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

In the matter of	)	
	)	
New ICO Satellite Services G.P.	)	
	)	
Application for blanket authority to operate	)	File No. SES-LIC-20071203-01646
Ancillary Terrestrial Component base stations	)	SES-AMD-20080118-00075
and dual-mode MSS-ATC mobile terminals	)	SES-AMD-20080219-00172
in the 2 GHz MSS bands	)	Call Sign: E070272

ORDER AND AUTHORIZATION

Adopted: January 15, 2009 **Released:** January 15, 2009

By the Chief, International Bureau

I. INTRODUCTION

1. In this order, we grant authority to New ICO Satellite Services G.P. ("ICO") to operate dual-mode mobile terminals that can be used to communicate either via ICO's geostationary-orbit Mobile Satellite Service ("MSS") satellite, ICO G1, or via ancillary terrestrial component ("ATC") base stations. The mobile terminals will use the 2010-2020 MHz frequency band for MSS uplinks and ATC terminal transmissions and the 2180-2190 MHz band for MSS downlinks and ATC base-station transmissions. We also authorize ATC base station operations.

II. BACKGROUND

A. ICO 2 GHz MSS Operation

2. On July 17, 2001, the Commission granted ICO's request for a reservation of 2 GHz MSS spectrum for radio links between mobile earth stations in the United States and a constellation of non-geostationary-orbit satellites to be launched under authority from the United Kingdom.[1] In May 2005, the International Bureau ("Bureau") granted a request to modify the spectrum reservation to specify a single U.K.-licensed geostationary-orbit satellite at the 91° W.L. orbital location, rather than a constellation of non-geostationary satellites.[2] In December 2005, the Commission further modified ICO's spectrum reservation to increase it to 10 megahertz in each

[1] The spectrum reservation was granted to ICO's predecessor-in-interest, ICO Services Limited; ICO Services Limited, *Order*, DA 01-1635, 16 FCC Rcd 13762 (IB/OET 2001). The 2 GHz MSS bands consist of the 2000-2020 MHz band, which is allocated for uplink transmission, and the 2180-2200 MHz band, which is allocated for downlink transmission. 47 C.F.R. § 2.106.

[2] *ICO Satellite Services G.P., Memorandum Opinion and Order*, DA 05-1504, 20 FCC Rcd 9797 (Int'l Bur. 2005)

direction of transmission.[3] In December 2006, the Commission modified ICO's spectrum reservation to reflect a change in assigned orbital location from 91° W.L. to 92.85° W.L. and to reserve Ka-band frequencies for feeder links and telemetry, tracking, and command (TT&C) signals.[4] On April 2, 2008, the Commission granted ICO's application for a license for a U.S. gateway station to use the reserved Ka-Band frequencies, and also granted authority for operation of four fixed earth stations to transmit S-band signals to the ICO satellite for calibration of spot beams.[5] ICO launched its MSS satellite on April 14, 2008, and notified the Commission that it had chosen the 2010-2020 MHz and 2180-2190 MHz bands as its Selected Assignments, pursuant to the Commission's policy that the first 2 GHz MSS system to launch its satellite into its authorized orbital location may choose its service-link spectrum blocks.[6]

B. ATC Policy and Authorization Procedures

3. In 2003, the Commission adopted rules for the licensing and operation of ATC systems. ATC systems consist of terrestrial base stations and mobile terminals licensed to the operator of an MSS system, re-using frequencies assigned for the system's MSS operations.[7] The Commission concluded that ATC operation would serve the public interest by facilitating increased network capacity, more efficient use of spectrum, extension of coverage for handset operation to places where MSS operators have previously been unable to offer reliable service,

[3] See *Use of Returned Spectrum in the 2 GHz Mobile Satellite Service Frequency Bands*, 20 FCC Rcd 19696 (2005) ("*Returned Spectrum Order*") (recon. pending).

[4] *ICO Satellite Services G.P., Memorandum Opinion and Order*, DA 06-2545, 21 FCC Rcd 14612 (Int'l Bur. 2006) (*ICO Modification Order*). "Feeder links" provide the communications link between fixed gateway earth stations and a satellite, and facilitate the relay of communications to and from mobile terminals. For example, a message sent by a mobile terminal is relayed first from the terminal to the satellite, and via a feeder link from the satellite to the fixed earth station. From the fixed earth station, the message can be relayed to terrestrial communications networks.

[5] See *Public Notice, Satellite Communications Services Information, Actions Taken*, Report No. SES-01023 (April 9, 2008). Also see *Public Notice, Policy Branch Information, Actions Taken*, Report No. SAT-00518 (April 25, 2008) (modification of spectrum reservation to revise certain technical specifications and waive cross-polarization isolation requirement).

[6] Letter to the FCC Secretary from Suzanne Hutchings Malloy, Senior Vice President, Regulatory Affairs, filed April 25, 2008 in File No. SAT-MOD-20070919-00129. See *Establishment of Policies and Service Rules for the Mobile Satellite Service in the 2 GHz Band, Report and Order*, 15 FCC Rcd 16127 (2000) at ¶16. MSS operators must relocate incumbent FS microwave licensees upon a determination, based on the standards of TIA-TSB86, that interference would be caused to the incumbent operations. See, e.g., Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use by the Mobile-Satellite Service, ET Docket No. 95-18, Second Report and Order and Second Memorandum Opinion and Order, 15 FCC Rcd 12315, 12341 ¶ 78 (2000) (MSS Second R&O and Second MO&O). MSS operators must also satisfy the cost-sharing obligations set forth in 47 C.F.R. § 101.82.

[7] *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; Review of the Spectrum Sharing Plan Among Non-Geostationary Satellite Orbit Mobile Satellite Service Systems in the 1.6/2.4 GHz Bands,* Report and Order and Notice of Proposed Rulemaking, IB Docket No. 01-185, FCC 03-15, 18 FCC Rcd 1962 (2003) ("*ATC Report and Order*"), modified by Order on Reconsideration, 18 FCC Rcd 13590 (2003), reconsidered in part in Mem. Opinion and Order and Second Order on Reconsideration, 20 FCC Rcd 4616 (2005) ("*ATC Second Reconsideration Order*"), *further reconsideration pending*.

improved emergency communications, enhanced competition, and economies of scale in handset manufacture that would be passed on to consumers.[8] An MSS operator may request blanket license authority for operation of ATC stations in the United States.[9]

4. In the *ATC Report and Order*, the Commission prescribed several "gating" requirements that MSS operators must meet in order obtain an ATC authorization. To ensure that ATC will be ancillary to the provision of MSS, the Commission adopted a general gating requirement that MSS operators must provide "substantial" satellite service to be eligible for ATC authorization.[10] The Commission established specific measures for meeting the substantial satellite service requirement, including the capability of providing continuous satellite service over all of the United States, Puerto Rico, and the U.S. Virgin Islands,[11] commercial availability of satellite service throughout the mandatory coverage area,[12] and maintaining a spare satellite.[13] The Commission also adopted a requirement that ATC service offerings must be integrated with the provider's MSS offerings.[14]

C. Blanket License Application

5. On December 3, 2007, ICO filed an application for a license for operation of ATC base stations and up to one million dual-mode MSS/ATC user terminals in the United States.[15] The application was placed on public notice.[16] TerreStar Networks Inc. filed comments, and Sprint Nextel Corporation ("Sprint Nextel") and Inmarsat Global Limited ("Inmarsat") filed petitions to deny.[17] ICO filed a consolidated opposition and response to the comments and petitions.[18] Sprint Nextel and Inmarsat filed replies to ICO's consolidated opposition,[19] and the Association for Maximum Service Television, Inc. and the National of Association of

[8] *ATC Report and Order* at ¶¶ 2, 20-45, and 210-11.

[9] *Id.* at ¶240. An individual, site-specific license must be obtained for any ATC base station that presents an aviation-hazard issue or for which an Environmental Assessment must be prepared. *Id.* at ¶239; *also see* 47 C.F.R. §§ 1.1307, 17.4, and 17.7.

[10] *ATC Report and Order* at ¶ 72.

[11] 47 C.F.R. § 25.149(b)(1).

[12] 47 C.F.R. § 25.149(b)(3).

[13] 47 C.F.R. § 25.149(b)(2).

[14] 47 C.F.R. § 25.149(b)(4).

[15] New ICO Satellite Services G.P., File No. SES-LIC-20071203-01646. In two subsequent filings ICO amended the application to correct errors in technical specifications. *See* File Nos. SES-AMD-20080118-00075 and SES-AMD-20080219-00172.

[16] *Public Notice, Satellite Communications Services, Satellite Radio Applications Accepted for Filing*, Report No. SES-01012 (March 5, 2008), corrected in Report No. SES-01014 (March 12, 2008). On May 22, 2008, the Satellite Division granted a request from ICO to designate the proceeding as permit-but-disclose under the Commission's ex parte rules.

[17] Comments of TerreStar Networks, Inc. filed April 4, 2008 ("TerreStar Comments"); Petition to Deny filed by Inmarsat Global Limited on April 4, 2008 ("Inmarsat Petition"); Petition to Deny of Sprint Nextel Corporation filed April 4, 2008 ("Sprint Nextel Petition").

[18] Consolidated Opposition and Response of New ICO Satellite Services G.P., filed April 17, 2008.

[19] Reply filed by Inmarsat Global Limited on April 24, 2008; Reply of Sprint Nextel Corporation, filed April 24, 2008 ("Sprint Nextel Reply").

Broadcasters filed joint comments in response to both the petitions to deny and the consolidated opposition.[20]

1. MSS/ATC System Description[21]

6. ICO plans to implement a MSS/ATC system that will provide multicast and interactive services to customers. The ICO MSS/ATC system will provide full national coverage and services to users in buildings, as well as outdoors. ICO has designed the MSS/ATC system with the capability to provide multiple Internet-protocol-enabled services, including text-messaging, email, multicast broadband data and/or video, public safety, and telematics.[22] ICO constructed its G1 satellite to support radio protocols that are widely used or in the process of being widely implemented. The system is designed to operate with a range of vehicular and portable user terminals, including handheld terminals similar in size to current cellular phones and small accessory units to be connected to the user's telephone, personal computer, or personal digital assistant.

7. Using a frequency-division duplex[23] technology, the system will be deployed using the forward mode of operation as defined in the Commission's ATC rules,[24] using the 2010-2020 MHz band for terminal-to-satellite and terminal-to-base-station transmissions ("uplink transmissions") and the 2180-2190 MHz band for satellite-to-terminal and base-station-to-terminal transmissions ("downlink transmissions"). Transmissions from satellite and terrestrial transmitters will be OFDM-based[25] and time-synchronized to enable receivers to combine and process both signals. The system will dynamically allocate full duplex channels for satellite interactive communications based on spectrum reuse and traffic requirements. While reserving capacity for MSS communications, terrestrial interactive services may utilize more capacity in the uplink and downlink bands where satellite services are unreliable or satellite

[20] MSTV and NAB Comments, filed April 24, 2008 ("MSTV-NAB Comments").

[21] The following system description is based upon Exhibit 1 of ICO's blanket license application.

[22] As defined in the application, "telematics" means provision of location technology and wireless data transmission to users in motor vehicles. Application Exhibit 1, n.11. ICO indicates that all of the services that it will offer initially will be IP-enabled services that are not connected to the public switched network. ICO indicates that such services therefore will not be offered on a common carrier basis, and that it will apply separately for a common carrier authorization to cover any common carrier services that it may offer in the future. Application Exhibit 1, n.12.

[23] Frequency division duplex means that a radio station's transmitter and receiver operate at different frequencies so the station can transmit and receive signals at the same time.

[24] *See* 47 C.F.R. § 25.149(a)(1). The system technology also will support time-division duplex operations, which separate uplink and downlink signals by placing them in different time-slots. However, the application states that the ATC system will employ only a forward mode of operation under the Commission's rules, *i.e.*, that the terminal-to-base-station transmissions will use the 2010-2020 MHz band and the base-station-to-terminal transmissions will use the 2180-2190 MHz band. See ¶15 *infra*. Our approval is thus limited to the frequency-division duplex system in the application.

[25] OFDM is an abbreviation for orthogonal frequency-division multiplexing, a spread spectrum multiplexing technique that distributes digital signal data over a large number of frequency sub-carriers at closely-spaced intervals. The data are divided into parallel data streams or channels, one for each sub-carrier.

capacity is limited.[26]

8. For its initial service rollout, ICO has contracted for deployment of dual-mode MSS/ATC terminals to support a service that ICO refers to as Mobile Interactive Media, or MIM. MIM will provide navigation, assistance, and multicast mobile video services nationwide to vehicle-based terminals. The initial MIM service will include 8 to 15 channels of interactive video, Global Positioning System ("GPS") navigation with integrated traffic and weather information, GPS-enhanced emergency communications, theft notification, and transmission of vehicle maintenance data. ICO maintains that, by thus placing advanced satellite communications capabilities in a mass-market service, it will greatly expand the reach of devices that can enhance public safety and enable users to communicate in disaster situations when traditional cellular networks are inaccessible.[27]

2. Compliance with ATC Gating Requirements

9. *MSS Coverage* ICO certifies that its G1 satellite can provide MSS everywhere in the United States, Puerto Rico, and the U.S. Virgin Islands one hundred percent of the time insofar as technically possible, as required by Section 25.149(b)(1)(i) of the Commission's rules.[28]

10. *MSS Commercial Availability* ICO certifies that its MSS services will be commercially available in accordance with the coverage requirements for 2 GHz MSS systems, as required by Section 25.149(b)(3) of the Commission's rules. ICO stipulates, however, that this certification is based upon an assumption that broadcast auxiliary service relocation issues will be resolved in a manner that will permit ICO to offer nationwide commercial MSS at the time when it plans to commence provision of MSS/ATC services. ICO states that if this assumption proves to be incorrect, it may request a waiver of the commercial-availability gating requirement at a later date.[29]

11. ICO also certifies that it will comply with the related requirement in Section 25.149(b)(6) that an ATC base station not use all available MSS frequencies when doing so would effectively preclude reception of MSS downlink signals in the same vicinity.[30]

12. *Spare Satellite* ICO certifies that within one year after commencing ATC operations it will have a spare MSS satellite on the ground and will launch the spare in the next commercially reasonable launch window in the event of an irreparable failure of the G1 satellite,

[26] ICO's system description includes a statement that "techniques defined in the DVB-SH, UMTS and other standards also provide mechanisms for utilizing spectrum outside the satellite bands to improve capacity, coverage or reliability of the system and the end-user services." Application Exhibit 1, Attachment A at 2-3. We do not construe this as a request for permission to transmit in spectrum outside ICO's assigned MSS service-link and feeder-link bands and do not grant authority herein for any such operation.

[27] Application Exhibit 1, Attachment A at 5.

[28] Application Exhibit 1 at 7.

[29] *Id.* at 8 and n.17.

[30] *Id.* at 10.

as required by Section 25.149(b)(2)(ii).[31]

13. *Integration* ICO certifies that it will meet the integration requirement in Section 25.149(b)(4) by providing ATC services through dual-mode terminal devices that will also be able to communicate via the ICO MSS satellite.[32]

14. *In-band Operation* ICO certifies that it will restrict ATC operations to its selected assignments in the 2010-2020 MHz and 2180-2190 MHz bands, as required by Section 25.149(b)(5)(i) of the Rules.[33]

3. Compliance with Other Requirements

15. ICO certifies to the following: its ATC system will operate in the forward-band mode; *i.e.*, the ATC mobile terminals will transmit in ICO's 2010-2020 MHz MSS uplink band and the ATC base stations will transmit in its 2180-2190 MHz MSS downlink band;[34] the ATC operations will not extend beyond ICO's MSS coverage area;[35] ICO ATC base stations will meet all applicable antenna and structural clearance requirements in Part 17 of the Commission's rules;[36] ICO ATC transmitters will meet the Commission's radiofrequency radiation exposure limits;[37] and the ATC system will meet the Commission's requirements for protection of the National Radio Astronomy Observatory, the Arecibo Observatory, the Table Mountain Radio Receiving Zone, FCC field offices, and certain government earth stations.[38] Finally, ICO certifies that its ATC system will operate in compliance with the band-specific technical limits in Section 25.252 of the Commission's rules, except insofar as it requests waivers of those restrictions.[39] The waiver requests are discussed below.

III. DISCUSSION

A. Spare Satellite

16. *Pleadings* As noted above, ICO declared in its application that it would meet the requirement to have a ground spare satellite on hand within one year after commencing ATC operation. ICO asserted that it would either exercise a contractual option to purchase an additional satellite from Space Systems/Loral, which built the ICO G1 satellite, or contract with another manufacturer for construction of a spare satellite.[40]

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[31] *Id.* at 7.
[32] *Id.* at 8.
[33] *Id.*
[34] *Id.* at 9. *See* 47 C.F.R. § 25.149(a)(1).
[35] *Id. See* 47 C.F.R. § 25.149(a)(3).
[36] *Id. See* 47 C.F.R. § 25.149(a)(4).
[37] Application Exhibit 2. *See* 47 C.F.R. §§ 1.1310, 2.1093, and 25.149(a)(5).
[38] Application Exhibit 1 at 10. *See* 47 C.F.R. §§ 1.924 and 25.203(e)-(g).
[39] *Id.*
[40] *Id.* at 7-8.

17. In its petition to deny, Inmarsat contended that ICO failed to provide a satisfactory prospective showing that it will meet the spare satellite requirement. Inmarsat pointed out that the Commission stated in the ATC rulemaking that it would grant an authorization that would permit the licensee to commence ATC operation based on a "satisfactory, prospective … substantial" and "detailed" showing that all the gating criteria will soon be met.[41] Inmarsat also noted that the Commission stated that MSS systems should "show substantial progress toward meeting the gating criteria before receiving ATC authority."[42] Inmarsat maintained that ICO's retention of an unexercised option for construction of a spare satellite and its assertion that it will have a ground spare at some unspecified future time did not constitute a detailed showing of substantial progress toward meeting the requirement to have a ground spare available within one year after commencing ATC operation.[43] In this regard, Inmarsat noted that ICO indicated in the application that it planned to start providing MSS and ATC services in January 2009; Inmarsat contended that it was infeasible to begin construction of a spare satellite in the interim and complete it within one year after that planned service inauguration, *i.e.*, by January 2010.[44] Inmarsat therefore contended that ICO's request for ATC authority should be denied.[45]

18. In opposition, ICO argued that there is no requirement to show that a contract for construction of a spare satellite has been executed, or that construction of the spare satellite is in progress, in order to present a satisfactory prospective showing of compliance. ICO asserted that the Bureau granted ATC licenses to Globalstar LLC ("Globalstar") and Mobile Satellite Ventures Subsidiary LLC ("MSV") despite the fact that neither company had a spare satellite under construction or had contracted for construction of a spare satellite.[46] ICO also stated, that if it could not arrange for a spare satellite to be completed within one year after its planned commencement of ATC operation, it would either postpone the commencement of ATC operation or request waiver of the one-year deadline.[47]

19. <u>*Discussion*</u> Although the demonstration in ICO's initial application, by itself, may not be adequate, we find that its demonstration as supplemented by a later filing is sufficient.

20. In the MSV decision that ICO cites, MSV sought a waiver of the requirement that geostationary systems have available a ground spare satellite within one year after commencing ATC operations. The Bureau declined to waive the spare satellite requirement based upon the information then available. The request involved a first-generation satellite nearing the end of its anticipated service life. The Bureau indicated, however, that it would entertain a request for

[41] Inmarsat Petition at 2, citing *ATC Second Reconsideration Order* at ¶¶ 89-90.
[42] *ATC Second Reconsideration Order* at ¶87.
[43] Inmarsat Petition at 4. *Accord,* Sprint Nextel Reply at 13.
[44] Inmarsat Reply at 2.
[45] *Id.* at 5.
[46] ICO Opposition at 3-4, citing *Globalstar LLC, Request for authority to implement an ancillary terrestrial component for the Globalstar Big LEO Mobile Satellite Service (MSS) system*, 21 FCC Rcd 398 ¶36 (IB 2006) ("*Globalstar ATC Order*"), and *Mobile Satellite Ventures Subsidiary LLC, Application for Minor Modification of Space Station License for AMSC-1*, 19 FCC Rcd 22144 ¶25 (IB 2004) ("*MSV ATC Order*").
[47] ICO Opposition at 4.

waiver of the one-year deadline for obtaining a ground spare, provided the request were supported with evidence that a spare satellite was under construction with a scheduled delivery date no later than six months after the milestone deadline for launching MSV's second-generation MSS satellite. The Bureau stressed that this approach would not require MSV to construct a spare replicating the first-generation satellite's obsolete design.[48] MSV subsequently submitted a revised proposal to provide satellite back-up capacity for its second generation satellite, and the Bureau granted a waiver of the ground-spare requirement on the basis of that showing.[49]

21. In the other case that ICO cites, Globalstar was subject to the spare-satellite rule for operators of non-geostationary MSS systems, which requires the operator to have an in-orbit spare at the time when ATC operations commence, rather than one year afterward.[50] The Bureau concluded that Globalstar, which admittedly had no in-orbit spare at the time but had eight ground spares that it was preparing to launch, had made a satisfactory showing of compliance by certifying that it would comply with the rule before commencing ATC service.[51] Because Globalstar was not requesting authority to commence ATC operation before complying with the in-orbit spare requirement, its application was granted. Here, however, ICO's statements left some uncertainty as to whether ICO might commence commercial ATC operation based solely upon a possible future waiver of the one-year deadline.[52]

22. In a statement filed on January 6, 2009, ICO clarifies that it will not commence ATC operations "until firm arrangements are in place to meet the spare satellite requirement."[53] This statement provides a satisfactory basis for concluding that ICO will not commence ATC operations until compliance with the one year deadline is substantially assured. The statement also removes any uncertainty as to whether ICO might commence ATC operations based primarily upon a hoped-for waiver grant, knowing that a firm and reasonable path to full

[48] *MSV ATC Order* at ¶25.

[49] *Mobile Satellite Ventures Subsidiary LLC, Application for Limited Waiver of On-Ground Spare Satellite Rule*, 22 FCC Rcd 20548 (2007). The firm arrangements consisted of an agreement with its Canadian affiliate for back-up capacity on its second-generation satellite, and related satellite manufacturing agreements that provided for delivery of the affiliate's satellite within six months following delivery of MSV's second-generation satellite.

[50] 47 C.F.R. § 25.149(b)(2)(i).

[51] *Globalstar ATC Order* at ¶36. In a subsequent order released in October 2008, the Commission determined that Globalstar did not meet the in-orbit spare requirement at that time because it did not have an in-orbit spare capable of operating in Globalstar's MSS downlink band. *Globalstar Licensee LLC, Application for Modification of License for Operation of Ancillary TerrestrialComponent Facilities*, FCC 08-254, 46 Comm. Reg. (P&F) 362 (2008), at ¶19. The Commission granted interim waivers of the in-orbit spare rule and other gating requirements, however, to allow Globalstar and an affiliated spectrum lessee to commence providing broadband ATC service in rural areas in conjunction with one-way MSS, pursuant to its policy of harmonizing its processes to maximize the benefit of USDA rural-development loans. The waivers were granted subject to conditions that, *inter alia*, require ATC operation to be suspended as of July 1, 2010 if at that time Globalstar still does not have an in-orbit spare capable of operating in the downlink band. Id. at ¶41.

[52] *See* ICO Opposition at 4.

[53] Letter dated Jan. 6, 2009 to Marlene H. Dortch, FCC Secretary, from Suzanne Hutchings Malloy, Senior V.P., Regulatory Affairs.

compliance with the one year deadline had not been secured.[54] Accordingly, we find ICO's demonstration of compliance with the spare satellite gating criterion adequate, subject to ICO providing written notification to the International Bureau at least 30 days prior to commencing ATC operation. The notification should describe in detail the nature of the firm arrangements that are in place.

B. Commercial Availability, BAS/CARS Relocation, and Reimbursement

23. *Background* The ATC gating requirements bar an MSS system from providing ATC service before its satellite services are commercially available "in accordance with . . . coverage requirements"[55] specified in the Commission's MSS coverage rule. The applicable coverage rule requires ICO to be capable of providing MSS on a continuous basis throughout the 50 states, Puerto Rico, and the U.S. Virgin Islands, if technically feasible.[56] ICO's ability to make MSS commercially available is constrained by rules pertaining to relocation of Broadcast Auxiliary Service ("BAS") stations and Cable Television Relay Service ("CARS") stations. Specifically, Section 74.690(e)(1)(i) of the Commission's rules prohibits 2 GHz MSS systems from commencing commercial operation until fixed BAS station operations in the 1990-2025 MHz frequency band anywhere in the United States and mobile BAS stations operations in that band in the top 30 Nielsen market areas have been relocated to the 2025-2110 MHz band.[57] Section 78.40(f)(2) bars 2 GHz MSS systems from commencing commercial operation until CARS stations operating in the 1990-2025 MHz band in the top 30 Nielsen markets have been relocated to the 2025-2110 MHz band.

24. The Commission adopted the BAS/CARS relocation requirements for 2 GHz MSS systems in the year 2000, after having allocated 2 GHz spectrum for MSS and before adopting rules governing the licensing and technical operation of 2 GHz MSS systems.[58] In 2003, the Commission reallocated 15 megahertz of spectrum, at 1990-2000 MHz and 2020-2025 MHz, from MSS to terrestrial wireless services. In so doing, the Commission stated that responsibility for relocation of BAS and CARS stations from the 1990-2025 MHz band would be shared between MSS systems and terrestrial wireless entrants.[59] In 2004, the Commission

[54] *See Globalstar ATC Order* at ¶36. ICO's statement also removes any uncertainty as to whether ICO might commence ATC operations based upon a hoped-for waiver grant, knowing that a reasonable path to compliance within one year had not been secured.

[55] 47 C.F.R. § 25.149(b)(3). *See ATC Report and Order* at ¶¶ 85-86.

[56] 47 C.F.R.§ 25.143(b)(2)(iv).

[57] As defined in 47 C.F.R. §§ 74.690 and 78.40, relocation entails modification and/or replacement of station equipment and testing and adjustment of the new or modified equipment as necessary for a seamless shift in operating frequencies from 1990-2025 MHz to 2025-2110 MHz.

[58] *Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use by the Mobile-Satellite Service, Second Report and Order and Second Memorandum Opinion and Order*, 15 FCC Rcd 12315 (2000) ("*2 GHz MSS Allocation Second Report and Order*").

[59] *Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems, Third Report and Order, Third Notice of Proposed Rulemaking, and Second Memorandum Opinion and*

decided to assign five megahertz of the reallocated spectrum, at 1990-1995 MHz, together with a paired band at 1910-1915 MHz, to Sprint Nextel (then known as Nextel), subject to a requirement that Sprint Nextel relocate all BAS and CARS stations from the 1990-2025 MHz band by a specified deadline.[60] While imposing this obligation on Sprint Nextel, however, the Commission did not remove the obligation of the MSS entrants to relocate the BAS licensees and retained the rules that bar 2 GHz MSS systems from commencing operation prior to nationwide relocation of fixed BAS stations and relocation of all BAS and CARS stations in the top thirty Nielsen markets.[61] The Commission said that Sprint Nextel could seek *pro rata* reimbursement from 2 GHz MSS systems. In general, a new entrant that incurs expenses for relocation of incumbents from spectrum that the new entrant will not occupy is entitled to reimbursement from subsequent entrants in the vacated spectrum.[62]

25. Sprint Nextel subsequently requested an extension of time for completing the relocation process due to unanticipated difficulties it had encountered. Under the extended schedule Sprint Nextel proposed, relocation of fixed and mobile BAS/CARS stations in the top 30 Nielsen markets would be completed in August 2009, and relocation of fixed BAS stations nationwide would be completed by September 7, 2009.[63] In comments on Sprint Nextel's request, ICO contended that any extension of Sprint Nextel's relocation deadline should be granted in conjunction with a waiver of Sections 74.690(e)(1)(i) and 78.40(f)(2) to allow ICO to commence commercial MSS and ATC operation in January 2009, whether or not relocation of BAS and CARS stations in the top 30 markets and/or nationwide relocation of fixed BAS stations were complete by then.[64]

Order, 18 FCC Rcd 2223 (2003) at ¶37.

[60] *Improving Public Safety Communications in the 800 MHz Band, Consolidating the 800 and 900 MHz Industrial/Land Transportation and Business Pool Channels, Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services including Third Generation Wireless Systems, Petition for Rulemaking of the Wireless Information Networks Forum Concerning the Unlicensed Personal Communications Service, Petition for Rulemaking of UT Starcom Inc. Concerning the Unlicensed Personal Communications Service, Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 1.2 GHz for Use by the Mobile Satellite Service, Report and Order, Fifth Report and Order, Fourth Memorandum Opinion and Order, and Order*, 19 FCC Rcd 14969 (2004) ("*800 MHz Report and Order*"). The conditional grant of 1.9 GHz spectrum was to facilitate Sprint Nextel's relinquishment of spectrum in the 800 MHz band, in order to achieve more efficient use of that band for public safety communications. *Id.* at ¶5.

[61] *Id.* at ¶250.

[62] *Id.* at ¶261. Likewise, an MSS system that took the initiative to effect BAS/CARS relocation to some extent instead of waiting for Sprint Nextel to complete nationwide band-clearing by itself would be entitled to pro rata compensation from Sprint Nextel. *Id.* at ¶262.

[63] *Improving Public Safety Communications in the 800 MHz Band, Consolidating the 800 and 900 MHz Industrial/Land Transportation and Business Pool Channels, Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems, Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 1.2 GHz for Use by the Mobile Satellite Service, Memorandum Opinion and Order and Further Notice of Proposed Rulemaking,*, FCC 08-73, 44 Communications Reg. (P&F) 535 (2008) ("*BAS Relocation Extension and Further NPRM*") at ¶¶ 24-25.

[64] *Id.* at ¶28.

26. In a decision released in March 2008, the Commission granted Sprint Nextel's extension request in part, postponing the relocation deadline to March 5, 2009, and expressly reserved the option of granting a further extension of time.[65] The Commission also proposed to amend the rules to allow 2 GHz MSS systems to offer commercial MSS and ATC service nationwide before the relocation of BAS and CARS in the top 30 markets and relocation of fixed BAS links in all markets are completed.[66] In the alternative, the Commission invited public comment on the possibility of amending the rules to establish a market-by-market policy that would allow a 2 GHz MSS licensee to provide both MSS and ATC services in any market where BAS/CARS relocation is complete.[67]

27. *Pleadings* In joint comments, the Association for Maximum Service Television, Inc. ("MSTV") and the National Association of Broadcasters ("NAB") assert that ICO has made no showing that it can operate ATC facilities without interfering with operation of BAS stations in the 1990-2025 MHz band. Therefore, they urge the Commission to deny authority for ICO to commence ATC operation before BAS/CARS relocation from that band has been successfully completed.[68]

28. In its petition to deny, Sprint Nextel notes that Section 25.149(b) precludes granting any ATC operating authority to an MSS operator unless the operator demonstrates that it "can or will" comply with, *inter alia*, the MSS commercial availability requirement.[69] Sprint Nextel also contends that ICO is legally barred from providing MSS unless and until it reimburses Sprint Nextel for a pro rata share of the expense that Sprint Nextel has incurred in relocating BAS and CARS stations. No such reimbursement is imminent, according to Sprint Nextel, as ICO has rebuffed an invitation to discuss reimbursement with Sprint Nextel and has not agreed that it has a reimbursement obligation.[70] Therefore, Sprint Nextel contends that ICO's request for ATC operating authority should be denied because ICO cannot legitimately certify that it meets the MSS commercial availability requirement throughout its mandatory geographic coverage area.[71]

29. Sprint Nextel asserts several grounds for the premise that ICO is legally barred from providing MSS until it reimburses Sprint Nextel for a pro rata share of BAS/CARS relocation expense. First, Sprint Nextel notes that, in the 2 GHz MSS allocation rulemaking, the Commission held that any MSS licensee commencing operation in a portion of the 2 GHz MSS band after a previous entrant has subsidized relocation of BAS/CARS stations from the entire

[65] *Id.* at ¶29.
[66] *Id.* at ¶¶ 49 and 52.
[67] *Id.* at ¶56. The Commission proposed to effect these rule changes on or before ICO's planned January 1, 2009 startup date for commencing commercial operations. *See id.* at ¶52.
[68] Comments of the Association for Maximum Service Television, Inc. and the National Association of Broadcasters filed April 24, 2008, at 3.
[69] Sprint Nextel Petition at 2.
[70] *Id.* at 4, indicating that in reply to an interim billing estimate from Sprint Nextel, ICO stated in a letter dated Feb. 12, 2008 that it was "impossible to know" when, if ever, MSS licensees would be obligated to reimburse Sprint Nextel for BAS/CARS relocation expense.
[71] *Id.*

band must pay the prior entrant a proportional share of the relocation expense.[72] Second, Sprint Nextel maintains that the Commission reaffirmed this reimbursement requirement when it imposed a concurrent band-clearing obligation on Sprint Nextel.[73] Finally, Sprint Nextel points out that the Commission, in the *2 GHz MSS Allocation Second Report and Order*, stated that 2 GHz MSS operating authority would be granted subject to a condition requiring compliance with the requirement to compensate a prior entrant for BAS/CARS relocation expense on a *pro rata* basis,[74] and that ICO's 2 GHz MSS spectrum reservation was granted subject to a stipulation that "[ICO's system] must be implemented consistent with the plans for incumbent relocation adopted in the *2 GHz Allocation & Relocation Proceeding*."[75]

30. In response, ICO maintains that it need not make MSS commercially available nationwide in order to satisfy the commercial-availability requirement, but instead can meet the requirement by commencing commercial MSS operation somewhere in the United States via a satellite that is technically capable of providing nationwide coverage.[76] Thus, according to ICO, it has prospectively demonstrated compliance by stating that it expects to commence providing MSS in January 2009 via a satellite system that is technically capable of providing nationwide coverage.[77] As for Sprint Nextel's argument regarding reimbursement, ICO asserts that the argument is irrelevant to disposition of its blanket license application and adds that ICO has rebutted similar contentions in other proceedings and sees no need to repeat itself here.[78]

31. In the alternative, ICO requests waiver of the commercial availability requirement, if necessary to allow it to commence ATC operation at the same time and in the same markets it commences providing MSS, even if it is unable to provide MSS nationwide at that point. According to ICO, the purpose of the commercial-availability rule is to prevent operators from commencing ATC operation while delaying MSS implementation until later. ICO contends that granting its waiver request would not disserve this objective because it has already launched its satellite and has successfully completed operational testing of its MSS system.[79]

32. <u>*Discussion*</u> We do not agree with ICO's interpretation of Section 25.149(b)(3).

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[72] Sprint Nextel Reply at 7 n.19, citing *2 GHz MSS Allocation Second Report and Order* at ¶¶ 69 and 71. Also see *id.* at ¶¶ 66-67.

[73] Sprint Nextel Petition at 3, citing *BAS Relocation Extension and Further NPRM* at ¶39 and *800 MHz Report and Order* at ¶250. Also see *id.* at ¶261.

[74] Sprint Nextel Reply at 7, citing *2 GHz MSS Allocation Second Report and Order* at ¶¶ 69 and 71.

[75] Sprint Nextel Reply at 7, citing *ICO Services Limited, Letter of Intent to Provide Mobile-Satellite Service in the 2 GHz Bands, Order*, 16 FCC Rcd 13762 (IB and OET 2001) at n.31.

[76] ICO Consolidated Opposition at 5.

[77] *Id.*

[78] *Id.* at 4, n.16. We assume that ICO refers to the arguments concerning reimbursement that it presented in reply comments filed on May 30, 2008 in the consolidated rulemaking proceeding in ET Dockets 95-18 and 00-258 and WT Docket 02-55.

[79] ICO Consolidated Opposition at 6. *See* Public Notice, Policy Branch Information, Actions Taken, Report No. SAT-00526 (May 10, 2008), finding that ICO met its milestone deadlines for satellite launch and commencing MSS (test) operation.

The rule provision does not merely require MSS to be made commercially available *somewhere* in the United States before ATC operation may commence. Rather, the provision requires that MSS must be commercially available "in accordance with the coverage requirements" before the MSS operator may offer ATC services. The coverage rule requires ICO to be capable of providing service at any time throughout the United States, Puerto Rico, and the U.S. Virgin Islands, "if technically feasible." The technical feasibility proviso has no bearing on this case, as ICO has not alleged that a technical problem will prevent its G1 satellite from providing fulltime service in any portion of the coverage area specified in Section 25.143(b)(2)(iv). Furthermore, even if ICO were correct in its interpretation of Section 25.143(b)(2), it would still be barred by the terms of Sections 74.690(e)(1)(i) and 78.40(f)(2) from commencing ATC operation before the rebanding requirements specified therein have been met.

33. Granting ICO's alternative request for waiver of the commercial-availability requirement (and likewise waiving Sections 74.690(e)(1)(i) and 78.40(f)(2)) to allow it to commence providing ATC before completing a nationwide rollout of MSS would prejudge issues the Commission is considering in the Further Notice of Proposed Rulemaking proposing to amend the rules to allow 2 GHz MSS systems to commence providing both MSS and ATC in markets where BAS/CARS relocation has occurred.[80] Consequently, we are referring this matter for resolution in connection with the ongoing rulemaking and conditioning ICO's authority to operate ATC upon full compliance with the MSS commercial availability requirement, or, alternatively, upon separate Commission action in the rulemaking forum.

34. With respect to Sprint Nextel's objections related to relocation reimbursement, Sprint, ICO, and TerreStar have raised these matters in other Commission proceedings, including several docketed proceedings.[81] To avoid prejudicing the outcome of this dispute, we are issuing ICO's ATC authority subject to the outcome of this dispute, the resolution of which will occur in another proceeding.

C. Requests for Waiver of Technical Rules

1. General Considerations

35. ICO contends that, due to intervening changes of circumstance, many of the technical restrictions that the Commission established for ATC operation in the 2 GHz MSS bands are no longer necessary to prevent harmful interference.[82] In particular, ICO notes that,

[80] *See BAS Relocation Extension and Further NPRM, supra.*

[81] *See, e.g.*, Sprint Nextel Corporation, Comments, WT Docket No. 02-55 (filed Apr. 30, 2008) ; Letter from Lawrence R. Krevor, Vice President, Sprint Nextel Corporation, to Marlene H. Dortch, Esq., Secretary, FCC, WT Docket No. 02-55 (June 25, 2008); Letter from Lawrence R. Krevor, Vice President - Spectrum, Sprint Nextel Corporation, to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 02-55 (filed October 8, 2008) at 13, citing *Sprint Nextel Corp. v. New ICO Satellite Services G.P., et al.*, No. 1:08cv651 (E.D. Va. Aug. 29, 2008) (order referring claims to FCC under the doctrine of primary jurisdiction). *See* reply comments of New ICO Satellite Services G.P. and TerreStar Networks Inc. filed on May 30, 2008 in ET Docket 95-18, ET Docket 00-258, and WT Docket 02-55.

[82] Application Exhibit 1 at 10-13.

when the Commission adopted the ATC rules, there were eight authorized 2 GHz MSS systems, whereas only two systems, ICO's and that of TerreStar Networks, Inc., ("TerreStar"), now remain. Furthermore, ICO asserts that the technical rules pertaining to ATC base station operation in Section 25.252(a) were designed to protect against overload of highly sensitive receivers that Boeing planned to deploy as components of a 2 GHz Aeronautical Mobile Satellite (Route) Service ("AMS(R)S") system, which was never implemented.[83] ICO asserts that neither itself nor TerreStar plan to provide AMS(R)S.[84] ICO also asserts that, if 2 GHz AMS(R)S were to be initiated in the future, it would coordinate with the AMS(R)S licensee to ensure that the AMS(R)S communications would be protected from harmful interference. ICO recommends, however, that the scope of any AMS(R)S operation in the 2 GHz band and the necessary technical requirements for such operation, including receiver overload specifications, be determined through rulemaking.[85]

36. ICO therefore requests waiver of technical requirements that were devised to protect the now-defunct Boeing AMS(R)S system. ICO proposes instead to conform to limits that are consistent with requirements for operation of terrestrial broadband Personal Communications Service ("PCS") and Advanced Wireless Service ("AWS")[86] transmitters in nearby frequency bands. ICO maintains that allowing it to attain technical parity with comparable terrestrial services will enable it to increase the efficiency of its spectrum use, improve ATC coverage, provide additional advanced communications, and strengthen competition, without causing harmful interference. ICO notes that the Commission has concluded that harmonizing technical rules for PCS and AWS promotes efficient utilization of newly available spectrum by allowing carriers to make use of existing infrastructure, technologies, and expertise[87] and suggests that harmonizing 2 GHz ATC requirements with the

[83] ICO notes that Boeing surrendered its 2 GHz MSS authorization in 2005. *See Public Notice, Commission Invites Comments Concerning Use of Portions of Returned 2 GHz Mobile Satellite Service Frequencies*, 20 FCC Rcd 12231 (IB 2005) (announcing the surrender of several 2 GHz MSS licenses, including Boeing's).

[84] *See* Application Exhibit 1 at 12. *See also* Waiver Request of TerreStar Networks, Inc., filed July 23, 2007 in IBFS File No. SES-AMD-20070723-00978, in which TerreStar declares that "neither TerreStar nor ICO has current plans to offer 2 GHz MSS
AMS(R)S services."

[85] *Id.* at 13.

[86] AWS refers to terrestrial wireless systems with sufficient bandwidth for both voice service and data services such as internet web-browsing and full-motion video, operating in certain designated frequency bands. The Commission adopted rules for AWS operation in the paired 1710-1755 MHz and 2110-2155 MHz "AWS-1" bands in *Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands, Report and Order*, 18 FCC Rcd 25162 (2003) ("*AWS-1 Report and Order*"), modified by *Order on Reconsideration*, 20 FCC Rcd 14058 (2005), and is considering proposed rules for AWS operation in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz "AWS-2" bands and the 2155-2180 MHz "AWS-3" band in pending rulemakings. *See Service Rules for Advanced Wireless Services in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz and 2175-2180 MHz Bands, Notice of Proposed Rule Making*, WT Docket No. 04-356, 19 FCC Rcd 19263 (2004) ("*AWS-2 NPRM*"); *Service Rules for Advanced Wireless Services in the 2155-2175 MHz Band, Notice of Proposed Rule Making*, WT Docket No. 07-195, 22 FCC Rcd 17035 (2007) ("*AWS-3 NPRM*"); and *Service Rules for Advanced Wireless Services in the 2155-2175 MHz Band, Further Notice of Proposed Rule Making*, WT Docket Nos. 07-195 and 04-356, 23 FCC Rcd 9859 (2008) ("*AWS-3 Further NPRM*").

[87] Application Exhibit 1 at 15, citing *AWS-1 Report and Order* at ¶¶ 20-21.

technical rules for PCS and AWS would have similar beneficial results.

37. In its comments filed in this proceeding, TerreStar Networks Inc. ("TerreStar") supports ICO's application and the incorporated waiver requests.[88] TerreStar agrees with ICO that many of the Commission's relevant technical limits were devised to protect sensitive Boeing AMS(R)S aircraft receivers and are overly strict, now that Boeing has surrendered its 2 GHz MSS license. Furthermore, TerreStar contends that there would be no need for such strict limits in the event 2 GHz AMS(R)S were to be provided at some future time, because the typical performance characteristics of current-generation receivers are superior to the assumed specifications of the Boeing aircraft receivers that the Commission sought to protect when it adopted the rules in question.[89]

38. In its petition to deny, however, Sprint Nextel contends that each of the technical waivers that ICO is requesting would increase the likelihood of harmful interference with PCS and/or AWS communications, and that waiving so many technical rules in an adjudicatory decision would improperly circumvent the Administrative Procedure Act's notice-and-comment requirements.[90]

39. We are not persuaded by Sprint Nextel's procedural argument that ICO's requests for technical waivers are too radical and/or too numerous to be considered on the merits in an adjudicatory decision. Section 1.3 of the Commission's rules[91] states that the Commission may waive its rules for "good cause shown," and it is well-established that waiver of a Commission rule is appropriate when granting such relief would not undermine the rule's policy objective[92] and would better serve the public interest than requiring strict compliance.[93] We will evaluate each of ICO's technical waiver requests in accordance with these settled principles.

40. The technical rules at issue here were adopted for the purpose of preventing harmful interference. As a general matter, we conclude that, insofar as the requested waivers would not result in harmful interference and would comport with the Commission's established requirements for comparable terrestrial services, granting the waivers will serve the public interest by enabling ICO to operate more efficiently and provide more valuable service. Below, we address each of the specific technical waiver requests.

2. Waiver Requests Pertaining to Base Station Transmission (2180-2190 MHz)

41. *Out-of-Band Emission ("OOBE") Limit* ICO seeks waiver of Section 25.252(a)(1) of the Commission's rules,[94] which requires 2 GHz ATC base stations to limit the

[88] TerreStar initially reserved judgment with respect to some of ICO's waiver requests but informed the Commission in a later filing that it had resolved all of its concerns in discussions with ICO. Letter to Marlene H. Dortch, FCC Secretary, from Joseph A. Godles, Counsel to TerreStar Networks Inc., filed April 24, 2008.

[89] TerreStar Comments at 3.

[90] Sprint Nextel Petition at 6-7 and Reply at 8-10.

[91] 47 C.F.R. §1.3.

[92] *Northeast Cellular Tel. Co. v. FCC*, 897 F.2d 1166 (D.C. Cir. 1990).

[93] *WAIT Radio v. FCC*, 418 F.2d 1153, 1157 (D.C. Cir. 1969).

[94] 47 C.F.R. § 25.252(a)(1).

equivalent isotropically radiated power ("EIRP") spectral density of emissions at the edges of the operator's authorized base-station transmission band to -100.6 dBW/4 kHz or less. ICO requests permission to operate, instead, within a more lenient requirement that base-station transmitter power (P), in watts, be attenuated by a factor of (43 + 10*log(P) dB) at the band edges.[95]

42. According to ICO, compliance with the -100.6 dBW/4 kHz limit would severely impair the capacity and spectral efficiency of its ATC network by precluding operation with more than one five-megahertz carrier. ICO contends that substituting a (43 + 10*log(P) dB) attenuation requirement would harmonize the band-edge emission restriction with analogous restrictions for similar terrestrial services.[96] Specifically, ICO notes that the Commission has prescribed a (43 + 10*log(P) dB) OOBE attenuation rule for broadband PCS stations[97] and also for base stations transmitting in the 2110-2155 MHz AWS-1 band[98] and tentatively concluded in the *AWS-2 NPRM* that imposing the same attenuation requirement on base-station transmission in the 2175-2180 MHz AWS J-Block band would prevent interference with reception of ATC base-station transmissions in the adjacent 2180-2190 MHz band.[99] By the same token, ICO contends that operation of its ATC base stations in the 2180-2190 MHz band subject to a reciprocal (43 + 10*log(P) dB) band-edge attenuation would be mutually compatible with operation of J-Block base stations in compliance with the same limit.[100] ICO also contends, *a fortiori*, that operation of its base stations subject to the proposed (43 + 10*log(P) dB) attenuation would not interfere with reception of Broadband Radio Service transmissions in the 2150-2162 MHz band, in view of the fact that there are 18 megahertz of separation between that band and ICO's base-station transmission band at 2180-2190 MHz.[101]

43. As ICO points out, the -100.6 dBW/4kHz band-edge emission limit was specifically tailored to the protection requirements for the now-defunct Boeing AMS(R)S system[102] We also note that TerreStar – which is authorized to use the adjacent 2190-2200 MHz band for MSS downlink transmission and has applied for authority to use that band for ATC base-station transmission, as well[103] – has no objection to ICO's technical proposals for ATC

[95] Application Exhibit 1, Attachment B at 1.
[96] *Id.*
[97] *See* 47 C.F.R. § 24.238(a).
[98] *See* 47 C.F.R. § 27.53(g).
[99] *See AWS-2 NPRM* at ¶105.
[100] Application Exhibit 1, Attachment B at 2. In comments on the *ASW-3 NPRM*, ICO likewise advocated an OOBE attenuation of (43 + 10*log(P) dB) for AWS-3 base stations in the 2155-2175 MHz band. *See* ICO Comments to *AWS-3 NPRM* at 4.
[101] *Id.* at 3-4. ICO notes in this regard that the Commission concluded in the *AWS-2 NPRM* that AWS base-station operation subject to a (43 + 10*log(P) dB) OOBE attenuation would not interfere with reception of Multipoint Distribution Service transmissions in a band separated by 13 megahertz from the AWS operating band. *See AWS-2 NPRM* at ¶103.
Pending relocation of all Fixed Service stations from the 2160-2200 MHz band, ICO proposes to protect those remaining from interference from its ATC base-station operations through coordination pursuant to the procedures outlined in Section 24.237 of the Commission's rules. Application Exhibit 1, Attachment B at 3.
[102] *See ATC Report and Order* at ¶112 and Appendix C1, § 2.2.2.
[103] IBFS File No. SES-AMD-20070907-01253.

operation.

44. Under the circumstances, we agree with ICO that it would serve the public interest to align the limit on OOBE from ATC base stations transmitting in the 2180-2190 MHz band with the Commission's OOBE limit for terrestrial wireless base stations transmitting in the adjacent 2155-2180 MHz AWS band. The Commission has proposed to adopt a (43 + 10*log(P) dB) OOBE attenuation requirement for AWS base stations transmitting in the 2155-2180 MHz band,[104] and none of the comments filed in the AWS-3 proceeding take issue with that proposal. Accordingly, we will grant a limited waiver of Section 25.252(a)(1) so as to require ICO to attenuate its ATC base station emission levels below the transmitter power by only (43 + 10*log(P) dB) in frequencies outside the 2180-2190 MHz band.[105] This waiver is subject to possible revisions in light of decisions the Commission may adopt in pending proceedings on adjacent-band AWS services.[106]

45. *Radiated Power* Section 25.252(a)(2) of the Commission's rules[107] states that a license application for 2 GHz ATC base stations must demonstrate that they will generate no more than 27 dBW (approximately 501 watts) EIRP within a bandwidth of 1.23 megahertz. ICO requests waiver of this rule to allow its ATC base stations to generate up to 32 dBW (approximately 1585 watts) EIRP per megahertz of bandwidth,[108] which is approximately equivalent to an EIRP of 32.9 dBW (1950 watts) in a 1.23 megahertz bandwidth. ICO maintains that granting this waiver request would enable it to provide ATC services with fewer base stations in a given area and thus would facilitate more efficient and rapid deployment of new services to the public. Further, ICO asserts that allowing its base stations to generate EIRP spectral density up to 32 dBW/MHz would enable it to eliminate gaps in coverage and provide better coverage inside buildings and in urban areas.[109]

46. According to ICO, operation of its base stations at the proposed 32 dBW/MHz power spectral density ("PSD") limit would not result in harmful interference to radio services in adjacent bands because compliance with the (43 + 10*log(P) dB) OOBE attenuation that ICO is also proposing would suffice to prevent such interference. ICO asserts that an AWS terminal receiving a cdma2000 carrier in the adjacent 2175-2180 MHz J-Block band will have to tolerate out-of-channel interference from up to three other J-Block cdma2000 carriers. According to ICO's calculations, the noise increase that an ICO digital-video ATC base-station transmission with a PSD of 32 dBW/MHz would cause in a cdma2000 J-Block terminal receiver would be 4.6 dB less than the noise that could be caused by interference from three other cdma2000 carriers at peak power, assuming that the ATC and J-Block base stations all operate with an OOBE

[104] *AWS-3 NPRM* at ¶59; *AWS-3 Further NPRM* at ¶3.

[105] This waiver does not apply to operation of any base station located within 133 kilometers of a U.S. government earth station receiving in the 2200-2290 MHz band. *See* ¶51, *infra.*

[106] *See* note 86 *supra*.

[107] 47 C.F.R. § 25.252(a)(2).

[108] Application Exhibit 1 at 20-22 and Attachment B. ICO asserts that this limit, like the band-edge emission limit in Section 25.252(a)(1), was designed to prevent receiver saturation in Boeing 2 GHz MSS aircraft terminals. Application Exhibit 1 at 20.

[109] Application Exhibit 1, Attachment C at 2.

attenuation of (43 + 10*log(P) dB).[110] Hence, ICO maintains that the proposed substitution of a 32 dBW/MHz limit would not cause interference above currently tolerated levels.

47. When it adopted the 27 dBW/1.23 MHz limit in Section 25.252(a)(2), the Commission's principal objective was to prevent overload interference in aircraft earth-stations, particularly Boeing aircraft earth-stations, receiving signals in an adjacent block of the 2 GHz MSS downlink band.[111] In view of Boeing's decision not to proceed with its plans for a 2 GHz MSS system and TerreStar's express acquiescence to ICO's waiver requests, we find that it would serve the public interest to allow ICO's ATC base stations to operate within a radiated power limit consistent with the Commission's base-station power limits for comparable terrestrial wireless systems. ICO's proposal to operate within a PSD limit of 32 dBW/MHz is consistent with the Commission's established limit of 1640 watts (approximately 32 dBW) EIRP for non-rural AWS-1 base stations[112] and non-rural PCS base stations with antenna heights of 300 meters or less,[113] which the Commission has also proposed to prescribe for non-rural AWS base stations transmitting in the adjacent 2155-2180 MHz band.[114] We therefore grant the request for waiver to allow base-station operation within a 32 dBW/MHz EIRP limit. This waiver is subject to possible revisions in light of decisions the Commission may adopt in pending proceedings on adjacent-band AWS services.[115]

48. *Power Toward Horizon; Distance from Runways; Power Flux Density at Runways; Overhead Gain* ICO requests waiver of the following rule provisions on the grounds that they were adopted to protect Boeing's subsequently abandoned 2 GHz AMS(R)S service and are not needed to prevent harmful interference to TerreStar's planned 2GHz MSS/ATC operations:[116] Section 25.252(a)(3),[117] which states that an applicant for 2 GHz ATC operating authority must demonstrate that its base stations will not generate EIRP toward the horizon in excess of 25.5 dBW within a bandwidth of 1.23 megahertz; Section 25.252(a)(4),[118] which states that an applicant for 2 GHz ATC operating authority must demonstrate that its base stations will not be located within 190 meters of any airport runway, aircraft stand area, or aircraft takeoff or landing path; Section 25.252(a)(5),[119] which states that an applicant for 2 GHz ATC operating authority must demonstrate that its base stations will not generate aggregate power flux density of more than -51.8 dBW/m^2 within a 1.23 megahertz bandwidth at any airport runway, aircraft stand area, or takeoff or landing path;[120] and Section 25.252(a)(8),[121] which prescribes limits on 2

[110] Application Exhibit 1, Attachment C at 4. ICO notes that (43 + 10*log (P) dB) is prescribed in Section 24.238(a) of the Commission's rules as the OOBE attenuation factor for broadband PCS transmitters.
[111] *See ATC Report and Order*, Appendix C1, §§ 2.2.4.2 and 2.2.4.3.
[112] *See* 47 C.F.R. § 27.50(d)(1).
[113] *See* 47 C.F.R. § 25.232(a).
[114] *AWS-3 Further NPRM* at ¶4 and Appendix A.
[115] *See* note 86 *supra*.
[116] Application Exhibit 1 at 22-24.
[117] 47 C.F.R. § 25.252(a)(3).
[118] 47 C.F.R. § 25.252(a)(4).
[119] 47 C.F.R. § 25.252(a)(5).
[120] Application Exhibit 1 at 23.

GHz ATC base-station antenna gain in vertical-plane angles of 2 degrees or more above the main-lobe axis.

49. These limits were specifically devised to accommodate the projected protection requirements of aircraft receivers in a non-geostationary Boeing 2 GHz MSS system that was not implemented.[122] In view of the fact that TerreStar has explicitly acquiesced to ICO's request for waiver of these rule provisions, we conclude that the requested waivers are justified. In the event, however, that TerreStar or a successor-in-interest commences providing 2 GHz MSS aeronautical service, ICO will be obliged to resolve any harmful interference with aircraft reception of satellite downlinks in the 2190-2200 MHz band caused by operation of its ATC base stations.[123]

50. *Distance from Government Earth Stations* Section 25.252(a)(6)[124] states that an applicant for 2 GHz ATC operating authority must demonstrate that its base stations will not be located within 820 meters of a U.S.-government earth station operating in the 2200-2290 MHz band. ICO requests a waiver that would allow it to place a base station within 820 meters of such an earth station if the government consents. Noting that the Commission calculated the 820-meter limit based on free space propagation loss,[125] ICO contends that other factors such as the pointing direction of the government earth station's antenna and the topographic profile between the base-station site and the earth-station site should also be taken into account in determining the separation distance needed to prevent interference. In view of the variability of such factors, ICO proposes to coordinate base-station placement with U.S. government earth stations on a case-by-case basis.

51. In December 2008, ICO entered into an agreement with Federal agencies that operate earth stations receiving in the 2200-2290 MHz band. Among other things, the agreement prohibits ICO from locating a base station within 820 meters of any such earth station. We therefore deny the request for waiver of Section 25.252(a)(6). In order to ensure that ICO's base-station operations will not result in unacceptable interference to federal earth stations operating in the 2200-2290 MHz band, such operations must be conducted in a manner consistent with the "Operator-to-Operator Agreement between ICO Global Communications and United States Federal Government Agencies Operating Earth Stations in the 2200-2290 MHz Band," including the requirement that the EIRP spectral density of out-of-band emissions from any base station authorized herein that is situated within 133 kilometers of an existing Federal Government earth station operating in the 2200-2290 MHz band must not exceed -100.6 dBW/4 kHz in any portion of that band.[126]

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[121] 47 C.F.R. § 25.252(a)(8).

[122] *See ATC Report and Order* at ¶¶ 110-114.

[123] *See* 47 C.F.R. § 25.255.

[124] 47 C.F.R. § 25.252(a)(6).

[125] Application Exhibit 1, Attachment D at 1, citing *ATC Report and Order* at App. C1 § 3.2.

[126]. *See* January 6, 2009, Letter to Mr. Julius Knapp, Chief, Office of Engineering and Technology, Federal Communications Commission, from Karl B. Nebbia, Associate Administrator, Office of Spectrum Management, National Telecommunications and Information Administration and attached Operator-to-Operator Agreement

3. Waiver Requests Pertaining to Terminal Transmission (2010-2020 MHz)

52. *Radiated Power* Section 25.252(b)(1)[127] states that an applicant for 2 GHz ATC operating authority must demonstrate that its ATC mobile terminals will not emit more than 1 dBW (1.25 watts) EIRP in a bandwidth of 1.23 megahertz. ICO requests a waiver to allow handheld or portable terminals to operate with radiated power of up to 2 watts (*i.e.*, 3 dBW) EIRP in carrier bandwidths of up to 5 megahertz. ICO also seeks a waiver to allow vehicular terminals operate with a maximum transmitter output power of 2 watts without any specified limit on antenna gain.[128] ICO maintains that relaxing the terminal in-band power limit would make it possible for its ATC terminals to operate with expanded range and better service quality.[129]

53. ICO asserts that the peak power specifications it proposes for its ATC terminals are consistent with the Commission's prescribed power limits for broadband PCS terminals and user stations in the Broadband Radio Service and Educational Broadband Service.[130] ICO also maintains that operation of its ATC terminals within the proposed power limits would have no impact on BAS operation in the 2025-2110 MHz band.[131] ICO further maintains that terrestrial wireless operation in frequency bands below the 2000-2020 MHz MSS band will be adequately protected by spectral separation, and by the limits in Section 25.252(c)(2) on emissions in frequencies below 2000 MHz, which ICO is not asking us to waive.[132] ICO adds that its ATC terminals' radiated power will be kept below the maximum level by power control in urban and suburban areas, where terrestrial wireless terminals are most frequently deployed, further reducing the likelihood of interference.[133] Moreover, ICO has submitted an interference analysis purporting to demonstrate that operation of its ATC terminals with the proposed power specifications would not increase noise levels in terrestrial wireless terminal or base-station receivers to an unacceptable extent.[134]

54. Sprint Nextel objects to ICO's request for a waiver to allow vehicular terminals to operate with 2 watts of transmitter output power and antenna gain of 3 dBi or more, which would result in generation of radiated power well in excess of 3 dBW EIRP. Sprint Nextel contends that 2 GHz ATC terminals generating more than 3 dBW EIRP could cause widespread overload interference in terrestrial wireless terminals receiving base-station transmissions in frequency

between ICO Global Communications and United States Federal Government Agencies Operating Earth Stations in the 2200-2290 MHz Band.

[127] 47 C.F.R. § 25.252(b)(1).

[128] Application Exhibit 1 at 24-25 and Attachment E at 1 and 5.

[129] Application Exhibit 1, Attachment E at 1.

[130] Application Exhibit 1 at 25 and Attachment E at 1. *See* 47 C.F.R. § 24.232(c) (prescribing EIRP limit of 2 watts for portable PCS terminals) and 47 C.F.R. § 27.50(h)(2) (prescribing 2 watt limit on transmitter output power for all BRS and EBS "user stations" and 2 watt EIRP limit for BRS and EBS mobile terminals).

[131] Application Exhibit 1 at 25.

[132] ICO Consolidated Opposition at 10 and n.37.

[133] ICO Consolidated Opposition at 12.

[134] *See* Application Exhibit 1, Attachment E.

bands below 2000 MHz.[135] In its reply pleading, however, Sprint Nextel acknowledges that the possibility of overload interference to terrestrial mobile terminals with reception bands below 2000 MHz would be materially reduced by the 10 megahertz-or-more spectral separation between their receive bands and ICO's selected assignment for terminal transmission.[136]

55. Section 25.252(b)(1) effectively specifies a limit on the permissible power spectral density of 2 GHz ATC terminal transmissions, which may not exceed 1 dBW (1.25 watts) EIRP within a bandwidth of 1.23 megahertz (which is equivalent to -60 dBW/Hz). The rule does not necessarily preclude operation with carrier bandwidths greater than 1.23 MHz or EIRP greater than 1 dBW. ICO's ATC terminals may transmit 3 dBW EIRP across a 5 megahertz carrier bandwidth, as proposed, without a waiver of Section 25.252(b)(1), provided the power is distributed in such a way that EIRP does not exceed 1 dBW within any 1.23 megahertz segment of the carrier bandwidth. Such operation with a wider bandwidth than 1.23 megahertz in compliance with the power spectral density limit in Section 25.252(b)(1) would be consistent with the Note to Section 25.252, because it would entail no greater interference potential than cdma2000 operation consistent with that same PSD limit.[137] ICO ATC terminals may also transmit in less than 1.23 megahertz carrier bandwidth, provided the PSD of such narrowband transmissions does not exceed -60 dBW/Hz.

56. ICO has not demonstrated good cause, however, for waiving the PSD limit to permit ATC terminals to operate with EIRP and bandwidth specifications, or transmitter output power and antenna gain, that would result in generation of more than 1 dBW EIRP per 1.23 megahertz of bandwidth in broadband carriers or a PSD of more than -60 dBW/Hz in carriers narrower than 1.23 megahertz. The main concern, when considering waiver of the in-band PSD limit, is potential overload of adjacent-band receivers. The devices that could potentially receive in bands adjacent to ICO's 2010-2020 MHz terminal transmission band are TerreStar's space station and ATC base stations receiving in the 2000-2010 MHz band and J-Block AWS base stations receiving in the 2020-2025 MHz band as proposed in the *AWS-2 NPRM*.[138] TerreStar has explicitly acquiesced to ICO's waiver requests and proposed terminal specifications, so it is the potential for overload of J-Block base station receivers that is of primary concern here. According to ICO, operation of an ICO ATC terminal with 3 dBW EIRP and (43 + 10*log(P) dB) attenuation at the band edge would cause the same amount of noise in a J-Block base-station receiver as would be caused by an equidistant J-Block terminal transmitting in an adjacent channel with the same radiated power and band-edge attenuation.[139] ICO's analysis also

[135] Sprint Nextel Petition at 8.

[136] *Id.* at 13.

[137] The Note to 47 C.F.R. § 25.252 states that authority for 2 GHz ATC operation with an architecture other than cdma2000 may be granted if the applicant demonstrates that such operation would result in no greater interference potential than cdma2000 operation in compliance with the technical requirements in Section 25.252. The carrier bandwidth for cdma2000 operation is 1.23 MHz. Thus, in proposing operation with 5 MHz carriers, ICO is subject to the proviso in the Note.

[138] In the AWS-2 NPRM the Commission tentatively concluded that the 2020-2025 MHz band should be designated for mobile-station transmission (*i.e.*, for base-station reception). *AWS-2 NPRM* at ¶111.

[139] Application Exhibit 1, Attachment E at 12. The discussion in Attachment E at pp. 6-13 is extremely confusing, as ICO consistently speaks of "victim broadband PCS base station receiver[s]" therein, despite the fact that the sub-

indicates that operation of an ICO vehicular ATC terminal with 2-watt transmitter output, 3 dBi antenna gain, and (43 + 10*log(P) dB) band-edge attenuation would cause approximately 3 dB more noise in the victim base-station receiver than would be caused by the hypothetical adjacent-channel J-Block terminal transmission.[140]

57. This interference analysis is unsatisfactory for a numbers of reasons. To begin with, ICO does not explain why it should be acceptable for vehicular ATC terminals to cause more noise in J-Block base station receivers than would be caused by adjacent-channel J-Block terminal transmissions. Nor does ICO explain why it assumes in its analysis that a vehicular ATC terminal has an antenna gain of 3 dBi, although it is requesting a waiver that would allow such terminals to operate without any limit on antenna gain. Nor does ICO explain why its assumptions pertaining to victim base-station receiver characteristics should be deemed relevant.[141] More fundamentally, ICO's technical analysis does not appear to take overload interference into account, particularly in the worst-case situation when an interfering ATC terminal is in close proximity to the victim J-Block base station. Permission for terminal operation that would generate more than 1 dBW EIRP per 1.23 megahertz of bandwidth in broadband carriers, or a PSD of more than -60 dBW/Hz in carriers narrower than 1.23 megahertz, is therefore denied.

58. *Out-of-Band Emissions* Section 25.252(b)(2)[142] prescribes an EIRP power spectral density limit of -67 dBW/4kHz on emissions from 2 GHz ATC mobile terminals at the edges of the operator's selected frequency assignment for terminal transmission. In addition, Sections 25.252(c)(1) and 25.252(c)(2) require, among other things, that the EIRP of emissions from a 2 GHz ATC terminal be attenuated by (43 + 10*log(P) dB) at the edges of the operator's selected assignment. ICO proposes to meet the (43 + 10*log(P) dB) requirement but requests waiver of the -67 dBW/4kHz limit. ICO asserts that grant of this waiver request would align the band-edge emission limits for its ATC terminals with corresponding limits for terminal operation in nearby AWS and PCS frequency bands.[143]

59. Section 25.252(c)(2)[144] also requires OOBE from 2 GHz ATC stations to be attenuated by at least (70 + 10*log(P) dB) in frequencies above 2025 MHz and below 1995 MHz, and requires emissions in the 1995-2000 MHz and 2020-2025 MHz bands to be attenuated to an

caption indicates that the subject-matter is interference to J-Block AWS receivers. We infer that ICO was assessing the potential for interference into J-Block base-station receivers with assumed operating characteristics similar to those of broadband PCS base stations. ICO's assumption that an adjacent-channel J Block terminal transmits at the same EIRP level as the interfering ATC terminal is reasonable, in view of the Commission's tentative conclusion in the *AWS-2 NPRM* that J Block terminals should operate subject to the same peak power limit as 2 GHz MSS and ATC terminals. *AWS-2 NPRM* at ¶111. The Commission's supposition that 2 GHz MSS and ATC terminals are subject to a 1-watt limit on peak EIRP, *id.*, was obviously erroneous.

[140] *Id.* at 12, Table 3.

[141] ICO assumes that the victim base station receiver has the 3GPP2 and ETSI specifications for cdma2000 base station receivers or the 3GPP2 and ETSI specifications for UMTS base station receivers. *Id.* at 7 and nn. 11 and 12.

[142] 47 C.F.R. § 25.252(b)(2).

[143] Application Exhibit 1 at 25-26.

[144] 47 C.F.R. § 25.252(c)(2).

extent determined by linear interpolation from (70 + 10*log(P) dB) at 1995 MHz and 2025 MHz to (43 + 10*log(P) dB) at 2000 MHz and 2020 MHz. ICO proposes to abide by the graduated limits on emissions below 2000 MHz but requests a partial waiver to allow its mobile terminals to operate with a flat attenuation of (43 + 10*log(P) dB) for emissions on frequencies above 2020 MHz. ICO contends that this proposed relaxation of the limits on emissions above 2020 MHz would be harmless because the adjacent 2020-2025 MHz J Block is a transmission band, rather than a receiving band, for AWS mobile terminals and thus there is no problem of adjacent-band mobile-to-mobile interference in this case.

60. Sprint Nextel takes issue with ICO's proposal to meet only a (43 + 10*log(P) dB) OOBE attenuation on emissions from mobile terminals in frequencies above 2020 MHz. Sprint Nextel asserts that PCS operators have concluded that (43 + 10*log(P) dB) attenuation is inadequate and have mutually agreed to meet stricter emission limits instead.[145] The Commission has consistently maintained in rulemakings pertaining to terrestrial wireless operation that requiring out-of-band emissions from mobile terminals to be attenuated by (43 + 10*log(P) dB) will suffice to prevent interference with base-station reception of terminal transmissions in an adjacent frequency band.[146] While it is true, as Sprint Nextel asserts, that terrestrial wireless operators have agreed to meet a stricter limit on out-of-band emissions from PCS terminals operating in the 1850-1915 MHz band, those stricter voluntary limits pertain to the level of emissions into the PCS mobile receive band at 1930-1990 MHz.[147] ICO's 2010-2020 MHz terminal-transmission band is not adjacent to a mobile-terminal reception band.[148] The nearest mobile-terminal receiving band, the 1995-2000 MHz AWS-2 H-Block band, is 10 megahertz away from the lower edge of ICO's terminal-transmission band, and ICO is not asking for waiver of the limits that Section 25.252(c)(2) prescribes for emissions in frequencies below 2000 MHz, which require an attenuation of 70 + 10log(P) at 1995 MHz.

61. We conclude that a partial waiver of the graduated limits in Section 25.252(c)(2) pertaining to emissions in frequencies above 2020 MHz is justified to permit ICO's ATC terminals to operate subject to a simple (43 + 10*log(P) dB) limit on emissions in frequencies above the upper edge of its terminal transmission band. This will harmonize the upper-end emission limit with the OOBE limit that the Commission has proposed for AWS terminals transmitting in the adjacent 2020-2025 MHz J Block[149] and will not adversely affect Broadcast Auxiliary Service ("BAS") or Electronic News Gathering ("ENG") in frequencies above 2025 MHz.[150] This waiver is subject to possible revisions in light of decisions the Commission may

[145] Sprint Nextel Petition at 9.

[146] *See, e.g., AWS-1 Report and Order* at ¶92 and *AWS-2 NPRM* at ¶¶ 87, 90, and 98.

[147] *See AWS-2 NPRM* at ¶89 and n.195.

[148] This assumes that the Commission will reserve the 2020-2025 MHz J Block exclusively for AWS terminal transmission, as proposed in the *AWS-2 NPRM* at ¶98.

[149] *Id.* at ¶98.

[150] No concern was expressed in comments filed in the ATC rulemaking that 2 GHz ATC terminals might interfere with BAS or ENG operation, even though at that time the 2 GHz terminal-transmission band extended to 2025 MHz at the upper end and thus was directly adjacent to the 2025-2110 MHz BAS/ENG band. To the contrary, the Society of Broadcast Engineers commented that ATC operation in the 1990-2025 MHz band would present no problem

adopt in pending proceedings on adjacent-band AWS services.[151]

62. The -67 dBW/4k Hz limit in Section 25.252(b)(2) was adopted to prevent adjacent-band interference with satellite reception of uplink transmissions from aircraft terminals in the 2 GHz MSS system that Boeing planned to operate.[152] Boeing abandoned its plans to develop a 2 GHz MSS system, however, and the only party aside from ICO that holds a spectrum reservation for 2 GHz MSS operation in the United States has filed comments in support of the application at issue here. Furthermore, ICO proposes to abide by the requirement in Section 25.252(c)(1) to attenuate emissions in the 2000-2020 MHz band outside of its assigned operating band – *i.e.*, to attenuate emissions in the 2000-2010 MHz band that TerreStar would use for terminal transmission – by (43 + 10*log(P) dB) and proposes to attenuate emissions above 2020 MHz to the same extent. In thus attenuating transmitter power at both edges of its terminal transmission band by at least (43 + 10*log(P) dB) while limiting in-band power spectral density as required by Section 25.252(b)(1), ICO would limit the power spectral density of band-edge emissions to essentially the same extent that Section 25.252(b)(2) requires, albeit with a different reference bandwidth.[153] The request for waiver of Section 25.252(b)(2) is therefore granted.

63. *Emission Measurement* Section 25.252(c)(4)[154] stipulates that measurement instruments with a resolution bandwidth of one megahertz or more shall be used to verify compliance with the emission limits in Section 25.252(c)(1) and (2). ICO requests that its compliance with those limits be determined, instead, according to the following measurement rule:

> Compliance with this rule is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 meghertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e., 1 megahertz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB

provided that base stations were barred from transmitting in that band. *ATC Report and Order* at ¶116. More to the point, although in their comments filed in this proceeding the Association for Maximum Service Television, Inc. and the National Association of Broadcasters object to ICO's request for permission to commence operation before BAS incumbents have been cleared from the 2000-2020 MHz band, they do not oppose ICO's request for relaxation of the limit on out-of-band emissions in frequencies above 2020 MHz.

[151] *See* note 86 *supra*.

[152] *ATC Report and Order* at ¶111.

[153] Attenuating band-edge transmitter power by (43 + 10*log(P) dB) while generating in-band EIRP spectral density of 1 dBW/1.23 MHz reduces band-edge EIRP spectral density to -43 dBW/1.23 MHz. Power spectral density of -43 dBW in a bandwidth of 1.23 MHz is equivalent to approximately -68 dBW in a 4 kilohertz bandwidth.

[154] 47 C.F.R. § 25.252(c)(4).

below the transmitter power.[155]

64. The modified procedure that ICO proposes for measuring emissions from its ATC terminals is identical to the procedure that the Commission has prescribed for measuring emissions from broadband PCS and AWS-1 terminals.[156] ICO's use of that measurement procedure would have no adverse consequences, and the Commission has previously concluded that the procedure is the most appropriate way of measuring out-of-band emissions into adjacent spectrum.[157] The request for waiver of Section 25.252(c)(4) is therefore granted.

D. Limits on Emissions in the 1559-1610 MHz Satellite Radionavigation Band

65. Sections 25.252(a)(7) and 25.252(b)(3) prescribe limits on the radiated power and power spectral density of emissions in the 1559-1610 MHz band from 2 GHz ATC base stations and mobile terminals. These limits were imposed for the purpose of preventing interference with aircraft reception of satellite radionavigation signals.[158] Counsel for ICO's parent company reports[159] that in discussions with federal agencies ICO has agreed to meet the following limits on emissions from base stations and mobile terminals in the 1559-1610 MHz band:

	Frequency	dBW/MHz EIRP	dBW EIRP of discrete emissions of less than 700 Hz bandwidth
Mobile Terminals	1559-1610 MHz	-95	-105
Base Stations	1559-1610 MHz	-100	-110

ICO states that it will meet these limits, which are more strict than the limits in Sections 25.252(a)(7) and 25.252(b)(3), as a condition of its ATC authorization. Accordingly, ICO's ATC authorization is conditioned on compliance with the limits specified in the table above.

E. Other Matters

66. Prior to operation, MSS operators must successfully coordinate each ATC base station in the 2180-2200 MHz band with incumbent fixed microwave stations based on the standard of TIA TSB 10-F or, pursuant to 47 C.F.R. § 101.105(c), other procedures that follow generally acceptable good engineering practices.[160] ICO acknowledges this coordination requirement[161] and we clarify that ICO's coordinations must take into account any additional interference potential resulting from ATC operations under the waivers granted herein. MSS

[155] Application Exhibit 1 at 18.

[156] *See* 47 C.F.R. §§ 24.238(b) and 27.53(g)(1).

[157] *AWS-1 Report and Order* at ¶94.

[158] *ATC Report and Order* at ¶¶ 124-26.

[159] Letter dated Dec. 15, 2008 to Marlene H. Dortch, FCC Secretary, from Suzanne Hutchings Malloy, Senior V.P., Regulatory Affairs for ICO Global Communications.

[160] *See, e.g.,* Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use by the Mobile-Satellite Service, ET Docket No. 95-18, *Third Report and Order and Third Memorandum Opinion and Order,* 18 FCC Rcd 23638, 23672 ¶ 70 (2003) (*MSS Third R&O and Third MO&O*). *See also* 47 C.F.R. §§ 101.69-101.82.

[161] Application Exhibit 1, Attachment B at 3 citing 47 C.F.R. § 24.237.

ATC operators also must satisfy the cost-sharing requirements set forth in Sections 27.1160-27.1174 of the Commission's Rules.[162]

IV. CONCLUSION

67. We conclude that grant of the above-captioned application, as conditioned herein, will serve the public interest, convenience, and necessity.

V. ORDERING CLAUSES

68. Accordingly, pursuant to Section 309 of the Communications Act, 47 U.S.C. § 309, IT IS ORDERED that the application of New ICO Satellite Services G.P. for authority for operation of MSS mobile earth stations, ATC base stations, and dual-mode MSS/ATC mobile terminals in the 2010-2020 MHz and 2180-2190 MHz frequency bands, (all in the forward-band mode only) SES-LIC-20071203-01646 as amended by SES-AMD-20080118-00075 and SES-AMD-20080219-00172, IS GRANTED to the extent indicated herein, subject to the following conditions, and IS OTHERWISE DENIED.

69. This authorization is subject to the Commission's applicable rules and regulations, except insofar as waived herein, and to the following conditions.

a. ATC operation pursuant to this authorization shall not commence until ICO has firm arrangements in place to meet the requirement, in Section 25.149(b)(2)(ii) of the Rules, to have a spare satellite available not later than one year after commencement of ATC operations.

b. ATC base stations authorized herein must attenuate out-of-band emissions by a factor of (43 + 10*log(P) dB) below the transmitter power (P) on frequencies outside the 2180-2190 MHz band.

c. ATC base stations authorized herein may transmit with power spectral density levels up to 32 dBW/MHz EIRP.

d. In the event that another party commences providing AMS(R)S in the 2 GHz MSS bands, the holder of this authorization shall coordinate with the AMS(R)S operator with regard to operation in excess of technical limits prescribed in Section 25.252 pursuant to the waivers granted herein.

e. Operation pursuant to this authorization shall be conducted in a manner consistent with the "Operator-to-Operator Agreement between ICO Global Communications and United States Federal Government Agencies Operating Earth Stations in the 2200-2290 MHz Band," and

[162] 47 C.F.R. §§ 27.1160-27.1174. *See also* Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Service to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems, ET Docket No. 00-258, Service Rules for Advances Wireless Services in the 1.7 GHz and 2.1 GHz Bands, WT Docket No. 02-353, *Ninth Report and Order and Order*, 21 FCC Rcd 4473 (2006) (*recon. pending*).

the EIRP spectral density of out-of-band emissions from any base station authorized herein that is situated within 133 kilometers of an existing Federal Government earth station operating in the 2200-2290 MHz band shall not exceed -100.6 dBW/4kHz in any portion of that band.

f. The EIRP spectral density of ATC terminal transmissions in transmission bandwidths less than 1.23 megahertz shall not exceed -60 dBW/Hz.

g. ATC stations authorized herein shall meet the limits on emissions in the 1559-1610 MHz band specified in this Order, above.

h. ICO may not commence ATC operations until its commercial MSS is available to the public throughout the ICO G1 satellite's coverage area, unless the Commission modifies or otherwise provides relief from the provisions of Sections 25.149(b)(3), 74.690(e)(1)(i) and 78.40(f)(2) of the rules in connection with ET Docket 95-18, ET Docket 00-258, and WT Docket 02-55, or a related proceeding.

i. This authorization is conditioned upon the outcome of ET Docket 95-18, ET Docket 00-258, and WT Docket 02-55, and any related proceedings.

FEDERAL COMMUNICATIONS COMMISSION

Helen Domenici
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