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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)	ET Docket No. 00-258
New Advanced Wireless Services, Including Third)	
Generation Wireless Systems)	
)	
Amendments to Parts 1, 2, 27 and 90 of the)	
Commission's Rules to License Services in the)	
216-220 MHz, 1390-1395 MHz, 1427-1429 MHz,)	WT Docket No. <u>02-8</u>
1429-1432 MHz, 1432-1435 MHz,)	
1670-1675 MHz, and 2385-2390 MHz)	
Government Transfer Bands)	

FOURTH NOTICE OF PROPOSED RULEMAKING

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By the Commission: Commissioner Copps issuing a separate statement

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I. INTRODUCTION

1. By this action, we propose to make spectrum available for Federal Government operations that will be displaced from the band 1710-1850 MHz as a result of making the 1710-1755 MHz segment available to support the introduction of new non-Federal Government advanced wireless services ("AWS"), including third generation wireless ("3G") systems.¹ These proposals are consistent with the U.S. Department of Commerce's 2002 *Viability Assessment*, the implementation of which would substantially clear the band 1710-1755 MHz of Federal Government operations that would have otherwise impeded the development of new nationwide AWS services.² Specifically, we propose to allow the U.S. Department of Defense ("DOD") to use the band 2025-2110 MHz, on a co-equal, primary basis with non-Federal Government operations, for earth stations at 11 sites that support military space operations (also known as tracking, telemetry, and commanding or "TT&C").³ Over time, DOD access to the band 2025-2110 MHz for TT&C Earth-to-space transmissions ("uplinks") may make more spectrum available in the band 1755-1850 MHz for absorbing certain DOD systems displaced from the band 1710-1755 MHz.⁴ In addition, we propose to permit the military services to operate stations in the fixed

¹ See *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 (2003) ("AWS *Second Report and Order*"). AWS is the collective term that we use for new and advanced wireless applications, such as voice, data and broadband services provided over a variety of high-speed fixed and mobile networks, and which are popularly referred to as 3G systems. We have also proposed service rules for AWS operations in the bands 1710-1755 MHz and 2110-2155 MHz. See also *Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands*, WT Docket No. 02-353, *Notice of Proposed Rulemaking*, 17 FCC Rcd 24135 (2002).

² See National Telecommunications and Information Administration ("NTIA") *Report* entitled "An Assessment of the Viability of Accommodating Advanced Mobile Wireless (3G) Systems in the 1710-1770 MHz and 2110-2170 MHz Bands," dated July 22, 2002 ("2002 *Viability Assessment*") (incorporated into the docket of this proceeding and available from NTIA at <http://www.ntia.doc.gov/ntiahome/threeg/va7222002/3Gva072202web.htm>). See also U.S. Department of Commerce's News Release entitled "Bush Administration Forges Landmark Plan for Spectrum Allocation," dated July 23, 2002. The Commission, which is an independent agency, administers non-Federal Government spectrum and NTIA, which is an operating unit of the U.S. Department of Commerce, administers Federal Government spectrum. See 47 C.F.R. § 2.105.

³ The band 2025-2110 MHz is allocated to the space operation service (Earth-to-space) (space-to-space) on a primary basis for Federal Government use. However, footnote US346 states that Federal Government use of the space operation service will not constrain the deployment of non-Federal Government operations. See para. 19, *infra*. An earth station is, *inter alia*, a station located on the Earth's surface and intended for communication with one or more space stations. See ITU *Radio Regulations*, Edition of 2001, No. 1.63.

⁴ See 2002 *Viability Assessment* at 3. To ensure mission success, NTIA anticipates that new satellites will be built with dual tracking and command frequencies, *i.e.*, in both the bands 1761-1842 MHz and 2025-2110 MHz. As experience is gained with 2 GHz TT&C, the use of the band 1761-1842 MHz is expected to be reduced. Therefore, initial DOD use of the band 2025-2110 MHz will not constitute an immediate "relocation" of the current systems, but will over time significantly reduce the use of the band 1761-1842 MHz for space operations, thereby allowing DOD the flexibility to accommodate additional systems in the band 1755-1850 MHz.

and mobile except aeronautical mobile services in the band 2025-2110 MHz on a secondary basis at six sites in the southwestern region of the United States.⁵

2. We also propose to make numerous allocation changes to the band 2360-2400 MHz, the most significant of which would rescind the recent establishment of Wireless Communications Services ("WCS") at 2385-2390 MHz, allow Federal and non-Federal Government flight test stations to operate in the band 2385-2395 MHz,⁶ and no longer make the band 2390-2400 MHz available for use by unlicensed Personal Communications Services ("PCS") devices. These allocation changes would permit DOD to relocate all aeronautical mobile systems out of the band 1710-1755 MHz, which is a major objective for facilitating the introduction of AWS. In addition, these allocation changes would provide needed replacement spectrum for use by DOD and commercial flight test stations, which may shortly lose access to the 35 megahertz of spectrum at 1525-1535 MHz and 2320-2345 MHz.⁷ Specifically, with regard to the Federal Government Table of Frequency Allocations, we propose: (1) to allocate the band 2385-2390 MHz to the mobile and radiolocation services on a primary basis and to the fixed service on a secondary basis; (2) to allocate the band 2390-2395 MHz to the mobile service on a primary basis; and (3) to limit use of the primary mobile service allocation at 2360-2395 MHz to aeronautical mobile applications,⁸ except that other mobile uses may be authorized on a secondary basis to aeronautical mobile applications. With regard to the Non-Federal Government Table of Frequency Allocations, we propose: (1) to allocate the band 2390-2395 MHz to the mobile service on a primary basis, (2) to limit use of the existing mobile service allocation in the band 2385-2390 MHz and the proposed mobile service allocation in the band 2390-2395 MHz to flight test stations,⁹ and (3) to delete the unused fixed service allocation from the band 2385-2390 MHz. In addition, we propose to no longer make the band 2390-2400 MHz available for use by unlicensed Personal Communications Services ("PCS") devices. Consequently, we propose to rescind the WCS service rules for the band 2385-2390 MHz and to rescind the technical rules for unlicensed PCS operations in the band 2390-2400 MHz.

⁵ *Id.*

⁶ AFTRCC has previously stated the following: Aeronautical telemetry is used to provide critical operational and telecommand data between ground facilities and the aircraft, space vehicle, missile, or weapons system under test. Flight test communications are critical to the U.S. aerospace industry's ability to develop and deliver as efficiently as possible aircraft, space vehicles, and military equipment. Moreover, flight test telemetry performs a critical safety function: The telemetry link enables ground-based engineers to monitor in real-time conditions aboard the aircraft so as to detect and avert possible threats to the life of the pilot, to neighboring communities, or to the major investment in one-of-a-kind prototype aircraft. See AFTRCC's Petition for Partial Reconsideration in WT Docket No. 02-8, received July 22, 2002, at 2.

⁷ See para. 8, *infra*.

⁸ Stating that the band 2360-2385 MHz is allocated to the mobile service on a primary basis and that use of this allocation is limited to aeronautical mobile applications is equivalent to stating that the band is allocated to the aeronautical mobile service on a primary basis. The aeronautical mobile service is a mobile service between aeronautical stations and aircraft stations, or between aircraft stations, in which survival craft stations may participate; emergency position-indicating radiobeacon stations may also participate in this service on designated distress and emergency frequencies. See 47 C.F.R. § 2.1. See also note 133 and 134, *infra*, for the definitions of aeronautical station and aircraft station.

⁹ The use of flight test stations is restricted to the transmission of necessary information or instructions relating directly to tests of aircraft or components thereof. See 47 C.F.R. § 87.299 (Scope of service).

II. BACKGROUND

3. In the Omnibus Budget Reconciliation Act of 1993 ("OBRA-93"), the Congress directed the Secretary of Commerce to identify at least 200 megahertz of spectrum below 5 GHz for transfer to non-Federal Government services.¹⁰ In response, the National Telecommunications and Information Administration ("NTIA") identified 235 megahertz, including the bands 1710-1755 MHz and 2390-2400 MHz, for such transfer.¹¹ At that time, the band 1710-1755 MHz, which was a Federal Government exclusive band, was to be reallocated as a mixed-use band.¹² Specifically, Federal Government use of the band 1710-1755 MHz was to be protected indefinitely at 333 fixed microwave stations used by Federal power agencies, at 111 stations used for aviation-related safety communications, and at 16 sites used by DOD for fixed point-to-point microwave, tactical radio relay, aeronautical mobile stations, *etc.*¹³ In 1995, the Commission reallocated the band 2390-2400 MHz to the amateur service on a primary basis and also made this band available for use by unlicensed PCS devices.¹⁴ We have recently reallocated the band 1710-1755 MHz to the fixed and mobile services on a co-primary basis to support the introduction of new AWS services. Concurrently, we provided that certain Federal Government operations have primary status at two sites and that other Federal facilities will be protected during a transition period.¹⁵

4. In the Balanced Budget Act of 1997 ("BBA-97"), the Congress directed the Secretary of Commerce to identify an additional 20 megahertz of spectrum below 3 GHz for transfer from Federal Government to non-Federal Government use to be assigned in compliance of Section 309(j) of the Communications Act of 1934, as amended.¹⁶ In response, NTIA identified six frequency bands, including the band 2385-2390 MHz.¹⁷

¹⁰ See OBRA-93, § 6001(a) (47 U.S.C. § 923(a)-(b)).

¹¹ See Spectrum Reallocation Final Report, Response to Title VI – Omnibus Reconsideration Act of 1993, NTIA Special Publication 95-32, dated February 1995.

¹² A mixed-use band means that Federal Government stations are limited by geographic area, by time, or by other means so as to guarantee that the potential use of the band to be made by such Federal Government stations is substantially less than the potential use to be made by non-Federal Government stations. See 47 U.S.C. 932(b)(2)(B).

¹³ See note 11, *supra*, at Appendix E and page F-4.

¹⁴ See *Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use*, ET Docket No. 94-32, *First Report and Order and Second Notice of Proposed Rule Making*, 10 FCC Rcd 4769 (1995). See also paras. 45-40, *infra*, for additional information on the current uses of the band 2390-2400 MHz.

¹⁵ See para. 9, *infra*. We codified these requirements in footnote US378. This United States footnote states that, in the band 1710-1755 MHz, Federal Government stations in the fixed and mobile services will operate on a primary basis until reaccommodated in accordance with the Strom Thurmond National Defense Authorization Act for Fiscal Year 1999. Further, Federal Government stations may continue to operate in the band 1710-1755 MHz as follows: Federal fixed microwave and tactical radio relay stations may operate indefinitely on a primary basis at two sites and may operate on a secondary basis at 14 sites. In the sub-band 1710-1720 MHz, precision guided munitions will operate on a primary basis until inventory is exhausted or until December 31, 2008, whichever is earlier.

¹⁶ See BBA-97, § 3002(c) (47 U.S.C. § 923(b)(3)). See also 47 U.S.C. § 309(j).

¹⁷ See "Spectrum Reallocation Report, Response to Title III of the Balanced Budget Act of 1997," NTIA Special Publication 98-36, dated February 1998. See also para. 44, *infra*, for a discussion of the current uses of band 2360-2390 MHz.

5. On January 8, 1999, the Wireless Information Networks Forum (“WINForum”) filed a Petition for Rulemaking requesting, *inter alia*, that the technical rules for unlicensed use of the band 2390-2400 MHz be revised.¹⁸ Specifically, WINForum requests that we include an alternative set of access rules that do not require “listen before transmit” protocol.

6. In the *27 Megahertz Allocation R&O*, we reallocated the band 2385-2390 MHz from Federal/non-Federal Government shared use to non-Federal Government exclusive use, effective January 1, 2005.¹⁹ In the *27 Megahertz Service Rules R&O*, we made the band 2385-2390 MHz available for use under WCS and established service rules for operation in this band.²⁰ The Aerospace and Flight Test Radio Coordinating Council (“AFTRCC”) and XM Radio Inc. (“XM Radio”) each filed a petition for partial reconsideration of the WCS service rules adopted for the band 2385-2390 MHz.²¹

7. On July 23, 2002, the U.S. Department of Commerce released the *2002 Viability Assessment*, wherein NTIA concluded that, if certain actions are accomplished, the band 1710-1755 MHz can be reallocated for AWS use without disrupting communications systems critical to national security and that this 45 megahertz can be paired with 45 megahertz of spectrum from the band 2110-2170 MHz.²² Specifically, the *2002 Viability Assessment* states that the band 1710-1755 MHz could be substantially

¹⁸ See WINForum’s Petition for Rulemaking, RM-9498, received on January 8, 1999, at 12.

¹⁹ See *Reallocation of the 216-220 MHz, 1390-1395 MHz, 1427-1429 MHz, 1429-1432 MHz, 1432-1435 MHz, 1670-1675 MHz, and 2385-2390 MHz Government Transfer Bands*, ET Docket No. 00-221, *Report and Order*, 17 FCC Rcd 368 (2002) (“*27 Megahertz Allocation R&O*”).

²⁰ See *Amendments to Parts 1, 2, 27 and 90 of the Commission’s Rules to License Services in the 216-220 MHz, 1390-1395 MHz, 1427-1429 MHz, 1429-1432 MHz, 1432-1435 MHz, 1670-1675 MHz, and 2385-2390 MHz Government Transfer Bands*, WT Docket No. 02-8, *Report and Order*, 17 FCC Rcd 9980 (2002) (“*27 Megahertz Service Rules R&O*”).

²¹ On July 22, 2002, AFTRCC and XM Radio each submitted a Petition for Partial Reconsideration of the *27 Megahertz Service Rules R&O* that touch on the band 2385-2390 MHz. AFTRCC’s petition seeks reconsideration of the WCS out-of-band emission limits, contending that these limits do not adequately protect aeronautical telemetry operations under certain scenarios involving power levels permitted in the bands 1432-1435 MHz and 2385-2390 MHz. Further, AFTRCC contends that the Commission’s rejection of AFTRCC’s adjacent band coordination proposals is contrary to administrative law. AFTRCC requests that we adopt its proposed adjacent band coordination requirements for WCS operations in the bands 1432-1435 MHz and 2385-2390 MHz in order to ensure a proper level of protection for aeronautical telemetry communications. See AFTRCC’s Petition of Partial Reconsideration, WT Docket No. 02-8, received July 22, 2002; and XM Radio’s Petition of Partial Reconsideration, WT Docket No. 02-8, dated July 22, 2002. On August 8, 2002, AFTRCC filed a petition for leave to file a supplement to its petition. In its Supplement, AFTRCC requests a delay in the implementation of the *27 Megahertz Service Rules R&O* and new service rules pertaining to the band 2385-2390 MHz pending a final decision in the 3G proceeding (ET Docket No. 00-258), given the potential impact of the 3G proceeding on the status of the band 2385-2390 MHz. (AFTRCC argues in its petition for leave to file the supplement that good cause exists to accept the supplement.) See AFTRCC Petition for Leave to File Supplement for Partial Reconsideration, WT Docket No. 02-8, received August 8, 2002; and Comments and Supplement to Petition for Partial Reconsideration, WT Docket No. 02-8, dated August 8, 2002. In its Petition for Partial Reconsideration, XM Radio contends that the Commission’s out-of-bounds emission limits adopted for the band 2385-2390 MHz are arbitrary and capricious, not supported by the record, and would permit harmful interference to reception of the Satellite Digital Audio Radio Service (“Satellite DARS”). XM Radio urges us to apply to new licensees in the band 2385-2390 MHz the same out-of-band emission limits to protect Satellite DARS that the Commission adopted for WCS licensees in the bands 2305-2320 MHz and 2345-2360 MHz.

²² See *2002 Viability Assessment* at 1-2.

cleared of Federal Government systems, including all of the 444 protected fixed microwave stations and much of the operations at the 16 protected sites.²³ It also sets forth a list of actions that need to be accomplished in order for the band 1710-1755 MHz to be made available for the accommodation of AWS. These required actions are listed in Section III.B, below. On July 24, 2002, we sought comment on the 2002 *Viability Assessment*.²⁴ Nineteen parties filed comments in this regard; however only AFTRCC; the Association for Maximum Service Television, Inc. and the National Association of Broadcasters ("Joint Broadcasters"); the Cellular Telecommunications & Internet Association ("CTIA"); Motorola, Inc. ("Motorola"); and Sirius Satellite Radio Inc. and XM Radio ("Satellite Radio Licensees") addressed either the band 2025-2110 MHz or the band 2360-2400 MHz.²⁵

8. On September 18, 2002, we adopted a *Notice of Proposed Rule Making* in ET Docket No. 02-305 ("*Above 28 MHz NPRM*").²⁶ Among the issues raised in that proceeding were the future status of aeronautical telemetry operations in the bands 1525-1535 MHz and 2320-2345 MHz. In their comments on the *Above 28 MHz NPRM*, neither AFTRCC nor the Boeing Company ("Boeing") oppose the deletion of the aeronautical telemetry allocations from the bands 1525-1535 MHz and 2320-2345 MHz.²⁷ In particular, we observe that Boeing avers that neither band remains usable for aeronautical telemetry operations due to Commission decisions to permit other services to operate in this same spectrum.²⁸

9. On November 7, 2002, we adopted a *Second Report and Order* in ET Docket No. 00-258, wherein we took significant steps in our continuing effort to identify and allocate spectrum to support AWS. Specifically, we allocated 90 megahertz of spectrum at 1710-1755 MHz and 2110-2155 MHz that can be used for AWS.²⁹ In this proceeding, we propose herein to allocate spectrum that would support the relocation of certain Federal Government operations from the band 1710-1755 MHz, thereby clearing this spectrum for nationwide AWS use.³⁰

²³ See para. 3, *supra*.

²⁴ See Public Notice, DA 02-1780, rel. July 24, 2002.

²⁵ See Appendix C for the list of commenters.

²⁶ 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 Update the Rules in this Frequency Range*, ET Docket No. 02-305, *Notice of Proposed Rule Making*, 17 FCC 19756 (2002) ("*Above 28 MHz NPRM*").

²⁷ See AFTRCC Comments in ET Docket No. 02-305; Boeing Comments and Reply Comments in ET Docket No. 02-305. AFTRCC is the FCC-recognized advisory committee for coordination of flight test frequencies shared by Federal and non-Federal Government users. Boeing is a heavy user of aeronautical telemetry spectrum, performing flight test operations as a part of its commercial and governmental aircraft manufacturing and in the performance of many of its defense contracts.

²⁸ See Boeing Comments in ET Docket No. 02-305 at 6-8.

²⁹ See note 1, *supra*. The Commission noted in the AWS *Second Report and Order* that several comments filed in response to the 2002 *Viability Assessment* were best addressed in a subsequent proceeding, and we address those comments herein. *Id.* at n.91. See also Joint Petition for Reconsideration of Sirius Satellite Radio Inc. and XM Radio Inc. (filed February 24, 2003) (seeking consideration of the parties' filed comments either in reconsideration of the AWS *Second Report and Order* or as part of a further reallocation proceeding).

³⁰ This action is consistent with section 1062(b) of the National Defense Authorization Act of 2000, PL 106-65.

10. On January 29, 2003, we adopted a *Third Report and Order, Third Notice of Proposed Rulemaking, and Second Memorandum Opinion and Order* in ET Docket No. 00-258.³¹ In that action, we proposed, *inter alia*, to redesignate between 5 and 10 megahertz of spectrum in the band 1910-1920 MHz from unlicensed PCS to AWS.

III. DISCUSSION

A. Current Uses of the Band 1710-1850 MHz

11. Prior to the recent reallocation of the 1710-1755 MHz segment to accommodate AWS, the entire band 1710-1850 MHz was allocated to the fixed and mobile services on a co-primary basis for Federal Government exclusive use. The band 1710-1850 MHz is the Federal Government's general purpose, long-range, low-capacity, point-to-point microwave band.³² In addition, the military services use the band 1710-1755 MHz for a type of temporary fixed service called tactical radio relay ("TRR") systems.³³ In a March 2001 report, NTIA stated that the number of assignments in the 1710-1755 MHz portion of this band has been decreasing due to the migration of Federal fixed point-to-point facilities from the band because of OBRA-93.³⁴ For example, some Federal agencies have begun to relocate fixed point-to-point links from the band 1710-1755 MHz to the band 1755-1850 MHz. NTIA states that as of January 2001 there were 1825 total assignments in the band 1710-1755 MHz, of which 1670 were fixed assignments.³⁵ Our recent review of NTIA's license database finds that use of the band 1710-1755 MHz has declined to a total of 1687 assignments, of which 1493 are fixed assignments.³⁶ In sum, NTIA has determined that there is sufficient Federal Government spectrum for the relocation of fixed point-to-point links out of the band 1710-1755 MHz and Federal agencies have begun the migration.³⁷ In the *AWS Second Report and Order*, we recently adopted footnote US378, which authorizes TRR systems to operate

³¹ See *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, *Third Report and Order, Third Notice of Proposed Rulemaking, and Second Memorandum Opinion and Order*, 18 FCC Rcd 223 (2003).

³² See *Spectrum Usage for the Fixed Services*, NTIA Report 00-378, dated March 2000.

³³ TRR systems are used by the military for nodal communications stations that support tactical communications for a wide area. Certain of these TRR systems can operate throughout the frequency range 1350-2690 MHz. The TRR system in use for the Navy/Marine Corps is the DWTS (see para. 14, *supra*). See "The Potential For Accommodating Third Generation Mobile Systems in the 1710-1850 MHz Band: Federal Operations, Relocation Costs, and Operational Impacts," Final Report, dated March 2001, NTIA Special Publication 01-46, at pages 3-3 and 4-4.

³⁴ *Id.* at page 3-4.

³⁵ *Id.* at pages 3-4 and 3-5, Figure 2 (Plot of Frequency Assignments in the 1710-1755 MHz Band). These fixed links are located throughout the United States. See also maps depicting the geographic distribution of fixed microwave stations used by Federal power agencies at Figure E-1 and of fixed microwave stations used for safety-of-life purposes at Figure E-2 of the *Spectrum Reallocation Final Report*, NTIA Special Publication 95-32.

³⁶ Our numbers are from a November 21, 2002 database search. A fixed assignment is for a single transmitter, which may serve multiple receivers.

³⁷ Additionally, NTIA, in consultation with DOD, has determined that there is sufficient Federal Government spectrum for the relocation of most DOD fixed point-to-point links out of the protected sites in the band 1710-1755 MHz such that it was not necessary to provide alternative spectrum for these systems in accordance with section 1062(b) of the National Defense Authorization Act of 2000.

in the band 1710-1755 MHz on a primary basis at two sites and on a secondary basis at 14 sites.³⁸

12. There is also extensive mobile use of the band 1710-1850 MHz.³⁹ Mobile systems include aeronautical mobile systems, precision guided weapons, high resolution video links, deployable emergency communications systems, combat identification systems, mobile tactical voice and data systems, robotic control functions, and target scoring systems.

13. The 1761-1842 MHz segment is used for TT&C uplinks.⁴⁰ DOD states that it uses the 1761-1842 MHz segment as the only communications link for initial contact with newly launched satellites, for early orbit checkout of those satellites, and for emergency access to spinning/tumbling satellites. The band is also vital for command and control, mission data retrieval, navigational data uploads for the Global Positioning System ("GPS"), and on-orbit maneuvering of many DOD satellites in all orbits from low earth to geostationary.⁴¹ In the *2002 Viability Assessment*, summarized below, NTIA points out that DOD will need to be granted access to the band 2025-2110 MHz on a co-equal, primary basis for DOD earth stations at selected sites that support DOD space operations. This affords an opportunity to increase the availability of access in the band 1755-1850 MHz for DOD systems displaced from the band 1710-1755 MHz and to satisfy future DOD spectrum requirements. In this *Notice*, we propose actions that would further promote the clearing of the band 1710-1755 MHz for the nationwide accommodation of AWS services.

B. The 2002 Viability Assessment

14. In the *2002 Viability Assessment*, NTIA states that, in general, relocating all DOD systems at the 16 protected sites from the band 1710-1755 MHz into the remaining band 1755-1850 MHz is not feasible, given the existing and growing Federal Government operations in the band 1755-1850 MHz.⁴² In particular, NTIA states that moving mobile, including aeronautical mobile, operations into the dense electromagnetic environment of the band 1755-1850 MHz would restrict other potential deployments. The *2002 Viability Assessment* addressed actions required to make other spectrum available for relocated Federal systems. Below, we have reproduced the most significant portions of the *2002 Viability Assessment*. In general, the *2002 Viability Assessment* states that the band 1710-1755 MHz can be used for the accommodation of AWS, if certain actions are accomplished. Specifically, except as provided below, Federal users of this band would relocate or modify their operations, not later than December 2008, or sooner depending on the nature of the radio communications. In order to achieve these outcomes, the following actions would be required:

- (1) Reimbursement Funds: As required by the Strom Thurmond National Defense Authorization Act for Fiscal Year 1999 ("NDAA 99"), funds would be made available by private sector entities receiving

³⁸ See note 1, *supra*.

³⁹ See note 34, *supra*, at pages 3-20 through 3-24.

⁴⁰ This allocation is set forth in footnote G42, which reads as follows: "Space command, control, range and range rate systems for earth station transmission only (including installations on certain Navy ships) may be accommodated on a co-equal basis with the fixed and mobile services in the band 1761-1842 MHz. Specific frequencies required to be used at any location will be satisfied on a coordinated case-by-case basis." See 47 C.F.R. § 2.106, footnote G42.

⁴¹ See Department of Defense Investigation of the Feasibility of Accommodating the International Mobile Telecommunications (IMT) 2000 Within the 1755-1850 MHz Band, dated February 9, 2001, at page 3-2.

⁴² See *2002 Viability Assessment* at 14.

spectrum in the band 1710-1755 MHz for the cost of relocating or modifying all Federal Government radio communications systems required to vacate or modify their operations in the band 1710-1755 MHz after an auction has taken place.⁴³

- (2) Federal Non-Military Systems: NTIA would direct the relocation of Federal non-military systems from the band 1710-1755 MHz to other Federal Government bands. Federal agencies that operate systems that are required to relocate under OBRA-93 are entitled to reimbursement. Federal agencies with protected assignments have agreed voluntarily to relocate such assignments, if reimbursed.⁴⁴ All such systems would be relocated two years after availability of reimbursed funds, or sooner if practicable.
- (3) DOD Fixed Microwave Systems: DOD would relocate its conventional fixed microwave systems from the band 1710-1755 MHz to other frequency bands within two years after reimbursement, but no later than December 2008, depending on the complexity of the relocated systems.
- (4) DOD's 16 Protected Sites:
 - (a) DOD Airborne Telemetry & Video Systems: Subject to the availability of reimbursement funds, DOD would relocate their airborne operations by December 2008 to other frequency bands, such as the Federal Government band 1755-1850 MHz, the Federal/non-Federal Government shared band 2360-2385 MHz or other telemetry bands; or the band 2385-2395 MHz under primary status provided as a result of a Commission rulemaking for Federal Government mobile use. NTIA will work with DOD to facilitate the introduction of new and relocated systems into the bands identified above.
 - (b) DOD Ground-based Systems: The Commission would accomplish the necessary rulemaking so that DOD ground-based systems in the band 1710-1755 MHz can remain on a secondary basis at all sites, but on a primary basis at the Cherry Point, NC, and Yuma, AZ sites for operations used in a manner similar to current operations at these protected sites. DOD ground-based systems, other than Digital Wideband Transmission System ("DWTS") operations at Cherry Point and Yuma, which cannot adjust their operations to prevent interference to commercial users in the band 1710-1755 MHz, will operate in the band 1755-1850 MHz or on a "non-interference, coordinated basis" in the band 1350-2690 MHz.⁴⁵ DOD ground-based systems may operate in the band 2025-2110 MHz on a secondary basis at six sites.⁴⁶

⁴³ We note that NTIA released an order last summer adopting reimbursement procedures. See "Mandatory Reimbursement Rules for Frequency Band or Geographic Relocation of Federal Spectrum-Dependent Systems, Department of Commerce," NTIA, 67 Fed. Reg. 41182 (June 17, 2002). We also observe that each Federal user retains its primary status until relocation is complete and NTIA limits or terminates the Federal user's operating license, 47 U.S.C. § 923(g)(2), and that the Federal user has a limited reclamation right, 47 U.S.C. § 923(g)(3). In addition, NTIA has proposed legislation to change the reimbursement process by creating a relocation fund using auctions proceeds. See U.S. Department of Commerce, NTIA, "Commerce Department Asks Congress to Create Spectrum Relocation Fund for Federal Agencies Whose Spectrum Is Reallocated to Commercial Use," NTIA Press Release, July 23, 2002. On June 11, 2003, the House of Representatives passed the Commercial Spectrum Enhancement Act (HR-1320). A similar measure (S-865) is tentatively scheduled to be marked up in the Senate Commerce Committee. This legislation from the 108 Congress can be found at <http://thomas.loc.gov/>.

⁴⁴ We note that the same reimbursement procedures will be used for Federal protected assignments that agencies have agreed voluntarily to relocate.

⁴⁵ A non-interference, coordinated basis means that the military services may operate systems without an allocation in certain non-Federal Government bands subject to local coordination. Local coordination between FCC field personnel and military field personnel is described in the *NTIA Manual* at Section 7.1.5.3 (Military Communications in non-Government Bands Above 25 MHz for Tactical and Training Operations) and in Section 7.17 (Military Communications at Test Ranges in non-Government Bands Above 25 MHz). No change is contemplated in these

(continued....)

- (5) Future DOD Requirements in the Band 1755-1850 MHz: Considering that DOD has future requirements to satisfy in the band 1755-1850 MHz plus the absorption of certain operations from the band 1710-1755 MHz, the Commission would conclude the necessary rulemaking by September 2004 to modify footnote US346 of the United States Table of Frequency Allocations (“U.S. Table”) to allow DOD the use of the band 2025-2110 MHz on a co-equal, primary basis for DOD TT&C earth stations at 11 selected sites that support military space operations.⁴⁷ Co-equal, primary access for TT&C in the band 2025-2110 MHz may make more spectrum available in the band 1755-1850 MHz to satisfy future DOD spectrum requirements.
- (a) DOD Precision Guided Munitions (“PGM”) Operations: PGM operations would continue in the band 1710-1720 MHz on a primary basis until inventory is exhausted or until December 31, 2008, whichever is earlier.
- (b) Other DOD Systems: Other DOD systems (e.g., unmanned ground robotic systems, range timing distribution systems, and target scoring devices) would relocate to the band 1755-1850 MHz, or other bands as available.
- (6) Implementing Coordination: NTIA, DOD, the Commission, and industry will establish a continuing process to facilitate sharing in the band 1710-1755 MHz. It is anticipated that the Commission will complete the necessary rulemakings to address the above conditions for making the band essentially clear of DOD operations at the protected sites, as well as reallocation of the band from Federal Government exclusive use to both Federal and non-Federal Government use on a mixed-use basis. It is expected that the early rollout of AWS will occur in the urban areas. Assuming reimbursed funds are available, every effort will be made to clear these areas first.

15. Below we address proposals that would permit military aeronautical mobile systems to relocate to the band 2360-2395 MHz and that would permit military TT&C uplinks at 11 sites to operate in the band 2025-2110 MHz. If adopted, these actions would substantially clear the band 1710-1755 MHz of Federal systems, thereby facilitating the introduction of new AWS, including 3G.

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well-established procedures. See *NTIA Manual of Regulations & Procedures for Federal Radio Frequency Management*, September 2001 Revision (“*NTIA Manual*”), Sections 7.1.5.3 and 7.17. The *NTIA Manual* can be downloaded at <http://www.ntia.doc.gov/osmhome/redbook/redbook.html>.

⁴⁶ Originally, NTIA requested that the military services be permitted to operate ground-based systems in mostly remote areas and ranges throughout the Southwestern United States, including, but not limited to, China Lake, CA; the Pacific Missile Test Range, Pt. Mugu, CA; Ft. Irwin, CA; Holloman AFB, NM (NTIA later renamed this site as the White Sands Missile Range); and Yuma, AZ. Subsequently, NTIA, with the concurrence of DOD, clarified that “ground-based systems” should be more narrowly defined as “stations in the fixed and mobile except aeronautical mobile services” and agreed to limit this use to the above five sites plus Nellis AFB, NV. These clarifications were made by W. Russell Slye, Office of Spectrum Management, NTIA to Chief, Spectrum Coordination Branch, Office of Engineering and Technology (“OET”), FCC, on September 24, 2002, October 9, 2002, and March 27, 2003.

⁴⁷ These 11 TT&C earth stations are: New Hampshire Tracking Station, New Boston AFS, NH; Vandenberg Tracking Station, Vandenberg AFB, CA; Eastern Vehicle Check-out Facility & GPS Ground Antenna & Monitoring Station, Cape Canaveral, FL; Buckley AFB, CO; Guam Tracking Stations, Anderson AFB, and Navy CTS, Guam; Hawaii Tracking Station, Kaena Pt, Oahu, HI; Kwajalein Atoll (GPS ground antenna); Camp Parks Communications Annex, Pleasanton, CA; Colorado Tracking Station, Schriever AFB, CO; Naval Satellite Control Network, Laguna Peak, CA; Naval Satellite Control Network, Prospect Harbor, ME; and Kirtland AFB, NM. NTIA subsequently deleted Kwajalein from its request because the Commission does not have licensing authority on this atoll. These clarifications were made by W. Russell Slye, Office of Spectrum Management, NTIA to Chief, Spectrum Coordination Branch, OET, FCC, dated September 24, 2002.

C. The Band 2025-2110 MHz

1. Current Uses

16. The band 2025-2110 MHz is allocated to the fixed, mobile, space operation (“SOS”),⁴⁸ Earth exploration-satellite (“EESS”), and space research (“SRS”) services on a co-primary basis throughout the world.⁴⁹ The SOS, EEES, and SRS allocations are limited to uplink and space-to-space transmissions,⁵⁰ which have successfully shared the band 2025-2110 MHz with low-density electronic news gathering (“ENG”) systems for many years. Because the introduction of high density or conventional land mobile systems would cause unacceptable interference to these space services, international footnote 5.391 prohibits administrations from introducing high-density mobile systems (such as AWS) in this spectrum.⁵¹ In order to protect satellites in geostationary orbit (“GSOs”), ITU Radio Regulation No. 21.1 states that, as far as practicable, sites for transmitting stations in the fixed and mobile services that employ an equivalent isotropically radiated power (“e.i.r.p.”)⁵² between 35-45 dBW should be selected so that the direction of maximum radiation of any antenna will be separated from the geostationary arc by at least 2°.⁵³

17. In the United States, the band 2025-2110 MHz is allocated to the fixed and mobile services on a primary basis for non-Federal Government use. The Commission licenses the band 2025-2110 MHz (commonly known as the 2 GHz BAS band) to the Television Broadcast Auxiliary Service (“BAS”)⁵⁴ and

⁴⁸ SOS is a radiocommunication service concerned exclusively with the operation of spacecraft, in particular space tracking, space telemetry, and space telecommand (“TT&C”). These functions will normally be provided within the service in which the space station is operating. Space tracking is determination of the orbit, velocity, or instantaneous position of an object in space by means of radiodetermination, excluding primary radar, for the purpose of following the movement of the object. Space telemetry is the use of telemetry for the transmission from a space station of results of measurements made in a spacecraft, including those relating to the functioning of the spacecraft. Space telecommand is the use of radiocommunication for the transmission of signals to a space station to initiate, modify, or terminate functions of equipment on an associated space object, including the space station. See 47 C.F.R. § 2.1.

⁴⁹ See 47 C.F.R. § 2.1 for definitions of EEES and SRS, the status of which are not at issue in this proceeding.

⁵⁰ In addition, international footnote 5.392 urges administrations to take all practicable measures to ensure that space-to-space transmissions between two or more SOS, EEES, and SRS non-geostationary satellites in the band 2025-2110 MHz not impose any constraints on uplink and other space-to-space transmissions of those services between geostationary and non-geostationary satellites. See 47 C.F.R. § 2.106, footnote 5.392.

⁵¹ See 47 C.F.R. § 2.106, international footnote 5.391. See also Recommendation ITU-R SA.1154.

⁵² The e.i.r.p. is the product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna (absolute or isotropic gain). See 47 C.F.R. § 2.1.

⁵³ See ITU Radio Regulations, Article 21 (Terrestrial and space services sharing frequency bands above 1 GHz), No. 21.2.

⁵⁴ On June 27, 2000, the Commission reduced the 2 GHz BAS Band by reallocating the 1990-2025 MHz segment to the mobile-satellite service, ultimately leaving the band 2025-2110 MHz to serve the needs of the BAS community. The entire band 1990-2110 MHz is still being used by BAS stations at this time. In that action, the Commission also made Federal Government satellite operations co-primary in the band 2025-2110 MHz, but with the caveat that these operations not constrain the deployment of BAS. See *Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use by Mobile-Satellite Services*, ET Docket No. 95-18, *Second Report and Order and Second Memorandum Opinion and Order*, 15 FCC Rcd 12315 (2000); *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*, (continued....)

the Local Television Transmission Service ("LTTS") for fixed and mobile use and to the Cable Television Relay Service ("CARS") for mobile use only (together these three services will be referred to as BAS in this document).⁵⁵

18. The band 2025-2110 MHz is also allocated to the EESS and SRS on a primary basis for Federal and non-Federal Government use, limited to uplink and space-to-space transmissions.⁵⁶ Further, the band 2025-2110 MHz is allocated to the SOS on a primary basis, for Federal Government use, limited to uplink and space-to-space transmissions. The Commission has adopted international power flux-density ("pfd") limits at the Earth's surface for the band 2025-2110 MHz in order to protect non-Federal Government terrestrial operations from satellite transmissions.⁵⁷ The Commission has also adopted international footnote 5.391, thereby prohibiting high-density mobile systems in the band 2025-2110 MHz, which facilitates compatible operations between non-Federal Government terrestrial transmitting stations and spacecraft receivers.

19. Recently, the Commission upgraded the Federal Government SOS, EESS, and SRS allocations in the band 2025-2110 MHz from secondary to primary status and removed geographic site limitations.⁵⁸ In doing so, the Commission also provides that these Federal Government space radiocommunication services must not constrain BAS deployment, except that geostationary operational environmental satellite ("GOES") earth stations in the 2025-2035 MHz segment may continue to be

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IB Docket 01-185, *Report and Order*, 18 FCC Rcd 1962, 1972, para. 17 (2003) (noting that some revisions to the current relocation procedures for BAS may be needed based on various Commission actions, including the reallocation of some MSS spectrum in the 2 GHz MSS band and the grant of flexibility to MSS licensees).

⁵⁵ BAS is regulated under Part 74 of our Rules, with specific rules for TV BAS in Subpart F. *See* 47 C.F.R. Part 74 (Experimental Radio, Auxiliary, Special Broadcast and Other Program Distribution Services), in particular, Subpart F (Television Broadcast Auxiliary Stations). The band 2025-2110 MHz may be used by cable network entities only for CARS pickup stations. *See* 47 C.F.R. §§ 78.11(f), 78.18(a)(6). LTTS is regulated under Part 101 of our Rules, with specific rules in Subpart L. *See* 47 C.F.R. Part 101 (Fixed Microwave Services), in particular, Subpart J (Local Television Transmission Service). CARS is regulated under Part 78 of our Rules. *See* 47 C.F.R. Part 78 (Cable Television Relay Service).

⁵⁶ While the Federal Government SRS and EESS allocations are direct Table entries, the non-Federal Government SRS and EESS allocations are contained in footnote US347, which states: "In the band 2025-2110 MHz, non-Government Earth-to-space and space-to-space transmissions may be authorized in the space research and Earth exploration-satellite services subject to such conditions as may be applied on a case-by-case basis. Such transmissions shall not cause harmful interference to Government and non-Government stations operating in accordance with the Table of Frequency Allocations."

⁵⁷ These pfd limits are found in footnote US90 and correspond to the "hard" limits found in ITU Radio Regulation No. 21.16. *See* 47 C.F.R. § 2.106, footnote US90; *see also* ITU *Radio Regulations*, No. 21.16.

⁵⁸ *See* note 54, *supra*. Previously, footnote US111 stated that Federal Government SRS uplinks could operate at nine sites on a secondary basis to non-Federal Government use of the band 1990-2025 MHz. Footnote US219 stated that Federal Government EESS could use the frequency 2106.4 MHz on a non-interference basis to non-Federal Government use for TT&C uplinks at 2 sites. Footnote US222 was not changed, but it only allocated the 2025-2035 MHz segment for Federal Government SRS and EESS use.

authorized on a co-equal, primary basis with BAS operations for TT&C uplink transmissions at three sites.⁵⁹ This requirement is in footnote US346 of the U.S. Table,⁶⁰ which reads as follows:

US346 Except as provided by footnote US222, use of the band 2025-2110 MHz by the Government space operation service (Earth-to-space), Earth exploration-satellite service (Earth-to-space), and space research service (Earth-to-space) shall not constrain the deployment of the Television Broadcast Auxiliary Service, the Cable Television Relay Service, or the Local Television Transmission Service. To facilitate compatible operations between non-Government terrestrial receiving stations at fixed sites and Government earth station transmitters, coordination is required. To facilitate compatible operations between non-Government terrestrial transmitting stations and Government spacecraft receivers, the terrestrial transmitters shall not be high-density systems (see Recommendations ITU-R SA.1154 and ITU-R F.1247).

20. BAS, LTTS, and CARS use a common channel plan⁶¹ and common technical rules.⁶² The seven BAS channels are available for assignment to TV pickup ("TVPU"), TV studio-transmitter link ("STL"), TV relay, and TV translator relay stations.⁶³ While mobile (TVPU) stations are limited to an e.i.r.p. of 35 dBW, fixed stations (STL, TV relay, and TV translator relay stations) may transmit with an e.i.r.p. of up to 45 dBW. TV translator relay stations may be authorized to use frequencies in the band 2025-2110 MHz on a secondary basis to other BAS stations.⁶⁴ Table 1, below, shows a recent count of the number of call signs for different classes of stations in the 2 GHz BAS band.⁶⁵

⁵⁹ Footnote US222 reads as follows: "In the band 2025-2035 MHz geostationary operational environmental satellite earth stations in the space research and Earth exploration-satellite services may be authorized on a coequal basis for Earth-to-space transmissions for tracking, telemetry, and telecommand at the sites listed below:

Wallops Is., Va. 37° 50' 48" N., 75° 27' 33" W.
Seattle, Wash. 47° 34' 15" N., 122° 33' 10" W.
Honolulu, Hawaii 21° 21' 12" N., 157° 52' 36" W."

Earth stations at these three sites operate with the same status that DOD requests for its 11 TT&C earth stations.

⁶⁰ There are 26 Federal Government earth stations currently operating under the footnote US346 requirement that their operation not constrain the deployment of BAS.

⁶¹ As indicated above, the 2 GHz BAS Band, which currently covers 120 megahertz of spectrum (1990-2110 MHz), has been reduced to 85 megahertz (2025-2110 MHz) on a phased-in basis. See 47 C.F.R. § 74.602.

⁶² On October 30, 2002, the Commission adopted a *Report and Order* in ET Docket No. 01-75 that amended Part 74 of our Rules to permit BAS licensees to introduce new technologies and create a more efficient BAS that can more readily adapt as the broadcast industry converts to the use of digital technology, such as digital television. We also made conforming amendments to Part 73 of our rules pertaining to the Radio Broadcast Services, to Part 78 of our rules pertaining to CARS and to Part 101 of our rules pertaining to Fixed Microwave Services, including LTTS. See *Revisions to Broadcast Auxiliary Service Rules in Part 74 and Conforming Technical Rules for Broadcast Auxiliary Service, Cable Television Relay Service and Fixed Services in Parts 74, 78 and 101 of the Commission's Rules*, ET Docket No. 01-75, *Report and Order*, 17 FCC Rcd 22979 (2002).

⁶³ See 47 C.F.R. § 74.601 for definitions of these classes of TV broadcast auxiliary stations. The use of these stations is also described in para. 22, *infra*.

⁶⁴ See 47 C.F.R. § 2.106, footnote NG118.

⁶⁵ This study was conducted on June 11, 2003, using the Universal Licensing System ("ULS"), except that the CARS mobile units were reviewed using the Cable Operational and Licensing System ("COALS") on May 2, 2003. For mobile operations, the call sign does not list the number of stations authorized. Many mobile authorizations permit operation on all seven channels. Receive-only sites are listed in COALS, but they are not listed in the ULS.

Class of Station	Number of Call signs
Number of call signs for mobiles & temporary fixed	1262
TV pickup (TP)	1213
CARS mobile units (TR)	15
Local Television Transmission (CT) mobiles	18 mobile and/ or temporary fixed
Local Television Transmission (CT)	16 temporary fixed only
Number of call signs for fixed stations	418
TV Intercity Relay (TI)	260
TV Studio Transmitter Link (TS)	88
Common Carrier Fixed Point-to-Point Microwave (CF)	40
TV Translator Relay (TT)	28
TV Microwave Booster (TB)	1
Aural Intercity Relay (AI)	1
Total Number of Licensed Links	1680

2. NTIA's Conclusion

21. In its *2002 Viability Assessment*, NTIA states DOD co-equal, primary access to the band 2025-2110 MHz for TT&C uplinks may make more spectrum available in the band 1755-1850 MHz for the relocation of Federal Government systems from the band 1710-1755 MHz and for future DOD spectrum requirements. Therefore, NTIA requests that we modify footnote US346 to permit DOD to use the band 2025-2110 MHz at 11 sites, on a co-equal, primary basis with non-Federal Government operations, for earth stations that support military space operations. NTIA also requests that DOD ground-based systems be permitted to operate in the band 2025-2110 MHz on a secondary basis within 50 kilometers (31 miles) of China Lake and Fort Irwin, California; and within 80 kilometers (50 miles) of Nellis Air Force Base, Nevada; the Pacific Missile Test Range, Point Mugu, California; White Sands Missile Range, New Mexico; and Yuma, Arizona.

3. Comments on NTIA's Conclusion

22. The Joint Broadcasters argue that BAS is essential to an effective, free broadcast television service.⁶⁶ They state that (in the larger metropolitan areas) broadcasters intensively use all seven 2 GHz BAS channels for:

- ENG: Broadcasters use 2 GHz BAS spectrum on a shared, coordinated basis primarily to transmit live, "at the scene" news reports to local studios during and in preparation for local newscasts.
- Special Events Coverage: Broadcasters use 2 GHz BAS spectrum to transmit point-of-view ("POV") camera transmissions to enhance special events coverage. Examples include blimp shots and "helmet-cam" views during sporting events, live remote coverage of news events, and shots from roving reporters on the floor of political conventions or along parade routes.
- STLs and Inter-City Relays ("ICRs"): Often stations use point-to-point links in the 2 GHz BAS band to relay programming from the station's main studio to its transmitter site and also to deliver programming to other facilities.⁶⁷

⁶⁶ See Comments of the Joint Broadcasters, ET Docket No. 00-258, at 3.

⁶⁷ *Id.* at 3.

23. At this initial stage, the Joint Broadcasters do not oppose NTIA's proposal to permit 11 DOD transmit earth stations access to the band 2025-2110 MHz, but express a myriad of concerns.⁶⁸ Paramount among these concerns is that permitting DOD access to the band 2025-2110 MHz not disrupt or constrain BAS operations.⁶⁹ The Joint Broadcasters argue that the 2002 *Viability Assessment* does not fully define the technical parameters of DOD space operations.⁷⁰ They submit that neither the Commission nor the television industry can make a meaningful assessment of the impact of the NTIA proposal until it provides specific information on all DOD systems it has earmarked for relocation. They therefore urge NTIA to disclose the technical parameters of the DOD earth station operations so that an assessment of their effects on BAS operations can be made.⁷¹ In addition, the Joint Broadcasters' state that their conditional acceptance of the DOD earth stations is premised on the assumption that this action will not result in the 2 GHz BAS band becoming "a dumping ground for wholesale relocation of DOD" systems.⁷² The Joint Broadcasters strongly urge both NTIA and the Commission not to alter the limited number of proposed DOD operations without full Commission and industry coordination.⁷³

24. Motorola supports reallocation of the band 2025-2110 MHz for use by DOD TT&C earth stations on a co-equal basis with existing BAS operations in that band.⁷⁴ Motorola observes that such an action would more closely align U.S. spectrum use with global use for this band.

25. CTIA does not object to having the band 2025-2110 MHz allocated for Federal Government TT&C uplink use because the proposed use would be consistent with uses elsewhere in the world and thus would promote international harmonization. However, CTIA does not believe it necessary to make this allocation in order to substantially clear the band 1710-1755 MHz, and asks that any work we do with respect to the band 2025-2110 MHz not delay reallocation and service rules proceedings for the band 1710-1755 MHz.⁷⁵ No party commented regarding NTIA's proposal to permit ground-based systems to operate at 6 sites on a secondary basis.

4. Proposals

26. We propose to revise footnote US346 to permit DOD to operate TT&C transmit earth stations at the 11 existing sites requested by NTIA on a co-equal, primary basis with BAS operations in the band 2025-2110 MHz. The band 2025-2110 MHz is the principal TT&C uplink band outside of the United States and the proposed action would allow the military services to have access to it, thereby better harmonizing U.S. space operations with the rest of the world. We make this proposal so that the band 1710-1755 MHz can be substantively cleared of Federal operations, thereby assisting in the introduction of new AWS, including 3G. Specifically, our proposal would give DOD the option of moving any or all of its TT&C uplinks at 11 specific sites up in frequency from 1761-1842 MHz to 2025-2110 MHz in

⁶⁸ *Id.* at 8.

⁶⁹ *Id.* at 5-8.

⁷⁰ *Id.* at 4-5.

⁷¹ *Id.* at 5.

⁷² *Id.* at 8.

⁷³ *Id.* at 8-9.

⁷⁴ See Motorola Comments, ET Docket No. 00-258, at 8-9.

⁷⁵ See CTIA Comments, ET Docket No. 00-258, at 4-5.

order to clear spectrum in a geographic area for military fixed and mobile systems, including those that must be relocated out of the band 1710-1755 MHz.⁷⁶ If specific frequencies within the band 2025-2110 MHz are successfully coordinated, then that earth station would operate on a co-equal, primary basis with BAS. We believe that this action would provide a reasonable opportunity for clearing the band 1710-1755 MHz for new nationwide AWS uses and that permitting DOD earth stations access to the band 2025-2110 MHz would also provide greater use of the band 2025-2110 MHz without a significant impact on incumbent operations. Accordingly, we propose to revise footnote US346 to read as follows:

US346 Except as provided for below and by footnote US222, Federal Government use of the band 2025-2110 MHz by the space operation service (Earth-to-space), Earth exploration-satellite service (Earth-to-space), and space research service (Earth-to-space) shall not constrain the deployment of the Television Broadcast Auxiliary Service, the Cable Television Relay Service, or the Local Television Transmission Service. To facilitate compatible operations between non-Federal Government terrestrial receiving stations and Federal Government earth station transmitters, coordination is required. To facilitate compatible operations between non-Federal Government terrestrial transmitting stations and Federal Government spacecraft receivers, the terrestrial transmitters shall not be high-density systems (see Recommendations ITU-R SA.1154 and ITU-R F.1247). Military satellite control stations at the following sites shall operate on a co-equal, primary basis with non-Federal Government operations:

Facility	Coordinates
Naval Satellite Control Network, Prospect Harbor, ME	44° 24' 55" N 068° 00' 50" W
New Hampshire Tracking Station, New Boston AFS, NH	42° 56' 52" N 071° 37' 37" W
Eastern Vehicle Check-out Facility & GPS Ground Antenna & Monitoring Station, Cape Canaveral, FL	28° 29' 10" N 080° 34' 34" W
Buckley AFB, CO	39° 42' 55" N 104° 46' 29" W
Colorado Tracking Station, Schriever AFB, CO	38° 48' 21" N 104° 03' 43" W
Kirtland AFB, NM	35° 03' 00" N 106° 24' 00" W
Camp Parks Communications Annex, Pleasanton, CA	37° 44' 00" N 121° 52' 00" W
Naval Satellite Control Network, Laguna Peak, CA	34° 06' 55" N 119° 04' 50" W
Vandenberg Tracking Station, Vandenberg AFB, CA	34° 49' 24" N 120° 31' 54" W
Hawaii Tracking Station, Kaena Pt, Oahu, HI	21° 33' 48" N 158° 14' 54" W
Guam Tracking Stations, Anderson AFB, and Naval CTS, Guam	13° 36' 48" N 144° 51' 12" E

27. As requested by the Joint Broadcasters, we asked NTIA to provide detailed information on the technical characteristics of the 11 TT&C earth stations. In response, NTIA stated that the information has not yet been developed. However, NTIA has emphasized to us that DOD is willing to assume the full burden of coordinating these 11 TT&C earth stations to avoid causing interference to incumbent BAS operations.

28. The band 2025-2110 MHz is the main band used by TV broadcasters for live news. In its comments in ET Docket No. 95-18, the Society of Broadcast Engineers ("SBE") states that broadcasters' use of the 2 GHz BAS band falls into four categories:⁷⁷

⁷⁶ We note that satellites already in orbit can not be changed to the new TT&C frequencies because these satellites are hardwired to receive TT&C frequencies in the 1761-1842 MHz segment. As DOD gains experience with TT&C operations in the band 2025-2110 MHz, the use of the band 1761-1842 MHz for TT&C is expected to be reduced, but DOD requirements in the band 1761-1842 MHz may exist until the year 2030. See Department of Defense's "Investigation of the Feasibility of Accommodating the International Mobile Telecommunications (IMT) 2000 Within the 1755-1850 MHz Band," dated February 9, 2001, at page 2-2.

⁷⁷ See SBE Comments, ET Docket No. 95-18, February 3, 1999, at 2.

- Category I, Los Angeles. Extremely heavy use, mostly split channel. There is a substantial amount of itinerant use, channel borrowing, and channel sharing; seven channels are not enough.
- Category II, "Metro." Spectrum is heavily used, especially during the news hours. There is limited split channel use and some itinerant use. There is regular channel borrowing and sharing.
- Category III, "Light." There is some ENG use and some fixed links. Typically, a small-market, low-competition situation.
- Category IV, "Rural." ENG use is extremely light. Use is generally for fixed, long-haul relays to small-market TV stations, to TV translator stations, and to cable TV headends. In some areas not all channels are even used.

SBE notes, however, that Category III or IV situations may upgrade to Category II or even Category I virtually instantaneously upon the arrival (scheduled or not) of a major news or public interest event.

29. As indicated above, our licensing records show that there are at least 1262 TVPU, CARS mobile units, and LTTTS mobiles/temporary fixed stations (mainly news trucks, but also includes news helicopters, blimps, *etc.*) operating in the 2 GHz BAS band. In its comments in ET Docket 98-142, SBE stated that a TVPU station, including a news helicopter, is most likely to operate within 100 kilometers (62 miles) of its home TV market.⁷⁸ We observe that two of the proposed earth stations would be located near Los Angeles (Category I) and that several of the proposed earth stations would be located in large metropolitan areas, which we believe correspond to SBE's Category II usage pattern. Table 2, below, gives a geographic prospective on our proposal.

DOD Transmitting Earth Station	Largest Nearby City	DMA Ranking ⁷⁹	Closest Distance in Miles ⁸⁰
Naval Satellite Control Network, Laguna Peak, CA	Los Angeles, CA	2	20
Vandenberg Tracking Station, Vandenberg AFB, CA	Los Angeles, CA	2	85
Camp Parks Communications Annex, Pleasanton, CA	San Francisco-Oakland-San Jose, CA	5	10
New Hampshire Tracking Station, New Boston AFS, NH	Boston (Manchester), MA	6	35
Buckley AFB, CO	Denver, CO	18	1
Eastern Vehicle Check-out Facility & GPS Ground Antenna & Monitoring Station, Cape Canaveral, FL	Orlando-Daytona Beach-Melbourne, FL	20	35
Kirtland AFB, NM	Albuquerque-Santa Fe, NM	48	5
Hawaii Tracking Station, Kaena Pt, Oahu, HI	Honolulu, HI ⁸¹	72	35
Colorado Tracking Station, Schriever AFB, CO	Colorado Springs-Pueblo, CO	91	35
Naval Satellite Control Network, Prospect Harbor, ME	Bangor, ME	158	40
Guam Tracking Stations, Anderson AFB, & Naval CTS	Agana, Guam ⁸²	N/A	5

⁷⁸ See SBE Comments, ET Docket 98-142, September 21, 1998, at 2.

⁷⁹ See *Broadcasting and Cable Yearbook 2002-2003* at page B-149 for a description of Nielsen's 210 Designated Market Areas ("DMAs").

⁸⁰ The distances shown are the approximate distance between a proposed DOD earth station and the nearest city limits.

⁸¹ In the State of Hawaii, there are 7 TV ICRs, 2 STL, 1 TV translator relay, and 2 TVPU stations in the 2 GHz BAS band (1990-2110 MHz). Both of the TVPU stations are licensed to Emmiss Television Licensee Corp.: KA95388 is licensed for BAS Channels A1 and A6 (1990-2008 MHz and 2076-2093 MHz) in a 40.2 km radius around Honolulu; and KB55070 is licensed for all 7 BAS channels (1990-2110 MHz) in a 80.5 km radius around Honolulu.

⁸² Guam Ed Telecommunications Corp. is the only licensee of the 2 GHz BAS band (1990-2110 MHz) on Guam and it has two TVPU stations, both of which are licensed to operate on BAS Channel A4 (2042-2059 MHz).

30. DOD transmit earth stations are used to control satellites in both geostationary and non-geostationary orbits (“NGSOs”). Further, we observe that DOD TT&C earth stations use extremely large antennas and high transmitter output powers to produce highly focused and very powerful mainbeams and could have large coordination areas.⁸³ Thus, these transmit earth stations could potentially cause interference to BAS operations. Accordingly, we find that coordination will be necessary between DOD earth stations operating in the band 2025-2110 MHz and 2 GHz BAS operations. In this regard, we will maintain our longstanding policy that first-licensed facilities have the right of protection from later-licensed facilities operating in the same frequency band.⁸⁴ However in this regard, we observe that currently Federal Government earth stations at 29 sites are authorized to transmit in the band 2025-2110 MHz in the United States.⁸⁵ We believe that—with coordination—DOD earth stations at an additional 11 sites may also successfully share frequencies in this band with the incumbent BAS operations. We base this belief on a variety of factors that can facilitate sharing of this spectrum. These include terrain shielding and the facts that some of the antennas may be pointed out to sea, that each TT&C channel is generally used only for relatively short periods of time, that a TT&C channel is expected to impact only one BAS channel, that earth stations controlling GSO satellites may point at such high elevation angles as to have a minimal impact on BAS operations, *etc.* We solicit comment on the specific factors that would permit proposed spectrum sharing.

31. Ordinarily in a Federal/non-Federal Government shared band, DOD would follow NTIA's procedures in securing coordination; that is, NTIA would approve the change in frequency for the earth stations and submit the frequency change to the Commission through the Frequency Assignment Subcommittee (“FAS”) of the Interdepartment Radio Advisory Committee (“IRAC”). Commission engineers would then provide input to ensure that incumbent non-Federal Government operations would be protected. However, in this case, we do not believe that our ordinary processes in Federal/non-Federal Government shared bands can be used without some modifications. For example, we have long entrusted frequency coordination of the 2 GHz BAS band to private coordinators, such as SBE.⁸⁶ We also note that the band 1990-2110 MHz supports a mix of mobile TVPU stations and fixed links and that BAS stations are currently transitioning to narrower channels in the band 2025-2110 MHz, to accommodate new services in the 1990-2025 MHz segment. In addition, because each local TV market may transition to a new BAS channel plan at different times, local frequency coordinators may be in the best position to

⁸³ Five of the 11 DOD TT&C earth stations (Anderson AFB, Guam; Buckley Field, CO; Kaena Pt, HI; New Boston, NH; and Vandenberg AFB, CA) that would be permitted to move up in frequency from 1761-1842 MHz to 2025-2110 MHz are included in the *NTIA Manual* under its list of coordinated earth stations. For the Anderson AFB, Kaena Pt., New Boston, and Vandenberg AFB earth stations, NTIA provides coordination contours in Annex B of its *Manual*. For Buckley Field, NTIA states that the nominal coordination distance is 363 statute miles, which is the maximum coordination distance for flat terrain on an overland path. It does not take into account the effects of possible terrain shielding. *See NTIA Manual*, Chapter 8, Section 8.3.15 & Annex B. We note that these coordination distances only define areas where analysis needs to be done to determine whether harmful interference could occur. We anticipate that future BAS facilities could be located much closer in proximity to a coordinated TT&C earth station than the distances shown above, if the future BAS facility is properly engineered.

⁸⁴ We observe that broadcasters are in the midst of converting their BAS facilities from analog to digital operations. For the purposes of coordination with the 11 DOD TT&C earth stations, we take this opportunity to expressly state that the conversion of BAS facilities from analog to digital operations will not cause those facilities to be considered new, but instead will retain their incumbent status.

⁸⁵ In addition, we note that the coordination contour of an earth station at Shirley Bay, Ontario, which also transmits in the band 2025-2110 MHz, extends over much of New York, Vermont, and New Hampshire, and also covers portions of Pennsylvania and Maine. *See NTIA Manual*, Appendix B.

⁸⁶ *See* 47 C.F.R. § 74.604 (Interference avoidance).

assess requests that affect local operating conditions. Thus, we propose to require that, prior to submitting applications for the authorization of the 11 earth stations to the Commission through the FAS, DOD frequency coordinators and technical representatives work with the local frequency coordinator (in most cases, this would be SBE) and the affected BAS licensees to ensure that the DOD operations not cause interference to incumbent non-Federal Government operations. Further, we propose that operation of these earth stations in the band 2025-2110 MHz not be authorized in the absence of successful coordination between the affected parties.⁸⁷ We expect that it may be necessary to jointly establish with NTIA other non-standard coordination procedures during the course of this proceeding. We seek comment on coordination procedures that can be implemented which will ensure that both fixed and mobile BAS⁸⁸ stations are adequately protected and accommodate the introduction of Federal earth stations in this band. We acknowledge that the short separation distances identified above present coordination challenges. We seek comment on how these challenges can be addressed. We recognize that our Rules do not currently include coordination rules that protect the normal operating areas of TVPU stations, but we are hopeful that coordination between the parties is achievable for the 11 DOD transmit earth stations without adversely affecting TVPU operations, particularly reception at fixed sites, including receive-only sites and at venues where sports or news events routinely occur. While we do not believe that non-Federal Government operations are likely to cause interference to Federal Government operations, we will require that once a DOD earth station has been coordinated, new BAS stations within these 11 areas coordinate their systems with the local DOD facility.

32. We observe that NTIA has added to its *Manual* the operational limits specified in the ITU *Radio Regulations* for DOD earth station transmissions in the 1761-1842 MHz segment.⁸⁹ Thus, the 11 DOD earth stations currently operating in the band 1761-1842 MHz do not transmit until their antenna (mainbeam) is pointing at least at 3° above the horizon, unless affected parties have agreed to a lower elevation angle.⁹⁰ In addition, NTIA has adopted the ITU limitations on the e.i.r.p. transmitted in any direction towards the horizon by an earth station.⁹¹ Thus, the 11 DOD earth stations currently operating

⁸⁷ Implicit in the concept of successful coordination is that the affected parties would know each others' operational parameters.

⁸⁸ BAS includes short term operations conducted pursuant to Section 74.24. Short term operations are TVPU or temporary fixed operations performed outside the parameters of a station's authorization, allowed for up to 720 hours per year, and can be conducted by all licensees of broadcast stations under Part 73 and broadcast auxiliary stations provided under subparts D, E, F, and H of Part 74, except wireless video assist devices, under the authority conveyed by a Part 73 license or a broadcast auxiliary license. 47 C.F.R. § 74.24 (Short term operation). Short term operations may be used by network entities to implement nationwide operation, and are sometimes referred to as "itinerant" or "network itinerant" operations.

⁸⁹ See *NTIA Manual*, Section 8.2.35 (Power and Direction of Maximum Radiation of Earth Stations in Certain Bands Shared with Stations in the Fixed and Mobile Services) at para. 4; see also *ITU Radio Regulations*, Article 21.

⁹⁰ Specifically, "earth station antennas shall not be employed for transmission at elevation angles of less than 3° measured from the horizontal plane to the direction of maximum radiation, except when agreed to by agencies or administrations concerned and those whose services may be affected." See *NTIA Manual*, Section 8.2.35 at para. 7; see also *ITU Radio Regulations*, No. 21.14. Lower elevation angles for the earth station's antenna equate to larger geographic areas in which BAS operations may be impacted.

⁹¹ Specifically, the e.i.r.p. transmitted in any direction towards the horizon by an earth station (mainbeam or sidelobes) must not exceed: + 40 dBW in any 4 kHz band for $\theta \leq 0^\circ$; and $+ 40 + 3\theta$ dBW in any 4 kHz band for $0^\circ < \theta \leq 5^\circ$, where θ is the angle of elevation of the horizon viewed from the center of radiation of the antenna of the earth station and measured in degrees as positive above the horizontal plane and negative below it. For angles of elevation greater than 5°, there is no restriction as to the e.i.r.p. transmitted by an earth station towards the horizon. See *NTIA Manual*, Section 8.2.35 at paras. 1, 2, and 4; see also *ITU Radio Regulations*, Nos. 21.8, 21.9, and 21.11.

in the band 1761-1842 MHz are (1) limited to an e.i.r.p. of 40 dBW at a 0° elevation angle, (2) permitted to increase their e.i.r.p. to 40 dBW plus 3 times their elevation angle between 0-5°, and (3) unlimited in e.i.r.p. at elevation angles above 5°. These e.i.r.p. limits may be exceeded by not more than 10 dB. We anticipate that NTIA will update its *Manual* to require that TT&C uplink earth stations operating in the band 2025-2110 MHz will likewise conform to these limits.

33. We do not make this proposal without concerns. Notably, we are concerned about the impact on future BAS growth in areas near the 11 TT&C uplink earth stations, especially in light of the ongoing digital television (“DTV”) transition. We solicit comment on our proposal and on methods that could be employed to ensure future BAS growth.⁹² In addition to spectrum sharing reasons discussed in paragraph 30, above, we note that, once an earth station has been coordinated in the band 2025-2110 MHz, its characteristics will become known to local BAS users. As such, we believe that the local BAS users should be able to work around the coordinated area. Specifically, we note that new BAS stations can be added in areas near the 11 earth stations, if they are located near incumbent BAS stations, which will be protected as a result of the coordination process. Nonetheless, we solicit comment on whether other frequency bands are more appropriate for the 11 TT&C uplink earth stations.

34. We observe that the adjacent frequency bands (1990-2025 MHz and 2110-2155 MHz) have been reallocated to the fixed and mobile services. Although authorization and use of these frequency bands has not yet begun, we are concerned that interference could be caused to these future services due to the placement of the 11 TT&C earth stations in the band 2025-2110 MHz. We are concerned, in particular, about two types of interference – interference caused by out-of-band emissions and interference caused by receiver overload.

35. In addressing out-of-band emission interference, we note that the unwanted emission standards for Federal Government earth stations operating above 960 MHz are specified as follows:

For all systems operating in this frequency range the emissions radiated outside of the necessary bandwidth shall roll-off at a rate equal to or greater than 40 dB/decade (12 dB/octave) from the attenuation level at the limit of necessary bandwidth. The emissions power shall roll-off to a level of at least 60 dB below the transmissions Maximum Peak SPD [Spectral Power Density] or less (see Figure 5.6.1). The requirements in this standard specify the upper bounds on unwanted emissions from space and earth stations associated with the space services.⁹³

TT&C uplink channels in the band 1761-1842 MHz have a necessary bandwidth of 4 MHz and we anticipate that new TT&C channels in the band 2025-2110 MHz will be approximately the same bandwidth. NTIA informs us that currently the signal level two-megahertz away from a TT&C center frequency is normally attenuated 20-25 dB below the maximum peak SPD. TT&C uplink transmitter output power is expected to range from 100 watts to 10 kW.⁹⁴ We solicit comment on how such high

⁹² Our primary concern is the location of future BAS receivers near the coordinated earth stations. In contrast, we do not have the same level of concern for BAS transmitters in the 2025-2110 MHz band. Because the footprint of the satellite is so large, it will ‘see’ signals from such transmitters whether they are near a coordinated earth station or a large distance from it.

⁹³ See *NTIA Manual* at Section 5.6.3 (Unwanted Emission Standards for Earth and Space Stations Operating [at] 960 MHz and above:).

⁹⁴ See “Department of Defense Investigation of the Feasibility of Accommodating the International Mobile Telecommunications (IMT) 2000 Within the 1755-1850 MHz Band,” February 9, 2001, at 5.7 (SATOPS Assumptions).

power levels coupled with the noted attenuation characteristics would impact BAS operations in the band 2025-2110 MHz.

36. We request comment on whether the limits specified above will be sufficient to protect the mobile and fixed receivers that will operate on spectrum above and below the band 2025-2110 MHz, or whether additional requirements, *e.g.*, specific limits on emissions generated outside the band 2025-2110 MHz, will be necessary. We note that emissions produced by the TT&C transmitters are expected to be greater than those that will be produced by future digital BAS transmitters that will operate in the band 2025-2110 MHz.⁹⁵ We therefore seek comment on whether the Federal Government's unwanted emission standard shown above is sufficient to protect out-of-band operations, or whether TT&C earth station emission limitations outside the band 2025-2110 MHz should be further limited. We observe that limiting emissions outside the band 2025-2110 MHz could be accomplished by reducing power, by increasing the attenuation roll-off rate and the maximum roll-off, and by not using spectrum immediately adjacent to the band edges, *i.e.*, by providing for guard bands. We request comment on whether such measures should be taken, and specifically whether TT&C transmitter emissions outside the band 2025-2110 MHz should be limited to those of a digital BAS transmitter with a bandwidth of 12 MHz and an output power of 13 dBW, centered 6.5 MHz from the band edge and meeting the emission mask in Section 74.637(a)(2).

37. With regard to the potential for receiver overload interference, we note that, as indicated above, TT&C transmitters are expected to operate with transmitter output power levels ranging from 100 watts to 10 kW. This raises concerns about the potential for overload of fixed and/or mobile receivers operating near TT&C stations receiving on spectrum above and below the band 2025-2110 MHz. We thus seek comment on whether, based on the geographic location of TT&C transmitters, interference of this type could occur.⁹⁶ If such interference is likely, we seek comment on what limits on TT&C transmitters (*e.g.*, reduced power levels, avoidance of the upper and lower edges of the band 2025-2110 MHz) might reduce the likelihood of overload interference to adjacent band mobile and fixed receivers. Similarly, we seek comment on measures that need to be taken by fixed and mobile receivers to protect against this type of interference.⁹⁷

38. We also propose to permit DOD to operate stations in the fixed and mobile except aeronautical mobile services on a secondary basis in the band 2025-2110 MHz at the six sites identified by NTIA in the southwestern United States. NTIA states that because these operations (such as TRR systems) are usually in remote areas, it would appear to be feasible for DOD to operate on a coordinated basis in this band. We agree with NTIA that it appears feasible for DOD to operate stations in the fixed and land mobile services on a secondary basis at six sites in the southwestern United States and to also operate stations in the maritime service in the Pacific Missile Test Range/Pt. Mugu on a secondary basis without hindering BAS fixed and mobile operations. We request comment on this tentative finding. Accordingly, we propose to adopt a United States footnote that would read as follows:

⁹⁵ We note that the out-of-band emissions of a digital TT&C transmitter as described above would exceed, by 35 dB, the out-of-band emissions of a digital BAS transmitter meeting the emission mask in Section 74.637(a)(2).

⁹⁶ We recognize that the occurrence of this type of interference is somewhat dependent on the characteristics of the affected receivers, and that such receivers do not presently exist. Thus, in addressing this interference issue, commenters may choose to rely on the characteristics of receivers operating in other wireless services in this spectrum range (*e.g.*, Broadband PCS receivers) or other types of receivers that may be appropriate.

⁹⁷ See *Interference Immunity Performance Specifications for Radio Receivers*, ET Docket No. 03-65, *Notice of Inquiry*, 18 FCC Rcd 6039 (2003)

USxxx In the band 2025-2110 MHz, the military services may operate stations in the fixed and mobile except aeronautical mobile services on a secondary and coordinated basis at the following sites:

Site	Coordinates	Radius of Operation (km)
Nellis AFB, NV.....	36° 14' N 115° 02' W	80
China Lake, CA.....	35° 41' N 117° 41' W	50
Ft. Irwin, CA.....	35° 16' N 116° 41' W	50
Pacific Missile Test Range/Pt. Mugu, CA	34° 07' N 119° 30' W	80
Yuma, AZ.....	32° 32' N 113° 58' W	80
White Sands Missile Range, NM.....	33° 00' N 106° 30' W	80

39. We request comment on all of the above proposals for the band 2025-2110 MHz. We are particularly interested in commenters' suggestions regarding how best to share the band 2025-2110 MHz between incumbent uses and the proposed extremely high powered transmitting earth stations. In addition, if commenters believe any of the 11 proposed earth station locations to be particularly problematic with regard to protecting BAS receive sites, we request specific suggestions and detailed engineering analysis showing how such situations can be resolved.

D. The Band 2360-2400 MHz

1. Background

40. As discussed above, the *2002 Viability Assessment* states that DOD would relocate its airborne telemetry and video systems that operate in the band 1710-1755 MHz at the 16 protected sites to other frequency bands, such as the bands 1755-1850 MHz, 2360-2385 MHz, or other telemetry bands; or to the band 2385-2395 MHz under a new primary Federal Government mobile service allocation.⁹⁸ As support for the new Federal Government allocation at 2385-2395 MHz, the *2002 Viability Assessment* states that industry service provider/vendor engineers analyzed each of the 16 sites on an assignment-by-assignment basis and concluded that all aeronautical mobile systems must be cleared from the 1710-1755 MHz band if the band is to be used for AWS.⁹⁹ NTIA states that DOD airborne telemetry and video systems would be relocated from the band 1710-1755 MHz at the 16 protected sites by December 2008, if the band 2360-2395 MHz is allocated for aeronautical mobile applications. NTIA also requests that all other mobile applications be permitted in the band 2360-2395 MHz on a secondary basis to aeronautical mobile applications.

41. In addition, we observe that, while the demand for aeronautical telemetry spectrum has greatly increased in recent years because aircraft manufacturers are monitoring significantly more parameters during flight tests and are using more video, the amount of spectrum allocated on a primary basis for use by Federal and non-Federal Government flight test stations has been reduced by over one third.¹⁰⁰ For example, we note that AFTRCC stated in January 1999 that:

⁹⁸ In its *2002 Viability Assessment*, NTIA describes the 16 DOD protected sites, including the separation distances needed for the protection of aeronautical mobile systems operating at these sites. See *2002 Viability Assessment* at 8, figure 2.

⁹⁹ See *2002 Viability Assessment* at page 9.

¹⁰⁰ Historically, 180 megahertz of spectrum at 1435-1535 MHz and 2310-2390 MHz was available for aeronautical telemetry operations on a primary basis. However, 65 megahertz of this spectrum has been reallocated to other radiocommunication services. In 60 megahertz of this spectrum, aeronautical telemetry use has been permitted (or was planned to be permitted) to continue on a secondary basis. Specifically, the band 1525-1535 MHz is available for aeronautical telemetry operations on a secondary basis to the mobile-satellite service (space-to-Earth). Because

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Bandwidth demands for flight test telemetry have grown exponentially: From an average of less than 1 MHz channels, to 3 MHz, toward 5 and even 10 MHz. This trend is a function of the increasing complexity and computerization of newer aircraft. For example, when the Boeing 707 was flight tested 40 years ago, engineers monitored 300 data points; when the 777 was tested four years ago, no less than 40,000 data points were monitored.¹⁰¹

42. Therefore, we propose, below, to take actions that would permit Federal Government aeronautical mobile systems to operate throughout the band 2360-2395 MHz and that would permit non-Federal Government flight test stations to operate in the band 2385-2395 MHz, as well as the band 2360-2385 MHz.

43. Globally, the band 2360-2400 MHz is allocated to the fixed and mobile services on a primary basis and to the amateur service on a secondary basis.¹⁰² In ITU Region 2, the band 2360-2400 MHz is also allocated to the radiolocation service on a primary basis.¹⁰³

44. In the United States, the principal use of the band 2360-2390 MHz is for aeronautical telemetry operations. In response to BBA-97, the band 2385-2390 MHz was transferred from Federal/non-Federal Government shared use to non-Federal Government exclusive use, effective January 1, 2005, except that Federal and non-Federal Government aeronautical telemetry operations may continue on a primary basis at various sites for two additional years.¹⁰⁴ We codified this spectrum transfer through the adoption of footnote US363.¹⁰⁵ Concurrently, we allocated the band 2385-2390 MHz to the non-

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Satellite DARS licensees have begun operations in the band 2320-2345 MHz, flight test stations operating in this band are permitted only on a secondary basis. In their comments to the *Above 28 MHz NPRM*, AFTRCC and Boeing state that neither the band 1525-1535 MHz nor the band 2320-2345 MHz remains usable for aeronautical telemetry purposes. See para. 8, *supra*. The bands 2310-2320 MHz and 2345-2360 MHz are available for aeronautical telemetry operations on a secondary basis to WCS; however, as WCS operations are brought into use, we anticipate that aeronautical telemetry use will become more limited in these bands.

¹⁰¹ See AFTRCC Reply Comments in RM-9395, received January 25, 1999, at 3-4. While this statement was made with regard to the band 1435-1535 MHz, we believe that it is also applicable to the band 2310-2390 MHz.

¹⁰² See ITU *Radio Regulations*, Article 5, page 108. See also 47 C.F.R. § 2.106 (2001 Edition), page 447.

¹⁰³ See 47 C.F.R. § 2.104(b). The United States is located within ITU Region 2, which covers North and South America.

¹⁰⁴ See *27 Megahertz Allocation R&O* at paras. 67-71.

¹⁰⁵ Footnote US363 reads as follows: Until January 1, 2005, the band 2385-2390 MHz is allocated to the Government mobile and radiolocation services on a primary basis and to the Government fixed service on a secondary basis. Use of the mobile service is limited to aeronautical telemetry and associated telecommand operations for flight testing of manned or unmanned aircraft, missiles or major components thereof. Use of the radiolocation service is limited to the military services. After January 1, 2005, Government stations in the mobile and radiolocation services shall continue to operate on a primary basis until re-accommodated in accordance with the National Defense Authorization Act of 1999, except at the sites identified below where Government stations may not be re-accommodated until January 1, 2007:

Protection Radius for Each of the Following Sites is 160 km:

Location	North Latitude/West Longitude	Location	North Latitude/West Long.
Barking Sands, HI	22° 07' / 159° 40'	Roswell, NM	33° 18' / 104° 32'
Cape Canaveral, FL	28° 33' / 080° 34'	Seattle, WA	47° 32' / 122° 18'
China Lake, CA	35° 40' / 117° 41'	St. Louis, MO	38° 45' / 090° 22'

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Federal Government fixed service on a primary basis, removed limitations on the use of the existing non-Federal Government mobile service allocation by deleting the band 2385-2390 MHz from footnote US276, and deleted the Federal Government mobile, fixed, and radiolocation service allocations from the band 2385-2390 MHz. We subsequently established service rules under Part 27 for this band.¹⁰⁶ However, the band 2385-2390 MHz has not yet been auctioned for new fixed and mobile services; instead, as authorized by footnote US363, this spectrum is still used by flight test stations. In order to accommodate aeronautical mobile systems relocated from the band 1710-1755 MHz, NTIA now requests that the band 2385-2390 MHz be generally returned to its allocation status prior to the reallocation.

45. In the United States, the band 2390-2400 MHz was historically part of a larger band that extended from 2390-2450 MHz, which was allocated to the radiolocation service on a primary basis for use by the military services and to the amateur service on a secondary basis. On February 5, 1994, the Commission reallocated the band 2390-2400 MHz, which was transferred as exclusive non-Federal Government spectrum, to the amateur service on a primary basis.¹⁰⁷ At the request of NTIA, the Commission concurrently added footnote G122 to its Rules, which states that Federal Government operations may be authorized on a non-interference basis in the band 2390-2400 MHz.¹⁰⁸

46. Also concurrent with that transfer, the Commission made the band 2390-2400 MHz available for unlicensed PCS devices and established technical rules for their use. In general, unlicensed PCS devices operating in the band 2390-2400 MHz were limited to asynchronous devices, which are devices that transmit RF energy at irregular time intervals, as typified by local area network data

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Eglin AFB, FL	30° 30' / 086° 30'	Utah Test Range, UT	40° 12' / 112° 54'
Glasgow, MT	48° 25' / 106° 32'	White Sands Missile Range, NM	32° 58' / 106° 23'
Nellis AFB, NV	37° 48' / 116° 28'	Wichita, KS	37° 40' / 097° 26'
Palm Beach County, FL	26° 54' / 080° 19'	Yuma Proving Ground, AZ	32° 54' / 114° 20'
Roosevelt Roads, PR	18° 14' / 065° 38'		
Protection Radius for Each of the Following Sites is 100 km:			
Edwards AFB, CA	34° 54' / 117° 53'	Patuxent River, MD	38° 17' / 076° 25'

In addition, non-Government flight test operations may continue at the sites identified below on a primary basis until January 1, 2007:

Protection Radius for Each of the Following Sites is 160 km:

Location	North Latitude/ West Longitude	Location	North Latitude/ West Longitude
Alamosa, CO	37° 26' 04" / 105° 52' 03"	Thermal, CA	33° 37' 35" / 116° 09' 36"
Albuquerque, NM	35° 11' 03" / 106° 34' 30"	Phoenix, AZ	33° 18' 28" / 111° 39' 19"
Amarillo, TX	35° 12' 49" / 101° 42' 31"	Marietta, GA	33° 54' 24" / 084° 31' 09"
Arlington, TX	32° 40' 00" / 097° 05' 53"	Greenville, TX	33° 04' 01" / 096° 03' 09"
Leadville, CO	39° 13' 13" / 106° 19' 03"		

¹⁰⁶ See 27 Megahertz Service Rules R&O.

¹⁰⁷ See *Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use*, ET Docket No. 94-32, *First Report and Order and Second Notice of Proposed Rule Making*, 10 FCC Rcd 4769; see also 47 C.F.R. § 2.106 (1994 Edition) at page 388 and footnote G2.

¹⁰⁸ See 47 C.F.R. § 2.106, footnote G122.

systems.¹⁰⁹ The Commission revised Part 15 of its Rules to allow asynchronous devices to operate in the band 2390-2400 MHz using the same rules as are used for the 1910-1920 MHz.¹¹⁰

2. Comments

47. AFTRCC supports the 2002 *Viability Assessment* with regard to the band 2385-2390 MHz. It states that its petition for partial reconsideration in WT Docket No. 02-8 would be moot if we return the band 2385-2390 MHz to aeronautical telemetry use.¹¹¹

48. Motorola also supports making the band 2385-2395 MHz available for military airborne telemetry operations.¹¹² Motorola states that this spectrum could be used to support air combat training operations and that such use would be compatible with existing airborne telemetry use in the adjoining band 2360-2385 MHz. Motorola also states that there has been only very limited interest expressed in the band 2385-2395 MHz in ET Docket No. 00-221. In addition, Motorola supports shared use of the band 2390-2395 MHz by Federal users and amateur radio operators.¹¹³ Motorola states that, although the reallocation of the band 2390-2395 MHz may result in some disruption of a limited number of amateur operations, this should not be allowed to stand in the way of the reallocation, given the enormous benefits of 3G that have been documented in ET Docket No. 00-258.

49. CTIA does not object to having the band 2385-2395 MHz allocated for Federal Government aeronautical mobile use because the proposed use would be consistent with uses elsewhere in the world and thus would promote international harmonization. However, CTIA does not believe it necessary to make this allocation in order to substantially clear the band 1710-1755 MHz, and asks that any work we do with respect to the band 2385-2395 MHz not delay reallocation and service rules proceedings for the band 1710-1755 MHz.¹¹⁴

50. The Satellite Radio Licensees urge us to protect the reception of the Satellite DARS signals from relocated aeronautical mobile users in the band 2360-2395 MHz.¹¹⁵ In particular, the Satellite Radio Licensees request that we adopt the same out-of-band emission limits for new operations in the band 2360-2395 MHz as those that apply to WCS mobile devices operating in the bands 2305-2320 MHz and 2345-2360 MHz.¹¹⁶ The Satellite Radio Licensees state that they currently operate terrestrial repeaters

¹⁰⁹ See 47 C.F.R. § 15.303(a)

¹¹⁰ See 47 C.F.R. §§ 15.301; 15.303(g); 15.319(a); and 15.321(a), (b), and (g).

¹¹¹ See AFTRCC Comments and Supplement to Petition for Partial Reconsideration, ET Docket No. 00-258 and WT Docket No. 02-8; see also para. 4, *supra*.

¹¹² See Motorola Comments, ET Docket No. 00-258, at 7-8.

¹¹³ *Id.* at 8.

¹¹⁴ See CTIA Comments, ET Docket No. 00-258, at 4-5.

¹¹⁵ See Joint Comments of Sirius Satellite Radio Inc. and XM Radio Inc., ET Docket No. 00-258, at 6-7. The Satellite DARS licensees operate in the band 2320-2345 MHz.

¹¹⁶ The emission limits for mobile stations operating in the WCS bands (2305-2320 MHz and 2345-2360 MHz) are very stringent. Specifically, the rules provide that the power of any emission outside the WCS licensee's frequency band(s) of operation must be attenuated below the transmitter power (P) within the WCS licensed band(s) of operation, measured in watts, by a factor not less than $110 + 10 \log(p)$ dB on all Satellite DARS frequencies (2320-2345 MHz). See 47 C.F.R. § 27.53(a)(2).

pursuant to special temporary authority and that they have entered into coordination agreements with AFTRCC in order to protect flight test stations operating in the primary aeronautical telemetry band at 2360-2385 MHz. The Satellite Radio Licensees urge us to ensure that they are not burdened with new coordination obligations, that is, that Federal "newcomers" be responsible for taking whatever steps may be necessary to eliminate objectionable interference.¹¹⁷

3. Proposals

51. Consistent with the *2002 Viability Assessment*, we propose to allocate the band 2360-2395 MHz for aeronautical mobile purposes on a primary basis for Federal Government use. We are making this proposal so that aeronautical mobile systems that currently operate in the band 1710-1755 MHz at the 16 protected sites can be relocated by December 2008.¹¹⁸ This relocation would substantively clear the band 1710-1755 MHz of Federal Government systems so that this spectrum can be used to accommodate AWS, including 3G systems.

52. We also propose to allocate the band 2390-2395 MHz to the mobile service on a primary basis for non-Federal Government use and to generally limit the use of this allocation and of the existing non-Federal Government mobile service allocation in the band 2385-2390 MHz to aeronautical telemetry use. This action would provide 10 megahertz of needed spectrum for commercial aeronautical telemetry operations. We observe that aeronautical telemetry bandwidth requirements have significantly increased in recent years as aircraft manufacturers collect increasing amounts of data and video concerning the performance of prototype aircraft. Given the increasing amounts of data being collected in flight tests, and the higher and higher data rates being utilized for such purposes, we tentatively find that additional spectrum for aeronautical telemetry use is necessary.¹¹⁹

53. In order to provide spectrum for other important services, it has previously been necessary to reallocate over one third of the spectrum that was allocated on a primary basis for aeronautical telemetry use. We believe that the proposed allocation will provide the additional spectrum needed as aeronautical telemetry migrates out of the Satellite DARS and WCS bands (2310-2360 MHz).

54. In addition, we observe that the aircraft manufacturers that make military aircraft are the same as those that make commercial aircraft. Indeed, some military aircraft are just modified commercial aircraft. Further, Federal and non-Federal Government users have traditionally shared the aeronautical telemetry bands on a co-primary basis, including the band 2385-2390 MHz. Significantly, we note that aircraft manufacturers already have the infrastructure in place to make use of the band 2385-2390 MHz. We believe that this equipment can be easily modified to operate in the band 2390-2395 MHz. Therefore, we believe that there are many benefits to expanding the primary non-Federal Government aeronautical

¹¹⁷ See Joint Comments of Sirius Satellite Radio Inc. and XM Radio Inc., ET Docket No. 00-258, at 5, 8.

¹¹⁸ See *2002 Viability Assessment* at 2-3.

¹¹⁹ This proposal responds in part to AFTRCC's request that policy-makers "aggressively" seek to identify additional aeronautical telemetry spectrum. See AFTRCC Reply Comments in IC Docket No. 94-31, received on April 14, 1995, at 3. AFTRCC reported that in 1997, the United States exported \$32.24 billion more in aerospace products than it imported. AFTRCC stated that this represented 7.3% of the total U.S. merchandise exports. In addition, AFTRCC stated that the aerospace industry employed 858,000 persons in 1997, which was nearly 8% of the durable goods manufacturing workforce. AFTRCC attributes this information to Aerospace Facts and Figure 1998/99 (Aerospace Industries Association). See AFTRCC Reply Comments in RM-9395, received on January 25, 1999, at footnote 2.

telemetry allocation to include the band 2385-2395 MHz.¹²⁰ Accordingly, we believe that the band 2385-2395 MHz should be made available to non-Federal Government aeronautical telemetry operations, as well as to Federal Government aeronautical mobile operations. As a consequence of these proposals, we propose to make a number of specific changes to rules affecting various portions of the band 2360-2400 MHz. Table 3, below, provides an overview of our proposals, which will be discussed in detail in the following paragraphs.

Band	Existing Allocations	Proposed Allocations	Summary
2360-2385 MHz	MOBILE US276 (In the band 2360-2385 MHz, Gov't and non-Gov't use is limited to aeronautical telemetering & associated telecommand operations for flight testing of manned or unmanned aircraft, missiles or major components thereof ("aeronautical telemetry"); all other mobile telemetering uses shall be secondary to this use) Gov't RADIOLOCATION G2 (Use limited to military services) G120 (Development of airborne primary radars in the band 2310-2385 MHz with peak transmitter power in excess of 250 watts for U.S. use not permitted) Gov't secondary fixed	2360-2390 MHz MOBILE US276 (In the band 2360-2395 MHz, Gov't use is limited to aeronautical mobile applications & non-Gov't use is limited to aeronautical telemetry, except that other Gov't mobile uses & other non-Gov't mobile telemetering uses may operate on a secondary basis.) Gov't RADIOLOCATION G2 G120 (Development of airborne primary radars in the band 2360-2390 MHz with peak transmitter power in excess of 250 watts for U.S. use not permitted) Gov't secondary fixed	Additional 5 MHz of primary aeronautical telemetry spectrum for Gov't & non-Gov't use. Additional 5 MHz of primary spectrum for Gov't radiolocation. Additional 5 MHz of secondary spectrum for Gov't fixed. Gov't secondary use of the band 2360-2390 MHz expanded from other mobile telemetering to other mobile uses. Reduction of 5 MHz for WCS. Update of footnote G120 to correspond to primary allocation for Gov't radiolocation.
2385-2390 MHz	WCS--non-Federal Gov't FIXED & MOBILE US363 (Until 01JAN05, Gov't allocations are the same as the band 2360-2385 MHz. Afterwards, Gov't stations continue to operate on a primary basis until re-accommodated in accordance with NDAA 99, except at 17 sites where stations may not be re-accommodated until 01JAN07. Non-Gov't aeronautical telemetry operations may continue at 9 sites on a primary basis until 01JAN07)		
2390-2400 MHz	AMATEUR Unlicensed PCS G122 (Gov't operations may be authorized on a non-interference basis)	2390-2395 MHz AMATEUR MOBILE US276	Additional 5 MHz of primary aeronautical telemetry spectrum for Gov't & non-Gov't use. Other Gov't mobile uses are secondary. Reduction of 5 MHz for Unlicensed PCS.
		2395-2400 MHz AMATEUR G122	Reduction of 5 MHz for Unlicensed PCS.

¹²⁰ Indeed, if we do not provide for common Federal/non-Federal Government aeronautical telemetry spectrum, it would be necessary for aircraft manufacturers to use non-Federal Government aeronautical telemetry spectrum during the development of military aircraft and Federal Government aeronautical telemetry spectrum after a contract with the Government is signed. Such a scheme would not be an efficient use of spectrum.

55. As indicated above, the band 2360-2385 MHz is currently allocated to the mobile service on a primary basis for Federal and non-Federal Government use. The use of these mobile allocations is limited by footnote US276 to aeronautical telemetering and associated telecommand operations for flight testing of manned and unmanned aircraft, missiles, or major components thereof. In order to implement our proposal, we would allocate the band 2385-2395 MHz to the mobile service on a primary basis for Federal Government use¹²¹ and would modify footnote US276 to permit Federal agencies to conduct all types of aeronautical mobile operations, not just aeronautical telemetering and telecommand operations. We also propose to expand the permissible uses under the Federal Government mobile service allocation in the band 2360-2395 MHz to include land mobile and maritime mobile applications on a secondary basis to aeronautical mobile applications.

56. Except as described above, this approach would return the band 2385-2390 MHz to its allocation status prior to its recent transfer and reallocation. Therefore, we also propose to allocate the band 2385-2390 MHz to the radiolocation service on a primary basis and to the fixed service on a secondary basis for Federal Government use. NTIA has informed us that Federal Government use of the radiolocation allocation in the band 2385-2390 MHz would be limited to the military services and thus, footnote G2 would be revised to reflect this limitation.¹²² Consistent with the above proposal to allocate the band 2390-2395 MHz to the aeronautical mobile service on a primary basis for Federal Government use, we propose to revise footnote G122 so that Federal Government operations in the band 2390-2395 MHz would no longer be shown as being on a non-interference basis to non-Federal Government operations.¹²³

57. By footnote G120, NTIA prohibits the development of airborne primary radars in the band 2310-2385 MHz with a peak transmitter power in excess of 250 watts for use in the United States.¹²⁴ NTIA has previously applied footnote G120 to the band 2385-2390 MHz. During its work on this *Notice*, the staff noticed that the bands 2310-2320 MHz and 2345-2360 MHz are no longer allocated to the Federal radiolocation service on a primary basis. In addition, we have recently proposed to downgrade the Federal radiolocation service allocation from primary to secondary status in the band 2320-2345 MHz because Satellite DARS licensees have commenced operations.¹²⁵ Therefore, we propose, with NTIA's concurrence, to amend footnote G120 by removing the band 2310-2360 MHz and by adding the band 2385-2390 MHz.

58. In order to promote spectrum sharing between Federal and non-Federal Government operations, we propose to delete the recently added, but still unused, fixed allocation from the band 2385-2390 MHz in the non-Federal Government Table. We also propose to re-apply the prior footnote US276 limitations on non-Federal Government mobile use of the band 2385-2390 MHz and to also apply the footnote US276 limitations on non-Federal Government mobile use of the band 2390-2395 MHz. These actions would return the band 2385-2390 MHz to use for non-Federal Government flight test stations and would also make available replacement spectrum for non-Federal Government flight test stations that are displaced from the band 2310-2360 MHz, thereby providing 35 megahertz (2360-2395 MHz) of primary spectrum for non-Federal Government aeronautical telemetry purposes. In

¹²¹ The band 2385-2390 MHz is already allocated to the mobile service on a primary basis for non-Federal Government use.

¹²² See Appendix A, § 2.106, footnote G2.

¹²³ See Appendix A, § 2.106, footnote G122.

¹²⁴ See 47 C.F.R. § 2.106, footnote G120.

¹²⁵ See *Above 28 MHz NPRM* at para. 47. This radiolocation service allocation is in footnote US328.

consideration of all of the above proposals for the band 2360-2395 MHz, we propose to revise footnote US276 to read as follows:

US276 Except as otherwise provided for herein, use of the bands and 2320-2345 MHz and 2360-2395 MHz by the mobile service is limited to Federal Government aeronautical mobile applications and to non-Federal Government aeronautical telemetering and associated telecommand operations for flight testing of aircraft, missiles or major components thereof. The following four frequencies are shared on a co-equal basis by Federal and non-Federal Government stations for telemetering and associated telecommand operations of expendable and reusable launch vehicles whether or not such operations involve flight testing: 2332.5 MHz, 2364.5 MHz, 2370.5 MHz, and 2382.5 MHz. Other Federal Government mobile uses and other non-Federal Government mobile telemetering uses shall be secondary to the above uses.¹²⁶

59. Under our proposal, the amateur service would retain its current primary allocation at 2390-2400 MHz, but would be required to share the lower 5 megahertz with new Federal and non-Federal Government operations on a co-primary basis. We do not believe that such sharing would have a significant impact on amateur operations. Under its band plan, the Amateur Radio Relay League ("ARRL") has designated the 2390-2396 MHz segment for use by "Fast Scan TV," which is a form of Amateur Television ("ATV").¹²⁷ However, there are numerous other bands designated for ATV.¹²⁸ Because of equipment availability, most ATV use appears to be in the bands 420-450 MHz and 902-928 MHz. Thus, because we believe that ATV use of the 2390-2395 MHz segment is relatively light and because aeronautical telemetry use is generally at remote facilities, we anticipate that Federal aeronautical mobile and non-Federal Government aeronautical telemetry use of the 2390-2395 MHz segment will not significantly impact amateur use of this spectrum. We propose to amend Section 97.303 of our amateur Rules to reflect this spectrum sharing proposal.¹²⁹ We solicit comment on whether limits should be imposed on the amateur and/or mobile services in order to enhance spectrum sharing; if limits are necessary, we seek comment on what limits we should adopt.

60. We observe that non-Federal Government flight test stations in the band 2310-2390 MHz have long been subject to the emission limitations that are specified in Section 87.139 of our Rules.¹³⁰ We propose to continue to employ these emission limitations for non-Federal Government flight test stations in the band 2385-2390 MHz.¹³¹ We note that NTIA has established significantly less stringent limits for unwanted emissions from aeronautical telemetry operations in this band than those requested by the Satellite Radio Licensees (25 to 55 dB less stringent than the WCS fixed and mobile limits).¹³² Therefore,

¹²⁶ In the upcoming Above 28 MHz Report and Order, we will consider whether to delete the band 2320-2345 MHz and the frequency 2332.5 MHz from footnote US276.

¹²⁷ ATV generally refers only to Fast Scan TV, not to Slow Scan TV. See <http://users.rcn.com/ssstv/faq.html>.

¹²⁸ The bands designated by ARRL for ATV use include 420-426 MHz, 426-432 MHz, 438-444 MHz, 909-915 MHz, 921-927 MHz, 1240-1246 MHz, 1252-1258 MHz, 1276-1282 MHz, and 2418-2430 MHz. See <http://www.arrl.org/FandES/field/regulations/bandplan.html#33cm>.

¹²⁹ See Appendix A, § 97.303 (Frequency sharing requirements).

¹³⁰ See 47 C.F.R. § 87.139.

¹³¹ Flight test stations are limited to 25 watts into the base of the antenna. See 47 C.F.R. § 87.131. In contrast, the WCS rules state that fixed and bases stations are limited to 2000 watts e.i.r.p. peak power and that mobile stations are limited to 4 watts e.i.r.p. peak power. See 47 C.F.R. § 27.13(f).

¹³² The Federal Government transmitter standard for terrestrial telemetering (fixed, land, and mobile) stations authorized for operation in the band 2310-2390 MHz is as follows. "a. For Authorized Bandwidth equal to or less
(continued....)

we request comment on the appropriate out-of-band emission limits that are necessary to protect Satellite DARS reception from both aeronautical (ground) stations¹³³ and from aircraft stations.¹³⁴

61. Under our proposal, the band 2385-2390 MHz would be available for aeronautical telemetering and associated telecommand for both Federal and non-Federal Government licensees and thus, footnote US363, which grandfathered various Federal and non-Federal Government sites for aeronautical telemetering and associated telecommand purposes, would no longer be needed. We therefore propose to delete footnote US363. Our proposal would also limit non-Federal Government use of the band 2385-2390 MHz to flight test stations and thus, footnote NG174, which states that frequencies in the band 2385-2400 MHz are not available for assignment to stations in the aeronautical mobile service in Puerto Rico, would no longer be needed. We also propose to delete footnote NG174.

62. We propose to rescind numerous changes to our WCS service rules that were made as part of our action on the transfer and reallocation of the band 2385-2390 MHz. Specifically, we propose to add the band 2385-2390 MHz back to the frequencies available to flight test stations in Section 87.303 of our aviation service rules.¹³⁵ We also propose to rescind the changes made in the *27 Megahertz Service Rules R&O* for the band 2385-2390 MHz in Parts 1, 27, and 87 of our Rules by deleting regulations containing this band from Sections 1.1307 (Environmental Assessments); 27.1(b)(7) (Basis and Purpose); 27.4 (Terms and definitions); 27.5(g) (Frequencies); 27.6(g) (Service areas); 27.11(h) (Initial authorization); 27.12(b) (Eligibility); 27.13(f) (License period); 27.50(f) (Power and antenna height limits); 27.53(i) (Emission limits); and 87.173, note 1 (Frequencies); and by deleting Part 27, Subpart K (2385-2390 MHz Band). In the Table of Frequency Allocations, we also propose to revise the entry for the band 2385-2390 MHz by replacing the cross reference to Part 27 of our Rules (Miscellaneous Wireless Communications Services) with a cross reference to Part 87 of our Rules (Aviation Services) to reflect the re-designation of the band 2385-2390 MHz.¹³⁶

(...continued from previous page)

than 1 MHz, the emissions must be attenuated below the mean power of the transmitter (pY) as follows: (1) On a frequency removed from the assigned frequency by more than 100 percent of the authorized bandwidth up to and including 100 percent plus 0.5 MHz, the attenuation must be at least 60 dB, when measured in a 3.0 kHz bandwidth. This signal need not be attenuated more than 25 dB below 1 milliwatt. (2) On any frequency removed from the assigned frequency by more than 100 percent of the authorized bandwidth plus 0.5 MHz, the attenuation must be at least $55 + 10 \log(pY)$ dB, when measured in a 3.0 kHz bandwidth. b. For Authorized Bandwidth greater than 1 MHz, the emissions must be attenuated below the mean power of the transmitter (pY) as follows: (1) On a frequency removed from the assigned frequency by more than 50 percent of the authorized bandwidth plus 0.5 MHz up to and including 50 percent of the authorized bandwidth plus 1.0 MHz, the attenuation must be at least 60 dB, when measured in a 3.0 kHz bandwidth. This signal need not be attenuated more than 25 dB below 1 milliwatt.

(2) On any frequency removed from the assigned frequency by more than 50 percent of the authorized bandwidth plus 1.0 MHz, the attenuation must be at least $55 + 10 \log(pY)$ dB, when measured in a 3.0 kHz bandwidth. See *NTIA Manual*, Section 5.2.2.1 (Location of Specific Standards) and Section 5.3.7 (Telemetry, Terrestrial (1435-1535, 2200-2290 and 2310-2390 MHz Bands)).

¹³³ An aeronautical station is a land station in the aeronautical mobile service. In certain instances, an aeronautical station may be located, for example, on board ship or on a platform at sea. See 47 C.F.R. § 2.1.

¹³⁴ An aircraft station is a mobile station in the aeronautical mobile service, other than a survival craft station, located on board an aircraft. *Id.*

¹³⁵ See 47 C.F.R. § 87.303(d)(1); see also Appendix A for the proposed revision to this section.

¹³⁶ See 47 C.F.R. § 2.106, column 6 for the band 2385-2390 MHz.

63. Nearly seven years after the Commission made the band 2390-2400 MHz available for unlicensed use, there is still no equipment authorized or anticipated for this band. In order to remove possible sources of harmful interference to primary radiocommunication services in the 2390-2395 MHz segment, we propose to no longer make the band 2390-2400 MHz available for unlicensed PCS use.¹³⁷ Specifically, we propose to revise Part 15 of our Rules by deleting the band 2390-2400 MHz from various technical rules that apply to asynchronous devices, *i.e.*, Sections 15.301 (Scope); 15.303(a), (g), and (i) (Definitions); 15.319(a) (General technical requirements); and 15.321(a), (b), and (g) (Specific requirements for asynchronous devices operating in the 2390-2400 MHz band).

IV. PROCEDURAL MATTERS

A. Initial Regulatory Flexibility Analysis

64. 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 B. 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 *Fourth Notice of Proposed Rule Making* ("4th NPRM") provided below in Section IV.C. Comments must have a separate and distinct heading designating them as responses to the IRFA.

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

65. 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).

C. Comments

66. 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 **[60 days from date of publication in the Federal Register]**, and reply comments on or before **[90 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).

67. 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

¹³⁷ If adopted, this proposal would moot that portion of WINForum's Petition for Rulemaking that deals with the band 2390-2400 MHz. *See* para. 5, *supra*.

or rulemaking number appear in the caption of this proceeding, commenters must submit two additional copies for each additional docket or rulemaking number.

68. 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, Vistrionix, 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.

D. Contact Person

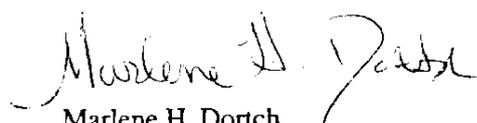
69. For further information concerning this rule making proceeding contact Tom Mooring at (202) 418-2450, tmoothing@fcc.gov, Office of Engineering and Technology.

V. ORDERING CLAUSES

70. 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, 332, 334, and 336 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, 332, 334, and 336, the FOURTH NOTICE OF PROPOSED RULEMAKING is hereby ADOPTED.

71. IT IS FURTHER ORDERED that the Commission's Consumer Information and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this FOURTH NOTICE OF PROPOSED RULEMAKING, including the Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION



Marlene H. Dortch
Secretary