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

JUL 2 6 1995

In the Matter of	)	
	)	
Amendment of Parts 2 and 15	)	
of the Commission's Rules to Permit	)	ET Docket No. 94-124
Use of Radio Frequencies Above 40 GHz	)	RM-8308
for New Radio Applications	)	

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SUPPLEMENTAL COMMENTS

FIXED POINT-TO-POINT COMMUNICATIONS
SECTION, NETWORK EQUIPMENT DIVISION
OF THE TELECOMMUNICATIONS
INDUSTRY ASSOCIATION

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July 27, 1995

No. of Copies rec'd 0+4
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SUMMARY

The Commission has proposed reallocating the bands above 40 GHz for millimeter wave technologies. To supplement the record of this proceeding, the Commission has requested supplemental comments on the need to harmonize this proposed spectrum allocation with European spectrum allocations.

In its comments on the reallocation proposal, the Fixed Point-to-Point Communications Section, Network Equipment Division of the Telecommunications Industry Association ("TIA"), supported the Commission's goal of encouraging development and implementation of new technologies. TIA also demonstrated that inadequate spectrum is available for fixed point-to-point microwave service ("FS") users to support PCS, other wireless networks, and emerging short-haul applications integral to the National Information Infrastructure ("NII"). Thus, TIA recommended that the 48.5-51.4 and 55.2-58.2 GHz bands be reallocated exclusively for FS and that certain other changes be made to the Commission's proposal so that contemplated commercial applications would be accommodated.

One of the primary reasons for TIA's proposal is that it conforms to European spectrum allocations. Such conformity would improve access to global markets, which is essential for U.S. technologies and economic development. Export of U.S.-made telecommunications equipment, including FS systems, would increase. Innovation would be encouraged, which would help justify high costs incurred in developing millimeter wave equipment and other new technologies. Domestic manufacturers would remain competitive with overseas manufacturers. Equipment costs would be reduced.

As demonstrated in these Supplemental Comments, TIA's proposed allocation is in the public interest because it would provide FS users much-needed spectrum for the NII and because it would ensure that the U.S. spectrum allocation is harmonized with European allocations. Thus, the Commission must adopt TIA's proposal.

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To: The Commission

SUPPLEMENTAL COMMENTS

In response to the Commission's request,[1] the Fixed Point-to-Point Communications Section, Network Equipment Division of the Telecommunications Industry Association ("TIA"),[2] hereby supplements its comments on the above-captioned Notice of Proposed Rule Making ("NPRM")[3] to allocate additional spectrum above 40 GHz.

THE COMMISSION APPROPRIATELY IS INTERESTED IN SEEKING CONFORMITY BETWEEN ITS SPECTRUM ALLOCATIONS AND INTERNATIONAL SPECTRUM ALLOCATIONS

The Commission proposes, in the NPRM, "to open for commercial development and use a portion of the 'millimeter wave' frequency bands above 40 GHz."[4] In the Public

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[1]Public Notice, International Harmonization of Frequency Bands Above 40 GHz (DA 95-1415, released June 23, 1995) ("Public Notice").

[2]TIA is the principal industry association representing fixed point-to-point microwave radio manufacturers. TIA 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.

[3]Amendment of Parts 2 and 15 of the Commission's Rules to Permit Use of Radio Frequencies Above 40 GHz for New Radio Applications, Notice of Proposed Rule Making, 9 FCC Rcd 7078 (1994).

[4]NPRM, 9 FCC Rcd at 7078 (footnote omitted).

Notice, the Commission seeks further comment on the "desirability and feasibility of harmonizing" its 40 GHz reallocation proposal in the NPRM with European allocations. Specifically, the Commission states:

> Representatives from the European Radiocommunications Committee (ERC) of the European Conference of Postal and Telecommunications Administrations (CEPT), the Federal Communications Commission (FCC), and the National Telecommunications and Information Administration (NTIA) held discussions recently regarding the desirability and feasibility of harmonizing the use in Europe and the United States of frequency bands above 40 GHz. During those meetings, the ERC representatives provided a "European Table of Frequency Allocations and Utilisations," for the band 3400 MHz to 105 GHz, that had been developed as part of a detailed spectrum investigation by the ERC. The ERC representatives indicated that the table reflects the CEPT objective of adopting a harmonized European allocations table by the year 2008. The ERC intends to review its frequency allocation table on an annual basis and welcomes input from U.S. entities. They further stressed their interest in seeking common and harmonized solutions with the United States throughout the entire radio spectrum, especially above 40 GHz.[5]

TIA agrees completely with the ERC representatives. Access to the global markets is critical. The present market for above 40 GHz equipment is relatively limited. Increased export potential is required to justify the high development costs of new technologies.

Consistent with the Commission's goal of promoting economic growth domestically by opening up markets overseas for U.S. products, TIA, in its comments on the NPRM, recommended that any spectrum allocation above 40 GHz must be totally congruent with European allocations. Furthermore, in these comments, in addition to the proposed reallocations in the bands above 40 GHz for fixed commercial services, TIA requested that the Commission allocate the 48.5 - 51.4 GHz and 55.2 - 58.2 GHz bands exclusively for fixed

[5]Public Notice at 1.

point-to-point microwave services ("FS").[6] This proposal was made because, in the NPRM, the Commission disregarded the needs of private and common carrier FS users. These users need spectrum to support personal communications services ("PCS"), other wireless networks, and emerging short-haul FS applications.[7] Bands for the establishment of short high-speed links also must be available to support implementation of the National Information Infrastructure ("NII"). Unless the Commission makes some of the specified bands above 40 GHz available exclusively for FS use to replace lost capacity on other FS bands (e.g., 2 GHz and 6 GHz), PCS, as well as the other traditional public safety and business services that rely on these networks, will be threatened.[8]

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[6]TIA Comments at 2. TIA also recommended that the Commission: (i) reallocate the Local Multipoint Distribution Service ("LMDS") to the 40.5 - 42.5 GHz band and reallocate the 28 GHz band for FS to match existing or proposed international allocations; (ii) license these bands under the proposed Part 101, and, consistent with clear statutory requirements, exempt these licenses from auction; (iii) revise the proposed allocation of the 47.2 - 48.2 GHz band by eliminating the 47.2 - 47.4 GHz allocation for unlicensed vehicular radar systems and reallocating that 200 MHz for such radar systems to anywhere in the 45.0 - 47.0 GHz band and moving the 800 MHz to be allocated for licensed use from 47.4 - 48.2 GHz to 47.2 - 48.0 GHz, so that a 500 MHz guardband between the proposed licensed uses and the proposed private and common carrier FS allocation starting at 48.5 GHz could be established; and (iv) establish formal procedures to improve spectrum sharing between the government and the private sector, including, at a minimum, reducing the time needed to coordinate frequencies between government and private users from weeks to hours. Id. at 25-26.

[7]Given the short-haul, wideband characteristics of the frequencies above 40 GHz, this spectrum should be quite useful for the microwave backbone of emerging PCS and other wireless networks. Moreover, these frequencies could support the other telecommunications services that private and common carrier FS users provide, such as emergency, public health and safety services, and services for local exchange carriers, cellular licensees, utilities, railroads, petroleum companies, and financial institutions. Finally, the short-haul, fixed point-to-point frequencies above 40 GHz also could be used for private LAN-to-LAN interconnection, surveillance, and other related applications.

[8]To accommodate PCS, FS users have been required to clear the 2 GHz band and to relocate in bands above 3 GHz. Redevelopment of Spectrum to Encourage Innovation In the Use of New Telecommunications Technologies, Second Report and Order, ET Docket

As detailed herein, TIA's proposal to carve out spectrum above 40 GHz for FS already is included in the most recent "European Table of Frequency Allocations and Utilisations."[9] Thus, to satisfy its goal of harmonizing domestic and international spectrum allocations, and to serve the public interest by taking action to relieve the acute spectrum shortage facing FS users, the Commission must adopt TIA's proposal.

No. 92-9, 8 FCC Rcd 6495, 6519-20 (1993), modified, Memorandum Opinion and Order, 9 FCC Rcd 1943 (1994). However, the bands designated for the relocating 2 GHz FS users, primarily the 6 and 11 GHz bands, already are very congested. These bands could become largely unusable if the Commission's recent recommendation, to reallocate the upper 6, 11 and 18 GHz bands so that FS users are co-primary with non-geostationary mobile-satellite service ("MSS") feeder links, is adopted at WRC-95. Preparation for International Telecommunication Union World Radiocommunication Conferences, Report, IC Docket No. 94-31 (FCC 95-256, released June 15, 1995) at paras. 43-45. Unfortunately, needed relief from this spectrum congestion is not provided in other recent Commission allocation decisions. Newly available spectrum in the 4 GHz band from the federal government will not be allocated so that this band is feasible as a substitute for the FS users being migrated off the 2 GHz band. Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use, First Report and Order and Second Notice of Proposed Rule Making, 10 FCC Rcd 4769 (1995). A currently pending proposal to channelize the 27.5-29.5 GHz band for the co-primary FS users is unlikely to be adopted. See Joint Petition for Rulemaking, filed February 9, 1995, by Harris Corporation-Farinon Division ("Harris") and Digital Microwave Corporation ("DMC") to re-channelize the 28 GHz band for FS users. Indeed, the Commission recently proposed reallocating the 28 GHz band only for LMDS systems, Fixed Satellite Service and MSS system feeder links. See FCC Proposes Band Plan For LMDS, FSS and MSS, News Release, Report No. DC 95-100 (Mimeo No. 54826, released July 13, 1995). The 38 GHz band, which is allocated for FS, already is saturated with PCS applicants needing backhaul support. A proposal is pending to reallocate the 37 GHz band for FS, but there is great uncertainty whether such an allocation ever will be made. Amendments of Parts 21 and 94 of the Commission's Rules to Establish a Channel Plan and Technical Rules for the 37.0-38.6 GHz Band, RM-8553, filed September 9, 1994, by TIA.

[9]European Radiocommunications Committee ("ERC") within the European Conference of Postal and Telecommunications Administrations ("CEPT"), Radiocommunications Reports, Frequency band 960 MHz to 105 GHz and associated European Table of Frequency Allocations and Utilisations, ERC Report 25 (Brussels, June 1994, revised Bonn, March 1995) ("ERC Report 25").

THE PUBLIC INTEREST WOULD BE SERVED BEST BY REALLOCATING THE 48.5 - 51.4 AND 55.2 - 58.2 GHz BANDS FOR FIXED POINT-TO-POINT MICROWAVE SERVICE

The record of this NPRM supports TIA's proposed reallocation of the 48.5-51.4 and 55.2-58.2 GHz bands for FS uses.[10] Several parties recognize that point-to-point data lines are essential building blocks for emerging technologies and for a global telecommunications infrastructure.[11] Indeed, even the International Telecommunication Union ("ITU") Study Group B recently declared that:

> Long-haul technologies such as satellite, microwave and fiber will be major components of the information superhighway, however, an economical and effective "last mile" distribution service will be necessary to make sophisticated interactive telecommunications applications available. Some subscribers will connect by coaxial cable, some by fiber and still others by [millimeter] links. The choice would be made on the basis of technical and economic considerations. Without this interface organizations will not be able to take advantage of the multitude of resources (both Federal and non-Federal) that require high-bandwidth access.

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[10]On June 16th, 1995, P-COM submitted an ex parte proposal to the Commission to reallocate only the 49.2 to 50.2 GHz band for FS. While P-COM's effort is commendable, TIA seeks a much needed, more extensive allocation for FS users. Moreover, P-COM's proposal is inconsistent with ERC Report 25. In proposing an international 48.5 to 51.4 GHz allocation, TIA stays clear of the proposed 47.2-47.4 GHz vehicular radar band and ensures harmonization with ERC Report 25. TIA also provides for the obvious costs and design advantages given by a wider and more standard transmit/receive ("T/R") frequency spacing. This advantage is not negligible, as "low cost" designs are critical to the success of millimetric microwave radios, despite the various technical challenges imposed by such high frequency bands.

[11]For example, in its comments on the NPRM, Hughes Aircraft Company, Communications Product Unit ("HCP"), urged the Commission to allocate spectrum above 40 GHz for short and medium-range point-to-point links because such links would be a "crucial component of the NII" and will be "vital to creating Wide Area Networks . . . that allow high speed data interconnection between various locations of a corporation, government agency, university campus, or other non-profit institution such as hospitals." HCP Comments at 3-4. See also Alcatel Network Systems, Inc. Comments at 1; Harris Comments at 1-2; Pacific Bell Mobile Services/Telesis Technologies Laboratory Comments at 3; AT&T Corp. ("AT&T") Comments at 3.

* * * * * * * *

> One major application that will depend heavily on the [millimeter] spectrum to connect to the information superhighway is "premises communications." Premises communications is defined as short range, high-capacity, point-to-point and network communications. Such technology will make adding, moving, and changing computer network connections far easier. It will also enabl[e] personnel to remotely connect to their office, bringing the concept of virtual offices closer to a reality. Ultimately, premises communications will evolve into indoor and private campus-area networks for handheld and pen-based personal information devices.[12]

The bands proposed by TIA for FS use match interim CEPT allocations, which already are being implemented by several countries.[13] Similarly, the ERC has allocated the 48.5-50.2, 50.4-51.4, 55.2-57.2 and 57.2-58.2 GHz bands for FS uses.[14] Moreover, in the near future, the ITU, the international telecommunications standards setting organization, is expected to adopt these allocations for FS use. Thus, adoption of TIA's proposal not only would promote the microwave and PCS markets domestically, such international comity would spur export of U.S. products.[15]

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[12]Study Group WP 1B, An Overview of U.S. Millimeter Wave Activities, Doc. No. USSG 1/14 (July 7, 1995) at 9.

[13]CEPT is responsible for setting European telecommunications standards.

[14]See ERC Report 25 at 40-41.

[15]Recently, the Commission reiterated the importance of using its regulatory jurisdiction to increase competition and open foreign markets for U.S. industry. The Commission is proposing rules that would allow it to consider the availability of competitive opportunities for U.S. industry overseas as an important factor in deciding whether foreign companies can export goods and services into the U.S. Market Entry and Regulation of Foreign-affiliated Entities, Notice of Proposed Rulemaking, IB Dkt. No. 95-22, 10 FCC Rcd 5256 (1995). An essential element, in ensuring such a level playing field, is allocating spectrum when the opportunity arises to be consistent with international allocations. Such an opportunity exists with TIA's proposals in response to the NPRM.

HARMONIZATION WITH EUROPEAN STANDARDS IS SUPPORTED ON THE RECORD

Harmonization between any Commission proposal to reallocate the bands above 40 GHz and the ERC Report 25 must be achieved. Trade will be facilitated. Innovation will be encouraged. Prices for products will decrease.

The Commission's interest in harmonizing any reallocation of the bands above 40 GHz with European standards, as detailed in the Public Notice, already is well-grounded in the record of the NPRM. Not only did TIA advocate such an approach, but numerous other parties made the same request.[16]

AT&T encourages the Commission to "do everything it can to achieve similar allocations of . . . spectrum internationally."[17] Teledesic Corporation ("Teledesic"), in advocating exclusive allocation of the 28 GHz band for fixed satellite service, states that by

> maintaining the harmony and compatibility of United States uses of spectrum with international uses, U.S. . . . equipment providers and . . . service providers will have maximum access to global markets. Having the same spectrum allocation . . . in the United States as in Europe will create export opportunities for U.S. manufacturers of . . . equipment who can establish a world leadership position in . . . technology. To maximize the public benefits of [new technologies], the Commission should seize the opportunity available to it in this proceeding for the optimum development of global . . . systems [by using the allocation process to forge truly international linkage].[18]

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[16]In the Public Notice, the Commission also addresses harmonization with Japanese spectrum allocations. TIA favors harmonization with Europe and with the ITU rather than with Japan. It is a long standing fact that the Japanese market remains mostly closed to U.S. microwave equipment manufacturers. On the other hand, several U.S. companies have been extremely successful in providing high frequency microwave systems to the European market. Harmonization of microwave frequency bands above 40 GHz will favor continuation of these great success stories and help maintain the U.S. competitive advantage in the global market.

[17]AT&T Comments at 5.

[18]Teledesic Comments at 12.

Similarly, Hughes Communications Galaxy, Inc. ("Hughes") declares that:

> Opening the currently unused millimeter wave bands to commercial applications will stimulate the rapid development of technology and create new opportunities for economic growth and jobs. This is confirmed by recent developments in other bands.
>
> * * * * * * * *
>
> The response to opening the bands above 40 GHz will be similar. Indeed, this has already begun in the 40 GHz band in the U.K., where the government has issued specifications and is awarding franchises for Multipoint Video Distribution Systems (MVDS), the European equivalent of LMDS.
>
> * * * * * * * *
>
> Other countries also are turning to the millimeter wave bands above 40 GHz as a means to serve their terrestrial broadband needs. In particular, many other countries have begun to promote the development of broadband video and other services above 40 GHz. Licensing these bands in the United States provides an added opportunity to promote United States competitiveness internationally by stimulating the development of technology for potential use in other parts of the world.[19]

Recent reallocations for PCS and other wireless technologies are forcing FS users to higher and higher frequency bands. The international telecommunications community already has initiated spectrum allocation in the higher frequency range to substitute for these lost bands. The U.S. must follow their lead. Among the options for new FS spectrum are the bands above 40 GHz. TIA's proposal would bring the United States spectrum allocation in these bands into conformity with international standards.[20]

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[19]Hughes Comments at 11-12.

[20]Under standards established by CEPT, the 48-5-51.4 GHz and 55.2-58.2 GHz bands are allocated for exclusive FS use. These bands have a T/R spacing of 1.47 GHz, which is more than adequate to provide FS service. In addition to the obligation of aiming for a 1 GHz or greater T/R spacing above 40 GHz, it is also advisable to align on recognized international telecommunications standards, such as the 1.47 GHz T/R spacing, when they have been established. For economic reasons, many low capacity microwave systems have

Compelling reasons exist for the Commission to conform its above 40 GHz band allocation with European allocations by reserving the 48.5-51.4 and 55.2-58.2 GHz bands for FS users. If the Commission intends opening foreign markets for devices operating in the bands above 40 GHz, it must allow interoperability with European and international standards. Microwave systems are natural platforms for new technology development. Successful exploitation of U.S. microwave technology is linked directly to harmonization with European and other international allocation standards.[21]

International harmonization of bands above 40 GHz would allow for cheaper components. Mass production would be increased. This capability would be especially important in the case of cutting edge millimetric technologies, where highest frequency components tend to be significantly more expensive. Harmonization with Europe would allow for cheaper products faster.

Taking action that could make the U.S. the sole dissident to otherwise global standards must be avoided by the Commission.[22] Otherwise, by requiring two different sets

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only one local oscillator (in these cases, the intermediate frequency is often related to the T/R separation). The associated cost reduction is more significant in the millimetric bands than in the lower frequencies. Wider T/R spacings also allow for the design of transceivers operating over a wider range of frequencies, greatly adding to system flexibility.

[21]Export of high quality, high frequency point-to-point microwave products by U.S. manufacturers has been quite successful. No less than eight (8) U.S.-based companies presently are exporting microwave radios in the 18-50 GHz range. Equipment using these frequencies is already in place in the United Kingdom.

[22]Matching international allocations and corresponding international standards has been, and must continue to be, an essential ingredient in domestic telecommunications and trade policy. For example, the National Telecommunications and Information Administration ("NTIA"), in its 1993 "Agenda for Action" for the NII, stated that one of its goals is to "[c]oordinate with other levels of government and with other nations" and "to avoid needless obstacles and prevent unfair policies that handicap U.S. industry." The National Information Infrastructure: Agenda for Action, Dept. of Commerce, National Telecommunications and

of procedures, export opportunities for domestic companies would be jeopardized and manufacturing costs would be increased.

The Commission must be careful in reallocating the bands above 40 GHz to ensure that it does not create any conflicts with TIA's necessary proposal for FS users. For example, in its Reply Comments in this proceeding, NASA, like so many other respondents, supported international harmonization by stating that "uniform international allocations will serve the public interest."[23] However, NASA undermines this position by also advocating that the 54.25-56 GHz band be allocated for exclusive Earth exploration-satellite service. NASA's proposal must be rejected because it is not justified and because it would conflict with TIA's well-documented proposal for additional FS spectrum allocation. Moreover, as noted in Harris' Supplemental Comments, filed concurrently herewith, the 51-55 GHz band already is allocated internationally for exclusive Earth exploration-satellite service. Under these circumstances, for the sake of the U.S. microwave industry, harmonization with the 55.2-58.2 GHz point-to-point microwave band in Europe must be assured.

Information Administration, Dkt. No. 930940-3240, 58 FR 49025 (Sept. 21, 1993). Similarly, the Commission consistently attempts to ensure that its domestic spectrum allocations are compatible with international spectrum allocations. See e.g., Amendment of the Commission's Rules to Establish Rules and Policies Pertinent to a Mobile Satellite Service, Notice of Proposed Rule Making, CC Dkt. No. 92-166, 9 FCC Rcd 1094, 1096 (1994).

[23]NASA Reply Comments at 17-18.

CONCLUSION

The Commission's proposed reallocation of the bands above 40 GHz serves the public interest. It will encourage innovation, develop new technologies, and increase export of U.S. telecommunications products.

Yet, with all this newly available spectrum, more can and should be done. Continued emergence of PCS and other technologies related to the implementation of the NII will require more FS spectrum. Existing public safety and emergency service providers, telephone and cellular carriers, businesses and utilities also need additional FS spectrum.

If the Commission is truly serious about promoting competition and unlocking foreign barriers to entry, it must adopt TIA's proposed reallocation. To open foreign markets for devices operating in the bands above 40 GHz, the Commission must guarantee interoperability with European and international standards. Thus, TIA strongly urges the Commission to adopt the international standards in this area by allocating the above-mentioned bands for exclusive FS use.

Establishment of any new microwave frequency band in the U.S. is a rare opportunity to achieve the benefits of international frequency band harmonization. TIA strongly restates its proposal to reallocate the 48.5-51.4 and 55.2-58.2 GHz bands for FS users exclusively so that such congruency between the Commission's proposal in ET Docket 94-124 and the ERC Report 25 could be obtained.

Respectfully submitted,

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