Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Globalstar, Inc. Petition for Rulemaking	)	RM-11685
to Reform the Commission's Regulatory	)	
Framework for Terrestrial Use of the	)	
Big LEO MSS Band	)	

CONSOLIDATED REPLY OF GLOBALSTAR, INC.

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Executive Summary

The Commission should issue a Notice of Proposed Rulemaking to provide greater flexibility for terrestrial use of Big LEO mobile satellite spectrum. The record in this proceeding demonstrates the public interest benefits to be gained by Globalstar's proposed reforms. By establishing more flexible terrestrial use of Upper Big LEO spectrum (2483.5-2495 MHz), the Commission will make over 22 megahertz of broadband-capable spectrum available right away. With reform in the Lower Big LEO band (1610-1617.775 MHz), the Commission will make approximately eight more megahertz available. No legislation is needed for these reforms. No incumbent licensees will need to be relocated. Globalstar's proposals will also help ease Wi-Fi congestion.

In its Petition for Rulemaking, Globalstar proposed (i) a long-term plan to utilize its full Big LEO spectrum allocation for a Frequency Division Duplex ("FDD") LTE-based mobile broadband network, and (ii) a near-term plan to utilize its licensed Upper Big LEO spectrum and adjacent unlicensed spectrum at 2473-2483.5 MHz for its proposed Terrestrial Low-Power Service ("TLPS") offering. The Commission should expeditiously initiate rulemaking proceedings that will enable Globalstar to implement these proposals, and should not be side-tracked or delayed by the few concerns raised by parties in their filings.

Clarification of Globalstar's TLPS proposal should resolve the concerns that unlicensed stakeholders have asked the Commission to address in any rulemaking. With its hybrid spectrum approach, Globalstar is not seeking to convert the unlicensed frequencies at 2473-2483.5 MHz into its own exclusively licensed spectrum. This unlicensed spectrum will remain unlicensed, and any party now and in the future will be able to operate there in a manner consistent with the Commission's existing rules. Globalstar's TLPS does not require operating rights that are

superior to those of other unlicensed users nor special interference protections from other unlicensed operations, and Globalstar has not made any such requests.

In response to interference concerns, Globalstar emphasizes that it is committed to minimizing 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 primary focus of the Commission's rulemaking process. Globalstar has proposed out-of-band emission ("OOBE") limits and other AWS-5 rules to protect nearby licensees, and will mitigate any unlikely interference. The Commission should again dismiss the rehashed arguments regarding Globalstar's sharing of its Big LEO spectrum with grandfathered TV Broadcast Auxiliary Service ("BAS") facilities in the Upper Big LEO band. These arguments are no more persuasive now than they were the multiple times they were raised before.

The Commission should also reject arguments to cling to the failed ancillary terrestrial component ("ATC") framework. As the National Broadband Plan and the Commission itself have recognized, those regulations have not produced the investment, innovation, and intensive use of spectrum that the Commission seeks to encourage. Globalstar has described the numerous, important public interest benefits that will result from the elimination of the ATC framework and more flexible terrestrial use of Big LEO spectrum.

While it conducts a rulemaking on Globalstar's Upper Big LEO band proposals, the Commission should conduct a separate, parallel rulemaking regarding terrestrial use of the Lower Big LEO band. Initially, this parallel proceeding should focus on the coexistence of commercial mobile operations in the Lower Big LEO band with nearby GPS systems and devices. It is critical that the Commission establish a formal process for technical study and analysis of relevant GPS interference issues.

Globalstar applauds the Commission for reforming its rules for 2 GHz MSS-terrestrial operations. The Commission should build on this momentum by undertaking similar reform in the Big LEO band. The pleading cycle on Globalstar's petition has closed, and the record demonstrates the benefits of Globalstar's proposed reforms. The Commission should bring consumers the benefits of more investment, innovation, and more-intensive use of broadband spectrum by launching a rulemaking now to reform the Big LEO-terrestrial use rules.

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CONSOLIDATED REPLY OF GLOBALSTAR, INC.

Globalstar, Inc. ("Globalstar") hereby replies to comments on its above-captioned Petition for Rulemaking seeking greater flexibility for terrestrial use of Big LEO mobile satellite service ("MSS") spectrum at 1610-1617.775 MHz/2483.5-2495 MHz.[1] Globalstar appreciates the interest and participation of those companies and organizations that commented on Globalstar's Petition. With the closing of the comment rounds, the Federal Communications Commission ("Commission") should move expeditiously to issue a Notice of Proposed Rulemaking ("NPRM") on fundamental reform of the Big LEO MSS-terrestrial regulatory framework. Reform will encourage wireless broadband investment and innovation, help to alleviate the growing broadband spectrum crunch, and ease spectrum congestion, including in unlicensed Wi-Fi spectrum. No commenter has provided any reason why the Commission should not act quickly to realize these benefits.

In the Petition, Globalstar proposed (i) a long-term plan to utilize its full Big LEO spectrum allocation for a Frequency Division Duplex ("FDD") LTE-based mobile broadband network, and (ii) a near-term plan to utilize its licensed Upper Big LEO spectrum at 2483.5-2495 MHz and adjacent unlicensed spectrum at 2473-2483.5 MHz for its proposed Terrestrial Low-

[1] Petition for Rulemaking of Globalstar, Inc., RM-11685 (Nov. 13, 2012) ("Petition").

Power Service ("TLPS") offering, which will be compatible with existing smartphones, tablets, and other devices. With this hybrid spectrum approach for TLPS, Globalstar emphasizes that it is not seeking to convert the unlicensed frequencies at 2473-2483.5 MHz into its own exclusively licensed spectrum. This unlicensed spectrum at 2473-2483.5 MHz will remain unlicensed, and any party now and in the future will be able to operate there in a manner consistent with existing Commission rules. Globalstar does not request operating rights that are superior to those of other unlicensed users nor does it seek protection from interference from other unlicensed operations, and Globalstar's TLPS requires no such preferred treatment. Globalstar welcomes commenters' input on unlicensed spectrum issues and looks forward to working with these parties during the Commission's rulemaking process.

One month after Globalstar filed its Petition, the Commission reformed the 2 GHz MSS-terrestrial framework, eliminating the outdated ancillary terrestrial component ("ATC") regime and establishing flexible technical rules for future terrestrial operations.[2] Globalstar applauds the Commission for taking this action. The Commission should build on this momentum by undertaking similar Big LEO reforms that enable Globalstar to implement its near-term and long-term terrestrial-use plans in the Big LEO band. The pleading cycle on Globalstar's petition has closed, and the record demonstrates the benefits of Globalstar's proposed reforms. The

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[2] *Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz Bands; Fixed and Mobile Services in the Mobile Satellite Service Bands at 1525-1559 MHz and 1626.5-1660.5 MHz, 1610-1626.5 MHz and 2483.5-2500 MHz, and 2000-2020 MHz and 2180-2200 MHz; Service Rules for Advanced Wireless Services in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz and 2175-2180 MHz Bands*, WT Docket No. 12-70, ET Docket No. 10-142, WT Docket No. 04-356, Report and Order and Order of Proposed Modification, FCC 12-151 (rel. Dec. 17, 2012) ("*2 GHz Order*"). *See also Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz Bands*, Notice of Proposed Rulemaking and Notice of Inquiry, 27 FCC Rcd 3561 (2012) ("*2 GHz NPRM*").

Commission should launch a rulemaking now to bring consumers the benefits of more investment, innovation, and more-intensive use of broadband spectrum.

I. The Record Demonstrates the Public Interest Benefits that Will Result from Globalstar's Proposed Terrestrial Services in the Big LEO Band

If the Commission undertakes the fundamental reforms described in the Petition, Globalstar will ultimately deploy a mix of FDD LTE and TLPS facilities in the Big LEO band. The development of LTE technology is a key component of America's broadband future, and Globalstar believes that FDD LTE operations may constitute the highest and best terrestrial use of the Big LEO band. Meanwhile, Globalstar's near-term proposal to use its Big LEO spectrum in combination with adjacent unlicensed Industrial, Scientific and Medical ("ISM") frequencies represents an efficient use of underutilized spectrum that advances the state-of-the-art in commercial mobile operations. In the comments on the Petition, no party challenges the public interest benefits that will result from these proposed services.[3]

As described in the Petition, fundamental reform of the Big LEO MSS-terrestrial framework will further the Commission's critical goal of making additional spectrum available for mobile broadband services.[4] Reform will *quickly* add more than 22 megahertz of broadband-capable spectrum to the nation's spectrum inventory, and later add approximately eight megahertz more, without the need for legislation or the relocation of incumbent licensees.

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[3] Iridium states that Globalstar's Petition "identifies an opportunity to meet the need for additional spectrum for Internet access services," and that "[t]he need for stable, reliable wireless Internet access services identified by Globalstar is not likely to subside." Opposition of Iridium Constellation LLC at 23, 24 ("Iridium Opposition"). Meanwhile, Clearwire says that it "supports Globalstar's ambition to offer additional terrestrial wireless broadband capacity for American consumers." Comments of Clearwire Corporation at 2 ("Clearwire Comments"). (Except where otherwise indicated, all oppositions or comments cited herein were filed in RM-11685 on January 14, 2013.)

[4] Petition at 18-22.

Globalstar's TLPS proposal will have significant benefits for existing Wi-Fi and consumers, helping to ease the increasing congestion that is diminishing the quality of Wi-Fi service. As Chairman Genachowski has observed, accelerating Internet usage and resulting congestion have diminished the quality of Wi-Fi service at high-traffic 802.11 hotspots.[5] With the deployment of additional 802.11-based capacity at 2.4 GHz, Globalstar and its terrestrial partners will be able to provide consumers with improved wireless broadband service, including faster data speeds and better Voice over Internet Protocol ("VoIP") functionality. This implementation of TLPS will complement the Chairman's efforts to substantially increase the amount of Wi-Fi spectrum available in the 5 GHz band.[6] Significantly, once the Commission adopts the new AWS-5 regulatory framework, Globalstar will be able to deploy TLPS systems

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[5] *See Winning the Global Bandwidth Race: Opportunities and Challenges for Mobile Broadband*, Prepared Remarks of FCC Chairman Julius Genachowski, University of Pennsylvania – Wharton, Philadelphia, PA, at 11 (Oct. 4, 2012) ("*Genachowski Spectrum Speech*") ("Wi-Fi networks [are] get[ting] more and more congested – have you tried using Wi-Fi in a busy airport recently?"), *available at:* <http://transition.fcc.gov/Daily_Releases/Daily_Business/2012/db1005/DOC-316661A1.pdf>. *See also FCC Chairman Julius Genachowski Announces Major Effort to Increase Wi-Fi Speeds and Alleviate Wi-Fi Congestion at Airports, Convention Centers, and in Homes with Multiple Devices and Users,* News Release, at 1 (rel. Jan. 9, 2013) ("*5 GHz Wi-Fi News Release*") ("We all know the frustration of Wi-Fi congestion at conferences and airports. Today, the FCC is moving to bring increased speed and capacity to Wi-Fi networks by increasing the amount of unlicensed spectrum for Wi-Fi. As this spectrum comes on line, we expect it to relieve congested Wi-Fi networks at major hubs like convention centers and airports. It will also help as tablets and smartphones proliferate and video use rises."), *available at*: <http://transition.fcc.gov/Daily_Releases/Daily_Business/2013/db0109/DOC-318326A1.pdf>; Julius Genachowski, *Boosting Wi-Fi Speed and Reducing Wi-Fi Congestion Key for Innovation & Consumers*, LinkedIn (Jan. 16, 2013) ("As consumer adoption of wireless devices continues to soar, Wi-Fi congestion is becoming a critical problem for consumers and innovators . . . We must keep nurturing today's Wi-Fi as we at the same time develop a next generation of spectrum policies."), *available at*: <http://www.linkedin.com/today/post/article/20130116232018-45735406-boosting-wi-fi-speed-and-reducing-wi-fi-congestion-key-for-innovation-consumers>.

[6] *See 5 GHz Wi-Fi News Release.*

almost immediately, and consumers around the country will be able to use their existing smartphones, tablets, and other wireless devices to receive this innovative service.[7]

Globalstar's TLPS proposal will also enable terrestrial carriers to deliver higher-quality wireless voice and low-speed data services to consumers, as those carriers "offload" their broadband services on to Globalstar's TLPS spectrum. TLPS can perform this function in a more managed and controlled way than traditional Wi-Fi elsewhere in the 2.4 GHz ISM band. More flexible terrestrial use of Big LEO spectrum will also help ensure the commercial viability of Globalstar's MSS network. Globalstar will offer terrestrial services soon after Commission action on its proposal, and revenues from terrestrial services and spectrum leases will help cover Globalstar's substantial capital costs and ongoing MSS-related operational costs. While Iridium, Globalstar's competitor, claims that terrestrial revenues should not be necessary for an MSS licensee to develop a successful satellite business,[8] each Big LEO MSS provider must take the steps necessary to finance the enormous costs associated with designing, manufacturing, and launching a new constellation of LEO satellites. Just as Iridium has pursued non-MSS revenues through hosted payload opportunities, Globalstar expects to benefit from terrestrial-based revenues as it develops its global MSS business. These incremental revenue streams are particularly important given the delays that MSS providers commonly experience in the design, manufacture, and launch of new satellite systems. The deployment of Globalstar's second-generation constellation is over two years delayed, even though the project has been fully financed since June 2009.

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[7] Globalstar has committed to deploy up to twenty thousand TLPS access points *free of charge* in the nation's public and non-profit schools, community colleges, and hospitals. Petition at 43.

[8] Iridium Opposition at 21.

Finally, Globalstar's TLPS deployments will deliver robust benefits for public safety. As Globalstar described in the Petition, during disasters such as Hurricane Sandy, still-operating 802.11-based hotspots can provide broadband and voice communications to citizens in affected areas who otherwise lack access to communications services.[9] TLPS facilities will augment this important post-disaster communications resource. In addition, if the Commission grants the Petition, Globalstar has committed to provide its mobile satellite service *free of charge* to Globalstar subscribers within any federally declared "disaster area" following natural and man-made disasters.[10] The Commission should embrace Globalstar's proposals and these critical public interest benefits, which have gone virtually undisputed by the commenters in this proceeding.

II. Globalstar is Committed to Minimizing Interference to BRS/EBS and Other Services in the Vicinity of Its Proposed TLPS Operations

Globalstar is committed to minimizing interference to Broadband Radio Service/Educational Broadband Service ("BRS/EBS") at 2.5 GHz and other services in the vicinity of its proposed TLPS operations, and it recognizes that such interference issues will be a primary focus of the Commission's rulemaking process. For the reasons that it described in its Petition, Globalstar continues to believe that TLPS is highly unlikely to cause harmful interference to BRS systems above 2496 MHz. TLPS access points and mobile devices will be operating at very low power levels and, consequently, will have much less impact on the RF

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[9] Petition at 22. *See, e.g.*, Arik Hesseldahl, *After Sandy, Wi-Fi Becomes Precious Commodity*, ALL THINGS D, Oct. 31, 2012, *available at*: <http://allthingsd.com/20121031/after-sandy-wi-fi-becomes-precious-commodity/?reflink=ATD_yahoo_ticker>. *See also* Strixsystems Case Study, *WiFi Mesh for Public Safety*, *available at*: <http://www.strixsystems.com/cswifimeshforpublicsefety.aspx> (viewed Nov. 7, 2012) ("The public safety and emergency services communities require the use of broadband WiFi mesh networking for 'always available' high-speed connectivity to people, video surveillance cameras, strategic and tactical equipment, databases and much more.").

[10] Petition at 44.

environment than the higher-power systems operating in conventional commercial wireless networks.[11] Globalstar's incorporation of high selectivity passband filters into its TLPS access points will also limit the risk of harmful interference to BRS-1, a fact that Clearwire Corporation ("Clearwire") does not sufficiently credit in its comments.[12] Going 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.

Contrary to Clearwire's claim, eliminating the Commission's failed ATC framework, including ATC technical rules, should not leave BRS/EBS or other licensed services unreasonably vulnerable to interference from TLPS or other terrestrial operations in the Upper Big LEO band.[13] As developed through the rulemaking process, the Commission's new AWS-5 rules – including Globalstar's proposed out-of-band emission ("OOBE") limits – should provide sufficient protection to Clearwire and other 2.5 GHz licensees.[14] Significantly, Globalstar's

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[11] Petition at 41 and at Appendix B, Technical Analysis Regarding Globalstar's Proposed Terrestrial Low-Power Service, John Dooley, at 9-10 ("Technical Analysis"). Like public 802.11 networks, the interference potential of individual TLPS network access points will be limited by extremely low maximum conducted power levels (less than 30 dBm) and the relatively high signal absorption rates of 2.4 GHz emissions.

[12] *See, e.g.,* Clearwire Comments at 14-15. As explained in the Petition, remedial filtration in TLPS access points will consist of passive filtration devices applied to the RF path of the 802.11 transceiver in a band-pass configuration. Petition at 40; Technical Analysis at 7-9. The choice of filtration technology and method of design integration will be influenced by the form factor, economics, and power level associated with any given TLPS base station application.

[13] Clearwire Comments at 21-23.

[14] In the Petition at 39, Globalstar proposed the following OOBE standard for low-power operations in the AWS-5 band:

> For digital stations with EIRPs below 36 dBm, the attenuation factor shall be not less than 40 + 10 log (P) dB at the channel edge, 43 + 10 log(P) dB at 5 MHz from the channel edges, and 55 + 10 log (P) dB at X MHz from the channel edges where X is the greater of 6 MHz or the actual emission bandwidth.

analysis indicates that TLPS-enabled mobile devices will consistently comply with Globalstar's proposed OOBE limit,[15] and the incorporation of passive filtration will enable TLPS access points similarly to meet this proposed limit in the AWS-5 band.

Clearwire notes that Globalstar's proposed OOBE limit for TLPS operations is less stringent than the OOBE limit that Clearwire has proposed for BRS operations at 2496 MHz.[16] Clearwire argues for "reciprocal" OOBE limits, but the parties' respective OOBE proposals give the operators above and below 2495/2496 MHz the protection they need. Globalstar requires a greater level of protection from OOBE-based interference than Clearwire. Globalstar's low-power MSS downlink operations at 2483.5-2500 MHz are much more vulnerable to harmful interference than Clearwire's terrestrial BRS/EBS systems (as well as Globalstar's future Big LEO terrestrial systems). The asymmetrical alignment of services above and below 2495/2496 MHz necessitates an asymmetrical approach to the OOBE limits in these bands. Similar treatment of dissimilar services in this instance would be unwarranted.

Clearwire also questions Globalstar's proposal to apply the same OOBE limit to TLPS access points and mobile devices.[17] Globalstar continues to believe that it makes sense for all TLPS facilities to be subject to the same OOBE standards; while TLPS access points effectively function as base station downlinks, technically they are more like BRS (and TLPS) mobile devices than high-power BRS and other commercial wireless base stations. TLPS access points will typically operate at the exceedingly low conducted power level of 1 watt (30 dBm), in

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15 As described in the Petition, Globalstar believes, based on its survey of the Commission's equipment certification database and conducted power levels, that current-generation mobile devices will be able to satisfy Globalstar's proposed OOBE limit without the need for additional hardware-based filtration. Petition at 40; Technical Analysis at 6-7.

16 *See* Clearwire Comments at 19-21; Letter from Cathy Massey, Clearwire Corporation, to Marlene Dortch, Secretary, FCC, WT Docket No. 03-66, RM-11614, at 1 (Oct. 19, 2012).

17 Clearwire Comments at 17.

contrast to high-power base stations that typically operate at a power level up to 1585 watts (62 dBm). If the Commission ultimately concludes that TLPS access points and end-user devices should be subject to their own specific OOBE limits, the OOBE limit for TLPS access points should certainly be far less stringent than the standard typically applied to high-power CMRS base stations. These issues can be explored further during the Commission's rulemaking process, if the Commission so chooses.

Finally, Globalstar will address any unlikely incidents of TLPS-related interference to BRS/EBS through appropriate mitigation activity. Unlike public 802.11 applications, TLPS access points will be carefully controlled by a Network Operating System ("NOS"). This TLPS NOS will be analogous to that currently deployed by CMRS operators to manage pico- and femto-cellular infrastructure. The TLPS NOS will manage security functions like the authorization/de-authorization of access points and terminal devices, and administer technical functions like (i) access point co-channel interference diagnostics, (ii) access point conducted power output, and (iii) access point RF radiation pattern/antenna gain. Significantly, a TLPS NOS will also create a rapid means of specifically identifying and controlling potential interference to adjacent-band operators. For example, an interference complaint from an adjacent-band operator may be rapidly correlated with TLPS access points in a given area. A remote technician may use the TLPS NOS to diagnose TLPS access points, alter their power output, modify their radiation pattern, or perform other diagnostic and remedial functions similar to those currently possible in femto-cellular networks. Globalstar believes that, with these capabilities, interference diagnosis and resolution will be significantly faster than in more

conventional macro-cellular networks. Globalstar looks forward to working with the Commission and interested parties to craft these mitigation practices.[18]

III. The Commission's Separate, Parallel Rulemaking on Terrestrial Mobile Operations in the Lower Big LEO Band Should Focus Initially on GPS Interference Issues

As described *infra* and in the Petition, Globalstar's long-term plan for its licensed Big LEO spectrum includes the deployment of FDD LTE terrestrial wireless facilities in the paired Lower and Upper Big LEO bands.[19] Globalstar's Lower Big LEO band spectrum at 1610-1617.775 MHz will be used for terrestrial mobile device uplink operations, while its Upper Big LEO band spectrum at 2483.5-2495 MHz will be used for LTE base station downlink operations. Ultimately, Globalstar hopes to deploy a mix of LTE and TLPS facilities around the United States.

To realize the public interest benefits of this Big LEO build-out, the Commission should conduct a separate, parallel rulemaking proceeding regarding terrestrial use of the Lower Big LEO band at the same time that it considers Globalstar's TLPS proposal. This parallel

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[18] As described in the Petition, if the Commission adopts the proposed Big LEO reforms, Globalstar and its future terrestrial partners will be able to provide TLPS to existing 802.11-enabled consumer devices by transmitting the necessary software update to devices associated with authenticated customers. Virtually immediately, those devices will have the technical ability to operate at 2473-2495 MHz and receive Globalstar's managed TLPS offering. Petition at 17. A couple of parties in their comments raise questions about the equipment certification process for these software updates. Clearwire Comments at 29; Comments of Bluetooth Special Interest Group at 3 ("Bluetooth SIG Comments"). In order to expand the operating frequency range of existing 802.11-enabled consumer devices to include Globalstar's licensed spectrum at 2483.5-2495 MHz, the original grantees for those device models (or their authorized third-party agents) will have to submit "permissive change" filings describing the proposed modifications. 47 C.F.R. § 2.1043; *see* Petition at 42 n.105. Once the Commission formally "accepts" these permissive changes for the relevant devices, the remote software updates can proceed and these devices can be used to receive TLPS. Globalstar anticipates that, in contrast, most if not all TLPS access points will be newly manufactured equipment, and that these base stations along with next-generation TLPS-enabled consumer devices will receive new equipment certifications from the Commission.

[19] Petition at 13-15.

proceeding should initially focus on the coexistence of commercial mobile operations in the Lower Big LEO band with nearby GPS systems and devices. While Iridium claims that such a proceeding is premature,[20] parties' concerns regarding potential interference from 1.5/1.6 GHz terrestrial mobile systems to GPS are well known.[21] It is critical that the Commission establish a formal process for technical study and analysis of relevant GPS interference issues, including desensitization, receiver overload, and the aggregate effect of mobile terminal operations.

Globalstar greatly appreciates the participation and input from the U.S. GPS Industry Council and Garmin in response to the Petition.[22] As indicated in the Petition, Globalstar's own products rely heavily on GPS functionality, and Globalstar fully recognizes the value of GPS and the importance of protecting GPS systems and devices around the world from harmful interference.[23] The Commission's rulemaking will enable GPS proponents to present their technical analyses and describe their positions fully.[24] Globalstar reiterates its commitment to work cooperatively with GPS industry members throughout this process. Since filing the Petition, Globalstar has engaged in constructive discussions with GPS stakeholders both in the

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20 Iridium Opposition at 19-20.

21 *See, e.g.*, Public Notice, *International Bureau Invites Comment on NTIA Letter Regarding LightSquared Conditional Waiver*, 27 FCC Rcd 1596 (IB 2012).

22 Comments of the U.S. GPS Industry Council and Garmin International, Inc. ("U.S. GPS Industry Council Comments").

23 Petition at 45-46. As described in the Petition, GPS is a critical component of Globalstar's family of SPOT devices, which have been used to initiate over 2200 rescues since their 2007 introduction. *Id.* at 10-11, 45.

24 Ultimately, the 1610-1617.775 MHz band should be incorporated into the AWS-5 framework and the Commission's terrestrial-use reforms extended to the Lower Big LEO band. Globalstar expects that other Lower Big LEO band terrestrial-use issues can be addressed in the GPS technical study process or at the conclusion of that study process. In that proceeding, Iridium will have a full opportunity to address its concerns regarding FDD LTE operations in this spectrum.

federal government and in private industry, and Globalstar looks forward to continuing these discussions in the months ahead.[25]

IV. The 2473-2483.5 MHz Band Segment Will Remain Unlicensed and Available for Use by Any Party that Operates in a Manner Consistent with the Commission's Existing Rules

Globalstar appreciates the input of stakeholders in the unlicensed ISM spectrum at 2400-2483.5 MHz. In their comments, these parties ask the Commission to address certain unlicensed spectrum issues in any rulemaking proceeding on the Petition.[26] Clarification of the TLPS

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[25] In their joint comments, the U.S. GPS Industry Council and Garmin indicate that "Globalstar's planned low-power, Wi-Fi use of the portion of its existing MSS spectrum at 2483.5-2495 MHz, as well as a portion of the adjacent spectrum in the [ISM] bands at 2473-2483.5 MHz, should not pose an OOBE problem for GPS/RNSS because of its inherently low-power, short-range transmission characteristics based on the IEEE 802.11 standard." U.S. GPS Industry Council Comments at 3. Globalstar greatly appreciates this statement. On this OOBE issue, Globalstar notes that Appendix A to the Petition included a new proposed Section 27.1402, which contained OOBE limits that are designed to protect Radionavigation Satellite Service ("RNSS") systems GPS and Glonass at 1559-1610 MHz from harmful interference from AWS-5 terrestrial operations at 2483.5-2495 MHz. Petition, Appendix A at 14. The limits in proposed Section 27.1402 are based on the OOBE limits for ATC base station and mobile operations now contained in Sections 25.254(a)(4) and 25.254(b)(4) of the Commission's rules. 47 C.F.R. §§ 25.254(a)(4), (b)(4). Globalstar recognizes that the OOBE limits in Section 25.254(a)-(b) have been superseded by separate agreements that Globalstar has entered into with the National Telecommunications and Information Administration ("NTIA"). In particular, Globalstar in 2008 entered into an agreement with NTIA regarding the OOBE limits for the proposed terrestrial wireless operations of Open Range Corporation ("Open Range") in the Upper Big LEO band at 2483.5-2495 MHz, and the Commission conditioned Globalstar's ATC modification authority on compliance with that agreed-to standard. *See Globalstar Licensee LLC; Application for Modification of License for Operation of Ancillary Terrestrial Component Facilities*, Order and Authorization, 23 FCC Rcd 15975, ¶ 36 (2008); Letter from William Adler, Globalstar, to Marlene Dortch, Secretary, FCC, File No. SAT-MOD-20080516-00106 (Oct. 30, 2008). Globalstar now clarifies that its TLPS operations and any other terrestrial operations in the AWS-5 band at 2483.5-2495 MHz will comply with the OOBE limits that Globalstar and NTIA agreed upon in 2008. Operating in compliance with these limits, neither TLPS operations in the short term nor FDD LTE downlink operations in the long term will have any harmful effects on GPS and Glonass at 1.5/1.6 GHz.

[26] Comments of the Wi-Fi Alliance (Jan. 11, 2013) ("Wi-Fi Alliance Comments"); Comments of the Wireless Internet Service Providers Association ("WISPA Comments"); Bluetooth SIG Comments; Comments of the Association of Home Appliance Manufacturers ("AHAM Comments").

proposal should resolve these commenters' concerns. Below, Globalstar again describes the spectrum architecture of its proposed TLPS operations and emphasizes that the regulatory status of unlicensed ISM spectrum will be unaffected by this proposal.

As explained in the Petition, Globalstar's TLPS operations will have a hybrid spectrum architecture, encompassing both Globalstar's licensed terrestrial use spectrum in the Upper Big LEO band at 2483.5-2495 MHz (the proposed AWS-5 band) and adjacent *unlicensed* ISM spectrum at 2473-2483.5 MHz. Globalstar clarifies that, with this proposal, it is not seeking to convert the unlicensed frequencies at 2473-2483.5 MHz into its own exclusively licensed spectrum. This spectrum will remain unlicensed. Now and in the future, any party will be able to operate in the 2473-2483.5 MHz band in a manner consistent with the Commission's existing Part 15 rules, avoiding harmful interference to Globalstar's adjacent-band MSS offerings above 2483.5 MHz.[27] Bluetooth devices and other unlicensed equipment will be able to coexist with TLPS and continue operating in the 2473-2483.5 MHz band segment.[28] There will be no "loss" of unlicensed spectrum for Bluetooth and other existing and future unlicensed technologies, or the related harms that apparently created concern for some commenters.[29]

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[27] 47 C.F.R. § 15.249(d) (requiring that "[e]missions radiated outside of the [2400-2483.5 MHz band], except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.").

[28] Petition at 16 n.24.

[29] Wi-Fi Alliance Comments at 4-5; Bluetooth SIG Comments at 2-3. Additional 802.11-based transmissions at 2473-2483.5 MHz should cause no harm to Bluetooth operations in the 2.4 GHz band. Bluetooth devices are frequency-hopping systems that operate on constantly varying 1 MHz channels throughout the 2400-2483.5 band. Thus, the 2473-2483.5 MHz band segment represents just one small portion of the unlicensed spectrum that is utilized by Bluetooth technology, and TLPS operations are no more likely to cause harmful interference to a Bluetooth device than already-existing 802.11-based Wi-Fi operations elsewhere in the unlicensed ISM band.

Furthermore, Globalstar does not request operating rights in the 2473-2483.5 MHz band that are superior to those of other unlicensed users. Like other unlicensed services, TLPS transmissions on unlicensed spectrum below 2483.5 MHz will enjoy no protection from interference from other licensed and unlicensed operations. In particular, Globalstar's TLPS will accept harmful interference from unlicensed operations on Wi-Fi Channel 11 and from microwave oven operations in the 2.4 GHz band.[30]

Some commenters express concern regarding potential harmful interference from TLPS operations to Wi-Fi service on Wi-Fi Channel 11 (2451-2473 MHz),[31] but such interference is highly unlikely under real-world conditions. While Wi-Fi Channels 11 and 14 are directly adjacent to one another, a functional 802.11-based communications link occupies only approximately 18 MHz of the 22 MHz of available bandwidth in these channels.[32] The *de facto* guard bands between these 802.11 channels will minimize mutual harmful interference between such Wi-Fi and TLPS systems. Moreover, as discussed above, TLPS access points and higher powered (>20 dBm) terminal devices will be equipped with high selectivity passband filters, and these filters will further segregate Channel 14 operations from those on Channel 11. In any case,

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30 *See* Wi-Fi Alliance Comments at 4; AHAM Comments at 6-7. Co-primary TLPS transmissions on Globalstar's licensed spectrum at 2483.5-2495 MHz will enjoy protection from interference from unlicensed Part 15 equipment just like other primary terrestrial wireless services within their licensed spectrum bands. However, to the extent that (i) Globalstar cannot determine the location of the interference within the 2473-2495 MHz band, or (ii) such interference occurs in both the licensed and unlicensed portions of the TLPS spectrum, Globalstar will have to accept this interference to its TLPS.

31 *See, e.g.*, WISPA Comments at 3.

32 While the channel widths of DSSS 802.11b and OFDM 802.11g/n are 22 MHz and 20 MHz, respectively, pulse shaping of the emissions mask means that an 802.11 channel is significantly attenuated at its edges. Specifically, the 6 dB bandwidth of a typical 802.11b emission is less than 12 MHz, and the 6 dB bandwidth of a typical 802.11g/n emission is less than 17 MHz.

under Part 15 of the Commission's rules, unlicensed Wi-Fi operations on Channel 11 do not enjoy protection from interference from other licensed or unlicensed services.[33]

Finally, the Wi-Fi Alliance expresses concern that Globalstar's TLPS framework will require that *all* 802.11-enabled equipment in the unlicensed ISM band incorporate the passive filtering necessary to meet Globalstar's proposed OOBE limit.[34] Only *TLPS access points* operating at 2473-2495 MHz, however, will need to incorporate this filtering to meet the proposed OOBE limit at the 2495 MHz band edge. Given their greater spectral distance from this band edge, other 802.11-enabled devices operating further down in the unlicensed ISM band (typically on Wi-Fi Channels 1, 6, and 11) would not need passive filtration in order to meet this OOBE requirement.

V. Iridium Ignores the Commission's Policy Goals and the Undeniable Failure of the Existing MSS ATC Framework to Further Those Goals

In its Opposition, Globalstar's competitor Iridium urges the Commission to preserve the ATC regime in the Big LEO band, including the substantial satellite service and integrated service gating requirements.[35] Iridium argues that any terrestrial service in the Big LEO band should remain ancillary to satellite services in that band.[36] In support, Iridium relies almost exclusively on Commission statements in its original MSS ATC orders in 2003 and 2005.[37]

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33 47 C.F.R. § 15.5(b).

34 Wi-Fi Alliance Comments at 3-4.

35 Iridium Opposition at 12-15.

36 *Id*. at 13-15.

37 *See, e.g*., Iridium Opposition at 13 (citing *Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Bands*, Report and Order and Notice of Proposed Rulemaking, 18 FCC Rcd 1962, ¶ 88 (2003) ("*ATC Order*") (stating that the Commission's goal was to "ensure that MSS remains first and foremost a satellite service").

The Commission should reject these outdated, anti-competitive arguments. They ignore the Commission's stated priorities, the Commission's recent discussion of MSS ATC issues, and the fact that the MSS ATC framework has yielded virtually no terrestrial use of MSS spectrum over the past decade. In 2010, in the face of the growing broadband spectrum gap, the National Broadband Plan established a new, more focused commitment to securing additional spectrum for terrestrial mobile broadband services.[38] The Plan made clear that the MSS ATC framework is incompatible with this fundamental broadband policy goal, noting that rules have "made it difficult for MSS providers to deploy ancillary terrestrial networks, as well as to establish partnerships with wireless providers or other well-capitalized potential entrants."[39] The Plan recommended that the Commission take "actions that will optimize license flexibility sufficient to increase terrestrial broadband use of MSS spectrum."[40]

Following the National Broadband Plan, the Commission has worked continuously to add to the nation's broadband spectrum inventory, and a key part of this effort is fundamental reform of the existing MSS ATC framework. Pointing to the absence of terrestrial operations in the MSS bands, the Commission in July 2010 issued a Notice of Inquiry as an initial step toward permitting more flexible terrestrial use of MSS spectrum.[41] The Commission specifically asked

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38 *See* FCC, "Connecting America: The National Broadband Plan," at 76-77 (rel. March 16, 2010), *available at*: <http://download.broadband.gov/plan/national-broadband-plan.pdf> ("National Broadband Plan").

39 *Id*. at 88.

40 *Id*. at 87.

41 *Fixed and Mobile Services in the Mobile Satellite Service Bands at 1525-1559 MHz and 1626.5-1660.5 MHz, 1610-1626.5 MHz and 2483.5-2500 MHz, and 2000-2020 MHz and 2180-2200 MHz*, Notice of Proposed Rulemaking and Notice of Inquiry, 25 FCC Rcd 9481 (2010) ("*NPRM/NOI*").

how it "can best increase the value, utilization, innovation and investment in the spectrum for terrestrial services throughout the 2 GHz, Big LEO and L-bands."[42]

Just last month, the Commission took perhaps its most significant step towards MSS-terrestrial reform with its release of the *2 GHz Order*.[43] The Commission established a new terrestrial "AWS-4" band at 2 GHz and modified DISH's MSS license to include the resulting AWS-4 terrestrial authorizations. The Commission eliminated the ATC gating requirements in the 2 GHz band, and applied flexible Part 27-type rules to terrestrial operations in the band. These fundamental reforms were widely supported by parties who participated in the 2 GHz rulemaking process.

As was the case at 2 GHz, the current MSS ATC framework will not foster the development of meaningful terrestrial broadband operations in the Big LEO band. Globalstar has held discussions with numerous potential terrestrial partners in recent years, and all of these companies have cited the existing substantial satellite service requirement as a strong deterrent against any terrestrial investment in MSS spectrum.[44] While Iridium dismisses the significance of such views,[45] terrestrial broadband operations are unlikely to take root in the Big LEO band until terrestrial operators have greater confidence that terrestrial authority will remain in place and terrestrial services will not be disrupted in the event of satellite failures beyond those operators' control. Eliminating the substantial satellite service gating requirement will increase

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42 *Id*. ¶ 26.

43 *See 2 GHz Order, supra* note 2.

44 Petition at 30-31.

45 Iridium Opposition at 15.

terrestrial operators' interest in Big LEO spectrum and encourage investment in mobile broadband at AWS-5.[46]

Iridium and the Mobile Satellite Users Association both claim that, given the presence of real satellite operations in the Big LEO band vis-a-vis the 2 GHz band, the fundamental reforms adopted at 2 GHz should not be applied to the Big LEO band.[47] The fact that Globalstar has developed an MSS business in the Big LEO band, however, does not mean that consumers would not be served by granting it terrestrial flexibility similar to that granted to 2 GHz licensees. While Globalstar is committed to the future of its satellite business, Big LEO licensees should have maximum flexibility to pursue terrestrial uses in order to maximize public benefits for *all* consumers. The Commission should build on the momentum of its *2 GHz Order* by undertaking similar pro-consumer, pro-investment reform of the Big LEO MSS-terrestrial rules.

Globalstar recognizes and appreciates that, as an organization representing the interests of satellite users, MSUA is concerned about the impact of AWS-5 operations on Globalstar's existing satellite business and customers. Globalstar assures MSUA and its membership that, as described in the Petition, preservation of a substantial satellite service requirement is not necessary to ensure Globalstar's continued provision of robust MSS offerings.[48] Globalstar is

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[46] Petition at 30-31. By removing the substantial satellite service requirement, the Commission can also ensure that consumers who rely on uninterrupted TLPS and other AWS-5 service will be protected from service disruptions. In addition, as Globalstar described in the Petition, elimination of the integrated services "dual-mode" requirement is necessary to permit mobile broadband development in Big LEO spectrum. Petition at 31-32. Permitting consumers to obtain terrestrial-only service via lightweight, single-mode devices will enable Globalstar to use AWS-5 spectrum efficiently and provide consumers with the innovative, market-ready services they want.

[47] Iridium Opposition at 16-17; Comments of the Mobile Satellite Users Association at 2 ("MSUA Comments").

[48] Petition at 7-13, 31.

fully committed to the continued development and future success of its MSS business. Globalstar has invested over $5 billion in its global MSS network, including over $1 billion in its second-generation network, and this year it will achieve full deployment of its second-generation MSS constellation.[49] As described *supra* at 5, revenues from the provision of AWS-5 services and related leasing arrangements will only strengthen Globalstar's ability to maintain a vital, dynamic satellite business that fully meets the needs of the satellite user community.

Meanwhile, Iridium's opposition appears to be nothing more than an effort to impede a competitor's business. Iridium is apparently concerned that Globalstar is set to become a formidable competitive threat in the MSS marketplace, with its second-generation MSS constellation nearly complete (Iridium's is still years away and its existing constellation is operating well beyond its original design life[50]) and potential revenues from terrestrial use of its Big LEO spectrum (Iridium's architecture precludes such use). With no explanation, Iridium claims that expanded terrestrial use of the Big LEO L band could negatively affect its current or future mobile satellite services.[51] Iridium does not demonstrate, has never demonstrated, and indeed cannot demonstrate that the deployment of terrestrial services in the Big LEO band would cause interference or any other genuine harm. The Commission should deny Iridium's transparent attempt to prevent Globalstar from moving forward with reinvigorated MSS

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49 The fourth and final launch necessary to return Globalstar to full duplex service is currently scheduled for February 5, 2013, at the Baikonur Cosmodrome in Kazakhstan.

50 *See* News Release, Iridium Communications Inc. (June 19, 2012) ("Iridium NEXT satellites are scheduled to launch from 2015 to 2017, and will provide this capability as the new satellites are commissioned, with full service expected by 2017."), *available at*: <http://investor.iridium.com/releasedetail.cfm?releaseid=684218>; Iridium Communications Inc., Annual Report (Form 10-K), at 23 (March 6, 2012) ("[O]ur satellites have already exceeded their original design lives."), *available at*: <http://files.shareholder.com/downloads/ABEA-3ERWFI/2294222387x0xS1193125-12-97807/1418819/filing.pdf>.

51 Iridium Opposition at 6-7, 20-22.

operations and a robust mobile broadband build-out in its Big LEO spectrum, advances that will generate substantial benefits for consumers, public safety users, and other customers throughout the United States. Certainly, Iridium has shown no reason why the Commission should not proceed with a rulemaking on the flexible terrestrial use of the Big LEO band, just as it did in the 2 GHz band.

VI. The Commission Should Once Again Reject EIBASS' Claims Regarding the Effects of Globalstar's Future Terrestrial Operations on BAS Systems Above 2483.5 MHz

In its comments, EIBASS once more focuses on the coexistence of Globalstar's future terrestrial operations and the limited number of grandfathered TV BAS facilities in the Upper Big LEO band.[52] EIBASS does little more than repeat arguments that it has made in other proceedings to no avail, and nothing in its comments should delay the Commission's initiation of a rulemaking on Globalstar's TLPS proposal.

Almost a decade after the Commission established a regulatory framework for terrestrial mobile operations in the Upper Big LEO band, EIBASS continues to argue that such operations are incompatible with grandfathered BAS systems operating on BAS Channel A10.[53] Contrary to EIBASS' claims, however, the Commission has repeatedly found that terrestrial mobile systems and this limited population number of BAS facilities can share spectrum and coexist in the Upper Big LEO band.[54] The Commission's analysis of Globalstar's proposed deployment of

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52 EIBASS Comments to the Globalstar Petition for Rulemaking ("EIBASS Comments").

53 *Id*. at 4-5.

54 *See Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Bands*, Report and Order and Notice of Proposed Rulemaking, 18 FCC Rcd 1962, ¶¶ 201-206 (2003) (finding that "ATC base stations could be operated on selected frequencies so that interference to these fixed and mobile stations could be avoided" and noting that "ATC operators will be required to protect against adjacent-channel and brute-force overload interference to previously licensed users"); *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, Fourth Report and Order and Further

low-power TLPS systems in the AWS-5 band should be no different, given that these low-power transmissions will have even less impact on BAS operations than more conventional, high-power commercial mobile applications.[55] Moreover, while EIBASS claims that Globalstar ignored the existence of BAS Channel A10 in the Petition,[56] Globalstar's proposed AWS-5 framework in fact includes a provision – Section 27.1403 – that is similar to the provision protecting BAS from interference in the MSS ATC context.[57] Under this proposed rule, Globalstar as the AWS-5 licensee will take the steps necessary to avoid causing interference to other services sharing the 2450-2500 MHz band, including operations on BAS Channel A10.

Finally, EIBASS once again asks the Commission to consider the spectrum "re-farming" proposal for the Big LEO band and surrounding spectrum that was submitted many years ago by

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Notice of Proposed Rulemaking, 19 FCC Rcd 13356, ¶ 75 (2004); *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*, Memorandum Opinion and Order and Second Order on Reconsideration, 20 FCC Rcd 4616, ¶¶ 93-94 (2005) (confirming that "Big LEO MSS licensees desiring ATC authorization will be able to coordinate with BAS licensees to avoid causing harmful interference to BAS Channel A10"); *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, ¶ 41 (2006) (stating that the Commission had considered "the potential for mutual interference between ATC operations and the grandfathered [BAS] operations in the band, but . . . ultimately determined that these services would be able to share spectrum and that any potential interference concerns could be mitigated through coordination").

55 EIBASS expresses concern about the effect of Globalstar's TLPS operations in unlicensed ISM spectrum at 2473-2483.5 MHz on BAS facilities below 2483.5 MHz. EIBASS Comments at 7-9. Like any other party, however, Globalstar has the right to operate in this unlicensed band as long as such operations comply with the Commission's Part 15 rules and do not cause harmful interference to licensed services. *See* 47 C.F.R. § 15.5(b). Globalstar will meet both of those requirements with its TLPS deployment at 2473-2483.5 MHz.

56 EIBASS Comments at 2.

57 Petition, Appendix A at 14.

the Society of Broadcast Engineers ("SBE").[58] The Commission should definitively reject this proposal, which ignores the Commission's 2007 decision to expand Globalstar's terrestrial-use authority to 2483.5-2495 MHz (a proceeding in which BAS interests failed even to participate).[59] Almost six years after that Commission order, EIBASS would have the Commission re-pack BAS Channel A10 to the 2474-2486 MHz band segment and reduce Globalstar's terrestrial-use spectrum by a third, limiting Globalstar's terrestrial authority to 7.5 MHz of spectrum at 2487.5-2495 MHz.[60] Contrary to EIBASS' claims, protecting BAS systems from interference does *not* require the reconfiguration of the Upper Big LEO band or the relocation of BAS channel A10. As indicated above, the Commission has repeatedly affirmed the existing spectrum framework at 2483.5-2500 MHz and rejected this spectrum re-farming proposal.[61] EIBASS fails to provide the Commission with any reason to reconsider these sound decisions.[62]

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58 EIBASS Comments at 6-7.

59 *Spectrum and Service Rules for Ancillary Terrestrial Components in the 1.6/2.4 GHz Big LEO Bands; Globalstar Licensee LLC, Authority to Implement an Ancillary Terrestrial Component*, Report and Order and Order Proposing Modification, 23 FCC Rcd 7210, ¶¶ 20-21, 30, 39 (2008). Neither EIBASS nor its predecessor organization SBE participated in the Commission's rulemaking proceeding on the expansion of Globalstar's terrestrial-use frequencies in the Big LEO band.

60 EIBASS Comments at 6-7 & Figure 1.

61 *See* note 54 *supra.*

62 EIBASS notes that in August 2011, Globalstar made a counterproposal to the SBE spectrum re-farming plan. Opposition of Globalstar, ET Docket No. 10-142, at 5 n.10 (Aug. 25, 2011). Specifically, Globalstar stated that it would not oppose an alternative spectrum re-farming approach that moves BAS Channels A8, A9, and A10 to the 2450-2461 MHz, 2461-2472 MHz, and 2472-2483 MHz band segments, respectively. This alternative re-packing plan would provide BAS licensees above 2450 MHz with bandwidth-sufficient 11 MHz channels while leaving intact Globalstar's terrestrial-use spectrum at 2483.5-2495 MHz. Globalstar is willing to revisit this alternative re-farming approach in future discussions with EIBASS.

VII. Globalstar Has Provided Sufficient Support for a Notice of Proposed Rulemaking on Big LEO Reforms that Will Permit Deployment of TLPS

Under the Commission's rules, a petition for rulemaking must provide "all facts, views, arguments and data deemed to support the action requested."[63] The Commission can subsequently issue a notice of proposed rulemaking if that petition "discloses sufficient reasons in support of the action requested to justify the institution of a rulemaking proceeding."[64] In its Petition and in this Reply, Globalstar has provided the Commission with a sound basis and sufficient reasons for it to issue a Notice of Proposed Rulemaking on Big LEO reforms that will enable Globalstar to implement TLPS.

As seen above in Section I of this Reply, Globalstar has described the numerous, important public interest benefits that will result from the implementation of TLPS around the United States.[65] Globalstar has proposed a regulatory framework for this new service, and has provided the Commission with specific proposed amendments to Parts 1, 2, 25, and 27 of its rules. With respect to technical issues, Globalstar has proposed a new OOBE limit for proposed TLPS base station and mobile operations at 2473-2495 MHz, to permit TLPS deployment while minimizing interference to adjacent-band BRS and EBS systems above 2496 MHz.[66] In the certified technical analysis attached to its Petition, Globalstar's engineering consultant demonstrated that actual 802.11-based TLPS end-user devices operating at typical power levels should consistently comply with this proposed OOBE limit, based on surveys of current-generation mobile devices in the Commission's equipment certification database.[67] This

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63 47 C.F.R. § 1.401(c).

64 47 C.F.R. § 1.407.

65 *See also* Petition at 18-24.

66 *Id*. at 39-41.

67 Technical Analysis at 6-7.

technical analysis also showed that incorporating passive filtration into future TLPS access point transceivers will ensure that those facilities comply with Globalstar's proposed OOBE limit.[68] Globalstar has also explained why harmful interference to BRS and EBS operations above 2496 MHz is unlikely, given the low power levels of TLPS devices and the passive filtration that Globalstar has committed to incorporate into its TLPS access points.[69] Finally, as described *supra* at 9, Globalstar's centralized control and management of TLPS operations should enable Globalstar to effectively mitigate any TLPS-related interference.[70]

Despite these showings, Clearwire claims that Globalstar provided insufficient information and testing data to warrant a rulemaking on Big LEO terrestrial-use reform in the Upper Big LEO band.[71] Clearwire ignores recent Commission precedent relevant to the Globalstar's Petition. In 2010, the Wireless Communications Association International ("WCA") filed a petition for rulemaking in which it proposed relaxation of the OOBE limits applicable to mobile devices in BRS/EBS spectrum, including at the 2496 MHz band edge.[72] The WCA petition included no certified engineering analysis, and little to no technical discussion of any kind. In response, Globalstar and other parties raised interference and other technical issues related to WCA's proposal.[73] While WCA included a brief, technically-oriented discussion in its reply, it once again provided no certified engineering analysis. Thus, WCA and other proponents of this relaxed OOBE limit (including Clearwire) provided only limited

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68 *Id*. at 7-9.

69 Petition at 41; Technical Analysis at 9-10.

70 *See also* Petition at 41-43.

71 Clearwire Comments at 2, 3, 15.

72 Petition for Rulemaking, Wireless Communications Association International ("WCA"), RM-11614 (Oct. 22 2010).

73 *See* Opposition of Globalstar, Inc., RM-11614 (Dec. 6, 2010); Comments of IPWireless, Inc., RM-11614 (Dec. 6, 2010); Comments of EIBASS, RM-11614 (Dec. 1, 2010).

information regarding BRS/EBS operational parameters, and certainly offered no test data in support of this proposed change. Nonetheless, the Commission in May 2011 issued a Notice of Proposed Rulemaking on WCA's proposed rule, seeking comment on potential interference and other technical issues.[74] Since then, Clearwire has been an active participant in that proceeding, and it clearly views a relaxed OOBE limit as critical to the development of its service. Had the Commission followed the approach that Clearwire now advocates, however, this OOBE issue would never have been the subject of a rulemaking.[75]

Globalstar's TLPS proposal passes the threshold set forth in the Commission's rules, and the Commission should expeditiously initiate a rulemaking on Big LEO reforms that will enable Globalstar to implement TLPS at 2473-2495 MHz.

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[74] *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*, Fourth Further Notice of Proposed Rulemaking, 26 FCC Rcd 8133, ¶¶ 5-7, 11-17 (2011).

[75] Similarly, neither DISH nor its predecessor licensees in the 2 GHz MSS band (TerreStar and New DBSD) provided the Commission with empirical data or other significant technical information prior to the Commission's initiation of a rulemaking proceeding on greater terrestrial flexibility in that band. *See*, *e.g.*, Application for Modification of Ancillary Terrestrial Component Authority, TerreStar Licensee Inc., IB Docket No. 11-149 (Aug. 22, 2011); Application for Modification of Ancillary Terrestrial Component Authority, New DBSD Satellite Services G.P., IB Docket No. 11-149 (Aug. 22, 2011); Consolidated Application for Transfer of Control (TerreStar Networks Inc., Debtor-In-Possession, DISH Network Corporation, et al.), IB Docket No. 11-150 (Aug. 22, 2011); Amendment to Application for Transfer of Control (DBSD North America, Inc., Debtor-In-Possession, DISH Network Corporation, et al.), IB Docket No. 11-150 (Aug. 22, 2011); Consolidated Opposition to Petitions to Deny and Response to Comments of DISH, DBSD and TerreStar, IB Docket Nos. 11-149, 11-150 (Oct. 27, 2011). The Commission requested such technical data in its *2 GHz NPRM*, and DISH, Sprint, and others built a full technical record during the course of that proceeding. *See 2 GHz Order* ¶¶ 52-158; *2 GHz NPRM* ¶¶ 28-68.

VIII. Conclusion

Globalstar urges the Commission to build on the momentum of its *2 GHz Order* by issuing a Notice of Proposed Rulemaking that undertakes similar pro-consumer, pro-investment reform of the Big LEO MSS-terrestrial rules. By taking this action, the Commission will bring consumers the benefits of more investment, innovation, and more-intensive use of broadband spectrum.

Respectfully submitted,

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Certificate of Service

I hereby certify that on this 29th day of January, 2013, I caused true and correct copies of the foregoing Consolidated Reply of Globalstar, Inc. to be mailed by U.S. mail, postage prepaid, addressed to:

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