Before the
Federal Communications Commission
Washington, D.C. 20554

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
	)	
The Establishment of Policies and Service Rules for the Mobile-Satellite Service in the 2 GHz Band	)	IB Docket No. 99-81
	)	
Amendment of the U.S. Table of Frequency Allocations to Designate the 2500-2520/2670-2690 MHz Frequency Bands for the Mobile-Satellite Service	)	RM-9911
	)	
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

THIRD REPORT AND ORDER, THIRD NOTICE OF PROPOSED RULEMAKING AND SECOND MEMORANDUM OPINION AND ORDER

Adopted: January 29, 2003 **Released: February 10, 2003**

Comment Date: [30 days from date of publication in the Federal Register]
Reply Comment Date: [45 days from the date of publication in the Federal Register]

By the Commission: Chairman Powell and Commissioner Adelstein issuing separate statements; Commissioner Copps approving in part, dissenting in part, and issuing a statement.

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I. INTRODUCTION

1. In this *Third Report and Order, Third Notice of Proposed Rulemaking, and Second Memorandum Opinion and Order*, we continue our ongoing proceeding to promote spectrum efficiency by evaluating spectrum that may be suitable for the provision of new services, including Advanced Wireless Services (AWS).[1] In the *Third Report and Order*, we reallocate portions of the frequency bands currently used by the Mobile-Satellite Service (MSS) to provide additional spectrum for Fixed and Mobile services. In the *Third Notice of Proposed Rulemaking*, we seek comment on how best to use the reallocated MSS spectrum as well as other bands previously proposed for AWS use, the relocation of the Multipoint Distribution Service (MDS), and additional flexibility for the Unlicensed Personal Communications Service (UPCS) band spectrum. Finally, in the *Second Memorandum Opinion and Order*, we deny a petition filed by the Cellular Telecommunications and Internet Association (CTIA) relating to use of the MSS band.

II. EXECUTIVE SUMMARY

2. Our efforts to identify and allocate spectrum that can be used to support new services, including AWS, have focused on identifying both Federal Government and non-Federal Government-use spectrum that possess attributes suitable for the provision of new services, and on allocating blocks of that spectrum that can quickly and efficiently be made available for this end. At the same time, we have taken a closer look at the existing uses of those frequency bands that we have identified as potential candidates for the provision of new services, and have taken steps to reallocate, retain, or provide additional flexibility to these bands, as warranted. Thus, a larger theme of this proceeding is our effort to promote more efficient spectrum use which, in turn, serves the public interest.

3. On November 15, 2002, the Commission issued a *Second Report and Order* in this proceeding that identified and allocated 90 megahertz of spectrum from Federal Government and non-Federal

[1] Advanced Wireless Services is the collective term we use for new and innovative fixed and mobile terrestrial wireless applications using bandwidth that is sufficient for the provision of a variety of applications, including those using voice and data (such as internet browsing, message services, and full-motion video) content. In an ongoing service rules proceeding for 90 megahertz of spectrum for AWS, we have proposed to adopt rules that will provide innovative and agile licensees with the flexibility to quickly adapt to changes in technological capabilities and marketplace conditions into the future, and have stated that our goal for the AWS-designated spectrum is "to put this spectrum to its highest value use with minimal transaction cost." Service Rules for Advanced Wireless Services, WT Docket No. 02-353, *Notice of Proposed Rulemaking*, 17 FCC Rcd 24135 (2002). Although AWS is commonly associated with so-called third generation (3G) applications and has been predicted to build on the success of such current-generation commercial wireless services as cellular and Broadband PCS, the services ultimately provided by AWS licensees are only limited by the fixed and mobile designation of the spectrum we allocate for AWS and the service rules we ultimately adopt for the bands.

Government operations at 1710-1755 MHz and 2110-2155 MHz that can be used to support AWS.[2] In the instant decision, we evaluate a number of other frequency bands that were identified for possible AWS use, but not addressed in our previous decisions. In the *Third Report and Order* portion of our action herein, we:

- Conclude that MSS in the 1990-2025 MHz and 2165-2200 MHz bands can operate in less than the 70 megahertz of spectrum currently allocated to MSS in the 2 GHz band.

- Reallocate the 1990-2000/2020-2025 MHz and 2165-2180 MHz bands for Fixed and Mobile services. This reallocates 30 megahertz of MSS spectrum while preserving 40 megahertz of spectrum for MSS.

- Redistribute some 2 GHz spectrum recently abandoned as a result of the ongoing initial MSS milestone review. This spectrum will be reassigned to the authorized MSS operators that remain when we complete the initial milestone review.

In the *Third Notice of Proposed Rulemaking* herein, we:

- Seek comment on whether we should re-designate all or a portion of the UPCS spectrum at 1910-1920 for new fixed and mobile uses. Five or ten megahertz of this spectrum could be paired with spectrum in the 1990-2000 MHz band to expand the existing Broadband PCS allocation, to allow for AWS applications, or as replacement spectrum for other services.

- Retain the 1920-1930 MHz band for UPCS use and seek comment on whether we should provide for additional flexibility in that band, as well as any additional spectrum that we retain for UPCS use in the 1910-1920 MHz band.

- Seek comment on making available for new services, including AWS, the MSS uplink band spectrum that we are reallocating at 2020-2025 MHz. We also ask whether this band could be paired with spectrum in the 2.1 GHz band.

- Seek further comment on making available for new services, including AWS, a 10 megahertz block that is upper adjacent to the existing 45 megahertz AWS allocation in the 2110-2155 MHz band. This spectrum block consists of the remaining 5 megahertz of the MDS band at 2155-2160 MHz combined with an adjacent 5 megahertz spectrum block in the 2160-2165 MHz band that was identified in the *Emerging Technologies* proceeding.

- Seek comment on the best use of the spectrum that we make available by reallocating the MSS downlink band at 2165-2180 MHz.

- Seek comment on relocation spectrum for MDS operations from the 2150-2160/62 MHz band, including spectrum that we make available by reallocating the MSS downlink band at 2165-2180 MHz or, alternatively, spectrum that is adjacent to the Broadband PCS bands.

In the *Second Memorandum Opinion and Order* herein, we:

[2] 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, *Second Report and Order*, 17 FCC Rcd 23193 (2002) (*Second R&O*).

• Deny a petition for reconsideration filed by CTIA that seeks reallocation of the entire 2 GHz MSS band for terrestrial wireless use.

III. BACKGROUND

4. The bands that we have considered in this proceeding were identified in the January 2001 *Notice of Proposed Rulemaking and Order*,[3] and in the August 2001 *Memorandum Opinion and Order and Further Notice of Proposed Rule Making*.[4] Collectively, in the *Notice* and the *Further Notice*, the Commission sought comment on the suitability for use by AWS of the 1710-1755 MHz band (scheduled for transfer from Federal Government to non-Federal Government use); the 1755-1850 MHz band (a Federal Government-use band); the 2110-2150 MHz and 2160-2165 MHz bands (used for point-to-point fixed microwave services and identified in the Commission's *Emerging Technologies* proceeding[5] as suitable for advanced services); the 2500-2690 MHz band (used by Instructional Television Fixed Services (ITFS) and Multichannel Multipoint Distribution Services (MMDS)); the 2150-2160/62 MHz band (used by MDS); the 1990-2025 MHz and 2165-2200 MHz bands (allocated for MSS); and the 1910-1930 MHz and 2390-2400 MHz bands (designated for UPCS use). In the *Notice*, the Commission also explored the possibility of introducing AWS in the 806-960 MHz and 1850-1910/1930-1990 MHz bands that are currently used for cellular, Broadband PCS, and Specialized Mobile Radio (SMR) services, as well as the 698-806 MHz bands that were reallocated as part of the transition to digital television.[6]

5. The Commission addressed use of the 2500-2690 MHz band in a September 2001 *First Report and Order* and *Memorandum Opinion and Order* in this proceeding.[7] In the *First R&O and MO&O*, the Commission found that ITFS and MMDS licensees operating in the band provided important services and would be difficult to relocate, and the Commission decided not to relocate these incumbent licensees.[8] Instead, the Commission modified the allocation by adding a mobile allocation to the 2500-2690 MHz

[3] 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, *Notice of Proposed Rulemaking and Order*, 16 FCC Rcd 596 (2001) (*Notice*).

[4] 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, ET Docket No. 95-18, and IB Docket No. 99-81, *Memorandum Opinion and Order and Further Notice of Proposed Rule Making*, 16 FCC Rcd 16043 (2001) (*Further Notice*).

[5] Redevelopment of Spectrum to Encourage the Establishment of Services Using New and Innovative Technologies, ET Docket No. 92-9, *First Report and Order and Third Notice of Proposed Rule Making*, 7 FCC Rcd 6886 (1992); *Second Report and Order*, 8 FCC Rcd 6495 (1993); *Third Report and Order and Memorandum Opinion and Order*, 8 FCC Rcd 6589 (1993); *Memorandum Opinion and Order*, 9 FCC Rcd 1943 (1994); *Second Memorandum Opinion and Order*, 9 FCC Rcd 7797 (1994), *aff'd*, Association of Public Safety Communications Officials-International, Inc. v. FCC, 76 F.3d 395 (D.C. Cir. 1996) (collectively, "*Emerging Technologies* proceeding").

[6] *Notice*, 16 FCC Rcd at 610-13 ¶¶ 34-38.

[7] 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, *First Report and Order and Memorandum Opinion and Order*, 16 FCC Rcd 17222 (2001) (*First R&O and MO&O*).

[8] *Id.*

band to provide additional flexibility for use of this spectrum.[9] The Commission also affirmed its prior determination not to reallocate a portion of the 2500-2690 MHz band to MSS.[10]

6. In its November 2002 *Second R&O*, the Commission undertook a comprehensive examination of AWS spectrum needs. In July 2002, the Department of Commerce National Telecommunications and Information Administration (NTIA) released a study ("*2002 Viability Assessment*") in which it concluded that 90 megahertz of spectrum consisting of the 1710-1755 MHz band and a matching 45 megahertz from the 2110-2170 MHz band could be reallocated without disrupting critical national security communications systems.[11] In the *2002 Viability Assessment*, NTIA also found that the 1755-1850 MHz Federal Government-use band (which had also been identified as spectrum that might support AWS) could not be made available for AWS for the foreseeable future.[12] Consistent with the *2002 Viability Assessment*, the Commission in the *Second R&O* allocated 45 MHz of Federal Government-use spectrum in the 1710-1755 MHz band for AWS, effective January 2004 (when the spectrum is scheduled to be made available for mixed Federal Government/non-Federal Government use).[13] The Commission also allocated a 45 MHz block of contiguous spectrum in the 2110-2155 MHz band for AWS.[14] This spectrum consists of the 2110-2150 MHz band, which is currently used by point-to-point microwave facilities and subject to the relocation procedures adopted in the Commission's *Emerging Technologies* proceeding, combined with an additional 5 megahertz block (2150-2155 MHz) that was previously allocated to MDS. The Commission noted that it would consider relocation spectrum and propose relocation procedures for MDS licensees (which continue to operate in the band) in a subsequent decision.[15]

7. As described in greater detail in the *Second R&O*, the Commission noted that the International Telecommunication Union (ITU) had identified a number of frequency bands that could be used to implement advanced wireless systems internationally,[16] and established a set of standards – International Mobile Telecommunications-2000 (IMT-2000) – that defines key characteristics of advanced radio

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[9] *Id.*

[10] *Id.*, 16 FCC Rcd at 17241 ¶¶ 35-36.

[11] United Stated Department of Commerce, National Telecommunications and Information Administration, "*An Assessment of the Viability of Accommodating Advanced Mobile Wireless (3G) Systems in the 1710-1770 MHz and 2110-2170 MHz Bands*," Report, July 22, 2002 (*2002 Viability Assessment*) (incorporated into ET Docket No. 00-258 and also available from NTIA at http://www.ntia.doc.gov/ntiahome/threeg/va7222002/3Gva072202web.htm).

[12] *Id.*

[13] *Second R&O* at ¶¶ 25 & 48.

[14] *Id.* at ¶¶ 27-47.

[15] *Id.* at ¶ 41.

[16] *Id.* at ¶¶ 2 & 4. *See also* WRC 2000 Final Acts S5.317A: WRC-2000 Final Acts Res. 223. ITU identified the 806-960 MHz, 1710-1885 MHz, and 2500-2690 MHz bands for possible terrestrial use for its International Mobile Telecommunciations-2000 standards and recognized that some administrations will use the 698-806 MHz for these purposes. The ITU also recognized that jurisdictions will need to protect existing services operating in the spectrum, that not all bands will be allocated for advanced wireless systems in all jurisdictions, and that advanced services will not have priority over other allocated services.

systems.[17] The Commission did not formally adopt the ITU standards, but instead concluded that the allocation in the *Second R&O* would be able to support a wide variety of services, including those using the most popular technologies under IMT-2000. Because this proceeding involved spectrum that falls under the spectrum management responsibilities of both the Executive Branch and the Commission, the Commission's actions have been facilitated by the extensive cooperation among a variety of Federal Government stakeholders, including NTIA. The Federal Government-use spectrum that was considered in the *Second R&O* is also subject to specific requirements of an Executive Memorandum and legislation regarding the transfer, licensing, and relocation of incumbent users on this spectrum. We note that these Federal Government-use bands are not under consideration in the instant decision.

IV. THIRD REPORT AND ORDER

8. This proceeding has provided us with the opportunity to explore a wide range of issues that affect many different frequency bands – including those bands identified for reallocation, those slated to host emerging technologies, and those that were not previously available for non-Federal Government use. In each of our decisions, we have sought to promote efficient use of spectrum in order to serve the public interest. Our goal here remains the same. As described in greater detail below, the allocations we make will promote efficiencies by reducing spectrum allocated for 2 GHz MSS, which we conclude can be accommodated in smaller spectrum bands, and by reallocating those bands to bring new services to the public. We explore in the accompanying *Further Notice* how best to use the spectrum we are reallocating for Fixed and Mobile services in the 2 GHz band.

A. Background

9. The 2 GHz MSS band includes worldwide, regional and domestic allocations, which are partially harmonized as described below. The 1980-2010 MHz (uplink) and 2170-2200 MHz (downlink) bands are allocated to the MSS on a primary basis throughout the world and have been designated as the satellite component of IMT-2000.[18] In Region 2 (North and South America), the 2010-2025 MHz (uplink) and 2160-2170 MHz (downlink) bands are also allocated to the MSS on a primary basis.[19] In addition, the 1980-2025 MHz and 2160-2200 MHz bands are also allocated to the fixed and mobile services on a primary basis throughout the world.

10. In the United States, the 1990-2110 MHz band is currently used by the local television transmission service, the cable television relay service, and broadcast auxiliary stations (collectively, BAS)

[17] These standards are intended to maximize the commonality of radio interfaces and provide a transition path to advanced systems from existing technologies. See *Notice*, 16 FCC Rcd at 598-600 ¶¶ 3-4 for additional background.

[18] *See* ITU *Radio Regulations*, Edition of 2001, Resolution 212 (Rev. WRC-97) and Resolution 716 (Rev. WRC-2000). In an uplink band terminals on Earth transmit up to the satellite. In a downlink band the satellite transmits down to the terminals.

[19] All of the 2 GHz MSS allocations are now effective internationally, except that MSS use of the 1980-1990 MHz band (allocated domestically to Broadband PCS) may not commence in Region 2 before January 1, 2005. *See* 47 C.F.R. § 2.106, footnote 5.389A, 5.389C, and 5.389D. However, MSS use of the 1980-1990 MHz band must not cause harmful interference to or constrain the development of the fixed and mobile services in the United States and certain other Region 2 countries. *See* 47 C.F.R. § 2.106, footnote 5.389B. In addition, MSS use of the Region 2 allocations (2010-2025 MHz and 2160-2170 MHz) may not cause harmful interference to or constrain the development of the fixed and mobile services in Regions 1 and 3; or, until January 1, 2005, in certain Region 2 countries. *See* 47 C.F.R. § 2.106, footnotes 5.389E and 5.390.

for fixed and mobile purposes. The 2110-2200 MHz band is currently used for fixed services (FS) and MDS. In 1997, the Commission reallocated the 1990-2025 MHz segment of the 1990-2110 MHz band (2 GHz BAS) for use by MSS uplinks and the 2165-2200 MHz band for use by MSS downlinks, effective January 1, 2000.[20] To provide for an orderly transition from BAS use, the Commission allowed BAS fixed and mobile facilities to operate on a primary basis for up to 10 years, after which time BAS facilities would operate on a secondary basis.[21] In 2000, the Commission adopted relocation procedures for incumbent broadcast auxiliary services at 1990-2025 MHz and the fixed services at 2165-2200 MHz.[22] The Commission recently suspended for one year, until September 6, 2003, the expiration date for the initial two-year mandatory BAS negotiation period for Phase 1 of the relocation plan between MSS and BAS.[23]

11. In August 2000, the Commission adopted the *2 GHz MSS R&O*, which established licensing and service rules for 2 GHz MSS.[24] The Commission divided the 2 GHz MSS spectrum into "Selected Assignments" – segments of equal bandwidth based on the number of applicants seeking assignments,[25] plus an additional segment reserved for system expansion by operators meeting certain criteria for service to rural areas.[26] The Commission also established milestones for system implementation and conditioned the authorizations on achievement of these milestones. Recognizing that not all systems may be implemented, the Commission indicated that it would evaluate what to do with any "abandoned spectrum"

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[20] *See* Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use by the Mobile-Satellite Service, *First Report and Order and Further Notice of Proposed Rule Making*, ET Docket No. 95-18, 12 FCC Rcd 7388 (1997) (*2 GHz MSS Allocation Order*), *aff'd on recon.*, *Memorandum Opinion and Order and Third Notice of Proposed Rule Making and Order*, 13 FCC Rcd 23949 (1998) (affirming 2 GHz MSS allocation and seeking further comment on relocation issues).

[21] Specifically, footnote NG156 reads as follows: "The band 1990-2025 MHz is also allocated to the fixed and mobile services on a primary basis for facilities where the receipt date of the initial application was prior to June 27, 2000, and on a secondary basis for all other initial applications. Not later than September 6, 2010, the band 1990-2025 MHz is allocated to the fixed and mobile services on a secondary basis." *See* 47 C.F.R. § 2.106, footnote NG156.

[22] *See* 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, *Second Report and Order and Second Memorandum Opinion and Order*, 15 FCC Rcd 12315 (2000). The BAS relocation plan calls for a two-phase relocation with two-year mandatory negotiation periods in each phase that will clear current BAS Channel 1 (1990-2008 MHz) followed by BAS Channel 2 (2008-2025 MHz). Under the adopted two-phase relocation plan, when MSS entrants clear BAS Channel 1 in the top 30 markets, BAS channel 1 would no longer be used in any television market; MSS entrants will have up to 5 years to relocate BAS Channel 1 operations in the remaining television markets. In the event that an agreement for relocation is not reached by the end of a particular negotiation period, the MSS licensee(s) have the option of involuntary relocation of BAS incumbents.

[23] 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, *Order*, 17 FCC Rcd 15141 (2002). The Commission took this action in order to maintain the status-quo while it decided whether the BAS relocation plan needs further revision in light of issues raised in other related rule making proceedings under consideration.

[24] The Establishment of Policies and Service Rules for the Mobile Satellite Service in the 2 GHz Band, *Report and Order*, IB Docket No. 99-81, 15 FCC Rcd 16127 (2000) (*2 GHz MSS R&O*).

[25] *Id.*, 15 FCC Rcd at 16138 ¶ 16. Under the *2 GHz MSS R&O*, the number of system proponents is determined at the time that the first 2 GHz MSS system is authorized. *Id.*

[26] *Id.*, 15 FCC Rcd at 16146-47 ¶¶ 35-39.

after the passage of each of the milestones.[27] In this context, "abandoned spectrum" includes all licensed (or, for non-U.S.-entity access, reserved) spectrum that the Commission reclaims as a result of the system proponent voluntarily turning in its license or missing milestones. Possible options include: (a) redistributing the abandoned spectrum among systems that are operational and require additional spectrum; (b) making the abandoned spectrum available for new entrants; and (c) awarding the abandoned spectrum to operators serving unserved areas as per the criteria set forth in the *2 GHz MSS R&O*.[28]

12. On July 17, 2001, the Commission staff issued authorizations to eight applicants to provide 2 GHz MSS in the United States.[29] The authorizations provide each system with Selected Assignments of 3.5/3.5 megahertz of spectrum (*i.e.*, 3.5 megahertz of uplink spectrum in the 1990-2025 MHz band and 3.5 megahertz of downlink spectrum in the 2165-2200 MHz band), where they may operate on a primary basis.[30] Commission staff delayed full implementation of the *2 GHz MSS R&O* with regard to an incremental 0.38/0.38 megahertz of spectrum per licensee, though Selected Assignments were to be chosen in 3.88 megahertz blocks to ensure the Commission's ability to implement the incremental 0.38 megahertz if that decision were made.[31] On October 15, 2002, ICO Global Communications (Holdings) Limited chose 1990-1993.88 MHz and 2172.76-2176.64 MHz as its Selected Assignments to serve the United States in the 2 GHz MSS band.[32]

13. On August 20, 2001, we released the *Further Notice* in this proceeding, wherein we revisited our decision in the *2 GHz MSS R&O* to defer until "after achievement of each of our system implementation milestones" evaluation of whether to redistribute abandoned spectrum among MSS

[27] *2 GHz MSS R&O*, 15 FCC Rcd at 16139 ¶ 18.

[28] *Id.*, 15 FCC Rcd at 16144-49 ¶¶ 31-44.

[29] *See The Boeing Company*, Order and Authorization, 16 FCC Rcd 13691 (Int'l Bur. 2001); *Celsat America, Inc.*, Order and Authorization, 16 FCC Rcd 13712 (Int'l Bur. 2001); *Constellation Communications Holdings, Inc.*, Order and Authorization, 16 FCC Rcd 13724 (Int'l Bur./OET 2001); *Globalstar, L.P.*, Order and Authorization, 16 FCC Rcd 13739 (Int'l Bur./OET 2001); *ICO Services Limited*, Order, 16 FCC Rcd 13762 (Int'l Bur./OET 2001); *Iridium LLC*, Order and Authorization, 16 FCC Rcd 13778 (Int'l Bur. 2001); *Mobile Communications Holdings, Inc.*, Order and Authorization, 16 FCC Rcd 13794 (Int'l Bur./OET 2001); *TMI Communications and Company, Limited Partnership*, Order, 16 FCC Rcd 13808 (Int'l Bur. 2001).

[30] Each 2 GHz MSS operator identifies the specific frequencies of its Selected Assignment when the first satellite in its system reaches its intended orbit and notifies the Commission in writing of its selection. *2 GHz MSS R&O*, 15 FCC Rcd at 16138 ¶ 16. Consistent with the *2 GHz MSS R&O*, an operator may also elect to operate outside its Selected Assignment on a secondary basis with respect to other 2 GHz MSS operators, subject to certain conditions. *Id.*, 15 FCC Rcd. at 16139-40 ¶ 19.

[31] If the Commission had applied the formula adopted in the *2 GHz MSS R&O*, each licensee would have been assigned 3.88 megahertz in each direction (*i.e.*, 35 megahertz divided by 8 licensees, plus 1). Instead, each licensee was assigned 3.5 megahertz of spectrum until the Commission decided in this proceeding whether to apply the formula as initially adopted (which would provide each of the 8 MSS licensees with .38 megahertz of additional spectrum in each direction) or to modify assignments under one of two proposed options.

[32] *See* Letter of Cheryl A. Tritt, Counsel to ICO Satellite Services G.P. to Marlene H. Dortch, Secretary, Federal Communications Commission, File No. 188-SAT-LOI-97; IBFS Nos. SAT-LOI-19970926-00163; SAT-AMD-20000612-00107; SAT-AMD-20001103-00155 (October 15, 2002) (2 GHz MSS Selected Assignment Notification, Annual Section 25.143(e) Report, and Section 25.121(d)(2) Certification). We note that over the course of this proceeding, ICO has filed under a number of names, including ICO Satellite Services G.P. and ICO Global Communications (Holdings) Ltd. For purposes of our discussion, we use the name "ICO" in all references.

licensees or make it available for licensing additional MSS systems or for other services.[33] Instead, we solicited comment regarding how to treat abandoned spectrum and included among the options whether to reallocate a portion of this spectrum for AWS. Specifically, we proposed that 10-14 megahertz of MSS spectrum be reallocated for AWS use without waiting for spectrum to be abandoned.[34] We solicited comment on two possible approaches to achieve reallocation, one which would retain Selected Assignments of 7 megahertz of spectrum (3.5 megahertz in each direction), which are already provided in the authorizations, and one which would provide for Selected Assignments of 7.5 megahertz of spectrum (3.75 megahertz in each direction).[35] Either approach would make it possible to reallocate the 2018/2020-2025 MHz and 2165-2170/2172 MHz bands to other services. Under either proposed approach, 56 to 60 megahertz of spectrum would be retained for MSS in the 1990-2018/2020 MHz and 2170/2172-2200 MHz bands.[36]

14. We also requested comment on the use of abandoned spectrum.[37] Specifically, we sought comment on whether we should make abandoned spectrum available for AWS, redistribute it among remaining MSS licensees, or assign it to new MSS entrants. Under any combination of mechanisms ultimately adopted, we solicited comment on whether 20 megahertz of global MSS spectrum should be retained for MSS in both the uplink and downlink bands.[38] We proposed that any reallocation of existing MSS spectrum would not significantly impair any of the current licensees' right to retain its current assigned spectrum allotment and reasonable expectation to acquire additional MSS spectrum for purposes of deploying and operating a 2 GHz MSS system.

15. We sought comment on what limitations should be placed on MSS licensees' ability to designate Selected Assignments if we were to reallocate spectrum for AWS. In particular, we proposed to modify MSS authorizations pursuant to Section 316 of the Communications Act concerning the amount of spectrum available to each MSS entity for Selected Assignments;[39] the bands in which those assignments could be made; and the location of each MSS system within each available band (*i.e.*, the incremental

[33] *Further Notice*, 16 FCC Rcd at 16054 ¶ 22 n.65 (citing *2 GHz MSS R&O*, 15 FCC Rcd at 16139 ¶ 18).

[34] *Id.*, 16 FCC Rcd at 16055 ¶ 24.

[35] One approach was to base the distribution of 2 GHz MSS spectrum on ten 3.5/3.5 megahertz Selected Assignments. Each of the eight 2 GHz MSS licensees would choose Selected Assignments of 3.5/3.5 megahertz. The remaining 14 megahertz of spectrum (two 7 megahertz assignments) would consist of the segment originally reserved for system expansion and the segment that would have been assigned to Inmarsat Horizons, which withdrew its application prior to licensing. Ten megahertz of spectrum (5 megahertz in each direction) could be reallocated for AWS, and 4 megahertz (2 megahertz in each direction) could be retained for MSS system expansion or made available for AWS or other services. If retained for MSS, the 2/2 megahertz could be distributed among the 2 GHz MSS systems or made available for other MSS systems.

Another approach would be to make 5/5 megahertz of spectrum available for reallocation to other services, and to distribute the remaining 30/30 megahertz among the MSS licensees. The eight 2 GHz MSS licensees would choose Selected Assignments of 3.75/3.75 megahertz each.

[36] *See Further Notice*, 16 FCC Rcd at 16055-56 ¶ 27.

[37] *Id.*, 16 FCC Rcd at 16056 ¶ 28.

[38] *See id.*, 16 FCC Rcd at 16056 ¶ 29.

[39] *See* 47 U.S.C. § 316.

spacing of each system from the band edge as well as the need to "pack" the MSS systems in one portion of the band in order to preserve contiguous spectrum for other users such as AWS).[40]

16. We also requested comment on whether MSS operators should be permitted to consolidate operations. Finally, we sought comment on how the BAS and FS relocation plans would have to be modified to accommodate a reallocation of spectrum for AWS, including, for example, what the relocation responsibilities of new MSS and AWS entrants would be and whether 2 GHz MSS and AWS licensees should share BAS and FS relocation costs on a pro rata basis.[41]

17. The Commission requires 2 GHz MSS networks to meet an implementation milestone schedule as a condition of authorization. All authorized networks must enter into a non-contingent satellite manufacturing contract for the system within one year of authorization, which in this case was July 17, 2002, and complete critical design review with two years of authorization; construction and deployment of satellites vary from two and a half years to five years, depending on whether the system is comprised of geostationary or non-geostationary satellites.[42] Non-compliance with implementation milestones will result in cancellation of the authorization. Operators are required to submit certification of milestone compliance, or filing disclosure of non-compliance, within ten days following the applicable milestone.[43] The Commission assesses compliance with the adopted milestone schedules by reviewing these and other filings.[44] All eight MSS entities certified compliance with the first milestone. Upon review of these certifications, the International Bureau cancelled authorizations held by Constellation Communications Holdings, Inc. (Constellation), Mobile Communications Holdings, Inc., and Globalstar L.P. (Globalstar).[45]

[40] *Further Notice*, 16 FCC Rcd at 16057 ¶ 31.

[41] *Id.*, 16 FCC Rcd at 16056-59, ¶¶ 29-35.

[42] *Non-geostationary satellite systems* must begin physical construction of all satellites in the system within two and a half years of authorization, and complete construction and launch of the first two satellites within three and a half years of grant. *Geostationary satellite systems* must begin physical construction of all satellites in the system within three years, and complete construction of, and launch, one satellite of its constellation into its assigned orbital location within five years of authorization. The entire system must be launched and operational within six years of authorization. *Id.*, 15 FCC Rcd at 16177-78 ¶ 106.

[43] *See* 47 C.F.R. § 25.143 (e)(3). Failure to file a certification or disclosure of non-compliance will result in automatic cancellation of an authorization. *See* 47 C.F.R. § 25.161.

[44] *See* 47 C.F.R. § 25.143 (e)(1).

[45] Applications of Mobile Communications Holdings, Inc. and ICO Global Communications (Holdings) Limited for Transfer of Control, Constellation Communications Holdings, Inc. and ICO Global Communications (Holdings) Limited for Transfer of Control, Mobile Communications Holdings, Inc. for Modification of 2 GHz MSS License, and Constellation Communications Holdings, Inc. for Modification of 2 GHz MSS License, File Nos. SAT-T/C-20020719-00104, SAT-T/C-20020718-00114, SAT-MOD-20020719-00105 and SAT-MOD-20020719-00103, *Memorandum Opinion and Order*, DA 03-285 (Int'l Bur., 2003); Application of Globalstar, L.P. For Modification of License for a Mobile-Satellite Service System in the 2 GHz Band, File Nos. 183/184/185/186-SAT-P/LA-97; 182-SAT-P/LA-97(64), *Memorandum Opinion and Order*, DA 03-328 (Int'l Bur., 2003).

18. Finally, we note that, in a separate proceeding, we have decided to permit MSS licensees to provide terrestrial and satellite services by integrating an ancillary terrestrial component (ATC) into their networks.[46] Therefore, our consideration of the 2 GHz MSS bands must also account for these changes.

B. Comments

19. Many commenters support our proposal to reallocate at least 10-14 megahertz of spectrum from the 2 GHz MSS bands for the provision of AWS.[47] For example, VoiceStream states that the market for satellite services has become smaller than it was in 1997 when 70 megahertz was allocated to the MSS in the 2 GHz, which increased the overall amount of spectrum allocated for MSS. It predicts that the number of potential MSS customers will continue to decrease as terrestrial services continue to build out, and that the potential customer base for all MSS systems in the United States is limited to 1-2 million subscribers. It calculates that satellite providers have 4,386 customers per megahertz of allocated spectrum (based on global subscribership),[48] whereas terrestrial wireless carriers have 648,000 customers per megahertz (based on domestic subscribership),[49] and concludes that the current amount of allocated MSS spectrum is too large for the limited demand.[50] Similarly, AT&T Wireless, which supports reallocation of the entire MSS band, observes that Commercial Mobile Radio Service (CMRS) end user growth has been much greater than estimated when we allocated 70 megahertz for 2 GHz MSS.[51]

20. Ericsson, The Progress and Freedom Foundation (PFF), Telephone and Data Systems (TDS), The Telecommunications Industry Association – Wireless Communications Division (TIA – Wireless

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[46] Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Bands, *Report and Order and Notice of Proposed Rulemaking*, IB Docket No. 01-185, FCC 03-15 (rel. Feb. 10, 2003) (*ATC Order*).

[47] *See, e.g.*, Ericsson Comments to the *Further Notice* at 11-13; PFF Comments to the *Further Notice* at 3; Motorola Reply Comments to the *Further Notice* at 6-7; TDS Reply Comments to the *Further Notice* at 2.

[48] VoiceStream states that the Mobile Satellite Users Associations Comments in IB Docket No. 01-185 at 3 (October 22, 2001) stated that "By the end of 2000, there were close to 750,000 mobile satellite terminals commissioned for operation around the globe." VoiceStream counts 171 megahertz of MSS spectrum, consisting of L-band systems (1525-1559 MHz and 1626.5-1660.5 MHz); Big LEO systems (1610-1626.5 MHz and 2483.5-2500); and 2 GHz MSS systems (1990-2025 MHz and 2165-2200 MHz) VoiceStream Reply Comments to the *Further Notice* at 9 (VoiceStream is now known as T-Mobile).

[49] VoiceStream identifies 123,000,000 U.S. subscribers. *Id.* at 10. The current number of domestic subscribers may be higher, as indicated by statistics published by CTIA. On January 30, 2002, the CTIA web site (www.wow-com.com) claimed "137,458,902 current U.S. Wireless Subscribers." VoiceStream identifies 190 megahertz of terrestrial wireless spectrum and counted 50 megahertz for cellular, 120 megahertz for Broadband PCS, and an estimated 20 megahertz for the SMR spectrum that Nextel uses in its services.

[50] VoiceStream Reply Comments to the *Further Notice* at 8-9; VoiceStream Reply Comments to the CTIA Petition for Reconsideration at 5-6.

[51] AT&T Wireless observes that in 1994, the Commission predicated that there would be 54 million CMRS users by the year 2000, but that CMRS end user growth has been more than twice as fast as the Commission envisioned, with the industry serving approximately 122 million customers today. In contrast, AT&T Wireless states that the MSS industry does not even serve 1 percent of that total. Thus, AT&T Wireless asserts that the "marketplace has clearly spoken and the Commission's allocation decisions should respond to end user demand, not MSS licensees' unrealistic promises." *See* AT&T Wireless Comments to the *Further Notice* at 9.

Division), and Verizon also recommend that all abandoned spectrum be reallocated to AWS,[52] while Verizon further avers that all unassigned spectrum should be given to AWS.[53] PFF recommends that we adopt a "zero tolerance" policy for failure of MSS operators to meet milestone requirements, and should be prepared to reallocate such abandoned MSS spectrum to alternative uses, most likely AWS, on an expedited basis should abandonment occur.[54] Ericsson observes that the 1910-1915 MHz and 1990-1995 MHz bands could be used for Broadband PCS expansion.[55]

21. Several commenters argue that MSS assignments should commence from 2025 MHz and 2200 MHz (*i.e.*, at the top of each band) and occupy bands on a decreasing-in-frequency basis, arguing that this would allow an AWS reallocation without impairing MSS licenses, and make future reallocation of spectrum from MSS easier.[56] Ericsson, TIA – Wireless Division, Verizon, and VoiceStream also state that the 2165-2170 MHz band should be immediately reallocated to 3G services (*i.e.* for AWS applications).[57] TIA – Wireless Division also notes that such a reallocation, in conjunction with reallocation of the 2110-2165 MHz band, would create a 60 megahertz contiguous block – which would support 6 blocks of 10 megahertz each.[58]

22. AT&T Wireless, Cingular, CTIA, and Orange Group[59] recommend that the entire 2 GHz MSS allocation (1990-2025/2165-2200 MHz) be reallocated for AWS,[60] arguing that the MSS industry as a

[52] TDS Reply Comments to the *Notice* at 3; TIA – Wireless Division Comments to the *Further Notice* at 6; PFF Comments to the *Further Notice* at 3; Verizon Comments to the *Further Notice* at 3.

[53] Verizon Comments to the *Further Notice* at 3.

[54] PFF Comments to the *Notice* at 3.

[55] Ericsson Notice of *Ex Parte* Presentation, ET Docket No. 00-258, dated Sept. 18, 2001.

[56] *See, e.g.,* TIA – Wireless Division Comments to the *Further Notice* at 7; Motorola Reply Comments to the *Further Notice* at 7. Similarly, TDS states that 2 GHz MSS should use contiguous bands, so any reclaimed spectrum should also be contiguous. TDS Comments to the *Further Notice* at 7-8.

[57] *See* Ericsson Comments to the *Further Notice* at 2; TIA – Wireless Division Comments to the *Further Notice* at 6; VoiceStream Reply Comments to the *Further Notice* at 8.

[58] TIA – Wireless Division Comments to the *Further Notice* at 6.

[59] Orange Group recommends the reallocation of the Region 1 and 3 bands (1980-2010 MHz and 2170-2200 MHz) for terrestrial wireless systems, which we conclude is a recommendation to reallocate all current 2 GHz MSS spectrum because the remaining MSS spectrum (the 2010-2025 MHz band paired with the 2165-2170 MHz band) would be both small and asynchronous, and therefore unlikely to support MSS licensees under the current structure of that service. Orange Group Reply Comments to the *Further Notice* at 7. Orange Group notes that the terrestrial component of IMT-2000 (1920-1980 MHz paired with 2110-2170 MHz) has a 190 megahertz duplex separation and that the 1990-2010 MHz and 2180-2200 MHz bands have this same duplex separation. Orange Group asserts that the use of 190 megahertz duplex separation would allow easier manufacture and design of terminal equipment, which would enable economies of scale and global roaming. *See* Orange Group Comments to the *Further Notice* at 4.

[60] *See* AT&T Wireless Comments to the *Further Notice* at 8-9; Cingular Comments to the *Further Notice* at ii, 7-13; CTIA Reply Comments to the *Further Notice* at 3-8. Cingular further recommends that reallocated MSS spectrum be used for Frequency Division Duplex (FDD) operations, with the 1990-2010 MHz band paired with the 2180-2200 MHz band and the 1710-1780 MHz band paired with the 2110-2180 MHz band, and that reallocated MSS spectrum in the 2010-2025 MHz band be used for Time Division Duplex (TDD) operations or, alternately, as replacement

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whole is not economically viable and noting that some 2 GHz MSS licensees have made such statements in filings before the Commission.[61] ArrayComm and Nortel suggest that the 20/20 megahertz of global MSS spectrum be retained for 2 GHz MSS use and that the remainder be relocated for AWS.[62] SBE recommends that the 2008-2025 MHz band be reallocated to support AWS.[63] CTIA, on the other hand, argues that the demand for spectrum for AWS and the tentative prospects for MSS should compel the Commission to reject maintaining any arbitrary "floor" of MSS spectrum, including the 40 megahertz of spectrum allocated to MSS globally, and that such a floor would preclude more efficient use of the spectrum.[64] Further, Nextel recommends that, as part of its proposed 800 MHz interference mitigation plan, we reallocate the 1910-1915/1990-1995 MHz bands to Nextel in exchange for spectrum that it would give up.[65] Finally, WCA offers that MDS relocation from the 2150-2160/62 MHz band could be accomplished by providing MDS with the 1910-1916/1990-1996 MHz bands and allowing fixed or mobile use.[66]

23. Several of the 2 GHz MSS proponents – including Celsat America (Celsat), Constellation, Globalstar, Lockheed Martin, Space Enterprise Council, and the Satellite Industry Association (SIA) – oppose any reallocation of spectrum from MSS, arguing that the satellite service may be the only viable solution for providing AWS to rural and underserved areas.[67] Lockheed Martin states that MSS provides many emergency communications, and the Mobile Satellite Users Association (MSUA) states that reallocating MSS spectrum would compromise many public safety operations.[68] The Telecommunications Industry Association – Satellite Communications Division (TIA – Satellite Division) states that MSS

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spectrum for incumbents in other bands – such as MDS – that are being cleared for possible AWS use. Cingular Comments to the *Further Notice* at 11.

[61] *See* AT&T Wireless Comments to the *Further Notice* at 8; Cingular Comments to the CTIA Petition for Reconsideration at 6; CTIA Reply Comments to the CTIA Petition for Reconsideration at 7-9. Moreover, AWS proponents observe that Globalstar has filed for bankruptcy and assert that this proves the MSS industry is not viable. In addition, AWS proponents argue that MSS use of the 1990-2025 MHz and 2165-2200 MHz is an inefficient use of valuable spectrum. AWS proponents also state that MSS is not viable and is unable to deliver promised service to rural and underserved areas.

[62] *See* ArrayComm Comments to the *Further Notice* at 9 & 13; Nortel Comments to the *Further Notice* at 6.

[63] *See* SBE Reply Comments to the *Further Notice* at 1 & 5.

[64] CTIA Comments to the *Further Notice* at 6-7.

[65] *See* Nextel Notice of *Ex Parte* Presentation, ET Docket No. 00-258, dated Aug. 9, 2002. Nextel initially recommended the 2020-2025/2170-2175 MHz bands. *See* Nextel Notice of *Ex Parte* Presentation, ET Docket No. 00-258, dated Nov. 21, 2001 at 29.

[66] *See* Letter from WCA, *et. al.*, to FCC Chairman Powell, July 11, 2002, in ET Docket 00-258, concerning "Compromise Solution for Relocating MDS from 2150-2162 MHz." (*WCA Letter*) This letter was sent jointly by WCA, Bellsouth, Nucentrix, Sprint, and Worldcom. WCA is the trade association of the MDS industry. The other parties hold the majority of licenses in the 2150-2160 MHz band. We note that the 1910-1916 MHz UPCS band and the 1990-1996 MHz MSS band is the same spectrum (1910-1915 MHz/1990-1995 MHz) that Nextel has identified.

[67] Celsat Comments to the *Further Notice* at 3; Lockheed Martin Comments to the *Further Notice* at 5; Globalstar Reply Comments to the *Further Notice* at 4; Space Enterprise Council Reply Comments to the *Further Notice* at 1; Constellation Comments to the *Further Notice* at ii-iii; SIA Comments to the *Further Notice* at 2.

[68] Lockheed Martin Comments to the *Further Notice* at 5; MSUA Comments to the *Further Notice* at 4.

provides important public service, particularly in disaster situations,[69] and argues that we must retain global MSS spectrum because of cost efficiencies such as simplified system design and economies of scale.[70] Globalstar and SIA state that the MSS bands are not designated globally for terrestrial services so a reallocation would not lead to global harmonization.[71]

24. ICO and Boeing argue that any domestic reallocation that conflicts with the international MSS allocations at 1980-2010 MHz and 2170-2200 MHz would impair the ability of multiple MSS systems to provide global service, would be a reversal of long-standing U.S. support of global spectrum for MSS, and would undermine U.S. credibility with the international community at future world radio conferences.[72] In response to requests by Nextel and the MDS proponents for access to the 1990-1996 MHz bands, ICO is concerned that a reallocation of the 1990-1996 MHz band would limit the amount of spectrum available to its uplink operations because it has already constructed its system to operate within the 1985-2015 MHz and 2170-2200 MHz bands.[73] TMI Communications and Company Limited Partnership (TMI) states that reallocation of 2 GHz MSS spectrum would cause coordination problems with Mexico and Canada because this spectrum is licensed for MSS use in these countries.[74]

25. CTIA, and certain incumbent PCS licensees and PCS equipment manufactures have raised the issue of possible out-of-band emissions interference from 2 GHz ATC mobile earth terminals to PCS mobile receivers operating in the 1930-1990 MHz band, which they claim would not be adequately protected by our current out-of-band limitation of -43 + 10 log P dB for PCS mobile transmitters.[75] These parties also have indicated that PCS mobile handsets would not be able to adequately filter out transmissions from nearby MSS ATC handsets; which could result in either a desensitization or overload of existing PCS receivers. Verizon has also expressed its concern on this same point.[76] CTIA suggests that this potential for interference could be mitigated by providing 15-20 megahertz of frequency separation between PCS and ATC operations and by imposing much tighter out-of-band emissions limits on ATC equipment. Nextel, however, disagrees with CTIA and Verizon's view, contending that while ATC could theoretically cause interference to existing PCS operations in limited circumstances, the probability of such interference actually occurring is low. Nextel argues that a 15 MHz guard band between MSS/ATC mobile transmit and PCS mobile receive is unnecessary given the combination of

[69] TIA – Satellite Division Comments to the *Further Notice* at 3.

[70] TIA – Satellite Division Comments to the *Further Notice* at 4-5.

[71] Globalstar Comments to the *Further Notice* at i-ii; SIA Comments to the *Further Notice* at 2, 5 & 6.

[72] ICO Comments to the *Further Notice* at 27-28; Boeing Comments to the *Further Notice* at 7. *But see* Cingular Reply Comments to the *Further Notice* at 5 (challenging the MSS proponents' argument that a reallocation of MSS spectrum would harm U.S. credibility in the international community).

[73] ICO Comments to the *2002 Viability Assessment* at 4-6. ICO also argues that a reallocation of the 1990-1996 MHz band would impair its ability to comply with one of our 70 percent frequency agility requirements and thus require it to modify its system at great cost. *Id.*

[74] TMI Comments to the *Further Notice* at 2.

[75] Letter from Diane Cornell, Counsel, Cellular Telecommunications and Internet Association to Marlene H. Dortch, Secretary, Federal Communications Commission at 4-10. *Ex Parte* filing in IB Docket No. 01-185 and ET Docket No. 00-258 (filed Jan. 14, 2003).

[76] Letter from Donald C. Brittingham, Director, Wireless Spectrum Policy, Verizon Corp. to Marlene H. Dortch, Secretary, Federal Communications Commission at 1-6. *Ex Parte* filing in IB Docket No. 01-185 and ET Docket No. 00-258 (filed Jan. 6, 2003).

contributing factors necessary to produce interference.[77] According to Nextel, if the same analyses used by CTIA for ATC mobile transmitters and PCS mobile receivers were used in the 800 MHz band, it would predict substantial interference. However, Nextel notes that in a similar allocation in the 800 MHz band where the cellular mobile transmit band is adjacent to the Land Mobile Radio mobile transmit band, there are no interference problems.[78]

26. TIA – Satellite Division also opposes the reallocation of 10-14 megahertz of spectrum for AWS, because such action would leave each MSS licensee with less than 4 megahertz of spectrum in each direction, which it claims is not enough to support the long-term provision of broad-based services.[79] Commenters representing 2 GHz MSS incumbents also describe anticipated growth for the service as a basis for rejecting the proposed reallocation. Celsat states that the spectrum usage by, and needs of, MSS are expected to grow as the service is deployed.[80] Boeing states that MSS will support a viable satellite-based air traffic management system and that it will use the entire assigned spectrum.[81] ICO notes that, according to the ITU, 206 megahertz of additional spectrum is predicted to be needed for MSS by 2005.[82]

27. MSS proponents uniformly recommend redistribution of abandoned 2 GHz MSS spectrum to remaining MSS carriers.[83] TMI states that additional flexibility should be given to MSS licensees to consolidate space platforms and acquire forfeited spectrum to enhance efficiency. It argues that no more than 10 megahertz should be reallocated to 3G.[84] PFF recommends that we adopt a liberal policy with respect to consolidations among MSS providers and between MSS providers and other firms, including specifically CMRS providers.[85]

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[77] *See* Letter from Regina M. Kenney, Esq., to Marlene H. Dortch, Secretary, Federal Communications Commission. *Ex Parte* filing on behalf of Nextel in IB Docket No 01-185 and ET Docket No. 00-258 (filed Jan. 23, 2003). Nextel notes that interference from an MSS/ATC handset to a PCS handset only occurs when both mobiles are close to each other, both mobiles are making call, the desired signal for the PCS mobile is weak, and the MSS/ATC mobile is operating at maximum power. Nextel states that the probability of all these factors occurring at the same time is very low.

[78] *Id.* at 6-8.

[79] TIA – Satellite Division Comments to the *Further Notice* at 4.

[80] Celsat Reply Comments to the *Further Notice* at 3-5, 7-8.

[81] Boeing Opposition to the CTIA Petition for Reconsideration at i.

[82] ICO Reply Comments to the *Further Notice* at ii, 3.

[83] Boeing Comments to the *Further Notice* at 6-7 ("the Commission should make clear that [abandoned] spectrum must first be made available to the remaining 2 GHz MSS licensees that have met their milestones"; Celast Reply Comments to the *Further Notice* at 6-8 ("Any abandoned 2 GHz MSS spectrum should be made available to the remaining 2 GHz MSS licensees."); Constellation Reply Comments to the *Further Notice* at 8 ("A regulatory structure that provides for the pro rata assignment of . . . spectrum among the 2 GHz MSS systems that are actually financed and implemented will result in the most practical utilization of the 2 GHz MSS bands"); TMI Comments to the *Further Notice* at 7 ("A *pro rata* share [of abandoned 2 GHz spectrum] should be offered to remaining operators (which have met their milestones) as a means to ensure that viable systems will develop.").

[84] TMI Reply Comments to the *Further Notice* at 2, 7-8; TMI Comments to the *Further Notice* at 2.

[85] *See* PFF Comments to the *Notice* at 3.

C. Decision

28. Based on the record, we conclude that the public interest would be best served by reallocating 30 megahertz of spectrum in the 2 GHz MSS band for Fixed and Mobile services on a primary basis and preserving the remaining 40 megahertz of spectrum for MSS at this time. We will reallocate 15 megahertz from the MSS uplink band, specifically the 1990-2000 MHz and 2020-2025 MHz band segments, and 15 megahertz from the MSS downlink band, specifically the 2165-2180 MHz band segment. We are modifying the Table of Allocations to provide for Fixed and Mobile services in these bands on a co-primary basis. In addition, we are modifying footnote NG156 of the U.S. Table of Frequency Allocations,[86] concerning Fixed and Mobile service status in bands shared with MSS, to remove the 1990-2000 MHz band. We are also creating a new non-Federal Government footnote that makes incumbent BAS and cable television relay service operations that are secondary to MSS also secondary to new Fixed and Mobile services. Finally, we conclude that some abandoned 2 GHz spectrum recently recaptured as a result of the initial MSS milestone review will be reassigned to the authorized MSS operators that remain when we complete the initial milestone review.

29. We already have concluded in this proceeding that we need to make spectrum available for terrestrial wireless services to promote the introduction of new advanced services,[87] and we would satisfy the public interest by making more spectrum available to meet these needs. We explore alternative uses of this reallocated spectrum, including use of this spectrum for AWS, in the accompanying *Further Notice*. By retaining a reduced MSS allocation, we also serve the public interest by providing spectrum that can be used by those MSS entities that are proceeding with plans to implement service in these bands. We note that some commenters suggest that we should reallocate the entire 2 GHz MSS spectrum, but we reject that course because it would require us to abandon MSS entirely in this band.[88] Of course, nothing in our decision today limits our continuing spectrum management obligations to ensure that the spectrum is used efficiently and effectively. This includes the ability of the Commission to ensure that the 2 GHz MSS band is not monopolized, whether through our case-by-case review of consolidation of transactions or our ability to open new processing rounds or the reallocation of spectrum if 2 GHz MSS licensees fail to meet their milestones.

30. Our conclusion to reallocate some MSS spectrum for Fixed and Mobile services is supported by the record and other public information. We agree with VoiceStream and other parties that the terrestrial wireless services have seen substantially higher subscribership growth than MSS, even though both services share nearly the same amount of spectrum.[89] Remarkable growth in terrestrial CMRS subscribership has occurred since 1995 when we began allocation proceedings for MSS. For example, in the *Second Competition Report*, we estimated that, as of December 1996, there were approximately 46.3 million subscribers in the mobile telephone sector.[90] In the *Seventh Competition Report*, we estimated that,

[86] 47 C.F.R. § 2.106, footnote NG156.

[87] *Second R&O*, 17 FCC Rcd at 23200, ¶ 12.

[88] As discussed in the *Second Memorandum Opinion and Order* portion of this document, *infra*, we likewise reject the petition for reconsideration filed by CTIA that relates to its petition for rulemaking to reallocate the entire 2 GHz MSS spectrum.

[89] VoiceStream Reply Comments to the *Further Notice* at 8-9 (calculating an average 648,000 United States customers per megahertz on 190 megahertz of spectrum allocated to terrestrial wireless services versus less than 5000 global customers per megahertz on the spectrum that is allocated to MSS).

[90] *See Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993 [and] Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services, Second Report*, FCC 97-75, rel. March 25, 1997 at 5 (*Second Competition Report*) (stating that "CMRS encompasses approximately 44

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as of December 2001, there were 128.5 million subscribers in the mobile telephone sector, which translates into a national penetration rate of roughly 45 percent, with 61 percent of all U.S. households having at least one wireless phone.[91] This was approximately a 17 percent increase in the number of mobile telephone sector subscribers since December 2000.

31. Although, as some MSS proponents assert, the MSS industry is still relatively young and needs the opportunity to overcome the substantial start-up obstacles it has encountered, we conclude that a reallocation of some 2 GHz MSS spectrum should not impair the growth of MSS. The remaining MSS allocations, both in the 2 GHz band and other bands, will be sufficient to support growth of this service for the foreseeable future.[92] Although several MSS networks have been deployed in other bands, some of the eight authorized 2 GHz MSS authorizations have been cancelled because entities did not meet the milestone conditions of their authorizations. On balance, it is in the public interest to reallocate a portion of the 2 GHz MSS spectrum to support continuing growth of fixed and mobile services.

32. The 30 megahertz of spectrum that will be reallocated from MSS comes from two sources: 14 megahertz of spectrum that was not assigned to any of the MSS licensees and 16 megahertz of spectrum (of the 21 megahertz) that has been abandoned as a result of MSS licensees not meeting initial milestones. Presently, the International Bureau has cancelled three MSS authorizations, thereby recapturing 21 megahertz of spectrum. Sixteen megahertz of this recaptured spectrum, as well as the 14 megahertz of unassigned spectrum, will be reallocated immediately for Fixed and Mobile services. Relying on unassigned and abandoned spectrum as the basis for the reallocation is least disruptive to the MSS licensees. Further, the initial MSS milestone review, which is not yet completed, has already made available an additional 5 megahertz of abandoned spectrum that we are not reallocating for new services. We note that the MSS entities have asserted the need for access to more than 3.5 megahertz of spectrum in

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million cellular subscribers, 34 million paging subscribers, and 2.3 million specialized mobile radio transmitters."). However, in the *Seventh Competition Report*, 17 FCC Rcd at 12988 n.10, the Commission uses the term "mobile telephone segment," which includes the provision of mobile telephony services by cellular, Broadband PCS, and digital SMR operators. Following the definition of the most recent report, we are not including paging subscribers for comparison purposes.

[91] *See Seventh Competition Report*, 17 FCC Rcd at 12988, 13004 & 13015.

[92] In addition to the MSS allocations at 2 GHz, additional MSS allocations in the U.S. are: 1) L-band, 1525-1559 MHz (downlink) and 1626.5-1660.5 MHz (uplink); 2) "Big LEO" band, 1610-1626.5 MHz (uplink) and 2483.5-2500 MHz (downlink); and 3) 3-4 megahertz across several bands for MSS data services ("Little LEO"). Currently, MSS licensees in the 1.6 GHz and 2.4 GHz bands (referred to as Big LEO systems) are providing service in the United States. Among the licensees that operate Low-Earth Orbit (LEO) satellites in these bands, Globalstar is operating under Chapter 11 bankruptcy protection and Iridium emerged from bankruptcy in December 2000. Globalstar states that its Big LEO MSS system had 75,535 worldwide commercial customers as of June 30, 2002. *See* "Globalstar presents ATC technology, discusses bankruptcy," RCR Wireless News, July 29, 2002, at 17. Iridium Satellite LLC. (Iridium) re-initiated commercial service at the end of March 2001 and we have no information on its subscriber numbers at this time. We note, however, that Iridium has entered into a contract with the U.S. Department of Defense to provide unlimited airtime to 20,000 Government workers. This contract was recently renewed for an additional year and there are options for renewal through 2005. *See* Iridium Press Release, Dec. 18, 2002, "Defense Department Exercises First Renewal Option of Contract" available at http://www.iridium.com/corp/iri_corp-news.asp?newsid=51. ICO, one of the eight 2 GHz MSS licensees, is the only one to have launched a satellite, and it has six additional assembled satellites. ICO has stated that it intends to commence commercial service in 2003.

each band for their Selected Assignments.[93] We thus conclude that the public interest would be served by redistributing abandoned 2 GHz spectrum recently recaptured as a result of the initial MSS milestone review, above the 16 megahertz being reallocated, to the authorized MSS operators that remain when we complete the initial milestone review. Thus, it is possible that more than 5 megahertz of abandoned spectrum may be available for redistribution when the initial MSS milestone review is completed. We further note that MSS milestone review is an ongoing process that spans several years, and it is possible that not all currently authorized MSS networks will be deployed. As we previously stated in *2 GHz MSS R&O*, we have not established nor do we do so here any policy or rule regarding the use of additional abandoned spectrum that may result after future MSS milestone reviews are completed. Instead, we will evaluate whether to redistribute such spectrum or make it available to new entrants after achievement of each of our system implementation milestones.[94]

33. Because we are revising the allocated spectrum for MSS and modifying the amount of spectrum that will constitute a Selected Assignment, we also modify how Selected Assignments are to be located in the revised MSS bandwidth. In the *2 GHz MSS R&O*, we determined that the MSS band plan would be divided into equal segments based on the number of licensed MSS systems. This incremental spacing approach allows MSS licensees to identify Selected Assignments working from either the bottom or the top of the band without requiring assignments to be selected in sequential order, as some commenters have suggested.[95] In order to maintain this flexibility, the plan for each band will be based on dividing the revised MSS allocation in each band by the number of MSS licensees remaining when we complete the initial MSS milestone review. Thus, MSS licensees will choose Selected Assignments as an integer multiple of this amount from either band edge.[96] We thus modify, pursuant to Section 316 of the Communications Act and consistent with our decisions here, the 2 GHz MSS authorizations to increase the amount of spectrum for Selected Assignments, to require that a Selected Assignment be located within the revised MSS allocation, and to require that a Selected Assignment be chosen such that the band edge of the assignment is an integer multiple of the revised value from the band edge.[97] We also delegate authority to the International Bureau to issue revised authorizations, consistent with our decisions here, when the initial milestone review is completed. When the authorizations are modified, the MSS entities, including ICO, can follow current procedures for notifying the Commission of their Selected Assignments and their selections will be put on public notice.

34. In deciding which segments of the MSS spectrum should be reallocated for Fixed and Mobile services, we recognize that the record is split on whether we should reallocate spectrum that overlaps the

[93] *See, e.g.*, Boeing Comments to the *Further Notice* at 3-6; Globalstar Comments to the *Further Notice* at 4-6; ICO Comments to the *Further Notice* at 15-16; Celsat Reply Comments to the *Further Notice* at 7-8.

[94] *See 2 GHz MSS R&O*, 15 FCC Rcd at 16139, ¶ 18.

[95] In the *2 GHz MSS R&O*, we also determined that we would not pair assignments in the uplink and downlink bands and, rather, provide MSS licensees with the flexibility to choose an assignment in one band independent of the chosen assignment in the other band. *See id.*, 15 FCC Rcd at 16141, ¶ 23.

[96] We recognize that if the Commission decides to assign MSS licensees additional spectrum through, for example, a distribution of abandoned MSS spectrum, the integer spacing of Selected Assignments may have to be modified so to accommodate the amount of assigned spectrum per licensee.

[97] The Commission has the authority to modify the 2 GHz MSS authorizations by rulemaking. *See, e.g.*, *Community Television, Inc. v. FCC*, 216 F.3d 1133, 1140-41 (D.C. Cir. 2000) (upholding Section 316 modification of broadcast licenses during the DTV transition, which would ultimately move licensees from one channel to another, but observing that the FCC had not "wrought a fundamental change to the terms of those . . . licenses").

global MSS allocation, which consists of paired 30 megahertz bands at 1980-2110 MHz and 2170-2200 MHz. The U.S. MSS allocation, which consists of two paired 35 megahertz bands, overlaps 20 megahertz of the international allocation in the lower uplink band (1990-2010 MHz) and all of the 30 megahertz of the international allocation in the upper downlink band (2170-2200 MHz). After careful consideration of the record, we conclude that, on balance, the benefits to the public of providing additional spectrum for Fixed and Mobile services that overlaps the international 2 GHz MSS band outweigh the impact on MSS. Our decision is to reallocate MSS spectrum in a way that will allow new entrants to take advantage of economies of scale in developing and deploying new services while maintaining sufficient international MSS spectrum.

35. In the 1990-2025 MHz band, we are reallocating from the current MSS allocation a 10 megahertz block at 1990-2000 MHz, which is contiguous with the existing Broadband PCS allocation at 1930-1990 MHz, and a 5 megahertz block at 2020-2025 MHz. Because the 10 megahertz block is contiguous with the Broadband PCS band, this spectrum could provide needed growth spectrum for PCS providers, as well as facilitate new AWS equipment development and deployment. This reallocation will reduce by 10 megahertz the current 20 megahertz available for the international MSS uplink allocation. While we recognize that globally harmonized spectrum is an important resource, we share CTIA's concerns regarding potential interference to existing PCS operations at 1930-1990 MHz.[98] We believe that in this instance, these interference concerns outweigh the benefits of increased global harmonized spectrum. We find that we can accommodate the international needs of 2 GHz MSS licensees in the remaining 10 megahertz (uplink) + 20 megahertz (downlink) of overlapping international spectrum. Not all of the eight authorized MSS networks will be deployed, not all of the proposed MSS networks will be providing global service, and most MSS licensees propose to operate throughout the currently allocated band (2000-2020 MHz).[99] The remaining MSS entities will be able to adapt their frequency use within the U.S. to the remaining allocated spectrum (2000-2020 MHz), and use any spectrum within the international allocation (1980-2010 MHz) outside the U.S.[100] Any newly authorized MSS networks could be built to accommodate the revised MSS allocation, assuming that sharing with incumbent MSS licensees is possible. We conclude that our decision to reduce the amount of globally harmonized MSS spectrum that will be available in the United States is appropriate at this time and consistent with the current spectrum requirements for the global portion of the 2 GHz MSS industry. Despite this action, we remain cognizant and supportive of the benefits of global spectrum harmonization, when appropriate.

36. In the 2165-2200 MHz band, we balance the MSS and terrestrial services needs by reallocating a 15 megahertz block at 2165-2180 MHz. This reallocation will minimize the impact on MSS, as all of the remaining 20 megahertz domestic allocation will overlap with the current international MSS downlink allocation – and, thus, 30 of the 40 megahertz of remaining MSS spectrum will overlap with the global allocation. As discussed above, we believe that MSS licensees should not be significantly impaired

[98] We note in the companion *ATC Order* that we have also adopted stricter out-of-band emission limits and other service requirements to further protect existing PCS operations. *See ATC Order, supra* n.46.

[99] *See supra* ¶ 17; *see also supra* n.29 (citing the Commission staff's July 17, 2001, authorizations to eight applications to provide 2 GHz MSS in the United States, wherein some applicants disclosed plans to construct single geostationary satellite systems that would not provide global service).

[100] For example, ICO has constructed its satellites to operate across the 1990-2015 MHz segment of the uplink band and thus will have 15 megahertz of bandwidth available for satellite use within the U.S. ICO thus will meet the 70 percent frequency agility requirement for MSS systems in this band.

in providing satellite services in this band.[101] We note that, as a result of our previous decision in this docket, 45 megahertz of contiguous spectrum, from 2110-2155 MHz, will be available for AWS. We also have proposed to make the adjacent bands at 2155-2160 and 2160-2165 MHz available for AWS. We note that our decision here to reallocate the adjacent MSS spectrum at 2165-2180 MHz is consistent with the majority of the AWS proponents who favor reallocating MSS spectrum adjacent to the 2110-2165 MHz band. Contiguous spectrum would make it easier to accommodate multiple licensees using larger spectrum blocks throughout this band. Further, as some commenters note, a flexible allocation at 2110-2165 MHz would overlap to a large extent the international allocation for a terrestrial component of advanced services at 2110-2170 MHz and thus will promote the timely introduction of new equipment and services in this spectrum.

37. As a consequence of our decision to reallocate the 1990-2000/2020-2025/2165-2180 MHz bands, we note that coordination of satellite and terrestrial use with Canada and Mexico will be necessary. Finally, we are not reaching decisions here on several other issues raised in the *Further Notice*, such as the consolidation of MSS assignments and BAS and FS relocation issues. We will address those issues in further proceedings. We note, for example, that relocating incumbent BAS operations in the 1990-2025 MHz band will be further complicated by our decision here.[102] As we stated in the *Further Notice* when discussing possible reallocation of spectrum in the 1990-2025 MHz band, the relocation of BAS from any portion of the band would be shared between new MSS entrants and other new entrants in the band.[103] Although we conclude that this principle would apply as a consequence of our reallocation decision, we will address fully BAS relocation issues in a future separate proceeding. We intend to address the relocation issues well in advance of the September 6, 2003, expiration of the initial two-year mandatory negotiation period for Phase 1 of the relocation plan between MSS and BAS.[104]

V. THIRD NOTICE OF PROPOSED RULE MAKING

38. Throughout this proceeding, we have identified and discussed numerous frequency bands that could be used to support AWS. As a result, we have generated a comprehensive record that has served as the basis for the allocation decisions we have taken to date and that will support our future decisions in

[101] For example, ICO has constructed its satellites to operate across the 2170-2200 MHz segment of the downlink band and thus will have 20 megahertz of bandwidth available for satellite use within the U.S. ICO thus will meet the 70 percent frequency agility requirement for MSS systems in this band.

[102] For example, BAS Channel 1 covers 1990-2008 MHz. Phase 1 of the BAS relocation plan makes the first MSS entrants responsible for clearing this channel, and allows them to seek reimbursement from later entering MSS operators. As a result of our decision here, a portion of BAS Channel 1 will now be used by other new entrants and thus raises the issue of those new entrants and the MSS parties sharing BAS relocation expenses.

[103] *See Further Notice*, 16 FCC Rcd at 16057 ¶ 33.

[104] In the *Further Notice*, we did not propose, nor do we suggest here, that 2 GHz MSS entities would be entitled to relocation compensation as a consequence of reallocating MSS spectrum for other services. We note, in particular, that the *Emerging Technologies* relocation policies were intended to prevent disruption of existing services and minimize the economic impact on licensees of those services. *See* Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies, ET Docket No. 92-9, *First Report and Order and Third Notice of Proposed Rulemaking*, 7 FCC Rcd 6886 (1993). None of the authorized 2 GHz MSS systems are now operational, thus there is no need to prevent disruption to existing services. Further, most 2 GHz MSS systems are in the early stages of construction, having just recently certified that they have met the first construction contract requirement under milestone review. Thus, most 2 GHz MSS systems can accommodate in their system design and construction the allocation changes made here with little or no economic impact. ICO constructed its system at its own risk prior to receiving a U.S. authorization. Nonetheless, the ICO system is capable of operating across the revised allocated MSS bandwidth, and thus the economic impact on ICO should be minimal.

this docket. Today's *Third R&O* further defines the scope of spectrum that could be made available for AWS or other purposes by reallocating 30 megahertz of MSS spectrum. In this *Third Notice of Proposed Rulemaking* (*Third Notice*), we discuss those frequency bands that are still under consideration in this proceeding and invite additional comment on their disposition. Specifically, we address the UPCS band at 1910-1930 MHz, the MDS spectrum at 2155-2160/62 MHz, the Emerging Technology spectrum at 2160-2165 MHz, and the bands reallocated from MSS. We seek comment on these bands with respect to using them for paired or unpaired AWS operations or as relocation spectrum for existing services. We emphasize the scope of the record we have already developed and urge interested parties to narrow their discussion to specific proposals that will allow for the most efficient and effective use of this remaining spectrum. For example, parties filing comments in response to any of the issues in this *Third Notice* should take into account how the modification of our rules to allow MSS licensees to deploy ATC affects their analysis of the spectrum under consideration in this proceeding.

A. 1910-1930 MHz and 1990-2000 MHz Bands

39. *Background.* The 1910-1930 MHz band is allocated internationally to the fixed and mobile services on a primary basis and has been designated as a candidate band for administrations wishing to implement IMT-2000 services.[105] In the United States, the 1910-1930 MHz band is allocated to the fixed and mobile services on a primary basis,[106] and is designated for use by low power unlicensed personal communications service (UPCS) devices under Part 15 of the Commission's Rules.[107] Because this band is located between the Broadband PCS mobile and base station transmit bands, UPCS is well suited to this band; *i.e.*, these systems can coexist with Broadband PCS while higher power systems would have a high likelihood of causing harmful interference to those systems.[108] Prior to the availability of the 1910-1930 MHz band for UPCS use, this band was used by fixed point-to-point microwave links. To facilitate the introduction of UPCS systems, the Commission established policies in the *Emerging Technologies* proceeding for the relocation of incumbent microwave systems from this band and designated UTAM, Inc. (UTAM) to coordinate and manage the transition.[109]

40. Under the current rules, the 1910-1920 MHz portion of the band may be used for asynchronous (generally data) UPCS devices and the 1920-1930 MHz portion may be used for isochronous (generally voice) UPCS devices.[110] To minimize the potential of systems in each band

[105] 47 C.F.R. § 2.106, footnote 5.388. International footnote 5.388A states that the 1910-1930 MHz and other frequency bands may be used by high altitude platform stations as base stations to provide IMT-2000 services. 47 C.F.R. § 2.106, footnote 5.388A.

[106] *See* 47 C.F.R. § 2.106.

[107] *See* 47 C.F.R. Part 15 - Radio Frequency Devices. Subpart D of Part 15 is titled "Unlicensed Personal Communications Service Devices."

[108] Domestically, Broadband PCS systems have been implemented as frequency division duplex (FDD) systems. Such systems generally require a duplex gap – an unused frequency block – to provide isolation between base and mobile transmit frequencies.

[109] *See* Amendment of the Commission's Rules to Establish New Personal Communications Services, GEN Docket No. 90-314, *Fourth Memorandum Opinion and Order*, 10 FCC Rcd 7955 (1995). UTAM is the Commission's frequency coordinator for UPCS devices in the 1910-1930 MHz band. The UPCS band relocation policies are codified at 47 C.F.R. §§ 101.69-101.81.

[110] Asynchronous devices are defined as those "that transmit RF energy at irregular time intervals, as typified by local area network data systems," and isochronous devices are defined as those "that transmit at a regular interval, typified by time-division voice systems." *See* 47 C.F.R. § 15.303(a)-(d). Specific requirements for the operation of

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interfering with other systems operating in the same band, the Commission adopted rules requiring UPCS devices to monitor the spectrum prior to transmitting. Recognizing that asynchronous and isochronous transmissions have different characteristics – asynchronous transmissions tend to be short, bursty packet data and isochronous transmissions tend to be longer and more predictable – the Commission tailored the monitoring etiquette to optimize the 1910-1920 MHz band for asynchronous devices and the 1920-1930 MHz band for isochronous devices.[111] Currently, the most widespread application of the 1920-1930 MHz UPCS band is for wireless PBX systems.

41. In the *Further Notice*, we sought comment on whether a portion of or the entire 1910-1930 MHz band should be re-designated for AWS or as relocation spectrum for incumbents in other frequency bands that are displaced by new AWS licensees.[112] In particular, we sought comment on the extent to which the 1910-1930 MHz band is being used or likely to be needed for UPCS devices and how the 1910-1930 MHz band could be used with other spectrum being considered for AWS. We also asked if part of the 1910-1930 MHz band were to be re-designated, how much, and which parts, should be re-designated, and whether the location of the 1910-1930 MHz band, as adjacent to the Broadband PCS bands, benefits or hinders the band's possible use for AWS.

42. We also note that there are several outstanding petitions relating to use of the 1910-1930 MHz band. A petition for rulemaking filed by WINForum requests that we allow isochronous UPCS devices to operate over the entire 1910-1930 MHz band and correspondingly phase out asynchronous UPCS use in the 1910-1920 MHz band. In addition, it asks that we modify certain technical requirements for UPCS devices to optimize the 1910-1930 MHz band for isochronous devices.[113] In contrast, a petition for rulemaking filed by UTStarcom requests that the use of the 1910-1920 MHz band be made available for community wireless networks on a coordinated basis.[114] UTStarcom maintains that its proposal would permit it to establish community wireless networks using the UTStarcom Personal Access System (PAS). This system, based on the Japan RCR-28 Personal Handy Phone System (PHS) standard, does not meet the current Part 15 UPCS monitoring etiquette rules for isochronous devices.[115] Instead, devices within the

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asynchronous devices in the 1910-1920 MHz band are codified at 47 C.F.R. § 15.321 and specific requirements for the operation of isochronous devices in the 1920-1930 MHz band are codified at 47 C.F.R. § 15.323.

[111] The purpose of the monitoring requirement is to allow systems that use different air interfaces to coexist harmoniously in the same band. The rules require asynchronous devices to monitor the spectrum that its transmission is intended to occupy for at least 50 microseconds prior to initiating a transmission with a monitoring threshold not more than 32 dB above the thermal noise power for a bandwidth equivalent to the emission bandwidth of the device. *See* 47 C.F.R. § 15.321 Isochronous devices are limited to specific channels and must monitor for at least 10 or 20 milliseconds depending on the design of the system. The monitoring threshold must not be more than 30 dB above the thermal noise power for a bandwidth equivalent to the emission bandwidth of the device. *See* 47 C.F.R. § 15.323.

[112] *Further Notice*, 16 FCC Rcd at 16048, ¶ 9.

[113] WINForum seeks modifications to certain technical rules, *e.g.*, 47 C.F.R. §§ 15.301 (definition of peak transmit power), 15.319(e) (antenna gain), 15.321 (frequency stability), in conjunction with its proposed rule for the 1910-1920 MHz band. We note that WINForum did not ask for any changes to the monitoring requirement.

[114] UTStarcom first requested licensed use of the 1910-1920 MHz band. It now proposes "coordinated unlicensed operation" in the 1910-1920 MHz band for its PAS system, with the coordination performed by UTAM using the existing UTAM coordination infrastructure. *See* UTStarcom Comments to the *Further Notice* at 6.

[115] UTStarcom Petition at 2. UTStarcom later submitted specific proposed technical changes to Part 15 in order to facilitate the use of its PAS system. *See Ex Parte* Comments of UTStarcom in RM-10024, filed May 23, 2001, at 1-
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system avoid interfering with each other through the use of a dedicated control channel. In the *Further Notice*, we solicited comment on these proposals, including the regulatory framework that we would have to establish were we to permit community wireless networks and/or other expanded uses of the UPCS band.[116] In addition, we have pending four petitions for waiver relating to use of the 1910-1920 MHz band. Specifically, petitions submitted by UTStarcom & Drew University and Alaska Power & Telephone Company, Inc. (Alaska Power) request use of the 1910-1920 MHz band for community wireless networks. Petitions submitted by Lucent and Ascom Wireless Solutions, Inc. (Ascom) request use of the 1910-1920 MHz band for isochronous UPCS devices. These petitions for waiver were previously placed on Public Notice.[117]

43. The record generated to date demonstrates support for a variety of options, from re-designating the entire 1910-1930 MHz band for AWS use to retaining the entire 20 megahertz for UPCS. Among those proponents of reallocating the entire UPCS band,[118] Ericsson and TIA – Wireless Division state that the characteristics of the 1910-1930 MHz band suit those advanced services that can take advantage of unpaired spectrum technologies.[119] Those commenters that support UPCS describe a band in which service has developed in spite of numerous challenges and difficulties. For example, UTAM states that equipment manufacturers have made significant investments in the development of UPCS products in the 1920-1930 MHz band and a large number of voice users exist in the band.[120] UTAM/WINForum assert that delays in the widespread development of UPCS are due to the ongoing relocation of microwave incumbents from the UPCS band and the strict Part 15 spectrum etiquette required by the rules.[121] These parties note particular difficulties would be associated with reallocation of the 1920-1930 MHz portion of the band. For example, NEC America (NEC) states that many wireless PBX systems cannot be retuned to

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3 (seeking modifications to the spectrum etiquette requirements of 47 C.F.R. § 15.307 and certain technical rules in 47 C.F.R. §§ 15.319 and proposing new rules in 47 C.F.R. §§ 15.320 (specific requirements for associated controlling and controlled isochronous devices operating in the 1910-1920 MHz band) and 15.321(c) (specific requirements for asynchronous devices operating in the 1910-1920 MHz and 2390-2400 MHz bands)).

[116] *See Further Notice*, 16 FCC Rcd at 16049-50, ¶ 13. *See also* Report No. 2320, *Public Notice*, (Mar.10, 1999) (listing WINForum Petition for Rulemaking, RM-9498, filed Jan. 8, 1999) and Report No. 2459, *Public Notice*, (Dec. 14, 2000) (listing UTStarcom Petition for Rulemaking, RM-10024, filed on Nov. 6, 2000). *See also infra* ¶ 54.

[117] *See* DA 99-1242 (Lucent Petition for Waiver, rel. Jun. 24, 1999); DA 00-2061 (UTStarcom & Drew University Petition for Waiver, rel. Sept. 8, 2000); DA 00-2833 (Ascom Petition for Waiver, rel. Dec. 15 2000); and DA 01-2308 (Alaska Power Petition for Waiver, rel. Oct. 5, 2001).

[118] *See, e.g.*, ArrayComm Comments to the *Further Notice* at 5; Ericsson Comments to the *Further Notice* at 7-8; Orange Group Comments to the *Further Notice* at 4; Siemens Comments to the *Further Notice* at 2; TDS Comments to the *Further Notice* at 6; and TIA Comments to the *Further Notice* at 4.

[119] *See* Ericsson Comments to the *Further Notice* at 7-8; TIA Comments to the *Further Notice* at 4. ArrayComm, which recommends that the 1910-1930 MHz band be used for time division duplex (TDD) technology, notes that the 1910-1920 MHz band is used for TDD operations in many parts of the world. ArrayComm Comments to the *Further Notice* at n.7.

[120] UTAM/WINForum Reply Comments to the *Further Notice* at 3-4. In addition, Motorola states that the market for isochronous devices is beginning to emerge. *See* Motorola Comments at 20. NEC states that the number of UPCS end users grew 31 percent in 2000. *See* NEC Comments at 10.

[121] UTAM/WINForum Reply Comments to the *Further Notice* at 5-6.

operate in different frequency bands,[122] and Avaya asserts that current users of UPCS systems cannot afford to replace their systems, effectively precluding the ability of many incumbents to migrate to other bands.[123] There is also support for retention and expanded use of the 1910-1920 MHz portion of the band. Echoing the pending petitions relating to use of the band, these commenters urge the development of isochronous devices across the entire UPCS band,[124] or ask that the 1910-1920 MHz band be used for community wireless networks to serve rural, tribal, and underserved areas.[125] In addition, Avaya, NEC, Blackfoot Telephone Cooperative, Inc., *et al.* (collectively, the Rural Commenters), and UTAM state that if the Commission were to re-designate any of the UPCS band for AWS, the band clearing administration and coordination efforts of UTAM would have to be addressed, and that UTAM's expenses should be reimbursed.[126]

44. In the *Third R&O*, we reallocate the 1990-2000 MHz band from MSS to fixed and mobile use. This band is adjacent to the current PCS base station transmit band at 1930-1990 MHz and the remaining MSS uplink band at 2000-2020 MHz. Although the 1990-2000 MHz band was previously allocated to MSS, currently there are no MSS operations in the band. Currently it is used by the BAS as part of the 1990-2110 MHz band. At the time that 1990-2025 MHz band was reallocated to MSS, the Commission adopted a transition plan to accommodate the BAS. In the *Further Notice*, we sought comment, generally, on how spectrum reallocated from MSS should be used.

45. Finally, we note that several existing licensees have asked that we consider using a portion of these bands as replacement spectrum. For example, Nextel, in conjunction with its "Private Wireless Coalition Consensus Plan" for resolving public safety and CMRS interference issues in the 800 MHz band,

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[122] *See* NEC Comments to the *Further Notice* at 14. NEC also claims that re-designation would be unduly burdensome and would deter future investment in UPCS because it would create stranded equipment, which may cause manufacturers to exit the UPCS market.

[123] *See* Avaya Reply Comments to the *Further Notice* at 2 & 6.

[124] For example, UTAM/WINForum states that UPCS spectrum usage is "vibrant" and that it is increasing as microwave migration continues. UTAM/WINForum Reply Comments to the *Further Notice* at 3-8. *See also* Avaya Comments to the *Further Notice* at 5 and 7; Nortel Comments to the *Further Notice* at 3-10; NEC Comments to the *Further Notice* at 2-4.

[125] *See* Blackfoot Telephone Cooperative (Blackfoot) Comments to the *Further Notice* at 2; Midstate Comments to the *Further Notice* at 2; Midvale Comments to the *Further Notice* at 2; Penasco Valley Comments to the *Further Notice* at 2; UTStarcom Comments to the *Further Notice* at 2; Rural Commenters Reply Comments to the *Further Notice* at 2; NTCA Reply Comments to the *Further Notice* at 2; *Ex Parte* Comments of the Rural Commenters in ET Docket No. 00-258, filed March 19, 2002. *See also* Panasonic Comments to the *Further Notice* at 2; Quantum Communication, Inc. Comments to the *Further Notice* at 2; RNI Communications Corp. Comments to the *Further Notice* at 2; RTG Comments to the *Further Notice* at 5, Telecom Consulting Associates, Inc. Comments to the *Further Notice* at 6; PHS MoU Comments to the *Further Notice* at 1; Robert Hart Comments to the *Further Notice* at 1.

[126] *See* Avaya Comments to the *Further Notice* at 6; NEC Reply Comments to the *Further Notice* at 6; Rural Commenters Reply Comments to the *Further Notice* at 4; and UTAM Reply Comments to the *Further Notice*. *See also* Nortel Comments to the *Further Notice* at 5 (suggesting that UPCS users, manufacturers, distributors, and users should be afforded the same level of relocation funding as other displaced services). UTAM recently stated that it has cleared 98 percent of the microwave facilities from the 1920-1930 MHz band and 91 percent from the 1910-1920 MHz band. In addition, UTAM states that it has incurred more than $60 million in liabilities relocating incumbent microwave links from the 1910-1930 MHz band. *See* "UTAM Report to the FCC" (filed July 1, 2002 in GEN Docket No. 90-314) (*UTAM Report*).

has asked that we re-designate the 1910-1915 MHz and 1990-1995 MHz bands to Nextel in exchange for spectrum that Nextel would surrender for reassignment to public safety systems.[127] Similarly, WCA has offered a proposal to relocate MDS Channels 1 and 2/2A to the 1910-1916/1990-1996 MHz bands and allow fixed or mobile use.[128]

46. *Reallocation.* We recognize that UPCS equipment manufacturers, distributors, and end users have invested considerable efforts and resources in the development and deployment of isochronous devices in the 1920-1930 MHz band, and that re-designation of the 1920-1930 MHz band for AWS would upset the reasonable expectations of these parties. Thus, we are no longer proposing to reallocate the 1920-1930 MHz portion of the UPCS band to support AWS applications. In contrast, we note that asynchronous UPCS applications have not been developed for the 1910-1920 MHz band as the Commission had envisioned when it authorized this service in 1994.[129] A search of our equipment authorization database reveals that there is not any UPCS equipment authorized for this band. We do not believe that the public interest is served if we allow this 10 megahertz of spectrum to remain fallow when there are many applications that can put it to good use.

47. As an initial matter, we note that because the 1910-1920 MHz band is adjacent to the 1850-1910 MHz Broadband PCS spectrum and the *Third R&O* creates a 10 megahertz fixed and mobile allocation at 1990-2000 MHz that is adjacent to the 1930-1990 MHz Broadband PCS block[130] one option is to pair spectrum from the UPCS band, 1910-1920 MHz, with spectrum from the 1990-2000 MHz band for an expansion of Broadband PCS services.[131] Other options include pairing and redesignating this spectrum for AWS, or using the bands to support the relocations of existing licensees under proposals such as those set forth by WCA or Nextel, as discussed below. Such a pairing could consist of two 5 megahertz blocks – *i.e.* the 1910-1915 MHz band paired with the 1990-1995 MHz band – or two 10 megahertz blocks, consisting of the entire 20 megahertz of spectrum in these two bands. We seek comment on such pairings.

48. We believe that it would serve the public interest to adopt a 5 + 5 megahertz or a 10 + 10 megahertz pairing within these bands.[132] For example, pairing these bands could allow for use of existing PCS equipment with little modification and easier manufacture and design of equipment, thereby enabling significant economies of scale. In addition, because the 1910-1920 MHz band lacks incumbent UPCS

[127] *Ex Parte* comments of Nextel in WT Docket 00-258, filed Aug. 9, 2002. *See also* "Improving Public Safety Communications in the 800 MHz Band," WT Docket No. 02-55. Since Nextel's proposal is part of the record in WT Docket 02-55 and comments have already been filed on Nextel's proposal, we do not invite comment here on this issue.

[128] *See WCA Letter, supra* n.66. We believe that if existing MDS licensees deployed more robust, spectrally efficient equipment upon relocation, WCA's proposal could also be implemented within the 1910-1915 and 1990-1995 MHz bands.

[129] At that time, the Commission anticipated that the band would be used for data applications such as high-speed, high-capacity LANs. *See* Amendment of the Commission's Rules to Establish New Personal Communications Services, GEN Docket No. 90-314, *Second Report and Order*, 8 FCC Rcd 7700 (1993).

[130] *See supra* ¶ 35.

[131] If this approach is taken, we would propose specific licensing and service rules in a subsequent Notice of Proposed Rule Making.

[132] We could also adopt an asymmetric pairing for these bands. *See infra* ¶ 53.

users, new licensees need only address relocation as it pertains to the relocation of incumbent point-to-point microwave systems in the band.[133]

49. We note that pairing the 1910-1920 MHz and 1990-2000 MHz bands in 5 megahertz increments (*i.e.* either 1910-1915 MHz paired with 1990-1995 MHz or 1910-1920 MHz paired with 1990-2000 MHz) is consistent with many possible uses of the bands. For example, the existing channel block assignments for Broadband PCS consist of 2x5 megahertz in the D, E, and F blocks.[134] In addition, we note that the IMT-2000 standards being considered for AWS include WCDMA, which is based on paired 5 MHz channel blocks and CDMA-2000, which uses multiple 1.25 megahertz carrier channels to provide higher data rates. Finally, such a pairing would also create the possibility of granting the request of Nextel or WCA. Accordingly, we seek comment on whether spectrum in these bands should be paired and re-designated for AWS with the likelihood that we would be able to use our existing Broadband PCS rules to promote rapid deployment of service in the band[135] or whether the bands should be used to support the relocation of existing licensees under proposals such as those set forth by WCA or Nextel.

50. As mentioned above, Broadband PCS has been implemented domestically using FDD technology which requires separation between the base and mobile transmit frequencies. Because this band separates the Broadband PCS base and mobile transmit frequencies, some commenters question the usefulness of the band for AWS and express concern that Broadband PCS receivers will be subject to harmful interference if spectrum in the 1910-1930 MHz band is re-designated for higher-powered uses.[136] Other commenters, such as Ericsson, endorse the use of the band for AWS as long as there are sufficient safeguards to protect existing Broadband PCS operations.[137] Currently, the UPCS band provides 20 megahertz of spectrum for separating the Broadband PCS base and mobile transmit bands. Based on the record of this proceeding, it appears possible to reduce this separation by 5 to 10 megahertz without

[133] Microwave systems operating with paired frequencies use the 1910-1930 MHz band paired with the 2160-2180 MHz band. We note that UTAM previously relocated certain microwave incumbents from the 1910-1920 MHz band in conjunction with the designation of the 1910-1930 MHz band for UPCS use. We discuss proposed modifications to the existing relocation and reimbursement procedures for the 1910-1920 MHz band to account for these relocations in ¶¶ 56-61, *infra*. We observe that the rules adopted in the 1992 *Emerging Technologies* proceeding apply to this band. *Emerging Technologies First Report and Order and Third Notice of Proposed Rule Making*, 7 FCC Rcd at 6890, ¶¶ 23-24. This relocation right was affirmed in the *Emerging Technologies Memorandum Opinion and Order and Third Notice of Proposed Rulemaking and Order*, 13 FCC Rcd 23949 (1998). The rules are codified in 47 C.F.R. §§ 101.69-101.101.99. Because these procedures are well known, parties can move expediently to initiate any relocation deemed necessary. For these reasons, we believe that service providers can roll out service in this band quickly.

[134] *See* 47 C.F.R. § 24.229.

[135] We make no decision with respect to whether our Broadband PCS rules would be most appropriate for this band, and note that we would propose specific licensing and service rules in a subsequent Notice of Proposed Rulemaking.

[136] CTIA Comments to the *Further Notice* at 3. *See also, e.g.*, Avaya Comments to the *Further Notice* at 10; Motorola Comments to the *Further Notice* at ii, 15 & 18; Nortel Comments to the *Further Notice* at 3-5; TIA Comments to the *Further Notice* at 4; UTAM Comments to the *Further Notice* at 16; UTStarcom Comments to the *Further Notice* at 3-4. *See also Ex Parte* comments of Motorola in WT Docket 00-258, filed Dec. 18, 2002 at 8 (suggesting that it would be feasible to extend the Broadband PCS spectrum by 5-6 megahertz to leverage existing equipment and technology).

[137] *See* Ericsson Comments to the *Further Notice* at 7-8.

leading to harmful interference to existing Broadband PCS systems.[138] We seek comment on how much we can reduce the frequency separation between the Broadband PCS base and mobile transmit bands in order to allow new systems to be deployed while protecting existing Broadband PCS operations, and what rules we would have to adopt to permit such operations. As an example, we could ensure that existing Broadband PCS is protected but allow for use of the entire 1910-1920 MHz band by adopting out-of-band emission limits that are tighter than those employed under our current PCS rules.

51. We note that in the *Third R&O*, we reallocated the 1990-2000 MHz band from MSS.[139] MSS operations, including ATC, may exist above 2000 MHz. In this regard, new operations in the 1990-2000 MHz band will need to take into account these adjacent band operations when developing and deploying new services and equipment. Licensees and operators in this band should take measures both to ensure that their operations are protected from MSS/ATC operations and will protect MSS and ATC operations from interference. For example, a PCS licensee operating in the band could eliminate potential interference from MSS/ATC operations by deploying additional base stations. Because the 1930-1990 MHz band is used for base station transmit by current PCS operators, we expect new operations in the band to follow that same convention. Accordingly, if this band is used for expanded PCS, licensees may be required to deploy additional base stations to avoid interference from MSS/ATC operations. With regard to interference to MSS/ATC, we request comment on whether we should adopt the same out-of-band limits for operations as we adopted for MSS/ATC (*i.e.*, a combination of -43 + 10 log P and -70 + 10 log P) or whether we should adopt a single -70 + 10 log P requirement for out-of-band emissions. We believe that base stations could easily achieve limits of -70 + log P at the band edge. We seek comment on this matter.

52. We also ask for comment on whether we should retain the 1915-1920 MHz band for UPCS use, but allow for greater flexibility of UPCS use within the entire 1915-1930 MHz band. We note the record includes comments that claim that the 1920-1930 MHz band is seeing continuing growth in the deployment of isochronous devices – particularly wireless PBXs – and that assert that there is a need for more spectrum for such uses in certain locations. By extending isochronous unlicensed use under the existing rules to the 1915-1920 MHz band, we would make an additional 5 megahertz of spectrum available for wireless PBXs and other UPCS devices, including voice and data devices.[140] By leaving the 1915-1920 MHz band segment unlicensed in this manner, we could further encourage the deployment – in both urban high-density and rural areas – of low power innovative Part 15 devices in this band. We seek comment on flexible UPCS use of the 1915-1930 MHz band. Commenters should take into account the existing base of isochronous devices in the band. For example, as noted above the monitoring etiquette differs for isochronous and asynchronous devices. Based on these differences and the differences between the way each type of device operates, can a single monitoring etiquette be used for these devices? Could the current monitoring etiquette for isochronous devices be used? In addition, we seek comment on whether we need to modify any other existing technical requirements[141] now specified for isochronous and

[138] *See, e.g.*, letter from Regina M. Kenney, Esq. to Marlene H. Dortch, Secretary, Federal Communications Commission. *Ex Parte* filing on behalf of Nextel in IB Docket No 01-185 and ET Docket No. 00-258 (filed Jan. 23, 2003).

[139] *See supra* ¶ 35.

[140] *See* UTAM Comments to *FNPRM* at 13-14 (stating that isochronous applications can support both voice and data). UTAM further notes that isochronous data systems are also efficient, as both Digital Enhanced Cordless Telephony (DECT) and Personal Handyphone Service (PHS) offer data rates on the order of 384 to 552 kbps. *See also* NEC Comments to *Further Notice* at 25 (stating that the ability to provide both data and voice on a converged wireless platform would increase the deployment of wireless PBXs).

[141] Specific requirements for the operation of asynchronous devices in the 1910-1920 MHz band are codified at 47 C.F.R. § 15.321 and specific requirements for the operation of isochronous devices in the 1920-1930 MHz band are

(continued....)

asynchronous devices if they share the band, and if so, specifically how. Commenters should also address whether any proposed modifications to the UPCS rules would also be appropriate if we reduce the UPCS band to 1920-1930 MHz.

53. In light of the above discussion, we note that retaining the 1915-1930 MHz band for UPCS would result in an expanded PCS band of only 1910-1915 MHz, not 1910-1920 MHz as previously discussed. Thus, such action would result in an asymmetric pairing of 5 megahertz (1910-1915 MHz) + 10 megahertz (1990-2000 MHz) or a symmetric pairing of 5 megahertz (1910-1915 MHz) + 5 megahertz (1990-1995 MHz) and an unpaired 5 megahertz block (1995-2000 MHz). Parties should also provide comment on the best use of the 1995-2000 MHz spectrum. For example, if the 1995-2000 MHz band remains unpaired, could it be used to support low-power unlicensed devices or point-to-point licensed services?

54. Finally, we seek comment on whether systems such as those proposed by UTStarcom for community wireless networks could also coexist in a reduced UPCS band. The UTStarcom system, based on PAS technology used in other countries, does not adhere to the monitoring etiquette specified in our rules. Rather, a central control channel is used to instruct handsets which channel to use. We note that such systems are designed to operate essentially in the 1910-1920 MHz band.[142] Would these systems be able to work in the 1915-1930 MHz band, or even the 1920-1930 MHz band?[143] In addition, UTStarcom asserts that these types of systems would cause co-channel interference to UPCS devices at significant distances.[144] In general, we note that our unlicensed rules have allowed for the development and introduction of successful consumer and business devices.[145] We believe that unlicensed spectrum should be available to the widest possible range of technologies, and conclude that the introduction of systems such as those geared for community wireless networks would serve the public interest. Accordingly, we seek comment on whether techniques exist to allow community wireless network systems to share the remaining UPCS frequencies with isochronous devices. Commenters who advocate expanding the rules to include these systems should provide specific proposals for rule changes. Commenters should also address both the possibility of a UPCS band consisting of 1915-1930 MHz and a UPCS band consisting of 1920-1930 MHz. Because it appears that systems based on current PAS technology cannot share the band with existing isochronous UPCS devices, comments supporting community wireless networks should specifically address potential interference and propose mechanisms for addressing such concerns.

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codified at 47 C.F.R. § 15.323. Because the isochronous etiquette is intended for "circuit switched" devices that transmit at regular intervals – thus they would take control of a communication channel for longer time periods – and the asynchronous etiquette is for "packet data" transmitted in bursts at irregular intervals, there are different monitoring timing intervals for each type of etiquette.

[142] UTStarcom Petition for Rulemaking at 2. The PAS system operates on a subset of the frequencies from 1893.5 to 1919.6 MHz. UTStarcom avers that the system can support large number of users through very small cells if it is allowed to use all 10 MHz in the 1910-1920 MHz. *Id.*, at 3.

[143] *See* UTStarcom *Ex Parte* Comments in RM-10024 and RM-9498, filed March 23, 2001, *Proposed Part 15 Changes*. The PAS system utilizes a control channel in the 1910-1911.25 MHz band. Although the control channel frequency can be changed within this frequency band, it is questionable whether the control channel may be moved to a sub-band within 1915-1930 MHz.

[144] *See* UTStarcom *Ex Parte* Comments in RM-10024 and RM-9498, filed November 15, 2002, *Potential Interference to Existing UPCS Systems Resulting From Co-Channel and Adjacent Channel Operation of UTStarcom Networks*, at 1.

[145] *See, e.g.*, Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band, ET Docket No. 02-380, *Notice of Inquiry*, 17 FCC Rcd 25632 (2002).

For example, could a limited monitoring requirement be placed on PAS systems? Could such a requirement be accomplished only at the base station or must there be a similar requirement at the mobile station? We note that existing UPCS devices, such as wireless PBXs, are operated primarily indoors and in urban areas. Could a geographic restriction be placed on such systems (*e.g.*, only allow them to operate in certain areas)? Commenters in favor of such restrictions should address how they could be enforced.

55. Pending the outcome of these further proceedings, we will hold the petitions for waiver that relate to use of the UPCS band in abeyance.

56. *Reimbursement.* Our proposal to re-designate all or part of the 1910-1920 MHz band raises several issues regarding reimbursement and relocation of existing operations. As noted above, unlicensed system operators, through UTAM, have been clearing the 1910-1930 MHz band of incumbent microwave systems. With respect to the 1990-2000 MHz band, the ultimate disposition of that band (*i.e.*, auctioned for AWS or used in part for relocating Nextel or MDS, etc.) will affect the relocation of incumbent operations. The *Third R&O* notes that the Commission will address these issues in a separate Notice of Proposed Rulemaking.[146] Therefore, we do not address relocation issues related to the 1990-2000 MHz band herein.

57. In its comments, UTAM states that it and its industry members have expended considerable efforts and financial resources in clearing the UPCS bands of incumbent fixed microwave links.[147] In its most recent report, UTAM demonstrates that it has cleared 91 percent of the microwave facilities from the 1910-1920 MHz band.[148] We note that because no asynchronous UPCS equipment has been deployed in this band, UTAM has not been recovering its band clearing expenses.[149] Because we propose to re-designate as much as 10 megahertz in the 1910-1920 MHz band, new licensees will reap the benefits of UTAM's band clearing efforts.

58. Avaya, the Rural Commenters, and other parties argue that the investments of the UPCS industry should be taken into account in re-designating the UPCS bands.[150] We agree. In other bands, when the Commission has reallocated spectrum, the general policy is that incumbent users, who have made substantial investments in their systems should be made whole – either through a monetary payment or by receiving comparable facilities in another frequency band. In this band, we note that there are no deployed systems. However, UTAM, acting under the framework set up by the Commission, has invested a significant amount of time, effort, and resources into clearing the 1910-1920 MHz band in anticipation of future use by UPCS. Consistent with Commission policy for licensees, we believe that they, too, should be made whole.

59. Because we are proposing to remove up to half of the current UPCS spectrum, we propose that UTAM be entitled to a percentage of the total reimbursement expenses incurred for the 1910-1930 MHz

[146] See *supra* ¶ 37.

[147] UTAM Comments to the *Further Notice* at 3.

[148] *See UTAM Report, supra* n.126.

[149] To recover its band clearing expenses, UTAM charges a fee for each deployed UPCS handset. So far, there has been no UPCS equipment using the 1910-1920 MHz band.

[150] Avaya Comments to the *Further Notice* at 6; Rural Commenters Reply Comments to the *Further Notice* at 4. *See also* NEC Reply Comments to the *Further Notice* at 6; UTAM Reply Comments to the *Further Notice*; Nortel Comments to the *Further Notice* at 5.

band as of the effective date of any final rules we adopt in this proceeding.[151] This percentage would represent the percentage of the 1910-1930 MHz band that we ultimately re-designate. For example, if we re-designate 10 megahertz – half of the band – then UTAM would be entitled to 50 percent of its total reimbursement expenses. If we instead re-designate the 1910-1915 MHz band segment, then UTAM would be entitled to a 25 percent reimbursement. We note that the party (or parties) obligated to reimburse UTAM will depend on our final decision with respect to the 1910-1920 MHz band. As an example, if we license the 1910-1915 MHz band segment in conjunction with Broadband PCS expansion, we propose that each future Broadband PCS licensee in that band contribute towards reimbursing UTAM a pro-rated portion of the total reimbursement. We note that this pro-rated amount could be based on the number of licenses,[152] the value of licenses as determined by auction, or could be calculated by other means, and we seek further comment on the specific calculation we should employ. If the spectrum is to be used for the relocation of existing licensees, it may be inequitable to expect these relocated licensees to reimburse UTAM. Thus, for those commenters that propose that the 1910-1920 MHz band (or a portion thereof) be used to relocate existing licensees, we seek comment on the means by which UTAM should be reimbursed, including proposals as to what parties should pay these expenses and how such a payment should be apportioned between parties.

60. We propose our overall reimbursement approach for several reasons. First, because some microwave systems may operate in portions of both the 1910-1920 and 1920-1930 MHz band, UTAM can continue to clear these systems and still recover its incurred expenses in the 1910-1920 MHz band. Second, because incumbent microwave systems were deployed across the entire 1910-1930 MHz band and UTAM has cleared most microwave links across the whole band, we believe that this represents the most reasonable and easiest approach to implement. We observe that the vast majority of the 1910-1930 MHz band has been cleared by UTAM over a period of several years, rendering retroactive calculations for apportionment difficult and complex. Finally, this reimbursement plan allow us to seek additional comment on how much of the UPCS band we re-designate, while proposing a mechanism that will allow relocation efforts to continue in the 1910-1930 MHz band without disruption. We seek comment on these proposals.

61. After the effective date of the rules adopted in this proceeding, it is possible that UTAM may continue to encounter microwave systems that operate in portions of the band that we re-designate and portions of the band that remains designated for UPCS, and that UTAM will incur some expenses for clearing a portion of the re-designated band. Similarly, a new licensee in the 1910-1920 MHz band (or a subset of that band, if we re-designate a smaller amount of spectrum) may incur expenses under the Emerging Technology relocation rules for microwave systems that they need to clear from the band. In these cases, we propose that on a case-by-case basis the new PCS entrant and UTAM reimburse each other on a pro-rata basis, based on the amount of relative spectrum cleared for each service.[153] We seek comment on these proposals.

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[151] New licensees are subject to the relocation rules established in the *Emerging Technologies* proceeding for clearing incumbent microwave stations from the portion of the 1910-1930 MHz band that is re-designated. *See supra* n.133.

[152] For example, if the Commission eventually issues 10 licenses for the 1910-1915 MHz band, a Broadband PCS licensee would be responsible for 1/10 times the number of its licenses of the total amount to be reimbursed to UTAM.

[153] For example, if UTAM clears a microwave link which uses a 20 megahertz channel across the entire 1910-1930 MHz band, and we re-designate the 1910-1915 MHz band for advanced services, then UTAM would seek reimbursement of 25 percent of the costs incurred from the new entrant(s) in the 1910-1915 MHz band.

B. 2020-2025 MHz and 2155-2180 MHz Bands

62. *Background.* In the *Third R&O*, we reallocate spectrum in the 2020-2025 MHz and 2165-2180 MHz bands that were formerly allocated for MSS. Although these bands are reallocated for fixed and mobile services, we have not made a decision on the best use for these bands. In addition, still outstanding in this proceeding is the disposition of the remaining MDS spectrum at 2155-2160/62 MHz and the Emerging Technology spectrum at 2160-2165 MHz. We now address all these bands and invite additional comment on how best to use these resources.

63. As described in the *Third R&O* and above, the 2020-2025 MHz band is currently allocated to MSS for uplinks and is currently used by BAS.[154] Also described in the *Third R&O* is the 2165-2180 MHz band, which is currently allocated to MSS for downlinks and is currently used by the fixed service.[155]

64. The 2160-2165 MHz band is currently used in the United States for non-Federal Government fixed services and mobile services licensed under the Fixed Microwave Service in Part 101 of the Rules, the Public Mobile Services under Part 22 of the Rules, and the Domestic Public Fixed Radio Services under Part 21 of the Rules.[156] The Commission originally identified this band for new advanced fixed and mobile services in the 1992 *Emerging Technologies* proceeding and adopted rules and procedures to permit new licensees to relocate existing fixed service microwave licensees from this spectrum band.[157] In the *Notice*, the Commission proposed to make this band available for advanced mobile and fixed communication services.[158]

65. The 2155-2160/62 MHz band is a subset of the MDS band. In the *Further Notice*, the Commission requested comment on whether the entire 2150-2160/62 MHz band should be reallocated for AWS, and if so, how this band might be used with other spectrum being considered for AWS.[159] In the *Second R&O*, the Commission reallocated a 5 megahertz portion of the MDS band at 2150-2155 MHz, but deferred to a later proceeding issues relating to MDS licensees, including the disposition of the remaining MDS spectrum and identification of replacement spectrum and relocation procedures.

66. Internationally, the 2150-2160 MHz band is allocated to Fixed and Mobile services on a primary basis.[160] Before the adoption of the *Second R&O*, the 2150-2160 MHz band was allocated domestically to the Fixed Service on a primary basis.[161] MDS operations in the band are regulated under

[154] *See supra* ¶ 10.

[155] *Id.*

[156] *See* 47 C.F.R. Parts 21, 22, and 101.

[157] *Emerging Technologies First Report and Order and Third Notice of Proposed Rule Making*, 7 FCC Rcd at 6890, ¶¶ 23-24. This relocation right was affirmed in the *Emerging Technologies Memorandum Opinion and Order and Third Notice of Proposed Rulemaking and Order*, 13 FCC Rcd 23949 (1998).

[158] *See Notice*, 16 FCC Rcd at 618, ¶ 52.

[159] *See Further Notice*, 16 FCC Rcd at 16060-61, ¶¶ 38-41.

[160] In Region 2 (the Americas) this band is also allocated for MSS downlinks on a secondary basis.

[161] Prior to February 25, 1974 footnote NG23 made the 2150-2162 MHz band available for assignment to stations in the International Fixed Public Radiocommunication Services in the Caribbean. A review of our licensing database finds that there are no such licensees. In a separate proceeding, we are proposing to delete footnote NG23. *See* Amendment of Parts 2, 25, and 87 of the Commission's Rules to Implement Decisions from World Radiocommunication Conferences Concerning Frequency Bands Between 28 MHz and 36 GHz and to Otherwise (continued....)

Part 21 of our Rules.[162] This band is generally operated as two channels - channel 1 (2150-2156 MHz) and channel 2A (2156-2160 MHz).[163] Licensees may also use channel 2 (2156-2162 MHz) on a limited basis in 50 cities.[164] In addition, MDS may use spectrum in the 2500-2690 MHz band.[165]

67. In 1992, when the 2160-2165 MHz band was reallocated to emerging technologies,[166] the Commission implemented a policy by which incumbent MDS licensees that were using the 2160-2162 MHz band would continue such use on a primary basis.[167] However, any MDS station that applied for use of this band after January 16, 1992 would be granted only on a secondary basis to emerging technology use.[168] In 1996, the Commission auctioned licenses for MDS channels on a Basic Trading Area (BTA) basis, but licenses for the 2160-2162 MHz band by licensees using MDS channel 2 were

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Update the Rules in this Frequency Range, ET Docket No. 02-305, *Notice of Proposed Rule Making*, 17 FCC Rcd 19756 at ¶ 103 (2002).

[162] *See* 47 C.F.R. Part 21—Domestic Public Fixed Radio Services. Subpart K of Part 21 is titled "Multipoint Distribution Service."

[163] Under an informal agreement among MDS licensees, the principal use of the 2150-2160/2 MHz band is for response stations transmitting to hub stations, which is generally known as upstream communications. *See generally* Sprint Comments to the *Notice* at 21 and WCA Comments to the *Notice* at 42-43. A response station in a two-way system is a customer-premises transceiver used for the reception of downstream and transmission of upstream signals as part of a large system of such stations licensed under the authority of a single license. A maximum e.i.r.p. of 33 dBW (2000 watts) per 6 MHz is permitted. A hub station is a receive-only station licensed as part of a system of response stations in a two-way system and used for the purpose of receiving the upstream transmissions of those response stations.

[164] The 2 megahertz at 2160-2162 MHz can only be assigned where there is evidence that no harmful interference would occur to any authorized co-frequency point-to-point facility. *See* 47 C.F.R. § 21.901(c).

[165] There are other MDS channels in the 2596-2644 MHz, 2650-2656 MHz, 2662-2668 MHz, and 2674-2680 MHz bands, as well as response channels in the 2686-2690 MHz band. Historically, the 2150-2162 MHz and 2500-2690 MHz bands were predominantly used for one-way analog video transmission. Increasingly, MDS operators are using these bands for two-way digital broadband services. In October 1996, the Commission decided to allow high-speed digital data applications, including Internet access. Then, in 1998, the Commission approved the use of two-way transmissions, effectively enabling the provision of voice, video, and data services. In 2001, a mobile, except aeronautical mobile, service allocation was added to the 2500-2690 MHz band. *See First R&O and MO&O*, 16 FCC Rcd 17222 (2001).

[166] *See Emerging Technologies First Report and Order and Third Notice of Proposed Rule Making*, 7 FCC Rcd at 6889, ¶ 17.

[167] Our licensing database indicates that there are 27 MDS licenses for the 2160-2162 MHz band on a primary basis. These stations are listed in Appendix E. We note that the Wireless Telecommunications Bureau is currently conducting an effort to verify the status of all existing MDS licenses. *See* Wireless Telecommunications Bureau Seeks to Verify ITFS, MDS, and MMDS License Status and Pending Applications, *Public Notice*, DA 02-2751 (rel. Oct. 18, 2002).

[168] *See* 47 C.F.R. § 21.901(c). The Commission provided the MDS service with an extra 2 megahertz in the 50 largest metropolitan areas so that there would be sufficient bandwidth (6 MHz) for a second analog television channel.

secondary to Emerging Technology licensees.[169] Currently, there are 16 MDS stations operating with such status.[170]

68. *Proposal.* We tentatively conclude that the MDS spectrum at 2155-2160/62 MHz and the Emerging Technology spectrum at 2160-2165 MHz, in conjunction with the former MSS spectrum at 2020-2025 MHz and 2165-2180 MHz, should be made available for new fixed and mobile services, including AWS. We envision that this spectrum could be offered in equally sized paired blocks to support FDD or TDD applications, or a combination of these technologies. We note that the record includes a number of proposals that could result in spectrum efficiencies. For example, the residual MDS spectrum at 2155-2160/62 MHz could be combined with the 2160-2165 MHz band to create a 10 megahertz block suitable for AWS use. Moreover, this spectrum is adjacent to the 2110-2155 MHz frequency band that we allocated to AWS in the *Second R&O* – creating a total of 55 megahertz of contiguous spectrum that can be used for AWS. We recognize that there are numerous benefits to such an allocation: contiguous spectrum will create synergies in equipment design and facilitate the introduction of multiple AWS licensees using large spectrum blocks; it could provide opportunities for asymmetric spectrum usage; and a flexible allocation at 2110-2165 MHz closely matches the international allocation for a terrestrial component of advanced services at 2110-2170 MHz, which will aid the deployment of new equipment and services in the band.

69. We also note that 5 megahertz of spectrum in the 2155-2180 MHz band could be paired with the 5 megahertz being made available at 2020-2025 MHz and that the remaining 20 megahertz could be used to provide an asymmetric pairing or TDD operations. Alternatively, the 2155-2180 MHz band could be used to support TDD operations in a 15 megahertz portion and as relocation spectrum for MDS in the remaining 10 megahertz portion. Other options also exist. For example, MDS licensees could retain the 2155-2160 MHz band and we could provide a contiguous allocation starting at 2160 MHz to replace the spectrum reallocated from 2150-2155 MHz in the *Second R&O*. We note that WCA has proposed a plan by which MDS operations would be completely relocated from these bands.[171] To develop a complete record, we believe that all spectrum options should be explored.

70. We seek comment on potential uses of the 2020-2025 MHz and 2155-2180 MHz bands. Comments should identify specific band plans and frequency pairings and describe how such proposals will result in spectrum efficiencies. Commenter should discuss any technical limitations that would be necessary to protect existing adjacent band operators, including MSS/ATC operations in the 2000-2020 MHz and 2180-2200 MHz bands. Commenters may also wish to consider how this spectrum could be used in conjunction with the 1910-1920 MHz and 1990-2000 MHz bands, discussed elsewhere in this *Third Notice*. In addition, commenters should focus on how any spectrum recommended for MDS relocation is comparable to the spectrum on which they are currently licensed.

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[169] *See* http://wireless.fcc.gov/auctions/06/ for information on Auction 6. This auction made available a maximum of 78 MHz of primary spectrum in each BTA, but with the caveat that BTA licensees would protect incumbent stations. In the MDS Bidder Information Package, the Commission noted: "In 1992, the 2160-2162 MHz frequency was reallocated to emerging technologies, and thus, any subsequent MDS use of these 2 MHz will be secondary." *See* FCC Auction [for] Multipoint and/or Multichannel Distribution Service (MDS) Authorizations for Basic Trading Areas, Bidder Information Package (1995), at 21 (available at http://wireless.fcc.gov/auctions/06/releases.html).

[170] These stations are listed in Appendix E.

[171] *See WCA Letter, supra* n.66 (proposing that MDS operations be relocated to spectrum in the 1910-1915/6 MHz and 1995-1995/6 MHz bands).

71. In the *Further Notice*, the Commission proposed that if relocation were deemed necessary, MDS incumbents would be entitled to comparable facilities or adequate replacement spectrum.[172] In the *Emerging Technologies* proceeding, we allowed new entrants to provide incumbents with comparable facilities using any acceptable technology.[173] Under this policy, incumbents must be provided with replacement facilities that allow them to maintain the same service in terms of throughput, reliability and operating costs.[174] We continue to believe that, to minimize disruption to existing services and to minimize the economic impact on licensees of those services, a similar approach is warranted for MDS. In the *Further Notice*, we also asked for a suggested timeframe for clearing the band as well as the types and magnitude of costs that would be involved. The Commission also requested comment on whether the spectrum sharing conclusions of an FCC study of MDS use of the 2500-2690 MHz band apply to the 2150-2160 MHz band,[175] and invited comment on the public interest costs and benefits of adding a mobile allocation to the 2150-2160 MHz band.[176]

72. We seek comment on the amount and location of spectrum needed to relocate MDS operations at 2150-2160/62 MHz. In particular, we seek to minimize disruption to existing services and to minimize the economic impact on MDS licensees providing those services. We note that our relocation policies do not dictate that systems be relocated to spectrum-based facilities or even to the same amount of spectrum as they currently use, only that comparable facilities be provided.[177] We further note that under our relocation policies only stations with primary status are entitled to relocation.[178] Because secondary operations, by definition, cannot cause harmful interference to primary operations,[179] new entrants are not required to relocate secondary operations. As stated above, MDS stations licensed after 1992 to use the 2160-2162 MHz band are on a secondary basis. Thus, in some cases, a portion of MDS channel 2 has secondary status, and this portion would not be entitled to relocation. Stations licensed prior to 1992 for MDS channel 2 (2156-2162 MHz) operate on a primary basis over the entire channel and thus, are entitled to relocation. Comparable facilities can be provided by upgrading equipment to digital technology and making use of efficient modulation and coding techniques. In addition, some existing MDS equipment

[172] *Second R&O*, 16 FCC Rcd at 16061, ¶ 40.

[173] *Emerging Technologies Third R&O*, 8 FCC Rcd 6589, 6591 & 6603 ¶¶ 5 & 36 (1993).

[174] *See, e.g.*, 47 C.F.R. § 101.91.

[175] *See* FCC Releases Staff Final Report "Spectrum Study of 2500-2690 MHz Band: The Potential for Accommodating Third Generation Mobile Systems" Seeks Comment on Final Report in Pending Spectrum Allocation Proceeding (ET Docket No. 00-258), DA 01-786, *Public Notice*, 12 FCC Rcd 10272 (2001). The study concluded that MDS and AWS sharing would not be possible in the 2500-2690 MHz band, and that it would not be possible to relocate MDS users on the band without jeopardizing the unique and valuable services that MDS users provide.

[176] *See Further Notice*, 16 FCC Rcd at 16061, ¶ 40.

[177] For example, in ET Docket No. 95-18, the Commission adopted a policy in which new MSS entrants would relocate incumbent BAS systems operating in the 1990-2110 MHz band in two phases to the 2008-2110 MHz band and then to the 2025-2110 MHz band – a reduction of 35 megahertz of spectrum. The Commission determined that BAS could achieve comparable facilities in the reduced spectrum because the relocation would entail an upgrade of equipment from analog to digital. *See* 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, *Second Report and Order and Second Memorandum Opinion and Order*, 15 FCC Rcd. 12315 (2000).

[178] Currently, there are 27 stations with primary status. *See* Appendix E.

[179] *See* 47 C.F.R. § 2.105(c)(2).

could likely be retuned, but it is also likely that some operations may move to another medium.[180] Given advances in technology, *e.g.*, changing from analog to digital modulation and the flexibility provided by our existing relocation procedures to make incumbents whole, we believe that current MDS operations could be accommodated using substantially less spectrum than that of the existing 2150-2160/62 MHz allocation. We seek comment on how the relocation obligation should be applied to post-1992 licensees operating on MDS channel 2. We also seek comment on the amount of spectrum necessary for MDS relocation. For example, can current MDS operations be supported using 10 megahertz or less, or must 12 megahertz be provided? Commenters should explain how the types of services existing licensees are providing and the operating status (*i.e.*, primary or secondary) of those stations affects their view.

73. We also seek additional comment on the appropriate relocation spectrum for MDS. Comments should address what spectrum should be used to accommodate existing MDS operations and how such spectrum is adequate to provide comparable facilities to minimize disruption to existing services. In particular, comments should address whether MDS operations could co-exist with incumbent users in suggested relocation bands or whether those incumbent users also would need to be relocated, including the costs to relocate those incumbents.

VI. SECOND MEMORANDUM OPINION AND ORDER

74. CTIA filed a petition for rule making on May 18, 2001,[181] requesting that the 2 GHz MSS bands be reallocated for other uses (such as terrestrial wireless services) and also asking that the Commission withhold grant of 2 GHz MSS licenses.[182] In the *Further Notice*, we granted the petition insofar as we proposed to reallocate 10-14 megahertz of spectrum for AWS, and denied it insofar as it requested reallocation of the entire 2 GHz MSS band and delaying of the licensing of MSS systems in the band.[183] We stated that our actions in the *Further Notice* would better serve the public with respect to these issues and was consistent with the International Bureau's granting of the MSS licenses on July 17, 2001.[184] In its petition for reconsideration,[185] CTIA claims we made an error by acting on its petition without first placing it on public notice, and asks that we vacate our decision to reject its petition for rulemaking, place the petition on public notice, and consider it *ab initio*. CTIA also claims that we failed to articulate a reasoned decision for rejecting its request and, further, that we could not reasonably rely on the grant of the MSS licenses because that action prejudged our consideration of CTIA's petition.[186]

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[180] *See* Wireless Communications Association Reply Comments to the *Notice* at 34 n.89.

[181] Petition for Rulemaking of the Cellular Telecommunications & Internet Association Concerning Reallocation of 2 GHz Spectrum for Terrestrial Wireless Use, Petition for Rulemaking (filed May 18, 2001).

[182] See *2 GHz MSS R&O*, 15 FCC Rcd at 16127. At the time the petition was filed, the Commission had reallocated the 1990-2025 MHz and 2165-2200 MHz bands and established service rules for MSS.

[183] See *Further Notice*, 16 FCC Rcd at 16054, ¶ 23.

[184] AT&T Wireless, Verizon Wireless and Cingular filed an application for review of the MSS license grants on August 16, 2001. We will address that application for review separately.

[185] Introduction of New Advanced Mobile and Fixed Terrestrial Services; Use of Frequencies Below 3 GHz; Petition for Rulemaking of the Cellular Telecommunications & Internet Association Concerning Reallocation of 2 GHz Spectrum for Terrestrial Wireless Use, *Petition for Reconsideration*, ET Docket No. 00-258 (filed October 15, 2001) (CTIA Petition for Reconsideration).

[186] CTIA Petition for Reconsideration.

75. Although we did not place CTIA's petition on public notice, our decision in that regard did not prejudice CTIA. We note that various parties filed responsive comments addressing reallocation of the entire 2 MSS GHz band in IB Docket No. 99-81,[187] which demonstrates that the public was provided the opportunity to submit comment on the reallocation question raised by CTIA's petition, and did so. Moreover, the Commission has already raised and duly considered this reallocation question. The same day the Commission adopted the *Further Notice* that considered the reallocation of some MSS spectrum, it initiated a separate proceeding to explore whether MSS licensees should be afforded additional flexibility.[188] Together, these proceedings explored the larger issue of MSS use that is also reflected in CTIA's petition. The *Third R&O* we adopt today concludes that a portion of the MSS spectrum should be reallocated to support AWS, but rejects a complete reallocation of the band. Accordingly, CTIA's original petition for rule making is now moot, and we deny its petition for reconsideration.

VII. PROCEDURAL MATTERS

A. Final Regulatory Flexibility Analysis for Third Report and Order

76. As required by Section 603 of the Regulatory Flexibility Act, 5 U.S.C. § 603, the Commission has prepared a Final Regulatory Flexibility Analysis (FRFA) of the possible significant economic impact on small entities of the proposals suggested in this document. The FRFA is set forth in Appendix C.

B. Initial Regulatory Flexibility Analysis for the Third Notice of Proposed Rule Making

77. As required by Section 603 of the Regulatory Flexibility Act, 5 U.S.C. § 603, the Commission has prepared an Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on small entities of the proposals suggested in this document. The IRFA is set forth in Appendix D. Written public comments are requested on the IRFA. These comments must be filed in accordance with the same filing deadlines as comments filed in this *Third Notice of Proposed Rulemaking* provided in paragraph 79, below. Comments must have a separate and distinct heading designating them as responses to the IRFA.

C. *Ex Parte* Rules – Permit-But-Disclose Proceeding

78. This is a permit-but-disclose notice and comment rule making proceeding. *Ex parte* presentations are permitted, except during the Sunshine Agenda period, provided they are disclosed as provided in the Commission's rules. *See generally* 47 C.F.R. §§ 1.1202, 1.1203, and 1.2306(a).

D. Comments

79. Pursuant to Sections 1.415 and 1.419 of the Commission's rules, 47 C.F.R. §§ 1.415, 1.419, interested parties may file comments on or before **[30 days from date of publication in the Federal Register]**, and reply comments on or before **[45 days from date of publication in the Federal Register]**. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS) or by filing paper copies. *See Electronic Filing of Documents in Rulemaking Proceedings*, 63 Fed. Reg. 24121 (1998).

[187] CTIA referenced this docket in the caption of its petition.

[188] Flexibility of Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Band, IB Docket No. 01-185, ET Docket No. 95-18, *Notice of Proposed Rulemaking*, 16 FCC Rcd 15532 (2001).

80. Comments filed through the ECFS can be sent as an electronic file via the Internet to http://www.fcc.gov/e-file/ecfs.html. Generally, only one copy of an electronic submission must be filed. If multiple docket or rulemaking numbers appear in the caption of this proceeding, however, commenters must transmit one electronic copy of the comments to each docket or rulemaking number referenced in the caption. In completing the transmittal screen, commenters should include their full name, U.S. Postal Service mailing address, and the applicable docket or rulemaking number. Parties may also submit an electronic comment by Internet e-mail. To get filing instructions for e-mail comments, commenters should send an e-mail to ecfs@fcc.gov, and should include the following words in the body of the message, "get form <your e-mail address." A sample form and directions will be sent in reply. Parties who choose to file by paper must file an original and four copies of each filing. If more than one docket or rulemaking number appear in the caption of this proceeding, commenters must submit two additional copies for each additional docket or rulemaking number.

81. Filings can be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail (although we continue to experience delays in receiving U.S. Postal Service mail). The Commission's contractor, Vistronix, Inc., will receive hand-delivered or messenger-delivered paper filings for the Commission's Secretary at 236 Massachusetts Avenue, N.E., Suite 110, Washington, D.C. 20002. The filing hours at this location are 8:00 a.m. to 7:00 p.m. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes must be disposed of before entering the building. Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9300 East Hampton Drive, Capitol Heights, MD 20743. U.S. Postal Service first-class mail, Express Mail, and Priority Mail should be addressed to 445 12th Street, SW, Washington, D.C. 20554. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.

E. Contact Persons

82. For further information, contact Jamison Prime at (202) 418-7474, jprime@fcc.gov, Office of Engineering and Technology.

VIII. ORDERING CLAUSES

83. Accordingly, IT IS ORDERED that pursuant to Sections 1, 4(i), 7(a), 301, 302(a), 303(f), 303(g), 303(r), 307, 308, 309(j), 316, and 332 of the Communications Act of 1934, as amended, 47 U.S.C. Sections 151, 154(i), 157(a), 301, 302(a), 303(f), 303(g), 303(r), 307, 308, 309(j), 316, and 332 the THIRD REPORT AND ORDER, THIRD NOTICE OF PROPOSED RULEMAKING, AND SECOND MEMORANDUM OPINION AND ORDER is hereby ADOPTED.

84. IT IS FURTHER ORDERED that the rules set forth in Appendix A WILL BECOME EFFECTIVE 30 days after publication in the Federal Register.

85. IT IS FURTHER ORDERED that NOTICE IS HEREBY GIVEN of the proposed regulatory changes described in this Notice, and that comment is sought on these proposals.

86. IT IS FURTHER ORDERED that the Petition for Reconsideration filed by the Cellular Telecommunications and Internet Association IS DENIED.

87. IT IS FURTHER ORDERED that authority IS DELEGATED to the International Bureau to modify Mobile-Satellite Service licenses pursuant to Section 316 of the Communications Act of 1934, as amended, 47 U.S.C. § 316, consistent with the decisions adopted herein.

88. IT IS FURTHER ORDERED that the Commission's Consumer Information Bureau, Reference Information Center, SHALL SEND a copy of this THIRD REPORT AND ORDER, THIRD NOTICE OF PROPOSED RULEMAKING, AND SECOND MEMORANDUM OPINION AND ORDER, including the Final Regulatory Flexibility Analysis and the Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX A: FINAL RULES

For the reasons discussed in the preamble, the Federal Communications Commission amends 47 CFR parts 2 and 25 as follows:

PART 2 -- FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

1. The authority citation for Part 2 continues to read as follows:

AUTHORITY: 47 U.S.C. 154, 302a, 303, and 336, unless otherwise noted.

2. Section 2.106, the Table of Frequency Allocations, is amended as follows:

a. Revise pages 48 and 49.

b. In the list of non-Federal Government (NG) Footnotes, revise footnotes NG156 and NG168 and add footnotes NG177 and NG178.

§ 2.106 Table of Frequency Allocations.

The revisions and additions read as follows:

* * * * *

5.149 5.341 5.385 5.386 5.387 5.388			1755-1850 FIXED MOBILE G42	1755-1850	
1930-1970 FIXED MOBILE 5.388A 5.388	1930-1970 FIXED MOBILE 5.388A Mobile-satellite (Earth-to-space) 5.388	1930-1970 FIXED MOBILE 5.388A 5.388	1850-2025	1850-2000 FIXED MOBILE NG177	RF Devices (15) Personal Communications (24) Fixed Microwave (101)
1970-1980 FIXED MOBILE 5.388A 5.388					
1980-2010 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.388 5.389A 5.389B 5.389F				2000-2020 MOBILE-SATELLITE (Earth-to-space) NG156	Satellite Communications (25)
2010-2025 FIXED MOBILE 5.388A 5.388	2010-2025 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.388 5.389C 5.389D 5.389E 5.390	2010-2025 FIXED MOBILE 5.388A 5.388		2020-2025 FIXED MOBILE NG177	
2025-2110 SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (Earth-to-space) (space-to-space) 5.392			2025-2110 SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION- SATELLITE (Earth-to- space) (space-to-space) SPACE RESEARCH (Earth- to-space) (space-to-space) 5.391 5.392 US90 US222 US346 US347	2025-2110 FIXED NG23 NG118 MOBILE 5.391 5.392 US90 US222 US346 US347	TV Auxiliary Broadcasting (74F) Cable TV Relay (78) Local TV Transmission (101J)

International Table			United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
2110-2120 FIXED MOBILE 5.388A SPACE RESEARCH (deep space) (Earth-to-space) 5.388			2110-2120 US252	2110-2155 FIXED NG23 MOBILE US252	Domestic Public Fixed (21) Public Mobile (22) Fixed Microwave (101)
2120-2160 FIXED MOBILE 5.388A 5.388	2120-2160 FIXED MOBILE 5.388A Mobile-satellite (space-to-Earth) 5.388	2120-2170 FIXED MOBILE 5.388A	2120-2200	2155-2160 FIXED NG23	Domestic Public Fixed (21) Fixed Microwave (101)
2160-2170 FIXED MOBILE 5.388A 5.388 5.392A	2160-2170 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.388 5.389C 5.389D 5.389E 5.390	5.388		2160-2180 FIXED NG23 NG153 MOBILE NG178	Domestic Public Fixed (21) Public Mobile (22) Fixed Microwave (101)
2170-2200 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A 5.388 5.389A 5.389F 5.392A				2180-2200 MOBILE-SATELLITE (space-to-Earth) NG23 NG168	Satellite Communications (25)
2200-2290 SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (space-to-Earth) (space-to-space)			2200-2290 SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED (line-of-sight only)	2200-2290	

* * * * *

NON-FEDERAL GOVERNMENT (NG) FOOTNOTES

* * * * *

NG156 The band 2000-2020 MHz is also allocated to the fixed and mobile services on a primary basis for facilities where the receipt date of the initial application was prior to June 27, 2000, and on a secondary basis for all other initial applications. Not later than September 6, 2010, the band 2000-2020 MHz is allocated to the fixed and mobile services on a secondary basis.

* * * * *

NG168 The band 2180-2200 MHz is also allocated to the fixed and mobile services on a primary basis for facilities where the receipt date of the initial application was prior to January 16, 1992, and on a secondary basis for all other initial applications. Not later than September 6, 2010, the band 2180-2200 MHz is allocated to the fixed and mobile services on a secondary basis.

* * * * *

NG177 In the bands 1990-2000 MHz and 2020-2025 MHz, where the initial filing date for facilities in the fixed and mobile services was prior to June 27, 2000, said facilities shall operate on a primary basis and all later-applied-for facilities shall operate on a secondary basis to Advanced Wireless Services. Not later than September 6, 2010, all such facilities in the bands 1990-2000 MHz and 2020-2025 MHz shall operate on a secondary basis to Advanced Wireless Services.

NG178 In the band 2165-2180 MHz, where the initial filing date for facilities in the fixed and mobile services was prior to January 16, 1992, said facilities shall operate on a primary basis and all later-applied-for facilities shall operate on a secondary basis to Advanced Wireless Services. Not later than September 6, 2010, all such facilities in the band 2165-2180 MHz shall operate on a secondary basis to Advanced Wireless Services.

* * * * *

PART 25 – SATELLITE COMMUNICATIONS

3. The authority citation for Part 25 continues to read as follows:

AUTHORITY: 47 U.S.C. 701-774. Interprets or applies Sections 4, 301, 302, 303, 307, 309 and 332 of the Communications Act, as amended, 47 U.S.C. Sections 154, 301, 302, 307, 309 and 332, unless otherwise noted.

4. Section 25.201 is amended by revising the definition for 2 GHz Mobile-Satellite Service to read as follows:

§ 25.201 Definitions.

* * * * *

2 GHz Mobile Satellite Service. A mobile-satellite service that operated in the 2000-2020 MHz and 2180-2200 MHz frequency bands, or in any portion thereof.

* * * * *

5. Section 25.202 is amended by revising paragraph (a)(4)(ii) to read as follows:

§ 25.202 Frequencies, frequency tolerance and emission limitations.

(a) * * * * *

(4) * * * * *

(ii) The following frequencies are available for use by the 2 GHz Mobile-Satellite Service:

2000-2020 MHz: User-to-Satellite Link
2180-2200 MHz: Satellite-to-User Link

* * * * *

APPENDIX B: PROPOSED RULES

For the reasons discussed in the preamble, the Federal Communications Commission proposes to amend 47 CFR part 15 as follows:

PART 15 – RADIO FREQUENCY DEVICES

1. The authority citation for Part 15 continues to read as follows:

AUTHORITY: 47 U.S.C. 154, 302, 303, 304, 307 and 544A.

2. Section 15.319 is amended by revising paragraph (a) to read as follows:

§ 15.319 General technical requirements.

(a) The 2390-2400 MHz band is limited to use by asynchronous devices under the requirements of Section 15.321. * * *

* * * * *

3. Section 15.321 is amended by revising the title, paragraphs (a) and (b) to read as follows:

§ 15.321 Specific requirements for asynchronous devices operating in the 2390-2400 MHz band.

(a) Operation shall be contained within the 2390-2400 MHz band. The emission bandwidth of any intentional radiator operating in these bands shall be no less than 500 kHz.

(b) All systems of less than 2.5 MHz emission bandwidth shall start searching for an available spectrum window within 3 MHz of the band edge at 2390 or 2400 MHz while systems of more than 2.5 MHz emission bandwidth will first occupy the center half of the band. Devices with an emission bandwidth of less than 1.0 MHz may not occupy the center half of the sub-band if other spectrum is available.

* * * * *

APPENDIX C: FINAL REGULATORY FLEXIBILITY ANALYSIS

As required by the Regulatory Flexibility Act (RFA)[189] an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the *Notice of Proposed Rulemaking and Order (Notice)*,[190] as well as the *Memorandum Opinion and Order and Further Notice of Proposed Rule Making* (*Further Notice*).[191] The Commission sought written public comments on the proposals in the *Notice* and *Further Notice*, including comment on each IRFA. This present Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.[192]

Need for, and Objectives of, the Third Report and Order

The *Third Report and Order* (*Third R&O*) continues our efforts to allocate spectrum that can be used for the provision of advanced wireless services (AWS) to the public, which in turn supports our obligations under Section 706 of the 1996 Telecommunication Act[193] and, more generally, serves the public interest by promoting rapid and efficient radio communication facilities.

The *Third R&O* discusses the need for spectrum allocations of sufficient size and with particular characteristics so as to allow for the provision of AWS. Specifically, it evaluates spectrum that was formerly allocated to the Mobile-Satellite Service (MSS). The Commission previously concluded that 2 GHz MSS licensees could operate using a smaller amount of spectrum than that which had previously been allocated. The *Third R&O* allocates spectrum for fixed and mobile services (which could be made available for AWS) in the 1990-2000 MHz, 2020-2025 MHz, and 2165-2180 MHz bands.

Summary of Significant Issues Raised by Public Comments in Response to the IRFA.

There were no comments filed that specifically addressed the rules and policies proposed in the IRFA.

Description and Estimate of the Number of Small Entities to Which the Rules Will Apply.

The RFA directs agencies to provide a description of, and, where feasible, an estimate of, the number of small entities that may be affected by the rules adopted herein.[194] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[195] In addition, the term "small business" has the same meaning as

[189] *See* 5 U.S.C. § 603. The RFA (codified at 5 U.S.C. § 601-612) has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

[190] 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, *Notice of Proposed Rulemaking and Order*, 16 FCC Rcd 596 (2001).

[191] 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, ET Docket No. 95-18, and IB Docket No. 99-81, *Memorandum Opinion and Order and Further Notice of Proposed Rule Making*, 16 FCC Rcd 16043 (2001).

[192] *See* 5 U.S.C. § 604.

[193] Section 706 of the Communications Act of 1934, as amended, codified at 47 U.S.C. § 157.

[194] 5 U.S.C. § 604(a)(3).

[195] 5 U.S.C. § 601(6).

the term "small business concern" under the Small Business Act.[196] A "small business concern" is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).[197]

A small organization is generally "any not-for-profit enterprise which is independently owned and operated ad is not dominant in its field."[198] Nationwide, as of 1992, there were approximately 275,801 small organizations.[199] "Small governmental jurisdiction" generally means "governments of cities, counties, towns, townships, villages, school districts, or special districts, with a population of less than 50,000."[200] As of 1992, there were approximately 85,006 governmental entities in the United States.[201] This number includes 38,978 counties, cities, and towns; of these, 37,566, or 96%, have populations of fewer then 50,000.[202] The Census Bureau estimates that this ratio is approximately accurate for all governmental entities. Thus, of the 85,006 governmental entities, we estimate that 81,600 (96%) are small entities.

Radiotelephone Operators. The Commission has not developed service rules for AWS spectrum, nor has it attempted to categorize potential licensees for this spectrum. However, because many of the comments we received in support of our efforts to allocate spectrum for AWS were submitted by commercial radiotelephone operators and because licensees of AWS-like bands in other countries include incumbent commercial radiotelephone operators, we believe that there is a high likelihood that the class of AWS licensees may ultimately consist of one or more radiotelephone operator. Therefore, we examine this category in greater depth. The SBA has developed a small business size standard for small businesses in the category "Cellular and Other Wireless Telecommunications."[203] Under that SBA category, a business is small if it has 1,500 or fewer employees.[204] According to the Bureau of the Census, only twelve firms from a total of 1238 cellular and other wireless telecommunications firms operating during 1997 had 1,000 or more employees.[205] Therefore, even if all twelve of these firms were cellular telephone companies, nearly all cellular carriers were small businesses under the SBA's definition. In addition, we note that there are 1807 cellular licenses; however, a cellular licensee may own several licenses. According to the most recent *Trends in Telephone Service* data, 858 carriers reported that they were engaged in the provision of either cellular service, Personal Communications

[196] 5 U.S.C. § 601(3) (incorporating by reference the definition of "small-business concern" in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register."

[197] 15 U.S.C. § 632.

[198] 5 U.S.C. § 601(4).

[199] Department of Commerce, U.S. Bureau of the Census, 1992 Economic Census, Table 6 (special tabulation of data under contract to Office of Advocacy of the U.S. Small Business Administration).

[200] 5 U.S.C. § 601(5).

[201] U.S. Dept. of Commerce, Bureau of the Census, "1992 Census of Governments."

[202] *Id.*

[203] 13 C.F.R. § 121.201, North American Industry Classification System (NAICS) code 513322.

[204] *Id.*

[205] U.S. Department of Commerce, U.S. Census Bureau, 1997 Economic Census, Information - Subject Series, Establishment and Firm Size, Table 5 – Employment Size of Firms Subject to Federal Income Tax at 64, NAICS code 513322 (October 2000).

Service (PCS), or Specialized Mobile Radio telephony services, which are placed together in that data. We have estimated that 291 of these are small under the SBA small business size standard.[206] Accordingly, based on this data, we estimate that not more than 291 radiotelephone operators would be affected by a decision to make additional spectrum available for AWS.

Geostationary, Non-Geostationary Orbit, Fixed Satellite, or Mobile Satellite Service Operators (including 2 GHz MSS systems). The Commission has not developed a definition of small entities applicable to geostationary or non-geostationary orbit, fixed-satellite or mobile-satellite service operators. The SBA has developed a small business size standard for Satellite Telecommunications Carriers, which consists of all such companies having $12.5 million or less in annual receipts.[207] In addition, a second SBA size standard for Other Telecommunications includes "facilities operationally connected with one or more terrestrial communications systems and capable of transmitting telecommunications to or receiving telecommunications from satellite systems,"[208] and also has a size standard of annual receipts of $12.5 million or less. According to Census Bureau data for 1997, there were 324 firms in the category Satellite Telecommunications, total, that operated for the entire year.[209] Of this total, 273 firms had annual receipts of $5 million to $9,999,999 and an additional 24 firms had annual receipts of $10 million to $24,999,990.[210] Thus, under this size standard, the majority of firms can be considered small. In addition, according to Census Bureau data for 1997, there were 439 firms in the category Satellite Telecommunications, total, that operated for the entire year.[211] Of this total, 424 firms had annual receipts of $5 million to $9,999,999 and an additional 6 firms had annual receipts of $10 million to $24,999,990.[212] Thus, under this second size standard, the majority of firms can be considered small.

Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements

The *Second R&O* addresses the possible use of frequency bands below 3 GHz to support the introduction of new AWS, but does not propose service rules. Thus, the item contains no new reporting, recordkeeping, or other compliance requirements.

Steps Taken to Minimize Significant Economic Impact on Small Entities, and Significant Alternatives Considered

The RFA requires an agency to describe any significant alternatives that it has considered in developing its approach, which may include the following four alternatives (among others): "(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities; (3) the use of performance rather than

[206] *See Trends in Telephone Service*, Industry Analysis and Technology Division, Wireline Communications Bureau, Table 5.3, page 5-5 (May 2002).

[207] 13 C.F.R. § 121.201, North American Industry Classification System (NAICS) code 517410 (formerly 513340).

[208] *Id.* NAICS code 517910 (formerly 513390).

[209] U.S. Census Bureau, 1997 Economic Census, Subject Series: Information, "Receipt Size of Firms Subject to Federal Income Tax: 1997," Table 4, NAICS code 517410 (issued Oct. 2000).

[210] *Id.*

[211] U.S. Census Bureau, 1997 Economic Census, Subject Series: Information, "Receipt Size of Firms Subject to Federal Income Tax: 1997," Table 4, NAICS code 517910 (issued Oct. 2000).

[212] *Id.*

design standards; and (4) an exemption from coverage of the rule, or any part thereof, for such small entities."[213]

Providing spectrum to support the introduction of new advanced mobile and fixed terrestrial wireless services is critical to the continuation of technological advancement. First and foremost, the Commission believes that providing for expanded use of the frequency bands identified in the *Third R&O* in order to allow for a wide range of voice, data, and broadband services over a variety of mobile and fixed networks will provide substantial new opportunities for small entities, including (but not limited to) small entities that are radiotelephone operators.

In prior decisions, we determined that MSS operations could exist within a 40 megahertz allocation, and this spectrum is not at issue in the current proceeding. Instead, the *Third R&O* addresses the use of 30 megahertz of abandoned MSS spectrum (*i.e.* spectrum available for reallocation because licensees either failed to satisfy Commission rules pertaining to system construction of because they voluntarily relinquished their authorizations). For this spectrum, we contrast the public benefits of the allocation of AWS and the potential that small entities will be involved in the provision of AWS with the likelihood that, at the time of MSS system implementation, no small businesses will be providing MSS. For this reason, we believe that the reallocation of spectrum from MSS in the *Third R&O* will actually provide small entities with opportunities that would have otherwise been unavailable.

Report to Congress:

The Commission will send a copy of the Third Report and Order including this FRFA, in a report to be sent to Congress pursuant to the Congressional Review Act.[214] In addition, the Commission will send a copy of the Third Report and Order, including this FRFA, to the Chief Counsel for Advocacy of the SBA. A copy of the Third Report and Order and FRFA (or summaries thereof) will also be published in the Federal Register.[215]

[213] 5 U.S.C. § 603(c)(1)-(c)(4).

[214] *See* 5 U.S.C. § 801(a)(1)(A).

[215] *See* 5 U.S.C. § 604(b).

APPENDIX D: INITIAL REGULATORY FLEXIBILITY ANALYSIS

As required by the Regulatory Flexibility Act (RFA)[216] the Commission has prepared this Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on small entities by the policies and rules proposed in this Third Notice of Proposed Rulemaking (*Third NPRM*). Comment is requested in this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments on the *Third NPRM* as provided above in paragraph 77. The Commission will send a copy of the *Third NPRM*, including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration. *See* 5 U.S.C. § 603(a). In addition, the *Third NPRM* and IRFA (or summaries thereof) will be published in the Federal Register.

Need for, and Objectives of, the Proposed Rules

The *Third NPRM* proposes to reallocate five megahertz of spectrum in the 1910-1915 MHz band that can be paired with spectrum in the 1990-1995 MHz band to support fixed and mobile services, including AWS. It proposes that additional flexibility be afforded to the remaining UPCS spectrum (1915-1930 MHz) in order to support a variety of UPCS devices, including voice and data devices, and asks whether additional unlicensed devises – such as community wireless networks – could also coexist in the band. The *Third NPRM* also proposes to reallocate spectrum at 2155-2165 MHz that was previously identified as candidate spectrum for AWS, and seeks the most appropriate means to relocate Multipoint Distribution Service (MDS) licensees operating in the 2150-2160/2162 MHz band. Together, these proposed actions continue our efforts to identify spectrum that is suitable for AWS, and to allocate our existing in such a way as to promote overall efficient use.

Legal Basis

The proposed action is authorized under Sections 1, 4(i), 7(a), 301, 302(a), 303(f), 303(g), 303(r), 307, 308, 309(j), 316, and 332 of the Communications Act of 1934, as amended, 47 U.S.C. Sections 151, 154(i), 157(a), 301, 302(a), 303(f), 303(g), 303(r), 307, 308, 309(j), 316, and 332.

Description and Estimate of the Number of Small Entities to Which the Rules Will Apply.

The RFA directs agencies to provide a description of, and, where feasible, an estimate of, the number of small entities that may be affected by the rules adopted herein.[217] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[218] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[219] A "small business concern" is one

[216] *See* 5 U.S.C. § 603. The RFA (codified at 5 U.S.C. § 601-612) has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

[217] 5 U.S.C. § 604(a)(3).

[218] 5 U.S.C. § 601(6).

[219] 5 U.S.C. § 601(3) (incorporating by reference the definition of "small-business concern" in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register."

which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).[220]

A small organization is generally "any not-for-profit enterprise which is independently owned and operated ad is not dominant in its field."[221] Nationwide, as of 1992, there were approximately 275,801 small organizations.[222] "Small governmental jurisdiction" generally means "governments of cities, counties, towns, townships, villages, school districts, or special districts, with a population of less than 50,000."[223] As of 1992, there were approximately 85,006 governmental entities in the United States.[224] This number includes 38,978 counties, cities, and towns; of these, 37,566, or 96%, have populations of fewer then 50,000.[225] The Census Bureau estimates that this ratio is approximately accurate for all governmental entities. Thus, of the 85,006 governmental entities, we estimate that 81,600 (96%) are small entities.

Radiotelephone Operators. The Commission has not developed service rules for AWS spectrum, nor has it attempted to categorize potential licensees for this spectrum. However, because many of the comments we received in support of our efforts to allocate spectrum for AWS were submitted by commercial radiotelephone operators and because licensees of AWS-like bands in other countries include incumbent commercial radiotelephone operators, we believe that there is a high likelihood that the class of AWS licensees may ultimately consist of one or more radiotelephone operator. Therefore, we examine this category in greater depth. The SBA has developed a small business size standard for small businesses in the category "Cellular and Other Wireless Telecommunications."[226] Under that SBA category, a business is small if it has 1,500 or fewer employees.[227] According to the Bureau of the Census, only twelve firms from a total of 1238 cellular and other wireless telecommunications firms operating during 1997 had 1,000 or more employees.[228] Therefore, even if all twelve of these firms were cellular telephone companies, nearly all cellular carriers were small businesses under the SBA's definition. In addition, we note that there are 1807 cellular licenses; however, a cellular licensee may own several licenses. According to the most recent *Trends in Telephone Service* data, 858 carriers reported that they were engaged in the provision of either cellular service, Personal Communications Service (PCS), or Specialized Mobile Radio telephony services, which are placed together in that data. We have estimated that 291 of these are small under the SBA small business size standard.[229]

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[220] 15 U.S.C. § 632.

[221] 5 U.S.C. § 601(4).

[222] Department of Commerce, U.S. Bureau of the Census, 1992 Economic Census, Table 6 (special tabulation of data under contract to Office of Advocacy of the U.S. Small Business Administration).

[223] 5 U.S.C. § 601(5).

[224] U.S. Dept. of Commerce, Bureau of the Census, "1992 Census of Governments."

[225] *Id.*

[226] 13 C.F.R. § 121.201, North American Industry Classification System (NAICS) code 513322.

[227] *Id.*

[228] U.S. Department of Commerce, U.S. Census Bureau, 1997 Economic Census, Information - Subject Series, Establishment and Firm Size, Table 5 – Employment Size of Firms Subject to Federal Income Tax at 64, NAICS code 513322 (October 2000).

[229] *See Trends in Telephone Service*, Industry Analysis and Technology Division, Wireline Communications Bureau, Table 5.3, page 5-5 (May 2002).

Accordingly, based on this data, we estimate that not more than 291 radiotelephone operators would be affected by a decision to make additional spectrum available for AWS.

Fixed Microwave Services. The *Third NPRM* proposes to reallocate a 5 megahertz spectrum block (2160-2165 MHz) that is licensed to fixed point-to-point microwave services and was previously identified for reallocation for advanced services in the Commission's *Emerging Technologies* proceeding.[230] Microwave services include common carrier,[231] private-operational fixed,[232] and broadcast auxiliary radio services.[233] At present, there are approximately 22,015 common carrier fixed licensees and 61,670 private operational-fixed licensees and broadcast auxiliary radio licensees in the microwave services. The Commission has not yet defined a small business with respect to microwave services. For purposes of this FRFA, we will use the SBA's definition applicable to wireless and other telecommunications companies – *i.e.*, an entity with no more than 1,500 persons.[234] According to Census Bureau data for 1997, there were 977 firms in this category, total, that operated for the entire year.[235] Of this total, 965 firms had employment of 999 or fewer employees, and an additional 12 firms had employment of 1,000 employees or more.[236] Thus, under this size standard, the great majority of firms can be considered small.

We note that the number of firms does not necessarily track the number of licensees. We estimate that all of the Fixed Microwave licensees (excluding broadcast auxiliary licensees) would qualify as small entities under the SBA definition. Of these licenses, approximately 890 are issued for frequencies in the Emerging Technology bands affected by this proceeding. In addition, the band contains approximately 13 licenses in the paging and radiotelephone service and 40 Local Television Transmission Service licenses. Thus, assuming that these entities also qualify as small businesses, as many as 943 small business licensees could be affected by the rules we adopt. We note that these entities have been subject to

[230] Redevelopment of Spectrum to Encourage the Establishment of Services Using New and Innovative Technologies, ET Docket No. 92-9, *First Report and Order and Third Notice of Proposed Rule Making*, 7 FCC Rcd 6886 (1992); *Second Report and Order*, 8 FCC Rcd 6495 (1993); *Third Report and Order and Memorandum Opinion and Order*, 8 FCC Rcd 6589 (1993); *Memorandum Opinion and Order*, 9 FCC Rcd 1943 (1994); *Second Memorandum Opinion and Order*, 9 FCC Rcd 7797 (1994), *aff'd*, Association of Public Safety Communications Officials-International, Inc. v. FCC, 76 F.3d 395 (D.C. Cir. 1996) (collectively, "*Emerging Technologies* proceeding").

[231] 47 CFR 101 *et seq.* (formerly, part 21 of the Commission's Rules).

[232] Persons eligible under parts 80 and 90 of the Commission's rules can use Private Operational-Fixed Microwave services. *See* 47 CFR parts 80 and 90. Stations in this service are called operational-fixed to distinguish them from common carrier and public fixed stations. Only the licensee may use the operational-fixed station, and only for communications related to the licensee's commercial, industrial, or safety operations.

[233] Auxiliary Microwave Service is governed by Part 74 of Title 47 of the Commission's Rules. *See* 47 CFR Part 74 *et seq.* Available to licensees of broadcast stations and to broadcast and cable network entities, broadcast auxiliary microwave stations are used for relaying broadcast television signals from the studio to the transmitter, or between two points such as a main studio and an auxiliary studio. The service also includes mobile TV pickups, which relay signals from a remote location back to the studio.

[234] 13 C.F.R. § 121.201, NAICS code 517212 (formerly 513322).

[235] U.S. Census Bureau, 1997 Economic Census, Subject Series: Information, "Employment Size of Firms Subject to Federal Income Tax: 1997," Table 5, NAICS code 517212 (issued Oct. 2000).

[236] *Id.* The census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is "Firms with 1,000 employees or more."

relocation under rules originally adopted in the Commission's *Emerging Technologies* proceeding. The *Third NPRM* anticipates that these general relocation rules will continue to apply to FS microwave licensees and does not propose to modify the class of licensees that are subject to these relocation provisions.

Multipoint Distribution Service (MDS). The *Third NPRM* proposes to reallocate spectrum for MDS licensees that currently operate in the 2155-2160 MHz band (and the 2155-2162 MHz band in some cases). This service has historically provided primarily point-to-multipoint, one-way video services to subscribers.[237] The Commission recently amended its rules to allow MDS licensees in the 2500-2690 MHz band to provide a wide range of high-speed, two-way services to a variety of users.[238] In connection with the 1996 MDS auction, the Commission defined small businesses as entities that had annual average gross revenues for the three preceding years not in excess of $40 million.[239] The Commission established this small business definition in the context of this particular service and with the approval of the SBA.[240] The MDS auction resulted in 67 successful bidders obtaining licensing opportunities for 493 Basic Trading Areas (BTAs).[241] Of the 67 auction winners, 61 met the definition of a small business. At this time, we estimate that of the 61 small business MDS auction winners, 48 remain small business licensees. In addition to the 48 small businesses that hold BTA authorizations, there are approximately 392 incumbent MDS licensees that are considered small entities.[242] After adding the number of small business auction licensees to the number of incumbent licensees not already counted, we find that there are currently approximately 440 MDS licensees that are defined as small businesses under either the SBA or the Commission's rules. Because the Commission's action only affects MDS operations in the 2155-2160 MHz band (and 2155-2162 MHz band in some cases), the actual number of MDS providers who will be affected by the proposed reallocation will only represent a small fraction of those 440 small business licensees.

Unlicensed Personal Communications Service (UPCS). As its name indicates, UPCS is not a licensed service. UPCS consists of intentional radiators operating in the frequency bands 1910-1930 MHz and 2390-2400 MHz, that provide a wide array of mobile and ancillary fixed communication services to individuals and businesses. The *Third NPRM* affects UPCS operations in the 1910-1920 MHz band; operations in those frequencies are limited to asynchronous (generally data) applications. There is

[237] For purposes of this item, MDS includes single channel Multipoint Distribution Service (MDS) and the Multichannel Multipoint Distribution Service (MMDS). *See* 66 Fed. Reg. 36177.

[238] Amendment of Parts 21 and 74 to Enable Multipoint Distribution Service and Instructional Television Fixed Service Licensees to Engage in Fixed Two-Way Transmissions, MM Docket No. 97-217, *Report and Order*, 13 FCC Rcd 19112 (1998), *recon.*, 14 FCC Rcd 12764 (1999), *further recon.*, 15 FCC Rcd 14566 (2000).

[239] 47 C.F.R. §§ 21.961 and 1.2110.

[240] Amendment of Parts 21 and 74 of the Commission's Rules with Regard to Filing Procedures in the Multipoint Distribution Service and in the Instructional Television Fixed Service and Implementation of Section 309(j) of the Communications Act - Competitive Bidding, MM Docket No. 94-131, *Report and Order*, 10 FCC Rcd 9589, 9670 (1995), 60 Fed. Reg. 36524 (July 17, 1995).

[241] Basic Trading Areas (BTAs) were designed by Rand McNally and are the geographic areas by which MDS was auctioned and authorized. *See id.* at 9608.

[242] 47 U.S.C. § 309(j). (Hundreds of stations were licensed to incumbent MDS licensees prior to implementation of Section 309(j) of the Communications Act of 1934, 47 U.S.C. § 309(j)). For these pre-auction licenses, the applicable standard is SBA's small business size standard for "other telecommunications" (annual receipts of $12.5 million or less). *See* 13 C.F.R. § 121.201.

no accurate source for the number of operators in the UPCS. The Commission has not developed a definition of small entities applicable to UPCS equipment manufacturers. However, the SBA has developed a small business size standard, Cellular and Other Wireless Carriers, which consists of all such companies having 1500 or fewer employees.[243] According to Census Bureau data for 1997, there were 977 firms in this category, total, that operated for the entire year.[244] Of this total, 965 firms had employment of 999 or fewer employees, and an additional 12 firms had employment of 1,000 employees or more.[245] Thus, under this size standard, the great majority of firms can be considered small. However, no equipment authorizations have been issued for devices operating in the 1910-1920 MHz band.

Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements

The *Third NPRM* addresses the possible use of frequency bands below 3 GHz to support the introduction of new AWS, but does not propose service rules. Thus, the item contains no new reporting, recordkeeping, or other compliance requirements.

Steps Taken to Minimize Significant Economic Impact on Small Entities, and Significant Alternatives Considered

The RFA requires an agency to describe any significant alternatives that it has considered in developing its approach, which may include the following four alternatives (among others): "(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities; (3) the use of performance rather than design standards; and (4) an exemption from coverage of the rule, or any part thereof, for such small entities."[246]

Providing spectrum to support the introduction of new advanced mobile and fixed terrestrial wireless services is critical to the continuation of technological advancement. As an initial matter, we believe that the provision of additional spectrum that can be used to support AWS will directly benefit small business entities by providing new opportunities for the provision of innovative new fixed and mobile wireless services.

We realize that some entities must be displaced to clear a sufficient quantity of contiguous spectrum to support new services. We endeavored to avoid this effect by identifying unencumbered spectrum, but spectrum in the suitable frequency range is heavily used already and a sufficient amount of unencumbered spectrum simply does not exist. We have also sought to minimize an adverse impact by proposing to reallocate frequency bands for those incumbents, including small entities, which might be accommodated in other spectrum. The spectrum we propose to allocate in the 2160-2165 MHz band was previously identified as an Emerging Technology band; thus, we have previously considered relocation consequences and established relocation procedures for incumbent operators in this band. Small entities operating in this band have known for a decade that they are subject to relocation and may have taken steps (such as deploying more efficient systems in different spectrum in lieu of upgrading existing

[243] 13 C.F.R. § 121.201, North American Industry Classification System (NAICS) code 517212.

[244] U.S. Census Bureau, 1997 Economic Census, Subject Series: Information, "Employment Size of Firms Subject to Federal Income Tax: 1997," Table 5, NAICS code 517212 (issued Oct. 2000).

[245] *Id.* The census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is "Firms with 1,000 employees or more."

[246] 5 U.S.C. § 603(c)(1)-(c)(4).

equipment) that could minimize the consequences of relocation vis-à-vis licensees in another spectrum band that had not heretofore been identified as a candidate for reallocation. Thus, the existing relocation procedures should serve to ease the relocation of small entity incumbents in the 2160-2165 MHz band, and make reallocation of this band a preferable alternative to the reallocation of other bands where we would have to establish new relocation rules.

The Commission has already received extensive comments in this proceeding on issues related to the possible reallocation of the 2150-2160 MHz (2.1 GHz) spectrum for advanced wireless purposes. Comments filed by the multipoint distribution/instructional television fixed services industry and several equipment manufacturers argue that the 2.1 GHz band is necessary for the continued roll-out of fixed wireless services across the country. Other commenters support the use of 2.1 GHz for advanced wireless services. In a recent decision, the Commission determined that it was necessary to reallocate MDS operations at 2150-2155 MHz to create a 45 megahertz block of contiguous spectrum that can be used to provide advanced services, but did not decide how to relocate these operations or what to do with remaining MDS operations in the 2155-2160/62 MHz band. One option proposed is the reallocation of the remaining MDS spectrum. By taking this action, we would be able to provide opportunities associated with the provision of contiguous and/or paired blocks of spectrum that can be used for fixed and mobile applications, including AWS.

The *Third NPRM* discusses reallocation of UPCS spectrum in the 1910-1920 MHz band for AWS. Because no equipment is currently certified for this band, we conclude that our decision is unlikely to affect any users or equipment manufactures that are small entities. We also explore options for providing increased flexibility of unlicensed use in the remaining UPCS spectrum, including modifying our rules to allow for expanded voice-based applications in the 1915-1920 MHz portion of the band if we decide to reallocate only the 1910-1915 MHz band segment. We note that we had sought comment on use of the entire 1910-1930 MHz band for AWS, and that the record reflects that numerous small entities may use or manufacture UPCS voice equipment on the 1920-1930 MHz portion of the band. Thus, the *Third R&O* represents a means to provide additional opportunities both to small entities that provide AWS while providing minimal disruption to small entities that are UPCS users and manufacturers (and possibly providing additional benefits, if the proposal to expand permitted UPCS use of the 1915-1920 MHz band is adopted). For this reason we conclude that our action is preferable to other alternatives, such as retaining the existing UPCS allocation in its entirety.

Rules that May Duplicate, Overlap, or Conflict with the Proposed Rules:

None.

APPENDIX E: MDS STATIONS IN THE 2160-2162 MHZ BAND

Primary MDS Stations

Call Sign	Licensee Name	Certification Date	Location
WPG39	American Telecasting of Colorado Springs, Inc.	6/84	Colorado Springs, CO
WLK290	James D. and Lawrence D. Garvey d/b/a Radiofone	7/88	New Orleans, LA
WLK246	Indianapolis MDS Co.	1/88	Indianapolis, IN
WLK242	Michael Kelley Revocable Trust	5/88	Martinsburg, WV
WLK228	San Francisco MDS Co.	10/89	San Francisco, CA
WLK227	New York MDS, Inc.	8/87	New York, NY
WHT747	Washington MDS Co.	1/88	Washington, DC
WHT702	St. Louis MDS Co.	8/87	St. Louis, MO
WHT594	Detroit MDS Co.	5/86	Detroit, MI
WHT573	DCT Communications, Inc.	12/88 (MOD)	San Bernardino, CA
WHT571	WorldCom Broadband Solutions, Inc.	9/84	Baltimore, MD
WHT570	Private Networks, Inc.	8/85	Houston, TX
WHT566	Milwaukee MDS Co.	7/84	Milwaukee, WI
WHT564	CS Wireless Systems, Inc.	1/86	Dallas, TX
WHT562	Chicago MDS Co.	6/84	Chicago, IL
WHI966	WorldCom Broadband Solutions, Inc.	2/89	Albany, NY
WHD479	Los Angeles MDS Co., Inc.	7/86	Los Angeles, CA
WHB522	Phoenix MDS Co.	1/82	Phoenix, AZ
WGX394	DCT Communications, Inc.	12/86	Anaheim, CA
WGW352	Wireless Broadcast Services of America	7/88 (MOD)	Sacramento, CA
WGW309	Atlanta MDS Co.	8/87	Atlanta, GA
WFY976	Bay Area Cablevision, Inc.	9/87	San Jose, CA
WFY900	CS Wireless Systems, Inc.	10/85	Fort Worth, TX
WFY852	CS Wireless Systems, Inc.	8/84	San Antonio, TX
WFY642	Broadcast Data Corp.	3/84	Oklahoma City, OK
WDU606	Broadcast Data Corp.	7/88 (MOD)	Columbus, OH
WCU552	Minneapolis MDS Co.	11/82	Minneapolis, MN

Secondary MDS Stations

Call Sign	Licensee Name	Application Date	Location
WMY475	American Telecasting of Denver, Inc.	4/96	Denver, CO
WMY429	George W. Bott	9/96	Grand Island, NY
WKR65	American Telecasting, Inc.	8/98	Las Vegas, NV
WHD358	James A. Simon	7/93	Ft. Wayne, IN
KNSE435	WorldCom Broadband Solutions, Inc.	3/02	Pittsburgh, PA
KNSD242	Teewinot Licensing Co.	4/98	Twin Falls, ID
KNSC851	American Telecasting of Cincinnati, Inc.	12/97	Cincinnati, OH
KNSC792	WorldCom Broadband Solutions, Inc.	8/97	Boston, MA
KNSC662	WorldCom Broadband Solutions, Inc.	4/97	New Haven, CT
KNSC655	Nucentrix Spectrum Resources, Inc.	3/97	Maysville, MO
KNSC303	Wireless Telecommunications, Inc.	8/96	Salisbury, MD
20000420AAC*	CS Wireless Systems, Inc.	8/2000	Addison, TX
20000420AAP*	CS Wireless Systems, Inc.	8/2000	Arlington, TX
20000420AAH*	CS Wireless Systems, Inc.	8/2000	Irving, TX
20000420AAF*	CS Wireless Systems, Inc.	8/2000	Plano, TX
20000420AAA*	CS Wireless Systems, Inc.	8/2000	Dallas, TX

* Indicates a developmental license.

APPENDIX F: LIST OF COMMENTING PARTIES

Commenters to the *Notice of Proposed Rule Making*

Comments (due February 22, 2001):

Ad Hoc MDS Alliance (MDS Alliance)
Alan Dixon
American Association of School Administrators
American Association of Community Colleges
American Federation of Teachers
American Petroleum Institute
Arizona Board of Regents for Arizona State University
ArrayComm
Association of America's Public Television Stations
AT&T Wireless Services (AT&T Wireless)
Austin Community College
Baypoint TV
Black Hawk College
Blooston Law Firm (Blooston)
Board of Regents of the University of Wisconsin System
Burlington County College
Canadian Wireless Telecommunications Association
Catawba Valley Community College
Catholic Television Network (Catholic)
CDMA Development Group (CDMA Group)
CelPlan Technologies
Central Dakota Telecommunications Consortium
Champion Industries
Chilean Telecommunications Administration (Chile or Chilean Government)
Cingular Wireless (Cingular)
Cisco Systems (Cisco)
Clearwire Technologies (Clearwire)
Community Telecommunications Network
Cook Inlet Region (Cook Inlet)
Council of the Great City Schools
Cellular Telecommunications and Internet Association (CTIA)
DCT Los Angeles (DCT LA)
Digital Broadcast Corporation
Dutchess Community College
Education Community of the United States
Education Service Center Region 9
Ericsson
Eureka College
Halifax Community College
Henry County Board of Education
Illinois Institute of Technology (IIT)
IPWireless
ITFS Spectrum Development Alliance
Jet Propulsion Laboratory, California Institute of Technology (JPL)
Joint Comments of CTIA, TIA, and PCIA
K-12 Community
Lee County School District
LinkAir Communications (LinkAir)
Lucent Technologies (Lucent)
MMDS Mankato
Motorola
National Academy of Science (National Academies)
National ITFS Association (National ITFS)
National Telecommunications and Information Administration (NTIA)
Network for Instructional TV
Nokia
Nortel Networks (Nortel)
Northern Arizona University Foundation
Nucentrix Broadband Networks (Nucentrix)
Oklahoma States Regents for Higher Education
Personal Communications Industry Association (PCIA)
Petroleum Communications
Public Utility Commission of Texas (Texas PUC)
Qualcomm
Qwest Wireless (Qwest)
Radio Advisory Board of Canada (RAB of Canada)
Rebekah E. Adams
Red Partnerships
Richardson Independent School District
The Rural Telecommunications Group
San Diego County Office of Education
San Diego County Superintendent of Schools
San Jose State University/William D. Nance
Siemens
SkyCable TV of Madison
Sprint Corporation (Sprint)
Software Defined Radio
South Carolina Educational Television Commission

Spectrumlink Networks (Spectrumlink)
Superintendent of Huntsville City Schools
Tarrant County College
Telephone and Data Systems
TIA
Treacy Lau
University of Colorado
University of North Carolina
Verizon Wireless (Verizon)
Virginia Communications
VoiceStream Wireless Corporation (VoiceStream)
Wireless Communications Association International (WCA)
Wireless One of North Carolina
Worldcom
Yuba Community College District

Reply Comments (due March 9, 2001):

Adams Telecom
ArrayComm
AT&T Wireless Services
Baypoint TV
Brown University
Catholic Television Network
Cingular Wireless
Cisco Systems
Clearwire Technologies
Council of the Great City Schools
CTIA
Education Community of the United States
Illinois Institute of Technology
Information Technology Industry Council
ITFS Spectrum Development Alliance
LinkAir Communications
Microband Corporation of America
Motorola
National ITFS Association
Network for Instructional TV
Nortel Networks
Nucentrix Broadband Networks
Orange Group
Qualcomm
Red Partnerships
Siemens
Spectrumlink Networks
Sprint Corporation
Telephone and Data Systems
The University of North Carolina
Verizon Wireless
VoiceStream Wireless Corporation
Wireless Communications Association International
Wireless One of North Carolina
Worldcom

Commenters to the *Further Notice of Proposed Rule Making*

Comments (due October 9, 2001):

21st Century Telesis/Robert Hart
Ad Hoc MDS Alliance
American Petroleum Institute
APCO
ArrayComm
ARRL, The National Association for Amateur Radio
AT&T Wireless Services
Avaya
Aviatel Communications
Blackfoot Telephone Cooperative
Blooston
The Boeing Company
Bryan P. King
Cellular Telecommunications & Internet Association (CTIA)
Celsat America
Cingular Wireless
Constantine Fantanas
Constellation Communications Holdings
Ericsson
Globalstar
iBee Communications
Iridium Satellite
Lockheed Martin Corporation
Orange Group
Midstate Communications
Midvale Telephone Exchange
Mobile Satellite Users Association
Motorola
MSTV and NAB
NEC America

New ICO Global Communications
Nickolaus E. Leggett
Nokia
Nortel Networks
Nucentrix Broadband Networks
Panasonic
Paul Toth-NA4AR
Penasco Valley Telephone Cooperative
PHS MoU Group
The Progress & Freedom Foundation (PFF)
Qualcomm
Quantum Communications
RNI Communications
The Rural Telecommunications Group
Satellite Industry Association
Siemens
Skycross
Society of Broadcast Engineers
Sprint Corporation
TDD Coalition
Telecom Consulting Associates (TCA)
Telecommunications Industry Association-Wireless Communications Division (TIA)
Telephone and Data Systems
TMI Communications and Company, Limited Partnership
UTAM
UTStarcom
Verizon Wireless
Wireless Communications Association International
Wireless Information Networks Forum (WINForum)
WorldCom

Reply Comments (due November 5, 2001):

2 GHz Broadcast Group
Ad Hoc MDS Alliance
ArrayComm
ARRL, The National Association for Amateur Radio
Avaya
The Boeing Company
Blackfoot Telephone Cooperative, Midstate Communications, Midvale Telephone Exchange, and Penasco Valley Telephone
CDMA Development Group
CTIA
Celsat America
Cingular Wireless
Constellation Communications Holdings
Cox Broadcasting and Cosmos Broadcasting Corporation
DCT Los Angeles
Globalstar
Meredith Corporation
Motorola
MSTV and NAB
National Telephone Cooperative Association
New ICO Global Communications
Nucentrix Broadband Networks
Orange Group
Public Safety Wireless Network
Siemens
Society of Broadcast Engineers
Space Enterprise Council
Sprint Corporation
TDD Coalition
Telephone and Data Systems
TMI Communications and Company, Limited Partnership
UTAM and Wireless Information Networks Forum (UTAM/WINForum)
UTStarcom
VoiceStream Wireless Corporation
Wireless Communications Association International
WorldCom

SEPARATE STATEMENT OF
CHAIRMAN MICHAEL K. POWELL

Re: *Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Bands*

Re: *Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems*

Today the Commission releases a family of orders that grants flexibility to licensees that provide substantial satellite service, strictly enforces our satellite milestone policies, and reallocates 30 MHz of spectrum for terrestrial use. Taken together, these orders reflect the Commission's commitment to vigorously guard the public's spectrum resource and to ensure that resource is used efficiently in the public interest. In addition, these orders will further increase the portfolio of spectrum-based services emerging as viable competitors in the voice and broadband marketplace. While I believe today's orders represent the optimal outcome under the constraints of the existing licensing regime, they also highlight areas of our current spectrum policy that warrant particular attention, from the Commission and Congress, if we are to maximize the public interest in spectrum policy.

First, we grant existing satellite providers in three bands the option of using their spectrum assignments on the ground as well as in space. Under our traditionally bifurcated licensing regime, satellite and terrestrial spectrum rights have been assigned independent of one another. In some cases, assignment of either satellite or terrestrial rights effectively barred the assignment of the other because of interference concerns. Advances in technology have changed some of these assessments. Sharing is now often possible between satellite and terrestrial, fixed services. Indeed, in cases where the services are severable, the Commission has decided to license the rights to different parties. In other cases, the capacity of two independent services to share is far more limited.

In the bands at issue here, the satellite-based services as well as the proposed terrestrial services are mobile, making sharing less feasible. Moreover, the satellite services are already licensed and, in two of the three bands at issue, satellite licensees are already offering service. In the end, I concluded that granting additional rights to existing satellite licensees best protected those services from harmful interference and ensured the spectrum currently allocated to satellite services in these three bands was fully utilized. The dissent argues that the Commission should have sought additional comment on our authority to assess a fee on satellite licensees who would be granted these additional rights. As an initial matter, it should be pointed out that the Commission already sought comment in this proceeding on that very issue. Further comment seems unproductive. However, I concur in the recommendation of the Spectrum Policy Task Force that Congress consider granting the Commission fee authority. Authorizing such fees would provide the Commission with an important tool for ensuring efficient use of the public spectrum resource.

Second, today's orders emphasize the importance of milestones in our satellite licensing regime. The Commission has long acknowledged that satellite-based communications present unique challenges. Specifically there is often a tremendous lag time between the filing of an application and the actual provision of service. The ITU satellite filing and coordination regime further complicate this process. The time and regulatory resources involved strongly counsel in favor of policies that ensure satellite spectrum goes to providers committed to using the spectrum promptly. Strict enforcement of milestones ensures this result. We will continue to be vigilant that satellite licensees fulfill their obligations to build systems – or the spectrum will be returned and re-licensed. Adherence to the obligation to construct new

systems also advances our goal of multiple, facilities-based competitors in all sectors of the communications marketplace, including satellite services.

While milestone enforcement is an important policy, the Commission is also examining its satellite policies in a broader context to determine whether our processes unduly hinder market access, and thereby limits competition in voice, broadband, and other markets. The Commission is currently reassessing its satellite licensing regime to determine what improvements can be made. Our current system takes much too long and makes the challenges associated with launching and operating a satellite service all the more complex. Satellite providers should succeed or fail in the marketplace on their own merits – not to have their business plans atrophy on the shelf while the FCC takes years to issue a license. We can and must do better.

Finally, the Commission today reallocates 30 MHz of spectrum at 2 GHz previously allocated for satellite use. The Commission also seeks comment on reallocating additional spectrum in the Big LEO band. These actions are not taken lightly. However, I believe that the highest-valued use of this spectrum is no longer for satellite service, and it is more prudent to explore other uses.

Going forward, it would be best if the Commission were not called upon to make such command-and-control determinations. If, for example, Congress were to repeal the international satellite competitive bidding prohibition in the ORBIT Act as the Task Force recommended, the Commission would be able to adopt a flexible allocation including satellite and terrestrial uses. If mutually exclusive applications were then accepted for filing, the resulting auction would allow the marketplace – rather than the Commission – to decide the highest valued use of the spectrum in question. I believe such an outcome would maximize the public interest and, accordingly, ask Congress to consider allowing the FCC the option of distributing flexible spectrum rights via auction.

Once the Commission determined that 30 MHz of satellite spectrum at 2 GHz would be reallocated, we faced the challenging task of selecting the appropriate bands. One of the most difficult aspects of that decision was to reallocate 10 MHz of globally harmonized spectrum at 1990-2000 MHz. Globally harmonized spectrum is a vital resource and we remain committed to the ITU process and the goals of global harmonization. However, the United States had years ago determined that the 1930-1990 band would be used for PCS. That service succeeded beyond our greatest expectations. Although during this period the Commission had yet to issue 2 GHz satellite licenses because of continuing international allocation issues, it had established certain technical operating parameters. As we came closer to a decision in these proceedings, it became increasingly clear that there would be interference issues between the PCS providers at 1930-1990 and satellite operators above 1990. The resulting interference may well have jeopardized the reliability and success of each service. Thus, although I highly value internationally harmonized operations, I determined that the ability of both services to operate reliably outweighed international concerns in this circumstance. Although I am disappointed that both interests could not be accommodated, I believe in the end stronger satellite and terrestrial services will result.

The decisions we reach today are significant and complex. The Commission's talented staff deserves credit and recognition for the long hours and tireless efforts that culminated in these orders' adoption. Together their efforts will allow for more efficient utilization of the spectral resource, the development of innovative service offerings, and more diverse and competitive alternatives for consumers throughout the country.

SEPARATE STATEMENT OF
COMMISSIONER MICHAEL J. COPPS
Approving in Part, Dissenting in Part

Re: *Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems; ET Docket No. 00-258*

The Establishment of Policies and Service Rules for the Mobile-Satellite Service in the 2 GHz Band; IB Docket No. 99-81

I write separately because I believe that the Commission should not abandon a substantial amount of rare globally harmonized satellite spectrum.

In today's Order the Commission decides to reallocate 10 MHz of globally harmonized spectrum as part of a reallocation of a total of 30 MHz from mobile satellite services (MSS) to advanced wireless services (AWS). I fully support the goal of providing adequate spectrum to new terrestrial services, and would have provided exactly the same amount of spectrum for AWS. My preference, however, was to choose less problematic frequencies.

The United States led the fight to win globally harmonized MSS spectrum in 1992. Soon thereafter, however, the Commission abandoned the plan to have a world-wide MSS band and allocated 10 MHz to PCS. This reduced by one-third the globally harmonized spectrum available to fledgling MSS operators, although it provided much-needed spectrum to PCS operators. This action engendered significant international disappointment and injured U.S. spectrum planning credibility.

Now we reallocate 50 percent more of the remaining globally harmonized MSS spectrum to AWS, leaving MSS licensees with only a third of what was originally fought for by U.S. negotiators. This will raise costs of satellite design and construction, make trans-national interference coordination more difficult, especially where satellite and terrestrial licensees must coordinate, and may further erode U.S. credibility internationally when we next fight for harmonized spectrum.

Maintaining MSS use of this spectrum certainly has costs. The majority believes that abandoning globally harmonized spectrum is necessary to reduce possible future interference. Reducing potential interference both to PCS and MSS is critically important. However, claims of potential interference were raised extremely late in this proceeding and the effect on interference of our decision is poorly understood, at best. If concerns about interference exist, we should confront them directly, seeking the efficient level of protections and a solution that doesn't do damage to our standing in the international community, if possible. For me, the values described above, and hard-won, globally harmonized spectrum, are just too valuable to walk away from.

SEPARATE STATEMENT OF
COMMISSIONER JONATHAN S. ADELSTEIN

Re: *Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems; ET Docket No. 00-258*

The Establishment of Policies and Service Rules for the Mobile-Satellite Service in the 2 GHz Band; IB Docket No. 99-81

My decision to support the shift of our domestic 2 GHz Mobile Satellite Services (MSS) allocation is not made lightly. I recognize the hard work of Commission staff and industry personnel at the 1992 World Administrative Radio Conference (and at subsequent conferences) in securing a global allocation of MSS spectrum in the 2 GHz band. However, over 10 years later, it now appears that our domestic economy and communications marketplace is better served by a shift in our country's 2 GHz MSS allocation.

I believe that this shift will serve many purposes. It will help minimize the potential for harmful interference to the millions of Americans who use Personal Communications Services (PCS) phones in the 1930-1990 MHz band from ancillary terrestrial handsets operating in the MSS band. The explosive growth of PCS phones is unprecedented, and no one could have ever imagined the proliferation of commercial mobile radio services over the past several years. The shift also will help minimize the potential for harmful interference from PCS base station transmitters into the terrestrial base receivers that MSS licensees will begin deploying once they receive authority to provide ancillary terrestrial services. Finally, the shift allows us to consider the use of paired spectrum in the 1910-1920 and 1990-2000 MHz bands for expanded PCS services, for advanced wireless services, for unlicensed services, or as replacement spectrum for other services.

I recognize that there may be a potential economic and engineering impact on certain 2 GHz MSS licensees as a result of our decision today. However, I am hopeful that those licensees seeking to serve global markets can work with our International Bureau so that they are able to use spectrum allocated for globally harmonized use. Similarly, I hope that regional or domestic systems in the 2 GHz MSS band will make frequency selections outside of the global allocation, but which still fall within the 2 GHz MSS spectrum that is harmonized with the rest of Region 2.

Finally, I express my strong support for the efforts of our Commission staff in preparing for WRC-03 and future international conferences and meetings. I sincerely hope that our decision does not undermine the efforts of these dedicated professionals in their dealings and negotiations with members of the international communications community. It cannot be emphasized enough that today's decision is made at the Commission level based on circumstances no one could have predicted at the time the original 2 GHz MSS allocation was made.