

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

In the matter of )  
)  
Establishment of an Interference Temperature ) ET Docket No. 03-237  
Metric to Quantify and Manage Interference )  
and to Expand Available Unlicensed )  
Operation in Certain Fixed, Mobile and )  
Satellite Frequency Bands )

**REPLY COMMENTS OF MOBILE SATELLITE VENTURES SUBSIDIARY LLC**

Mobile Satellite Ventures Subsidiary LLC (“MSV”) hereby files these Reply Comments in the above-captioned proceeding in which the Commission is considering permitting unlicensed devices to operate in certain licensed bands, pursuant to an “interference temperature” model for quantifying and managing interference.<sup>1</sup> MSV does not take any position on the specific proposal made by the Commission, but does respond to the comparisons by Inmarsat Ventures plc (“Inmarsat”) between this proceeding and the proceeding involving deployment by Mobile Satellite Service (“MSS”) licensees of an Ancillary Terrestrial Component (“ATC”).<sup>2</sup> As discussed herein, there are significant distinctions between the two proceedings which provide much greater assurance in the case of ATC that there will be no interference to incumbent operators.

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<sup>1</sup> *Establishment of an Interference Temperature Metric, Notice of Inquiry and Notice of Proposed Rulemaking*, ET Docket No. 03-237, FCC 03-289 (November 28, 2003) (“NPRM/NOI”).

<sup>2</sup> *See Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Bands, Report and Order*, 18 FCC Rcd 1962, FCC 03-15, IB Docket No. 01-185 (February 10, 2003) (“ATC Order”), amended by *Errata* (March 7, 2003). In July 2003, the Commission clarified the ATC application process. *See Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Bands, Order on Reconsideration*, IB Docket No. 01-185, FCC 03-162 (July 3, 2003) (“ATC Sua Sponte Order”).

## Background

*MSV.* MSV is the successor to Motient Services Inc. (formerly known as AMSC Subsidiary Corporation), the entity authorized by the Commission in 1989 to construct, launch, and operate a United States MSS system in the L-band.<sup>3</sup> MSV's licensed satellite (AMSC-1) was launched in 1995, and MSV began offering service in 1996. MSV is also the successor to TMI Communications and Company, Limited Partnership ("TMI") with respect to TMI's provision of L-band MSS in the United States and TMI's L-band mobile earth terminal authorizations granted by the Commission.<sup>4</sup> Today, MSV offers a full range of land, maritime, and aeronautical MSS, including voice and data, throughout the contiguous United States, Alaska, Hawaii, the Virgin Islands, and coastal areas up to 200 miles offshore.

*ATC Proceeding.* In February 2003, two years after MSV first proposed the concept to the Commission,<sup>5</sup> the Commission issued new rules permitting MSS licensees to supplement their satellite service with in-band terrestrial facilities, called ATC. *See ATC Order.* The Commission hailed the value of ATC, finding that the expanded authority would promote the efficient use of MSS spectrum (*ATC Order* ¶¶ 1, 21, 23), allow MSS providers to offer ubiquitous service by overcoming coverage gaps in urban areas (*id.* ¶ 24) and achieve economies of scale that will dramatically reduce the cost of MSS equipment and service (*id.* ¶¶ 24, 32), promote public safety and national security (*id.* ¶ 29), and increase competition (*id.* ¶ 23). By authorizing ATC, the Commission helped to maintain the financial viability of regional MSS

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<sup>3</sup> *Memorandum Opinion, Order and Authorization*, 4 FCC Rcd 6041 (1989); *Final Decision on Remand*, 7 FCC Rcd 266 (1992); *aff'd sub nom. Aeronautical Radio, Inc. v. FCC*, 983 F.2d 275 (D.C. Cir. 1993) ("Licensing Order").

<sup>4</sup> *See Motient Services Inc., TMI Communications and Company, LP, and Mobile Satellite Ventures Subsidiary LLC, Order and Authorization*, 16 FCC Rcd 20469 (Nov. 21, 2001).

<sup>5</sup> Application of Motient Services Inc. and Mobile Satellite Ventures Subsidiary LLC, File No. SAT-ASG-20010116-00010 (March 1, 2001).

systems, fostering the deployment of new, higher-power, multi-beam satellites and much lower power user equipment that causes less interference to other satellite systems and permits greater spectrum sharing.

The Commission's *ATC Order* imposed unique restrictions on ATC deployments by L-band licensees to protect other satellite systems from harmful interference. *ATC Order*, Appendix C2. One of these restrictions limits the extent an L-band MSS licensee can reuse terrestrially the L-band frequencies it shares co-channel with Inmarsat. This reuse limitation protects Inmarsat's satellites to a level of 1.4%  $\Delta T/T$ . *Id.* In its Petition for Reconsideration of this decision, MSV has demonstrated that the Commission can increase co-channel reuse up to a level of 6%  $\Delta T/T$  with no material effect on Inmarsat's operations.<sup>6</sup>

*Interference Temperature NPRM/NOI.* In November 2003, the Commission released the above-captioned *NPRM/NOI* on the use of an "interference temperature" model for quantifying and managing interference. To the extent that the "interference temperature" limit established for a given band is not reached, the Commission explains that there could be opportunities for other transmitters to operate in the band. *NPRM/NOI* ¶ 1. The Commission proposes to implement this "interference temperature" approach in two bands, the Fixed Service ("FS") and Fixed Satellite Service ("FSS") uplink band at 6525-6700 MHz and the FS, FSS, and Broadcast Auxiliary Service/Cable Television Relay Service ("BAS/CARS") band at 12.75-13.25 GHz. *Id.* ¶¶ 38-39. Using the interference temperature model, the Commission predicts that a large number of unlicensed devices can operate in these bands with EIRP levels as high as 1W to 4W. *Id.* ¶ 38.

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<sup>6</sup> See MSV, Petition for Partial Reconsideration and Clarification, IB Docket No. 01-185 (July 7, 2003) ("*MSV Recon Petition*").

Comments were filed in this proceeding on April 5, 2004. The Commission's proposals were opposed by a range of satellite companies,<sup>7</sup> terrestrial wireless carriers,<sup>8</sup> wireless equipment manufacturers,<sup>9</sup> unlicensed device manufacturers and users,<sup>10</sup> and broadcasters.<sup>11</sup> Commenters argued that the interference temperature approach should not be adopted because, among other things, it will be impossible to enforce due to the unlicensed nature of the transmitters,<sup>12</sup> will

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<sup>7</sup> Comments of The DIRECTV Group, Inc., ET Docket No. 03-237 (April 5, 2004) ("DIRECTV"); Comments of Globalstar LP, ICO Global Communications, Inmarsat Ventures Ltd., Intelsat Global Services Corp., Lockheed Martin Corp., Loral Space & Communications Ltd., New Skies Satellites, Northrop Grumman Space Technology, PanAmSat Corporation, and SES Americom Inc., ET Docket No. 03-237 (April 5, 2004) ("Satellite Companies"); Comments of Inmarsat Ventures Ltd., ET Docket No. 03-237 (April 5, 2004) ("Inmarsat"); Comments of Sirius Satellite Radio Inc., ET Docket No. 03-237 (April 5, 2004) ("Sirius").

<sup>8</sup> Comments of AT&T Wireless Services Inc., ET Docket No. 03-237 (April 5, 2004) ("AT&T Wireless"); Comments of Cellular Telecommunications & Internet Association, ET Docket No. 03-237 (April 5, 2004) ("CTIA"); Comments of Cingular Wireless LLC and BellSouth Corporation, ET Docket No. 03-237 (April 5, 2004) ("Cingular/BellSouth"); Comments of Verizon Wireless, ET Docket No. 03-237 (April 5, 2004); Comments of Nextel Communications, Inc., ET Docket No. 03-237 (April 5, 2004) ("Nextel"); Comments of Sprint Corporation, ET Docket No. 03-237 (April 5, 2004) ("Sprint"); Comments of The Wireless Communications Association International Inc., ET Docket No. 03-237 (April 5, 2004) ("WCA").

<sup>9</sup> Comments of Ericsson Inc., ET Docket No. 03-237 (April 5, 2004) ("Ericsson"); Comments of Lucent Technologies Inc., ET Docket No. 03-237 (April 5, 2004) ("Lucent"); Comments of Motorola, Inc., ET Docket No. 03-237 (April 5, 2004) ("Motorola"); Comments of Nokia Inc., ET Docket No. 03-237 (April 5, 2004) ("Nokia"); Comments of Qualcomm Incorporated, ET Docket No. 03-237 (April 5, 2004) ("Qualcomm").

<sup>10</sup> Comments of Proxim Corporation, ET Docket No. 03-237 (April 5, 2004) ("Proxim"); Comments of Wi-Fi Alliance, ET Docket No. 03-237 (April 5, 2004) ("Wi-Fi"); Comments of IEEE 802, ET Docket No. 03-237 (April 5, 2004) ("IEEE 802"); Comments of Shared Spectrum Company, ET Docket No. 03-237 (April 5, 2004) ("Shared Spectrum").

<sup>11</sup> Joint Comments of Association for Maximum Service Television Inc. and National Association of Broadcasters, ET Docket No. 03-237 (April 5, 2004) ("MSTV/NAB"); Comments of the Society of Broadcast Engineers, Inc., ET Docket No. 03-237 (April 5, 2004) ("SBE").

<sup>12</sup> See, e.g., DIRECTV at 11-12; Satellite Companies at 20-23; Inmarsat at 18-19; AT&T Wireless at 1-2, 10, 24-26; CTIA at 13-14; Cingular/BellSouth at 10-11, 30-31, 37; Verizon Wireless at 12; Sprint at 21; WCA at 14-15; Ericsson at 3-4; MSTV/NAB at 9-10; SBE at 2-5.

cause interference to licensed services,<sup>13</sup> and could be adopted in other countries thus leading to a greater aggregate impact than envisioned by the Commission.<sup>14</sup> One of these commenters, Inmarsat, argued that the issues being considered in this proceeding are similar to those being debated in the proceeding regarding deployment of ATC in the L-band. *Inmarsat* at 1.

### **Discussion**

The proposal to permit unlicensed devices to operate in FS, FSS, and BAS/CARS bands is significantly different than the concept of ancillary terrestrial operations by an MSS system operator. The most critical difference is that, in this proceeding, the Commission is proposing to allow the operation of unlicensed devices. Virtually all commenters in this proceeding have noted the extreme difficulty of enforcing rules against operators of unlicensed devices.<sup>15</sup> As Inmarsat notes, “[It] is virtually impossible to control the use of unlicensed devices once they enter the market.” *Inmarsat* at 18-19.<sup>16</sup> In the ATC proceeding, conversely, all the devices will be under the control of a licensee. The licensee will operate pursuant to specific rules that, in the case of the L-band where MSV operates, protect the incumbent satellite systems. No “renegade” users or equipment will be able to operate. If mobile terminals are operated on a licensee’s

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<sup>13</sup> See, e.g., DIRECTV at 3; Satellite Companies at 11-13; Inmarsat at 5-10; Sirius at 4; AT&T Wireless at 15-18; CTIA at 6; Cingular/BellSouth at 7; Verizon Wireless at 11-12; Sprint at 3-5; Qualcomm at 4.

<sup>14</sup> See, e.g., DIRECTV at 18-19; Satellite Companies at 28; Inmarsat at 4.

<sup>15</sup> See, e.g., DIRECTV at 11-12; Satellite Companies at 20-23; Inmarsat at 18-19; AT&T Wireless at 1-2, 10, 24-26; CTIA at 13-14; Cingular/BellSouth at 10-11, 30-31, 37; Verizon Wireless at 12; Sprint at 21; WCA at 14-15; Ericsson at 3-4; MSTV/NAB at 9-10; SBE at 2-5.

<sup>16</sup> See also AT&T Wireless at 25 (“Once unlicensed devices are sold, they become virtually untraceable – and practically immune to recall.”); Verizon Wireless at 12 (“Unlicensed devices cannot be controlled, and once they are permitted to operate there is no way to limit their proliferation. In this regard, the harm to CMRS systems would be permanent since there would be no ready or easy means for recalling the unlicensed devices once they are out in the market.”).

system in a manner that does not comply with the rules, the Commission will be able to readily enforce its rules against the licensee.

The Commission has proposed an interference threshold of 5%  $\Delta T/T$  based on general assumptions regarding the parameters of the satellites that would be impacted. A group of satellite companies, which includes Inmarsat, express concern that this 5%  $\Delta T/T$  interference threshold is not acceptable, but they do not submit any specific analysis to support this concern and it may be that FSS systems operate with less margin than is typical for an MSS system.<sup>17</sup> In the ATC proceeding, the Commission has an extensive record showing the negligible impact ATC will have on Inmarsat's available link margin. MSV has demonstrated that allowing co-channel L-band ATC mobile terminals to impact Inmarsat satellites to a level of 6%  $\Delta T/T$  will contribute a loss of only 0.17 dB in Inmarsat's available link margin. As the Satellite Companies note, "setting of interference temperature limits would have to be done on a band-by-band basis." *Satellite Companies* at 14. An analysis has been done for ATC in the L-band, and MSV has demonstrated that the appropriate threshold is 6%  $\Delta T/T$ .

Moreover, in this proceeding the Commission is proposing to allow U.S.-only unlicensed devices to impact co-channel satellites to a level of 5%  $\Delta T/T$ . Some commenters note that if multiple countries were to adopt a similar policy, the aggregate impact on co-channel satellites would be much greater than envisioned by the Commission.<sup>18</sup> In the ATC proceeding, conversely, the Commission has adopted a system-wide reuse limit which restricts the amount of times a licensee can reuse its licensed spectrum within its system footprint, which in MSV's case is essentially a North America-wide limit. Thus, unlike with the unlicensed device proposal contemplated in the *NPRM/NOI*, the Commission in the ATC proceeding has adopted a

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<sup>17</sup> *Satellite Companies* at 27-28; *Inmarsat* at 1.

<sup>18</sup> *See, e.g., DIRECTV* at 18-19; *Satellite Companies* at 28; *Inmarsat* at 4.

comprehensive interference threshold that will not increase even if ATC is authorized in other countries.

**Conclusion**

For the reasons stated above, it is appropriate to distinguish between the instant proceeding and that involving ATC.

Respectfully submitted,

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## TECHNICAL CERTIFICATION

I, Dr. Peter D. Karabinis, Vice President & Chief Technical Officer of Mobile Satellite Ventures Subsidiary LLC (“MSV”), certify under penalty of perjury that:

I am the technically qualified person with overall responsibility for preparation of the technical information contained in the foregoing “Reply Comments.” The information contained in the “Reply Comments” is true and correct to the best of my belief.

/s/Dr. Peter D. Karabinis

Dr. Peter D. Karabinis  
Vice President & Chief Technical Officer

May 5, 2004

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