

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

In the Matter of	)	
	)	
TerreStar Networks Inc.	)	File Nos. SES-LIC-20061206-02100
	)	SES-AMD-20061214-02179
	)	SES-AMD-20070309-00336
	)	SES-AMD-20070508-00582
Application for Blanket Authority to Operate	)	SES-AMD-20070723-00978
Ancillary Terrestrial Component Base Stations	)	SES-AMD-20070907- 01253
and Dual-Mode MSS-ATC Mobile Terminals	)	SES-AMD-20091117-01464
in the 2 GHz MSS Bands	)	Call Sign: E060430

**ORDER AND AUTHORIZATION**

**Adopted:** January 13, 2010

**Released:** January 13, 2010

By the Chief, Satellite Division, International Bureau:

**I. INTRODUCTION**

1. In this Order, we grant authority to TerreStar Networks Inc. (“TerreStar”) to operate dual-mode mobile terminals that can be used to communicate either via TerreStar’s geostationary-orbit Mobile Satellite Service (“MSS”) satellite, TerreStar-1, or via ancillary terrestrial component (“ATC”) base stations. The dual-mode terminals will use the 2000-2010 MHz frequency band for MSS uplinks and ATC mobile-to-base transmissions and the 2190-2200 MHz band for reception of MSS downlinks and ATC base-to-mobile transmissions. We also authorize ATC base station operations.

**II. BACKGROUND**

**A. TerreStar 2 GHz MSS Operation**

2. On July 17, 2001, the Commission granted TerreStar’s request for reservation of 2 GHz MSS spectrum<sup>1</sup> for radio links between mobile earth stations in the United States and a geostationary-orbit satellite to be launched under authority from Industry Canada.<sup>2</sup> In December 2005, the Commission

<sup>1</sup> 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. See Table of Frequency Allocations in 47 C.F.R. § 2.106.

<sup>2</sup> The spectrum reservation was granted to TerreStar’s predecessor-in-interest, TMI Communications and Company, Limited Partnership. See *TMI Communications and Company, Limited Partnership, Letter of Intent to Provide Mobile-Satellite Service in the 2 GHz Bands, Order*, 16 FCC Rcd 13808 (Int’l Bur. 2001). The spectrum reservation was declared null and void by the International Bureau in 2003, but was reinstated, with conditions, by the Commission in 2004. *TMI Communications and Company, Limited Partnership, Order*, 18 FCC Rcd 1725 (Int’l Bur. 2003) (declaring null and void); *TMI Communications and Company, Limited Partnership and TerreStar Networks Inc., Application for Review and Request for Stay, Memorandum Opinion and Order*, 19 FCC Rcd 12603 (2004) (*reinstating*).

modified TerreStar's spectrum reservation to increase it to 10 megahertz in each direction of transmission.<sup>3</sup> In November 2008, the Commission granted TerreStar a license for operation of a fixed earth station in North Las Vegas, Nevada, assigning extended Ku-band frequencies for feeder-link and telemetry, tracking, and command transmissions between that earth station and the TerreStar-1 satellite.<sup>4</sup> At the same time, the Commission also modified TerreStar's spectrum reservation to reflect changed technical specifications and a change in assigned orbital location from 106.5° W.L. to 111.0° W.L.<sup>5</sup> TerreStar notified the Commission that TerreStar-1 was launched on July 1, 2009 and was in operation (for testing) at the 111.0° W.L orbital location as of July 20, 2009.<sup>6</sup>

## B. ATC Policy and Authorization Procedures

3. In 2003, the Commission adopted rules for the licensing and operation of ATC systems. An ATC system consists of terrestrial base stations and mobile terminals licensed to the operator of an MSS system, re-using frequencies assigned for the licensee's MSS operations.<sup>7</sup> 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, improved emergency communications, enhanced competition, and economies of scale in handset manufacture that would be passed on to consumers.<sup>8</sup> An MSS operator may request blanket license authority for operation of ATC stations in the United States.<sup>9</sup>

4. In the *ATC Report and Order*, the Commission prescribed several "gating" requirements that MSS operators must meet in order to 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. 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, commercial availability of satellite service throughout the mandatory coverage area, and maintaining a spare satellite. The Commission also adopted a requirement that ATC service offerings must be integrated with the provider's MSS offerings. These requirements are set forth

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<sup>3</sup> *Use of Returned Spectrum in the 2 GHz Mobile Satellite Service Frequency Bands*, 20 FCC Rcd 19696 (2005) (recon. pending).

<sup>4</sup> File No. SES-LIC-20070530-00732, Call Sign E070098, granted Nov. 13, 2008.

<sup>5</sup> File No. SAT-MOD-20070529-00075, Call Sign S2633, granted Nov. 28, 2008.

<sup>6</sup> Letters (referencing Call Sign S2633) dated July 2 and July 20, 2009 to Marlene H. Dortch, FCC Secretary, from Joseph A. Godles, Attorney for TerreStar Licensee, Inc., with attached certifications.

<sup>7</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; 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, 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*").

<sup>8</sup> *ATC Report and Order* at ¶¶ 2, 20-45, and 210-11.

<sup>9</sup> *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; see also 47 C.F.R. §§ 1.1307, 17.4, and 17.7.

in Section 25.149(b) of the Commission's rules.<sup>10</sup>

### C. TerreStar's Blanket License Application

#### 1. Procedural History

5. On December 6, 2006, TerreStar applied for a blanket license for operation of up to two million MSS mobile earth terminals in the United States, which would communicate via TerreStar-1.<sup>11</sup> In a subsequent amendment to the application, TerreStar also requested authority for U.S. operation of ATC base stations and dual-mode mobile transceivers that could be used to communicate either via the base stations or via TerreStar-1.<sup>12</sup> In July 2007, TerreStar informed the Commission that foreign ownership in its parent corporation might have risen above 25 per cent as a result of recent transactions and that TerreStar might therefore file a petition for declaratory ruling under Section 310(b)(4) of the Communications Act<sup>13</sup> after ascertaining the relevant facts.<sup>14</sup> In February 2008 TerreStar amended the blanket-license application to report increased foreign ownership in the parent corporation<sup>15</sup> and requested a declaratory ruling under Section 310(b)(4) to permit indirect foreign ownership of TerreStar in excess of 25 per cent.<sup>16</sup> The petition for declaratory ruling was granted on December 23, 2009.<sup>17</sup>

6. New ICO Satellite Services G.P., now known as New DBSD Satellite Services G.P., (which we will consistently refer to herein as "New DBSD," regardless of temporal context) filed comments in support of the blanket application.<sup>18</sup> Inmarsat Global Limited ("Inmarsat") filed comments in which it contended that TerreStar should be required to submit further information regarding construction of a spare satellite.<sup>19</sup> Sprint Nextel Corporation ("Sprint Nextel") filed a petition to deny.<sup>20</sup> The Association for Maximum Service Television, Inc. and the National of Association of Broadcasters ("MSTV/NAB") jointly filed a pleading captioned "Comments."<sup>21</sup> TerreStar filed a consolidated

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<sup>10</sup> 47 C.F.R. § 25.149(b)(1)-(4).

<sup>11</sup> File No. SES-LIC-20061206-02100. *See also* File Nos. SES-AMD-20061214-02179 (amendment regarding orbital location of SkyTerra-1); SES-AMD-20070309-00336 (amendment to supplement and clarify technical information); and SES-AMD-20070508-00582 (amendment to update and revise technical information). The application with these amendments was placed on public notice in Report No. SES-00931 (May 30, 2007).

<sup>12</sup> File No. SES-AMD-20070907-01253. In a previously-filed amendment, File No. SES-AMD-20070723-00978, TerreStar had requested waiver of technical limits in Section 25.252(a) of the Commission's rules pertaining to ATC base-station operation. The waiver requests were reiterated in File No. SES-AMD-20070907-01253.

<sup>13</sup> 47 U.S.C. § 310(b)(4).

<sup>14</sup> Letter dated July 13, 2007 to Marlene H. Dortch, FCC Secretary, from Joseph A. Godles, Attorney for TerreStar Networks, Inc.

<sup>15</sup> File No. SES-AMD-20080229-00217. This amendment and the two ATC amendments were placed on public notice in Report No. SES-01018 (March 26, 2008). On May 20, 2008, the Satellite Division granted a request from TerreStar to designate the proceeding as permit-but-disclose under the Commission's ex parte rules.

<sup>16</sup> File No. ISP-PDR-20080229-0004.

<sup>17</sup> TerreStar Networks, Inc., Order and Declaratory Ruling, DA 09-2628 (Int'l Bur.).

<sup>18</sup> Comments of ICO Satellite Service G.P. filed April 25, 2008 ("ICO Comments").

<sup>19</sup> Comment filed by Inmarsat Global Limited on April 25, 2008 ("Inmarsat Comments").

<sup>20</sup> Petition to Deny of Sprint Nextel Corporation filed April 25, 2008 ("Sprint Nextel Petition").

<sup>21</sup> MSTV and NAB Comments, filed April 24, 2008 ("MSTV-NAB Comments").

response and opposition,<sup>22</sup> and Sprint Nextel and Inmarsat filed replies to the consolidated opposition.<sup>23</sup>

## 2. MSS/ATC System Description<sup>24</sup>

7. TerreStar plans to build and operate a mobile satellite and terrestrial communication network that can be used to address homeland security, public safety, disaster preparedness, and rural and underserved community communications needs in North America, offering voice, push-to-talk, Internet, email, messaging, conferencing, multicast video and data, and other services.<sup>25</sup>

8. The system will be operated through a Radio Resource Management system that will coordinate spectrum use, load factors, and transmission power between the satellite and terrestrial facilities. All TerreStar user terminals, including small handheld cell phones and truck-mounted mobile devices, will be capable of communicating via both the satellite and the ATC network. Further, TerreStar asserts that the user terminals will support seamless handoffs between satellite and ATC mode, based on system-defined algorithms in the terminals or Radio Resource Management system. PC cards will be used to provide end-to-end IP connectivity with the Internet and the Public Switched Network, for both MSS and ATC applications. TerreStar intends to operate initially with an open architecture and commercially available chipsets but plans to collaborate with semiconductor manufacturers to develop dedicated chipsets for its system. The planned satellite air-interface is GMR-3G, an open standard that supports access to GSM and W-CDMA core networks, and TerreStar plans to use a W-CDMA air interface for the ATC system.<sup>26</sup>

### III. DISCUSSION

#### A. Spare Satellite

9. The Commission's rules require that an applicant for ATC operating authority "demonstrate ... through certification" that it "does or will comply" with a requirement to "maintain a spare satellite on the ground within one year of commencing [ATC] operation ...."<sup>27</sup> In the *ATC Second Reconsideration Order*, the Commission said that it would be willing to conditionally grant ATC operating authority to an MSS licensee not currently in compliance with the coverage, commercial availability, and/or spare-satellite gating requirements on the basis of a "satisfactory, prospective, and substantial" showing that all the gating requirements would soon be met.<sup>28</sup> In its request for ATC authority, TerreStar asserted that it would meet the requirement to have a spare satellite on hand within one year after commencing ATC operation, that it had contracted for construction of the spare, and that

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<sup>22</sup> Consolidated Response and Opposition of TerreStar Networks Inc., filed May 8, 2008 ("Consolidated Opposition").

<sup>23</sup> Reply filed by Inmarsat Global Limited on May 20, 2008 ("Inmarsat Reply"); Reply of Sprint Nextel Corporation, filed May 20, 2008.

<sup>24</sup> The following description is based upon statements in the Introduction section of the narrative document captioned "AMENDMENT" included in TerreStar's Sept. 7, 2007 amendment filing (File No. SES-AMD-20070907-01253) ("ATC Amendment Narrative") and in Attachment 2 to that document.

<sup>25</sup> TerreStar does not propose to provide Aeronautical Mobile-Satellite (Route) Service, and the license granted herein does not include authority for such operation.

<sup>26</sup> ATC Amendment Narrative, Attachment 2 at 3.

<sup>27</sup> 47 C.F.R. § 25.149(b).

<sup>28</sup> *ATC Second Reconsideration Order* at ¶89.

the contract specified a delivery date well in advance of the one-year-after-commencement deadline.<sup>29</sup>

10. In its comments on the application, Inmarsat argued that TerreStar had not presented a substantial prospective showing regarding compliance with the spare-satellite requirement. Inmarsat maintained that in order for TerreStar to satisfy that requirement it should submit a copy of the construction contract for the spare satellite and disclose the current status of the contract, the current state of construction progress, and the target date for commencing ATC operation.<sup>30</sup>

11. In a statement filed on November 12, 2009, counsel for TerreStar reported that TerreStar does not currently expect to commence commercial ATC operation before late 2010 and has accordingly postponed the scheduled delivery of the spare satellite, TerreStar-2, to the last quarter of 2011. Counsel also reported that construction of TerreStar-2 was 85 percent complete and that TerreStar had paid approximately 91 percent of the contract price for its construction to the manufacturer, Space Systems/Loral. Finally, counsel asserted that TerreStar would continue to manage the construction schedule to ensure that the spare satellite requirement will be met.

12. The substantial reported progress in constructing a spare satellite and TerreStar's reiterated statements of intention afford reasonable assurance that construction of that satellite will be completed. To ensure that the spare-satellite gating requirement will be met, we condition the grant of ATC operating authority to prohibit commencement of commercial operation more than one year in advance of the delivery deadline in TerreStar's construction contract for its spare satellite, TerreStar-2.

#### **B. Geographic Coverage, Commercial Availability, and Restrictions on Commencement of Operation Pending BAS/CARS Re-banding**

13. The Commission's Rules require an applicant requesting authority for ATC operation in the 2 GHz MSS band to demonstrate that it can, or will be able to, provide MSS throughout the fifty U.S. states, Puerto Rico, and the U.S. Virgin Islands one hundred percent of the time, unless that is not technically possible.<sup>31</sup> Further, an MSS operator's satellite service must be commercially available in accordance with the MSS coverage requirements before that operator may offer ATC service.<sup>32</sup> In its blanket application, TerreStar certified that it will meet these requirements.<sup>33</sup>

14. In its petition to deny, Sprint Nextel argued that TerreStar cannot meet the coverage and commercial availability requirements.<sup>34</sup> Sprint Nextel relied upon a Commission rule prohibiting 2 GHz MSS licensees from providing service anywhere in the United States until all Broadcast Auxiliary Service ("BAS") operation in the top 30 markets, and all primary-status fixed BAS stations nationwide, have been shifted from the 1990-2025 MHz band to spectrum outside of that band.<sup>35</sup> Because BAS

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<sup>29</sup> ATC Amendment Narrative at 8.

<sup>30</sup> Inmarsat Comments at 3-4.

<sup>31</sup> 47 C.F.R. § 25.149(b)(1). *See also* 47 C.F.R. § 25.143(b)(2)(iv).

<sup>32</sup> 47 C.F.R. § 25.149(b)(3).

<sup>33</sup> ATC Amendment Narrative at 7 and 8. In support of the certification of compliance with the geographic coverage rule, TerreStar cross-referenced coverage maps in a technical amendment to its spectrum reservation. *See* SAT-MOD-20070529-00075 (granted Nov. 28, 2008), Figures 8 and 10-13.

<sup>34</sup> Sprint Nextel Petition at 2.

<sup>35</sup> 47 C.F.R. § 74.690(e)(1). BAS licensees operating in the 1990-2025 MHz band under licenses granted on or before June 27, 2000 have primary status until December 13, 2013, unless they are rebanded or refuse a rebanding offer from a New Entrant, as defined in 47 C.F.R. § 74.690(a). *See* 47 C.F.R. § 74.690(b). A parallel restriction in

rebanding is not complete Sprint Nextel contended that TerreStar could not provide MSS and therefore could not meet the coverage and commercial availability requirements.<sup>36</sup> Similarly, MSTV/NAB argued that the request for ATC authority should be denied because TerreStar had not explained how it would avoid interfering with incumbent BAS operations in uncleared markets.<sup>37</sup>

15. In a Report and Order released after the close of the pleading cycle in this proceeding, the Commission modified the rule provisions that barred commencement of 2 GHz MSS operation prior to relocation of BAS stations.<sup>38</sup> That Report and Order also addressed a parallel rule restricting 2 GHz MSS licensees from commencing commercial operation pending rebanding of all existing Cable Television Relay Service (“CARS”) stations in the top thirty markets.<sup>39</sup> The amended rules allow 2 GHz MSS systems to provide MSS and ATC in cleared markets, subject to a requirement to avoid interfering with BAS or CARS incumbents operating with primary status in the 1990-2025 MHz band in adjacent markets.<sup>40</sup> Further, the rules now allow 2 GHz MSS to be provided in uncleared markets as well, based on coordination with un-rebanded BAS and CARS incumbents in those markets.<sup>41</sup> The Commission prohibited ATC operation in uncleared markets, however,<sup>42</sup> and also prohibited operation of 2 GHz MSS terminals within line of sight of fixed BAS or CARS receivers operating with primary status in the 1990-2025 MHz band, unless such operation has been specifically coordinated with the operators of those fixed stations.<sup>43</sup> In conjunction with these rule changes, the Commission granted a waiver of the commercial availability gating requirement to New DBSD, a 2 GHz MSS/ATC licensee, to allow it to provide ATC in cleared markets in the interim pending completion of nationwide BAS/CARS rebanding.<sup>44</sup> The Commission also delegated authority to the International Bureau to grant an analogous waiver to TerreStar.<sup>45</sup>

16. The interim restrictions that the Commission prescribed in the *BAS Rebanding Order* preclude TerreStar from meeting the commercial-availability requirement until rebanding of the BAS incumbents is completed throughout the United States, Puerto Rico, and the U.S. Virgin Islands. TerreStar has not requested waiver of that requirement. The Commission’s reasons for granting New DBSD’s request for waiving the commercial-availability rule, however, also constitute good cause for granting a parallel waiver for TerreStar. Therefore, in exercise of the authority delegated in the *BAS Rebanding Order*, we grant a limited waiver to permit TerreStar to commence ATC operation in markets where BAS/CARS rebanding has been completed, provided that TerreStar MSS is commercially

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47 C.F.R. § 78.40(f)(1)(i) barred 2 GHz MSS licensees from commencing commercial operation pending rebanding of all existing Cable Television Relay Service (“CARS”) stations in the top thirty markets.

<sup>36</sup> Sprint Nextel Petition at 2.

<sup>37</sup> MSTV-NAB Comments at 2-5. *See also* letter to Marlene H. Dortch, FCC Secretary, from Christopher Guttman-McCabe for CTIA – The Wireless Association, filed June 25, 2008 (urging close evaluation of compliance with gating criteria).

<sup>38</sup> *Report and Order and Order and Further Notice of Proposed Rulemaking*, WT Docket 02-55, ET Dockets 00-258 and 95-18, and File No. SES-LIC-20071203-01646, 24 FCC Rcd 7904 (2009) (“*BAS Rebanding Order*”) at ¶39 and Appendix A.

<sup>39</sup> 47 C.F.R. § 78.40(f)(1)(i).

<sup>40</sup> *Id.*, ¶47.

<sup>41</sup> *Id.*, ¶¶ 53, 58.

<sup>42</sup> *Id.*

<sup>43</sup> *Id.*, ¶54.

<sup>44</sup> *Id.*, ¶¶ 61-62.

<sup>45</sup> *Id.*, ¶61 and n.136.

available in those markets. Once the BAS transition is complete, TerreStar will have to satisfy the commercial-availability requirement in order to expand ATC service.

### C. Reimbursement for BAS/CARS Rebanding

17. Sprint Nextel argued in its petition to deny that the blanket license application should be denied because TerreStar had not offered to reimburse Sprint Nextel for a portion of the expense of assisting BAS and CARS licensees to reband their facilities. Sprint Nextel contended that TerreStar's reservation of spectrum for provision of 2 GHz MSS in the United States was conditioned on a requirement to pay a *pro rata* share of such rebanding expense.<sup>46</sup> Sprint Nextel therefore argued that TerreStar cannot lawfully commence commercial MSS operation before tendering a *pro rata* reimbursement payment to Sprint Nextel, which had borne the expense of the BAS/CARS rebanding accomplished to date. Furthermore, Sprint Nextel argued that allowing TerreStar to commence commercial ATC operation without first discharging its reimbursement obligation would give it an unfair competitive advantage.<sup>47</sup> Issues concerning reimbursement have been raised by Sprint Nextel and the 2 GHz MSS licensees in other proceedings as well.<sup>48</sup>

18. The BAS/CARS rebanding plan established by the *2 GHz Allocation Second Report and Order* included a requirement for 2 GHz MSS licensees to pay a *pro rata* share of the expense of rebanding before commencing commercial operation. However, in the recent *BAS Rebanding Order*, the Commission invited public comment on possible modified rules for reimbursement and indicated that, in the interim, reimbursement of Sprint Nextel is not a prerequisite for commencing commercial MSS or ATC operation.<sup>49</sup> The Commission will resolve the issues concerning BAS/CARS rebanding reimbursement in that proceeding.<sup>50</sup> To avoid prejudicing the resolution of the reimbursement issues in that proceeding, we are conditioning TerreStar's ATC authorization on full compliance with the action taken by the Commission in that proceeding.<sup>51</sup>

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<sup>46</sup> Sprint Nextel Petition at 4, citing *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*, 15 FCC Rcd 12315 ¶¶ 69 and 71 (2000) ("*2 GHz Allocation Second Report and Order*"), and *TMI Communication and Company, Limited Partnership, Letter of Intent to Provide Mobile-Satellite Service in the 2 GHz Bands*, 16 FCC Rcd 13808 ¶7 n.23 (Int'l Bur. 2001) (granting spectrum reservation now held by TerreStar and stating that "[2 GHz MSS] systems must be implemented consistent with the plans for incumbent [BAS/CARS] relocation" adopted in the *2 GHz Allocation Second Report and Order*). Also see *Report and Order, Fifth Report and Order, Fourth Memorandum Opinion and Order, and Order*, 19 FCC Rcd 14969 ¶353 (2004).

<sup>47</sup> Sprint Nextel Petition at 5.

<sup>48</sup> See generally *BAS Rebanding Order* (discussing the arguments of the parties in related proceedings).

<sup>49</sup> *BAS Rebanding Order* at ¶45.

<sup>50</sup> We took a similar action in granting waiver requests filed by the other 2 GHz MSS licensee. See *New ICO Satellite Services G.P., Application for blanket authority to operate Ancillary Terrestrial Component base stations and dual-mode MSS-ATC mobile terminals in the 2 GHz MSS bands, Order and Authorization*, 24 FCC Rcd 171 (Int'l Bur. 2009) ("*New ICO ATC Order*"). See also *BAS Rebanding Order* at ¶ 60 (noting that ICO has been granted authority to operate ATC in conjunction with its satellite system . . . subject to FCC action concerning ICO's ongoing dispute with Sprint Nextel over reimbursement for Sprint Nextel's cost in relocating the BAS incumbents in the band).

<sup>51</sup> Relocation and reimbursement obligations with respect to fixed microwave licensees are discussed below.

#### D. Compliance with Other Requirements

19. TerreStar has certified to the following: its ATC system will operate in the forward-band mode;<sup>52</sup> ATC operation will be limited to TerreStar's selected frequency assignments in the 2 GHz MSS band;<sup>53</sup> TerreStar's ATC operation will be confined within its MSS coverage area;<sup>54</sup> TerreStar's ATC base stations will meet antenna and structural clearance requirements in Part 17 of the rules;<sup>55</sup> TerreStar's ATC base stations and mobile terminals will comply with Part 1, Subpart I of the Commission's rules ("Procedures Implementing the National Environmental Policy Act of 1969"), including the guidelines for human exposure to radio-frequency electromagnetic fields;<sup>56</sup> TerreStar's ATC base stations will not use all available 2 GHz MSS frequencies when that would exclude otherwise available signals from MSS space stations;<sup>57</sup> TerreStar will comply with the MSS-ATC integration requirement by ensuring that all mobile terminals that communicate via its base stations will be dual-mode devices that will also be able to communicate via the TerreStar-1 satellite;<sup>58</sup> and the ATC system will meet the Commission's requirements for protection of FCC field offices, radioastronomy observation, and government earth stations.<sup>59</sup> Finally, TerreStar certifies that its ATC system will operate in compliance with the band-specific technical limits that it is not asking us to waive.<sup>60</sup> These certifications constitute a satisfactory prospective showing of compliance with the requirements that they address.

#### E. Requests for Waiver of Technical Rules Pertaining to Base Station Operation

20. TerreStar contends that, due to intervening changes of circumstance, many of the technical restrictions that the Commission established for ATC base-station operation in the 2180-2200 MHz band are no longer necessary to prevent harmful interference.<sup>61</sup> TerreStar notes that when the Commission adopted the ATC rules, there were outstanding authorizations for operation of five 2 GHz MSS systems in the United States, whereas only two such 2 GHz MSS authorizations -- TerreStar's and New DBSD's -- now remain. Furthermore, TerreStar asserts that the technical rules pertaining to 2 GHz ATC base station operation in Paragraphs (2), (3), (5), and (8) of Section 25.252(a) were adopted to prevent overloading of highly sensitive receivers that Boeing, a former 2 GHz MSS licensee,<sup>62</sup> planned to deploy with a 2 GHz MSS system that was never implemented. TerreStar requests waiver of these rule provisions and also requests waiver of Section 25.252(a)(4), which prescribes a restriction on siting base

<sup>52</sup> ATC Amendment Narrative at 9. This certification is required by 47 C.F.R. § 25.149(a)(1).

<sup>53</sup> *Id.* This certification is required by 47 C.F.R. § 25.149(a)(2)(i).

<sup>54</sup> *Id.* This certification is required by 47 C.F.R. § 25.149(a)(3).

<sup>55</sup> *Id.* at 10. This certification is required by 47 C.F.R. § 25.149(a)(4).

<sup>56</sup> *Id.* This certification is required by 47 C.F.R. § 25.149(a)(5).

<sup>57</sup> *Id.* This certification is required by 47 C.F.R. § 25.149(a)(6).

<sup>58</sup> *Id.* at 8. This certification is required by 47 C.F.R. § 25.149(b)(4).

<sup>59</sup> *Id.* at 10-11. This certification is required by 47 C.F.R. § 25.149(d).

<sup>60</sup> *Id.* *I.e.*, TerreStar certifies that it will meet the technical limits on base-station operation in 47 C.F.R. § 25.252(a)(1), (a)(6), and (a)(7) and the limits on mobile-terminal operation in § 25.252(b) and (c). The waiver requests are discussed below.

<sup>61</sup> Waiver Request of TerreStar Networks, Inc. filed with File No. SES-AMD-20070723-00978 ("Waiver Request"), at 8-16.

<sup>62</sup> 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 (Int'l Bur. 2005) (announcing the surrender of several 2 GHz MSS licenses, including Boeing's).



stations in the vicinity of airports.

21. New DBSD supports the waiver requests,<sup>63</sup> and Sprint Nextel comments that the requested technical waivers “appear unlikely to materially increase the risk of interference to adjacent channel licensees.”<sup>64</sup>

22. Section 1.3 of the Commission’s rules<sup>65</sup> 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<sup>66</sup> and would better serve the public interest than requiring strict compliance.<sup>67</sup> 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 allow TerreStar to cause 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 TerreStar to operate more efficiently and provide more valuable service.<sup>68</sup> Below, we address each technical waiver request in turn.

23. Radiated Power The Commission’s rules require an applicant for 2 GHz ATC base stations to demonstrate that they will generate no more than 27 dBW (approximately 501 watts) EIRP within a bandwidth of 1.23 megahertz.<sup>69</sup> TerreStar requests waiver of this limit to allow its ATC base stations to generate a peak EIRP of 32 dBW (approximately 1640 watts), independent of bandwidth.<sup>70</sup>

24. We recently waived the same rule provision to allow New DBSD ATC base stations to transmit with EIRP power spectral density up to 32 dBW/MHz.<sup>71</sup> In so doing, we indicated that this waiver would put New DBSD’s base stations at parity with non-rural broadband PCS base stations with above-ground antenna height less than 300 meters and with non-rural AWS-1 base stations transmitting in the 2110-2155 MHz band. Such PCS and AWS base stations are subject to an EIRP limit of 1640 W when transmitting with emission bandwidth of 1 MHz or less and a limit of 1640 W/MHz when transmitting with emission bandwidth greater than 1 MHz.<sup>72</sup> We also noted that the Commission had

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<sup>63</sup> ICO Comments at 1.

<sup>64</sup> Sprint Nextel Petition at 6, n.13.

<sup>65</sup> 47 C.F.R. §1.3.

<sup>66</sup> *Northeast Cellular Tel. Co. v. FCC*, 897 F.2d 1166 (D.C. Cir. 1990).

<sup>67</sup> *WAIT Radio v. FCC*, 418 F.2d 1153, 1157 (D.C. Cir. 1969).

<sup>68</sup> This is the same general principle that we followed when granting similar waiver requests for the other 2 GHz MSS licensee. See *New ICO Satellite Services G.P., Application for blanket authority to operate Ancillary Terrestrial Component base stations and dual-mode MSS-ATC mobile terminals in the 2 GHz MSS bands, Order and Authorization*, 24 FCC Rcd 171 (Int’l Bur. 2009) (“*New ICO ATC Order*”), at ¶40.

<sup>69</sup> 47 C.F.R. § 25.252 (a)(2), (3).

<sup>70</sup> Waiver Request at 2 and attached Engineering Statement at 4, Table 4.

<sup>71</sup> *New ICO ATC Order* at ¶47.

<sup>72</sup> See 47 C.F.R. § 24.232(a) (prescribing power limits for broadband PCS base stations with less than 300 meter antenna height in counties with population density more than 100 per square mile) and 47 C.F.R. § 27.50(d)(2) (prescribing power limits for AWS-1 base stations in counties with population density more than 100 per square mile). AWS-1 systems are terrestrial wireless systems with sufficient bandwidth for both voice service and data services such as internet web-browsing and full-motion video, operating in the paired 1710-1755 MHz and 2110-2155 MHz bands. See *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). PCS systems are terrestrial mobile wireless systems operating in assigned spectrum blocks in the 1850-1910 MHz and 1930-1990 MHz bands. See 47 C.F.R. § 24.200 *et seq.*

proposed to adopt the same power limits for non-rural AWS base stations transmitting in the 2155-2180 MHz band.<sup>73</sup> TerreStar's proposed EIRP limit of 32 dBW is consistent with the EIRP limit for PCS and AWS-1 base-station transmissions of less than 1 MHz emission bandwidth and, as it applies to transmissions more than 1 MHz wide, is somewhat more restrictive than the 32 dBW/MHz limit we imposed on New DBSD and the equivalent power spectral density limit on broadband PCS and AWS-1 base-station emissions wider than 1 MHz. The power limits for broadband PCS and AWS-1 base stations, however, are accompanied by rule provisions governing measurement technique,<sup>74</sup> compliance with which is necessary for parity. We conclude that granting TerreStar's request for waiver of Section 25.252(a)(2), subject to a condition requiring adherence to the measurement rules associated with the relevant power limits for broadband PCS and AWS-1 base stations, will not unduly increase the risk of harmful interference or give TerreStar an unfair competitive advantage and will serve the public interest by enabling TerreStar to provide ATC more efficiently. This waiver may be subject to revision in light of future Commission decisions in pending rulemaking proceedings for AWS services.<sup>75</sup>

25. Radiated Power Toward Horizon, Distance from Airport Runways, Power Flux Density at Runways, Peak Gain, and Overhead Gain The Commission's rules specify a limit on permissible EIRP spectral density toward the horizon from a 2 GHz ATC base station.<sup>76</sup> The rules also require 2 GHz ATC base stations to be located at least 190 meters away from the nearest airport runway or aircraft stand area;<sup>77</sup> specify a limit on the aggregate power flux density at any airport runway or aircraft stand area that may result from operation of 2 GHz ATC base stations;<sup>78</sup> and prescribe a limit on the peak gain of a 2 GHz ATC base-station antenna and limits on gain in vertical angles of 2 degrees or more above the main-lobe axis.<sup>79</sup> We waived these rules for New DBSD for two reasons: first, because these restrictions were adopted to protect a Boeing AMS(R)S system that will not be implemented; second, because the only other 2 GHz MSS licensee (TerreStar, in that case) had explicitly assented to grant of the requested waivers.<sup>80</sup> We stipulated, however, that New DBSD would be obliged to resolve any harmful interference with aircraft reception of satellite downlinks in the frequency band assigned for base-station transmissions, in the event the other 2 GHz MSS licensee commenced providing AMS(R)S.<sup>81</sup>

26. TerreStar likewise requests waivers of these rule provisions. We grant these waiver requests for the same reasons, with the same proviso: in the event that another MSS licensee commences AMS(R)S operation in the adjacent 2180-2190 MHz band, TerreStar must coordinate operation pursuant to these waivers with that licensee.<sup>82</sup>

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<sup>73</sup> See *Service Rules for Advanced Wireless Services in the 2155-2175 MHz Band, Further Notice of Proposed Rule Making*, 23 FCC Rcd 9859 (2008) ("AWS-3 Further NPRM").

<sup>74</sup> See 47 C.F.R. § 24.232(d) and (e) and § 27.50(d)(5) and (6).

<sup>75</sup> Cf. *New ICO ATC Order* at ¶47 and n.115.

<sup>76</sup> 47 C.F.R. § 25.252(a)(3).

<sup>77</sup> 47 C.F.R. § 25.252(a)(4).

<sup>78</sup> 47 C.F.R. § 25.252(a)(5).

<sup>79</sup> 47 C.F.R. § 25.252(a)(8).

<sup>80</sup> *New ICO ATC Order* at ¶49.

<sup>81</sup> *Id.* at ¶68.

<sup>82</sup> See 47 C.F.R. § 25.255 (MSS-ATC operator must resolve any harmful interference to other systems resulting from its ATC operation).

## F. System Architecture

27. An applicant for operating authority for a 2 GHz ATC system with a system architecture other than cdma2000 must demonstrate that operation with the proposed architecture, instead of cdma2000, would not result in greater interference.<sup>83</sup> TerreStar proposes to use WCDMA architecture for ATC operation, with a waveform occupying 5 MHz, as opposed to the 1.25 MHz bandwidth of the cdma2000 waveform. TerreStar maintains that the potential for interference with the wider WCDMA waveforms is no greater than it would be if cdma2000 were used, in view of the following: i) the proposed WCDMA system will meet the same out-of-band emission limits that the Commission prescribed for cdma2000 systems and ii) overload protection is not a function of signal bandwidth.<sup>84</sup> We find that TerreStar has met the requirement to demonstrate that its use of WCDMA would not result in greater interference.

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

28. Paragraphs (a)(7) and (b)(3) of Section 25.252 prescribe limits on the permissible radiated power and power spectral density of emissions in the 1559-1610 MHz band from 2 GHz ATC base stations and mobile terminals. The Commission adopted these limits for the purpose of preventing interference with aircraft reception of satellite radionavigation signals.<sup>85</sup> TerreStar states that it will meet the following limits on emissions from base stations and mobile terminals in the 1559-1610 MHz band:

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

These limits, which TerreStar agreed to meet in response to concerns raised by the U.S. GPS Industry Council, are more restrictive than the limits in Sections 25.252(a)(7) and (b)(3). The limits in this table are material terms of the authorization.

## H. Other Matters

29. Prior to commencing commercial ATC operation, 2 GHz MSS operators must successfully coordinate operation of each ATC base station with incumbent fixed microwave stations in the 2190-2200 MHz band based on the standard of TIA TSB 10-F or, pursuant to 47 C.F.R. § 101.105(c), based on other procedures that follow generally acceptable good engineering practices.<sup>86</sup> Such

<sup>83</sup> 47 C.F.R. § 25.252, Note.

<sup>84</sup> Waiver Request at 16.

<sup>85</sup> *ATC Report and Order* at ¶¶ 124-26.

<sup>86</sup> *See Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use by the Mobile-Satellite Service, Third Report and Order and Third Memorandum Opinion and Order*, ET Docket No. 95-18, 18 FCC Rcd 23638, 23672 ¶70 (2003) ("*MSS Third Report and Order*"); 47 C.F.R. §§ 101.69-101.82.

coordination must take into account any additional interference potential resulting from operation pursuant to the waivers granted herein. If such coordination is unsuccessful, a 2 GHz MSS operator must relocate the relevant incumbent fixed microwave stations in accordance with the Commission's Rules.<sup>87</sup> A 2 GHz MSS operator must also satisfy the relocation cost-sharing requirements<sup>88</sup> set forth in Sections 27.1160-27.1174 and 101.82 of the Commission's Rules, insofar as they pertain to its operation in the 2190-2200 MHz band.<sup>89</sup> If harmful interference is caused to other services by ancillary MSS ATC operations, either from ATC base stations or mobile terminals, the MSS ATC operator must resolve any such interference.<sup>90</sup>

30. TerreStar proposes to provide Commercial Mobile Radio Service ("CMRS") via its ATC facilities. We therefore impose a condition to require such ATC services to be provided in compliance with the 911 requirements in Section 20.18 of the Commission's rules.<sup>91</sup>

31. On December 22, 2009, the Department of Justice and the Department of Homeland Security ("Government Parties") advised the Commission that they have no objection to grant of the captioned applications and TerreStar's petition for a ruling pertaining to indirect foreign ownership, provided that the Commission conditions the grant on compliance with an agreement between those Government Parties and TerreStar.<sup>92</sup> The Government Parties state that the agreement is intended to enhance the protection of national security, law enforcement and public safety.<sup>93</sup> The Commission defers to Executive Branch expertise on national security and law enforcement issues.<sup>94</sup> Accordingly, we adopt the requested condition.

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<sup>87</sup> See, e.g., *MSS Third Report and Order* at ¶ 70. The TIA TSB 10-F, or its successor standard, is the appropriate standard to determine whether a relocation obligation is triggered by each ATC base station, and the MSS licensee of any new terrestrial ATC must relocate incumbent FS licensees upon determination, based upon TSB 10-F, that interference would be caused to the incumbent operations. *Id.*

<sup>88</sup> The reimbursement obligations with respect to the 1990-2025 MHz band are discussed above.

<sup>89</sup> 47 C.F.R. § 101.82 citing 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) at ¶¶ 94-96 (*recon. pending*). Among other things, 2 GHz MSS operators must file data on each base station with an AWS clearinghouse prior to operating the ATC base station. See 47 C.F.R. § 27.1170.

<sup>90</sup> 47 C.F.R. § 25.255.

<sup>91</sup> See 47 C.F.R. § 20.3 and *Globalstar LLC*, 21 FCC Rcd 398 (2006) at ¶¶ 41 and 44.

<sup>92</sup> Petition to Adopt Conditions; Letter from Greg Pinto, Director – RCO, U.S. Department of Homeland Security and Richard C. Sofield, U.S. Department of Justice, Director – Foreign Investment Review Staff, National Security Division, to Marlene H. Dortch, Secretary, FCC (dated December 22, 2009).

<sup>93</sup> Petition to Adopt Conditions at 3. The agreement is attached to the *Order and Declaratory Ruling* as Appendix B; see *supra* n.11 and ¶ 3.

<sup>94</sup> See *Foreign Participation Order*, 12 FCC Rcd at 23918, ¶ 59, 23919-21, ¶¶ 61-66; *DISCO II Order*, 12 FCC Rcd 24094 at 24100, ¶ 15.

#### IV. CONCLUSION

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

#### V. ORDERING CLAUSES

33. Accordingly, pursuant to Section 309 of the Communications Act, 47 U.S.C. § 309, IT IS ORDERED that the application of TerreStar Networks Inc. for authority for operation of ATC base stations and dual-mode MSS/ATC mobile terminals in the 2000-2010 MHz and 2190-2200 MHz frequency bands, SES-LIC-20061206-02100, as amended by SES-AMD-20061214-02179, SES-AMD-20070309-00336, SES-AMD-20070508-00582, SES-AMD-20070723-00978, SES-AMD-20070907-01253, and SES-AMD-20091112-07192, IS GRANTED to the extent indicated herein and IS OTHERWISE DENIED.

34. This authorization is subject to the limiting specifications in the amended application, the Commission's applicable rules and regulations, except insofar as waived herein, and the following conditions:

- a. ATC operation under this authorization shall not be conducted in any market where BAS or CARS stations still operate in the 2000-2010 MHz band with primary status, as defined in 47 C.F.R. §§ 74.690(b), 78.40(b), and 78.40(f)(6), nor shall such ATC operation be conducted within line of sight of any such primary-status BAS or CARS station the presence of which is known to TerreStar.<sup>95</sup>
- b. MSS operation pursuant to this authorization shall be consistent with the restrictions prescribed in paragraphs 53-59 of the *BAS Rebanding Order* for protection of primary-status BAS and CARS operation.
- c. Commercial ATC operation pursuant to this authorization shall not commence unless and until: i) TerreStar is in possession of a completely-constructed spare satellite or ii) construction of a spare satellite is in progress pursuant to a contractual schedule with a delivery deadline no more than one year in the future. TerreStar shall promptly notify the Commission of any suspension or abrogation of the construction contract for TerreStar-2 or any change in the delivery schedule by filing a statement for the record referencing File No. SES-LIC-20061206-02100 and emailing a copy to [IB-SATFO@fcc.gov](mailto:IB-SATFO@fcc.gov). TerreStar shall also notify the Commission in the same manner of the commencement of commercial ATC operation.
- 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. ATC stations authorized herein shall meet the limits on emissions in the 1559-1610 MHz band specified in paragraph 28, above.
- f. Operation under this authorization is conditioned upon and subject to compliance with any action taken in further proceedings in ET Docket 95-18, ET Docket 00-258, and WT Docket 02-55, and any related proceedings.

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<sup>95</sup> See *BAS Rebanding Order* at ¶¶ 53-54.

- g. Compliance with the 32 dBW limit on authorized base-station EIRP shall be determined in accordance with the methods prescribed in 47 C.F.R. § 24.232(d) and (e).<sup>96</sup>
- h. ATC services offered as Commercial Mobile Radio Services shall be provided in compliance with the requirements prescribed in 47 C.F.R. § 20.18(b)-(m), and grant of this application is without prejudice to any action in pending rulemaking proceedings concerning 911 and E911 requirements.
- i. This authorization is conditioned upon compliance with the provisions of the Agreement between TerreStar, its parent company, and affiliates, on the one hand, and the Department of Justice and the Department of Homeland Security, on the other hand, dated December 18, 2009, which is intended to enhance U.S. national security, law enforcement, and public safety. Nothing in the Agreement is intended to limit any obligation imposed by Federal law or regulation.

FEDERAL COMMUNICATIONS COMMISSION

Robert G. Nelson  
Chief, Satellite Division  
International Bureau

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<sup>96</sup> Also see 47 C.F.R. § 27.50(d)(5) and (6).