standards with which its devices would comply. Its comments also lack any details of its NVNG MSS terminal's emissions or operation to confirm compatibility. As such, it is impossible to evaluate ORBCOMM's claim.

**B. Next Generation Aircraft Safety and Navigation Communications Systems Underscore the Continuing Need for the Commission's Prohibition on the Operation of NVNG MSS Devices Aboard Civil Aircraft**

Changes in aircraft operations since the adoption of Section 25.135(b) underscore the continuing need for the Commission's current rule. Datalink technology now is the standard in routine communications between flight crews and air traffic service providers. Additionally, flight-operations applications—such as graphical weather descriptions, electronic charts, and engine/aircraft health monitoring programs—commonly are used to enhance flight efficiency and safety. As such, there is a continuing need for interference protection for Aircraft Communications Addressing and Reporting System ("ACARS") operations that use the AOC frequencies.

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<sup>16</sup> See Report of the Below 1 GHz LEO Negotiated Rulemaking Committee, CC Docket No. 92-76 (Sep. 16, 1992); *NVNG MSS NPRM*, ¶ 4 ("Negotiated rulemaking involves the solicitation of input from affected parties, meeting as a Federal Advisory Committee, prior to the Commission's proposal of rules.").

<sup>17</sup> ORBCOMM Comments at 10.

Moreover, civil aviation now is transitioning to VHF Digital Link Mode 2 (“VDLM2”), a digital, air/ground and ground/ground datalink technology that combines digital AOC and ATC.<sup>18</sup> VDLM2 is the cornerstone of next-generation systems that are replacing voice communications for most ATC and AOC messages globally.<sup>19</sup> Both the U.S. and international aviation have invested hundreds of millions of dollars developing and implementing VDLM2 for worldwide operation.

Importantly, VDLM2 transceivers use 136.975 MHz as the common signaling channel—right at the band edge.<sup>20</sup> Its VHF transceivers and antennas are installed on the underside of an aircraft’s fuselage. These transceivers output a 25 watt signal through internal feeder cables in close proximity to the cargo compartments. Because full isolation between internal compartments is not always possible due to aircraft space and weight restrictions, installed systems must be coordinated in their placement to prevent harmful RF interactions. By allowing operation of uncoordinated NVNG MSS transceivers on civil aircraft, the physical separation between the transceivers and VDLM2 transceivers could be reduced to almost zero, potentially imposing operational restrictions on existing licensed aviation systems in the 108 – 137 MHz band.

The VDLM2 system also uses a Carrier Sense Multiple Access (“CSMA”) mechanism to prevent message collisions with multiple stations on the same channel. Before transmitting, each

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<sup>18</sup> See Aviation International News, “Mandates Loom for Fans of Datalink Communications” (Oct. 30, 2012), *available at* <http://www.ainonline.com/aviation-news/2012-10-29/mandates-loom-fans-data-link-communications> (last viewed Feb. 7, 2013).

<sup>19</sup> See, e.g., Aviation Week, “Avionics Providers Eye Euro CDPLC Wave” (Dec. 31, 2012), *available at* [http://www.aviationweek.com/Article.aspx?id=/article-xml/AW\\_12\\_31\\_2012\\_p0128-528007.xml](http://www.aviationweek.com/Article.aspx?id=/article-xml/AW_12_31_2012_p0128-528007.xml) (last viewed Feb. 7, 2013).

<sup>20</sup> International Civil Aviation Organization, *Aeronautical Telecommunications: International Standards and Recommended Practices*, 2nd Ed., Vol. 3, Annex 10 at Section 6.1.2.3 (2007).

radio/transceiver monitors the power received in the assigned frequency to confirm that no other transceiver is transmitting. If the received power in the band exceeds standardized thresholds, the VDLM2 transceiver believes the channel is in use by another VDLM2 system and will not transmit in order to prevent potential collisions and loss of information.<sup>21</sup> If ORBCOMM transceivers are allowed to operate on civil aircraft, the unwanted signals in the 108 – 137 MHz band could convince the VDLM2 CSMA system that the channel is busy, which would prevent it from transmitting communications vital to safe aircraft operations.

Tellingly, ORBCOMM concedes that it cannot “certify that any ORBCOMM MES is incapable of radiating in the 108 – 137 MHz band.”<sup>22</sup> It is critical, therefore, that the Commission adhere to its long-standing rule of not allowing NVNG devices capable of radiating into the 108 – 137 MHz band aboard aircraft—lest VDLM2 transceivers be subjected to the combined radio noise from several adjacent transceivers.

**C. ORBCOMM Fails to Provide Any Analysis that its Devices Could Work Aboard Civil Aircraft, Eliminating Any Claimed Public Interest Benefits from the Rule Change**

It is not clear that the proposed rule change would benefit ORBCOMM. ORBCOMM argues that new Section 25.285, as currently proposed, would continue to preclude ORBCOMM from “offering its valuable tracking service for goods that may be carried as cargo on civil aircraft.”<sup>23</sup> Yet, ASRI is not certain that ORBCOMM’s 137 – 138 MHz receivers would be able to operate successfully in close proximity to the avionics bays and antennas of civil aircraft and the VDLM2 radios operating on 136.975 MHz at 25 watts.<sup>24</sup> Indeed, ORBCOMM receivers in

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<sup>21</sup> *Id.* at Section 6.4.3.2.

<sup>22</sup> ORBCOMM Comments at 10.

<sup>23</sup> *Id.*

<sup>24</sup> 47 C.F.R. § 87.131 (2011).

the cargo bay might well experience front-end overload during transmissions from VDLM2 or other VHF aviation radios.<sup>25</sup>

Of course, Section 25.135(b) and proposed new Section 25.285 do not prevent ORBCOMM's devices on civil aircraft, only their operation during flight to protect the safety of the aircraft. ASRI welcomes other applications supporting the efficient tracking and distribution of commercial cargo, provided it meets the Commission's current and proposed regulations, and any required FAA certification.

Finally, ORBCOMM does not detail any control measures to ensure the security of aircraft while transporting actively tracked cargo. Although outside the Commission's remit, the proposed change to Section 25.285 could have far reaching consequences in the wider aviation industry.

### **III. CONCLUSION**

ORBCOMM's request to rewrite proposed new Section 25.285 is inconsistent with the spirit of this proceeding and should be dismissed. Further, ORBCOMM has provided no evidence that warrants reversal of the Commission's long-standing rule prohibiting the operation aboard civil aircraft of NVNG MSS devices capable of radiating in the 108 – 137 MHz band. Allowing such operation threatens critical ATC and AOC communications and jeopardizes the safety of life and property. Moreover, ORBCOMM has not shown that changes in the rule would even offer any public interest benefits, much less enough benefits to outweigh public

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<sup>25</sup> Ongoing ITU-R studies by both Boeing and Airbus also confirm with physical surveys an approximate 30 – 35 dB of attenuation of all RF signals between compartments and the aircraft exterior. *See* ITU-R WP5B PDR to Update ITU-R Report M.2197, Technical Characteristics of WAIC (2012). ASRI is uncertain that transmissions from or to the ORBCOMM devices could propagate through the aircraft exterior with sufficient power to operate successfully.

safety. For these reasons, the Commission should adopt proposed Section 25.285 as proposed in the *Notice* without ORBCOMM's suggested changes.

Respectfully submitted,

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