

Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington, DC 20554

In the Matter of )  
)  
Spectrum and Service Rules for Ancillary ) IB Docket No. 07-253  
Terrestrial Components in the 1.6/2.4 GHz ) RM-11339  
Big LEO Bands )  
)  
Review of the Spectrum Sharing Plan Among ) IB Docket No. 02-364  
Non-Geostationary Satellite Orbit Mobile )  
Satellite Service Systems in the 1.6/2.4 GHz )  
Bands )  
)

**REPLY COMMENTS**

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January 3, 2008

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## EXECUTIVE SUMMARY

Globalstar, Inc., (“Globalstar”) agrees with the Wireless Communications Association International, Inc. (“WCA”) on three critical points. First, Globalstar has abandoned its ill-conceived proposal to utilize the 2495-2500 MHz band for an Ancillary Terrestrial Component (“ATC”) component of its Mobile Satellite Service (“MSS”) system, and now only seeks to amend the Commission’s rules to permit ATC in the 2483.5-2495 MHz band. Second, Globalstar has acknowledged that any expansion of its authorized ATC spectrum will be subject to the overriding requirement (codified in Section 25.255 of the Commission’s Rules) that Globalstar’s ATC operations protect BRS channel 1 and other licensed services from harmful interference. Third, Globalstar has agreed that any ATC base station should be subject to the stricter limits on out-of-band-emissions (“OOBE”) set forth in Section 27.53(1)(2) and (1)(6) of the Commission’s Rules. While more must be done to assure full protection of BRS channel 1 licensees, Globalstar’s agreement on these points is a step in the right direction.

WCA continues to take issue with Globalstar’s proposal for rule changes that would permit it to routinely utilize the two megahertz at 2493-2495 MHz for ATC. As before, Globalstar refuses to accept the fact that the Commission has already considered the matter at length and concluded that ATC must be restricted to spectrum below 2493 MHz “to ensure adequate separation between MSS ATC and BRS operations at and above 2496 MHz.” Moreover, WCA’s concerns are not mitigated by Globalstar’s arrangement with Open Range Communications (“Open Range”), which apparently intends to employ Time Division Duplex (“TDD”) technology over Globalstar’s spectrum. A full evaluation of that arrangement is best left to some other proceeding where concerns about control and compliance with ATC gating requirements can be fully explored. For present purposes, however, the Commission must recognize that Section 25.149 of its Rules and Globalstar’s ATC authorization require Globalstar to operate ATC only in the forward-band mode, and thus TDD-based ATC is not permitted in the 2.4 GHz band. While WCA is not necessarily opposed to the issuance of a further notice of proposed rulemaking at some later date to solicit public comment on whether Globalstar should be permitted to operate ATC in a non-forward-band mode under appropriate rules designed to assure protection of BRS channel 1, Globalstar did not propose any change to Section 21.149 in the petition for rulemaking that commenced this proceeding, and the *NPRM* has not proposed any such change.

WCA appreciates that *if* the Commission in the future permits Globalstar’s ATC operations to utilize TDD, and *if* all neighboring BRS channel 1 base stations employ TDD technology, and *if* Globalstar synchronizes its operations with every BRS channel 1 base station that has a reception antenna within line-of-sight of Globalstar’s ATC such that all of the base stations transmit at the same time and receive at the same time, then ATC operations in the 2493-2495 MHz band will be benign. However, even assuming the Commission permits Globalstar’s ATC to utilize TDD technology, the other “ifs” are hardly foregone conclusions. Globalstar has not committed to utilizing TDD technology – it clearly intends to partner with others than Open Range and to utilize whatever technology suits the needs of its partners. Moreover, BRS channel 1 licensees have the flexibility to utilize TDD or Frequency Division Duplex technology, and are free to move between the two types of technologies at will. And, Globalstar may choose not to

synchronize at all times with neighboring BRS channel 1 licensees because differing business plans call for different ratios of uplink and downlink capacity.

Finally, Globalstar and Open Range are wrong when they assert that application of Sections 27.53(1)(2) and (6), standing alone, will “minimize or completely eliminate adjacent channel interference” even in those cases where ATC is not synchronized with BRS channel 1. Globalstar and Open Range conveniently ignore the fact that even where the interferer provides the more stringent  $67 + 10 \log(P)$  dB of attenuation measured 3 MHz into the victim’s spectrum as required by Section 27.53(1)(2), the operator of the victim base station must still back off three megahertz from the edge of its spectrum block because of limitations in achievable base station receiver filtering. Prior ex parte filings by equipment manufacturers and the initial comments filed in this proceeding thus have reaffirmed the need to preserve the existing three megahertz of separation between ATC and BRS channel 1, and neither Globalstar nor Open Range have made any technical showing to the contrary.

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**REPLY COMMENTS**

The Wireless Communications Association International, Inc. (“WCA”), by its attorneys, and pursuant to Section 1.415 of the Commission’s Rules, hereby submits its reply to the comments filed in response to the *Notice of Proposed Rulemaking* (“NPRM”) in the above-captioned proceeding.

**I. WCA AND GLOBALSTAR AGREE ON THREE CRITICAL ISSUES.**

At the outset, it must be noted that Globalstar, Inc. (“Globalstar”) has agreed with WCA on three issues that are critical first steps to assuring that any Ancillary Terrestrial Component (“ATC”) of Globalstar’s Mobile Satellite Service (“MSS”) system fully protects Broadband Radio Service (“BRS”) channel 1 licensees. First, Globalstar has retreated from its ill-conceived proposal to utilize the 2495-2500 MHz band for ATC, and now only seeks to amend the Commission’s rules to permit ATC in the 2483.5-2495 MHz band.<sup>1</sup> The record developed in

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<sup>1</sup> See Comments of Globalstar, Inc., IB Docket No. 07-253, at 2 (filed Dec. 19, 2007)[“Globalstar Comments”]. WCA is troubled, however, that Globalstar insists on stating that it is not seeking use of the 2495-2500 MHz band “at this time.” *Id.* at 2 n.2; see also *id.* at 24. Of course, Globalstar’s petition for rulemaking that commenced this proceeding did seek such authority, and Globalstar is undoubtedly embarrassed by the Commission’s conclusion “that it is not feasible or in the public interest to authorize ATC in the portion of the S-band that Big LEO MSS

response to the *NPRM* established beyond peradventure that ATC cannot share the 2495-2500 MHz band with BRS – indeed, no filing in response to the *NPRM* advocated that ATC be permitted above 2495 MHz.<sup>2</sup> As such, the Commission should affirm the *NPRM*'s tentative conclusion that “that it is not feasible or in the public interest to authorize ATC in the portion of the S-band that Big LEO MSS shares with the fixed and mobile services, at 2495-2500 MHz.”<sup>3</sup>

Second, WCA is pleased by Globalstar's concession that “should the Commission expand the spectrum in which Globalstar may deploy ATC, Globalstar's ATC operations in the expanded spectrum will be subject to the existing requirement that it not cause harmful interference to other licensed operations.”<sup>4</sup> As WCA established in its comments, that requirement – codified at Section 25.255 of the Commission's rules – is the lynchpin of any regulatory regime designed to assure that Globalstar's ATC operations not have any adverse impact on BRS channel 1.<sup>5</sup> While the record establishes that Section 25.255 by itself is not

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shares with the fixed and mobile services, at 2495-2500 MHz.” *Spectrum and Service Rules for Ancillary Terrestrial Components in the 1.6/2.4 GHz Big LEO Bands*, Second Order On Reconsideration, Second Report And Order, And Notice Of Proposed Rulemaking, IB Docket No. 07-253, FCC 07-194, at ¶ 40 (rel. Nov. 9, 2007) [“*NPRM*”]. However, the Commission should not abide Globalstar's effort to save face at the risk of leaving the BRS channel 1 allocation under a cloud of uncertainty. While the Commission cannot preclude Globalstar from submitting a petition for rulemaking seeking further rule changes in the future, the Commission should declare that it has no intention of permitting ATC to utilize the 2495-2500 MHz band.

<sup>2</sup> See, e.g. Comments of Wireless Communications Ass'n Int'l, Inc., IB Docket No. 07-253, at 4-5 (filed Dec. 19, 2007) [“WCA Comments”]; Comments of Sprint Nextel Corp., IB Docket No. 07-253, at 3-6 (filed Dec. 19, 2007) [“Sprint Nextel Comments”]; Comments of Motorola, Inc., IB Docket No. 07-253, at 2 (filed Dec. 19, 2007) [“Motorola Comments”]; Comments of WiMAX Forum, IB Docket No. 07-253, at 2 (filed Dec. 19, 2007) [“WiMAX Forum Comments”]; Comments of CTIA – The Wireless Association, IB Docket No. 07-253, at 3-7 (filed Dec. 19, 2007) [“CTIA Comments”].

<sup>3</sup> *NPRM* at ¶ 40.

<sup>4</sup> Globalstar Comments at 22. See also *id.* at vi (“[S]hould the Commission expand Globalstar' ATC authority, Globalstar's ATC operations in the expanded spectrum will be subject to the existing requirements in the Commission's rules and in its ATC authorization designed to prevent harmful interference to other licensed operations.”).

<sup>5</sup> See WCA Comments at 2-4, 7, 8. See also WiMAX Forum Comments at 4 n. 7.

sufficient to fully protect BRS channel 1 operations, it must remain a critical part of whatever regulatory regime is adopted in response to the *NPRM*.<sup>6</sup>

And, third, Globalstar has agreed with WCA that any ATC base station should be required to reduce its out-of-band-emissions (“OOBE”) to the stricter limits set forth in Section 27.53(1)(2) and (1)(6) of the Commission’s Rules.<sup>7</sup> While the record before the Commission establishes that subjecting ATC to this stricter limit on OOBE does not obviate the need either for retention of Section 25.255<sup>8</sup> or for a general ban on ATC above 2493 MHz, Globalstar’s agreement to be subject to the stricter OOBE requirements is a step in the right direction.

**II. UNTIL SUCH TIME AS THE COMMISSION AMENDS ITS RULES TO PERMIT NON-FORWARD-BAND ATC USE UNDER CONDITIONS THAT FULLY PROTECT BRS CHANNEL 1, ATC MUST REMAIN RESTRICTED TO SPECTRUM BELOW 2493 MHz**

While Globalstar and WCA are in agreement on the three points highlighted above, WCA continues to take issue with Globalstar’s proposal for rule changes that will permit it to routinely utilize the two megahertz at 2493-2495 MHz for ATC. The history of the Commission’s decision to ban ATC above 2493 MHz to protect BRS channel 1 from harmful interference has been recounted by WCA and others in their initial comments in response to the *NPRM*, and need not be repeated in detail here.<sup>9</sup> Suffice it to say that Globalstar engages in revisionist history when it suggests that restricting ATC to spectrum below 2493 MHz was merely a temporary step

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<sup>6</sup> As WCA and others have stressed, while Section 25.255 effectively renders Globalstar’s ATC usage secondary to BRS, the Commission has recognized that “[e]stablishing a secondary allocation, . . . , does not itself adequately protect primary licensees against interference.” See WCA Comments at 6 and Sprint Nextel Comments at 7 n.20, quoting *Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, L-Band, and the 1.6/2.4 Bands, et al.*, Report and Order and Notice of Proposed Rulemaking, 18 FCC Rcd 1962, 1997 (2003) [“ATC Order”].

<sup>7</sup> See Globalstar Comments at 23, 25, Technical Appendix at 13.

<sup>8</sup> See WCA Comments at 8.

<sup>9</sup> See *id.* at 3-6; CTIA Comments at 7-8; WiMAX Forum Comments at 3; Sprint Nextel Comments at 7-8.

pending some future allocation of spectrum for BRS, and had no connection to interference protection concerns.<sup>10</sup>

Globalstar defies credulity when it suggests that the Commission intended to revisit its ban on ATC use above 2493 MHz once it decided where BRS channel 1 would be located.<sup>11</sup> In fact, the two decisions were made contemporaneously – the Commission’s decision to restrict Globalstar’s ATC to spectrum below 2493 MHz was adopted at the very same Commission open meeting as the decision to relocate BRS channel 1 from 2150-2156 MHz to 2496-2502 MHz.<sup>12</sup> More importantly, the Commission has stated with crystalline clarity that the decision to establish the current three megahertz separation between ATC and BRS channel 1 was made specifically “to ensure adequate separation between MSS ATC and BRS operations at and above 2496 MHz.”<sup>13</sup> As the Commission stated at the time, the ban on ATC use above 2493 MHz was

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<sup>10</sup> See Globalstar Comments at 13, 24. Globalstar’s suggestion that there is no technical reason for the guardband between ATC and BRS channel 1 is particularly curious given that the guardband was first proposed by Globalstar itself to avoid interference to BRS or EBS. See Letter from William D. Wallace, Esq., Counsel for Globalstar, L.P., to William Caton, Acting Secretary, Federal Communications Commission, IB Docket No. 01-185, Attachment 1 at 26 (filed Mar. 13, 2002). The Commission ultimately agreed and separated ATC from the 2.5 GHz band to assure interference protection. See *ATC Order*, 18 FCC Rcd at 2062; Sprint Nextel Comments at 6, 8-9.

<sup>11</sup> See Globalstar Comments at 15.

<sup>12</sup> See *Amendment of Parts 1, 21, 73, 74 and 101 of the Commission’s Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands*, Report and Order and Further Notice of Proposed Rulemaking, 19 FCC Rcd 14165, 14177-78 (2004) (“Contemporaneously with the adoption of this item, we have, in IB Docket No. 02-364 (Big Leo Spectrum Sharing R&O proceeding) added a co-primary fixed and mobile (except aeronautical mobile) service allocation to the 2495-2500 MHz band. That allocation is intended to facilitate the relocation of MDS Channels 1 and 2 to spectrum embedded with other MDS operations that we address herein. The actions within the Big Leo Spectrum Sharing R&O proceeding combined with the new band plan for the band will increase the efficient utilization of the 2496-2690 MHz spectrum and resolves the relocation of MDS Channels 1 and 2 by integrating these licensees with similar operations”) [*“2004 BRS/EBS R&O”*]; *Review of the Spectrum Sharing Plan Among Non-Geostationary Satellite Orbit Mobile Satellite Service Systems in the 1.6/2.4 GHz Bands; 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*, Report and Order, Fourth Report and Order and Further Notice of Proposed Rulemaking, 19 FCC Rcd 13356, 13385-90 (2004) [*“Big LEO Spectrum Sharing Order”*].

<sup>13</sup> *Amendment of Parts 1, 21, 73, 74 and 101 of the Commission’s Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands*, Order on Reconsideration and Fifth Memorandum Opinion and Order and Third Memorandum Opinion and Order and Second Report and Order, 21 FCC Rcd 5606, 5613-14 (2006) [*“2006 BRS/EBS Order”*].

to provide “even greater frequency separation (*i.e.*, 2 megahertz plus 1 megahertz guard band from 2495-2496 MHz to protect BRS” and thus assure that assure that BRS channel 1 licensees not suffer as a result of their involuntary relocation to 2496-2502 MHz.<sup>14</sup>

Given this history (which is barely three years old), Globalstar and its allies bear a heavy burden to demonstrate that the Commission was wrong in concluding that a three megahertz guardband is necessary to protect BRS channel 1 operations from any harm resulting from Globalstar’s introduction of ATC. They have failed to carry that burden here.<sup>15</sup>

The arguments by Globalstar and its business partner Open Range Communications, Inc. (“Open Range”) make much of the fact that they have entered into an agreement pursuant to which Open Range intends to employ Time Division Duplex (“TDD”) technology in providing a terrestrial broadband service in certain rural markets utilizing Globalstar’s MSS spectrum.<sup>16</sup> This notice and comment rulemaking proceeding is not the proper place for the Commission to evaluate whether the relationship between Globalstar and Open Range comports with the applicable Commission rules. Although the public record is quite limited (Globalstar and Open Range have not, for example, filed their arrangement with the Commission) and far more information is required before WCA or the Commission can evaluate the issues raised by that relationship, what is available to date suggests there are serious questions as to: (a) whether

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<sup>14</sup> See *supra* note 9; *Big LEO Spectrum Sharing Order*, 19 FCC Rcd at 13388-89. It should be noted that Globalstar is fundamentally wrong when it asserts that “no BRS licensees appear to be using BRS channel 1.” Globalstar Comments at 25 n. 69. To the contrary, the record developed in ET Docket 00-258 establishes that BRS channel 1 is being used extensively across the country, including in many rural markets, to provide wireless broadband service to subscribers. See *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*, Ninth Report and Order and Order, 21 FCC Rcd 4473, 4481 (2006).

<sup>15</sup> Although Main Street Broadband, LLC has filed comments in support of Globalstar’s proposals, it provides absolutely no technical argument in support of its assertion that a one megahertz guardband will be sufficient to protect BRS channel 1. See Comments of Main Street Broadband LLC, IB Docket No. 07-253, at 2 (filed Dec. 19, 2007).

<sup>16</sup> See Globalstar Comments at 5-8; Comments of Open Range Communications, Inc., IB Docket No. 07-253, at 6 (filed Dec. 19, 2007).

Globalstar will be retaining sufficient control over the planned ATC facilities to comport with Section 310(d) of the Communications Act of 1934, as amended and the Commission's implementing rules; and (b) whether the wireless broadband services that Open Range will offer over Globalstar's spectrum comply with the applicable gating requirements set forth in Section 25.149, including the integration requirement.<sup>17</sup> Indeed, that Globalstar and Open Range have failed to formally solicit Commission guidance as to whether their relationship passes muster is surprising given Globalstar's admission to the Securities and Exchange Commission ("SEC") that "the scope of ATC services that we will be permitted and required to provide under our existing FCC license is unclear."<sup>18</sup> In any event, WCA fully intends to address these issues in more detail at the appropriate time to assure that Globalstar, has conceded to the SEC that the technical problems afflicting its satellite constellation have jeopardized its ability to offer viable two-way communications services, is not merely seeking to monetize its spectrum holdings without regard to the rules and policies that permit it to offer ATC services in the first place.<sup>19</sup>

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<sup>17</sup> See 47 C.F.R. § 25.149(b)(4). Of particular interest to WCA will be how Globalstar intends to integrate Open Range's service with Globalstar's MSS service. WCA is aware of Globalstar's rhetoric that a combined service offering will permit Open Range subscribers to secure broadband service even where Open Range does not provide service. See Globalstar Comments at 7. However, the economics of the subscriber equipment market are such that WCA questions whether Globalstar/Open Range could afford to offer subscriber equipment capable of receiving both terrestrial WiMAX service and MSS service at prices that consumers will find reasonable. Yet, absent such dual-mode devices, Globalstar is going to have a very tough row to hoe in demonstrating that the terrestrial and satellite components are integrated. See *ATC Order*, 18 FCC Rcd at 2008-9 (establishing dual mode handsets as the "safe harbor" for satisfying the Commission's ATC integration requirement). Moreover, Globalstar states that it would use exceptionally low power, four-watt base station transmitters in a system ostensibly designed to serve large, sparsely populated areas of the country. The low-power base station model would seem inconsistent with a rural deployment strategy that, in any case, is at odds with the original purpose of the ATC authorization to supplement MSS service in the "urban canyons" and other areas where satellite service cannot reach. 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 Band*, Memorandum Opinion and Order and Second Order on Reconsideration, 20 FCC Rcd 4616, 4624 (2005).

<sup>18</sup> Globalstar, Inc. Quarterly Report Pursuant to Section 13 or 15(d) of the Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 (Form 10-Q), at 48 (Nov. 14, 2007).

<sup>19</sup> See *id.* at 43 ("if we are unsuccessful in developing additional technical solutions, interruptions of two-way communications services will increase and y some time in 2008 substantially all of our in-orbit satellites launched prior to 2007 will cease to support two-way communications services."). The status of Globalstar's satellites is highly relevant to the question of whether ATC can be offered on Globalstar's spectrum, as it goes directly to

While those issues can await a more complete analysis in the future, for purposes of this proceeding it is essential to note that any ATC on Globalstar's spectrum is presently required to operate only in the forward-band mode, using the spectrum in the 2.4 GHz band solely for transmissions from base stations to subscribers. That requirement is set forth in Section 25.149(a) of the Commission's Rules,<sup>20</sup> and Globalstar represented to the Commission that it would comply with the rule when it applied for its ATC authorization.<sup>21</sup> Moreover, the International Bureau specifically conditioned Globalstar's ATC authorization on forward-band mode operations.<sup>22</sup> Thus, because TDD systems use the same spectrum for both base-to-subscriber and subscriber-to-base communications, TDD ATC in the 2.4 GHz band is not permitted at the present time. While WCA is not necessarily opposed to the issuance of a further notice of proposed rulemaking at some later date to solicit public comment on whether Globalstar should be permitted to operate ATC in a non-forward-band mode under appropriate rules designed to assure protection of BRS channel 1,<sup>23</sup> Globalstar did not propose any change to

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whether the gating criteria established by the Commission to preserve the integrity of the MSS allocation is preserved. As Globalstar has conceded in its SEC filing "our authority to provide ATC services is contingent on our continuing to offer satellite services to our customers and having a usable in-orbit spare satellite at the time we begin to offer ATC services." *Id.* at 48.

<sup>20</sup> See 47 C.F.R. §25.149(a). It is worth noting that while L-band MSS licensees are permitted to apply for authorization to operate ATC in a non-forward-band mode if it can demonstrate that such operations would produce no greater potential interference than that resulting from forward-band mode operations, the Commission has not afforded such flexibility to Globalstar. See *id.* at Note to (a)(1).

<sup>21</sup> See Application of Globalstar USA, LLC, File No. SES-MOD-INTR2005000456, at Ex. B, p. 1 (filed Mar. 1, 2005) ("The Globalstar ATC mobile user terminals will transmit only in the 1610-1615.5 MHz band, and the Globalstar ATC base stations will transmit only in the 2487.5-2493 MHz band."); *id.* at Ex. B-1, p. 2 ("The Globalstar ATC system will operate in the 'forward-band' mode for 1.6/2.4 GHz MSS systems."); *id.* at 3 ("Globalstar is not requesting, and does not require, any waivers of the Commission's ATC rules to incorporate the ATC into its existing service offerings.").

<sup>22</sup> See *Globalstar, LLC*, 21 FCC Rcd 398, 400, 413 (2006).

<sup>23</sup> At a minimum, any use by Globalstar of non-forward-band technology should be subject to continued compliance with the absolute interference protection requirement set forth in Section 25.255 of the Rules, to maintenance of the current ban on ATC operations in the 2493-2495 MHz band except where ATC is consented to by any BRS channel 1 licensee with a base station that has a reception antenna with line-of-sight to the ATC transmitting antenna, and to protection of the current flexibility enjoyed by BRS licensees to use TDD or FDD technology and change technologies from time to time as consumer demand dictates. See *infra* n. 26.

Section 21.149 in the petition for rulemaking that commenced this proceeding, and, obviously, the *NPRM* has not proposed any such change. As such, it is bizarre that Globalstar and Open Range now would have the Commission lift the ban on ATC operations in the 2493-2495 MHz band by citing to their plans to use TDD, which the Commission's rules expressly prohibit.

WCA appreciates that *if* the Commission in the future permits Globalstar's ATC operations to utilize TDD,<sup>24</sup> and *if* all neighboring BRS channel 1 base stations employ TDD technology, and *if* Globalstar synchronizes its operations with every BRS channel 1 base station that has a reception antenna within line-of-sight of Globalstar's ATC such that all of the base stations transmit at the same time and receive at the same time, then ATC operations in the 2493-2495 MHz band will be benign. However, even assuming the Commission permits Globalstar's ATC to utilize TDD technology, the other "ifs" are hardly foregone conclusions.

First, the Commission's BRS rules do not require licensees to utilize TDD technology, but instead afford BRS licensees the flexibility to utilize the TDD or FDD technology of their choosing.<sup>25</sup> The Commission has recognized that "not restricting the [2.5 GHz] band to a particular technology allows licensees and systems operators to deploy either FDD or TDD technology, and freely switch between the two as the technology develops and the marketplace demands evolve."<sup>26</sup> Indeed, to WCA's knowledge, every BRS channel 1 system in operation today utilizes FDD technology, pairing BRS channel 1 for subscriber-to-base transmissions with other 2.5 GHz spectrum for base-to-subscriber transmissions. While many BRS channel 1

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<sup>24</sup> While WCA recognizes that Globalstar apparently intends to permit Open Range and others to provide terrestrial services on its spectrum, it remains to be seen whether such arrangements will be permitted by the Commission. For purposes of the following discussion, WCA will simply utilize "Globalstar" to refer to whatever entity is providing the terrestrial service.

<sup>25</sup> See *2004 BRS/EBS R&O*, 19 FCC Rcd at 14184 ("The plan we adopt is also technologically neutral, affording licensees the flexibility to deploy either FDD or TDD technology anywhere in the 2.5 GHz band.")

<sup>26</sup> *Id.* at 14216. Indeed, the Commission specifically rejected a proposal that would have required BRS licensees to make an initial selection between TDD and FDD and thereafter be bound by that selection. See *id.*

licensees may deploy TDD technology, whatever rules are adopted in this proceeding must assure BRS channel 1 licensees that their flexibility to utilize BRS channel 1 in conjunction with an FDD technology from time to time is fully protected against interference from ATC.

Second, even if the BRS and ATC systems both employ TDD technology, there can be no assurance that Globalstar will be able to reach agreement with a neighboring BRS channel 1 licensee on synchronization. For Globalstar to avoid interference, it must lock its operations to the same timing reference used by the BRS channel 1 licensee and synchronize its operations such that at all times it is transmitting in a given direction at precisely the same time and for precisely the same duration as the BRS channel 1 base station. The former requirement is likely not to be problematic, as WCA expects that most BRS TDD systems in the United States will synchronize to the Global Positioning System, and Globalstar should have no difficulty doing the same. However, Globalstar may not wish to operate its facilities using the same uplink-downlink ratio as the BRS channel 1 licensee (*i.e.*, Globalstar may wish to allocate its capacity between uplink and downlink in a different proportion than the BRS channel 1 licensee) and thus the parties will be unable to agree upon synchronization. In other words, even where both Globalstar and the BRS channel 1 channel licensee use TDD technology, there is the possibility that Globalstar will not agree to synchronize with the BRS channel 1 licensee. While it may be that Globalstar has sufficiently flexibility that its operations “can easily be synchronized” with BRS channel 1 operations,<sup>27</sup> the Commission cannot assume that synchronization will occur in all cases.

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<sup>27</sup> See Globalstar Comments at 26. This is particularly true given that the Commission has afforded BRS licensees the flexibility to change the uplink-downlink ratios of their systems over time to respond to consumer demand. Even if Globalstar elects to synchronize its system at the outset, it may not want to maintain the same uplink-downlink ratios as the adjacent-channel licensees over time.

Finally, Globalstar has not committed to utilize TDD technology for ATC across the United States, even if the Commission ultimately permits it to do so. While Open Range apparently desires to use TDD in those areas where it hopes to utilize Globalstar's spectrum, Globalstar appears to be contemplating entering into agreements with others and using whatever technology its partners desire to employ in their markets. Thus, for all of its reliance on the benefits of TDD synchronization, Globalstar is not committed to universal deployment of TDD technology.

Given that synchronization is not possible under the current requirement that Globalstar ATC operate in the forward-band mode, and is hardly a foregone conclusion even if the Commission modifies that requirement, the Commission must retain its current general ban on ATC use of spectrum above 2493 MHz. Globalstar and Open Range would have the Commission believe, wrongly, that application of Sections 27.53(1)(2) and (6) of the Commission's Rules to ATC operations will "minimize or completely eliminate adjacent channel interference."<sup>28</sup> What their argument conveniently ignores, however, *is that even where the interferer provides the more stringent  $67 + 10 \log(P)$  dB of attenuation measured 3 MHz into the victim's spectrum as required by Section 27.53(1)(2), the operator of the victim base station must still back off three megahertz from the edge of its spectrum block because of limitations in achievable base station receiver filtering.*

*Ex parte* filings in response to Globalstar's petition for rulemaking by manufacturers of WiMAX base station components used in the 2.5 GHz band establish that at least three megahertz of separation between ATC and BRS channel 1 is necessary "to achieve marginally sufficient attenuation even with the best of filter designs [and] to avoid overload interference

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<sup>28</sup> Open Range Comments at 7; *see also* Globalstar Comments at 23.

while still being capable of sufficiently amplifying the extremely weak signals from mobile devices.”<sup>29</sup> This is why, as WCA noted, designers of 2.5 GHz band networks preserve a three megahertz guardband at the edge of their frequency block in the absence of an agreement with adjacent channel licensees to synchronize operations.<sup>30</sup> And, WCA was hardly alone in pointing out the problem. Motorola correctly notes that “[a]bsent mitigation techniques such as synchronization, significant guard bands are necessary to prevent inter-service interference in these S-band frequencies.”<sup>31</sup> Along similar lines, Nortel acknowledges that where one operator deploys TDD technology and the adjacent operator deploys FDD technology, “[a] guard band is necessary when operators use different duplexing schemes.”<sup>32</sup> As Sprint Nextel confirms, “[i]n the 2.5 GHz band, BRS-EBS operators that use [TDD] technologies, such as WiMAX, design their systems to operate with at least three megahertz of separation from other non-synchronized TDD operations or FDD systems.”<sup>33</sup> In other words, even if ATC is subject to Sections 27.53(l)(2) and (6), BRS channel 1 licensees will be subject to interference unless ATC is restricted to the spectrum below 2493 MHz. While Globalstar sanctimoniously declares that “each and every licensed operator bears responsibility to . . . protect itself to the greatest extent possible

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<sup>29</sup> Letter from David M. Sobczak, CSS Antenna, Inc., to Marlene H. Dortch, Secretary, Federal Communications Commission, RM-11339, at 2 (filed Oct. 24, 2007); Letter from Burton J. Calloway, KMW Communications, Marlene H. Dortch, Secretary, Federal Communications Commission, RM-11339, at 1 (filed Oct. 24, 2007). *See also* Letter from Vince Caputo, Andrew Corporation, to Marlene H. Dortch, Secretary, Federal Communications Commission, RM-11339 (filed Oct. 26, 2007).

<sup>30</sup> At the same time, although application of Section 27.53(l)(2) does not obviate the need for a three megahertz guardband absent synchronization, it makes eminently good sense to subject Globalstar’s ATC operations to the restrictions on OOBE set forth in that rule. *See* WCA Comments at 8.

<sup>31</sup> Motorola Comments at 3.

<sup>32</sup> Nortel Comments at 3.

<sup>33</sup> Sprint Nextel Comments at 9. The need for these transition zones, which allow base station receivers to filter out transmissions from another system’s base station transmitters, is reflected in Section 27.53(l)(2) of the Commission’s Rules, which provides for a more stringent base station spectral mask measured three megahertz from the channel block edge. *See id.* at 9 n. 24.

from unintentional interference,”<sup>34</sup> Globalstar’s rhetoric ignores the fact that the Commission has conditioned Globalstar’s ATC authority on Globalstar’s compliance with its absolute obligation to cure interference to licensees in other services. Moreover, the record before the Commission establishes that, given the limitations of filter technology, there is nothing more that BRS licensees can reasonably do to avoid interference from non-synchronized ATC operations above 2493 MHz.<sup>35</sup> The only approach that will fully protect BRS channel 1 absent synchronization is to retain the existing ban on ATC use of spectrum above 2493 MHz.

Globalstar’s failure to appreciate that Sections 27.53(1)(2) and (6) are not a panacea is hardly the only weakness in its technical analysis. As is discussed in detail in the reply comments submitted today by Sprint Nextel Corporation, Globalstar’s analysis of interference from non-synchronized ATC to BRS channel 1 is fundamentally flawed, as it severely underestimates the potential for interference to BRS channel 1 licensees if ATC is permitted to operate above 2493 MHz.<sup>36</sup> In the interest of brevity, WCA incorporates that discussion by reference here.

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<sup>34</sup> Globalstar Comments at 27. Globalstar fundamentally misstates the Commission’s ATC policy when it asserts that “planned operations on BRS channel 1 are no more or less commercially important than Globalstar’s ATC operations below 2495 MHz . . . .” *Id.* at 28. In fact, the Commission has concluded that BRS channel 1 has primacy, imposing on ATC the absolute obligation to cure any interference that it causes to BRS channel 1. *See* 47 C.F.R. § 25.255.

<sup>35</sup> *See supra* n. 29.

<sup>36</sup> WCA is particularly disturbed by the fact that Globalstar’s analysis assumes an unreasonably low power level for ATC base station transmitters, particularly for those that will likely be used in the rural areas Open Range proposes to serve. As Sprint Nextel discusses in detail, it certainly appears that Globalstar makes assumptions to support its desired results, and not to reflect likely deployments.

While Globalstar purports that it “provided a detailed technical demonstration in its original ATC application that is ATC services would not cause interfere to other licensees operating on the same or adjacent spectrum,” (*see* Globalstar Comments at 23), in fact its ATC application was long on conclusory statements and short on technical analysis. *See, e.g.,* Reply Comments of Wireless Communications Ass’n Int’l., FCC File No. SAT-MOD-20050301-00054 et al. at 3-5 (filed June 8, 2005). More importantly, *any statements made by Globalstar in its ATC application are of no moment here, since the ATC application was predicated on using “forward band” mode only, and on limiting ATC operations to spectrum below 2493 MHz!*

In short, there is no basis in the record from which the Commission can conclude that a one megahertz separation between ATC and BRS channel 1 is sufficient to protect BRS channel 1 operations under all possible circumstances. WCA appreciates that *if* the Commission in the future allows Globalstar to utilize TDD technology to provide ATC (relief that Globalstar has yet to even request) and *if* Globalstar is able to reach synchronization agreements with neighboring BRS channel 1 license holders, it may be possible for Globalstar to utilize spectrum up to 2495 MHz for ATC without interference to those neighboring BRS channel 1 license holders. But until the Commission formally proposes modification of Section 25.149 to permit Globalstar to utilize TDD technologies, any discussion of the rules and policies that would govern Globalstar's use of the 2493-2495 MHz band for ATC is premature. For now, the Commission must assume that synchronization will not always occur, and retain the ban on ATC use above 2493 MHz to assure protection of BRS channel 1 licensees.

Respectfully submitted,

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January 3, 2008