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Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

In the Matter of: )

Amendment of Section 2.106 of )  
the Commission's Rules to )  
Allocate the 1610-1626.5 MHz )  
and the 2483.5-2500 MHz Bands )  
for Use by the Mobile-Satellite )  
Service, Including Non-geostationary )  
Satellites. )

ET Docket No. 92-28

RM-7771, RM-7773  
RM-7805, RM-7806

PP-29, PP-30  
PP-31, PP-32, PP-33

REPLY COMMENTS

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## SUMMARY

Motorola Satellite Communications, Inc. ("Motorola") fully supports the Commission's proposed primary and secondary frequency allocations for mobile-satellite services ("MSS"). In order to permit the greatest meaningful competition, the Commission should segment the bands, enabling the marketplace to decide between the proposed FDMA/TDMA and FDMA/CDMA systems. Since the 1610-1626.5 and 2483.5-2500 MHz bands are not sufficient for all of the LEO MSS applicants to operate economically viable systems, the Commission should allocate additional spectrum to MSS. By segmenting the band and allocating additional spectrum, the Commission will ensure robust competition between the IRIDIUM™ system, the qualified FDMA/CDMA applicants, and AMSC Subsidiary Corporation ("AMSC") in its already licensed bands.

In a blatant effort to preclude competition from the IRIDIUM™ system, several of the FDMA/CDMA applicants contend that the Commission should permit them to share both the uplink and downlink bands exclusively on a spread spectrum basis. However, more than a year and a half after they first filed applications for service in these bands, the FDMA/CDMA proponents still have not offered a shred of technical data or analysis demonstrating that they can share this spectrum efficiently on a spread spectrum basis. The Commission must reject this "sound bite" engineering approach as unworkable and not in the public interest.

In a further attempt to thwart competition from the IRIDIUM™ system, the FDMA/CDMA applicants conjure up a parade of horrors they claim would exist if the Commission finalizes its proposal to implement the results of WARC-92 by allocating the spectrum between 1613.8-1626.5 MHz to space-to-Earth MSS on a secondary basis. As is their style, these applicants offer no technical data or analysis to support their claims that such a secondary allocation would interfere with existing users. Nothing has changed since the adoption of this secondary allocation at WARC-92, and the Commission's Rules and the international Radio Regulations adequately protect primary users against harmful interference from secondary use of the band.

To promote the most meaningful competition, the Commission should allocate this spectrum exclusively to LEO satellite systems. AMSC already has been licensed to provide MSS in other bands. The Commission should reject AMSC's attempt to extend its monopoly to the RDSS/MSS bands, which are allocated worldwide and better suited for LEO operations.

Finally, the Commission should reverse its tentative decision and award Motorola a pioneer's preference for the innovative services and technological advances associated with the IRIDIUM™ system. None of the commenters has offered a valid basis for denying Motorola this preference.

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PP-31, PP-32, PP-33

REPLY COMMENTS

Motorola Satellite Communications, Inc. ("Motorola") hereby submits its reply comments further supporting the Commission's proposed primary and secondary spectrum allocations in the above-captioned frequency bands for mobile-satellite service ("MSS").<sup>1/</sup> All of the commenters are in basic agreement as to the Commission's primary MSS allocation proposals. It is clear from the comments of both the applicants and existing users that there is a large unmet demand for MSS in the United States and throughout the world.<sup>2/</sup>

<sup>1/</sup> See Notice of Proposed Rule Making and Tentative Decision, 7 FCC Rcd. 6414 (1992) ("NPRM").

<sup>2/</sup> See, e.g., Comments of American Petroleum Institute at 3-6. See also Comments submitted in support of Motorola's IRIDIUM™ system application. File Nos. 9-DSS-P-91(87), CSS-91-010.

I. INTRODUCTION

In its previous comments, Motorola endorsed the Commission's proposed primary and secondary MSS allocations, identified additional MSS uplink spectrum, and urged the Commission to authorize only low-Earth orbit ("LEO") satellite systems in these bands. Motorola further explained that it could readily comply with international Radio Regulation 2613 for its feeder links, and the applicable ANSI/IEEE standards for radio frequency exposure to humans. Finally, Motorola urged the Commission to award it a pioneer's preference for the technological and service innovations associated with the IRIDIUM™ system.

Some of the competing applicants have suggested that the Commission should mandate FDMA/CDMA spread spectrum sharing for all LEO MSS systems. However, the FDMA/CDMA proponents -- with their "sound bite" engineering -- have yet to furnish a shred of evidence that efficient spread spectrum sharing is technically feasible. Similarly, some competing applicants have urged the Commission to reject the proposed secondary allocation in the 1613.8-1626.5 MHz band for space-to-Earth transmissions without any technical analysis or evidentiary support for their contentions of harmful interference from such a secondary allocation. To the contrary, all of the licensed primary users in this band will be protected from any harmful interference by the Commission's Rules and international coordination procedures. Accordingly, the Commission cannot accept any of the exclusionary proposals of the FDMA/CDMA applicants.

Instead of precluding competition from the IRIDIUM™ system, as urged by several of Motorola's opponents, the Commission should adopt the only viable approach to multiple entry -- the segmentation of the available spectrum as well as the allocation of additional MSS uplink spectrum. This pro-competitive solution will allow the marketplace to choose between the highly-efficient IRIDIUM™ system and the proposed FDMA/CDMA systems of the other applicants.

**II. THE PUBLIC INTEREST WOULD BE FURTHERED BY PERMITTING THE MARKETPLACE TO DECIDE BETWEEN FDMA/TDMA AND FDMA/CDMA SYSTEMS**

Several commenters expressed the view that the public interest would best be served by mandating FDMA/CDMA spread spectrum co-frequency sharing of the subject frequencies, arguing that such a policy would lead to multiple entry. These commenters further asserted that the Commission should preclude Motorola's FDMA/TDMA design from use of these frequencies because it would confer a monopoly on the IRIDIUM™ system. These comments rest on several faulty assumptions. First, FDMA/CDMA spread spectrum co-frequency sharing simply will not result in viable multiple entry due to the severe adverse effects of inter-system interference on the capacity of these systems. Indeed, in the year and a half since their applications were filed, the FDMA/CDMA proponents have not presented any concrete technical analysis to support their claims that they can share the use of the same frequencies with each other. Second, Motorola does not seek a monopoly of the available L-band spectrum. To the

contrary, Motorola has urged the Commission to provide for frequency sharing and multiple entry through band segmentation and allocation of additional frequencies to MSS, thereby enabling the marketplace to decide between competing service technologies. Third, the public interest would be furthered by authorizing construction and operation of the IRIDIUM™ system so that the public would be provided services that the FDMA/CDMA applicants simply cannot offer.

**A. The Sound Bite Engineering of the FDMA/CDMA Applicants Has Not Provided Any Record Support as to Their Ability to Share Spectrum on a Co-Frequency Basis**

The most significant aspect of the record in this proceeding (and all other related proceedings) is that the proponents of FDMA/CDMA systems have yet to provide the Commission with a shred of technical evidence to support their sharing and performance claims. The FDMA/CDMA applicants apparently believe that if they repeat their unverified contentions regarding unlimited spectrum sharing and capacity capabilities often enough, they can convince the Commission that achieving their claims is possible without providing any technical data or analysis. In contrast, Motorola has previously established that the proposed FDMA/CDMA satellite systems cannot operate on a co-frequency basis as claimed and still maintain the capacities and performance characteristics needed to have viable

systems.<sup>3/</sup> The time for the FDMA/CDMA applicants to disclose and defend their proposed sharing arrangements is long overdue.

The FDMA/CDMA applicants propose systems which are significantly different in technical design from one another, including such basic parameters as their orbits, modulation schemes, power levels, channel bandwidths, interference potential, and utilization of the frequency bands. Motorola has presented technical studies demonstrating that the inter-system interference resulting from co-frequency sharing of these systems would reduce link margins well below minimally acceptable levels,<sup>4/</sup> and would substantially limit the capacities of all four FDMA/CDMA systems.<sup>5/</sup>

To date, none of the FDMA/CDMA proponents has offered a shred of concrete technical data or analysis that proves they can share on a spread spectrum co-frequency basis. Instead, these applicants perpetuate the "big lie" by referring to previous filings which allegedly demonstrate the multiple entry benefits of their modulation scheme. In fact, no real support is

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<sup>3/</sup> See, e.g., Motorola's Consolidated Petitions to Dismiss and/or Deny, File Nos. 15-DSS-MP-91, et al. (Dec. 18, 1991) at 42-50; Motorola's Reply Comments, File Nos. 15-DSS-MP-91, et al. (Jan. 31, 1992) at 6-9, Tables 1-4 and Technical Appendix 1.

<sup>4/</sup> It is well established that a minimum of 1dB margin is required for minimal levels of service even for direct line-of-site transmissions. A practical MSS system able to provide service to mobile terminals, whether or not shadowed by foliage, would require much higher link margins.

<sup>5/</sup> See Motorola's Reply Comments, File Nos. 15-DSS-MP-91, et al. (Jan. 31, 1992) at 6-9, Tables 1-4 and Technical Appendix 1. See also AMSC Comments at 15-16, Technical Appendix at 8-9; Consolidated Opposition of AMSC to Petitions to Deny, File Nos. 15-DSS-MP-91, et al. (Jan. 31, 1992), Technical Appendix 1 at 8-22.

contained in any of these earlier submissions. For example, Loral Qualcomm Satellite Services, Inc. ("LQSS") cited four previous filings which it claims "provided extensive information to the Commission concerning CDMA, its spectrum efficiency and its ability to accommodate multiple systems. . . ."<sup>5/</sup> However, an examination of these four prior submissions confirms that LQSS, like the other FDMA/CDMA proponents, has not presented any technical evidence that FDMA/CDMA systems can efficiently use the available spectrum on a co-frequency basis.<sup>7/</sup> Indeed, several of the cited filings suggest that band segmentation is the most effective method for sharing spectrum in the LEO MSS satellite environment.<sup>8/</sup>

LQSS now reports that it has developed a computer simulation program that might be used to illustrate certain MSS sharing arrangements. However, the paper attached to LQSS'

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<sup>5/</sup> LQSS' Comments at 10.

<sup>7/</sup> See LQSS's System Application (June 1, 1991), Appendix 5 (no technical analysis of co-frequency sharing, states that LQSS can share through band segmentation); LQSS' Consolidated Opposition to Petitions to Deny (January 31, 1992) Technical App. 48, (no technical analysis of co-frequency sharing, claims that a "properly designed" CDMA system can share the same bandwidth, and states that LQSS can share through band segmentation); LQSS Consolidated Reply Comments (March 27, 1992) Technical Appendix (no technical analysis of co-frequency sharing); LQSS Supplement to Request for Pioneer's Preference (June 12, 1992) (no discussion or technical analysis of co-frequency sharing).

<sup>8/</sup> See LQSS System Application (June 1, 1991) Appendix 5 at 13-14, 27-28 (stating that LQSS' "frequency segmented structure" of 13 band segments of 1.25 MHz each could effectively share through band segmentation); LQSS' Consolidated Opposition to Petitions to Deny (January 31, 1992) Technical App. 48 (CDMA applicants can share by "band splitting").

comments is merely a superficial description of a purported simulation program. It does not describe (much less define) the algorithms to be employed in the simulation program. The LQSS paper certainly does not present any results or analysis from the use of its unverified program.

The other FDMA/CDMA proponents have devoted their efforts to proclaiming that they can share spectrum without even expressing interest in determining whether such co-frequency operation would actually be feasible. For example, TRW, Inc. ("TRW") would have the Commission simply authorize all the FDMA/CDMA applicants to operate on a co-frequency basis without any proof that they can share efficiently.<sup>9/</sup> Ellipsat Corporation ("Ellipsat") blithely asserted that: "Based upon preliminary discussions among [some of] the parties, it appears that co-existence among multiple spread spectrum systems can in fact be readily achieved."<sup>10/</sup> Constellation Communications, Inc. ("Constellation") relegated this issue to a footnote which did not contain any technical analysis.<sup>11/</sup>

In sum, the proponents of FDMA/CDMA have not placed in the public record any technical analysis or data documenting their claimed ability to use the available bandwidth on a co-frequency basis, and absent such record support, such "sound bite" engineering claims are not entitled to any further consideration. References to previous unsupported comments,

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<sup>9/</sup> TRW Comments at 10-12.

<sup>10/</sup> Ellipsat Comments at 11.

<sup>11/</sup> Constellation Comments at 4 n.7.

general descriptions of computer programs, "preliminary discussions" and conclusory footnotes cannot suffice. Until a solid technical analysis is submitted to the Commission and withstands public scrutiny, the Commission must reject the FDMA/CDMA applicants' unsupported assertions that they can share the spectrum on a co-frequency basis.

**B. The Commission Can Achieve Multiple Entry By Segmenting The Bands And Allocating Additional Spectrum**

Motorola has demonstrated that band segmentation provides a better approach to allocating the available bandwidth than co-frequency sharing by multiple systems. Motorola urges the Commission to segment the band, permitting the marketplace to decide which technology provides the better service. In order to ensure that there is sufficient spectrum to permit robust competition, Motorola has also proposed that the Commission allocate additional uplink spectrum for MSS.

Segmenting the band and adding MSS uplink spectrum will provide all qualified applicants with sufficient bandwidth to prove the benefits of their proposed systems in the marketplace. Motorola needs only the 10.5 MHz from 1616-1626.5 MHz to operate the IRIDIUM™ system, leaving the remaining 22.5 MHz identified by the FCC for RDSS and MSS available for all of the qualified FDMA/CDMA applicants. In addition, Motorola has twice petitioned the Commission to allocate at least another 10.5 MHz for MSS in either one or both of two possible bands for the FDMA/CDMA applicants, thereby making at least 33 MHz available for these

applicants.<sup>12/</sup> Communications Satellite Corporation ("COMSAT") has echoed Motorola's call to the Commission to allocate additional spectrum for MSS.<sup>13/</sup>

Any band segmentation approach should be compatible with all of the LEO MSS system proposals. Three of the other applicants originally proposed a form of narrow band FDMA/CDMA operation rather than a CDMA broadband spread spectrum methodology. The remaining applicant -- Constellation -- has previously stated that it could operate on an FDMA/CDMA basis.

Motorola has repeatedly affirmed that it is not seeking a monopoly. Indeed, Motorola is the only applicant to present a realistic proposal for multiple entry. Contrary to the claims of some competing applicants,<sup>14/</sup> segmenting the band would not necessarily provide the IRIDIUM™ system with exclusive use over the segment licensed to it. The IRIDIUM™ system could share spectrum geographically by turning off its spot beams at certain frequencies in designated locations.<sup>15/</sup>

Some of the other applicants would have the Commission mandate the use of FDMA/CDMA access techniques for this allocation in order to preclude competition from the more efficient IRIDIUM™ system. Instead of foreclosing competition

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<sup>12/</sup> Motorola's Petition for Expedited Action (June 9, 1992); Motorola's Petition for Rulemaking (Sept. 22, 1992).

<sup>13/</sup> COMSAT's Comments at 1.

<sup>14/</sup> See, e.g., AMSC's Comments at 14-15; TRW's Comments at 13-16.

<sup>15/</sup> All U.S. licensees must have their systems coordinated internationally in accordance with ITU Resolution 46 which was recently adopted at WARC-92.

from such applicants, the Commission should select a pro-competitive solution of frequency band segmentation which would permit multiple entry and allow the marketplace to choose between the services which would be offered by the FDMA/TDMA and FDMA/CDMA systems. Thus, the Commission would ensure vigorous MSS competition between the IRIDIUM™ system, the qualified FDMA/CDMA applicants in their band segments, and AMSC in its previously-licensed spectrum.

**C. The Public Interest Will Be Served Through the Unique Services Provided by the IRIDIUM™ System**

In addition to providing for competition, the IRIDIUM™ system has at least three significant public interest advantages over the proposed FDMA/CDMA systems. First, Motorola is the only applicant that will provide adequate link margins to offer quality universal service to handheld portable units. As demonstrated in a recent submission by the United States to the CCIR at the upcoming Tokyo working group meeting, high link margins are required to serve handheld MSS subscriber units.<sup>16/</sup> None of the other proposed systems has sufficient link margins to serve such units when they are blocked by foliage or other obstructions.

Second, only the IRIDIUM™ system will provide service to the entire United States as well as virtually all other global locations on a continuous basis. The Commission has repeatedly emphasized the importance of satellite coverage and availability

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<sup>16/</sup> See Appendix 1 hereto.

to Alaska, Hawaii and other offshore domestic points like Puerto Rico and the U.S. Virgin Islands.<sup>17/</sup> None of the other proposed systems will be able to provide their claimed service on a continuous basis to the entire continental United States, let alone Alaska and Hawaii.<sup>18/</sup> When typical propagation losses are taken into account, all of the proposed systems, with the exception of the IRIDIUM™ system, would experience significant coverage dropouts.<sup>19/</sup>

Third, the IRIDIUM™ system provides the greatest spectrum efficiency of any of the proposed LEO or GSO systems. Motorola has previously demonstrated that, based on the applicants' stated capacities, the IRIDIUM™ system is significantly more efficient in terms of available channels per megahertz of the user link bandwidth than any of the other systems before the Commission.<sup>20/</sup>

**III. THE USER LINK BANDS SHOULD BE ALLOCATED  
EXCLUSIVELY TO LEO SYSTEMS**

Even though AMSC already has been awarded a domestic monopoly on 28 MHz of valuable MSS spectrum and has requested an additional 35 MHz of spectrum in other bands, it insists that it should be awarded an additional 10 MHz in this proceeding for the

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<sup>17/</sup> Indeed, Section 25.114(c)(15) of the Rules requires each applicant to provide "[a] detailed description of the capabilities, if any, of each proposed domestic satellite to provide service to Alaska, Hawaii, and/or Puerto Rico/Virgin Islands."

<sup>18/</sup> See Motorola's Petition to Deny at 18-26.

<sup>19/</sup> See Motorola's Petition to Deny at 24-25.

<sup>20/</sup> Motorola's Comments at 11-12.

"full development of AMSC's MSS system."<sup>21/</sup> The Commission should reject AMSC's bid to extend its domestic MSS monopoly into the RDSS/MSS bands. This spectrum must be licensed instead only to qualified LEO MSS applicants in order to allow for meaningful competition in the United States.

AMSC has repeatedly asserted that it may not be able to coordinate internationally sufficient spectrum for the "full development" of its first generation system.<sup>22/</sup> It has provided no evidence, however, to support this claim, or otherwise explain what it means by such "full development." Moreover, by its repeated requests for delaying its milestone dates for AMSC-2 and AMSC-3, AMSC has raised serious questions as to whether it will ever build all three of its authorized satellites.<sup>23/</sup>

At the same time that AMSC cannot meet its own milestones, it concedes that there is insufficient spectrum in the proposed bands for the pending LEO MSS applicants.<sup>24/</sup> AMSC should not be permitted to warehouse this valuable and scarce spectrum, depriving competing and more efficient systems, such as the IRIDIUM™ system, from entering into competition with it.

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<sup>21/</sup> AMSC's Comments at 7.

<sup>22/</sup> AMSC's Comments at 1-10.

<sup>23/</sup> AMSC has repeatedly requested extensions of the construction milestones for these two satellites. See File Nos. 37-DSS-MP/ML-91, 38-DSS-MP/ML-91. Motorola has petitioned the Commission to deny AMSC's latest extension of time application and declare the licenses for AMSC-2 and AMSC-3 null and void. See Motorola's Petition to Deny (Sept. 25, 1992).

<sup>24/</sup> AMSC's Comments at 11-16.

AMSC faces a more fundamental obstacle as well. It should not be awarded a license to any spectrum in the RDSS/MSS bands because it does not meet the uplink EIRP density limits established in the international Radio Regulations at WARC-92 for the 1610-1626.5 MHz band. The Commission has proposed to include these absolute limits in the domestic allocation tables, and AMSC has offered no concrete solution for meeting this requirement.

**IV. THE FCC MUST MAKE A SECONDARY ALLOCATION FOR DOWNLINKS IN THE 1616-1626.5 MHz BAND**

In a thinly veiled attempt to preclude competition from the IRIDIUM™ system, several competing applicants urged the Commission to reverse its proposal to adopt the WARC-92 approved secondary downlink allocation in the 1613.8-1626.5 MHz band.<sup>25/</sup> These commenters, however, have once again failed to offer any technical evidence to support their interference claims about Motorola's bidirectional use of the 1616-1626.5 MHz band. Even if there were such evidence of harmful interference, a secondary allocation would still be warranted because any users with primary status in the band would be fully protected under the Commission's rules.

The Commission's secondary allocation for space-to-Earth operations is intended to implement the WARC-92 results. Indeed, it was the United States that proposed, and vigorously worked for, the adoption of this secondary allocation at WARC-92.

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<sup>25/</sup> See, e.g., Constellation's Comments at 5-6; Ellipsat's Comments at 11-12; LQSS' Comments at 12-14; TRW's Comments at 10-13.

The competing applicants have not provided any new arguments or information that would justify reversal of this position. For example, TRW has provided absolutely no support for its baseless claim that the IRIDIUM™ system's operation will cause unacceptable levels of self-interference.<sup>26/</sup> Motorola will employ protective operational techniques -- such as satellite-based timing and frequency -- which will permit the efficient use of the spectrum without any harmful self-interference. Likewise, the other applicants have presented misleading statements concerning the IRIDIUM™ system's interference potential. LQSS' allegation of interference from bidirectional operations to FDMA/CDMA operations is based on the faulty assumption of co-frequency satellite system operation.<sup>27/</sup> The IRIDIUM™ system will operate in a portion of the band separate and apart from any other satellite system. LQSS' claim that the IRIDIUM™ system will interfere with the Radio Astronomy Service ("RAS") and GLONASS is equally specious because it assumes unacceptable out-of-band emissions from the IRIDIUM™ system below 1616 MHz.<sup>28/</sup> The National Academy of Sciences, itself, does not object to the proposed secondary allocation, but only suggests that measures might be necessary to limit out-of-band emissions.<sup>29/</sup>

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<sup>26/</sup> TRW's Comments at 14.

<sup>27/</sup> LQSS' Comments at 12-13.

<sup>28/</sup> LQSS' Comments at 13-14.

<sup>29/</sup> National Academy of Sciences' Comments at 4. Motorola anticipates that the rules for out-of-band emissions will be addressed in the technical discussions to be undertaken in the upcoming negotiated rulemaking proceeding.

In any event, the secondary allocation for bidirectional operation will require the IRIDIUM™ system to avoid interfering with primary users in this band. The Commission's Rules and the international Radio Regulations guarantee protection to such users.<sup>30/</sup> Moreover, the IRIDIUM™ system will be able to avoid any objectionable interference through band segmentation and international coordination in accordance with the recently-adopted ITU Resolution 46. As mentioned above, band segmentation will prevent any interference with GLONASS, the Radio Astronomy Service and other U.S. licensees operating in the band.

To conclude, there is no basis for modifying the Commission's proposed secondary allocation for space-to-earth transmissions in the 1616-1626.5 MHz band. None of the commenters presented any new information, much less a solid technical analysis, to change this determination. The IRIDIUM™ system will be able to avoid interference with other operators primarily through band segmentation and geographic sharing.

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<sup>30/</sup> For this reason there is no need for any PFD limits in the L-Band, as suggested by some commenters. See AMSC's Comments at Technical Appendix 6-8; LQSS' Comments at 13. LQSS has proposed a paper for submission to the CCIR WP8D Tokyo meeting (Appendix B to LQSS' Comments). That paper contained a number of significant technical errors, including establishment of invalid criterion for interference tolerance, incomplete and inexact definitions, and failed to address GLONASS downlinks and interference levels of GLONASS signals. See Memorandum from Mel Barbat to James Vorhies, et. al. (December 11, 1992) (Appendix 2). Motorola understands that the United States will not present LQSS' paper to the CCIR. See Letter from James Vorhies to Warren Richards (December 14, 1992) (Appendix 3).

V. MOTOROLA IS ENTITLED TO A PIONEER'S PREFERENCE

As Motorola has explained previously, it is entitled to a pioneer's preference because the IRIDIUM™ system offers significant technological and service innovations.<sup>31/</sup> TRW and Ellipsat urged the Commission to deny all requests for a preference to ensure that no applicant obtains an advantage over the competing applicants.<sup>32/</sup> Of course, the very purpose of the Commission's pioneer's preference program is to allow an innovator "to have its application considered without being subject to competing applications." NPRM at 14 n.29. Therefore, Motorola's pioneer's preference request cannot be denied simply because Motorola would obtain an advantage over the other applicants if its request were granted.

Ellipsat specifically urged that Motorola's request for a pioneer's preference be denied because it claimed that the IRIDIUM™ system's innovations were based on technologies previously used or proposed by others.<sup>33/</sup> This criticism misses the point. Motorola should be awarded a pioneer's preference not because of any particular technology incorporated into the system design, but rather because of its overall system concept of personal, handheld mobile voice communications services by a

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<sup>31/</sup> Motorola's Comments at 23-33.

<sup>32/</sup> TRW's Comments at 30; Ellipsat's Comments at 12-13.

<sup>33/</sup> Ellipsat's Comments at 13.

constellation of LEO satellites.<sup>34/</sup> No other applicant can claim such a service innovation.

**VI. CONCLUSION**

For the foregoing reasons, the Commission should adopt the proposed primary and secondary MSS allocations, designate this spectrum exclusively for LEO systems, and award Motorola a pioneer's preference for the substantial technological and service innovations in the IRIDIUM™ system.

Respectfully submitted,

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<sup>34/</sup> See Supplement to Request for Pioneer's Preference, PP-32, at 6-8 (April 10, 1992); Motorola's Comments at 23-33.

CERTIFICATE OF SERVICE

I, Philip L. Malet, hereby certify that the foregoing Reply Comments were served by first-class mail, postage prepaid, this 6th day of January, 1993 on the following persons:

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