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FEDERAL COMMUNICATIONS COMMISSION
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May 5, 1997

BY HAND DELIVERY

Mr. William F. Caton
Secretary
Federal Communications Commission
1919 M Street, N.W., Suite 222
Washington, D.C. 20554

Re: IB Docket No. 97-95, RM-8811

Dear Mr. Caton:

Attached for filing please find an original and nine copies of the Comments of Hughes Communications, Inc. in the above-referenced rulemaking. Thank you.

Sincerely,

Arthur S. Landerholm*
of LATHAM & WATKINS

Enclosures

No. of Copies rec'd 0+9
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Before the
FEDERAL COMMUNICATIONS
Washington, D.C. 20

Original

In the Matter of:	
Allocation and Designation of Spectrum for Fixed-Satellite Services in the 37.5-38.5 GHz, 40.5-41.5 GHz, and 48.2-50.2 GHz Frequency Bands; Allocation of Spectrum to Upgrade Fixed and Mobile Allocations in the 40.5-42.5 GHz Frequency Band; Allocation of Spectrum in the 46.9-47.0 GHz Frequency Band for Wireless Services; and Allocation of Spectrum in the 37.0-38.0 GHz and 40.0-40.5 GHz for Government Operations	IB Docket No. 97-95 RM-8811

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

COMMENTS OF HUGHES COMMUNICATIONS, INC.

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COUNSEL FOR HUGHES
COMMUNICATIONS, INC.

May 5, 1997

*Admitted only in California.

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

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In the Matter of:	)	
	)	IB Docket No. 97-95
Allocation and Designation of Spectrum	)	
for Fixed-Satellite Services	)	RM-8811
in the 37.5-38.5 GHz, 40.5-41.5 GHz,	)	
and 48.2-50.2 GHz Frequency Bands;		

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Before the
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Washington, D.C. 20554

In the Matter of:	)	
Allocation and Designation of Spectrum for Fixed-Satellite Services in the 37.5-38.5 GHz, 40.5-41.5 GHz, and 48.2-50.2 GHz Frequency Bands; Allocation of Spectrum to Upgrade Fixed and Mobile Allocations in the 40.5-42.5 GHz Frequency Band; Allocation of Spectrum in the 46.9-47.0 GHz Frequency Band for Wireless Services; and Allocation of Spectrum in the 37.0-38.0 GHz and 40.0-40.5 GHz for Government Operations	)	IB Docket No. 97-95 RM-8811

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In the Matter of:	)	IB Docket No. 97-95
Allocation and Designation of Spectrum for Fixed-Satellite Services in the 37.5-38.5 GHz, 40.5-41.5 GHz, and 48.2-50.2 GHz Frequency Bands; Allocation of Spectrum to Upgrade Fixed and Mobile Allocations in the 40.5-42.5 GHz Frequency Band; Allocation of Spectrum in the 46.9-47.0 GHz Frequency Band for Wireless Services; and Allocation of Spectrum in the 37.0-38.0 GHz and 40.0-40.5 GHz for Government Operations	)	RM-8811

COMMENTS OF HUGHES COMMUNICATIONS, INC.

Hughes Communications, Inc. ("HCI") submits these Comments in response the Commission's above-captioned Notice of Proposed Rulemaking ("NPRM"), which sets forth a domestic reallocation and designation plan for the 36 - 51.4 GHz band (the "40 GHz band").

Introduction and Summary

HCI lauds the Commission for its objective of taking a comprehensive approach to planning the future use of the large band of spectrum at 40 GHz. Sensible spectrum policy and planning recommends just such an approach. Yet, despite the Commission's commendable intention, the Commission's proposed band plan is deficient in several important respects. By designating only 2 GHz of spectrum in each direction for satellite systems in the 40 GHz band,

while simultaneously foreclosing use of 6.6 GHz of spectrum for satellite systems,[1] the Commission's proposal fails to accommodate the future spectrum needs of the next generation of Fixed Satellite Service ("FSS"), Broadcasting Satellite Service ("BSS"), and Mobile Satellite Service ("MSS") systems.

The demand for FSS, BSS, and MSS services is rapidly increasing as our communications infrastructure strains under the explosive growth of the demand for the transportation of voice, video, and data, especially high-bandwidth, high-speed transportation. The existing satellite systems presently operating or planned for deployment using the C, Ku, and Ka band allocations will not be sufficient to satisfy this rapidly expanding demand. The existing global allocations for satellite services in the 40 GHz band represent crucial expansion spectrum needed for new satellite systems, particularly as the band segmentation at Ka band has greatly reduced the total capacity that can be provided by any Ka band satellite system. Moreover, satellite technology has developed to the point where the amount of possible capacity is no longer primarily constrained by spacecraft hardware. To the contrary, today's spacecraft are capacity constrained principally by the amount of spectrum that is allocated for them to use. Thus, larger satellite spectrum allocations facilitate the development of higher capacity systems, which, in turn, reduce the ultimate cost of service to the end user, and increase the competitiveness of satellite services. As such, the continued development of the National

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[1] The proposed band plan designates the following frequencies for Wireless Services: 37.0 - 37.5 GHz, 38.5 - 40.5 GHz, 41.5 - 42.5 GHz, 46.9 - 47.0 GHz, 47.2 - 48.2 GHz, and 50.4 - 51.4 GHz. NPRM at ¶ 14. These frequency bands total 5.6 GHz. Further, the 1 GHz band at 36.0 - 37.0 GHz has Fixed and Mobile Service allocations, but no satellite allocation. Although the proposed band plan would designate 40.0 - 40.5 GHz for Wireless Services, NPRM at ¶ 14, the Commission has not proposed to add a Fixed Service and/or Mobile Service domestic allocation to that band. *See* NPRM at Appendix B, Proposed Rule § 2.106.

Information Infrastructure and the Global Information Infrastructure, as well as our information-based economy, require that the Commission maintain existing global allocations for, and set aside sufficient spectrum for licensing of, the next generation of FSS, BSS, and MSS systems in the 40 GHz band.

Yet, the Commission's NPRM, by designating merely 2 GHz in each direction for FSS, does not sufficiently anticipate or set aside sufficient spectrum for the future spectrum needs of satellite services. The NPRM denigrates BSS use of the 40 GHz band, makes no provision for MSS service in the 40 GHz band, and completely fails to discuss or recognize the future spectrum needs of the satellite industry beyond the one system application now on file. The NPRM also endangers the existence of uniform global frequency allocations in the 40 GHz band.

In addition, the NPRM threatens to move forward with reallocations or designations for the 40 GHz band while significant contingencies that affect the assumptions underlying the NPRM proposals remain unresolved. The amount and extent of spectrum needed by government users in the 40 GHz band remains unknown to the Commission and industry alike. Of course, without an accurate picture of the amount of spectrum truly available for commercial uses, the Commission cannot accurately accommodate the needs of satellite and terrestrial users in the 40 GHz band. Also, the NPRM proposals are contingent upon obtaining changes to international allocations at WRC-97, which are far from certain. Further, in each contingency, the satellite industry bears the full burden of an unsuccessful resolution of the issue. Therefore, the Commission should refrain from taking any action on the proposed band plan, or any of the other pending proceedings relating to this NPRM, until these contingencies have been definitively resolved.

Finally, as the Commission is well aware, preparations for the upcoming WRC-97 are currently underway at the Conference Preparatory Meeting ("CPM") in Geneva. The results of that preparatory meeting will be critical to understanding the international compatibility of the NPRM proposals. HCI is actively participating in the CPM and intends, in the reply comments in this proceeding, to address the impact of that meeting, and also present an alternative band plan that addresses these international issues.

I. ADEQUATE SPECTRUM MUST BE MAINTAINED FOR FUTURE COMMERCIAL SATELLITE APPLICATIONS IN THE 40 GHZ BAND

HCI has for some time viewed the existing domestic and international satellite allocations in the 40 GHz band as both necessary and appropriate to accommodate the needs of future generations of communications satellites, including FSS, MSS, and BSS systems. In fact, Hughes, TRW, Lockheed Martin and other satellite companies pioneered the use of advanced satellite communications in the 40 GHz band through development of the MILSTAR system, which provides critical services to the U.S. military. The 40 GHz band plays a prominent role in HCI's long-term business plans.

Ensuring the continued existence of adequate spectrum allocations for satellites in the 40 GHz band also will serve to enhance the Global Information Infrastructure ("GII") and the National Information Infrastructure ("NII"). Additional satellite spectrum will be needed in the immediate future to accommodate the burgeoning growth in voice, data and video transport services, as well as the expansion of global broadband communications. Thus, it is important that satellite spectrum allocations be kept available on a global basis. With an eye toward the need for global satellite allocations, and in order to efficiently and effectively accommodate the

wide breadth of future satellite services, the Commission should be careful to preserve a substantial amount of bandwidth for satellites at 40 GHz.

A. Demand is Rapidly Expanding for FSS, BSS, and MSS Services

Our society and economy, as well as those of the world, are increasingly based on the rapid exchange of increasingly large amounts of information. The digital revolution and the fantastic growth in computing power have enabled the exponential spread of applications that facilitate rapid and ubiquitous access to information. Area codes are multiplying with the proliferation of facsimile machines, wireless telephony and paging, and, perhaps most importantly, modems for access to the Internet. Although the dispersion of voice-based communications has been most visible to the public in recent years, the composition of traffic on our communications infrastructure is increasingly shifting from bandwidth-frugal voice traffic to bandwidth-hungry data traffic. This trend is largely driven by the fantastic growth of data-applications such as the Internet, videoconferencing and video file transport. The rapid adoption of these data-intensive technologies by business has fueled the demand for high-bandwidth communications services. There is no indication that this accelerating demand for transportation of information, and especially high-bandwidth, high-speed transportation, will moderate in the future.

In turn, as the new bandwidth-intensive applications have gained both popularity and added complexity, bottlenecks have developed at the desktop, the server, the hub, and the switch. In fact, the terrestrial wireless and wireline infrastructure is currently struggling to match the expanding demand for high-speed data communications. Network congestion and terrestrial brown-outs currently are not uncommon. The short-term solutions to this congestion, if sufficient to address the existing demand, will not satisfy the future expansion of demand for

these services. Expansion and upgrade of the terrestrial network, of course, potentially offers an element of the solution to this problem, but the cost and practicality of constructing a high-speed terrestrial data network to all parts of the world is highly limiting. Undoubtedly, the near-term expansion of the terrestrial data network will occur in the large cities, leaving suburban and rural areas, as well as developing countries, unserved by broadband capacity. Creation of alternative paths for the transport of data traffic is therefore a vital national interest.

The terrestrial communications infrastructure is not alone in supporting the increased demand for communications capacity. Current satellite services are in ever-greater demand. As the Commission recognized nearly two years ago with regard to FSS, the C and Ku bands are already heavily utilized.[2] The international "land rush" that has marked the Ka band in recent years also reflects a rapidly increasing demand for FSS and MSS services. Demand has also markedly increased worldwide for the distribution of video programming via satellites in both the BSS and FSS bands. Finally, ITU studies have predicted a significant increase in demand for MSS services.

Satellites offer significant public interest benefits that are not advanced by any other means of communications and that cannot be provided absent the continued availability of suitable satellite spectrum. Most significantly, satellites offer ubiquitous service at a cost that is distance insensitive. This characteristic of satellite communications allows satellite operators to provide first- and last-mile connectivity much more efficiently and cost-effectively than

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[2] 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, *Third Notice of Proposed Rulemaking*, 11 F.C.C. Rcd. 53 at ¶ 55 (rel. July 29, 1995) ("28 GHz Third NPRM").

terrestrial systems. Satellite systems also offer instantaneous deployment to thin route areas without the high distance-based tariffs that are characteristic of terrestrial networks. Yet, the proposed band plan does not provide sufficient spectrum to allow the many benefits afforded the public by satellite service to be implemented at 40 GHz.

The satellite industry is adding new services and additional capacity to meet this growing demand for bandwidth. Yet, at bottom, the current trends suggest that within the next decade, the satellite systems presently operating or planned for deployment using the C, Ku, and Ka band allocations will not be sufficient to meet the continued explosive demand for broadband satellite communications. In order to ensure the continued development of both the NII and the GII, as well as our information-based economy, the Commission must maintain existing global allocations for, and set aside sufficient spectrum for licensing of, the next generation of FSS, BSS and MSS systems in the 40 GHz band.

B. Existing Government Systems Demonstrate the Viability of Satellite Services at 40 GHz.

The MILSTAR system demonstrates that the 40 GHz band is viable for the provision of satellite services in the immediate future. MILSTAR is a satellite communications system that provides, secure, jam-resistant communications for high-priority military users. The system, which is the most advanced military satellite communications system to date, links military command authorities with a wide variety of small, highly-mobile ground terminals installed on vehicles, ships, submarines and aircraft. The first two MILSTAR satellites have been in orbit and operating since 1995 and the next four satellites are scheduled for launch in 1999 through 2002. Hughes, TRW, Lockheed Martin and other satellite companies developed

the technology necessary to enable the use of the 40 GHz band for advanced satellite communications, such as the MILSTAR system.

HCI and other satellite companies will build on the pioneering MILSTAR technology, as well as the governmental and commercial systems deployed or to be deployed at Ka band, to provide the next generation of broadband satellite services at the 40 GHz band. Just as with the development of the Ka band, where the NASA ACTS communications satellite led to the commercial development of that band,[3] public moneys used to develop the MILSTAR technology for government use of the 40 GHz band can and will pay a dividend for American taxpayers and consumers as that technology is applied to new commercial satellite systems, but only if there is a sufficient spectrum allocation to do so.

II. THE NPRM DOES NOT DESIGNATE SUFFICIENT SPECTRUM FOR SATELLITE SYSTEMS AT THE 40 GHZ BAND

While the NPRM lauds the Commission's designation of "4 GHz of spectrum for FSS" in the 40 GHz band,[4] the Commission's NPRM fails to discuss or even recognize the future spectrum needs of the satellite industry. Notably absent from the NPRM is any discussion of how the future needs for satellite services can be met when over 8.2 GHz of existing global satellite allocations at 40 GHz are being effectively reduced in the U.S. by over one-half, to merely 4 GHz of spectrum for satellite licensing. In forming the proposed band plan, the Commission indicates that it considered the "requirements for both fixed and satellite services as

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[3] *See* 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*, 3 C.R. 857 at ¶ 7 (P & F) (rel. July 22, 1996) ("28 GHz Report").

[4] NPRM at ¶ 14.

expressed in applications now pending" and other "expressions of interest in providing services in these bands."[5] Yet, sound spectrum management also requires that the Commission look beyond short-term demand and anticipate the future needs for satellite spectrum. The one satellite application "now pending" for use of the 40 GHz band simply does not reflect the breadth of the satellite industry's interest in the 40 GHz band or the wide range of satellite services that will develop in the 40 GHz band in the future, as long as the Commission makes sufficient spectrum available for licensing to satisfy the market demand for these services.[6]

The long lead-time needed for the development and implementation of satellite systems often means that terrestrial companies are able to roll out portions of their systems in new frequency bands in advance of satellite companies. This results from the fact that satellite equipment, which in contrast to terrestrial equipment simply cannot be recovered and repaired once it is deployed, must be significantly more technically mature and reliable before it can be incorporated into new commercial systems. This dynamic should not lead to the unfounded impression that terrestrial companies have a greater demand for, or an ability to use, the 40 GHz band. To the contrary, the existing 40 GHz satellite allocations are the only practicable frequency bands available for the next generation of satellite services, particularly as the band segmentation of Ka band has greatly reduced the total capacity that can be provided by any Ka band system. As such, the 40 GHz spectrum is expansion spectrum that is critical to

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[5] NPRM at ¶ 11.

[6] As the Commission is well aware, satellite applications have traditionally been acted upon in processing rounds. The current lack of additional satellite applications in the 40 GHz band reflects the absence of a filing window, not the absence of satellite-industry interest in the 40 GHz band. HCI intends to make an appropriate filing for the 40 GHz band when the upcoming window opens.

accommodate the next generation of satellite services. Although the satellite industry had not surmounted the engineering challenges to providing commercial service posed by use of frequencies at 40 GHz as recently as two years ago, the recent technological advances and the transfer of know-how from military systems now support the promise of viable commercial 40 GHz systems within the next five years. Indeed, the current implementation of satellite systems at Ka band (which was fallow only five years ago) demonstrates the speed with which technology can develop to allow commercial use of these higher bands.

The Commission's designation of merely 2 GHz in each direction at 40 GHz for future satellite services simply does not sufficiently anticipate the future spectrum needs for satellite services. In order to serve the expanding demand for broadband satellite communications services described in Section I above, each type of satellite service, FSS, BSS and MSS, will need access to sufficient spectrum in the 40 GHz band . The expansion needs of these three different services simply cannot be packed into 2 GHz of spectrum in each direction. Moreover, satellite technology has developed to the point where the amount of capacity is no longer primarily constrained by spacecraft hardware. To the contrary, today's spacecraft are capacity constrained principally by the amount of spectrum that is allocated for them to use. Thus, larger satellite spectrum allocations facilitate the development of higher capacity systems, which, in turn, reduce the ultimate cost of service to the end user, and increase the competitiveness of satellite services.

As the Commission has implicitly recognized by proceeding with a proposed designation of spectrum for satellite use in the 40 GHz band, the expansion space for satellite

services in the lower bands is quite limited. The C and Ku bands are already heavily utilized[7] and are largely unavailable for FSS expansion needs. And although the applications planned for the Ka band will provide some relief for congestion in the C and Ku bands, the limited amount of bandwidth in the Ka band means that the Ka band cannot satisfy all future demand for satellite service.[8] Likewise, there are significant constraints upon additional use of the BSS allocations at 12 GHz due to the "planned" nature of this band. Indeed, the Commission has recognized the inherent limits on the use of this band in limiting the number of participants in the recent DBS auction.[9] Finally, the Commission has had a number of well-known difficulties on the international front in obtaining adequate spectrum for the MSS services in the L and S bands, and there are no clear alternatives for accommodating MSS needs elsewhere.

The existing and future demand for FSS, BSS, and MSS illustrates why existing spectrum allocations for these services should be preserved for the future. The Commission has recognized the need for satellite allocations at 40 GHz in proposing to designate spectrum for FSS use. Yet, the NPRM designates spectrum only for FSS, denigrates BSS use of the 40 GHz band, and makes no provision, either implicitly or explicitly, for MSS service. The Commission

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[7] 28 GHz Third NPRM at ¶ 55.

[8] In the Commission's Millimeter Wave proceeding, ET Docket No. 94-124, HCI initially advocated moving the LMDS service to 2 GHz between 40.5 and 42.5 GHz and freeing up 2 GHz of spectrum at Ka band for satellite services. This position reflected the belief that a 2.5 GHz contiguous allocation in the Ka band for satellite services would have furnished an opportunity to provide a wide variety of satellite communications from this band. The Commission's subsequent designation of 850 MHz to LMDS and de facto allocation of another 650 MHz to three satellite licensees has foreclosed the development of many additional satellite services in that band.

[9] *See* Revision of Rules and Policies for the Direct Broadcast Satellite Service, 11 F.C.C. Rcd. 9712 at ¶ 28 (rel. December 15, 1995).

has not provided a compelling or even sufficient rationale to conflate the allocations of three satellite services into 2 GHz of frequency in each direction.

Despite all of these considerations, the Commission's proposed band plan would effectively reduce by over 50 percent -- from 8.2 GHz to 4 GHz -- the bands that are available, under current U.S. allocations, for satellite services between 36.0 and 51.4 GHz.[10] As such, the Commission's proposed band plan, by designating only 2 GHz in each direction for satellite service expansion spectrum in the 40 GHz band, would have a significant and adverse impact on the future of the U.S. satellite industry.

III. THE NPRM THREATENS THE EXISTENCE OF UNIFORM GLOBAL FREQUENCY ALLOCATIONS IN THE 40 GHZ BAND

The 40 GHz band is particularly valuable as a satellite expansion band because of the uniform existence of global allocations for all types of satellite services -- FSS, MSS and BSS. The existence of global spectrum allocations is an important factor that allows satellite systems to fully exploit their intrinsic spectrum efficiency. By their inherent nature, satellites can offer ubiquitous service at a cost that is distance insensitive. For example, satellites are the means by which telephony has been expanded to unserved portions of Alaska. Likewise, BSS service has allowed many rural customers to receive affordable multi-channel video for the first time. Thus, satellites provide an important link in serving underserved households that never will be connected to high-capacity local telecommunications service, either because they are located in rural or suburban areas, or because they are located in developing countries. But to

[10] In contrast, the band plan makes available 6.6 GHz for wireless services on a primary basis, and another 4 GHz on an underlay basis, for a total of 10.6 GHz for wireless services.

provide this role on a cost-effective basis, satellites are dependent on the existence of consistent spectrum allocations across their service area.

Global allocations are important to satellite systems for a number of reasons. As the Commission is aware, satellite operators increasingly are developing systems on a global basis to meet the international needs of their customers. Having consistent spectrum allocations across the globe allows all spacecraft in the system to share a common set of frequencies, simplifies the system design, reduces the cost of the spacecraft, and reduces system weight (thereby lowering launch costs). Moreover, commonality in spacecraft design facilitates the prompt in-orbit restoration of capacity of any failed spacecraft, and allows for the development of low-cost transmit/receive equipment around the world.

The Commission is well aware of the importance of global satellite allocations, having successfully advocated at WRC-92 for a global MSS allocation at L band, and at WRC-95 for a global NGSO FSS allocation and a global allocation for NGSO MSS feeder links at Ka band. Additionally, now that MSS needs at S band are becoming more critical, the U.S. has proposed conforming the MSS allocation there on a global basis.

In light of this prior experience, and given the value of global allocations to satellite use of spectrum, it is imperative that existing global satellite allocations not be dismantled. Yet, the proposed band plan would decimate existing global satellite allocations in over 4 GHz of spectrum. For example, the designation of the 41.5 - 42.5 GHz band for wireless services and the "upgrade" of existing secondary fixed and mobile allocations in this band would put the U.S. at odds with the BSS allocation for this band in the rest of the world. The designation of wireless services in the 41.5 - 42.5 GHz band also would impose an

insurmountable burden on the ability to deliver video services to small, ubiquitous satellite antennas and thereby destroy the global satellite allocation in that band.

As the Commission is well aware, preparations for the upcoming WRC-97 are currently underway at the Conference Preparatory Meeting ("CPM") in Geneva. The results of that preparatory meeting will be critical to understanding the international compatibility of the NPRM proposals. HCI is actively participating in the CPM and intends, in the reply comments in this proceeding, to address the impact of that meeting, and also present an alternative band plan that addresses these international issues.

IV. ALL CONTINGENCIES MUST BE RESOLVED BEFORE PROCEEDING WITH ANY PART OF THE BAND PLAN

HCI applauds the Commission's intention to plan comprehensively the development of the 36 - 51.4 GHz band. HCI wholeheartedly concurs with the view that sound spectrum policy requires planning for communications services that may not be fully implemented even within the next five years. Anticipation of and reservation for future spectrum needs should be the hallmarks of spectrum planning, as it was in WARC-79 when FSS, BSS, and MSS allocations were established in the 40 GHz band. However, the Commission should not begin to implement any part of this comprehensive blueprint for the 40 GHz band until the significant contingencies that will affect the underlying assumptions behind this proposal have been resolved. These two significant contingencies are the ability of satellite systems to share with government users, and whether the U.S. can obtain new global satellite allocations at WRC-97.

A. Government Sharing Issues Must Be Resolved Before the Commission's Band Plan is Implemented.

The Commission must have additional information regarding government sharing with commercial satellite services before any part of its band plan can be implemented. As the Commission implicitly recognized in the NPRM,[11] without an accurate picture of the amount of spectrum truly available for commercial uses, the Commission cannot accurately accommodate the needs of the satellite and terrestrial interests in the 40 GHz band. The information needed to assess this situation simply is not available to the commercial satellite industry.

The Ka band presents a lesson in this regard. The Commission knows only too well the requests to accommodate Government spectrum needs that came forward well after the Commission had developed the band plan for the Ka band.[12] Indeed, these additional Government needs have caused HCI significant difficulty in implementing their proposed services at the Ka band. The Commission saw similar problems arise with the relocation of DEMS, a licensed service, from the 18 GHz Band on national security grounds. As it is no secret that government systems, disclosed or undisclosed, exist in the 40 GHz band, it is imperative that both the Commission and industry fully appreciate the impact of government use of these bands before implementing or agreeing to any segmentation of this band.[13]

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[11] NPRM at ¶ 18-19.

[12] *See* Amendment of Part 2 of the Commission's Rules to Allocate Spectrum for the Fixed-Satellite Service in the 17.8 - 20.2 GHz Band for Government Use, 10 F.C.C. Rcd. 9931 (rel. July 31, 1995).

[13] For example, the Commission's band plan indicates that future government uses of the 45.5 - 46.7 GHz band include Mobile (on a secondary basis), MSS and Radionavigation Satellite. NPRM at Appendix C. Yet, the NPRM contains no discussion, technical or otherwise, of these future uses. While these services are presently reflected in the domestic

Despite these uncertainties, the NPRM, by indicating that satellite bands may be better candidates than wireless services for sharing with Government systems,[14] places the burden of future or heretofore non-public Government demands for 40 GHz spectrum on satellite service providers. By placing this disproportionate burden on the satellite industry, the NPRM compounds its inadequate provision of satellite spectrum with the specter of further reductions in the amount of available satellite spectrum. The Commission's offer of 2 GHz in each direction to the satellite industry is clearly insufficient to accommodate the necessary future expansion of satellite services. The prospect of being reduced to 1 GHz or 1.5 GHz in each direction to accommodate government needs would make many commercial satellite systems in the 40 GHz band simply non-viable.

This problem of government sharing specifically arises in a part of the band -- 40.0 - 40.5 GHz -- where the Commission proposes to accommodate certain government space research and earth exploration satellite services. HCI views this part of the band as critical to future satellite services, as it contains 500 of the 1000 MHz in the 40 GHz band that is globally allocated for MSS. However, HCI is unable to comment on the impact that the space services proposed here might have on future use of these bands for commercial services because the Commission has not presented any specific information about how the government plans to use this part of the band. In light of these considerations, the Commission should not move forward with any part of its segmentation plan until the impact of government needs on commercial satellite systems is fully quantified.

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allocation table, 47 C.F.R. § 2.106, the government plans for these bands are of obvious relevance in developing a blueprint for the 40 GHz band.

[14] NPRM at ¶ 18.

B. The Commission's Band Plan Relies on International Allocation Changes That May Not Occur at WRC-97.

The 40 GHz band plan cannot be implemented in whole or in part until the results of WRC-97 are known, because the band plan is contingent on the availability of the 40.5 - 41.5 GHz band to accommodate FSS services, and no such allocation exists today. The NPRM proposes to add an FSS allocation to the existing BSS allocation at 40.5 - 41.5 GHz to provide the only band for 40 GHz GSO FSS in the U.S. Although there are other existing FSS allocations, those bands would no longer be available for FSS use in the U.S. if they were designated for high density fixed services. Aside from the fact that 1 GHz is an insufficient amount of bandwidth for the next generation of satellite systems at 40 GHz, there is no reason to believe that that an FSS allocation change can be effectuated at WRC-97. As the Commission recognizes, its proposal to add an FSS allocation may not even be broached until WRC-99.[15] And even if these proposals are considered at WRC-97, they are by no means assured of passage on a global basis, much less in any one region. To the contrary, it appears that Region 3 is not yet prepared to make any changes to allocations above 30 GHz.[16] Thus, if the Commission were to proceed with any part of its proposal before WRC-97, companies seeking to provide GSO FSS service could find that there is no place for them to deploy at 40 GHz in the U.S., as all of the spectrum that is available today will have been assigned to competing services.

Just as with the government sharing issues, any proposal to move forward with wireless designations in the face of the severe uncertainty about the ability to accommodate satellite services would place the full burden of the NPRM on a satellite industry that needs and

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[15] *See* NPRM at ¶ 34.

[16] *See* Asia-Pacific Telecommunity Provisional Views and Proposals for WRC-97 (April 1997).

has relied on the 40 GHz band for future satellite services. Therefore, the Commission should refrain from taking any action on the proposed band plan or any of the other pending proceeding relating to this band until after the conclusion of WRC-97. In particular, the Commission should not take any further action in the proceedings related to the 40 GHz band[17] because the implementation of those proposals will significantly limit the Commission's ability to modify its plan for the 40 GHz band if any element of the band plan cannot be implemented. There is no reason why the NPRM and the related pending proceedings cannot be delayed for six months until the conclusions of WRC-97 can be taken into account.[18]

V. THE COMMISSION SHOULD NOT DIVIDE SATELLITE SPECTRUM BY SERVICES OR TECHNOLOGIES AT THIS TIME

The NPRM proposes to segment the proposed FSS allocation into a GSO band with 1 GHz of spectrum in each direction and a NGSO band with 1 GHz of spectrum in each direction. HCI views this segmentation as premature. Moreover, there is no support in the record for such a division.[19] Certainly, adequate spectrum for satellite uses must be set aside and the breadth of satellite services, including GSO and NGSO, is relevant in making this determination. But the full scope of satellite spectrum needs in the 40 GHz band will not

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[17] Amendment of the Commission's Rules Regarding the 37.0-38.6 GHz and 38.6-40.0 GHz Bands, *Notice of Proposed Rulemaking and Order*, 11 F.C.C. Rcd. 5930 (1995); 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 Rulemaking*, 9 F.C.C. Rcd. 7078 (1994) and *First Report and Order and Second Notice of Proposed Rulemaking*, 11 F.C.C. Rcd. 4481 (1995).

[18] In fact, waiting for the conclusion of WRC-95 was the approach the Commission took only two years ago when it was faced with similar uncertainty about its ability to obtain certain new satellite allocations in connection with the 28 GHz proceeding.

[19] Indeed, the only pending NGSO application at 40 GHz indicates that it can coexist with the GSO FSS. *See* Motorola M-Star Application.

become clear until the filing window closes on the imminent 40 GHz processing round. Moreover, Hughes has long advocated the development and implementation of sharing criteria for NGSO systems that allow them to use the spectrum in a manner that does not preclude GSO systems in the same band. If the Commission allocates sufficient satellite spectrum in the 40 GHz band, BSS, FSS, and MSS systems, in both GSO and NGSO configurations, will undoubtedly utilize the band. Thus, the Commission should establish a large frequency band in the 40 GHz band for satellite use, but delay sub-division of this spectrum by service (BSS, FSS, MSS) and technology (GSO, NGSO) until it has opened a filing window and can assess the compatibility of the applications received.

CONCLUSION

The Commission's proposed reallocations and designations do not adequately provide for the long term satellite use of the 40 GHz band. Rather than reducing the amount of spectrum available to the satellite services, the Commission should recognize both the need to accommodate of satellite systems at these frequencies and the unavailability of higher frequencies for satellite operation for the indefinite future. Sound spectrum management and public interest considerations warrant maintaining, rather than reducing, the frequencies available for satellite use in the 40 GHz band.

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