Before The
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
GLOBALSTAR, L.P.	)	
Application for Authority to Launch	)	
and Operate a Mobile Satellite	)	File Nos. 182--186-SAT-P/LA-97
System in the 2 GHz Frequency Band	)	
	)	
IRIDIUM, L.L.C.	)	
Application For Authority to Launch	)	File No. 187-SAT-P/LA-97
and Operate a Low Earth Orbit Satellite	)	
System in the 2 GHz Frequency Band	)	
	)	
MOTOROLA GLOBAL	)	
COMMUNICATIONS, INC.	)	
Application for Authority to Construct,	)	File Nos. 79-SAT-P/LA-97(63);
Launch, and Operate the Celestri Satellite	)	94--98-SAT-P/LA-97
System	)	

To: Chief, International Bureau

CONSOLIDATED REPLY COMMENTS

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SUMMARY

The Fixed Point-to-Point Communications Section, Wireless Communications Division, of the Telecommunications Industry Association (the "TIA Fixed Section"), herein replies to the pleadings filed concerning the captioned applications (collectively, the "Applications"). Each applicant (collectively, the "Applicants") seeks Commission authority to construct, launch and operate a satellite system that uses various portions of the 17.7-20.2 GHz frequency bands (collectively, the "18 GHz Band").

The TIA Fixed Section has urged the Commission to defer taking any action to grant the requested authorizations because:

- There is unrefuted evidence that 18 GHz Band terrestrial fixed point-to-point microwave radio service ("FS") users and co-primary Fixed-Satellite Service ("FSS") applicants could not operate without impeding each other's development. With the limited information concerning their systems provided by FSS users, the only available evidence demonstrates that these co-primary satellite operations would degrade FS reliability objectives and prevent FS expansion.

- The Applicants are not technically qualified.

- Requisite FS/FSS inter-service coordination procedures do not exist.

Thus, it is premature to authorize any of the Applicants in the 18 GHz Band where FS users operate.

Grant of the captioned Applications could be lethal to existing and future FS operations. Serious technical questions infect the Applicants' ability to operate in a benign manner with co-primary FS users:

- Exclusion Zones Would Be Created -- Potential ubiquitous deployment of satellite earth stations could sterilize the spectrum available for terrestrial expansion because viable sharing criteria have not been developed. Large "exclusion zones," especially in urban areas, would be created where new FS stations would be unable to operate.

- Power Limits Have Not Been Established -- Appropriate power flux density limits for FSS systems have not yet been developed. In particular, this lack of necessary standards to control aggregate power from the multitude of proposed satellites could seriously degrade FS links.

Risking all the essential services that FS users are capable of providing, when such uncertainty exists, is unnecessary and clearly is contrary to the public interest.

With all these problems, it is not surprising that there is no record support for grant of the Applications. The parties commenting on the Applications have made a compelling showing that no Applicant is technically qualified to be a Commission licensee. The only Applicants filing responsive comments, Motorola Global Communications, Inc. and Iridium, L.L.C., did not rehabilitate their flawed Applications and rebut the commenters' criticism of their license qualifications. Based upon this clear record, the Commission must defer all the Applications until such qualifications can be proven.

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CONSOLIDATED REPLY COMMENTS

Pursuant to Section 25.154 of the Commission's Rules,[1] the Fixed Point-to-Point Communications Section, Wireless Communications Division, of the Telecommunications Industry Association (the "TIA Fixed Section"),[2] submits these

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[1] 47 C.F.R. § 25.154 (1998).

[2] The Telecommunications Industry Association ("TIA") is the principal industry association representing all telecommunications equipment manufacturers, including manufacturers of terrestrial fixed point-to-point microwave radio service ("FS") equipment. TIA Fixed Section members serve, among others, companies, including telephone carriers, utilities, railroads, state and local governments, and cellular carriers, licensed by the Commission to use private and common carrier bands for provision of important and essential telecommunications services. Sometimes, a product-oriented division or a section of such a division will file in a proceeding representing the views of only the members of that

Consolidated Reply Comments on the pleadings filed concerning the captioned applications (collectively, the "Applications").[3] Each applicant (collectively, the "Applicants") seeks Commission authority to construct, launch and operate a satellite system that uses various portions of the 17.7-20.2 GHz frequency bands (collectively, the "18 GHz Band").[4]

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division or section. This filing is specifically from the TIA Fixed Section. Furthermore, the TIA Fixed Section is an "interested party" with standing to file these Consolidated Reply Comments. Its members manufacture FS equipment for the same bands where the applicants seek authority to operate.

[3]Public Notice, DA 97-2201 (released October 15, 1997) and Public Notice, DA 97-2202 (released October 15, 1997). The deadline for filing reply comments and oppositions on the Applications was extended until February 2, 1998. In the Matter of Report Nos. SPB-105 (DA 97-2201), SPB-106 (DA 97-2202) Satellite Applications Accepted for Filing in the Ka-Band, Order, DA 98-21 (released January 7, 1998). The response deadline for these Consolidated Reply Comments was extended to February 23, 1998, in the same order.

[4]Globalstar, L.P. ("Globalstar") has requested Commission authority to launch and operate a Mobile-Satellite Service ("MSS") system that would use 200 MHz of feeder uplink spectrum in the 15.45-15.65 GHz Ku-band or in the 19.3-19.6 GHz Ka-band. *Application of Globalstar, L.P. for Authority to Launch and Operate a Mobile-Satellite Service System in the 2 GHz Frequency Band* (File Nos. 182--186-SAT-P/LA-97). Public Notice, DA 97-2202 (released October 15, 1997) (the "Globalstar Application").

Iridium L.L.C. ("Iridium") has requested Commission authority to launch and operate a MSS system of low-Earth orbit ("LEO") satellites in non-geostationary orbit ("NGSO") that would use 400 MHz of feeder downlinks in the 19.3-19.7 GHz band. *Application of Iridium L.L.C. for Authority to Launch and Operate the MACROCELL Mobile Satellite System in the 2 GHz Band* (File No. 187-SAT-P/LA-97). Public Notice, DA 97-2202 (released October 15, 1997) (the "Iridium Application").

Motorola Global Communications, Inc. ("Motorola") has requested Commission authority to construct, launch and operate a network of geostationary orbit ("GSO") satellites providing Fixed-Satellite Service ("FSS") that would use 750 MHz to operate downlink transmissions in the 18.35-18.60 GHz and 19.7-20.2 GHz bands. *Application of Motorola Global Communications, Inc. for Authority to Construct, Launch and Operate the Celestri GEO System* (File Nos. 94--98-SAT-P/LA-97). Public Notice, DA 97-2202 (released October 15, 1997) (the "Motorola GEO Application").

Motorola also has requested Commission authority to construct, launch and operate a network of LEO satellites in NGSO providing FSS that would use the 18.8-19.3 GHz and 19.7-20.2 GHz bands for downlink transmissions. *Application of Motorola Global Communications, Inc. for Authority to Construct, Launch and Operate the Celestri Multimedia LEO System* (File No. 79-SAT-P/LA-97(63)). Public Notice, DA 97-2201 (released October 15, 1997) (the "Motorola LEO Application").

In its Comments on the individual Applications, the TIA Fixed Section urged the Commission to defer taking any action to grant the requested authorizations.[5] Deferral is necessary because:

- There is unrefuted evidence that 18 GHz Band FS users and co-primary satellite applicants could not operate without impeding each other's development. With the limited information concerning their systems provided by FSS users, the only available evidence demonstrates that these co-primary satellite operations would degrade FS reliability objectives and prevent FS expansion.
- The Applicants are not technically qualified.
- Requisite FS/FSS inter-service coordination procedures do not exist.

Thus, it is premature to authorize any of the Applicants in the 18 GHz Band where FS users operate.[6]

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[5]On December 22, 1997, the TIA Fixed Section filed individual initial Comments opposing grant of the Globalstar Application, the Iridium Application, the Motorola LEO Application and the Motorola GEO Application.

[6]TIA Fixed Section Comments on Globalstar Application at 4-13; on Iridium Application at 4-15; on Motorola GEO Application at 4-15; on Motorola LEO Application at 5-15.

No record support exists for grant of the Applications.[7] Missing from each Application is documentation that the proposed system could operate without causing harmful interference to co-primary FS or FSS users.

The parties commenting on the Applications have made a compelling showing that no Applicant is technically qualified to be a Commission licensee. Neither Motorola nor Iridium, in their responsive comments, rehabilitate their Applications and rebut the commenters' criticism of their license qualifications. Based upon this clear record, the Commission must defer all the Applications until such qualifications can be proven.[8]

THE APPLICANTS HAVE NOT PROVEN THAT FS OPERATIONS WOULD BE PROTECTED

Grant of the captioned Applications could be lethal to existing and future FS operations. Serious technical questions infect the Applicants' ability to operate in a benign manner with co-primary FS users:

- Exclusion Zones Would Be Created -- Potential ubiquitous deployment of satellite earth stations could sterilize the

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[7]In addition to the TIA Fixed Section Comments on the Applications, various oppositions to grant of the Applications were filed. Specifically, comments or petitions were filed by GE American Communications, Inc. ("GE"); Hughes Communications Galaxy, Inc. ("Hughes"); CellularVision USA, Inc.; ICO Services Limited; Motorola Satellite Communications, Inc. and U.S. LEO Services, Inc. (collectively, "Motorola Satellite"); KaStar Satellite Communications Corp. ("KaStar"); Loral Space & Communications Ltd. ("Loral"); Lockheed Martin Corporation ("Lockheed"); the Satellite Coalition; and Teledesic Corporation ("Teledesic"). Lockheed also filed Reply Comments on January 22, 1998. On February 2, 1998, Teledesic filed its Consolidated Response ("Teledesic Response"). Furthermore, on February 2, 1998, Iridium filed its Consolidated Opposition and Response ("Iridium Response") and Motorola filed its Consolidated Opposition and Reply Comments ("Motorola Reply"). Globalstar did not file responsive comments.

[8]Before the Commission can grant any of the Applications, each Applicant must demonstrate its technical qualifications to be a licensee. 47 U.S.C. § 308(b); 47 C.F.R. § 25.140(b) and 47 C.F.R. § 25.143(b) (1998).

spectrum available for terrestrial expansion because viable sharing criteria have not been developed. Large "exclusion zones," especially in urban areas, would be created where new FS stations would be unable to operate.[9]

- Power Limits Have Not Been Established -- Appropriate power flux density ("pfd") limits for FSS systems have not yet been developed. In particular, this lack of necessary standards to control aggregate power from the multitude of proposed satellites could seriously degrade FS links.

Risking all the essential services that FS users are capable of providing, when such uncertainty exists, is unnecessary and clearly is contrary to the public interest.

A. The Record Confirms The Importance of Protecting FS Users Against Harmful Interference.

Expansion of 18 GHz Band FS networks is essential to the National Information Infrastructure ("NII").[10] This growth, however, is at peril if co-primary FSS operations are not restricted.[11]

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[9]See Attachment A, which depicts this "exclusion zone."

[10]See Attachment B, which depicts the many different FS uses of the 18 GHz Band. The 18 GHz Band is resident to myriad important specific applications. Railroads use the 18 GHz Band for communications crucial to public safety and safe train operations, interference with which can result in loss of life or property. The 18 GHz Band is used to provide cellular and PCS cell interconnects to MTSOs and to the PSTN (also used for network congestion relief). Universities, corporations, and state and local governments use roof mounted FS radios to carry local area network traffic between buildings in a campus environment or in industrial clusters. The petroleum industry uses short-haul microwave communications to serve as spurs off long-haul communications systems. Utilities use FS links for controlling and monitoring operations. Competitive Access Providers use FS links for local distribution networks to bypass local telephone companies. LMDS systems will use FS links for a transport infrastructure and for provision of high capacity links between hubs. Broadcasters frequently use point-to-point microwave links in the 18 GHz Band to relay program material to their transmitters and will need the band to support HDTV deployment. The continued availability of spectrum in the 18 GHz Band is critical for wireless cable operators, particularly as additional sources of programming and new services are being introduced which must be relayed to transmitter sites.

[11]See Attachment C, which depicts the different FS/FSS designations in the 18 GHz Band.

Contributions by FS users no longer can be ignored. When evaluating spectrum needs, the Commission must credit FS users with their demonstrated value and must not permit untested, new FSS users into the band at their expense. Disregarding the fundamental flaws in the Applications and allowing the Applicants to proceed, before they explain fully how their systems would impact FS users and before they prove that such operations would not be harmful, disserves the terrestrial backbone of the NII.

B. FSS Users Object to Grant of the Applications.

Such concerns over harmful interference from the Applicants' proposed satellite systems are not limited to FS users. Indeed, the record developed concerning the Applications is clear that FSS users also consider band sharing to be premature because their operations would be equally at risk.[12]

For example, the Satellite Coalition declared that:

> Motorola has not satisfied its burden of demonstrating that it could avoid harmful interference to GSO FSS systems. To the contrary, as discussed in the separate filings by members of the Satellite Coalition, Motorola's analysis does little to dispel the fears of the

[12]See, e.g., The Satellite Coalition's Joint Petition to Defer Processing the Motorola LEO Application at 3 (remarking that evaluation of whether NGSO systems operating in the Ka-band would cause harmful interference to GSO systems operating in the same frequencies is premature); KaStar Comments on Motorola LEO Application at 2 and 4 (urging Commission to require Motorola to submit further technical information so interference issues could be considered); and GE Petition to Defer Motorola LEO Application at 3 (urging Commission to defer action on Application until information required to analyze technical issues has been obtained and detailed studies regarding possibilities for sharing between GSO and NGSO satellite systems have been completed). See also Comments of Loral on Motorola GEO and LEO Applications at 5; Joint Petition to Defer Processing of the Satellite Coalition on Motorola LEO Application at 4; Petition to Defer of GE on Motorola LEO Application at page 1 of Attachment: "Technical Issues Raised by Celestri NGSO Application;" Comments of KaStar on Motorola LEO Application at 2; Petition to Deny of Teledesic on Motorola LEO Application at 17; and Petition to Deny of Hughes on Motorola LEO Application at 4.

> GSO FSS industry that Celestri could do serious harm to their operations.[13]

Similarly, based upon the record developed in these proceedings, Teledesic condemns Motorola for its "universally recognized failure to prevent harmful interference to licensed stations . . . , [including] terrestrial systems."[14] It also accurately characterizes the consensus opposition to grant of the Applications:

> Commenters are *unanimous* in their view that Motorola has failed to discharge its clear responsibility to avoid interference to licensed systems. Indeed, it is apparent from the comments that the Celestri will cause harmful interference not only to Teledesic's licensed NGSO FSS operations, but also to other previously licensed systems in the frequencies sought by Motorola.[15]

Hughes joins this chorus of opposition. It seeks Commission denial of the Celestri Application because "[c]onspicuously absent . . . is a technical demonstration that the . . . system is capable of operating without causing harmful interference"[16] and because Motorola has failed to make the requisite demonstration of its technical qualifications.[17] Failure to defer or deny grant of the Applications would, according to Loral, jeopardize development of incumbent 18 GHz Band users and undermine the "stable regulatory environment" that the Commission intends to promote.[18]

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[13]Satellite Coalition at 3.

[14]Teledesic Response at 1.

[15]Id. at 2.

[16]Hughes Petition to Deny at 1.

[17]Id. at 4.

[18]Loral Comments at 8. See also Teledesic Response at 3-4.

While these attacks are focused on Motorola's Celestri Application, they apply with equal force to all the Applications. The record speaks convincingly concerning the serious problems that would exist if these Applications, in their present form, are granted.[19] Ignoring these objections cannot be tolerated.

C. Deferral of Action On the Applications Would Deter FSS Users From Flooding The Commission With Multiple Proposals For the Same Service.

The Applications at issue herein merely are the tip of the iceberg. Numerous other 18 GHz Band FSS applications (21 in all) have been filed, but the majority have not yet been placed on Public Notice.[20] These additional proposals, not surprisingly, are pockmarked with the same gaps in useful information concerning system parameters and with the same interference problems for FS users.

A careful review of these new applications reveals that different filings have been made by the same company for different frequency bands to support a single

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[19]In the Globalstar Application for authority to construct and operate a 2 GHz band MSS system, the 19.3-19.6 GHz band is proposed for feeder uplinks. Motorola Satellite and Lockheed correctly argue that the MSS feeder link designation in the 19.3-19.7 GHz Band is for MSS feeder downlinks only. Comments of Motorola Satellite on Globalstar Application at 2; Comments of Lockheed on Globalstar Application at 1-2. To date, the Commission has not designated the 19.3-19.7 GHz Band for MSS feeder uplinks. To do so, the Commission would be required either to designate the 19.3-19.7 GHz Band for such use or to waive its rules and permit MSS feeder uplink operations on a non-conforming basis. Globalstar's Application does not request the Commission to take either action. As Lockheed correctly observes, "the Commission is not at liberty to authorize Globalstar to operate MSS feeder uplinks in the 19.3-19.7 GHz Band." Comments of Lockheed on Globalstar Application at 3.

[20]See Attachment D, which lists all pending 18 GHz Band FSS applications.

system.[21] Relaxed Commission standards for application filing[22] have created this charade and have penalized the well-established, proven FS industry.

Indeed, FS users are being pummeled by the Commission's unfortunate decision to open the floodgate to FSS applications. When coupled with the FSS applicants penchant for hiding their most relevant system characteristics (assuming that they, in fact, did finalize a system design, which is unlikely for several of the applicants), this misguided policy makes it impossible for the co-primary FS licensees to evaluate properly the applications assaulting their rightful access to the 18 GHz Band. Review of the Applications, and the upcoming review of the numerous other proposals, presents the Commission with a timely opportunity to re-assess the impact of these policies.

D. The Commission Must Let the Private Sector Address Sharing Problems Before Granting the Applications.

Action by the Commission at this time must not compromise FS user access to the 18 GHz Band. Grant of the Applications can not be made before these serious sharing problems are addressed by both the terrestrial and satellite industries.

Efforts, however, are being made to resolve these problems. These efforts are intended to protect FS users so that they could have reasonable opportunities to

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[21]For example, Teledesic and Motorola each has filed applications for two (2) broadband access FSS systems in the 18 GHz Band and one (1) in the 38 GHz band; Hughes has applied for three (3) systems in the 18 GHz Band and one (1) in the 38 GHz band; and Loral is involved in at least two (2) 18 GHz Band FSS systems and at least one (1) in the 38 GHz band. See Attachment D.

[22]See Fixed-Satellite Service in the Ka-Band, 9 CR 1214, 1218-20 (1997).

expand their operations and so that the Applications could be granted and other FSS or MSS systems could be launched and successfully deployed.

The World Radiocommunication Conference 1997 ("WRC-97") recognized the importance of studying the numerous 18 GHz Band sharing problems between FS and FSS users, as well as between NGSO and GSO FSS users.[23] Several specific recommendations were made to conduct further studies in an effort to optimize FS and FSS access to the 18 GHz Band. These studies, in preparation for the World Radiocommunication Conference 1999 ("WRC-99"), are being made to identify sharing criteria and coordination procedures in frequency bands where satellite services and terrestrial radio communication services are co-primary:

- Resolution 131 — WRC-97 recognized that studies on potential interference have not determined if existing pfd limits "would provide adequate protection of the fixed service when applied to non-GSO networks." It recommends that the ITU-R "study, as a matter of urgency, the appropriate [pfd] values to be applied to non-GSO networks . . . to ensure protection of the fixed service . . . ."[24]

- WRC-99 Agenda — WRC-99 Agenda Item 1.3 is intended to determine the "coordination area around an earth station in frequency bands shared by" FS and FSS users.[25] Similarly, WRC-99 Agenda Item 1.13.1 is to "review and,

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[23]International Telecommunication Union, Final Acts of the World Radiocommunication Conference 1997, Geneva, 1997 ("WRC-97 Final Acts").

[24]WRC-97 Final Acts, RES. 131 (formerly Resolution COM5-23). See also Resolution 130 (formerly Resolution COM5-18) and Resolution 538 (formerly Resolution COM5-19), which address the need to develop appropriate sharing criteria involving FSS use of the 18 GHz Band. Id., RES. 130 and 538 (WRC-97). See also Draft CPM Report to the WRC-99, Annex 7, Doc. CPM99-1/9-E (Nov. 26, 1997).

[25]WRC-97 Final Acts, RES. GTPLEN1-3 (WRC-97), Agenda Item 1.3.

> if appropriate, revise the [pfd] limits" affecting "sharing conditions among" FSS and terrestrial services "to ensure the feasibility of these power limits and [to ensure] that these limits do not impose undue constraints on the development of these systems and services[.]"[26]

Several domestic study groups have been established to support these efforts. Most notably, U.S. Joint Task Group 4-9-11 ("JTG 4-9-11") has been convened to address the sharing issues involving FSS and FS systems in the 18 GHz Band. It has proposed the following Guiding Principles with respect to the 10-30 GHz bands:

> These principles would provide guidance for the further deliberations of the group, and would serve to ensure that difficult interpretive debates are resolved at the earliest opportunity:
>
> 1. Every attempt should be made, in all frequency bands subject to Resolution 130, to strike the appropriate balance between the following objectives:
>
>   - maximizing the efficient use of the spectrum by multiple services;
>
>   - maintaining economically viable operational and planned systems; and
>
>   - ensuring that any technical or regulatory constraints that may be imposed in an effort to facilitate co-frequency operation do not unduly inhibit the evolution of any of the technologies concerned.
>
> 2. In the frequency bands between 10 and 30 GHz that are subject to Resolution 130, the GSO must be protected to ensure continued use of existing FSS systems and the development of new GSO technologies and systems. **In**

[26] Id., RES. GTPLEN 1-3 (WRC-97), Agenda Item 1.13.1.

addition, existing and future terrestrial and space services and systems must be protected.[27]

To complement this industry effort, the Commission has established its Advisory Committee for the 1999/2000 World Radiocommunication Conference.[28] Paralleling these efforts is a newly-formed informal Joint Working Group ("JWG"), which the TIA Fixed Section was instrumental in establishing. It consists of satellite and terrestrial industry representatives. The JWG will study the following 18 GHz Band FS/FSS sharing issues:

- Blanket licensing of ubiquitous GSO and NGSO FSS earth station terminals in the 17.7-19.3 GHz band.
- Applicability of existing FSS-FS coordination procedures to earth stations operating in the 17.7-19.7 GHz band which will not be ubiquitously deployed or blanket licensed.
- Impact of deploying these various types of FSS earth stations on FS use of the 17.7-19.7 GHz band and vice versa.[29]

Finally, a broad-based Fixed Wireless Coalition has been formed to articulate FS user needs and to assist the Commission and the satellite industry in unraveling the riddle of co-primary access to all bands, including the 18 GHz Band.[30]

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[27]Radiocommunication Study Groups, ITU-R Joint Task Group 4-9-11, UNITED STATES OF AMERICA, Proposed Working Principles for ITU-R Joint Task Group 4-9-11, Doc. No. USJTG-4-9-11/19 (Rev.2) (Feb. 11, 1998) (emphasis added).

[28]FCC News Release, "Antoinette Cook Bush Named to Head FCC's Advisory Committee For the 1999/2000 WRC," released Feb. 6, 1998.

[29]See Attachment E, 18 GHz Joint Working Group, Terms of Reference (Draft 3, 2/19/98).

[30]See Attachment F, which is a roster of the Fixed Wireless Coalition. It is the TIA Fixed Section's understanding that similar FSS groups have been formed to push their agenda.

Not only are these industry groups tackling the difficulties inherent in affording FS and FSS users access to the 18 GHz Band, but the Commission is contemplating initiating a Notice of Proposed Rulemaking ("NPRM") to address these issues.[31] At a minimum, a record must be developed in this NPRM, as well as progress reported by the aforementioned study groups, before the Commission could even consider the Applications.

Progress towards developing a bi-lateral approach to facilitating co-primary FS/FSS use of the 18 GHz Band is being stymied by satellite user reluctance to disclose technical information concerning their proposals. Information, such as: (i) earth station deployment plans, antenna size and elevation, receiver noise floor, and bandwidth characteristics; and (ii) satellite number, elevation, orbit, antenna, transmit power, and bandwidth characteristics, are fundamental to resolve this problem. While reliable FS system characteristics are readily available from ITU-R documentation and from U.S. frequency coordinators, these FSS plans and technical characteristics generally remain a mystery.

The TIA Fixed Section actively is working towards accelerating productive FS/FSS dialogue. Regrettably, most FSS applicants so far have been less enthusiastic about providing FS users and equipment manufacturers with representative, relevant

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[31]It is the TIA Fixed Section's understanding that this NPRM is responsive to a pending rulemaking initiated by various FSS users, Routine Licensing of Large Numbers of Small Antenna Earth Stations Operating in the Ka-Band, RM-9005. In this rulemaking, petitioners made proposals to accommodate FSS/FS sharing in the 17.7 - 18.8 GHz band and to permit blanket licensing of FSS earth stations in the same band. Of the 23 parties filing comments, only two (2) FSS users supported these proposals. The remaining FSS users, as well as all the FS interests, strongly advocated deferring action until band sharing issues were resolved.

information. Such counter-productive tactics must not be rewarded. Under these circumstances, until these band sharing issues are evaluated and addressed, and until it is proven that FS users in fact will be protected, the Commission must defer its final decision on the Applications.

APPLICANTS REPLY COMMENTS FAIL TO REHABILITATE THEIR PROPOSALS

Motorola and Iridium claim that concerns about their Applications are unfounded, that their FSS systems are compatible with co-primary FS systems, and that grant of these Applications thus should not be deferred. Both Applicants base their claim of immunity from protecting FS users against interference on their co-primary status in the 18 GHz band and on their claimed compliance with Part 25/ITU standards.

For example, Motorola states that:

> The Celestri LEO System design assures protection to both current and future FS operations under standards that are currently embodied in the Commission's Rules and that are supported by technical studies that have been conducted in connection with WRC-97.[32]

Similarly, Iridium attempts to foreclose the issue by merely stating that "FS and NGSO MSS have co-primary status in the band"[33] and that it will comply with Part 25 requirements regarding sharing and coordination in the 18 GHz Band.[34]

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[32]Motorola Reply at 44 (footnote omitted).

[33]Iridium Response at 3.

[34]Id. at 5.

These arguments are totally without merit. First, Applicants' reliance upon Part 25 and ITU sharing criteria is inappropriate because they are not based upon any 18 GHz Band FS user needs or proposed FSS systems, because they are inconsistent with applicable Part 101 interference protection requirements, and because Part 25 of the Commission's Rules does not include a FS/FSS sharing procedure. In fact, under Section 25.203(c) of the Commission's Rules, Iridium and other FSS applicants are required to perform an interference analysis in accordance with the procedures set forth in Section 25.255,[35] but Section 25.255 has been eliminated.[36] Second, co-primary status does not entitle a FSS applicant to operate in a manner that would inhibit a FS applicant's equal rights to the same band.

A. Iridium Incorrectly Claims That FS Users Will Have No Interference Problems In the 18 GHz Band From FSS Users.

Iridium attempts to discredit the TIA Fixed Section's position by stating that "[t]here is no explaining or understanding" its comments objecting to grant of the MACROCELL proposal.[37] It further alleges that the TIA Fixed Section is improperly trying to "prevent [its] feeder down link operations in the 19.3-19.7 GHz band . . . ."[38] Iridium's arguments, however, are unavailing.

The basis of the TIA Fixed Section's objections is quite clear. Iridium's proposed use of 18 GHz Band feeder links for its MSS service jeopardizes FS users:

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[35]47 C.F.R. § 25.203(c) (1998). See also 47 C.F.R. § 25.130 (1998).

[36]62 FR 5924, 5931 (Feb. 10, 1997).

[37]Iridium Response at 3.

[38]Id. at ii.

> Interference due to sharing with MSS feeder downlink operations threatens FS users' ability to provide reliable service and to expand operations. Absent viable sharing criteria, FS transmitters could interfere with MSS feeder downlink earth station receivers, which would impair expansion potential. Similarly, MSS feeder downlinks could interfere with FS receivers, which would impair existing operations.
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> * * * * * *
>
> From a technical view, there is no real difference between MSS feeder downlinks and [FSS] service links, since in both cases the earth station facilities involved are stationary. The only operational difference between the two, if any, is quantitative. The MSS feeder downlink earth stations may be less densely configured than FSS service links, which are, by their nature, potentially ubiquitous. Since Iridium has provided no detailed information on how many feeder links it plans to deploy, and on where related earth stations would be located, it is logical to assume that the same interference problems, which the Commission and the industry have identified in the context of FS and FSS coordination, will extend to MSS feeder downlinks.[39]

Iridium fails to understand the seriousness of these problems. Instead of making a serious effort to consider FS user concerns and accommodate their needs, Iridium regrettably tries to sweep these debilitating problems under the rug. This unwillingness to work with its co-primary partners in the 18 GHz Band cannot be condoned.

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[39]TIA Fixed Section Comments on Iridium Application at 7-8.

1. Co-Primary Designation Does Not Exempt FSS Users From Protecting FS Users Against Harmful Interference.

Iridium claims that the TIA Fixed Section's concern over interference is misplaced. It argues that, since the proposed operation of MSS feeder downlinks in the 18 GHz Band is co-primary with FS, sharing is permissible.[40]

While the TIA Fixed Section recognizes the co-primary rights of MSS feeder downlink operations in the 18 GHz Band, it totally disagrees with Iridium's unsupported assertion that it automatically is entitled to use the band because of this status without any regard for FS users. Having a co-primary status clearly is not an independent reason for deploying FSS systems. For sharing actually to take place on a co-primary basis, coordination procedures and criteria to be used between the affected 18 GHz Band services must exist.[41] Such coordination procedures and criteria, based upon the respective equal needs of co-primary FS and FSS users, do not presently exist and coordination thus could not occur under Iridium's approach.

In its Application, Iridium unjustifiably claims that interference between the MACROCELL System satellite downlinks and FS receivers will be minimized through active power control. Nevertheless, it concedes that maximum allowable flux density may be exceeded when power is increased to compensate for weather conditions.[42]

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[40]Iridium Response at 3. Iridium attempts to prove that such sharing is non-harmful by stating that its feeder downlinks in the 19.3 - 19.7 GHz Band already have been licensed and coordinated successfully with FS licensees. Id. at 3-4. This claim has absolutely no value because Iridium conveniently fails to provide any details about such coordination.

[41]See, e.g., 47 C.F.R. §§ 2.106, 25.203(h) and 25.258(a) (1998).

[42]Iridium Application at A-16.

These solutions are unproven. Current Part 25 interference protection criteria for terrestrial systems in shared bands are not based upon any 18 GHz Band FS user needs, which is exacerbated by the lack of applicable coordination procedures.[43] Furthermore, the Commission requires that coordination between FS and MSS feeder link users sharing the 18 GHz Band must be conducted pursuant to Part 25 and to Part 101.[44]

The need to establish these FS/FSS coordination procedures was recognized at WRC-97 and has been made an agenda item for WRC-99.[45] Specifically, Agenda Item 1.3 tasks WRC-99 with developing a method for the "determination of the coordination area around an earth station in frequency bands shared among space services and terrestrial radiocommunication services . . . ."[46] Such studies are needed because Appendix S7/28 of the ITU Radio Regulations, which includes coordination criteria for FSS users,[47] was developed for operations well below the 18 GHz Band. The current Appendix 28 standards are being revised for several reasons. These reasons include

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[43]See footnotes 34 and 35, supra.

[44]47 C.F.R. § 25.251 (1998). See also Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services, First Report and Order and Fourth Notice of Proposed Rulemaking, 11 FCC Rcd 19005, 19037-038 (1996) ("LMDS Order").

[45]WRC-97 Final Acts, RES. GTPLEN 1-3, supra.

[46]Id., Agenda Item 1.3.

[47]Pursuant to Section 25.251(b) of the Commission's Rules, the "technical aspects of coordination are based upon [this] Appendix 28 . . . ." 47 C.F.R. § 25.251(b) (1998).

the fact that rain attenuation is not a factor in the lower bands and the fact that FS station densities are much lower in these bands than in the 18 GHz Band.

2. FS Expansion Must Not Be Impeded.

In its comments, the TIA Fixed Section justified deferral of all the Applications, including Iridium's proposed 18 GHz Band feeder downlinks, because the proposed operations would create unacceptable "exclusion zones" which obstruct entry by new FS systems.[48] Iridium attacks the basis for this objection:

> Again, the concern [that the TIA Fixed Section] has is not interference with existing FS but the potential for interference between numerous satellite earth stations (not just [Iridium's] feeder link earth stations) and **future** FS services. This is no reason for contending that [Iridium] is not technically qualified.[49]

To FS users, MSS feeder links are just one additional type of FSS system proposed for the 18 GHz Band. Official mutually agreeable coordination procedures and criteria, as well as serious band planning, are required before the Commission can open the door and permit the multitude of FSS or MSS feeder link systems to use co-primary FS bands.

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[48]TIA Comments on Iridium Application at 8.

[49]Iridium Response at 4-5 (footnote omitted).

3. Grant of Iridium's Application Is Premature.

Iridium attempts to convince the Commission that action on its Application would not be premature. To support this claim, Iridium cites its participation in the JWG and its completed coordination in all relevant frequency bands.[50]

These claims, however, are merely window dressing. Mere participation in relevant industry groups is not enough. The JWG only was established in January 1998. Iridium and most other FSS parties have not yet contributed meaningful data on their proposed system characteristics. Completion of coordination for unidentified systems totally fails to provide an adequate comfort level for FS users. Most importantly, the JWG recognizes the need to develop 18 GHz Band FS/FSS sharing, as it has committed to review the applicability of existing inter-service coordination procedures to earth stations operating in the 17.7-19.7 GHz band which will not be ubiquitously deployed or blanket licensed.[51]

B. Motorola Fails to Prove That Its FSS Proposals Would Protect FS Users.

The TIA Fixed Section demonstrated that Motorola's Applications should not be granted because its FSS downlinks would interfere with FS facilities and because stringent coordination requirements for new FS users would create an unacceptably large exclusion zone.[52] Motorola disagrees:

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[50]Id. at 5.

[51]See Attachment E.

[52]Motorola's Reply does not address its GEO Application because it claims that "the Commission received no petitions against" this proposal. Motorola Reply at 2. The TIA Fixed Section is confused by this statement. It timely filed Comments opposing the Motorola GEO Application, as evidenced by Attachment G. In addition, Loral, in its Comments, criticizes the Motorola GEO Application.

> None of these arguments has merit. The Celestri LEO System design assures protection to both current and future FS operations under standards that are currently embodied in the Commission's Rules and that are supported by technical studies that have been conducted in connection with WRC-97. By using coordination, dynamic frequency management, and automatic FSS terminal channel selection capabilities, Motorola will avoid unacceptable interference to and from current and future FS terminals.[53]

As detailed below, the TIA Fixed Section does not accept Motorola's position.

1. Motorola's Proposed Approach Does Not Adequately Protect FS Users From Harmful Downlink Interference.

The TIA Fixed Section is concerned that the Celestri LEO System's use of the 18.8 - 19.3 GHz downlink band would cause unacceptable interference to FS terminals. This band is designated as co-primary for both FS and NGSO FSS (downlinks). The TIA Fixed Section showed that there is no convincing evidence that existing pfd limits provide adequate protection to FS users.[54]

Motorola disputes this claim. It argues that the downlink power limits specified in Section 25.208(c) of the Commission's Rules to protect FS systems never will be exceeded by the Celestri LEO System.[55]

> In fact, based on studies conducted between the FS and NGSO/FSS in WP4-9S, the 1997 CPM Report "concluded that the existing [pfd] levels in Table S21-4 of Article S21 are sufficient to protect the FS." The original studies, which were carried out prior to CPM-95, were based upon the parameters of the proposed

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[53]Motorola Reply at 44 (footnote omitted).

[54]TIA Fixed Section Comments on the Motorola GEO Application at 10-11 and on the Motorola LEO Application at 10-11.

[55]Motorola Reply at 45.

> NGSO systems at that time using a "worst case" interference model. CPM-95 concluded that the [pfd] limits of -115/-105 dBW/M^2/MHz adequately protect FS receivers from NGSO downlinks in the 18.8 - 19.3 GHz band. These conclusions were studied further in WP4-9S and verified by contributions from France, Canada, and others. Further, all of these studies were based on very conservative criteria, yet still satisfied the standards for unacceptable interference proposed by the FS community.[56]

Motorola's interpretation of current ITU-R efforts does not answer the problems with its Application. None of these studies addresses FS user needs. Nor do current Commission rules. The Part 25 interference protection criteria for FS systems in FSS/FS shared bands are not based upon any 18 GHz Band FS operations. Furthermore, the Commission requires coordination between FS and FSS users sharing the 18 GHz Band pursuant to the requirements of both Part 25 and Part 101.[57]

To say the least, Motorola seems to have a very limited view of what the ITU-R recently has been requested to do with regard to evaluating proposed pfd limits for NGSO FSS systems in the 18 GHz Band. Motorola basically claims that all 18 GHz NGSO FSS pfd limits definitively have been set, with the specific exception of those being studied for systems proposing to use 100 or more satellites.[58]

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[56] Id. at 45-46 (footnotes omitted).

[57] 47 C.F.R. § 25.251 (1998). See also LMDS Order, 11 FCC Rcd at 19037-038.

[58] Motorola Reply at 44-46.

Motorola incorrectly characterizes the nature of the ITU-R efforts. Under WRC-97 Res. COM5-23 (now Resolution 131):

> *considering d)*
>
> further studies are required of the power flux-density limits applicable to non-GSO FSS systems for the protection of terrestrial services in the bands 10.7-12.75 GHz and 17.7-19.3 GHz.[59]

The large satellite systems referred to by Motorola are only mentioned in a footnote (#5) of Resolution 131 and require even stricter provisional pfd values. All NGSO pfd values found in Annex 1 of Resolution 131 require further studies, as stated in "*considering* d)" of the foregoing text.

The problems with Motorola's position are even more apparent in the Terms of Reference for Joint Task Group 4-9-11.[60] The JTG 4-9-11 is asked to develop CPM text in response to WRC-99 Agenda Item 1.13:

> 1.13 on the basis of the results of the studies in accordance with Resolutions **130 (WRC-97), 538 (WRC-97) and 131 (WRC-97):**
>
> 1.13.1 review and, if appropriate, revise the power limits appearing in Articles **S21** and **S22** in relation to the sharing conditions among non-GSO FSS, GSO FSS, GSO BSS, space sciences and terrestrial services, to ensure the feasibility of these power limits and that these limits do not impose undue constraints on the development of these systems and services.[61]

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[59]WRC-97 Final Acts, RES. 131. See also WRC-99 Agenda Item 1.13.1, supra. Under Resolution 131, contrary to Motorola's assertion, the provisional pfd limits apply to all FSS systems, regardless of how many satellites are deployed.

[60]See ITU-R Circular Letter 9/LCCE/23 (December 15, 1997).

[61]Id.

This mandate to review and, if appropriate, revise the provisional NGSO FSS pfd limits, is especially wise considering the recent flood of 18 GHz Band FSS applications filed at the Commission. This growing pile of FSS applications is continually changing sharing scenarios and assumptions, requiring the additional study requested by WRC-97 and by the TIA Fixed Section herein.

2. Motorola Fails to Rebut the Problems Identified With Respect to Creation of Multiple Exclusion Zones.

Sharing requires earth terminals to be protected. Both 18 GHz Band FS and FSS licensees typically will want to locate their earth station facilities so they serve the same urban area. Any urban FS system can cause interference to any urban FSS system within roughly plus or minus 45 degrees of the terrestrial transmission main beam. Under these typical conditions, if FSS earth stations are (or may be) present, no new FS system could be implemented since sharing is impossible. Consequently, due to this "exclusion zone,"[62] future FS deployment effectively would cease and current users would be prevented from expanding their FS systems, in which they already have made a substantial investment. Such aborted FS development clearly is not in the public interest.

As detailed in the TIA Fixed Section's Comments:

> Under the proposals made in the Application by Motorola and in other 18 GHz Band FSS applications, there is a strong likelihood that FS systems would be, in effect, frozen out of large geographic areas near FSS earth stations. Satellite earth station receivers have unusually stringent (relative to FS systems) interference protection requirements. Unlike FS systems, satellite earth station

[62] See Attachment A.

> receivers typically coordinate an entire band at all azimuths and force other services to provide them very stringent interference protection. Any measures required to protect the earth station are the responsibility of the new FS user. Often, nothing can be done to satisfy the satellite earth station user. Once a satellite system is in place in a geographic area, it tends to obstruct the entry of new FS systems into the same geographic area. This area, or "exclusion zone," may extend more than 100 miles from earth stations.
>
> * * * * * *
>
> For obvious reasons, such constraints would be intolerable for FS users. The effect is to freeze the band from further FS development in the same geographical area. Indeed, such a result is untenable, particularly in urban areas where demand for newer terrestrial services is great and is expanding rapidly.[63]

Rather than acknowledging the problems created by these exclusion zones, Motorola claims that this problem is not serious. It promises to:

> [E]ngage in site-specific coordination with FS operators to prevent unacceptable interference to Celestri LEO System high data-rate terminals operating in the 18.8-19.3 GHz band. Such coordination, in conjunction with suitable application of appropriate mitigation techniques will achieve reliable reception in proximity to FS sites.
>
> * * * * * *
>
> The Celestri LEO System low data rate terminals are designed to select automatically an interference-free channel upon detection of FS signals in the 18.8 - 19.3 GHz band. If the terminal is unable to locate such an interference-free channel, as in the case of a highly-congested FS environment, it will switch to an available channel in the 19.7 - 20.2 GHz band, where FS is not authorized to operate, or to an alternate frequency in the 18.8 - 19.3 GHz band, where no interference is present. The channel monitoring, selection and switching process is

[63]TIA Fixed Section Comments on Motorola LEO Application at 8-9 (footnotes omitted).

> automatic in the Celestri LEO System and is fully transparent to the user. Importantly for the FS community, this dynamic channel and band-switching capability will allow virtually unlimited FS expansion. Thus, TIA's concern that "FS users would have to coordinate their transmitters with throngs of FSS earth station receivers" should be alleviated by the planned mitigation techniques of the Celestri LEO System terminals. In any event, Motorola recognizes the practical limitations of coordination with ubiquitous terminals and intends to rely on mitigation techniques such as antenna sidelobe control, general shielding, site-specific shielding and frequency avoidance to avoid receiving unacceptable interference to its terminals.[64]

The TIA Fixed Section acknowledges and values Motorola's commitment to use automatic selection of interference-free channels upon detection of local FS signals as an interference-mitigation technique.

This technique, however, apparently is limited to Motorola's proposed LEO system. There is no evidence on the record that this interference-mitigation technique also would be used in Motorola's proposed GEO system.[65]

The TIA Fixed Section fear, that "throngs of FSS earth station receivers" in urban areas would degrade FS operations significantly,[66] thus has not been addressed by Motorola with respect to its GEO proposal. The absence of FS/FSS sharing procedures from Part 25 remains a serious concern in evaluating Motorola's GEO system. More importantly, the TIA Fixed Section fails to see how the proposed high

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[64]Motorola Reply at 46-47 (footnote omitted).

[65]Due to Motorola's incorrect assumption that no objections were filed regarding its GEO Application, it did not respond to the TIA Fixed Section's concerns regarding this proposal. TIA Fixed Section Comments on Motorola GEO Application at 7-8.

[66]Id.

density deployment of FSS earth stations for this GEO system could occur in a band used by the FS for urban applications.

It should be clear to Motorola that, when the typical FS (or FSS) intra-service station distance is substantially smaller than the required typical FS-FSS inter-service separation distance, deployment of either service in the same geographical area (as it is basically being proposed here) will be impeded severely. Neither FS nor FSS users would wish to be found in such a situation. This is one reason why all concerned FS and FSS parties must join the JWG and work together in a meaningful way to address these problems.

CONCLUSION

The record of this proceeding is clear. Unless and until each Applicant demonstrates that it can operate in co-primary FS spectrum on a non-interference basis, the Commission cannot grant its Application. Consistent with the TIA Fixed Section's position, all other commenters state that the Commission must require each Applicant to support its proposal with recognized interference analyses demonstrating that the system would not interfere with co-primary FS or FSS systems.

The JWG actively is attempting to identify an approach that would allow both FS and satellite users to access the 18 GHz Band. Other studies, prompted by WRC-99 agenda items, will complement the JWG efforts. A record on these issues will be developed in response to the forthcoming NPRM.

Erosion of FS spectrum must be stemmed. Otherwise, provision of critical public safety services and development of wireless technologies will be thwarted.

Given the magnitude of uncertainty over 18 GHz Band sharing issues, industry and Commission efforts must be afforded the time necessary to address these problems comprehensively before FSS applications are granted and the satellite industry's incentive to contribute to this process diminishes. Thus, the TIA Fixed Section urges the Commission to defer action on the Applications until completion of these necessary studies.

Respectfully submitted,

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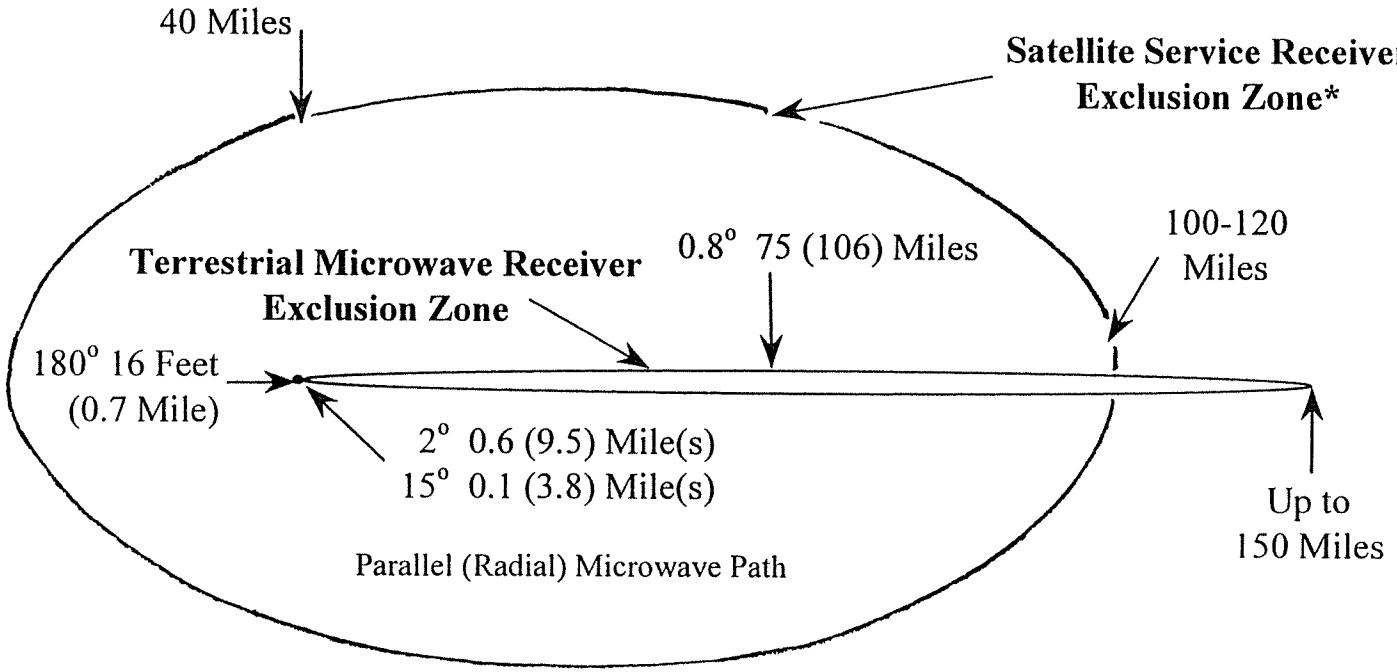
February 20, 1998

ATTACHMENT A

Fixed Service Transmitter Exclusion Zones

* Curtis, H. E., " Interference between Satellite Communication Systems and Common Carrier Surface Systems," *Bell System Technical Journal*, May 1962, pages 921-943.



Satellite Service Uses All Frequencies at All Azimuths Within a Band

Terrestrial Microwave Uses a Pair of Frequencies Within a Narrow Wedge

Lower 6 GHz 6 Ft. Standard FS Antennas

ATTACHMENT B

FS use of the 18GHz band

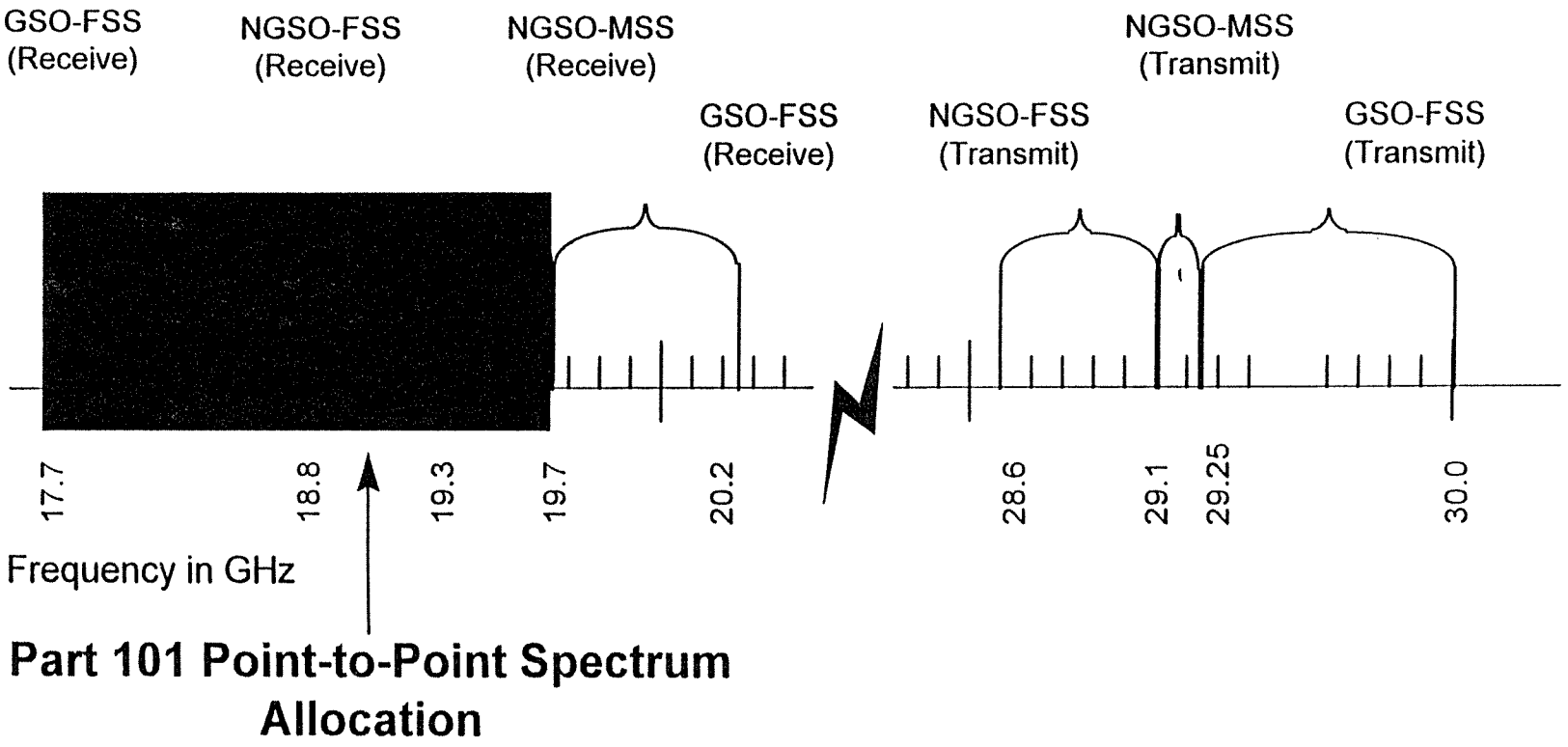
Freq. range	#of Lic.	Characteristics
17.70-18.14	1,303	Pt-to-Pt, 10/40MHz
18.14-18.37	21,167	BAS, CARS, 6MHz
18.37-18.58	10,276	BAS,CARS, 6MHz
18.58-18.82	1,494	Pt-to-Pt, 5/10MHz
18.82-18.92	695	DEMS
18.92-19.16	1,276	Pt-to-Pt, 5/10MHz

FS use of 18GHz (Cont'd)

Freq. Range	**#of Lic.**	**Characteristics**
19.16-19.26	693	DEMS
19.26-19.70	1,222	Pt-to-Pt, 10/40MHz
17.70-19.70	38,126	All sub-bands

ATTACHMENT C

Ka-Band (18/28GHz) Systems (Source: Comsearch)

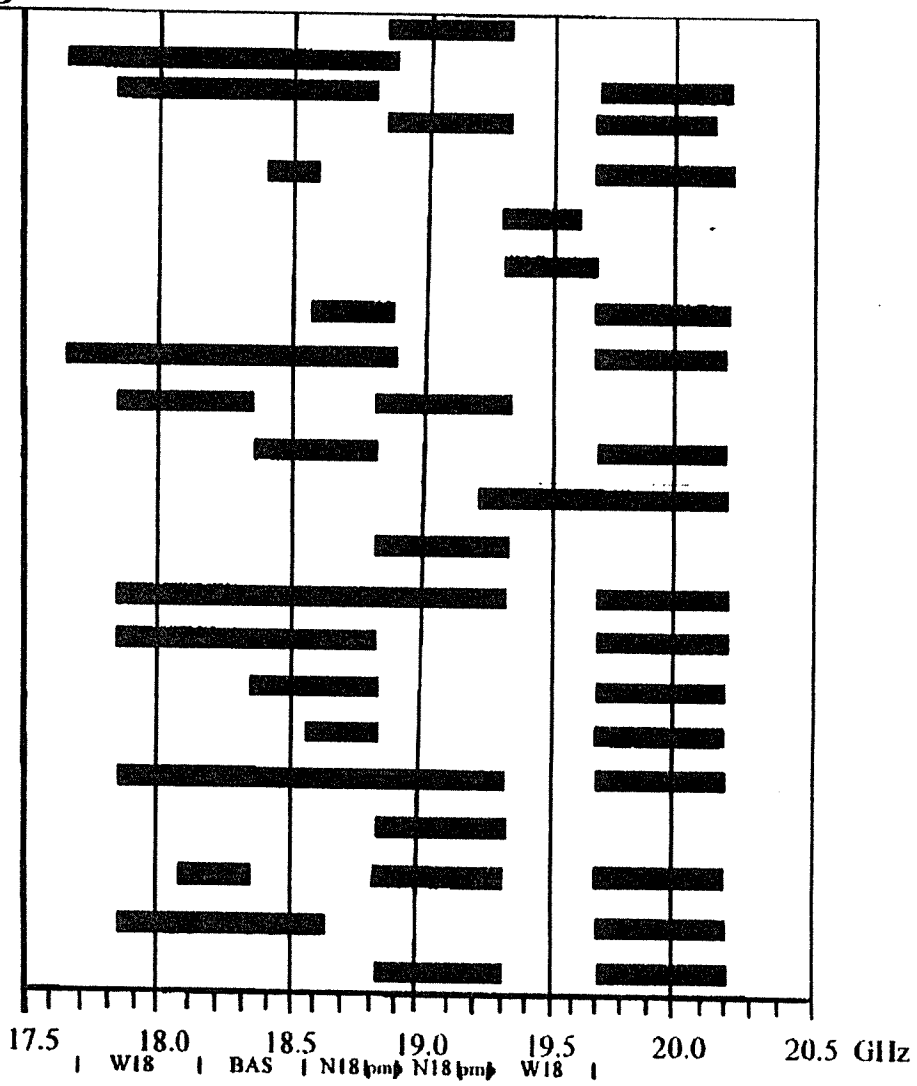


TELECOMMUNICATIONS INDUSTRY ASSOCIATION

ATTACHMENT D

KA-BAND FSS APPLICATIONS

Applicant	GSO/NGSO
Teledesic	NGSO
Teledesic Gigalinks	NGSO
Loral CyberStar	GSO
Motorola Celestri LEO	NGSO
Motorola Celestri GEO	GSO
GlobalStar	GSO/NGSO
Iridium	NGSO
CAI Data Systems	GSO
Pacific Century Group	GSO
Lockheed Astrolink	GSO
Orion F-5 and F-10	GSO
Hughes Galaxy	GSO
GE	GSO
Lockheed Astrolink Phase II	GSO
Hughes SPACEWAY EXP	GSO
DirectCom	GSO
PanAmSa	GSO
TRW	GSO/NGSO
Hughes SPACEWAY NGSO	GSO/NGSO
Lockheed LM-MEO	NGSO
Skybridge II	NGSO
@Contact	NGSO



ATTACHMENT E

Draft 3
2/19/98

18 GHz Joint Working Group
Terms of Reference

Scope: To study blanket licensing of ubiquitous GSO and NGSO FSS earth station terminals in the 17.7-19.3 GHz band; in addition, to review the applicability of existing FSS-FS coordination procedures to earth stations operating in the 17.7-19.7 GHz band, which will be non-ubiquitously deployed nor blanket licensed. Consequently, to study the impact of the deployment of these various types of FSS earth stations on the fixed service use of the 17.7-19.7 GHz band and vice versa. (Note that the issues associated with the sharing with the Earth Exploration Satellite and Space Research Services in the 18.6-18.8 GHz band are not included in the scope of this study.)

Objective: Produce a report identifying: (1) what was studied; (2) areas where consensus regarding sharing and coordination methods has been achieved and (3) areas where consensus has not yet been achieved.[1]

Study Methodology:

1. Identify the domestic and international FSS/FS allocations and band usage in the 17.7-19.7 GHz band (target completion date: 19 March 1998).

2. Identify the scope of current domestic uses of the 17.7-19.7 GHz band, and consider taking account of government usage (target completion date: 19 March 1998).

3. Identify the scope of known planned domestic uses of the 17.7-19.7 GHz band, and consider taking account of government usage (target completion date: 19 March 1998).

4. Presentation of representative "system" characteristics and comparison to a worst-case scenario.

5. Identify specific potential interference scenarios among services.
   Examine successful interference management and/or mitigation techniques used within existing Fixed Services.
   Examine successful interference management and/or mitigation techniques used between existing services.

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[1] The JWG report is expected to consist of: Introduction; Summary of Results, Participant list, Background, Study Methodology, and Results/Conclusions. This will be followed by a compendium of contributions accepted for consideration by the group.

6. Postulate solutions to each potential interference scenario.
   Feasibility of Blanket Licensing
   Sharing
   Coordination methodology
   Segmentation

7. Report JWG output to the FCC and Industry.

8. Determine what ongoing efforts are needed, if any, (such as a Telecommunications Systems Bulletin (TSB) to produce consistent methodology for calculating potential interference and sharing criteria).

Sutliff, Barnett

ATTACHMENT F

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ATTACHMENT G

Before The
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
MOTOROLA GLOBAL COMMUNICATIONS, INC.	)	
	)	
	)	File Nos. 94 through 98
	)	SAT-P/LA-97
Application for Authority to Construct, Launch and Operate the Celestri GEO System	)	

"STAMP AND RETURN"

To: Chief, International Bureau

COMMENTS OF
FIXED POINT-TO-POINT COMMUNICATIONS SECTION,
WIRELESS COMMUNICATIONS DIVISION,
TELECOMMUNICATIONS INDUSTRY ASSOCIATION

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December 19, 1997

CERTIFICATE OF SERVICE

I, Deborah Mashburn, hereby certify that a true and correct copy of the foregoing Consolidated Reply Comments was sent this 20th day of February, 1998, via first class mail, postage prepaid, to the following:

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