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

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

SECOND ORDER ON RECONSIDERATION, SECOND REPORT AND ORDER, AND NOTICE OF PROPOSED RULEMAKING

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By the Commission:

TABLE OF CONTENTS

Heading Paragraph #

I. INTRODUCTION 1
II. BACKGROUND 3
III. SECOND ORDER ON RECONSIDERATION 8
A. Prior Decision 9
B. Petition for Reconsideration 13
C. Discussion 14
1. The L-band Bandplan 14
2. Hearing Under Section 316 of the Communications Act 21
IV. SECOND REPORT AND ORDER 26
V. NOTICE OF PROPOSED RULEMAKING 27
A. Background 28
B. Comments 31
C. Discussion 37
VI. CONCLUSION 43
VII. PROCEDURAL MATTERS 46
VIII. ORDERING CLAUSES 71
APPENDIX A - List of Filers
APPENDIX B - Big LEO L-band Bandplan

I. INTRODUCTION

1. In this *Second Order on Reconsideration, Second Report and Order, and Notice of Proposed Rulemaking*, we modify the Commission's decision in the *Big LEO Spectrum Sharing Order*[1] to establish a bandplan that improves spectrum efficiency and facilitates sharing between code division multiple access (CDMA) and time division multiple access (TDMA) Mobile Satellite Service (MSS) systems in the 1610-1626.5 MHz band (the L-band).[2] The Big LEO L-band bandplan that we establish here provides an equitable distribution of the spectrum between the CDMA satellite system operated by Globalstar, Inc. (Globalstar), and the TDMA satellite system operated by Iridium Satellite LLC (Iridium). In this *Second Order on Reconsideration*, based upon new information in the record showing the impracticability of Big LEO spectrum sharing, we revise the spectrum sharing bandplan the Commission adopted in the *Big LEO Spectrum Sharing Order*. Specifically, CDMA and TDMA MSS systems will each have the exclusive MSS use of 7.775 megahertz of L-band Big LEO spectrum. In addition, in order to account for certain technical issues raised by the design characteristics of existing MSS systems, we require CDMA and TDMA MSS systems to share 0.95 megahertz of L-band spectrum. As a result of today's decision, Globalstar's CDMA system and Iridium's TDMA system will have equal amounts of L-band Big LEO spectrum for their exclusive MSS use.

2. Additionally, in response to a petition filed by Globalstar, we initiate a new *Notice of Proposed Rulemaking (Notice)* to consider spectrum authorizations and technical rules for ancillary terrestrial components (ATC) in the Big LEO bands.[3] In the *Notice*, we seek comment on whether we should increase the amount of spectrum in which CDMA Big LEO MSS systems are authorized to operate ATC.

II. BACKGROUND

3. *Big LEO Order*. In 1994, the Commission adopted licensing and service rules for satellite operators providing MSS in the L-band and the 2483.5-2500 MHz (the S-band) Big LEO bands.[4] Specifically, the Commission designated the 1610-1621.35 MHz segment of the L-band for CDMA MSS uplink operations and the 2483.5-2500 MHz S-band for CDMA MSS downlink operations.[5] The Commission designated the 1621.35-1626.5 MHz segment of the L-band for TDMA MSS uplink and

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[1] *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 Service to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems*, IB Docket No. 02-364, ET Docket No. 00-258, Report and Order, Fourth Report and Order and Further Notice of Proposed Rulemaking, FCC 04-134, 19 FCC Rcd 13386 (2004) (*Big LEO Spectrum Sharing Order/Big LEO Spectrum Sharing Further Notice*).

[2] Big LEO systems provide voice and data communication to users with handheld mobile terminals via non-geostationary satellites in Low Earth Orbit (LEO), *i.e.*, at orbital altitudes below the Van Allen Radiation Belt. The term "Big LEO" was coined to distinguish such systems, operating in frequency bands above 1 GHz, from the so-called "Little LEO" systems that provide data communications via non-geostationary satellites in frequency bands below 1 GHz.

[3] Globalstar Inc., *Petition for Expedited Rulemaking for Authorization to Provide Ancillary Terrestrial Component Services in its Entire Spectrum Allocation* (filed June 20, 2006) (Globalstar Petition).

[4] *See Amendment of the Commission's Rules to Establish Rules and Policies Pertaining to a Mobile Satellite Service in the 1610-1626.5/2483.5-2500 MHz Frequency Bands*, CC Docket No. 92-166, Report and Order, FCC 94-261, 9 FCC Rcd 5936 (1994) (*Big LEO Order*), *on reconsideration*, Memorandum Opinion and Order, FCC 96-54, 11 FCC Rcd 12861 (1996).

[5] *See Big LEO Order*, 9 FCC Rcd at 5955, ¶ 44.

downlink operations. The Commission also considered the possibility that not all of the CDMA MSS systems that were contemplated at the time of the *Big LEO Order* would ultimately be built and launched. In the event that only one CDMA MSS system was launched and operated, the Commission noted that it had "proposed to reduce the bandwidth assigned to that system automatically from 11.35 MHz to 8.25 MHz."[6] The Commission stated that an 8.25 MHz assignment, or one-half of the available 1.6 GHz MSS allocation, should be sufficient to support a viable system and that the remaining 3.1 MHz of spectrum would be made available to an operational frequency division multiple access (FDMA) or TDMA system upon a showing of need or, if this demonstration could not be made, to a new entrant.[7] Ultimately, however, the Commission deferred any decision on reassigning the 3.1 megahertz of spectrum at 1618.25-1621.35 MHz to a future rulemaking.[8]

4. Subsequently, the Commission licensed four CDMA MSS operators to share the 1610-1621.35 MHz and 2483.5-2500 MHz bands,[9] and one TDMA operator to have exclusive use of the 1621.35-1626.5 MHz band.[10] Three of the CDMA MSS licenses were later surrendered. Currently, the Big LEO bands are occupied by one CDMA MSS system, Globalstar[11] and one TDMA MSS system, Iridium.[12] The Commission currently has no application before it for any new Big LEO MSS system.

5. *Big LEO Spectrum Sharing Notice*. In 2003, the Commission issued a *Notice of Proposed Rulemaking* in response to a Petition for Rulemaking filed by Iridium, requesting 5.85 megahertz of additional spectrum for Iridium to use in the CDMA portion of the Big LEO L-band.[13] The Commission

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[6] *Big LEO Order*, 9 FCC Rcd at 5959-60, ¶ 54.

[7] *See Big LEO Order*, 9 FCC Rcd at 5959-60, ¶ 54.

[8] *See Big LEO Order*, 9 FCC Rcd at 5960, ¶ 55.

[9] *See Loral/Qualcomm Partnership, L.P.*, Order and Authorization, DA 95-128, 10 FCC Rcd 2333 (Globalstar License), *erratum*, DA 95-373, 10 FCC Rcd 3926 (Int'l Bur. 1995), *recon. denied*, 11 FCC Rcd 18502 (1996), *modification granted, L/Q Licensee, Inc.*, DA 96-1924, 11 FCC Rcd 16410 (Int'l Bur./OET 1996) (assigning feeder-link frequencies); *TRW, Inc.*, Order and Authorization, DA 95-130, 10 FCC Rcd 2263, *erratum*, DA 95-371, 10 FCC Rcd 3924 (Int'l Bur. 1995), *recon. denied*, 11 FCC Rcd 18502 (1996), *modification granted*, DA 96-1923, 11 FCC Rcd 20419 (Int'l Bur. 1996) (assigning feeder-link frequencies); *Mobile Communications Holdings, Inc.*, Order and Authorization, DA 97-1367, 12 FCC Rcd 9663 (Int'l Bur./OET 1997); *Constellation Communications, Inc.*, Order and Authorization, DA 97-1366, 12 FCC Rcd 9651 (Int'l Bur./OET 1997).

[10] *See Motorola Satellite Communications, Inc.*, Order and Authorization, DA 95-131, 10 FCC Rcd 2268, *erratum*, DA 95-372, 10 FCC Rcd 3925 (Int'l Bur. 1995), *recon. denied*, 11 FCC Rcd 18502 (1996), *modification granted*, DA 96-1789, 11 FCC Rcd 13952 (Int'l Bur. 1996) (assigning feeder-link frequencies). For a more detailed history of the Big LEO licensees, *see Big LEO Spectrum Sharing Order*, 19 FCC Rcd at 13365-13367, ¶¶ 19-23.

[11] *See* Letter from Josh L. Roland, Counsel to Globalstar LLC to Marlene H. Dortch, Secretary, Federal Communications Commission, File No. SAT-T/C-20051227-00269 (March 20, 2006) (consummation of *pro forma* transfer of control of licenses from Globalstar LLC to Globalstar, Inc.); *International Authorizations Granted*, IB Docket No. 04-4, Public Notice, DA 04-628, 19 FCC Rcd 4079 (Int'l Bur. 2004) (granting bankruptcy reorganization of the Globalstar space station license and associated earth station licenses held by Globalstar LP, Debtor-in-Possession and L/Q Licensee, Inc.).

[12] *See Applications of Space Station System Licensee, Inc., Assignor, and Iridium Constellation LLC, Assignee, et al.*, Memorandum Opinion and Order, Order and Authorization, DA 02-307, 17 FCC Rcd 2271 (Int'l Bur. 2002) (approving bankruptcy-related assignment of the Iridium space station license and associated earth station licenses to Iridium Satellite LLC and affiliated companies).

[13] *See Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-band, and the 1.6/2.4 GHz Bands; Review of the Spectrum Sharing Plan Among Non-Geostationary Satellite Orbit Mobile Satellite Service Systems in the 1.6/2.4 GHz Bands*, Report and Order and Notice of Proposed Rulemaking

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noted that it had "left open the possibility of providing an opportunity for additional MSS entry in the Big LEO spectrum" in the *Big LEO Order*.[14] In seeking comment on the issue of spectrum reallocation or reassignment, the Commission stated that "it is appropriate to seek comment on both the possible reassignment and possible reallocation of any returned spectrum for possible use by other services."[15]

6. *Big LEO Spectrum Sharing Order*. In 2004, the Commission adopted the *Big LEO Spectrum Sharing Order*, which revised the Big LEO bandplan.[16] The Commission determined that TDMA MSS operators could use an additional 3.1 megahertz of spectrum at 1618.25-1621.35 MHz on a shared basis, while permitting CDMA MSS operators to have continued use of that spectrum.[17] The Commission stated that allowing operators using CDMA and TDMA technologies to have access to the same spectrum, where feasible, would promote efficient spectrum use.[18] Further, the Commission stated that allowing both TDMA and CDMA MSS operators to use this shared spectrum would promote technological neutrality, resulting in more market-driven uses of the spectrum.[19] The Commission declined to adopt specific coordination rules for the 3.1 megahertz of shared spectrum, stating that the MSS operators should be able to coordinate with "minimal Commission intervention" in spectrum sharing negotiations.[20] The Commission observed that *de facto* sharing between Globalstar and Iridium in the 1618.25-1621.35 MHz segment had already been occurring since the Commission granted Iridium special temporary authority (STA) to operate in that segment in 2003, in support of U.S. operations in the Middle East, and later in support of rescue and reconstruction efforts in response to the 2005 hurricane season.[21] The Commission also stated that minimal Commission involvement was consistent with its efforts to promote flexible, market-oriented spectrum policies encouraging efficient spectrum use.[22] The *Big LEO Spectrum Sharing Order* also established a plan for spectrum sharing in the 2495-2500 MHz band between CDMA MSS operators and the fixed and mobile services.[23] Globalstar filed a Petition for Reconsideration of the *Big LEO Spectrum Sharing Order*. We received one opposition and one reply to opposition.[24]

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(*Big LEO Spectrum Sharing Notice*), IB Docket No. 01-185, IB Docket No. 02-364, FCC 03-15, 18 FCC Rcd 1982, 2089 at ¶ 265 (2003) (citing Iridium *Petition for Rulemaking*, filed Jul. 26, 2002 (Iridium Petition)).

[14] *Big LEO Spectrum Sharing Notice*, 18 FCC Rcd at 2089, ¶ 265 (citing *Big LEO Order*, 9 FCC Rcd at 5960, ¶ 55).

[15] *Big LEO Spectrum Sharing Notice*, 18 FCC Rcd at 2089, ¶ 265.

[16] *See generally Big LEO Spectrum Sharing Order*, 19 FCC Rcd 13386.

[17] On September 3, 2004, the International Bureau modified authorizations held by Iridium to use the additional 3.1 MHz of spectrum on a shared basis. *See Iridium Constellation LLC, Iridium Satellite LLC, Iridium Carrier Services, Modification of Authority to Operate a Mobile Satellite System in the 1.6 GHz Frequency Band*, Order, DA 04-2869, 19 FCC Rcd 17474 (Sat. Div., Int'l Bur. 2004) (modifications effective September 8, 2004).

[18] *See Big LEO Spectrum Sharing Order*, 19 FCC Rcd at 13377, ¶ 45.

[19] *See Big LEO Spectrum Sharing Order*, 19 FCC Rcd at 13377, ¶ 46.

[20] *Big LEO Spectrum Sharing Order*, 19 FCC Rcd at 13369, ¶¶ 28-29 and 13380, ¶ 53.

[21] *See Big LEO Spectrum Sharing Order*, 19 FCC Rcd at 13380, ¶ 53.

[22] *See Big LEO Spectrum Sharing Order*, 19 FCC Rcd at 13380-81, ¶ 55.

[23] *See Big LEO Spectrum Sharing Order*, 19 FCC Rcd at 13387-88, ¶¶ 69-71.

[24] *See* Appendix A. Petitions for reconsideration regarding spectrum sharing in the 2495-2500 MHz band between CDMA MSS operators and the fixed and mobile services were resolved in the *Big LEO Order on Reconsideration and AWS 5th MO&O*. *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*
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7. *Big LEO Spectrum Sharing Further Notice.* As part of the *Big LEO Spectrum Sharing Order*, the Commission issued the *Big LEO Spectrum Sharing Further Notice* to explore whether CDMA and TDMA MSS operators could share the 1616-1618.25 MHz segment of the L-band.[25] In particular, the Commission asked whether such sharing would affect the ability of CDMA and TDMA MSS operators to provide a wide variety of services, including aviation services.[26] The Commission also asked whether shared use of the 1616-1618.25 MHz segment would affect the ability of CDMA operators to provide ATC services.[27] Further, the Commission sought comment on how an additional sharing requirement might affect the ability of CDMA MSS systems to provide global communications.[28] Finally, the Commission asked for alternate approaches to sharing that would take into account technical limitations that might hinder sharing in the 1616-1618.25 MHz segment and that would permit the most efficient use of this spectrum.[29] In response to the *Big LEO Spectrum Sharing Further Notice*, we received three comments, three replies, and numerous *ex parte* filings from Globalstar and Iridium.[30]

III. SECOND ORDER ON RECONSIDERATION

8. In this *Second Order on Reconsideration*, we adopt a more equitable bandplan that reassigns 3.1 megahertz of shared Big LEO L-band spectrum to the exclusive use of TDMA MSS systems, subject to minimal sharing requirements, and we limit the amount of shared spectrum between CDMA and TDMA MSS systems to 0.95 megahertz of L-band spectrum at 1617.775-1618.725 MHz. As a result of these decisions, the bandplan we adopt today provides CDMA MSS systems with an exclusive assignment of 7.775 megahertz of L-band spectrum at 1610-1617.775 MHz, TDMA MSS systems with an exclusive MSS assignment of 7.775 megahertz of L-band spectrum at 1618.725-1626.5 MHz, and a small shared segment of 0.95 megahertz between CDMA and TDMA MSS systems at 1617.775-1618.725 MHz.

A. Prior Decision

9. As noted briefly above, in 2003 the Commission received the Iridium Petition, which sought reassignment of 5.85 megahertz of spectrum in the 1615.5-1621.35 MHz portion of the Big LEO L-band, which was previously assigned to CDMA Big LEO MSS.[31] Iridium asserted that its demand for spectrum both in the United States and in other regions of the world had grown to the point of near-peak capacity

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2500-2690 MHz Bands, WT Docket No. 03-66, *Review of the Spectrum Sharing Plan Among Non-Geostationary Satellite Orbit Mobile Satellite Service Systems in the 1.6/2.4 GHz Band*, IB Docket No. 02-364, *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*, ET Docket No. 00-258, Order on Reconsideration and Fifth Memorandum Opinion and Order and Third Memorandum Opinion and Order and Second Report and Order, FCC 06-46, 21 FCC Rcd 5606, 5618-5639, ¶¶ 20-58 (2006) (*Big LEO Order on Reconsideration and AWS 5th MO&O*) (recon pending) (appeal held in abeyance, *Sprint Nextel Corporation v. FCC*, No. 06-1278 (D.C. Cir. filed July 21, 2006)).

[25] *See Big LEO Spectrum Sharing Further Notice*, 19 FCC Rcd at 13399, ¶ 98.

[26] *See Big LEO Spectrum Sharing Further Notice*, 19 FCC Rcd at 13399, ¶ 99.

[27] *See Big LEO Spectrum Sharing Further Notice*, 19 FCC Rcd at 13399, ¶ 99.

[28] *See Big LEO Spectrum Sharing Further Notice*, 19 FCC Rcd at 13399, ¶ 99.

[29] *See Big LEO Spectrum Sharing Further Notice*, 19 FCC Rcd at 13399, ¶ 100.

[30] *See* Appendix A.

[31] *See Big LEO Spectrum Sharing Notice*, 18 FCC Rcd at 2089, ¶ 266.

use on its system at various times and that its projected growth in use would require additional Big LEO spectrum in the near future.[32] In the *Big LEO Spectrum Sharing Notice*, therefore, the Commission stated that it was appropriate to consider making at least 3.1 megahertz of additional spectrum available to Iridium because only one of the four licensed CDMA Big LEO MSS systems had been launched.[33] As noted above, the Commission had stated in the *Big LEO Order* in 1994 that it would defer any decision on whether to reassign the 3.1 megahertz segment at 1618.25-1621.35 MHz until it was clear that only one CDMA Big LEO MSS system would operate in the Big LEO L-band.[34]

10. In response to the *Big LEO Spectrum Sharing Notice*, Iridium asserted that it was unable to satisfy its customers' needs, to meet increasing demand for MSS service, or to offer new services with only 5.15 megahertz of assigned spectrum.[35] Further, Iridium stated that it was at a competitive disadvantage because it was assigned only 5.15 megahertz of spectrum while Globalstar was assigned 27.85 megahertz of spectrum, including Globalstar's assigned spectrum in the L-band and the S-band.[36] For these reasons, Iridium argued that the Commission should modify the Big LEO spectrum bandplan to create spectrum parity.[37]

11. Globalstar opposed Iridium's plan, claiming that it needed all of the spectrum it was assigned to provide service to current and anticipated future customers.[38] Globalstar also claimed that inter-service sharing and out-of-band (OOB) emissions limits restricted Globalstar's spectrum usage in the 1610-1615 MHz band and, therefore, that a reduction in L-band spectrum could hinder Globalstar's ability to provide its services.[39] Finally, Globalstar asserted that Iridium did not use its assigned spectrum efficiently, had not demonstrated a need for more spectrum, and had previously declined the offer of S-band spectrum in which to operate.[40]

12. Rather than reassigning spectrum in the Big LEO L-band, the Commission decided to "establish a new band sharing plan in which the TDMA operators may share the 3.1 megahertz of spectrum with CDMA operators at 1618.25-1621.35 MHz."[41] The Commission based this decision upon: (1) its earlier decision in the *Big LEO Order* to reassess the then-current bandplan if only one CDMA system was launched and (2) the fact that only one CDMA satellite system, Globalstar, has been launched

[32] *See Big LEO Spectrum Sharing Notice*, 18 FCC Rcd at 2089, ¶ 266 (citing Letter from Richard E. Wiley, Counsel to Iridium, to Michael K. Powell, Chairman, FCC, dated Jan. 13, 2003).

[33] *See Big LEO Spectrum Sharing Notice*, 18 FCC Rcd at 2089, ¶ 266.

[34] *See Big LEO Order*, 9 FCC Rcd 5960, ¶ 55.

[35] *See Big LEO Spectrum Sharing Order*, 19 FCC Rcd 13371, ¶ 34 (citing Iridium Comments at 10-30, Iridium Reply at 6-9).

[36] *See Big LEO Spectrum Sharing Order*, 19 FCC Rcd 13371, ¶ 34 (citing Iridium Comments at 7).

[37] *See Big LEO Spectrum Sharing Order*, 19 FCC Rcd 13372, ¶ 35 (citing Iridium Comments at 4-5). Iridium's bandplan called for 5.35 megahertz of L-band spectrum to be reassigned from CDMA to TDMA Big LEO MSS, and for approximately 10 megahertz of CDMA Big LEO S-band spectrum to be reclaimed for "other purposes," leaving approximately 12.5 megahertz of total L-band and S-band Big LEO spectrum available to Globalstar. *See Big LEO Spectrum Sharing Order*, 19 FCC Rcd 13371, ¶ 34 (citing Iridium Comments at 25-26, 36).

[38] *See Big LEO Spectrum Sharing Order*, 19 FCC Rcd 13372, ¶ 36 (citing Joint Comments of L/Q Licensee, Inc., Globalstar, L.P. and Globalstar USA, L.L.C. (Joint Comments) at 6).

[39] *See Big LEO Spectrum Sharing Order*, 19 FCC Rcd 13372-73, ¶ 36 (citing Joint Comments at 11).

[40] *See Big LEO Spectrum Sharing Order*, 19 FCC Rcd 13373, ¶ 37 (citing Joint at 12-19, 30).

[41] *Big LEO Spectrum Sharing Order*, 19 FCC Rcd 13376, ¶ 44.

since the *Big LEO Order*.[42] The Commission found that sharing this segment would promote spectrum efficiency by increasing the number of MSS licensees that would use the spectrum.[43] Further, the Commission found that allowing sharing in the 1618.25-1621.35 MHz segment "represents a more technology neutral approach to assigning spectrum, thereby not giving a preference to a specific technology."[44] The Commission also found "that sharing L-band spectrum would be more beneficial than granting TDMA MSS operators exclusive access to additional L-band spectrum. Both the CDMA and the TDMA MSS operator set forth compelling arguments for utilizing the spectrum, so we believe that sharing the spectrum would be the most equitable solution at this time."[45] The Commission was unpersuaded by Iridium's spectrum parity argument, and considered no other spectrum reassignments in the Big LEO bands.[46]

B. Petition for Reconsideration

13. After the Commission issued its spectrum sharing decision in the *Big LEO Spectrum Sharing Order*, several parties addressed the feasibility of spectrum sharing between CDMA and TDMA MSS in the Big LEO L-band. Globalstar filed a Petition for Reconsideration, requesting that the Commission reverse its decision in the *Big LEO Spectrum Sharing Order* and preclude CDMA and TDMA MSS sharing in the 1618.25-1621.35 MHz segment.[47] Should we decline to do this, Globalstar requests several alternate measures. First, Globalstar requests that we require Iridium to show a need for each CDMA channel in the 1618.25-1621.35 MHz band before we grant it access to that channel.[48] Second, Globalstar requests access to Big LEO TDMA spectrum, currently used by Iridium, in an amount equal to the amount of CDMA spectrum shared with TDMA MSS systems.[49] Third, Globalstar requests that we shift the lower boundary of shared Big LEO spectrum from 1618.25 to 1618.725, in order to preserve the CDMA Channel 7 for CDMA systems.[50] Globalstar also contends that the Commission cannot allow spectrum sharing in the Big LEO bands without affording Globalstar a hearing under Section 316 of the Communications Act of 1934, as amended (Communications Act).[51]

C. Discussion

1. The L-band Bandplan

14. In the *Big LEO Spectrum Sharing* proceeding, the Commission assigned 3.1 megahertz of spectrum in the L-band for shared use by CDMA and TDMA systems. Upon reconsideration, however, we conclude that, based upon new information presented in the record,[52] the public interest would be

[42] *See Big LEO Spectrum Sharing Order*, 19 FCC Rcd at 13371, ¶ 33.

[43] *See Big LEO Spectrum Sharing Order*, 19 FCC Rcd 13377, ¶ 45.

[44] *Big LEO Spectrum Sharing Order*, 19 FCC Rcd 13377, ¶ 46.

[45] *Big LEO Spectrum Sharing Order*, 19 FCC Rcd 13377, ¶ 47.

[46] *See Big LEO Spectrum Sharing Order*, 19 FCC Rcd 13378, ¶ 49.

[47] *See* Globalstar Petition at 3-8.

[48] *See* Globalstar Petition at 7.

[49] *See* Globalstar Petition at 7.

[50] *See* Globalstar Petition at 8-9.

[51] *See* Globalstar Petition at 13-18 (citing 47 U.S.C. § 316).

[52] The record on this reconsideration contains three technical analyses of spectrum sharing and the risk of interference between CDMA and TDMA MSS systems in the Big LEO L-band. *See* Globalstar Petition, Tech.

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better served by reassigning spectrum in the L-band so that CDMA and TDMA MSS systems have equal assignments of spectrum for their exclusive MSS use in order to account for the growth of current CDMA and TDMA MSS systems and to limit sharing to only a small segment of less than one megahertz. We base our decision upon new information showing the impracticability of spectrum sharing between heavily loaded CDMA and TDMA MSS systems in the Big LEO L-band.

15. As an initial matter, we find that sharing between CDMA and TDMA MSS systems becomes technically more difficult as both systems approach or achieve full loading, *i.e.*, operation at maximum system capacity. Globalstar asserts that spectrum sharing between fully loaded CDMA and TDMA systems is not feasible in the L-band.[53] Globalstar states that the two types of systems can coordinate use of spectrum to which both have access, so that the two systems are *de facto* dividing that portion of the spectrum, but that sharing, in the sense of co-frequency co-coverage operations, is not feasible.[54] To support this assertion, Globalstar provides an interference analysis demonstrating that Iridium operations at full system capacity would cause harmful interference to Globalstar operations.[55] Iridium counters with its own technical analysis that demonstrates that sharing between the two operators should leave margins of between 12.2 dB and 27.8 dB below Globalstar's interference threshold, even assuming full use of the shared spectrum by Iridium.[56] Iridium also contends that Globalstar's analysis contains several erroneous assumptions.[57]

16. Globalstar disputes Iridium's technical arguments,[58] and along with Sagem and Qualcomm, contends that spectrum sharing in the 1616-1618.25 MHz segment would disrupt Globalstar's provision of aviation services.[59] Globalstar also submits a draft report on sharing between TDMA and CDMA systems in the L-band prepared by the Electronic Communications Committee (ECC) of the European Conference of Postal and Telecommunications Administrations.[60] The report concludes that in shared spectrum, when both Iridium and Globalstar are fully loaded, an Iridium satellite would suffer harmful interference from Globalstar earth terminals 45% of the time,[61] a Globalstar satellite would suffer interference from Iridium earth terminals which may or may not exceed defined protection criteria 100% of the time,[62] and Globalstar satellites would receive unacceptable interference from Iridium satellites.[63]

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Appx., § 2; Iridium Comments at 17-20; Letter from William T. Lake, Counsel to Globalstar, to Marlene H. Dortch, Secretary, FCC, dated Feb. 7, 2007, Attachment A (ECC Draft Report).

[53] *See* Globalstar Petition at 5-6.

[54] *See* Globalstar Petition at 5-6.

[55] *See* Globalstar Petition, Tech. Appx., § 2. *See also* Globalstar Comments at 12.

[56] *See* Iridium Comments at 17-20.

[57] Iridium disputes Globalstar's assumption of the number of Iridium carriers per Globalstar channel and beam, and the average transmit power per carrier of Iridium's system. *See* Iridium Reply at 7-9.

[58] *See* Globalstar Reply at 6-13.

[59] Globalstar contends that it needs two unshared CDMA channels in the L-band to provide service to aircraft. *See* Globalstar Comments at 5-16 and Tech. Appendix; Globalstar Reply at 14-22 and Tech. Appendix. *See also* Sagem Comments at 1-3; Qualcomm Reply at 1-10.

[60] *See* ECC Draft Report at 36.

[61] *See* ECC Draft Report at 36.

[62] *See* ECC Draft Report at 36.

[63] *See* ECC Draft Report at 36.

Further, our own experience of satellite interference issues reinforces the decision the Commission made in 1994 to restrict TDMA and CDMA systems to different parts of the L-band, a decision based on the conclusion that fully-loaded TDMA and CDMA systems cannot share spectrum in a co-frequency, co-coverage manner without generally undesirable operational limitations. Moreover, both Iridium and Globalstar state that their business has grown, and confidently predict that their business will continue to grow. Globalstar has experienced steady, significant increases in subscribership for the last two years,[64] and Iridium has shown that the communications traffic it is handling has increased substantially.[65] Further, Iridium argues it will need more spectrum to provide full-rate voice channels and higher speed data transmissions, as well as to accommodate peak demand.[66]

17. In view of these considerations, and in order to provide long-term certainty and stability in the Big LEO market and to avoid harmful interference between CDMA and TDMA Big LEO MSS systems, we will divide the Big LEO L-band spectrum equally to CDMA and TDMA systems. As the Commission proposed in the *Big LEO Order*, we will reassign the 3.1 megahertz of spectrum at 1618.25-1621.35 MHz from shared Big LEO MSS use to the exclusive use of TDMA, except for such minimal sharing as we establish below. We will assign this 3.1 megahertz of spectrum to Iridium on an exclusive basis, subject to the minimal sharing requirements we establish below, because no third party in this proceeding expressed an interest in L-band Big LEO spectrum and because, based on the record before us, Iridium has made a case demonstrating its need for more spectrum.[67]

18. In order to address technical concerns related to Globalstar, the existing CDMA MSS system, we will require CDMA and TDMA MSS systems to share the 1617.775-1618.725 MHz segment of the L-band. Globalstar notes in its reconsideration petition that its CDMA channels are each approximately 1.23 megahertz wide, and there are small guard bands at each end of Globalstar's channel plan.[68] Because of this, Globalstar Channel 7 is at 1617.495-1618.725 MHz. Globalstar requests that, if the Commission does not reconsider its decision requiring spectrum sharing in the 1618.25-1621.35 MHz segment, that it move the lower boundary of the shared segment from 1618.25 MHz to 1618.725 MHz in order to preserve Globalstar Channel 7 for Globalstar's exclusive use.[69] Globalstar contends that it needs Channels 6 and 7 on an unencumbered basis to provide aviation service.[70] In its comments, Iridium's asserts that sharing is technically feasible, which indicates that Globalstar could continue to use Channel 7 on a shared basis if part of the channel was assigned for shared use by these two systems.[71]

19. As noted above, Globalstar's CDMA Channel 7 covers the segment at 1617.495-1618.725. Were we to divide the L-band equally at 1618.25 MHz and assign the 1618.25-1626.5 MHz band to Iridium's exclusive use would, we would preclude Globalstar from using the portion of its Channel 7 at 1618.25-1618.725 MHz. Because of the operating characteristics of Globalstar's system, this prohibition would effectively deny Globalstar of the use of all of CDMA Channel 7. Therefore, if Globalstar could not use CDMA Channel 7 and Iridium were authorized to use only the portion of CDMA Channel 7, at

[64] *See* Globalstar Comments at 2.

[65] *See* Iridium Comments at 2.

[66] *See* Iridium Comments at 7-9.

[67] *See* Iridium at 5-10; Iridium Reply at 2-6.

[68] *See* Globalstar Petition for Reconsideration at 9-10.

[69] *See* Globalstar Petition for Reconsideration at 9-10.

[70] *See* Globalstar Comments at 8-10.

[71] *See* Iridium Comments at 11-12.

1618.25-1618.725 MHz, which lay within its assigned L-band spectrum, the remainder of CDMA Channel 7, 0.755 megahertz of spectrum at 1617.495-1618.25 MHz, could not be used by either operator. We find that it is not in the public interest to allow 0.755 megahertz of scarce, valuable MSS spectrum to go unused. For this reason, we will allow Globalstar to use CDMA Channel 7 by allowing Globalstar to share the 0.475 megahertz segment of spectrum at 1618.25-1618.725 MHz, which is assigned to Iridium. This limited sharing will allow Globalstar to use all of CDMA Channel 7. At the same time, we note that sharing the 0.475 megahertz of spectrum at 1618.25-1618.725 MHz may affect the ability of Iridium to use that 0.475 megahertz of spectrum to its full advantage. Accordingly, in order to preserve equity in the L-band, we will allow Iridium to share the 0.475 megahertz of spectrum assigned to Globalstar, at 1617.775-1618.25 MHz. This segment is also within CDMA Channel 7. We believe that this approach is equitable because it grants each operator the same amount of exclusive spectrum (7.775 megahertz) and provides both operators a small segment of shared spectrum (0.95 megahertz).[72] We note that this solution is similar to an approach suggested by Globalstar in its reconsideration petition, *i.e.*, allow it to share TDMA-exclusive spectrum in an amount equal to the amount of CDMA spectrum shared with TDMA systems.[73] Based on our review of the record, we find that the segment of spectrum at 1617.775-1618.725 can be shared while both systems are relatively lightly loaded. We conclude that spectrum sharing in a small segment of the Big LEO L-band will allow Globalstar to optimize its use of CDMA Channel 7 and will allow the productive use of a 0.755 megahertz segment of Big LEO MSS spectrum that would otherwise remain unused by either operator.

20. As a result of this action, Globalstar will retain the exclusive MSS use of the 1610-1617.775 MHz segment of the L-band, Iridium will be assigned the exclusive MSS use of the 1618.725-1626.5 MHz segment, and the two systems will share the 1617.775-1618.725 MHz segment. A graphic presentation of the band assignments is presented at Appendix B *infra*. We note that the *Iridium License Order* required Iridium to complete all radio astronomy site coordination before Iridium began operations in the 1621.35-1626.5 MHz band.[74] In compliance with this requirement, Iridium coordinated its operations with the National Radio Astronomy Observatory through a Memorandum of Understanding. Iridium also negotiated a Coordination Agreement with the National Astronomy and Ionosphere Center of Cornell University, which operates the Arecibo radio astronomy site. These agreements specify the maximum level of unwanted emissions that Iridium may emit into the 1610.6-1613.8 MHz radio astronomy band during specific time periods when radio astronomy observations are carried out at specific sites. Today's decision will permit Iridium to operate satellite downlinks closer to the radio astronomy band at 1610.6-1613.8 MHz than previously authorized. We remind Iridium that it is still bound by the existing agreements and that it will have to terminate operations if its operations cause unacceptable interference to radio astronomy observations, as specified in the existing agreements. Further, we realize that some radio astronomy sites may not have existed, or may not have envisioned making measurements in the 1610.6-1613.8 MHz band, at the time that these agreements were made. To obtain protection from Iridium's MSS emissions, operators of those sites should request a coordination agreement with Iridium.

[72] This bandplan leaves a 0.28 megahertz portion of CDMA Channel 7, at 1617.495-1617.775 assigned exclusively to CDMA systems.

[73] *See* Globalstar Petition for Reconsideration at 7.

[74] *See Application of Motorola Satellite Communications, Inc. for Authority to Construct, Launch, and Operate a Low Earth Orbit Satellite System in the 1616-1626.5 MHz* Band, Order and Authorization, DA 95-131, 10 FCC Rcd 2268, 2270 at ¶ 14 (1995).

2. *Hearing Under Section 316 of the Communications Act*

21. In the *Big LEO Spectrum Sharing Order*, the Commission found that Globalstar was not entitled to a hearing under Section 316 of the Communications Act. That section requires written notice to any licensee of a proposed change in the license, so that the licensee may object to the proposed change.[75] The Commission found that the "spectrum sharing plan [did] not fall under section 316 because the spectrum sharing plan [had] been adopted pursuant to a rulemaking proceeding that generally affects all MSS providers operating in that band."[76] Further, the Commission found that Section 316 applies only to license modifications, which occurs when an unconditional right granted by the license is substantially affected. The Commission found that Globalstar never had any unconditional right to the spectrum in which the Commission allowed sharing, because the spectrum at issue had been granted for the use of four CDMA satellite systems. Thus, the Commission found in the *Big LEO Spectrum Sharing Order* that Globalstar's rights to that spectrum had always been subject to sharing with other satellite systems, and the inclusion of a TDMA system in the sharing authorized in part of the spectrum did not substantially affect Globalstar's right.[77]

22. In its reconsideration petition, Globalstar again claims that we must grant it a hearing under Section 316 of the Communications Act. Globalstar claims that even though the changes in question were the result of a rulemaking proceeding, they were "in substance and effect individual in impact and condemnatory in purpose."[78] Globalstar states that the Commission's action caused Globalstar to modify directly its operations and suppressed Globalstar's access to the spectrum.[79] Thus, according to Globalstar, a hearing under Section 316 was required.[80]

23. We affirm our determination in the *Big LEO Spectrum Sharing Order* on this issue, and we decline to grant Globalstar a hearing under Section 316 of the Communications Act. With regard to Globalstar's argument that the Commission may not use its rulemaking authority to avoid the adjudicatory procedures required for modifying individual licenses,[81] we note that rulemaking proceedings that are general in nature – such as this one – are not subject to Section 316 requirements.[82]

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[75] *See* 47 U.S.C. § 316.

[76] *Big LEO Spectrum Sharing Order*, 19 FCC Rcd at 13392, ¶ 85.

[77] *See Big LEO Spectrum Sharing Order*, 19 FCC Rcd at 13394, ¶ 86.

[78] Globalstar Petition for Reconsideration at 13 (quoting *California Citizens Band Ass'n v. FCC*, 375 F.2d 43, 51-52 (9th Cir. 1967).

[79] *See* Globalstar Petition for Reconsideration at 14.

[80] *See* Globalstar Petition for Reconsideration at 17.

[81] *See* Globalstar Petition at 13 (citing *Committee for Effective Cellular Rules v. FCC*, 53 F.3d 1309, 1319 (D.C. Cir. 1995)). Globalstar contends that the Commission "cannot, merely by invoking its rulemaking authority, avoid the adjudicatory procedures required for granting and modifying *individual* licenses." *Id.* (citing *California Citizens Band Assoc. v. FCC*, 375 F.2d 43, 51-52 (9th Cir. 1967)).

[82] *See, e.g., Washington Utils. and Transport. Comm'n* v. FCC, 513 F.2d 1142, 1160-1165 (9th Cir. 1975), cert. denied, 423 U.S. 836 (1975); *WBEN, Inc. v. U.S.*, 396 F.2d 601, 617-20 (2d Cir. 1968), cert. denied, 393 U.S. 914 (1968) (stating that "[a]djudicatory hearings serve an important function when the agency bases its decision on the peculiar situation of individual parties who know more than anyone else. But when, as here, a new policy is based upon the general characteristics of an industry, a rational decision is not furthered by requiring the agency to lose itself in an excursion into detail that too often obscures fundamental issues rather than clarifies them."); *Revision of Rules and Policies for the Direct Broadcast Satellite Service*, Report and Order, 11 FCC Rcd 9712, 9766, ¶ 139 (1995) (stating that "the Commission may modify any station license or construction permit if in its judgment such

(continued....)

As we explained in the *Big LEO Spectrum Sharing Order*, we modified the Big LEO bandplan in order to further our public interest goal of promoting more efficient use of spectrum. Our action is consistent with past policy decisions that required Globalstar to share that spectrum.[83] Accordingly, we find that this proceeding is a rulemaking of general effect, and that such modification of Globalstar's license that may occur will result from policy decisions based in the public interest.

24. Even if this rulemaking proceeding were subject to the requirements of Section 316, we reiterate that, as the Commission found in the *Big LEO Spectrum Sharing Order*, Globalstar never had a right of exclusive access to the spectrum the Commission reassigned for sharing. The Commission decided in the *Big LEO Order* to provide L-band spectrum at 1610-1621.35 MHz to four CDMA satellite systems. The Commission specifically stated that if only one CDMA system was constructed, it would propose to reassign the 3.1 megahertz of spectrum at 1618.25-1621.35 to another licensee.[84] We find, as the Commission did in the *Big LEO Spectrum Sharing Order*, that the grant of spectrum to Globalstar under its license was made with the understanding that it was both to be shared with other operators and subject to modification if only one CDMA operator launched and operated a satellite system.

25. Further, we decline Globalstar's request because Globalstar received all the notice and opportunity to object that Section 316 requires, and considerably more. Section 316 states that any license may be modified by the Commission in the public interest, but that '[n]o such order of modification shall become final until the holder of the license... shall have been notified in writing of the proposed action and the grounds and reasons therefor, and shall be given reasonable opportunity, of at least thirty days, to protest such proposed order...."[85] We find that Globalstar was given written notice of the Commission's proposal in the *Big LEO Spectrum Sharing NPRM*, which was released on February 10, 2003.[86] That Globalstar had actual notice of the proposal is evidenced by the fact that Globalstar commented in that proceeding, which culminated in the *Big LEO Spectrum Sharing Order* adopted on June 10, 2004.[87] Thus, Globalstar had sixteen months to object to the proposal. Indeed, Globalstar filed for reconsideration of the Commission's decision in the *Big LEO Spectrum Sharing Order*. Globalstar also filed comments, reply comments, a petition, replies to oppositions, and letters in this proceeding. Moreover, Globalstar's representatives have met on an *ex parte* basis with Commission personnel.[88]

(...continued from previous page)
action will promote the public interest, convenience, and necessity, and, ... such modification may appropriately be accomplished through notice and comment rulemaking.").

[83] *See Big LEO Spectrum Sharing Order*, 19 FCC Rcd at 13394-95, ¶ 87.

[84] *See Big LEO Order*, 9 FCC Rcd at 5959-60, ¶ 54.

[85] 47 U.S.C. § 316(a)(1).

[86] *See Flexibility for Deliver of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-band, and the 1.6/2.4 GHz Bands; Review of the Spectrum Sharing Plan Among Non-Geostationary Satellite Orbit Mobile Satellite Service Systems in the 1.6/2.4 GHz Bands (Big LEO Spectrum Sharing)*, Report and Order and Notice of Proposed Rulemaking, IB Docket No. 01-185, IB Docket No. 02-364, 18 FCC Rcd 11030 (2003).

[87] *See Big LEO Spectrum Sharing Order*, 19 FCC Rcd 13356.

[88] *See, e.g.*, Letter from William T. Lake, Counsel to Globalstar, to Marlene H. Dortch, Secretary, FCC, dated Jul. 18, 2006 (meeting with Commissioner Tate); Letter from William T. Lake, Counsel to Globalstar, to Marlene H. Dortch, Secretary, FCC, dated Jul. 18, 2006 (meeting with Commissioner McDowell); Letter from William T. Lake, Counsel to Globalstar, to Marlene H. Dortch, Secretary, FCC, dated Jun. 22, 2006 (meeting with Chairman Martin); Letter from William T. Lake, Counsel to Globalstar, to Marlene H. Dortch, Secretary, FCC, dated Jun. 22, 2006 (meeting with Commissioner Adelstein); Letter from William T. Lake, Counsel to Globalstar, to Marlene H. Dortch, Secretary, FCC, dated Apr. 28, 2006 (meeting with Commissioner Copps).

Thus, we find that Globalstar has had ample opportunity, and used that opportunity, to protest the Commission's decision.

IV. SECOND REPORT AND ORDER

26. In the *Big LEO Spectrum Sharing Further Notice*, the Commission invited comment on whether and how additional sharing might be possible in the future, referring specifically to whether an additional 2.25 megahertz of spectrum could be shared at 1616-1618.25 MHz.[89] Because we are altering the bandplan for the 1610-1626.5 MHz band to reduce the amount of spectrum shared by CDMA and TDMA Big LEO systems, the proposal for expanded spectrum sharing in the *Big LEO Spectrum Sharing Further Notice*, is moot. The issues of spectrum assignment and sharing raised in the *Big LEO Spectrum Sharing Further Notice* are resolved in the comprehensive bandplan for the 1610-1626.5 MHz band that we adopt in the *Second Order on Reconsideration*. Accordingly, we terminate the *Big LEO Spectrum Sharing Further Notice*.

V. NOTICE OF PROPOSED RULEMAKING

27. In this *Notice of Proposed Rulemaking*, we initiate a proceeding to consider spectrum authorizations and technical rules for ATC in the Big LEO bands. Specifically, we seek comment on expanding the L-band and S-band spectrum in which Globalstar may operate ATC. Globalstar requests that we expand its authorization to operate ATC from the current 11 megahertz of its assigned spectrum to all of the L-band and S-band spectrum in which it is licensed to operate, either exclusively or on a shared basis.[90]

A. Background

28. *ATC Order*. MSS systems can provide communications in areas where it is difficult or impossible to provide communications coverage via terrestrial base stations, such as remote or rural areas and non-coastal maritime regions. A disadvantage of MSS is the fact that the satellite link is susceptible to blocking by structural attenuation, particularly in urban areas and inside buildings. The ATC concept allows MSS operators to integrate terrestrial services into their satellite networks in order to augment coverage in areas where their satellite signals are largely unavailable due to blocking.[91] In 2003, the Commission adopted the ATC Order, permitting MSS licensees to seek authority to implement ATC to be integrated into MSS networks in MSS bands, including the Big LEO bands.[92] ATC allow MSS operators to expand their communications services to urban areas and in buildings where the satellite signal is weak by re-using their assigned MSS frequencies.[93] In the Big LEO bands, the Commission limited ATC operations "to the 1610-1615.5 MHz, 1621.35-1626.5 MHz and 2492.5-2498 MHz bands and to the specific frequencies authorized for use by the MSS licensee that seeks ATC authority."[94] Subsequently

[89] *See Big LEO Sharing Further Notice* at 13398, ¶ 98.

[90] *See* Globalstar *Petition* at 13.

[91] *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*, Memorandum Opinion and Order and Second Order on Reconsideration, IB Docket No. 01-185, FCC 05-30, 20 FCC Rcd 4616, 4818 at ¶¶ 7-8 (2005) (*ATC MO&O*).

[92] *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*, IB Docket No. 01-185, Report and Order and Notice of Proposed Rulemaking, FCC 03-15, 18 FCC Rcd 1962, 1964-2087, ¶¶ 1-4, 6-260 (2003) (*ATC Order*).

[93] *ATC Order* at 1971, ¶ 14.

[94] 47 C.F.R. § 25.149(a)(2)(iii).

the Commission shifted the S-band ATC block to 2487.5-2493 MHz, so that ATC and the fixed and mobile services allocation at 2495-2500 MHz would not overlap.[95]

29. *Globalstar Petition for Rulemaking.* On June 20, 2006, Globalstar filed a *Petition for Expedited Rulemaking* (Petition) requesting that we authorize Globalstar to provide ATC using all of its assigned spectrum in the 1610-1621.35 MHz and 2483.5-2500 MHz Big LEO bands.[96] We placed the Petition on public notice and received four oppositions, four comments, and two reply comments.[97]

30. Globalstar asserts that since the Commission granted it authority to operate ATC in the 1610-1615.5 MHz and 2487.5-2493 MHz bands in January 2006,[98] it has taken a number of steps to prepare for implementation of ATC, including "conducting engineering tests and consumer surveys on potential ATC technologies and services... architecting [sic] its next-generation satellites to best limit mutual interference between the MSS and ATC components..."[99] Globalstar also states that it is "in active business negotiations relating to deployment of ATC."[100] Globalstar claims that its ATC will, when implemented, allow it to offer ubiquitous coverage and a wide range of advanced services to customers, as well as using Globalstar's spectrum with much greater efficiency.[101] For this reason, Globalstar requests that we allow it to offer ATC in all of the Big LEO spectrum Globalstar is authorized to use. This would include spectrum that Globalstar shares with Iridium and five megahertz of spectrum at 2495-2500 MHz that Globalstar shares with the Broadband Radio Service/Educational Broadband Service (BRS/EBS). Globalstar maintains that it is being treated unequally because all of the spectrum available to MSS operators in other bands may be used for ATC, but less than the total spectrum available to Globalstar in the Big LEO bands is available for ATC.[102] Globalstar claims that it is the only current or potential MSS operator limited to using less than its full authorized spectrum for ATC.[103] Globalstar asserts that it can operate ATC across its full assigned spectrum, including spectrum shared with other MSS providers, without causing interference to other users.[104] Globalstar asserts that appropriate coordination requirements and emissions limits will ensure that its ATC does not cause interference to other services.[105] Globalstar also contends that allowing it to use only 11 megahertz for ATC places it at a competitive disadvantage *vis-à-vis* other MSS operators who could provide ATC and distorts the market

[95] *See Big LEO Spectrum Sharing Order*, 19 FCC Rcd at 13389, ¶ 75.

[96] *See* Globalstar *Petition* at 3.

[97] *See Consumer and Governmental Affairs Bureau Reference Information Center Petition for Rulemakings Filed*, Public Notice, Report No. 2785, RM-11339, released July 27, 2006. For commenters and opponents, *see* Appendix A.

[98] *See* Globalstar *Petition* at 6-7.

[99] Globalstar *Petition* at 7.

[100] Globalstar *Petition* at 7.

[101] *See* Globalstar *Petition* at 8-12.

[102] Globalstar refers to the 2 GHz MSS bands at 2000-2020 MHz and 2180-2200 MHz, and the non-Big LEO MSS L-bands at 1525-1544 MHz, 1545-1559 MHz, 1626.5-1645.5 MHz, and 1646.5-1660.5 MHz.

[103] *See* Globalstar *Petition* at 15 (citing 47 C.F.R. § 25.149(a)(2)(ii)).

[104] *See* Globalstar *Petition* at 17.

[105] *See* Globalstar *Petition* at 17.

for MSS/ATC services.[106] In its comments, Qualcomm, Inc. (Qualcomm), which manufactures equipment for Globalstar, agrees with Globalstar's argument.[107]

B. Comments

31. In support of its request, Globalstar analyzes potential cases of interference to licensees and services with which it shares spectrum, or which it may affect by its use of its spectrum.[108] First, Globalstar lists three possibilities of interference to the MSS Big LEO provider with which it shares part of its spectrum, Iridium. Globalstar asserts that it can avoid uplink interference from Iridium mobile terminals into Globalstar ATC base stations simply by assigning its own ATC mobile terminals frequencies in the portion of the 1610-1626.5 MHz band of which it has exclusive use. In cases of potential downlink interference from Iridium satellites to Globalstar ATC base stations, Globalstar asserts that the reduced antenna gain of its ATC base stations in the direction of Iridium satellites will ameliorate interference concerns. Finally, uplink interference into Iridium satellites from Globalstar mobile terminals would be limited by the same mechanism that Globalstar uses to limit interference into its own satellites, according to Globalstar.[109] With regard to BRS/EBS in the 2495-2500 MHz band, Globalstar states that it wishes to use this portion of the band only until BRS/EBS is built out. After such build out, Globalstar claims that it must, and will, abandon using that portion of its spectrum if any occasions of interference arise.[110] Qualcomm agrees, stating that Globalstar can simply and without difficulty move out of the 2495-2500 MHz band in any area in which BRS/EBS begins operation, because Globalstar MSS/ATC mobile terminals will be designed to operate across the entire 2483.5-2500 MHz band.[111]

32. Several parties oppose granting Globalstar authority to operate ATC in the 2495-2500 MHz band. CTIA, the Wireless Association (CTIA), states that it has long been the Commission's intent to provide protection for BRS/EBS by means of frequency separation from ATC.[112] Sprint Nextel Corp. (Sprint Nextel) agrees, noting that Globalstar itself has acknowledged that ATC cannot share spectrum with another terrestrial mobile service and that the Commission has a predominant scheme of licensing terrestrial services in separate spectrum blocks.[113] The Wireless Communications Association International (WCAI) agrees[114] and further notes that both Globalstar and the Commission have stated that Globalstar needs no more ATC spectrum.[115] Motorola, Inc. (Motorola) observes that the Commission established sharing between MSS and BRS/EBS in the 2495-2500 MHz band substantially on the basis that MSS would operate primarily in rural and remote areas, while BRS/EBS would operate primarily in urban and suburban areas. Because ATC would be used primarily in urban areas, Motorola opposes allowing Globalstar to operate ATC in the 2495-2500 MHz band.[116] The WiMAX Forum presents a

[106] *See* Globalstar *Petition* at 19-20.

[107] *See* Qualcomm Comments at 4-5.

[108] *See* Globalstar *Petition* at 21-22.

[109] *See* Globalstar *Petition* at 23.

[110] *See* Globalstar *Petition* at 25-26.

[111] *See* Qualcomm Comments at 6-8.

[112] *See* CTIA Comments at 4-5.

[113] *See* Sprint Nextel Opposition at 2-5.

[114] *See* WCAI Opposition at 7.

[115] *See* WCAI Opposition at 4-6.

[116] *See* Motorola Comments at 2-4.

technical analysis to demonstrate its view that ATC and BRS/EBS cannot share spectrum, and opposes any ATC use of the 2496-2500 MHz band.[117]

33. Iridium opposes expanding Globalstar's ATC spectrum in the L-band, stating that Globalstar has provided no technical evidence that it can operate ATC across its entire assigned band at 1610-1621.35 MHz, including the portion which Globalstar shares with Iridium, without causing harmful interference. Further, Iridium claims that Globalstar has expressly admitted that Globalstar's ATC could cause harmful interference to Iridium's MSS system.[118]

34. In response, Globalstar asserts that it has demonstrated the need for more ATC spectrum, citing its increase in customers and services, and states that its ability to plan for ATC is clouded by the uncertainty as to the frequencies on which it will be allowed to offer ATC.[119] Globalstar also states that expanded ATC spectrum will allow it, in partnership with Open Range Communications, Inc., to provide broadband services in rural areas that currently lack affordable, high-speed broadband.[120] Globalstar reiterates its understanding that it will be obliged to adhere to technical rules designed to avoid interference, and states that it will operate ATC in the 2495-2500 MHz band only where there is no BRS/EBS to suffer interference.[121] Finally, Globalstar asserts that it will not interfere with Iridium's operations in the Big LEO L-band.[122]

35. In response to Globalstar's assertions, T-Mobile USA, Inc. (T-Mobile) states that Globalstar has no need for more ATC spectrum, and that Globalstar's request for more spectrum comes before it has conducted any ATC operations at all.[123] Further, T-Mobile notes that the emergency services Globalstar provided during the 2005 hurricane season were all provided without ATC.[124] According to T-Mobile, Globalstar has not shown how its ATC can share spectrum without interference to other services, and the Commission has long recognized the need to maintain separation between ATC and BRS/EBS.[125] Therefore, asserts T-Mobile, we should refuse to allow Globalstar ATC in the 2493-2500 MHz segment of the S-band.[126] WCAI asserts that there is an undisputed record demonstrating that ATC cannot share with BRS in the 2495-2500 MHz segment of the S-band.[127] WCAI notes that it, the WiMAX Forum, Sprint Nextel, CTIA, T-Mobile, SBE, and Iridium have opposed Globalstar's rulemaking petition.[128] WCAI denies Globalstar's claim that a rulemaking proceeding will provide certainty as to how much spectrum will be authorized for ATC, stating that there is no uncertainty that ATC cannot share spectrum

[117] *See* WiMAX Forum Comments at 2-4.

[118] *See* Iridium at 2-3.

[119] *See* Globalstar Reply at 3-5.

[120] *See, e.g.*, letter from William T. Lake, Wilmer Hale, to Marlene H. Dortch, Secretary, FCC, dated Sep. 12, 2007.

[121] *See* Globalstar Reply at 9-14.

[122] *See* Globalstar Reply at 15-17.

[123] *See* T-Mobile Reply at 2.

[124] *See* T-Mobile Reply at 2-3.

[125] *See* T-Mobile Reply at 3-4.

[126] *See* T-Mobile Reply at 4-5.

[127] *See* Letter from Paul J. Sinderbrand, Counsel to WCAI, to Kevin J. Martin, Chairman, FCC, dated Jun 22, 2007, at 1 (WCAI Letter).

[128] *See* WCAI Letter at 2.

with BRS.[129] WCAI contends that any ATC operation in the 2495-2500 MHz segment will be secondary to BRS, and that allowing Globalstar to operate ATC in this segment would therefore reduce Globalstar's certainty.[130] WCAI states that the presence of ATC in the 2495-2500 MHz segment at the start of BRS service "would impose additional costs attributable to, among other things, customer churn, processing of complaints from those customers who remain, identifying the source and location of the interfering ATC facility, notifying the offending ATC operator of the problem and, where the ATC operator does not cooperate in a timely manner, discontinuing service to customers."[131] Finally, WCAI demands that the Commission account for the impact that the same uncertainty will have on Advanced Wireless Service licensees to relocate BRS Channel 1 licensees from the 2150-2156 MHz band to the 2496-2502 MHz band.[132] WCAI concludes that grant of the Globalstar rulemaking petition will cast a pall over the BRS industry, and asks that we deny Globalstar's rulemaking petition.[133]

36. The Society of Broadcast Engineers (SBE) also opposes the deployment of ATC in any part of the 2483.5-2500 MHz band because of the potential for interference to Broadcast Auxiliary Service (BAS) stations which share the 2483.5-2500 MHz band with CDMA Big LEO MSS.[134] SBE suggests the possibility of authorizing Globalstar to use 10 megahertz of spectrum in the 2483.5-2500 MHz band, at 2486-2496 MHz, subject to "repacking" BAS channels from their current spectrum of 2450-2500 MHz to the 2450-2486 MHz and conversion to digital format.[135] SBE also points out that Globalstar has not in the past coordinated its operations with BAS.[136]

C. Discussion

37. We seek comment on whether we should expand the L-band and S-band spectrum in which Globalstar is authorized to operate ATC. Such an increase would allow Globalstar to offer a higher-capacity ATC than would be possible with its currently authorized 11 megahertz of ATC spectrum. In light of our decision in the *Second Order on Reconsideration* above, Globalstar is effectively requesting ATC authority in the 1610-1618.725 MHz and 2483.5-2500 MHz bands, including spectrum it shares with other licensees or services in both bands. We seek comment on how much of Globalstar's authorized spectrum we should allow Globalstar to use for ATC operations in the Big LEO L-band and S-band.

38. We tentatively conclude that we will not authorize ATC in the portion of the 1617.775-1618.725 MHz band assigned for sharing between CDMA MSS systems, such as Globalstar, and TDMA

[129] *See* WCAI Letter at 3.

[130] *See* WCAI Letter at 4.

[131] WCAI Letter at 5.

[132] *See* WCAI Letter at 5.

[133] *See* WCAI Letter at 5.

[134] *See* SBE Comments at 2.

[135] *See* SBE Comments at 2-3. In a joint letter dated June 4, 2007, SBE again suggested a "two-phase digitization and repacking" of BAS channels A8, A9 and A10 to prevent "mutually destructive" interference between BRS and BAS, and Sprint Nextel stated that it could "voluntarily assist" most BAS licensees in such a transition. *See* Letter from Trey Hanbury, Director, Sprint Nextel and Christopher Imlay, General Counsel, SBE, to Marlene H. Dortch, Secretary, FCC, dated June 4, 2007. SBE proposes BAS "repacking" more completely in its Petition for Reconsideration of the *Big LEO Order on Reconsideration and AWS 5th MO&O*, filed May 22, 2006.

[136] *See* SBE Comments at 5-7.

systems, such as Iridium. The ECC study provided by Globalstar indicates that there is a high probability of mutual interference problems in spectrum shared between CDMA and TDMA systems.[137] For the purposes of interference analysis, ATC uplinks are the same as MSS uplinks. The addition of ATC communications to the MSS satellite communications considered by the ECC analysis could easily exceed the communications volume that the ECC considered to be full loading on Globalstar's system. Because ATC would be used primarily in densely populated urban areas where there is significant structural blockage of the satellite signal path, it is highly likely that there could be large numbers of simultaneously operating, co-channel ATC mobile terminals. Such levels of system loading could render Globalstar ATC infeasible in the shared spectrum at 1617.775-1618.725 MHz. We seek comment on our tentative conclusion not to permit ATC in this shared spectrum and whether a CDMA ATC operating in spectrum shared with a TDMA operator would result in harmful interference.

39. Big LEO MSS shares the S-band with BRS/EBS, BAS Channel A10, a small number of point-to-point microwave operators, private radio services, and industrial, scientific, and medical equipment.[138] Allocations in the band are quite complex, as are issues of interference avoidance and coordination of operations. The Commission noted in the *Big LEO Spectrum Sharing Order* that placing fixed and mobile services in the upper portion of the S-band at 2495-2500 MHz conflicts with MSS ATC operations previously designated for use in the 2492.5-2498 MHz band. For this reason, the Commission shifted the 5.5 megahertz segment authorized for ATC in the S-band from 2492.5-2498 MHz to 2487.5-2493 MHz.[139] The Commission stated its belief that "moving ATC operations below 2490 MHz will not impact other in-band and [out-of-band] users such as BAS much differently than in its original 2492.5-2498 MHz band frequency assignment, since in either situation, ATC operators must protect incumbent operations that would be subject to harmful interference."[140]

40. MSS shares the 2495-2500 MHz band with the fixed and mobile services on a co-primary basis. Several parties state that BRS/EBS licensees in the 2495-2500 MHz segment cannot share with ATC due to the likelihood of interference between ATC and BRS/EBS licensees.[141] Globalstar does not dispute the conclusion that sharing is not feasible between ATC and BRS/EBS, but states in its rulemaking petition that it wishes to use this segment only until BRS/EBS licensees become active, and that it will vacate this segment to resolve any interference problems it may cause to BRS/EBS.[142] Several commenters, however, have asserted that BRS/EBS, as a new service, should be able to plan and deploy with a minimum of uncertainty about potential interference problems.[143] If ATC were permitted to operate in the band in advance of BRS/EBS deployment, they assert that this uncertainty would hamper their ability to deploy in a timely manner.[144] For all of these reasons, we tentatively conclude 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. We seek comment on this tentative conclusion. We also seek comment on what technical standards for ATC we should consider in the S-band, such as

[137] *See* ECC Draft Report, *supra* n.41, at 36.

[138] *See* 47 C.F.R. § 2.106.

[139] *See Big LEO Spectrum Sharing Order*, 19 FCC Rcd at 13389, ¶ 75.

[140] *Big LEO Spectrum Sharing Order*, 19 FCC Rcd at 13389, ¶ 76.

[141] *See* CTIA Comments at 4-5; Sprint Nextel Opposition at 2-5; Motorola Comments at 2-4; WiMAX Forum Comments at 2-4.

[142] *See* Globalstar *Petition* at 23.

[143] *See* CTIA Opposition at 7-8; Sprint Nextel Opposition at 2; WCAI Opposition at 11-13.

[144] *See, e.g.*, WCAI Opposition at 11-13; CTIA Opposition at 7-8.

coordination requirements, out-of-band emissions limits, and power limits, in order to protect BRS/EBS operations from interference from ATC. We also note that, even assuming that we decline to permit ATC operations on the 5 MHz of BRS/EBS spectrum at 2495-2500 MHz and the 0.95 MHz of spectrum shared with Iridium, if we were to authorize ATC in the remaining spectrum sought by Globalstar, this would total an additional 8.275 MHz for ATC use.

41. We note that Sprint Nextel claims that at least three megahertz of frequency separation is needed between BRS stations and MSS ATC stations in order to avoid interference and that Globalstar should not be allowed to operate ATC facilities above 2493 MHz.[145] Sprint Nextel relies on the Commission's prior decision to move ATC operations from 2492.5-2498 MHz to 2487.5-2493 MHz because of the "conflict" between ATC and fixed and mobile excluding aeronautical mobile services above 2495 MHz.[146] We seek comment on these concerns and the appropriate upper limit for ATC operations. We also seek comment on the possibility of applying to ATC operations the out-of-band emissions rule applicable to BRS and EBS operations. Under that rule, for fixed and temporary fixed digital stations, the attenuation shall not be less than 43 +10 log (P) dB, unless a documented interference complaint is received from an adjacent channel licensee.[147] In the event that the complaint cannot be mutually resolved between the parties, licensees of both the existing and new systems shall reduce their out-of-band emissions by at least 67 + 10 log (P) dB, measured three megahertz from their channels' edges for distances between stations exceeding 1.5 kilometers (km).[148] The Commission required that the interfering licensee either resolve the interference situation or employ the more rigorous emission mask within 60 days after receiving a documented interference complaint.[149] MSS systems may submit adjacent channel interference complaints against BRS operators on the same terms and conditions as adjacent channel BRS and EBS licensees.[150] We seek comment on whether applying this rule to MSS ATC operations would make it appropriate to allow ATC operations up to 2495 MHz.

42. We also seek comment on how to protect BAS from harmful interference, should we expand the authorized ATC spectrum in the S-band. BAS Channel A10 is "grandfathered" in this spectrum, and our rules require ATC in the Big LEO L-band and S-band to coordinate their frequency use with BAS and other services in those bands.[151] Because BAS is most heavily used in urban areas – the same areas where ATC would likely be most heavily deployed – and because BAS is a service in which stations move about, setting up to send signals back to television studios from remote locations, often with little or no advance notice, we seek comment on power limits, technical standards and coordination requirements that would allow Globalstar to expand its ATC operations in the S-band. We specifically seek comment on whether an expansion of the authorized ATC in the spectrum beyond the current authorization would

[145] *See* Sprint Nextel Opposition at 2-4; letter from Trey Hanbury, Sprint Nextel, to Marlene H. Dortch, Secretary, FCC, dated Sep. 13, 2007. *See also* letter from Paul J. Sinderbrand, Counsel, WCAI, to Kevin J. Martin, Chairman, FCC, dated Jun. 22, 2007 at 3.

[146] Sprint Nextel Opposition at 3. *See Big LEO Spectrum Sharing Order*, 19 FCC Rcd at 13389, ¶ 75 where the Commission noted "that placing fixed and mobile except aeronautical mobile services in the upper portion of the S-band conflicts with ATC operations previously designated for use in the 2492.5-2498 MHz band. Because of this allocation change, we will move ATC operations down five megahertz to the 2487.5-2493 MHz band, which continues to allow at least two megahertz of MSS-only use between ATC operations and non-MSS services."

[147] 47 C.F.R. § 27.53(l)(2).

[148] 47 C.F.R. § 27.53(l)(2).

[149] 47 C.F.R. § 27.53(l).

[150] *See* 47 C.F.R. § 27.53(l)(2).

[151] *See* 47 C.F.R. § 25.254(a)(3).

make frequency coordination more difficult. We also note that if we expand the authorized ATC spectrum to a lower limit of 2483.5 MHz, this lower limit would be adjacent to BAS Channel A9. We seek comment on what technical standards, such as out-of-band emissions limits or power limits, would be necessary to prevent interference from ATC to BAS Channel A9. We clarify that this *Notice* is not intended to prejudice or influence any action the Commission may take with regard to SBE's Petition for Reconsideration in the *Big LEO Order on Reconsideration and AWS 5th MO&O* proceeding.[152] Parties should file comments in IB Docket No. 07-253.

VI. CONCLUSION

43. The bandplan we adopt here for the Big LEO L-band will provide certainty and stability for MSS systems operating in the Big LEO bands. By providing equal amounts of L-band spectrum for the exclusive use of CDMA and TDMA MSS systems, we provide a more equitable distribution of spectrum resources. At the same time, by confining necessary spectrum sharing to a small segment of less than one megahertz, we provide the opportunity for Big LEO MSS systems to plan their future designs and operations with less uncertainty. As a result of our decision in this *Second Order on Reconsideration*, we will modify both Iridium's and Globalstar's MSS licenses pursuant to our authority under Section 316 of the Communications Act.[153] In particular, we will modify Iridium's license to reflect that Iridium will have exclusive MSS use of TDMA spectrum at 1618.725-1626.5 MHz, as well as shared CDMA/TDMA spectrum at 1617.775-1618.725 MHz. We will modify Globalstar's license to reflect that Globalstar will have exclusive MSS use of CDMA spectrum at 1610-1617.775 MHz, as well as shared CDMA/TDMA spectrum at 1617.775-1618.725 MHz. These license modifications will serve the public interest by ensuring that both MSS operators have access to adequate spectrum to provide their services.

44. In the *Notice,* we seek comment on increasing the spectrum available for Globalstar to deploy and operate ATC in both the Big LEO L-band and S-band. We tentatively conclude that ATC is not feasible in the shared segment of the L-band between 1617.775-1618.725 MHz because of the likelihood of harmful interference to Iridium's system. We further tentatively conclude that ATC is not feasible in the segment of the S-band at 2495-2500 MHz that Globalstar shares with BRS/EBS because of the likelihood of harmful interference to BRS/EBS.

45. We delegate authority to the International Bureau to modify Iridium's and Globalstar's licenses as set forth in this *Second Order on Reconsideration.* Copies of this Order will be served on Iridium and Globalstar. Consistent with Section 316, either licensee may protest modification of its license within 30 days of such modification.[154]

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[152] *See* SBE Petition for Reconsideration of the *Big LEO Order on Reconsideration and AWS 5th MO&O*, filed May 22, 2006.

[153] *See* 47 U.S.C. § 316. We made a similar Section 316 modification to Iridium's license when we decided that TDMA MSS operators could access the 1618.25-1621.35 MHz band. *See Big LEO Order*, 19 FCC Rcd at 13395, ¶ 88; *Iridium Constellation LLC*, Order, DA 04-2869, 19 FCC Rcd 17474 (Sat. Div., Int'l Bur. 2004).

[154] *See* 47 U.S.C. § 316(a)(1). Any other licensee who believes its license will be modified by this decision to modify Iridium's and Globalstar's licenses may also protest the decision within 30 days from the Federal Register publication of this *Order*. *See* 47 U.S.C. § 316(a)(2).

VII. PROCEDURAL MATTERS

46. *Final Regulatory Flexibility Certification.* The Regulatory Flexibility Act of 1980, as amended (RFA),[155] requires that a regulatory flexibility analysis be prepared for notice-and-comment rulemaking proceedings, unless the agency certifies that "the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities."[156] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[157] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[158] A "small business concern" is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the U.S. Small Business Administration (SBA).[159]

47. Pursuant to the RFA, the Commission incorporated an Initial Regulatory Flexibility Analysis (IRFA) into the *Big LEO Spectrum Sharing Further Notice*.[160] We received no comments in response to the IRFA. However, no Final Regulatory Flexibility Analysis is necessary for the *Second Report and Order* because we have decided not to make any changes to the Commission's rules. We note that this Final Regulatory Flexibility Certification addresses only the matters considered in the *Second Order on Reconsideration* portion of the attached *Second Order on Reconsideration, Second Report and Order, and Notice of Proposed Rulemaking*. For the reasons described below, we now certify that the policies and rules adopted in this *Second Order on Reconsideration* will not have a significant economic impact on a substantial number of small entities.

48. In this *Second Order on Reconsideration*, we revise the bandplan of the 1610-1626.5 MHz band to reassign a portion of the spectrum. We find that our actions will not affect a substantial number of small entities because only two MSS operators will be affected. We find that these licensees are not small businesses. Small businesses often do not have the financial ability to become MSS system operators due to high implementation costs associated with launching and operating satellite systems and services. Therefore, we certify that the requirements of this *Second Order on Reconsideration* will not have a significant economic impact on a substantial number of small entities. The Commission will send a copy of the *Second Order on Reconsideration*, including a copy of this Final Regulatory Flexibility Certification, in a report to Congress pursuant to the Small Business Regulatory Enforcement Fairness Act of 1996, *see* 5 U.S.C. § 801(a)(1)(A). In addition, this *Second Order on Reconsideration* and this Final Regulatory Flexibility Certification will be sent to the Chief Counsel for Advocacy of the Small Business Administration, and will be published in the Federal Register. *See* 5 U.S.C. § 605(b).

49. Therefore, we certify that the actions of the *Second Order on Reconsideration* will not have a significant economic impact on a substantial number of small entities. The Commission will send a copy

[155] The RFA, *see* 5 U.S.C. §§ 601-612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

[156] 5 U.S.C. § 605(b).

[157] 5 U.S.C. § 601(6).

[158] 5 U.S.C. § 601(3) (incorporating by reference the definition of "small-business concern" in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register."

[159] 15 U.S.C. § 632.

[160] *Big LEO Spectrum Sharing Further Notice*, 19 FCC Rcd at 13419-13420, App. F.

of the *Second Order on Reconsideration*, including a copy of this Final Regulatory Flexibility Certification, in a report to Congress pursuant to the Congressional Review Act.[161]

50. *Initial Regulatory Flexibility Analysis.* As required by the Regulatory Flexibility Act (RFA),[162] the Commission has prepared this present Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on small entities by the policies and rules proposed in this Notice of Proposed Rule Making (Notice). Written public comments are requested on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments provided in paragraph 51 of this Notice. The Commission will send a copy of this NPRM, including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA).[163] In addition, the Notice and IRFA (or summaries thereof) will be published in the Federal Register.[164]

51. *Need for, and Objectives of, the Proposed Rules.* The Notice proposes no rules, but seeks comment on expanding the Mobile Satellite Service (MSS) spectrum in which MSS licensees may offer ancillary terrestrial component (ATC) service in the bands 1610-1626.5 MHz (the Big LEO L-band) and 2483.5-2500 MHz (the Big LEO S-band). ATC is a terrestrial communications service operating in an MSS licensee's assigned MSS spectrum. It is intended to allow MSS licensees to use terrestrial communications to offer service in locations where the satellite signal is blocked, such as urban areas or inside buildings.

52. Currently, MSS licensees operating code division multiple access (CDMA) systems are permitted to offer ATC in the L-band segment at 1610-1615.5 MHz, and in the S-band segment at 2487.5-2493 MHz. The Notice seeks comment on expanding the authorized spectrum for ATC, potentially up to 1610-1617.775 in the L-band and 2483.5-2495 MHz in the S-band. Any expansion of ATC spectrum would allow CDMA Big LEO MSS licensees to offer higher-capacity ATC and be more competitive with MSS licensees offering ATC in other MSS bands.

53. *Legal Basis.* The proposed action is authorized under Sections 4(i), 301, 302, 303(e), 303(f), 303(r), 304 and 307 of the Communications Act of 1934, as amended, 47 U.S.C. Sections 154(i), 301, 302, 303(e), 303(f), 303(r), 304 and 307.

54. *Description and Estimate of the Number of Small Entities To Which the Proposed Rules Will Apply.* The RFA directs agencies to provide a description of and, where feasible, an estimate of the number of small entities that may be affected by the proposed rules, if adopted.[165] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[166] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[167] A small business

[161] *See* 5 U.S.C. § 801(a)(1)(A).

[162] *See* 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. § 601 *et. seq.*, has been amended by the Contract With America Advancement Act of 1996, Pub. L. No. 104-121, 110 Stat. 847 (1996) (CWAAA). Title II of the CWAAA is the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA).

[163] *See* 5 U.S.C. § 603(a).

[164] *See id.*

[165] 5 U.S.C. § 603(b)(3).

[166] 5 U.S.C. § 601(6).

[167] 5 U.S.C. § 601(3) (incorporating by reference the definition of "small business concern" in 15 U.S.C. § 632). Pursuant to the RFA, the statutory definition of a small business applies "unless an agency, after consultation with the

(continued....)

concern is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the SBA.[168]

55. CDMA MSS licensees share the L-band with TDMA MSS licensees. None of the MSS licensees affected by the proposals in this *Notice* are small entities, as defined by 5 U.S.C. § 632.

56. CDMA MSS licensees share the S-band with licensees in the Broadcasting Auxiliary Service and the Broadband Radio Service/Educational Broadband Service.

57. According to Commission staff review of the BIA Publications, Inc. Master Access Television Analyzer Database (BIA) on March 30, 2007, about 986 of an estimated 1,374 commercial television stations[169] (or approximately 72 percent) have revenues of $13.5 million or less and thus qualify as small entities under the SBA definition. The Commission has estimated that the number of licensed NCE television stations to be 380.[170] We note, however, that, in assessing whether a business concern qualifies as small under the above definition, the controlling affiliation(s)[171] must be considered. Our estimate, therefore, likely overstates the number of small entities that might be affected by our action, because the revenue figure on which it is based does not include or aggregate revenues from affiliated companies. The Commission does not compile and otherwise does not have access to information on the revenue of NCE stations that would permit it to determine how many such stations would qualify as small entities.

58. BRS/EBS is a new service, and the Commission has no records indicating how many entities will be licensed in the service. We believe, however, that a substantial number of BRS/EBS licensees are likely to be small entities as defined by the SBA.

59. *Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements.* None.

60. *Steps Taken to Minimize Significant Economic Impact on Small Entities, and Significant Alternatives Considered.* The RFA requires an agency to describe any significant alternatives that it has considered in reaching its proposed approach, which may include the following four alternatives (among others): (1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance or reporting requirements under the rule for small entities; (3) the use of performance,

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(...continued from previous page)
Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register." 5 U.S.C. § 601(3).

[168] Small Business Act, 15 U.S.C. § 632 (1996).

[169] Although we are using BIA's estimate for purposes of this revenue comparison, the Commission has estimated the number of licensed commercial television stations to be 1374. See News Release, "Broadcast Station Totals as of December 31, 2006" (dated Jan. 26, 2007); *see* http://www.fcc.gov/mb/audio/totals/bt061231.html.

[170] Broadcast Stations Total as of December 31, 2006.

[171] "[Business concerns] are affiliates of each other when one [concern] controls or has the power to control the other or a third party or parties controls or has the power to control both." 13 C.F.R. § 121.103(a)(1).

rather than design, standards; and (4) an exemption from coverage of the rule, or any part thereof, for small entities.[172]

61. The Commission seeks comment in the Notice, including comment on what impact expanding the L-band and S-band ATC spectrum may have on other services, including licensees who are small entities.

62. *Federal Rules that May Duplicate, Overlap, or Conflict With the Proposed Rule.* None.

63. This Second Order on Reconsideration and Second Report and Order does not contain new or modified information collection requirements subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. In addition, therefore, it does not contain any new or modified "information collection burden for small business concerns with fewer than 25 employees," pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, *see* 44 U.S.C. 3506(c)(4).

64. *Initial Paperwork Reduction Act of 1995 Analysis:* This Notice of Proposed Rulemaking does not contain proposed information collection requirements subject to the Paperwork Reduction Act of 1995, Public Law 104-13. In addition, therefore, it does not contain any proposed information collection burden "for small business concerns with fewer than 25 employees," pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, *see* 44 U.S.C. 3506(c)(4).

65. *Ex Parte Rules, Permit-But-Disclose.* This proceeding will be treated as a "permit-but-disclose" proceeding subject to the "permit-but-disclose" requirements under Section 1.1206(b) of the Commission's rules.[173] *Ex parte* presentations are permissible if disclosed in accordance with Commission rules, except during the Sunshine Agenda period when presentations, *ex parte* or otherwise, are generally prohibited. Persons making oral *ex parte* presentations are reminded that a memorandum summarizing a presentation must contain a summary of the substance of the presentation and not merely a listing of the subjects discussed. More than a one- or two-sentence description of the views and arguments presented is generally required.[174] Additional rules pertaining to oral and written presentations are set forth in section 1.1206(b).

66. *Filing Requirements, Comments and Replies.* Pursuant to Sections 1.415 and 1.419 of the Commission's rules,[175] interested parties may file comments and reply comments on or before the dates indicated on the first page of this document. Comments may be filed using: (1) the Commission's Electronic Comment Filing System ("ECFS"), (2) the Federal Government's eRulemaking Portal, or (3) by filing paper copies.[176]

67. *Electronic Filers:* Comments may be filed electronically using the Internet by accessing the ECFS: http://www.fcc.gov/cgb/ecfs/ or the Federal eRulemaking Portal: http://www.regulations.gov. Filers should follow the instructions provided on the website for submitting comments. For ECFS filers, if multiple docket or rulemaking numbers appear in the caption of this proceeding, filers must transmit one electronic copy of the comments for each docket or rulemaking number referenced in the caption. In

[172] *See* 5 U.S.C. § 603(c).

[173] *See* 47 C.F.R. § 1.1206(b); *see also* 47 C.F.R. §§ 1.1202, 1.1203.

[174] *See* 47 C.F.R. § 1.1206(b)(2).

[175] *See* 47 C.F.R. §§ 1.415, 1419.

[176] *See Electronic Filing of Documents in Rulemaking Proceedings*, Report and Order, GC Docket No. 97-113, FCC 98-56, 13 FCC Rcd 11322 (1998).

completing the transmittal screen, filers should include their full name, U.S. Postal Service mailing address, and the applicable docket or rulemaking number.

68. *Paper Filers:* Parties who choose to file by paper must file an original and four copies of each filing. If more than one docket or rulemaking number appears in the caption of this proceeding, filers must submit two additional copies for each additional docket or rulemaking number. Filings can be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail (although we continue to experience delays in receiving U.S. Postal Service mail). All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.

- The Commission's contractor will receive hand-delivered or messenger-delivered paper filings for the Commission's Secretary at 236 Massachusetts Avenue, NE., Suite 110, Washington, DC 20002. The filing hours at this location are 8:00 a.m. to 7:00 p.m. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes must be disposed of before entering the building.

- Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9300 East Hampton Drive, Capitol Heights, MD 20743.

- U.S. Postal Service first-class, Express, and Priority mail should be addressed to 445 12th Street, SW, Washington DC 20554.

69. *Availability of Documents.* Comments, reply comments, and *ex parte* submissions will be available for public inspection during regular business hours in the FCC Reference Center, Federal Communications Commission, 445 12th Street, S.W., CY-A257, Washington, D.C., 20554. These documents will also be available via ECFS. Documents will be available electronically in ASCII, Word 97, and/or Adobe Acrobat.

70. *Accessibility Information.* To request information in accessible formats (computer diskettes, large print, audio recording, and Braille), send an e-mail to fcc504@fcc.gov or call the FCC's Consumer and Governmental Affairs Bureau at (202) 418-0530 (voice), (202) 418-0432 (TTY). This document can also be downloaded in Word and Portable Document Format (PDF) at: http://www.fcc.gov.

VIII. ORDERING CLAUSES

71. IT IS ORDERED that, pursuant to Sections 4(i), 7, 302, 303(c), 303(e), 303(f) and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. Sections 154(i), 157, 302, 303(c), 303(e), 303(f) and 303(r), this *Second Order on Reconsideration, Second Report and Order, and Notice of Proposed Rulemaking* IS ADOPTED.

72. IT IS FURTHER ORDERED that the Petition for Reconsideration filed by Globalstar LLC IS GRANTED to the extent specified herein.

73. IT IS FURTHER ORDERED that the Final Regulatory Flexibility Certification, as required by Section 604 of the Regulatory Flexibility Act, IS ADOPTED.

74. IT IS FURTHER ORDERED that the Initial Regulatory Flexibility Certification, as required by Section 604 of the Regulatory Flexibility Act, IS ADOPTED.

75. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this *Second Order on Reconsideration,*

Second Report and Order, and Notice of Proposed Rulemaking, including the Final Regulatory Flexibility Certification and the Initial Regulatory Flexibility Certification, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX A

List of Filers

Report and Order, Fourth Report and Order and Further Notice of Proposed Rulemaking

Comments
Globalstar LLC (Globalstar)
Iridium Satellite LLC (Iridium)
Sagem Avionics, Inc. (Sagem)

Reply to Comments
Globalstar
Iridium
Qualcomm Incorporated (Qualcomm)

Petition for Reconsideration
Globalstar

Oppositions to Petition for Reconsideration
Iridium

Replies to Oppositions
Globalstar

Ex Parte Filings
Globalstar
Iridium

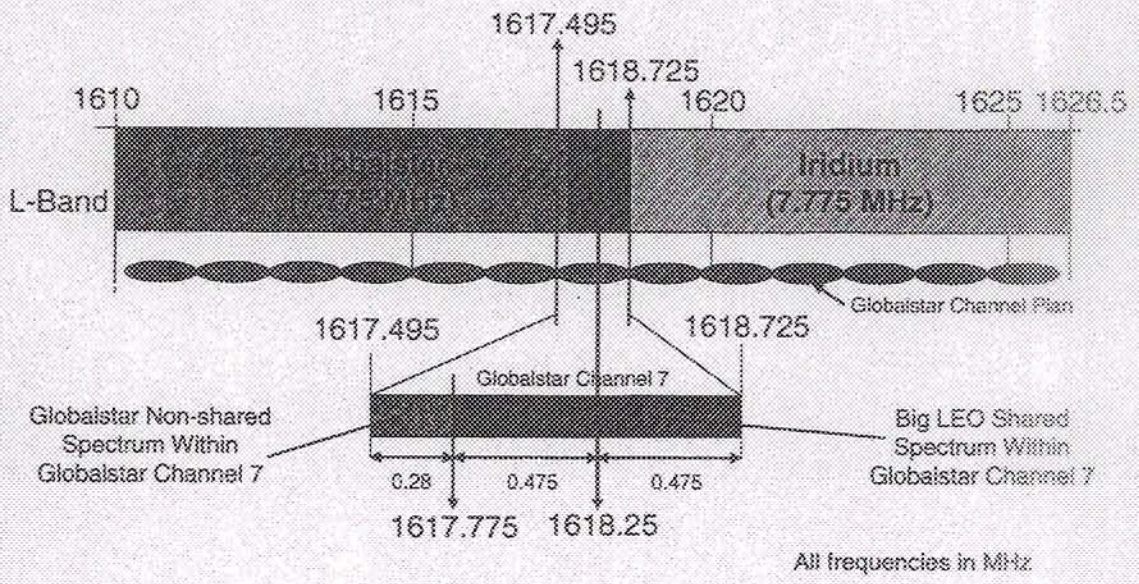
Petition for Expedited Rulemaking

Oppositions
CTIA – The Wireless Association (CTIA)
Society of Broadcast Engineers, Inc. (SBE)
Sprint Nextel Corporation (Sprint Nextel)
Wireless Communications Association International, Inc. (WCAI)

Comments
Iridium
Motorola, Inc. (Motorola)
Qualcomm
SBE
WiMAX Forum (WiMax)

Replies to Comments and Oppositions
Globalstar
SBE
T-Mobile USA, Inc. (T-Mobile)

Ex Parte Filings
Globalstar
Mobile Satellite Ventures Subsidiary LLC
Sprint Nextel
T-Mobile
Rep. Michael T. Honda
Wireless Communications Association International, Inc. (WCAI)

APPENDIX B

Big LEO L-band Bandplan