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

In the Matter of	)	
	)	
Amendment of the Commission's Rules Regarding the 37.0-38.6 GHz and 38.6-40.0 GHz Bands	)	ET Docket No. 95-183 RM-8553
	)	
Implementation of Section 309(j) of the Communications Act -- Competitive Bidding, 37.0-38.6 GHz and 38.6-40 GHz	)	PP Docket No. 93-253

To: The Commission

REPLY COMMENTS

FIXED POINT-TO-POINT COMMUNICATIONS
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OF THE TELECOMMUNICATIONS
INDUSTRY ASSOCIATION

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SUMMARY

In the captioned Notice of Proposed Rule Making and Order ("NPRM"), the Commission proposes amending its rules so that fixed point-to-point microwave service ("FS") licensees could use the 37.0-38.6 GHz band ("37 GHz band") and the 38.6-40.0 GHz band ("39 GHz band"). As detailed in its Comments on the NPRM, the Fixed Point-to-Point Communications Section, Network Equipment Division of the Telecommunications Industry Association ("TIA"), supports adoption of such rules, provided that certain recommendations are implemented regarding:

- technical requirements;
- exclusion of mobile service and deferral of point-to-multipoint service entry into the band;
- restrictions on sharing with Government users;
- protection of Personal Communications Service ("PCS") and private FS users from auctions;
- compatible service areas for 37 GHz and 39 GHz licenses and processing 39 GHz applications.

The record of this proceeding enthusiastically endorses making the 37 GHz band available for FS users. Numerous parties share TIA's position regarding the changes needed to make the Commission's proposals appropriately protective of potential and existing users of the 37-40 GHz band and sufficiently flexible to permit emerging wireless and other technologies supported by these bands to flourish.

Technical Standards -- TIA supports the Commission's proposal to adopt minimal technical standards. These standards must be designed to protect against interference and to promote user and manufacturer flexibility.

This "minimalist" approach to technical rules is supported by most parties. Contrary to unsupported claims by a limited number of commenters, it is premature to permit operation in the

37-40 GHz band without specific technical and operating requirements. The record shows that baseline interference protection, frequency coordination, transmitter power, maximum EIRP, frequency tolerance, efficiency rates, and antenna standards must be adopted. Industry efforts, by NSMA and other interested parties, to develop these standards must be supported. To the extent link-per-link licensing is employed, traditional frequency coordination procedures must be followed. Regular exchange of system data by licensees to facilitate coordination must be required and must be managed by the Commission.

Permissible Users -- TIA strongly opposes permitting mobile users into the 37-40 GHz band because they would cause serious interference problems. Numerous other parties also recommend against opening the door to mobile users. No evidence is submitted in the record to rebut TIA's position that permitting mobile users into the 37-40 GHz band would be catastrophic for FS users and for the new technologies depending on FS networks.

TIA supports access by point-to-multipoint users once applicable technical standards are developed in a proceeding after the rules proposed in the NPRM are adopted. This proposal accommodates the parties supporting such use of the band without compromising the needs of point-to-point users.

Motorola Satellite proposes rules to accommodate Fixed-Service Satellite ("FSS") use of the 37-40 GHz band. This proposal must be denied because no showing was made that additional FSS spectrum is needed or that such sharing could occur without impairing FS operations significantly.

Government Band Sharing -- TIA proposes limiting the Government to sharing the single channel pair reserved for private FS users, provided Part 101 coordination requirements are satisfied. TIA opposes sharing the 37-40 GHz band with Government space research users because the proposed technical standards do not meet international criteria and would cause severe degradation to FS users.

Several parties join TIA in strenuously opposing sharing the 37-40 GHz band with Government users. Not surprisingly, there is no support for granting NTIA's request that space research users could share the band.

Auctions -- The Commission's proposal to auction all channels in the 37-40 GHz band, except for a limited class of grandfathered 39 GHz licensees, is unlawful with respect to intermediate FS links because it would violate Section 309(j) of the Communications Act of 1934, as amended (the "Act"). If auctions, however, are used, the Commission must protect PCS licensees, and private FS licensees, such as utilities and public safety entities, from being required to engage in a costly license pursuit. The Commission must set aside six (6) paired 37 GHz channel blocks for PCS licensees and one (1) paired 37 GHz channel block for private FS licensees. The PCS channel block would be exempted from auctions until three (3) months after the last broadband PCS license is issued; the private FS channel pair would be exempted from auctions indefinitely; and the remaining seven (7) paired channel blocks would be auctioned on a BTA-wide basis. In addition, any unlicensed 39 GHz frequencies also could be auctioned.

Forcing PCS licensees pay again for essential ancillary facilities (i.e., the FS backhaul links) generally is opposed. Bidders for PCS licenses did not factor in a second auction for FS links because the Commission already had determined it is unlawful under the Act. Making private FS licensees bid for their channels was not anticipated for the same reason, and it would impose a significant and unnecessary financial burden on such users. Thus, the Commission must be mindful of these concerns, which are restated in numerous other comments, and it must adopt TIA's proposal for a limited exemption from auctions for PCS and private FS licensees.

Compatible Service Areas -- To avoid conflicts with existing service area configurations, TIA proposes that: (i) the 37 GHz band must be licensed only on a Basic Trading Area ("BTA") basis

because there would be no conflict with existing licensees and because it would accommodate other wireless (e.g., cellular, SMR) or fixed user service areas; and (ii) the 39 GHz band must continue to be licensed only on a Rectangular Service Area ("RSA") basis, provided that any new RSA would be limited to BTA boundaries.

Considerable disagreement exists in the record regarding how to establish service areas in the unused 37 GHz band and in the already licensed 39 GHz band. At a minimum, the Commission must avoid establishing a licensing scheme that would create the conflicts likely under its proposal in the NPRM. Moreover, it must ensure that the amount of unlicensed service areas is minimized.

Build-out Requirements -- TIA opposes the Commission's proposed single time-frame for build-out, which would be applicable to all service areas and to all licensees. Instead, TIA recommends that the Commission base its build-out requirements on service area population or population density.

There is near unanimous opposition to the Commission's build-out proposal. However, even though no consensus emerges in the comments regarding specific appropriate alternative criteria, there is widespread support for using market based criteria, such as population or population density.

Existing 39 GHz Licensees -- Inexplicably, the Commission has imposed certain draconian restrictions on processing 39 GHz license and license modification applications (i.e., imposition of a processing freeze). TIA objects to the unfair treatment that the Commission is according 39 GHz applicants and licensees. Thus, TIA proposes that the Commission: (i) lift its application processing freeze on all 39 GHz band applications filed by the December 15, 1995, release date of the NPRM; (ii) permit any mutually exclusive 39 GHz band applicants meeting this deadline to file amendments resolving frequency conflicts no later than 60 days after release of a Report and Order in this proceeding (the "Amendment Deadline"); (iii) promptly grant all eligible pending 39 GHz band

applications, including those applications filed by the Amendment Deadline; and (iv) provide current 39 GHz band licensees, as well as the applicants granted licenses under TIA's plan, the opportunity to meet appropriate build-out requirements based upon service area population or population density.

There is no dispute in the record that the Commission's treatment of 39 GHz applicants and licensees is unjustified. Lifting the processing freeze and providing a specific time period to resolve frequency conflicts is compelled by the comments in this proceeding.

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To: The Commission

REPLY COMMENTS

Pursuant to Section 1.415 of the Commission's Rules,[1] the Fixed Point-to-Point Communications Section, Network Equipment Division of the Telecommunications Industry Association ("TIA"),[2] hereby replies to comments[3] on the above-captioned Notice of Proposed Rule

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[1]47 C.F.R. Section 1.415 (1996).

[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. TIA has completed its June 1994 "Telecommunications Systems Bulletin No. 10-F, Interference Criteria for Microwave Systems" ("Bulletin 10-F"), which prescribes standards for implementing the new channel plan for the bands above 3 GHz and for establishing criteria regarding 2 GHz band PCS-to-microwave interference protection. As part of its ongoing standard-setting process, TIA is updating Bulletin 10-F, and Bulletin 10-G is in draft. Furthermore, TIA, along with the National Spectrum Managers Association, was responsible for most of the technical rule proposals recently adopted by the Commission in its consolidation of Parts 21 and 94 into new Part 101. See Reorganization and Revision of Parts 1, 2, 21, and 94 of the Rules to Establish a New Part 101 Governing Terrestrial Microwave Fixed Radio Services, Report and Order, WT Dkt. No. 94-148 (FCC 96-51, released Feb. 29, 1996) ("Part 101 Order").

[3]Attachment 1 lists the parties in this proceeding and the abbreviations for these parties used herein.

Making and Order ("NPRM").[4] In the NPRM, the Commission proposes amending its rules to establish a channel plan, licensing requirements and technical rules for fixed point-to-point microwave service ("FS") operations in the 37.0-38.6 GHz band ("37 GHz band")[5] and for FS licensing and technical rules in the 38.6-40.0 GHz band ("39 GHz band").[6]

As detailed in its Comments, TIA agrees with the need to amend the Commission's rules so that the 37-40 GHz band would be available for FS operations. However, the record of this proceeding fully supports TIA's recommendations that the Commission incorporate the following revisions into its final rules:

- Minimum technical rules must be adopted to increase licensee flexibility and decrease equipment costs.
- Mobile users must be prohibited from using the 37-40 GHz band due to the significant threat of interference to fixed operations. Initial channelization in the 37-40 GHz band must be limited to point-to-point microwave users; applicable technical rules for point-to-multipoint users must be developed after adoption of the rules herein.
- Government band-sharing must be limited to a single channel pair, provided Part 101 coordination criteria are met. Space research government band-sharing must be prohibited.
- Even though auctions of intermediate links are unlawful under Section 309(j) of the Communications Act of 1934, as amended (the "Act"),[7] if auctions are used, certain safeguards must be established. PCS licensees in the 37 GHz band must be exempted from auctions on six (6) channel pairs for a limited period and private FS users in the 37 GHz band must be exempted from auctions on one (1) channel pair indefinitely.

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[4]This NPRM is in response to TIA's September 1994 Petition for Rulemaking, which it amended on May 4, 1995. NPRM at 2 footnote 10. The deadline for filing reply comments on the NPRM was extended to April 1, 1996. Order, DA 96-144 (released February 9, 1996).

[5]NPRM at para. 1.

[6]NPRM at para. 2.

[7]47 U.S.C. Section 309(j) (1996).

- Service areas must be made compatible so that the 37 GHz band contains only Basic Trading Areas ("BTAs") and the 39 GHz band contains only Rectangular Service Areas ("RSAs"), provided that any new RSA would be limited to BTA boundaries.

- Build-out requirements must be established based upon service area population or population density.

- 39 GHz licensees and applicants must be protected so that they are eligible for grandfathering and exempted from auctions if they meet applicable build-out requirements.[8]

I. THE RECORD SUPPORTS MAKING THE 37-40 GHz BAND AVAILABLE FOR FS OPERATIONS

In the NPRM, the Commission concludes that its proposals to make FS available in the 37-40 GHz band are justified and in the public interest because "adequate spectrum [is needed] to meet [the] infrastructure needs" of PCS and other emerging technologies.[9] TIA corroborates this conclusion in its Comments by detailing how FS users:

- provide essential services for (i) public health and safety users; (ii) local exchange carriers and new Competitive Access Providers ("CAPs"), cellular telephone companies, utilities, railroads, petroleum companies, financial institutions, and federal, state and local governments; and (iii) emerging wireless telecommunications providers, especially PCS licensees;

- face increasingly inadequate spectrum in the bands above 3 GHz to provide such services; and

- need full access to the 37-40 GHz band and its short-haul, wideband characteristics to ensure availability of the microwave backbone for emerging PCS, cellular, SMR and other wireless networks.[10]

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[8]TIA at 4.

[9]NPRM at para. 13.

[10]TIA at 5-8.

A. Making the 37-40 GHz Band Usable For FS Networks Is Supported By the Record.

Widespread support exists among the parties in this proceeding[11] for the Commission's proposal to make the 37 GHz band usable for FS networks. BizTel applauds the Commission for demonstrating "solid foresight in proposing to open the 37 GHz band for licensing and to implement service rules affecting the 37 GHz and 39 GHz bands that promote more flexible and efficient use of the scarce spectrum resource."[12] Furthermore, BizTel characterizes the Commission's efforts as "prudent" because the "availability of additional millimeter wave spectrum for the provision of local fixed wireless services will help to promote competition, enhance marketplace offerings and create new jobs."[13]

Both AT&T and PCIA support this proposal because "the characteristics of the band allow high speed communications over relatively short distances,"[14] which satisfies a need for PCS licensees to have "access to spectrum suitable for backhaul and backbone operations."[15] TDS supports the proposal because "additional 37 GHz spectrum is needed to satisfy point-to-point communications needs of cellular and broadband PCS systems, of common carriers providing short-haul 'last mile' links, and of private companies for internal communications needs."[16] In addition,

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[11]See, e.g., GTE at 2; Milliwave at 6-7,11; Commco at 2; INNOVA at 2; MRC at 1-2; Harris at 2; Alcatel at 2-3; DMC at 2; PCIA at 3.

[12]BizTel at 10.

[13]BizTel at 10.

[14]PCIA at 2.

[15]AT&T at 1.

[16]TDS at 3.

non-PCS providers, such as CAPs and other 39 GHz band licensees, support the proposal because it would help meet increasing demand for wireless broadband transmission capacity.[17]

Such reliance upon microwave networks to support PCS and other emerging technologies is not surprising. It is well-established that FS systems are more reliable and cost-effective than wireline, fiber and satellite systems. For example, Ameritech describes why RF links are preferable:

> The radio systems proposed in Ameritech's applications will allow its local exchange carriers to provide rapid, cost effective and reliable access to the PSTN. CMRS providers have made it clear to Ameritech that such interconnection is vital to their emerging businesses. By using high-capacity short-haul microwave links in this manner, Ameritech will be able to speed the implementation of its wireline service by being able to activate a link without the need for procurement of rights of way and construction of wireline facilities. Moreover, such microwave facilities are better suited for those settings where wirelines may be damaged by the effects of storm, snow, vandalism or floods and will help Ameritech provide its customers with the consistent, high-quality service they need. Therefore, Ameritech's proposed uses for 39 GHz facilities will help CMRS providers to rapidly implement service over their ever-changing and expanding systems.
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> * * * * * * * *
>
> Ameritech also seeks to utilize these 39 GHz channels to provide a variety of new, flexible and cost-effective services to its customers utilizing local area networks ("LANs"), to provide redundant paths of communications for links that are prone to flooding or which are used for priority and emergency communications, and to provide wireless local loop service, in appropriate settings.[18]

Due to this superiority, "[m]ore and more companies are expected to use shorthaul microwave facilities as an alternative to local exchange telephone lines or other alternative services."[19]

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[17]BizTel at 6-10; ALTS at 1.

[18]Ameritech at 2-3.

[19]TGI at 9.

B. Harmonizing Requirements for the 37 GHz Band and the 39 GHz Band are Necessary.

Not only is there support for adopting channelization, technical and licensing rules to make the 37 GHz band usable for FS providers, the record clearly reflects a need to harmonize such rules for the 37 GHz band and the 39 GHz band.[20]

PCIA states that "[t]hese bands are sufficiently proximate and fungible that unified regulations governing [their] assignment and use . . . is warranted."[21] Furthermore,

> [g]iven the substantial interdependency and technical similarity between the 37 and 39 GHz bands there would be little sense in adopting dissimilar channel plans and technical rules for the two bands. And, a common plan will encourage a competitive equipment market to develop by making sufficient spectrum available with consistent technical standards to warrant equipment manufacturers to enter, and/or devote substantial developmental resources to, this market segment.[22]

Harmonization would expedite availability of cost-effective equipment:

> [T]he Commission [must] adopt a channeling plan and technical rules that are consistent for both 37 and 39 GHz. This approach is essential to the development of a hardy point-to-point microwave market. In particular, consistency will allow a competitive equipment market to develop, as well as to enable these bands to be made available for a wider array of services (i.e., point-to-multipoint). If equipment manufacturers are faced with common technical standards, and sufficient spectrum in the 37 and 39 GHz bands, they will be encouraged to devote substantial resources to developing this market segment.[23]

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[20]WinStar at 11; Milliwave at 6-7; Columbia at 15-16; GEC at 3; Spectrum at 1-2; Altron at 2; INNOVA at 2; Alcatel at 2; DMC at 2.

[21]PCIA at 3.

[22]Milliwave at 7.

[23]Commco at 9. See also GTE at 3-4 (this proposal "will expedite the availability of equipment for the newly channelized band, and should result in lower equipment costs"); ART at 45-47; Astrolink at 12.

C. The Commission's Proposals For The 37 GHz Band Are In The Public Interest Because Needed FS Spectrum Would Be Made Available.

Inadequate spectrum is available for FS operations. TIA, in its Comments, documents the steady loss of this spectrum in the 6, 11, 18, 23 and 28 GHz bands.[24] Establishing channelization, technical and operating rules for FS users in the 37 GHz band would help alleviate this problem.

WinStar disputes the need for more FS spectrum. WinStar attempts to demonstrate that fiber copper and copper cable are substitutable for FS by arguing that they "are capable of being used for short hops with a similar transmission quality and reliability."[25] WinStar also argues that adequate FS spectrum exists in the 18, 23, 28 and 40 GHz bands, thereby minimizing the need for FS channels in the 37-40 GHz bands.[26] WinStar's arguments are without merit.

First, microwave is superior to fiber copper and copper cable. It can be deployed more rapidly, is more reliable, and is more cost-effective than the other two media.[27] Thus, fiber copper and copper cable are not substitutable for FS.

Second, the 18, 23, 28 and 40 GHz bands are not appropriate surrogates for the 37-40 GHz band. Wide area licensing is the most important characteristic of the 38 GHz band, which is a quite different application capability than is available in the 18 and 23 GHz bands. Based upon the different proposals for channelizing the 28 GHz band (e.g., 250, 500 or 1000 MHz blocks), it is unlikely that it could be used efficiently with the 50 MHz blocks in the 37-40 GHz band. Finally, the 40.5-42.5 GHz band still has not even be allocated in the U.S.

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[24]TIA at 5-8.

[25]WinStar at 29.

[26]WinStar at 27-30.

[27]See Section I.B, supra.

II. TECHNICAL RULES ARE NECESSARY

In the NPRM, the Commission proposes adopting only those technical requirements needed "to minimize interference between channel blocks and between service areas . . . ."[28] Specifically, for the 37 GHz and 39 GHz bands, the Commission proposed:

- foregoing specification of maximum transmitter power or directional antenna standards;
- establishing a maximum EIRP of +55 dBw to allow for increased reliability on long paths;
- adopting a 0.001% frequency tolerance to improve equipment frequency stability, thereby maximizing use of each channel block;
- revising the bandwidth rule to clarity that: (i) for channel block assignments, the authorized bandwidth is equivalent to an unpaired channel block assignment or to either half of a paired channel block assignment; and (ii) that equipment is permitted to operate over fully aggregated channel blocks without restriction;
- channelizing both the 37 GHz and 39 GHz bands with a 700 MHz separation between transmit and receive ("T/R") frequencies; and
- permitting licensees to subdivide channel blocks and to select antennas as they so choose.[29]

A. Flexible Technical Rules Are Preferred.

While recognizing the need to impose specific technical and operating rules on 37-40 GHz band licensees, most parties prefer the Commission's proposal that only minimal requirements be established. For example, AT&T states that "providing [the] licensees with full technical and operational flexibility will enable [them] to take advantage of innovations which make it possible to

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[28]NPRM at para. 115.

[29]NPRM at paras. 19, 20, 115, and 116.

use the same spectrum for new and additional services."[30] Similarly, ALTS prefers that the Commission "adopt liberal technical rules to encourage innovation . . . ."[31] Commco concurs:

> Certainly, the adoption of minimal technical rules will encourage technological innovation in these bands. Demand for services which are based on new and rapidly evolving technologies will increase incrementally; therefore, the rules adopted in this proceeding should be as flexible as possible to allow for growth.[32]

B. Establishing Appropriate Interference Protection Standards Is Critical.

All the Commission's proposed technical rules are grounded upon protecting against inter-system interference.[33] NSMA agrees that this approach is appropriate.[34] It believes that "effective streamlined procedures for precluding unacceptable interference to and from authorized 37 GHz and 39 GHz operations are essential to viable commercial operations, and are a critical factor in determining the attendant economic value of the spectrum."[35]

Adopting appropriate interference protection criteria is especially important given the Commission's proposal to license systems on a wide area basis instead of on a link-per-link basis:

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[30]AT&T at 9.

[31]ALTS at 2.

[32]Commco at 10.

[33]NPRM at para 115.

[34]NSMA is a "non-profit association dedicated to developing consensus industry recommendations for the conduct of frequency coordination among commercial and private FCC applicants, permittees and licensees engaged in the provision of a broad range of fixed and mobile services." Through its Working Group process, NSMA regularly publishes recommendations and reports, as regulatory and industry conditions warrant, which detail guidelines and/or technical information "intended to improve and streamline frequency coordination procedures for designated fixed or mobile radio service operations." NSMA at 3.

[35]NSMA at 1. See also Columbia at 13.

> For individual link licensing, the Part 21 coordination procedure works because the technical parameters of each link are prior coordinated and then filed with the Commission, including a showing that coordination has been completed. Because the Commission puts all applications on public notice, the industry has a means to ensure that each link for which applications have been filed has been properly coordinated.
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> * * * * * * * *
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> In contrast, the coordination that has taken place in the 39 GHz band with rectangular area licensing has been a simple survey of which co-channel applicants' blocks overlap. Because the technical parameters of each link (or any link) are not known at the time of application, there is no way to effectively analyze the interference potential with neighboring applicants or licensees. To analyze the interference potential, users would have to exchange actual link information after obtaining a license. There is no means to ensure that this information exchange will take place under area licensing since no further FCC filing is required. Specific information, although potentially not current, could be obtained from the data listings required to be filed with the FCC in 21.711(c) (if the Commission puts this information on public notice or makes it otherwise publicly available). However, with BTA licensing by auction, the Commission has proposed in the NPRM to delete the requirement of filing such a listing. Thus, there is some question as to whether Part 21 coordination as it is currently practiced in the industry is appropriate or applicable with area licensing.[36]

Efforts are underway to develop needed service area interference protection and frequency coordination standards. For example,

> NSMA is actively studying several procedural approaches to the coordination of operations in adjacent service areas. These approaches include the use of a power flux density threshold, as proposed by the Commission, and/or fixed separation distance triggers. Based on the findings to date of NSMA Working Group 3 "Coordination Procedures" . . . there are a number of technical issues that require further study before final conclusions can be reached regarding recommendations as to specific procedures for coordination among authorized 37 GHz and 39 GHz facilities.
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> * * * * * * * *
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> Of particular relevance to the specific request for comment contained in the NPRM, NSMA believes that the Commission's proposal for use of a power

[36]Comsearch at 6-7 (footnote omitted). See also DCT at 28.

> flux density threshold merits careful examination and analysis as to the practical implications of its computation and use prior to any final decision on the matter. Among other things, there does not appear to be sufficient available technical information to determine protection criteria for the various equipment types that may be employed by licensees. Moreover, there does not appear to be any consensus within the industry at this time as to the values that should be used to calculate a power flux density threshold that will provide adequate interference protection to victim receivers. Furthermore, the variability of path loss possibilities, including but not limited to the effects of terrain, vegetation and man-made features between the radiating station and the service area boundary, as well as the irregular nature of many BTA boundaries, is likely to lead to substantial difficulty in the preparation of compliance computations and may precipitate disputes as to their technical validity. Further study is indicated within the NSMA working group structure to address all of these issues, and to evaluate whether the use of fixed separation distances as triggers for notification and/or coordination may offer an appropriate alternative means of providing interference protection for 37 GHz and 39 GHz operations. This study process is complicated somewhat by the fact that the NPRM has set forth the prospect that variable technical parameters for antenna gain, pattern, and/or transmit power may be permitted in at least some portion or portions of the 37 GHz and 39 GHz bands.[37]

Similarly, Comsearch recommends that the Commission institutionalize the exchange of technical information for frequency coordination. It proposes requiring a licensee to maintain a computer data base of all its operating and proposed facilities, which would be provided periodically to the Commission, but also upon request to any potentially affected user (i.e., any co-channel or adjacent channel licensee with an appropriate coordination distance).[38] As Comsearch documents, this information is critical in the proposed wide-area environment because it would provide adjacent licensees needed information to work with each other and configure their systems so that interference would be minimized.[39] Once these requirements are implemented, users could institute a system of

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[37]NSMA at 5-7 (footnotes omitted). BizTel and ART expressly support NSMA's efforts. BizTel at 43-44; ART at 43. DCT also acknowledges the need for industry to reach a consensus on frequency coordination and interference protection standards. DCT at 28.

[38]Comsearch at 7-8.

[39]Comsearch at 8-11.

coordination with an initial data base exchange and then regular updates showing any changes since the last exchange.[40]

TIA supports NSMA's efforts at developing frequency coordination and interference protection guidelines. It recommends that the Commission defer establishing interference protection guidelines until NSMA's standard-setting process is completed.

In the interim, TIA supports Comsearch's recommendation to make information exchange mandatory among 37-40 GHz band licensees. Frequency coordination is essential to protecting against harmful interference. If such safeguards are not established, the goals set forth in this proceeding will be frustrated.

C. The Commission Should Grandfather Existing Equipment.

If the Commission's technical rule proposals are adopted, certain technical characteristics of existing equipment would have to change. This "flash cut" would be inappropriate because users would lose the capabilities available with, and their undepreciated investment in, existing equipment.

Commco recommends that the "Commission . . . grandfather any equipment, not just microwave paths, installed [before effective date of rules] with the lower, 0.03% tolerance level" to ensure that equipment manufacturers do not lose the value of their embedded investment and that users have a ready supply of competitively-priced inventory.[41] BizTel recommends the establishment of a "fixed transition period" (e.g., a specific time period or the remaining useful life of the equipment) for grandfathering equipment.[42]

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[40]Comsearch at 8. AT&T makes a similar proposal. AT&T at 13-16.

[41]Commco at 10-11.

[42]BizTel at 41.

TIA agrees. Existing investment in equipment should be protected. With the type of equipment now available, technical operations would not be adversely affected if some form of grandfathering is permitted. Thus, TIA urges the Commission to adopt appropriate "grandfathering" provisions to protect existing equipment.

D. Link-Per-Link Licensing for Private FS Licensees Must Be Required.

In its comments, TIA proposes reserving a single channel pair for private FS users that would be licensed on a link-per-link basis.[43] The purpose of this set-aside is to exempt these utilities, government agencies and other licensees, which use the facilities for their internal needs, from an unnecessary financial burden.

This proposal is supported by several other parties. PCIA believes the set-aside for private FS licensees is needed because, "[a]s higher technology private systems are deployed, their needs for backhaul capacity will also grow and some efficient accommodation should be made for those users that do not require BTA coverage."[44] Pacific Bell Mobile agrees:

> [we] . . . support making one or two pairs available on a link by link basis. This is particularly desirable if the Commission decides that licensing will be done on the basis of auctioning. This would protect those users that only need a very small number of links and those that are uncertain of their needs for point to point links at the time of auction. It would also deter auction winners from charging exorbitant prices for use of the spectrum by those who need some links but did not win or participate in the auction. This type of set aside would be particularly valuable for small businesses and private users of point-to-point links. Even if, the spectrum is licensed on a BTA basis without an auction, a set aside of one or two pairs for a link by link assignment would be valuable for entities that simply do not need an entire BTA.[45]

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[43]TIA at 19.

[44]PCIA at 5.

[45]Pacific Bell Mobile at 5.

TDS shows that link-per-link licensing would be useful for private FS users and for rural telephone companies.[46] Comsearch sees such a set-aside as a solution to the Government sharing problem.[47] Therefore, the Commission must set aside a single channel pair for private FS users and it must license this pair on a link-per-link basis.

E. The Proposed Minimal Technical Standards Are Appropriate.

To ensure that its interference protection goals are met, the Commission proposes myriad specific technical requirements, including maximum EIRP, efficiency rate, frequency tolerance, and antenna standards.[48] Adoption of these standards generally is supported.[49] In addition, most parties agree with the Commission and TIA that licensees should be able to channelize their systems as they choose.[50] Finally, T/R spacing at 700 MHz instead of 800 MHz generally is approved.[51]

Inexplicably, however, some parties propose that the Commission forego imposing most, if not all, the technical rules proposed in the NPRM.[52] This "hands-off" approach, however, is inappropriate and premature because it would: (i) unleash large numbers of incompatible operators in individual markets without adequate safeguards against harmful interference; (ii) increase research

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[46]TDS at 5-6.

[47]Comsearch at 3. See also Alcatel at 2; BizTel at 42.

[48]NPRM at para. 115.

[49]DMC at 2; Alcatel at 2; BizTel at 42; Commco at 9-11; Astrolink at 11-12; INNOVA at 3-4.

[50]WinStar at 11; BizTel at 42; GTE at 4; INNOVA at 3; Altron at 3; Pacific Bell Mobile at 4; Spectrum at 3; TDS at 4.

[51]Alcatel at 2; ART at 45-47; Spectrum at 3; Altron at 3; GEC at 5-6. A limited number of parties favor 800 MHz T/R spacing. Pacific Bell Mobile at 4; PCIA at 5. TIA continues to favor 700 MHz T/R spacing to optimize spectral efficiency and to ensure common equipment standards. Nevertheless, whatever approach the Commission takes, TIA strongly recommends that it adopt a uniform channelization to ensure the availability of economical equipment.

[52]WinStar at 57-63; ART at 35-45; DCT at 27-29; Columbia at 13-15.

and development costs caused by doubt over how the bands would be used and by the need to overcompensate in designing interference protection standards, in an uncontrolled environment, to address all such possible uses; (iii) create uncertainty over potential market demand and related production and performance requirements because specific uses for the bands are not prescribed; and (iv) impede the interoperability of devices domestically and internationally. Once 37-40 GHz systems are in place and empirical data are collected with respect to operational characteristics, the Commission could revisit this issue and determine what, if any rules, remain appropriate.

One of the commenters, Angel, is a high altitude aircraft system which would approximate the service of a geostationary MSS system with a footprint of 100-240 mile-wide coverage. Angel wants to use the 39 GHz band for its mobile links.[53] To accommodate its needs. Angel proposes that the Commission liberalize its power flex density ("pfd") and related standards.[54] This proposal is totally unacceptable because it would permit operation at a level which is 65 dB worse than already questionable ITU limits.

III. MOBILE USERS MUST BE KEPT OUT OF THE 37-40 GHz BAND, BUT POINT-TO-MULTIPOINT USERS SHOULD BE PERMITTED ACCESS AT A LATER DATE

Appropriately, the Commission has limited its proposals to establishing a channel plan, license requirements, and technical rules only for FS operations in the 37-40 GHz band.[55] However, it also inquired if the 37-40 GHz band could be made available for other fixed (e.g., point-to-multipoint) and mobile users.[56]

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[53]Angel at 5.

[54]Angel at 5-8.

[55]NPRM at para. 1.

[56]NPRM at paras. 13 and 110.

A. Mobile Users Must Be Kept Out.

TIA strongly opposes permitting mobile users to operate in the 37-40 GHz band. Such entry would destroy this band for FS users. As TIA demonstrated in its Comments:

> Mobile and fixed users are like oil and water. Significant differences in operating characteristics would have to be resolved, which is particularly difficult because of the problems fixed systems have coordinating with mobile systems. The potential for interference is too significant. Indeed, FS users already have surrendered the 2 GHz band for mobile PCS users.
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> * * * * * * * *
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> TIA strongly objects to permitting mobile users to share this band with FS users because: (i) mobile receiver selectivity characteristics are unacceptable; (ii) coordination is quite difficult between fixed stations and mobile facilities; and (iii) international spectrum harmony would be disrupted (i.e., in Europe, this band is used only for FS) and manufacturing economies of scale would be frustrated.[57]

Other parties echo TIA's concern regarding mobile service in the 37-40 GHz band. PCIA understands the need to close the 37-40 GHz band to mobile users because such "operations, even at low power, can pose a threat to fixed systems since such users are nomadic and could attempt to transmit within the line-of-sight of a high gain fixed receiver."[58] In its comments, Harris states that "the virtual impossibility of co-location of mobile and fixed service systems as well as the increased density of millimetric radio links coupled with their expected evolution toward point-to-multipoint structures [could make] any mobile service sharing . . . unrealistic . . . . ."[59]

Besides the serious technical problems attendant to mobile use of the 37-40 GHz band, there are other compelling reasons to keep such users out of the band. There certainly is no lack of mobile

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[57]TIA at 22-23 (footnote omitted).

[58]PCIA at 4.

[59]Harris at 4. See also Pacific Bell Mobile at 5; Alcatel at 2; BizTel at 14 footnote 9.

frequencies in other bands. Substantial amounts of spectrum have been allocated for terrestrial and space-based mobile services and related infrastructure needs (i.e., feeder links) from the UHF bands up to the 28 GHz band. Most of these allocations have been made at the expense of FS users. Moreover, permitting unlimited mobile use of the 37-40 GHz band would handicap U.S. Government control over spectrum allocation matters. Any efforts by the Commission to coordinate allocations on a national or international basis would be made significantly more difficult because of the uncertainties associated with mobile use of the band.

Unfortunately, other parties ignore how mobile services will threaten FS operations in the 37-40 GHz band.[60] Unlike TIA which has documented how mobile services will degrade FS operations,[61] the "mobile" advocates fail to present any documentation that sharing would work. No evidence is submitted that mobile users need more spectrum. Absent such documentation, the Commission cannot justify permitting mobile users to share the 37-40 GHz band.

Fixed Wireless Local Services -- The Commission, in a separate proceeding, proposes allowing all broadband Commercial Mobile Radio Service ("CMRS") licensees to provide fixed wireless local services without restriction.[62] It also inquires if CMRS provision of other fixed services should be permitted under similar conditions.[63] WinStar, in Comments on that rule making,

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[60]WinStar at 37-40; ART at 45; TDS at 4; Milliwave at 27; Ameritech at 8-9.

[61]TIA at 22-23.

[62]Amendment of the Commission's Rules To Permit Flexible Service Offerings in the Commercial Mobile Radio Services, Notice of Proposed Rule Making, WT Docket No. 96-6 (FCC 96-17, released January 25, 1996) ("CMRS Flexibility NPRM") at para. 23.

[63]CMRS Flexibility NPRM at para. 14.