

BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C.

In the Matter of)	
Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems)	ET Docket No. 00-258
Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use By the Mobile-Satellite Service)	ET Docket No. 95-18
The Establishment of Policies and Service Rules for the Mobile-Satellite Service in the 2 GHz Band)	IB Docket No. 99-81
Petition for Rule Making of the Wireless Information Networks Forum Concerning the Unlicensed Personal Communications Service)	RM-9498
Petition for Rule Making of UTStarcom, Inc., Concerning the Unlicensed Personal Communications Service)	RM-10024

TO: THE COMMISSION

**REPLY COMMENTS
OF THE AD HOC MDS ALLIANCE
ON THE FURTHER NOTICE OF PROPOSED RULE MAKING**

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SUMMARY

The Ad Hoc MDS Alliance (“Ad Hoc”), is a group of MDS licensees. In its comments in this proceeding, Ad Hoc strongly opposed relocation of MDS Channel 1 and 2 operations to provide spectrum for advanced wireless services. Nonetheless, in recognition of the National interest and to make its interests known, Ad Hoc provided a set of spectrum reallocation considerations, reviewed available spectrum for possible MDS replacement spectrum homes and recommended the 1910-1930 MHz band as that home.

Ad Hoc has reviewed the comments submitted in this proceeding. After that review, Ad Hoc continues to support the 1910-1930 MHz band as an acceptable relocation band for MDS Channels 1 and 2. But Ad Hoc also supports the relocation of MDS Channels 1 and 2 to the 1990-2010 MHz band.

Ad Hoc strongly opposes alternatives to those bands for MDS Channel 1 and 2 relocation. The 2385-2400 MHz band is especially inappropriate for such relocation, although it would provide an acceptable spectral home for displaced and future isochronous UPCS devices.

Finally, Ad Hoc reiterates the public benefits of harmonizing the service rules for MDS Channels 1 and 2 with those for MDS and ITFS operations in the 2500-2690 MHz band by granting MDS Channel 1 and 2 operations flexible use authority.

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The Ad Hoc MDS Alliance, by and through its attorneys ("Ad Hoc"),¹ hereby submits these reply comments in response to the *Memorandum Opinion and Order and Further Notice of Proposed Rulemaking* (the "FNPRM") in the above-referenced proceedings, released on August 20,

¹ The Ad Hoc MDS Alliance consists of the following entities: Atlanta MDS Company, Inc., Chicago MDS Company, Detroit MDS Company, Los Angeles MDS Company, Inc., Milwaukee MDS Company, Minneapolis MDS Company, New York MDS, Inc., Phoenix MDS Company, San Diego MDS Company, San Francisco MDS, Inc., St. Louis MDS Company, Inc.,

2001 (FCC 01-224). The date for submitting reply comments on the matters raised in the *FNPRM* was extended to November 8, 2001.²

I. BACKGROUND

Ad Hoc's members are licensees of MDS channels that operate in the 2150-2162 MHz band on either MDS Channel 1 or MDS Channel 2 in major markets. In its comments filed on October 22, 2001, Ad Hoc voiced its strong preference that the Commission not relocate MDS Channels 1 and 2 to alternative spectrum. Any such a relocation would disrupt existing consumer services dependent on those channels either for wireless cable or fixed broadband services. But Ad Hoc also recognized that avoiding a relocation may be unrealistic in view of the National interest and the October 5, 2001 statement of the NTIA on its behalf and on behalf of other Federal agencies declaring that just two bands were under consideration as advanced wireless services homes, one of which includes the spectrum assigned to MDS Channels 1 and 2.

Accordingly, and to offer useful and constructive guidance for a decision, if made, to reallocate MDS Channels 1 and 2, Ad Hoc's comments presented a series of critical considerations that should inform the relocation decision. Based upon those considerations, Ad Hoc determined that the 1910-1930 MHz band, now available to unlicensed PCS ("UPCS"), would be the best spectral home for displaced MDS Channel 1 and 2 operations.

Comments to the *FNPRM* of third parties that directly or indirectly address MDS relocation issues have provided some useful perspectives and information which warrant Ad Hoc's critique. These reply comments will focus upon those third party comments. First, these reply comments will address objections to and recommendations for the relocation of MDS

Washington MDS, Inc., Private Networks, Inc., Multipoint Information Systems, and Broadcast Data Corporation.

² *Order Extending Reply Comment Period*, DA 01-2533 (D. Chief, Wireless Telecommunications Bureau; rel. Oct. 30, 2001).

Channel 1 and 2 operations to the UPCS band between 1910 and 1930 MHz. Second, these reply comments will address alternatives suggested by third party commenters to such relocation. Finally, these comments will address proposals to conform the MDS Channel 1 and 2 allocation to the MDS/ITFS 2500-2690 MHz allocation by according flexible use authority to MDS Channels 1 and 2.

II. AD HOC BELIEVES THAT THE 1910-1930 MHZ BAND IS AN ACCEPTABLE RELOCATION BAND FOR MDS CHANNELS 1 AND 2

The comments filed in response to the *FNPRM* evince little support for reallocating the UPCS 1910-1930 MHz band for advanced wireless services; no commenters other than a few foreign companies advocate this position.³ Based upon the comments, there are only two serious proposals for the 1910-1930 MHz band: (1) retaining the upper half of the band for isochronous UPCS so that a handful of manufacturers can continue their attempts to develop a market for their “in-building” cordless phone products, and expanding the isochronous UPCS band into the vacant lower half of that band now reserved for asynchronous UPCS devices; and (2) reallocating the whole band for displaced MDS Channel 1 and 2 operations.

After considering the comments of this handful of manufacturers, Ad Hoc still believes that they have offered no significant concerns or information that would call into question Ad Hoc’s demonstration that the 1910-1930 MHz band is an acceptable spectral displacement home for MDS Channel 1 and 2 operations, as explained below.

(a) The Public Interest Favors Using the Fallow 1910-1920 MHz Band for Displaced MDS Channel 1 Operations, as Opposed to Changing the Rules to Allow the Expansion of Isochronous UPCS Operations into This Band

The 1920-1930 MHz UPCS manufacturing interests confirm the Commission's finding⁴ that the lower half of the UPCS band, between 1910 and 1920 MHz, is fallow,⁵ and advocate amending the rules to allow isochronous operations in the 1910-1920 MHz band.⁶

It is well known that there is little fallow spectrum below 3 GHz. Thus, if 3G spectrum is allocated, existing uses of bands below 3 GHz must be moved or retired. In this environment of spectrum scarcity, it makes little sense to allocate spectrum to allow for an expansion of a type of operation, especially when that operation is not subject to spectrum scarcity. This describes UPCS. The 10 MHz allocated for this largely "in-building" isochronous service can support so many cordless phones in any one building or campus that it is difficult to imagine more than a handful of instances in which users would be denied cordless phones due to spectrum scarcity. For example, NEC's "WIRED FOR WIRELESS" can support "as many as 16,000" phones⁷ and over 3,000 zone transceivers, providing coverage to 77 million square feet.⁸

³ See Section II(d), below.

⁴ *FNPRM*, at ¶ 10.

⁵ Comments of NEC to *FNPRM*, at 23-24 (referring to the "dearth of asynchronous devices in the 1910-1920 MHz band") ("NEC Comments"); Comments of Motorola to *FNPRM*, at 20 ("Motorola Comments"). Motorola attributes the fallow nature of this 10 MHz of asynchronous UPCS bandwidth to a slower relocation of incumbents and the availability of suitable alternative spectrum at 2.4 GHz and 5.8 GHz. Motorola Comments, at 20.

⁶ Motorola Comments, at 20; NEC Comments, at 23-25.

⁷ Comments of NEC America, Inc. to *FNPRM*, at 3 (filed Oct. 22, 2001) (emphasis supplied) ("NEC Comments"). This information also appears on the NEC web site at <http://www.cng.nec.com/cng/Products/ProProduct.asp>. [Search Term: Wired].

⁸ NEC Comments, at 3. Note that NEC's comments represent a coverage area of 17 million square feet, while the NEC web site represents a coverage area of 77 million square feet.

Comments supporting an expansion of the isochronous UPCS band offer no persuasive evidence that an allocation of additional spectrum is required by any demand.⁹

- (b) It Is in the Public Interest to Adopt Ad Hoc's Plan to Relocate MDS Channel 2 to 1920-1930 MHz, and Provide for Continued Use of the 1920-1930 MHz Band by UPCS During a Reasonable Depreciation Period

The isochronous UPCS manufacturing interests decry the unfairness of relocating these systems to make room for displaced MDS Channel 2. But the fact remains that making room for 3G requires the rearrangement of frequency allocations below 3 GHz. It is an inescapable fact that reallocating existing operations to new spectrum inherently involves costs and inconveniences. In short, users of spectrum must suffer. Every harm, cost or inconvenience UPCS interests would suffer by a relocation will be suffered by MDS interests by a relocation. Accordingly, Avaya's exhortations notwithstanding,¹⁰ the fact that a relocation comes with costs

⁹ For example, Motorola states that the "market for isochronous devices is only just beginning to emerge" Motorola Comments, at 20. NEC attempts to demonstrate this need by stating that a 1994 reduction in the amount of spectrum allocated to UPCS indicates that UPCS is spectrum-deprived. But the fact of a spectrum reduction in a then-nonexistent service does not necessarily support the conclusion that UPCS is now spectrum-starved. NEC continues by suggesting that another 10 MHz would enable "UPCS systems to serve more customers and offer more robust data capabilities." NEC Comments, at 24. But NEC does not point to instances where spectrum starvation prohibits it from serving customers. Rather, NEC says it "faces limitations" serving "certain enterprise facilities ...," *id.*, which falls far short of a compelling need for additional spectrum as a solution to this problem (if that is the appropriate solution) and which is more egregiously short of the burden of need one would find appropriate when there is a spectrum shortage. While we appreciate NEC's desire to better perfect its product, a reallocation of the 2150-2162 MHz band from MDS to 3G will create an immediate and demonstrable need for spectrum for displaced MDS operations which should take precedence over a possible future, undemonstrated and speculative need for new isochronous UPCS spectrum.

¹⁰ Avaya notes that (i) the development of Part 15-compliant UPCS products has come at a high price, (ii) that UPCS product manufacturers have overcome regulatory hurdles, (iii) that manufacturers relied upon the Commission's allocation of spectrum to UPCS, (iv) that UPCS interests must comply with an "onerous, complex and singularly comprehensive set of regulations to deploy systems in the UPCS band," and (v) that it is difficult to sell these complex products to customers. Comments of Avaya Inc. to *FNPRM*, at 2-5 ("Avaya Comments"). By making one

cannot be erected as a barrier to relocation or there would never be any relocations.¹¹ The allocations below 3 GHz would remain static as time and technology rendered those allocations obsolete. The fact that Congress gave the FCC the broad spectrum allocation powers contained in Section 303(c) of the Communications Act of 1934, as amended, recognizes the dynamic nature of communications technologies, needs, markets and capabilities. Section 303(c) does not require the Commission to stay its reallocation power because of cost considerations. Similarly, and contrary to NEC's Section 303(y) argument, there is no statutory restriction that would require the Commission not to reallocate spectrum because to do so would cause interference to existing users.¹²

Contrary to the exhortations of the UPCS manufacturers, there is not much use of the 1920-1930 MHz band in this country.¹³ Because of this fact and the largely "in-building" nature

change in that sentence – that being changing "UPCS" to "MDS" – that sentence aptly describes the history of challenges the MDS industry has faced. The point is that UPCS's challenging past is no reason to immunize it from reallocation.

¹¹ NEC complains of (i) stranded investment; NEC Comments, at 14-15; (ii) detrimental reliance in taking the Commission at its word when it allocated spectrum for UPCS; *id.* at 15-16; (iii) manufacturer reticence; *id.* at 18; and (iv) consumers reticence; *id.* at 17-18. Again, reallocated MDS interests are similarly situated, as is any service that faces a reallocation.

¹² NEC Comments, at 4-9. According to NEC, Section 303(y) prohibits the Commission from reallocating the 1910-1930 MHz band to other uses. NEC appears to ignore that Section 303(y), by its express terms, only provides factors to be considered and findings to be made in order to confer flexible use authority on licensees. One of the factors, and the one relied upon most heavily by NEC, is that the allocation of flexible use authority will not cause "harmful interference" to other users of the band. This consideration, and Section 303(y) itself, cannot be understood to circumscribe the Commission's broad spectrum power under Section 303(c) to reallocate incumbents to new bands; indeed, such a restriction would give frequency-protected users permanent spectral homes. Moreover, even if NEC's revisionist reading of Section 303(y) were to be correct, NEC's theory that no reallocation can occur unless it would not cause "harmful interference" is of no comfort to UPCS. UPCS systems, by regulation, must accept interference.

¹³ NEC points to the existence of at least 10 wireless PBX products that use the 1920-1930 MHz band, but only 4 manufacturers of those devices even bothered to comment in this proceeding, and no trade association represents them in this proceeding, even though a reallocation of their spectrum is clearly on the table. Perhaps that is because the use of the 1920-1930 MHz band truly is quite light measured on a relative basis. Avaya, while offering strongly

of UPCS products, although some negative impact of a relocation of such users cannot be avoided, it certainly can be brought down to acceptable levels by adopting Ad Hoc's plan to allow existing users a depreciation and transition period¹⁴ and by allocating alternative asynchronous UPCS spectrum to isochronous use.¹⁵

Considering the needs of 1920-1930 MHz UPCS, Ad Hoc's comments recommend that the 2390-2400 MHz be used as a new home for 1920-1930 isochronous UPCS.¹⁶ This band presently is allocated for use by asynchronous UPCS and amateur radio. As the Commission knows and comments in this docket reflect,¹⁷ there has been little (if any) development of asynchronous UPCS devices for 2390-2400 MHz. Allowing this band to be used for isochronous

worded warning of the harms to UPCS interests of a reallocation, offers a product that was only first released in 1998, and provides no information as to the number of wireless PBXs it has installed in the United States. (Avaya's web site indicates that its UPCS product "DEFINITY®" was first released in 1998; <http://www.db.avaya.com/pls/bcs/syst.main>). While Motorola similarly does not mention its wireless PBX sales volume, Ad Hoc doubts that it is very large because, as shown on Motorola's web site, its Telario™ wireless UPCS system was only first marketed about 1 year ago. (This information is derived from press releases and trade journal articles posted on Motorola's web site at <http://www.motorola.com/telario>). NEC states its sales volume at page 3 of its comments, but what it reveals is that it has only installed just 700 wireless PBX systems in the 5 years its product has been available. Nortel also offers at page 4 of its comments that it has 100,000 phones in the 1920-1930 MHz band, but Nortel does not tell the reader how many are in the United States or how many PBXs serve these phones in the United States. While we cannot provide an exact number of wireless PBXs in the 1920-1930 MHz band, the foregoing information indicates that there are not very many wireless PBX units in use in the 1920-1930 MHz band.

¹⁴ Ad Hoc Comments, at 20-21; 30-31.

¹⁵ NEC's also propounds the curious theory that removing isochronous UPCS from the 1920-1930 MHz band would be bad for competition as it would create a "competitive windfall" for SpectraLink, who NEC touts as the dominant manufacturer of 900 MHz and 2.4 GHz equipment. NEC Comments, at 17-18. This claim, however, is devoid of any showing by NEC that SpectraLink enjoys economies of scale or other barriers to entry that give SpectraLink market power. NEC has not shown, let alone alleged, that SpectraLink has the power to set prices to earn supranormal profits or that the availability of UPCS equipment in the 1920-1930 MHz band is the only barrier to the existence of that power. Indeed, even if that were shown, a reallocation of isochronous UPCS to another band would mitigate this effect, and that is what Ad Hoc proposes.

¹⁶ Ad Hoc Comments, at 20-21.

¹⁷ *FNPRM*, at ¶ 9; Motorola Comments, at 14.

UPCS devices should provide the 1920-1930 MHz interests with a new spectral place of business that will satisfy their needs.¹⁸

No one has demonstrated a sufficient need for additional spectrum for isochronous UPCS operations. If this need should ever arise, it could be met in the adjacent 2385-2390 MHz band. As stated by Motorola, no one has expressed an interest in this band for commercial services.¹⁹ Ad Hoc doubts that any one would find a potentially business-sustaining use for such a small segment of bandwidth, or that equipment manufacturers would risk an investment in equipment without a demonstrated, viable market for products using this bandwidth. But, if coupled to the 2390-2400 MHz band, it becomes part of a 15 MHz band that could support existing and expanded uses of isochronous UPCS devices.

(c) MDS Can Operate in the 1910-1930 MHz Band Without Causing Harmful Interference to Adjacent Band Operations

In selecting the 1910-1930 MHz band for MDS Channel 1 and 2 relocation, Ad Hoc was impressed by the fact that the size of the band came quite close to fitting the current size of the band allocated to MDS Channels 1 and 2. Ad Hoc also noted that the band supplied a small amount of extra bandwidth that could be used to control interference into PCS mobile transmitter reception below 1910 MHz and into PCS base station transmitter reception above

¹⁸ While this band also supports amateur radio traffic, Ad Hoc notes that ARRL – the association for the amateur radio industry -- reiterates that amateur radio and UPCS can coexist in this band. ARRL Comments, at 4-6. While ARRL does not specifically endorse the use of the band for isochronous UPCS devices, ARRL notes that only certain operating limitations shared by both asynchronous and isochronous UPCS devices are needed to avoid adverse interaction with Amateur stations in the 2390-2400 MHz band. *Id.* at 6-7, n.6. As explained below in Section IV, these operating restraints cannot be met by MDS, thus rendering the 2390-2400 MHz band not only too small for MDS Channel 1 and 2 relocation, but technically unsuitable for MDS.

¹⁹ Motorola Comments, at 13.

1930 MHz. Cingular, in essence, concurs with our suggestion, noting that high power operations can coexist with adjacent band PCS operations if 5 MHz guardbands are used.²⁰

Motorola, however, asserts that interference from MDS to adjacent band broadband PCS operations will be unmanageably high. In making this claim, Motorola relies upon what it admits is an extrapolation of a “preliminary” analysis not of MDS operations in the 1910-1930 MHz band, but of MDS operations in the 2150-2162 MHz band indicating that MDS CPE would interfere with both adjacent band PCS base stations and subscriber units.²¹ While time constraints have not permitted Ad Hoc to commission a thorough engineering analysis of Motorola’s extrapolation, Ad Hoc observes that Motorola studied a smaller MDS band and assumed MDS operations at powers of 2,000 watts. While MDS stations can operate at such high powers, they rarely do so and only when used for multichannel video delivery service. Ad Hoc believes that a proper engineering analysis must consider the 1910-1930 MHz band, must consider its capability to provide guard zones between MDS and broadband PCS, and must consider the more realistic scenario of the use of these MDS channels as return paths. Our engineers inform us that they are confident that MDS operations in the 1910-1930 MHz band can be engineered to avoid interference to broadband PCS operations in upper and lower adjacent bands. They note that the adjacent bands are occupied by commercial PCS operators, who use good RF filtering at base stations and sophisticated subscriber devices that have sufficient filtering to allow for an efficient control of adjacent band interference. Indeed, PCS operators must operate with adjacent spectrum neighbors who themselves are PCS operators, with large towers, high power transmitters and numerous base stations using different standards.

²⁰ Cingular Comments, at 12-13.

²¹ Motorola Comments, at 17.

As for cochannel interference from MDS to 1920-1930 MHz UPCS in a transitional band-sharing scenario, pending the depreciation and relocation of UPCS operations, our engineers also believe that a solution can be had to this problem of interference. Unlike many RF devices, the vast majority of UPCS devices are in-building and intra-building applications. As such, these devices are “pinpointed” and thus are not apt to wander nomadically into the path of MDS transmitters. In-building antennas are designed to cover very specific areas, and virtually all of them use diversity antennas to increase their own performance inside buildings to combat fading and thus to provide a better average link margin within its own system. These devices are also greatly shielded by the building itself. According to our engineers, path loss attenuation through typical building walls is on the order of 20 to 30 dB at 2 GHz. Intra-building and on-campus outdoor antennas are designed and installed with very narrow beamwidths. These highly directional fixed-mount antennas could very likely discriminate against MDS interference. A solution is also aided by the fact that there are very few of these cordless phone systems in use, thus aiding spectrum sharing during this transitional period. Considering all of these factors, our engineers predict that the likelihood of interference is greatly mitigated and that there would likely be only a few isolated cases where any noticeable degradation would result during the transition period.

(d) Other Proposals for the Use of the 1910-1930
Band Are Inferior to Ad Hoc’s Proposal

Notably, most commenters propound the position that the 1910-1930 MHz band should not be reallocated for advanced wireless services. Many of those that advance that position cite

the small size of the band as a reason not to make this reallocation,²² while one notes that the band is not used anywhere in the world for 3G services.²³

There are, however, other alternative proposals for the use of this band and certain qualified endorsements of the band for 3G services. As explained below, none of those proposed uses would serve the public interest better than allocating the band to MDS Channel 1 and 2 operations.

(1) TDD Reallocation.

Cingular expresses its support for the reallocation of the band for advanced services using TDD.²⁴ The TIA notes that the band “could be suitable for advanced mobile wireless services, primarily those that can take advantage of un-paired spectrum technologies.”²⁵ TIA does not identify such technologies, but TDD is at least one of them.

Ad Hoc strongly supports the allocation concept of technological neutrality that is central to the TDD Coalition’s comments in this proceeding,²⁶ or, to use the jargon of the *Policy Statement* on spectrum allocations, flexible allocation is critical to promoting spectrum efficiency.²⁷ Ad Hoc

²² Cingular Comments, at 12; NEC Comments, at 19-20;
²³ Comments of UTStarcom, Inc. to *FNPRM*, at 3-4 (filed Oct. 22, 2001).

²⁴ Cingular Comments, at 12.

²⁵ Comments of the Wireless Communications Division of the Telecommunications Industry Association (“TIA”), at 4 (filed Oct. 22, 2001). TIA goes on to caution against interference to adjacent band PCS operations.

²⁶ Comments of the TDD Coalition to *FNPRM*, at 5 (filed Oct. 22, 2001).

²⁷ *Principles for Reallocation of Spectrum to Encourage the Development of Telecommunications Technologies for the New Millennium*, FCC 99-354 (rel. Nov. 22, 1999). To quote the *Policy Statement*:

In the majority of cases, efficient spectrum markets will lead to use of spectrum for the highest value end use. Flexible allocations may result in more efficient spectrum markets. Flexibility can be permitted through the use of relaxed service rules, which would allow licensees greater freedom in determining the specific services to be offered.

Id. at ¶ 9.

acknowledges that TDD has its proponents as an alternative to FDD for short-distance paths, especially when paired bands are not available. Still, Ad Hoc views the concept of allocating a band for this one technology as inherently inconsistent with sound spectrum allocation policies. Such an allocation would retard research and development of other transmission modalities for the band, and may never actually result in any use of the band.

(2) Reallocation to Higher Power, Unlicensed Uses.

UTStarcom, together with three entities who filed form-letter comments, advocates increasing the maximum power of UPCS devices so that they can cover whole communities, while retaining the unlicensed nature of the allocations.²⁸ In Ad Hoc's opinion, this lower power mobile radio proposal is unworkable. The reason that UPCS devices can operate without interference on an unlicensed basis is their extremely low power that largely restricts these devices, and their interference potential, to the user's premises. For that reason, there is no need for the Commission to create and administer a licensing scheme for preventing interference and deciding who will operate the devices in what locations. Operations within the 1910-1930 MHz band at powers that can cover whole communities make the use of the devices by one entity to cover one area electrically incompatible with the use of the devices by another entity to cover the same area and, perhaps, an adjacent area. For that reason, not only would interference rules be required, but the Commission would have to develop a method for choosing among conflicting proposals to offer the service in geographic areas. In short, licenses would be required, along with either an auction or comparative hearing scheme for frequency assignment.

Moreover, regardless of how it is regulated, such a community mobile service is not needed. While PCS and cellular mobile radio service are slower to arrive at more remote

²⁸ UTStarcom Comments, at 4-6. The form-letter comments were submitted by iBee Communications, Inc., Aviatel, Inc. and TNI Communications Corp.

communities, if there is a cost effective need for services like those proposed by UTStarcom, there is no reason to believe that presently licensed PCS and cellular providers will not provide the service. Given the need that will exist to accommodate MDS if it is displaced, the greater public good resides in reallocating this spectrum to MDS.

(3) Comments Favoring Use of the 1910-1930 MHz Band for 3G Services.

Siemens advocates the assignment of the 1910-1930 MHz band for TDD and FDD 3G systems.²⁹ Orange has a similar proposal, and also suggests a TDD allocation for the lower half of the band and pairing the upper half of the band with the 2110-2120 MHz band for FDD operation.³⁰ Ad Hoc does not see the merit of either proposal as each is based upon a rejection for 3G of the bands under consideration in the *NTIA Statement*, and each is based upon promoting the discarded notion of promoting spectrum harmonization with Europe.

Ericsson supports the reallocation of the 1910-1930 MHz band for advanced wireless services, noting that the band could be used primarily for services that use unpaired spectrum technologies.³¹ But, Ericsson demonstrates no need for such services.

III. THE 1990 MHZ BAND COULD SERVE AS A NEW HOME FOR MDS CHANNELS 1 AND 2

Ad Hoc did not suggest the possibility of using the Mobile-satellite Service (“MSS”) uplink band at 1990-2025 MHz for MDS displacement spectrum. Ad Hoc reviewed the 1990-2025 MHz band in its comments and found that it was quite acceptable as MDS replacement spectrum, but decided not to recommend the band as MDS replacement spectrum because of the recent licensing of MSS interests in this band. Now that Ad Hoc has had the opportunity to review comments to the *FNRPM*, Ad Hoc sees that numerous commenters have made the

²⁹ Comments of Siemens Corporation to *FNPRM*, at 2.

³⁰ Comments of Orange Group to *FNPRM*, at 4 (filed Oct. 23, 2001).

³¹ Comments of Ericsson Inc. to *FNPRM*, at 7 (“Ericsson Comments”).

suggestion that displaced MDS operations can be accommodated in the MSS 2 GHz uplink band.³² As explained below, Ad Hoc has reconsidered its position and agrees that the 1990-2025 MHz should be considered as replacement spectrum for MDS.

The 1990-2025 MHz band has all of the positive technical attributes of the 1910-1930 MHz band, but no existing operations.³³ Among those attributes is sufficient size, and the key characteristic identified in Ad Hoc's comments of not being higher in frequency than the spectrum now used by MDS Channels 1 and 2.

Ad Hoc also observes that the band offered up by the commenters would be available, in part, upon adoption of the 3G plan under consideration as indicated in the *NTIA Statement*. The *NTIA Statement* expresses that the 2110-2170 MHz band is under consideration for 3G reallocation. The upper 5 MHz of that band is the lower 5 MHz of the 2 GHz MSS downlink band. If symmetrical up- and downlink bands for MSS are desirable, as suggested by the fact that 2 GHz MSS now has such spectral symmetry, then the reallocation of the 2110-2170 MHz band to 3G would strand 5 MHz of MSS uplink spectrum. Such stranded spectrum would be available for reallocation to MDS.

While Ad Hoc agrees with the commenters that recommend the MSS uplink band for MDS relocation, Ad Hoc has a different view as to where within the 2 GHz MSS uplink band MDS should be located and how much of that band should be reallocated to MDS.

Concerning location of the replacement spectrum, these commenters suggest that MDS receive a part of the upper portion of the 2 GHz MSS uplink band ending at 2025 MHz. Ad Hoc, however, believes that, if MDS is to receive a portion of the MSS uplink band, that portion

³² Comments of Cingular to *FNPRM*, at 11 (filed Oct. 22, 2001) ("Cingular Comments"); Ericsson Comments, at 11; Motorola Comments, at 14.

should be a part of the lower portion beginning at 1990. Ad Hoc's proposal would lessen the adverse impact of this reallocation to MSS licensees. This conclusion assumes that the lower portion of the MSS downlink band, between 2165 and 2170 MHz, will be allocated to 3G services. If that is the case, then allocating the lower portion of the MSS band to MDS will best preserve the spectral separation between MSS up- and downlink frequencies, redounding in lower-cost MSS mobile units.

Concerning the size of the replacement band, these commenters suggest an MSS uplink reallocation to MDS of 15 MHz to accommodate MDS Channels 1 and 2.³⁴ Our engineers, however, believe that a 20 MHz allocation will be required to preserve existing services and potential, because a 15 MHz bandwidth may only accommodate a guard band or guard zone on one end. While we have not developed information indicating the size of the guard band or guard zone that will be required to protect adjacent band MSS uplink operations, we recognize that these operations would be conducted with low power mobile units, and Ad Hoc presumes that they would be significantly susceptible to adjacent band interference.

IV. THE 2385-2400 MHZ BAND IS TOTALLY UNACCEPTABLE AS AN MDS CHANNEL 1 AND 2 RELOCATION BAND

Some commenters suggest the relocation of MDS Channels 1 and 2 to the 2385-2400 MHz band.³⁵ Ad Hoc firmly disagrees with this suggestion.

First, MDS high power transmitters would interfere with cordless phones, wireless LANs and personal access networks operating above 2400 MHz. These devices are designed without

³³ Licenses for MSS systems operating in the 1990-2025 MHz band were just issued this last July. Ad Hoc is unaware of any actual 2 GHz MSS system development in the brief span of time between the issuance of those licenses and now.

³⁴ Cingular Comments, at 14.

³⁵ Motorola Comments, at 13-14; Comments of Verison Wireless to *FNPRM*, at 9 (filed Oct. 22, 2001); Comments of Ericsson to *FNPRM*, at 10-11 (filed Oct. 22, 2001). Ericsson also

enough filtering to prevent comparatively high power MDS transmitters from saturating the front ends of these devices, rendering them useless. Such a result would create a major controversy with consumers, consumer groups and educators,³⁶ who cannot be expected to understand the fine nuances of frequency allocation decisions. The public relations nightmare would be massive, because these devices are consumer products and there are millions of them in use. If MDS were to have just 15 MHz between 2385 and 2400 MHz to accommodate current operations, Ad Hoc doubts that there would be room in the 2385-2400 MHz band both for MDS's current operating bandwidth and for a guardband sufficient in size to protect cordless phone, wireless LAN and personal access network reception. In short, this band is too small to accommodate displaced MDS Channels 1 and 2.

Second, the remaining portion of the band between 2390 and 2400 MHz is allocated to the Amateur Radio Service on a primary basis and cannot be shared with MDS without mutually-destructive interference. ARRL, the amateur radio association, explains that UPCS and the Amateur Radio Service are able to share this band because of the in-building nature of UPCS and the very low powers at which it operates. As required by the UPCS Rules, UPCS devices cannot exceed a spectral density of only 3 milliwatts in any 3 kHz bandwidth,³⁷ and ARRL strenuously opposes any relaxation of that density limitation.³⁸ Accepting ARRL's comments, MDS cannot share spectrum with Amateur radio because even the lowest power MDS transmitters, operating as return paths from subscriber premises, vastly exceed that power density. Viewed from the perspective of MDS as the interference victim, ARRL's and Cingular's comments indicate that MDS reception would also suffer in that band because amateur stations are itinerant and operate

suggests the alternatives of MSS spectrum below 2025 MHz and the 700 MHz band for MDS relocation spectrum.

³⁶ Wireless LANs are common to college campuses.

³⁷ ARRL Comments, at 6.

at relatively high power levels.³⁹ Notably, MDS does not now share spectrum with amateur radios, and should not have to suffer this additional, and probably unsolvable, coordination problem along with a relocation.

Third, a relocation of MDS to this band would be a relocation to a higher frequency, resulting in inferior propagation characteristics and increasing power requirements while making the transition to self-installed CPE more problematic.

Fourth, even assuming that the 2385-2400 MHz band has sufficient size to accommodate MDS Channels 1 and 2 (which it does not), one-third of this band between 2385 and 2390 MHz is encumbered by Governmental users until 2005, as well as other incompatible uses of this spectrum by its current non-Governmental users.⁴⁰ This is simply too long for MDS to wait for cleared replacement spectrum.

Fifth, Ad Hoc believes through conversations with its customers that relocating MDS Channels 1 and 2 to the 2385-2400 MHz band will increase their costs and delay their deployment. A move of MDS Channels 1 and 2 to this band could put Ad Hoc out of business.

In short, no portion of the 2385-2400 MHz band offers an acceptable home for displaced MDS operations.

V. A RELOCATION OF MDS CHANNELS 1 AND 2 TO IDENTIFIED SPECTRUM OTHER THAN THAT AT 1910-1930 MHZ OR AT 1990-2010 MHZ WILL CAUSE SEVERE ADVERSE FINANCIAL CONSEQUENCES TO MDS, INCLUDING THE POSSIBILITY OF THE LOSS OF THE ABILITY TO PROVIDE HIGH SPEED INTERNET-ACCESS AND OTHER SERVICES TO THE PUBLIC

In their comments, Sprint, WorldCom and the Wireless Communications Association International exhort the Commission not to relocate MDS Channels 1 and 2 because of the costs

³⁸ ARRL Comments, at 12.

³⁹ ARRL Comments, at 9; Cingular Comments, 14.

of relocation and the potential adverse effect on providing the fixed broadband services that are so desperately needed, particularly in rural areas. Ad Hoc also strongly favors remaining in its spectral home MDS Channels 1 and 2 have had since the 1970s. But, as explained above and in our comments, we believe it prudent to offer viable alternatives in the event that the Commission decides to relocate MDS Channels 1 and 2 to make room for a 3G allocation.

Critical to an MDS Channel 1 and 2 relocation is that they move only to a lower frequency band. Indeed, the lower the better because lower bands offer less signal absorption which is an especially acute problem for broadband applications. Lower bands also encourage equipment manufacturers to design and produce the high quality and innovative equipment that will be needed to propel MDS's fixed broadband services, because equipment design is less expensive and the business model improves. Finally lower bands promote the development and availability of subscriber units that can be installed without the aid of professional installation, and without the corresponding cost of the truck-roll, installation personnel salaries and installation equipment required for professional installation. Self-installation is viewed by many as the key to the future of broadband fixed wireless services.⁴¹

The 1910-1930 and 1990-2015 MHz bands are the only bands that have been identified in this proceeding that promote those business goals and avoid the pitfalls of an increase in the frequencies assigned to MDS Channels 1 and 2.

⁴⁰ See Spectrum Chart contained with Rule 2.106.

VI. REGARDLESS OF THEIR FREQUENCY BAND, MDS CHANNELS 1 AND 2 SHOULD RECEIVE THE SAME FLEXIBLE USE AUTHORITY NOW ENJOYED BY THEIR COUNTERPARTS AT 2500-2690 MHZ

Ad Hoc's comments present the case for according MDS Channel 1 and 2 operations the same flexibility of use that the Commission accorded to MDS and ITFS channels operating in the 2500-2690 MHz band. We have seen no comments that present a counter-argument to that proposal. Rather, the only comments to address it enthusiastically support this proposal to harmonize the use-latitude given to MDS Channels 1 and 2 with the use-latitude given to the channels between 2500-2690 MHz that are used cooperatively with MDS Channels 1 and 2 to offer a single service.⁴²

The absence of resistance to this proposal speaks to the compelling logic of the *Policy Statement* on spectrum allocations⁴³ generally, and of according flexible use to the entire MDS/ITFS band specifically. While the case for according flexible use authority to MDS and ITFS operating in the 2500-2690 MHz band is compelling, it is perhaps more critical to

⁴¹ Both Sprint and WorldCom have announced that they will retard MDS fixed broadband installation efforts awaiting the availability of self-installed CPE.

⁴² Comments of WorldCom, at 11; Comments of WCAI, at 14.

⁴³ *Principles for Reallocation of Spectrum to Encourage the Development of Telecommunications Technologies for the New Millennium*, FCC 99-354 (rel. Nov. 22,1999). The overall goal of the Commission's wireless spectrum allocation policy is efficient use of spectrum. Harmonizing spectrum use rules for like services is one of the key identified means for achieving this end. To quote the *Policy Statement*:

In the majority of cases, efficient spectrum markets will lead to use of spectrum for the highest value end use. Flexible allocations may result in more efficient spectrum markets. Flexibility can be permitted through the use of relaxed service rules, which would allow licensees greater freedom in determining the specific services to be offered. Another way to allow flexibility in use of the spectrum is to allow licensees to negotiate among themselves arrangements for avoiding interference rather than apply mandatory technical rules to control interference. *A third possibility is to harmonize the rules for like services.*

Id. at ¶ 9 (emphasis supplied).

MDS/ITFS-based fixed broadband services to accord this authority to MDS Channels 1 and 2. MDS Channels 1 and 2 are the primary return path frequencies used for MDS/ITFS-based fixed broadband services. If they have flexible use authority, the development of “self-installed” CPE will be promoted.

VII. CONCLUSION

In a spirit of cooperation and to further the national interest, Ad Hoc continues to consider a relocation of its MDS licenses to comparable spectrum. In fact, in these reply comments Ad Hoc has increased its flexibility to also include 1990-2010 MHz as a candidate relocation band with the previously identified 1910-1930 MHz in our original comments. However, Ad Hoc remains adamantly opposed to a relocation to the 2385-2400 MHz for the reasons expressed above. As previously suggested by Ad Hoc, we believe a timely and cost-efficient transition to either the 1910-1930 MHz or 1990-2010 MHz band can be accomplished by the rapid issuance of licenses for the selected replacement band, the retaining of existing licenses for a reasonable dual illumination transition period and the granting of flexible use. Short of this, Ad Hoc respectfully submits that the Commission should not relocate MDS

Channels 1 and 2 but should grant them flexible use authority consistent with the November 1999 Policy Statement and its treatment of MDS channels located in the 2500-2690 MHz band., allowing them to promote more efficient use of the band and provide better service to the public.

Respectfully submitted,

THE AD HOC MDS ALLIANCE

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