Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of

Terrestrial Use of the 2473-2495 MHz Band for Low-Power Mobile Broadband Networks; IB Docket No. 13-213
Amendments to Rules for the Ancillary Terrestrial Component of Mobile Satellite Service Systems RM-11685

REPLY COMMENTS OF THE WIRELESS COMMUNICATIONS ASSOCIATION INTERNATIONAL

The Wireless Communications Association International (“WCAI”), by its attorneys and pursuant to Section 1.415(a) of the Commission’s Rules,¹ hereby submits its reply to the comments filed in response to the Notice of Proposed Rulemaking (the “Notice”) in this proceeding.² While WCAI is pleased that Globalstar has acknowledged its obligation to continue providing Broadband Radio Service (“BRS”) Channel 1 licensees with absolute protection against harmful interference, there remain unanswered questions as to how Globalstar will meet that obligation. Until those questions are answered, the Commission should refrain from modifying its Ancillary Terrestrial Component (“ATC”) rules or otherwise authorizing Globalstar to provide a terrestrial low-power service over its 2483.5-2495 MHz Mobile Satellite Service (“MSS”) spectrum.

¹ 47 C.F.R. § 1.415(a).
I. GLOBALSTAR HAS YET TO DEMONSTRATE HOW IT WILL SATISFY BRS CHANNEL 1’S ABSOLUTE RIGHT TO PROTECTION AGAINST HARMFUL INTERFERENCE.

A central theme of the comments filed by those concerned about potential interference to BRS Channel 1 is that the Commission must not retreat from its prior declarations that “[o]ur rules impose an absolute obligation on the MSS/ATC operator to resolve any harmful interference to other services”\(^3\) and that Globalstar has an “absolute obligation to eliminate any harmful interference to BRS that may nevertheless occur” even if it complies with the power limitations, out-of-band emission limits and other technical rules applicable to terrestrial use of its spectrum.\(^4\)

WCAI was pleased that the *Notice* proposed that “Globalstar’s low-power ATC operations in the 2483.5-2495 MHz band would not be entitled to interference protection” from licensed operations and that “Globalstar’s operations would also need to protect other licensed services from harmful interference to the extent required under current rules.”\(^5\) And, WCAI is even more pleased by Globalstar’s acknowledgement in response that:


\(^5\) *Notice*, 28 FCC Rcd at 15359 ¶ 20 (citation omitted). As Sprint Corp. (“Sprint”) correctly noted, there is a substantial risk that BRS Channel 1 base stations will cause brute force overload interference to nearby Globalstar low-powered access points and end user devices. *See* Sprint Comments at 7. Globalstar’s own comments acknowledge that “Globalstar’s TLPS would be required . . . to accept interference from other licensed systems.” Comments of Globalstar, Inc., IB Docket No. 13-213, at 25 (filed May 5, 2014) [“Globalstar Comments”]. Thus, if the Commission does move forward with the proposals advanced in the *Notice*, it can and should confirm that Globalstar’s terrestrial operations are subject to whatever interference may be caused by BRS operations that otherwise comply with the Part 27 technical rules.
as an ATC service at 2483.5-2495 MHz and an unlicensed service at 2473-2483.5 MHz, Globalstar’s TLPS would be required to avoid harmful interference to other licensed operations and to accept interference from other licensed systems. TLPS can meet these obligations and coexist successfully with licensed services such as the Broadband Radio Service (“BRS”) and Educational Broadband Service (“EBS”) at 2.5 GHz.6

What concerns WCAI, however, are the unanswered questions as to how Globalstar will satisfy its obligation to protect BRS Channel 1 licensees, particularly if the Commission adopts Globalstar’s proposal for a less-rigorous unwanted emissions limit above 2495 MHz. Given that Globalstar anticipates serving millions of consumer mobile end user devices, curing interference when it is caused by such a device is going to be a challenge. Simply put, WCAI fears that because the interfering devices often will be highly mobile, in the overwhelming majority of cases the interfering device will be long gone before Globalstar can identify the source of interference and effectuate a cure. Indeed, Globalstar’s own discussion of its network operations system suggests that Globalstar may not even be able to identify individual client devices as sources of interference.7 Given the limited capability, if any, that Globalstar will have to mitigate interference after the fact, it is essential that the Commission impose appropriate power and unwanted emission limits on Globalstar’s terrestrial operations ab initio.

As noted in WCAI’s initial comments, when WCAI and others expressed serious concerns about interference to BRS Channel 1 in response to the cursory technical analysis

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6 Globalstar Comments at 25.

7 In describing how it would eliminate interference, Globalstar notes that “[a] remote technician could use the TLPS NOS to shut down a particular TLPS access point, alter access points’ power output or radiation pattern, or perform other needed diagnostic and remedial functions.” Id. at 21 (emphasis added). See also id. at 39 (“Globalstar’s use of a NOS to control and manage TLPS access points is critical to minimizing interference to its own MSS and other licensed services.”). Globalstar does not discuss any control over individual client devices that may be the source of interference.
submitted as Appendix B to Globalstar’s initial petition for rulemaking.\(^8\) Globalstar committed that “[g]oing forward, Globalstar anticipates providing additional technical analysis regarding these interference issues in the Commission’s open, transparent rulemaking process on Big LEO reforms permitting deployment of TLPS.”\(^9\) Unfortunately, Globalstar did not provide any such additional technical analysis with its comments in response to the Notice, and instead merely regurgitates the same discussion from Appendix B that had proved wanting in the first place.\(^10\)

In contrast, Sprint has presented the Commission with a detailed discussion of the potential for interference to BRS Channel 1 from brute force overload and from unwanted emissions, particularly should Globalstar’s proposed unwanted emission limit be adopted.\(^11\) That discussion need not be repeated here. However, it is worth noting again that none of the concerns WCAI and Sprint are raising are particularly new. Indeed, six years ago the Commission itself specifically warned Globalstar of the challenges it would face in attempting to operate terrestrially in close proximity to BRS Channel 1 operations, and recommended that

\(^8\) See Reply of the Wireless Communications Ass’n Int’l, RM-11685, at 4 (filed Jan. 29, 2013) [“WCAI RM Comments”] (“Globalstar has provided such scanty information regarding its proposed TLPS that it simply is not possible for BRS interests to accurately assess the potential for interference to existing and planned BRS operations.”); Comments of Clearwire Corporation, RM-11685, at 6, 12 (filed Jan. 14, 2013).

\(^9\) Consolidated Reply of Globalstar, Inc., RM-11685, at 7 (filed Jan. 29, 2013). See also Letter from Regina M. Keeney, Counsel to Globalstar, Inc., to Marlene H. Dortch, Secretary, Federal Communications Commission, RM-11685, at 2 (filed Feb. 22, 2013) (“Globalstar has made clear its commitment to minimize interference to adjacent-band Broadband Radio Service (“BRS”) and Educational Broadband Service (“EBS”) systems and other services, and it recognizes that such interference issues will be a focus of the Commission’s rulemaking.”).

\(^10\) See Globalstar Comments at 27 n.51, n.52, n.53, n.54. In addition, as Sprint demonstrates, Globalstar’s reliance on the efforts by BRS interests to secure a less restrictive emissions mask for mobile devices is not relevant here, since the proposed rule would maintain the current limits on unwanted emissions below 2495 MHz and are predicated on the BRS industry’s embrace of time-synchronization to avoid interference (which cannot be employed to limit interference from Globalstar’s proposed service, since it will not employ a time division duplex modulation scheme). See Sprint Comments at 6.

\(^11\) See Sprint Comments at 6-8.
ATC be limited to areas physically removed from BRS use.12 Yet, Globalstar now ignores that suggestion and instead embraces a business plan that calls for operating in the same urban and suburban areas where BRS Channel 1 mobile devices and base stations are already being deployed. The burden is on Globalstar to establish that it will be able to avoid interference to BRS Channel 1 operations operating under its preferred technical rules.13 Globalstar has yet to carry that burden.

II. THE COMMISSION MUST ASSURE THAT ALL DEVICES CAPABLE OF OPERATING AT 2483.5-2495 MHZ ARE UNDER GLOBALSTAR’S CONTROL AT ALL TIMES.

In response to the Notice, the Commission was urged to assure that all devices capable of operating at 2483.5-2495 MHz, whether master access points or client devices, are at all times under Globalstar’s control.14 Globalstar has supported the adoption of such a requirement.15

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12 Globalstar ATC Modification Order, 23 FCC Rcd at 7224.

13 It is again worth noting that the Commission has warned Globalstar that, even if it complies with the power limitations, out-of-band emission limits and other technical rules applicable to terrestrial use of its spectrum, Globalstar has an “absolute obligation to eliminate any harmful interference to BRS that may nevertheless occur, including its obligation to reduce the power of operations in its upper channel or channels, or cease operations entirely in its upper channel or channels, to eliminate harmful interference to BRS Channel 1 operations.” Id. at 7222. See also WCAI Comments at 3. Globalstar has acknowledged its obligation to address any interference that does occur, notwithstanding compliance with the technical rules, claiming that its network operations center would be equipped to address any “unlikely incidents” of interference. Globalstar Comments at 28.

14 See WCAI Comments at 8-10; Sprint Comments at 9.

15 See Globalstar Comments at 20-21. While Globalstar proclaims that such common control “is essential to protecting existing Big LEO MSS operations,” WCAI takes that claim with a grain of salt. See id. at 21. Indeed, WCAI suspects that if the Commission examines Globalstar’s network operation plans, it will find that because MSS satellite phone usage generally occurs in remote areas, and its low-power terrestrial service will be offered in more urban and suburban areas, there is virtually no risk of interference between Globalstar’s two service offerings and thus no active network management planned to mitigate it. The proclaimed need for network management, WCAI suspects, is nothing more than an excuse for keeping Wi-Fi and other unlicensed users out of the 2473-2483.5 MHz band.
However, many questions remain unanswered regarding how Globalstar will control the devices empowered to operate in the 2483.4-2495 MHz band so that Globalstar will at all times be capable of curing any interference to BRS Channel 1.\textsuperscript{16} Globalstar’s petition provided a very high level overview of its intentions,\textsuperscript{17} but as the Notice implicitly recognized, far more detail is needed before the Commission can put stock in Globalstar’s claim that it will remain in control of all devices that operate in the 2483.5-2495 MHz band.

Unfortunately, Globalstar has chosen not to provide such detail. Instead, it largely repeated its earlier high-level discussion.\textsuperscript{18} WCAI’s comments specifically advanced a series of questions that remain unanswered, and WCAI is hopeful that Globalstar will address those questions in its own reply comments.\textsuperscript{19} Absent more detail from Globalstar on these issues, neither the Commission nor the BRS Channel 1 licensee community can take comfort that Globalstar’s proposed low-power terrestrial service can be implemented without a material risk of interference to BRS Channel 1 operations.

\textsuperscript{16} It is worth noting that while the Notice raises several questions regarding the feasibility of Globalstar’s plan to utilize existing client end user devices via software upgrades, not one manufacturer of IEEE 802.11-compliant equipment provided any data. See Notice, 28 FCC Rcd at 15369 (“we seek comment on whether the currently deployed devices have the hardware capability to operate in the additional frequency band with the Globalstar proposed protocol. We also seek comment on whether existing devices could be modified though over-the-air software changes, or whether changes to the devices’ firmware would be necessary.”). Indeed, Cisco Systems, Inc., an acknowledged leader of the IEEE 802.11 community, noted that it was not clear whether most end user devices could be upgraded to operate on Channel 14 through a simple RF software upgrade. See Comments of Cisco Systems, Inc., IB Docket No. 13-213 at 3 n.3 (filed May 5, 2014).

\textsuperscript{17} See Petition of Globalstar, Inc. for Rulemaking, RM-11685, at 42-43 (filed Nov. 13, 2012).

\textsuperscript{18} See Globalstar Comments at 20-22.

\textsuperscript{19} See WCAI Comments at 9-10.
III. THE EQUIPMENT AUTHORIZATION REQUIREMENTS APPLICABLE TO EQUIPMENT USED IN GLOBALSTAR’S TERRESTRIAL NETWORK MUST ASSURE COMPLIANCE WITH THE RULES AND POLICIES DESIGNED TO PROTECT BRS CHANNEL 1.

In its comments in response to the Notice, WCAI stressed that, particularly because few, if any, IEEE 802.11-compliant client devices currently in the field have been tested during the certification process with Channel 14 activated, the equipment authorization requirements applicable to equipment used in Globalstar’s terrestrial network must assure compliance with the rules and policies designed to protect BRS Channel 1. WCAI established that Globalstar was wrong in asserting that the “permissive change” procedures are available under the current equipment authorization rules to modified client devices, that Globalstar had failed to provide any justification for departing from those rules, and that the Commission is correct in proposing to apply its standard equipment authorization processes to the modification of devices for use in Globalstar’s low-power terrestrial network.20

In its comments, Globalstar reverses course and now concedes that under the current equipment authorization rules, grantees seeking to have their devices authorized to operate on Globalstar’s ATC network cannot take advantage of the streamlined permissive change process.21 Yet, Globalstar continues to press for the Commission to permit grantees to make Class II permissive change requests – which Globalstar concedes are “less extensive” than certification filings.22 And, even worse from the perspective of BRS Channel 1 interests that are legitimately concerned about the unknown impact when Channel 14 is activated, Globalstar has

20 See id. at 10-12.
21 See Globalstar Comments at 35 (“Because a TLPS software update triggers the application of Part 25 of the Commission’s rules, it appears that the re-certification requirement could apply to existing consumer devices gaining TLPS capability at 2483.5-2495 MHz.”).
22 Id. at 36.
now, for the first time, suggested that it be permitted to make a single filing on behalf of the grantees of all of the devices it intends to modify.\textsuperscript{23}

Globalstar would have the Commission believe that activating Channel 14 in existing Wi-Fi devices would not pose a threat to adjacent BRS Channel 1 operations because “performance on Channel 14 (including the emissions mask) should be essentially the same as its performance on Channels 1, 6, and 11.”\textsuperscript{24} Whether Globalstar is correct is anyone’s guess, because devices certificated by the Commission to operate in the 2.4 GHz band generally are tested with Channels 12, 13 and 14 de-activated. Simply put, there is no basis for the Commission to conclude that when a device is operating on Channel 14 its unwanted emissions will comport with Commission limits above 2495 MHz. That is why it is so essential that every device model Globalstar intends to modify to operate on its network be fully tested and evaluated by Commission staff or a Telecommunication Certification Body to assure that it complies with whatever limits on unwanted emissions above 2495 MHz are adopted in this proceeding.

WCAI understands that the Commission staff is concerned about the implications for consumers should it strictly enforce the requirement that a re-certificated device must be re-labelled with a new FCC ID. WCAI has no objection to the Commission waiving the re-labelling requirement with respect to client devices used in Globalstar’s network. But the Commission should not be waiving the broader requirement that such devices be subject to the full certification process – a process that will assure that each model is capable of meeting the limits on unwanted emissions when Channel 14 is activated.

\textsuperscript{23} See id. at 37.
\textsuperscript{24} Id. at n.37.
IV. CONCLUSION.

The record developed in response to the Notice raises more questions than it answers regarding the potential adverse consequences for incumbent users of spectrum adjacent to Globalstar’s MSS spectrum, including users of BRS Channel 1. While WCAI is pleased that Globalstar has acknowledged its obligation to provide absolute interference protection to BRS Channel 1 operations and to accept any interference those operations may cause, too many questions remain unanswered as to how Globalstar will provide the requisite interference protection. Until those questions are answered, the Commission should refrain from modifying its ATC rules or authorizing Globalstar to provide its terrestrial low-power service.

Respectfully submitted,

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