

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

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

In the Matter of:)

Amendment of Parts 2.106 and 25.202)
of the Commission's Rules to)
Allocate the 37.5-38.6 GHz Bands)
to the Fixed-Satellite Service and)
to Establish Technical Rules for)
the 37.5-38.6 GHz Band)

RM No. 8811

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REPLY COMMENTS OF MOTOROLA SATELLITE COMMUNICATIONS, INC.

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Dated: July 5, 1996

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CET

SUMMARY

Motorola Satellite Communications, Inc. ("Motorola") hereby submits its reply comments in the above-captioned proceeding. In its Petition for Rulemaking, Motorola requested a domestic allocation of the 37.5-38.6 GHz band to the Fixed-Satellite Service ("FSS") (space-to-Earth). The band already has a worldwide primary allocation for FSS downlinks. Along with contiguous spectrum, this band is needed for the development of future satellite systems.

Motorola's Petition fully satisfies the requirements of the Commission's Rules, 47 C.F.R. § 1.401(c). Motorola has submitted sufficient facts, arguments and data in support of the requested rulemaking on implementing an existing worldwide allocation. Specifically, Motorola has demonstrated that the lower bands allocated for satellite services are heavily congested and that this band is part of the next available spectrum for satellite systems. Further, because the band is already allocated to the FSS on a worldwide basis, it offers an opportunity for the implementation of international and global systems. Attaining the broad international allocation required for such systems is exceedingly difficult, and the Commission should not squander a global allocation that is already available.

The domestic implementation of the global FSS allocation is consistent with the treaty obligations of the United States as a member of the International Telecommunication Union and signatory to the International Telecommunication Convention, particularly since an FCC refusal to entertain Motorola's request would nullify the rights flowing from the worldwide allocation for proponents of global satellite systems.

Some commenters protest that Motorola has not proffered sufficient proof because it has not presented to the Commission a specific satellite system and has not demonstrated that sharing is feasible between such a system and the terrestrial services in the band. Such a demonstration, however, goes beyond the burden that Motorola can properly be asked to shoulder. All that Motorola is requesting at this point is a rulemaking on implementing a worldwide spectrum allocation. Motorola should not have to design and apply for a specific satellite system to demonstrate the need for such an allocation. Nor should Motorola have to show that a concrete satellite system can coexist co-frequency and co-coverage with terrestrial services before the Commission institutes the requested rulemaking.

Indeed, these commenters have it precisely backwards: it is through the requested rulemaking that the broad range of

sharing questions can be fully evaluated by the Commission. As the Commission knows, sharing a band between co-primary services can be achieved through a variety of methods: power limits, geographical coverage and other constraints, "angle segmentation" techniques, as well as band segmentation. Motorola agrees that, where feasible, co-frequency sharing should be the preferred method of sharing, subject to acceptable constraints on all services involved. The Commission should accordingly explore such an alternative. Band segmentation is also available as a "last resort" option and could also be considered by the Commission as a provisional measure pending the completion of studies on co-frequency sharing. But in this era of increasing efforts to achieve multiple access to the spectrum for as many diverse uses as technologically feasible, the Commission should not rule out satellite services de facto by refusing to hold a rulemaking on Motorola's petition.

A preliminary assessment indicates that co-frequency sharing in this band may be feasible subject to conditions. In fact, even Winstar concedes that possibility. While Motorola acknowledges that some conditions may turn out to be inconsistent with the business plans of satellite or terrestrial operations, the Commission should not refuse to hold a rulemaking allowing for a study of possible conditions. The technical study

submitted by Winstar does not contain sufficient data to permit definitive conclusions about sharing.

Motorola suggests that an appropriate forum for conducting such studies, in parallel with the requested rulemaking, is the Telecommunications Industry Association ("TIA"). The TIA contains Sections that represent terrestrial and microwave interests respectively, and is well-suited for such an endeavor. Indeed, the TIA's Satellite Communications Division has already proposed to conduct similar studies to explore the feasibility of sharing the 2 GHz band between the Mobile-Satellite Service and terrestrial operators. Expansion of the scope of such studies to include the problems posed in the 38 GHz bands would greatly assist the Commission in the requested rulemaking.

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REPLY COMMENTS OF MOTOROLA SATELLITE COMMUNICATIONS, INC.

Motorola Satellite Communications, Inc. ("Motorola") hereby submits its reply comments in the above-captioned proceeding. In its Petition for Rulemaking, Motorola requested a domestic allocation of the 37.5-38.6 GHz band to the Fixed-Satellite Service ("FSS") (space-to-Earth). The band already has a worldwide primary allocation for FSS downlinks. Along with contiguous spectrum, this band is needed for the development of future satellite systems.

I. MOTOROLA HAS SATISFIED THE COMMISSION'S REQUIREMENTS IN ITS PETITION FOR RULEMAKING

Section 1.401(c) of the Commission's Rules, 47 C.F.R. § 1.401(c), requires that rulemaking petitions:

set forth the text or substance of the proposed rule or rule to be repealed, together with all facts, views, arguments and data deemed to support the action requested, and shall indicate how the interests of the petitioner will be affected.

Motorola has provided the Commission with sufficient facts and arguments, contrary to the contentions of some commenters, in support of the action requested -- institution of a rulemaking proceeding to implement a worldwide spectrum allocation: allocation of this band, along with the current allocations in the contiguous spectrum, would accommodate the next generation of satellite systems; the band is suited for international and global systems, since a global allocation is already available; and the requested domestic allocation would implement the global allocation of the band consistent with U.S. international obligations. These facts should be enough for the Commission to institute a rulemaking proceeding on Motorola's petition.

Motorola's interests would be directly affected by the domestic allocation of this band to FSS. As the Commission is well aware, Motorola is a satellite communications company that is in the business of designing, developing and implementing satellite systems. Motorola's interest in the spectrum available for such systems, especially where other available spectrum is congested, should therefore be obvious.

II. THE DOMESTIC ALLOCATION OF THE 37.5-38.6 BAND WOULD PROMOTE THE UNITED STATES' INTERNATIONAL OBLIGATIONS

As a member of the ITU and signatory to the International Telecommunication Convention, the United States should not lightly disregard the existing worldwide FSS allocation of the 37.5-38.6 GHz band. The ITU Charter requires member countries to work together to avoid harmful interference between communication systems. See, e.g., Aeronautical Radio, Inc. v. FCC, 928 F.2d 428, 443 (D.C. Cir. 1991) ("ARINC") (citing International Telecommunication Convention, Nov. 6, 1982, preamble and art. 4, S. Treaty Doc. No. 6, 99th Cong., 1st Sess. (1985), ratified, 131 Cong. Rec. 17,674 (1985)). Member countries are required to respect international allocations.^{1/}

^{1/} The ITU's regulations provide:

Administrations of the Members shall not assign to a station any frequency in derogation of either the Table of Frequency Allocations given in this Chapter or the other provisions of these Regulations, except on the express condition that harmful interference shall not be caused to services carried on by stations operating in accordance with the provisions of the Convention and of these Regulations.

Radio Regulations, art. 6, § 4 (emphasis added). See ARINC, 928 F.2d at 444.

Respect for the worldwide allocation is all the more necessary because a failure to implement it domestically would effectively nullify all rights flowing from that allocation for proponents of global satellite systems. Service to the United States and other countries is an indispensable component of any such system.

III. THE FEASIBILITY OF SHARING BETWEEN THE FIXED SERVICE AND FSS IS INDICATED BY PRELIMINARY DATA, BUT MUST BE CONFIRMED BY FURTHER STUDY UNDER THE AUSPICES OF A RULEMAKING

Some commenters protest that Motorola has not proffered sufficient proof because it has not presented to the Commission a specific satellite system and has not demonstrated that sharing is feasible between such a system and the terrestrial services in the band. See, e.g., Partial Opposition of Biztel, Inc. ("Biztel") at 3. Opposition of Winstar Communications, Inc. ("Winstar") at 7. Such a demonstration, however, goes beyond the burden that Motorola can properly be asked to shoulder. All that Motorola is requesting at this point is a rulemaking on implementing a worldwide spectrum allocation.²⁴ Motorola should not have to design and apply for a

²⁴ Even some of the terrestrial interests effectively agree on the need to develop a record in the context of a rulemaking. See, e.g., the Comments of GHz Equipment Company, Inc. (arguing

(continued ...)

specific satellite system to demonstrate the need for such an allocation. Nor should Motorola have to show that a concrete satellite system can coexist co-frequency and co-coverage with terrestrial services before the Commission institutes the requested rulemaking.

Indeed, these commenters have it precisely backwards: it is through the requested rulemaking that the broad range of sharing questions can be evaluated by the Commission. As the Commission knows, sharing a band between co-primary services can be achieved through a variety of methods: power limits, geographical coverage and other constraints, "angle segmentation" techniques, as well as band segmentation.^{2/} Motorola agrees that, where feasible, co-frequency sharing should be the

^{2/} (... continued)

that Motorola and other interested parties should be required to develop a complete record in the ongoing rulemaking proceedings in ET Docket No. 95-183 with respect to the feasibility of sharing in the 37.5-38.6 GHz band).

^{3/} Regarding Motorola's request that the Commission adopt the power flux density limits set forth in the Radio Regulations, the TIA's Microwave Section contends that RR 2578 does not apply to this band. See Comments of Point-to-Point Communications Section, Network Equipment Division of the Telecommunications Industry Association at 4. This disregards the fact that the limits of RR 2578 are incorporated by reference and made applicable to this band through RR 2582, 2583 and 2584. The possibility that the CCIR may recommend different values for these limits in the future should not matter. If and when the CCIR makes such a Recommendation and a competent world administrative radio conference endorses it, the Commission can consider appropriate modifications to the limits.

preferred method of sharing, subject to acceptable constraints on all services involved. The Commission should accordingly explore such an alternative. Band segmentation is also available as a "last resort" option and could also be considered by the Commission as a provisional measure pending the completion of studies on co-frequency sharing. But in this era of increasing efforts to achieve multiple use of the spectrum for as many diverse uses as technologically feasible,^{4/} the Commission should not rule out satellite services de facto by refusing to hold a rulemaking on Motorola's petition.

A preliminary assessment of sharing in the band would appear to indicate that co-frequency sharing may be feasible subject to conditions. Motorola agrees that the current state of knowledge about this band does not permit definitive conclusions. Further, Motorola acknowledges that some of the conditions required for co-frequency sharing may turn out to be onerous or inconsistent with the business plan of either terrestrial or satellite system proponents. At the same time, however, the feasibility of sharing is not definitively contradicted by any of the comments of the terrestrial interests. Indeed, Winstar's Opposition allows for the possibility that sharing is feasible

^{4/} See, e.g., Eli M. Noam, "Taking the Next Step Beyond Spectrum Auctions: Open Spectrum Access," IEEE Communications Magazine (Dec. 1995), at 66, 69 et seq.

subject to restrictions. See Winstar Opposition at 4-6 (interference from satellite downlinks to FSS receivers is possible under certain conditions; interference from FS transmitters into downlink receivers may be possible subject to "drastic measures" or "restrictions"). Winstar only speculates that such conditions may be onerous or lead to holes in coverage or inefficiencies. Id. at 6. While Motorola does not discount such possibilities, the Commission plainly should not refuse to hold a rulemaking without further study of possible conditions and their implications.

The technical study submitted by Winstar does not contain sufficient data to identify and evaluate possible restrictions, much less permit definitive conclusions about sharing. Winstar points to the 28 GHz band, where the Commission has tentatively concluded that sharing between "'LMDS stations and the ubiquitous FSS user transceivers'" is not feasible. Id. at 6 (citation omitted). This analogy disregards the different circumstances of sharing in the 37.5-40 GHz band. For example, this band will be used for satellite downlinks, whereas at issue in the 28 GHz band were satellite uplinks. Further, the paradigm for terrestrial use of the 37.5-40 GHz band appears to be point-to-point applications, in contrast with the point-to-multipoint LMDS technology. Most important, Winstar's

discussion disregards the sharing agreement reached in the 28 GHz band between Motorola and the most important LMDS proponents. That agreements reflected a solution of co-frequency sharing between LMDS and the FSS uplinks of Motorola's IRIDIUM® system, subject to mutually acceptable constraints. While sharing in this band may give rise to problems not encountered in the LMDS-FSS feeder link scenario, the possibility of an accommodation cannot be dismissed.

Winstar's analysis fails to address several possible sharing techniques, including for example "angle segmentation": in a situation where satellite and terrestrial operations use differentiated angles, the high-gain beams of the terrestrial antennas might be capable of rejecting satellite emissions, especially in light of the high attenuation of satellite signals characterizing the band. Further, the analysis of Winstar does not contain sufficient information to allow a thorough evaluation of the tentative conclusion Winstar reaches. For example, the analysis does not take account of the spreading loss for the Fixed Service signal (affected by the length of the link) and the noise performance of the Fixed Service receiver.

Motorola suggests that an appropriate forum for conducting such studies, in parallel with the requested rulemaking, is the Telecommunications Industry Association

("TIA"). The TIA contains Sections that represent terrestrial and microwave interests respectively, and is well-suited for such an endeavor. Indeed, the TIA Satellite Communications Division has already proposed to conduct similar studies to explore sharing the question of the 2 GHz band between the Mobile-Satellite Service and terrestrial operators. See Communications Daily, June 29, 1996, at 7. Expansion of the scope of such studies to include the problems posed in the 38 GHz bands would greatly assist the Commission in the requested rulemaking.

IV. IF CONSOLIDATED, THE 37-40 GHZ ISSUES SHOULD BE HANDLED JOINTLY BY THE INTERNATIONAL AND WIRELESS BUREAUS

Certain parties have requested consolidation of Motorola's petition with the pending 37/40 GHz rulemaking, RM-8553, in ET Docket No. 95-183.^{5/} In principle, Motorola does not oppose consolidation of the two proceedings. Motorola points out only that such a consolidated proceeding should be treated as a joint item of the International Bureau and the Wireless Bureau. Involvement of the International Bureau will ensure that the satellite interests, over which that Bureau has jurisdiction, are fully aired and adequately considered at the decisional level.

^{5/} See Biztel Motion to Consolidate (filed June 20, 1996), Winstar Opposition at 2-3.

In the context of the 28 GHz band, which similarly implicates both satellite and terrestrial interests, the Third Notice of Proposed Rulemaking was likewise submitted to the Commission jointly by the two Bureaus. The Commission should follow the same practice here.

V. CONCLUSION

For the foregoing reasons, Motorola requests that the Commission institute a rulemaking proceeding on amending its rules to domestically implement the current worldwide primary allocation of the 37.5-38.6 GHz band to the FSS.

Respectfully submitted,

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Dated: July 5, 1996

ENGINEERING CERTIFICATE

I hereby certify under penalty of perjury that I am the technically qualified person responsible for preparation of the engineering information contained in the foregoing document. I am familiar with the Commission's Rules concerning Part 25 and satellite space station matters. I have prepared or reviewed the engineering information contained in this application and the statements of fact made therein are true and correct to the best of my personal knowledge.

By: 

Stephen J. Clark
Spectrum and Standards
Motorola Satellite Communications

Dated this 5th day of July, 1996.

CERTIFICATE OF SERVICE

I, Pantelis Michalopoulos, hereby certify that on this 5th day of July, 1996, a copy of the foregoing Reply Comments was sent by first-class mail, postage prepaid or by hand delivery (†) to the following:

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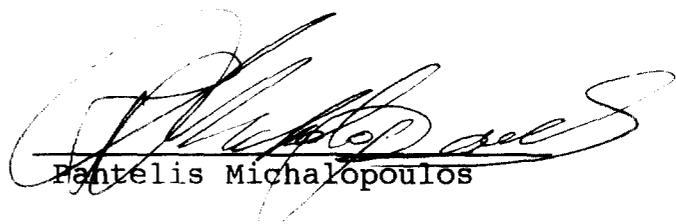
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