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

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| In the Matter of |) | |
| |) | |
| Revisions to Rules Authorizing the Operation of |) | WT Docket No. 08-166 |
| Low Power Auxiliary Stations in the 698-806 |) | |
| MHz Band |) | |
| |) | |
| Public Interest Spectrum Coalition, Petition for |) | WT Docket No. 08-167 |
| Rulemaking Regarding Low Power Auxiliary |) | |
| Stations, Including Wireless Microphones, and the |) | |
| Digital Television Transition |) | |
| |) | |
| Amendment of Parts 15, 74 and 90 of the |) | ET Docket No. <u>10-24</u> |
| Commission's Rules Regarding Low Power |) | |
| Auxiliary Stations, Including Wireless |) | |
| Microphones |) | |

REPORT AND ORDER AND FURTHER NOTICE OF PROPOSED RULEMAKING

Adopted: January 14, 2010

Released: January 15, 2010

By the Commission: Chairman Genachowski issuing a statement.

Comment Date: [30 days after publication in the Federal Register]

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I. INTRODUCTION

1. In this Report and Order and Further Notice of Proposed Rulemaking, we take action to ensure that public safety and commercial licensees can operate in the 700 MHz Band without interference, while providing entities currently operating wireless microphones in the band with an opportunity to relocate to other bands. In particular, we ensure that these devices are cleared from the 700 MHz Band no later than June 12, 2010, consistent with the Commission's long-standing goal of making this spectrum fully available for use by public safety and commercial licensees, and the customers that they serve in the band. We also authorize, for the first time, the use of wireless microphones, on an unlicensed basis, by entities not currently eligible to obtain licenses. We do this by waiver based on our longstanding unlicensed device rules, which have proved highly successful in permitting the use of low-power wireless devices. In addition, we adopt a number of safeguards designed to ensure both that consumers understand their rights and obligations in operating wireless microphones and that wireless microphones are operated in compliance with our rules and policies. Finally, in the Further Notice we seek to refine and update our rules governing the use of wireless microphones, seeking comment on a range of issues concerning the operation of these devices in the core TV bands.

2. More specifically, in this Report and Order, we adopt the following requirements:

- We prohibit the manufacture, import, sale, lease, offer for sale or lease, or shipment of wireless microphones and other low power auxiliary stations intended for use in the 700 MHz Band in the United States, effective upon the publication of the rules in the Federal Register, and adopt related marketing and other requirements.
- We require that all low power auxiliary stations, including wireless microphones,¹ cease operations in the 700 MHz Band no later than June 12, 2010, one year from the end of the DTV transition.²

¹ Low power auxiliary stations are intended to transmit over distances of approximately 100 meters for uses such as wireless microphones, cue and control communications, and synchronization of TV camera signals. 47 C.F.R. § 74.801. As a general matter, in this item the term "low power auxiliary station" is intended to include devices operated by licensees under Part 74, Subpart H of our rules as well as by users without such authorization.

² The DTV transition ended on June 12, 2009. In the DTV Delay Act, enacted on February 11, 2009, Congress extended the DTV transition deadline from February 17, 2009, to June 12, 2009. DTV Delay Act, Pub. L. No. 111-4, 123 Stat. 112 (2009) ("DTV Delay Act"). The Digital Television Transition and Public Safety Act of 2005 (continued....)

- We provide for an early clearing mechanism that, to the extent that a public safety or commercial licensee will be initiating operations in the 700 MHz Band on specified frequencies and particular markets before June 12, 2010, permits a licensee to require users of low power auxiliary stations, including wireless microphones, to cease operations 60 days after notice.
- We stress that the operations of low power auxiliary stations, including wireless microphones, in the 700 MHz Band must cease immediately if at any time users of these devices cause harmful interference to a 700 MHz public safety or commercial licensee.
- With respect to unauthorized operations of wireless microphones and other low power auxiliary stations, we waive our Part 15 rules for a limited period to permit unauthorized users of wireless microphones and other low power auxiliary stations to operate on an unlicensed basis under Part 15 pursuant to certain specified technical requirements -- in the 700 MHz Band until June 12, 2010, and in the core "TV bands"³ until the effective date of the Commission's actions in response to the Further Notice.

3. In addition, in this Report and Order we take various actions to ensure that consumers are better informed about our rules and policies concerning wireless microphones, which should facilitate compliance with those rules:

- We establish disclosure requirements to make certain that buyers of wireless microphone equipment understand the limitations on their use of such equipment. For instance, manufacturers, dealers, distributors, and other entities that sell or lease these devices will have to display a consumer disclosure at the point of sale or lease informing consumers of the conditions that apply to the operation of wireless microphones in the core TV bands.
- As part of our consumer outreach plan, we will release consumer publications, including a Consumer Fact Sheet, that inform the public of our decisions in this Report and Order and of the need to clear the 700 MHz Band so that the spectrum can be used for the provision of new public safety and commercial services.
- We will work with organizations whose memberships include wireless microphone users so that they help us inform all affected users of our decisions in this Report and Order, particularly the need to clear the 700 MHz Band.
- We will assist consumers, including those who have previously purchased wireless microphones that operate in the 700 MHz Band, by posting information on our website and by making information available from the Commission's consumer service representatives through a toll-free number at our call center.
- We will make available via our website and our call center information regarding which wireless microphones are 700 MHz wireless microphones, what options may be available if consumers do have 700 MHz microphones, and how to contact wireless microphone manufacturers to obtain additional information. Information concerning our decision today will be posted on our website at www.fcc.gov/cgb/wirelessmicrophones.

4. Finally, in the Further Notice, we take the following actions:

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("DTV Act") previously had set February 17, 2009, as the end of the DTV transition. *See* Deficit Reduction Act of 2005, Pub. L. No. 109-171, 120 Stat. 4 (2006) ("DRA"). Title III of the DRA is the DTV Act.

³ For purposes of this order, the "core TV bands" consist of TV channels 2-51, excluding channel 37.

- We propose to revise our rules to provide that low power wireless audio devices, including wireless microphones, may be operated as unlicensed devices under Part 15 of the rules in the core TV bands.
- We propose technical rules to apply to low power wireless audio devices, including wireless microphones, operating in the core TV bands on an unlicensed basis under Part 15 of the rules.
- We seek comment on whether, and to what extent, eligibility for obtaining licenses to operate low power auxiliary stations, including wireless microphones, under Part 74 should be expanded, and on whether we should revise Part 90 to facilitate wireless microphone use.
- We seek comment on possible longer-term approaches for the operation of wireless microphones. Consistent with our broader efforts to manage this country's spectrum resources as effectively and efficiently as possible,⁴ we here seek comment on possible long-term reform, based in part on technological innovation such as digital technology, that would enable wireless microphones to operate more efficiently and with improved immunity to harmful interference, thereby increasing the availability of spectrum for wireless microphone and other uses.

II. BACKGROUND

5. *DTV Transition.* In 2006, the DTV Act set a firm deadline for the end of the DTV transition of February 17, 2009, at which time the spectrum in the 700 MHz Band, occupied by television broadcasters in TV Channels 52-69, would become available for wireless services, including public safety and commercial services.⁵ The DTV Act accelerated the deadline for the transition and consequently eliminated uncertainty regarding when 700 MHz Band spectrum would be available for such wireless services. On February 11, 2009, with enactment of the DTV Delay Act, the DTV transition deadline was extended from February 17, 2009, to June 12, 2009.⁶

6. With the completion of the DTV transition on June 12, 2009, only spectrum occupied by Channels 2-51 (excluding channel 37) -- the "core" TV broadcast spectrum ("TV bands") -- is needed for broadcast television service.⁷ In turn, the 700 MHz Band, which is comprised of spectrum above TV

⁴ See *infra* Section IV.A.4.; A National Broadband Plan for Our Future, GN Docket No. 09-51, *Notice of Inquiry*, 24 FCC Rcd 4342 (2009) ("*National Broadband Plan NOP*"); Data Sought on Uses of Spectrum, NBP Public Notice # 26, GN Docket Nos. 09-47, 09-51, and 09-137, *Public Notice*, DA 09-2518 (Dec. 2, 2009) ("*NBP Public Notice #26*").

⁵ See DTV Act, § 3002.

⁶ See DTV Delay Act, § 2.

⁷ See Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, WT Docket No. 06-150, Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, CC Docket No. 94-102, Section 68.4(a) of the Commission's Rules Governing Hearing Aid-Compatible Telephones, WT Docket No. 01-309, *Notice of Proposed Rule Making, Fourth Further Notice of Proposed Rule Making, and Second Further Notice of Proposed Rule Making*, 21 FCC Rcd 9345, 9348 ¶ 4 (2006) (*700 MHz Commercial Services Notice*); see also Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, WT Docket No. 06-150, Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, CC Docket No. 94-102, Section 68.4(a) of the Commission's Rules Governing Hearing Aid-Compatible Telephones, WT Docket No. 01-309, Biennial Regulatory Review – Amendment of Parts 1, 22, 24, 27, and 90 to Streamline and Harmonize Various Rules Affecting Wireless Radio Services, WT Docket 03-264, Former Nextel Communications, Inc. Upper 700 MHz Guard Band Licenses and Revisions to Part 27 of the Commission's Rules, WT Docket No. 06-169, Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band, PS Docket No. 06-229, Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local (continued....)

Channel 51, is now available on a primary basis for new public safety and other wireless services.⁸ Accordingly, now that the DTV transition has been completed, all analog television service by full power TV stations has terminated and temporary DTV assignments on Channels 52-69 have been relocated into the core TV channels so that new wireless licensees will be able to provide unencumbered services in the 698-806 MHz Band.⁹ In adopting rules for the 700 MHz spectrum, our goals included promoting commercial access to that spectrum and the development of a nationwide, interoperable broadband network for public safety users.¹⁰ The Commission stated that “[i]t is incumbent . . . to take all the steps necessary to make . . . [the 700 MHz] spectrum effectively available to both public safety as well as commercial licensees.”¹¹

7. The Commission has auctioned licenses for commercial services in the 700 MHz Band and has issued a nationwide license for the broadband portion of the public safety spectrum in this band.¹² In addition, a number of public safety entities have authority to operate in the narrowband public safety spectrum.¹³ We also continue to consider matters relating to the upper portions of the 700 MHz Band and

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Public Safety Communications Requirements Through the Year 2010, WT Docket No. 96-86, *Report and Order and Further Notice of Proposed Rulemaking*, 22 FCC Rcd 8064, 8069-70 ¶ 14 (2007) (*700 MHz First Report and Order*).

⁸ See *700 MHz Commercial Services Notice*, 21 FCC Rcd at 9348 ¶ 4; see also *Service Rules for the 698-746, 747-762 and 777-792 MHz Bands*, WT Docket No. 06-150, *Revision of the Commission’s Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems*, CC Docket No. 94-102, Section 68.4(a) of the Commission’s Rules Governing Hearing Aid-Compatible Telephones, WT Docket No. 01-309, *Biennial Regulatory Review – Amendment of Parts 1, 22, 24, 27, and 90 to Streamline and Harmonize Various Rules Affecting Wireless Radio Services*, WT Docket 03-264, *Former Nextel Communications, Inc. Upper 700 MHz Guard Band Licenses and Revisions to Part 27 of the Commission’s Rules*, WT Docket No. 06-169, *Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band*, PS Docket No. 06-229, *Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Communications Requirements Through the Year 2010*, WT Docket No. 96-86, *Declaratory Ruling on Reporting Requirement Under Commission’s Part 1 Anti-Collusion Rule*, WT Docket No. 07-166, *Second Report and Order*, 22 FCC Rcd 15289, 15291 ¶ 1 (2007) (*700 MHz Second Report and Order*).

⁹ *700 MHz First Report and Order*, 22 FCC Rcd at 8066 ¶ 1. The DTV Delay Act afforded the Commission discretion to allow broadcasters to complete their transitions prior to June 12, 2009, subject to such rules as the Commission finds necessary or appropriate. See *Implementation of the DTV Delay Act*, MB Docket No. 09-17, *Second Report and Order and Notice of Proposed Rulemaking*, 24 FCC Rcd 2526, 2527 ¶ 1 (2009).

¹⁰ See *700 MHz Second Report and Order*, 22 FCC Rcd at 15292 ¶ 3.

¹¹ *700 MHz First Report and Order*, 22 FCC Rcd at 8066 ¶ 2.

¹² See *Auction of 700 MHz Band Licenses Closes, Winning Bidders Announced for Auction 73*, *Public Notice*, 23 FCC Rcd 4572 (2008). Prior to Auction 73, other licenses in the 700 MHz Band were auctioned. See, e.g., *Lower 700 MHz Band Auction Closes*, *Public Notice*, 17 FCC Rcd 17272 (2002); *Lower 700 MHz Band Auction Closes*, *Public Notice*, 18 FCC Rcd 11873 (2003); *Auction of Lower 700 MHz Band Licenses Closes*, *Public Notice*, 20 FCC Rcd 13424 (2005). See also *Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band*, PS Docket No. 06-229, *Order*, 22 FCC Rcd 20453 (2007).

¹³ See, e.g., *Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band*, PS Docket No. 06-229, *Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Communications Requirements Through the Year 2010*, WT Docket No. 96-86, *Order*, 22 FCC Rcd 20290 (2007) (granting a waiver to the Commonwealth of Virginia to allow continued deployment outside of the consolidated narrowband channels); *Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band*, PS Docket No. 06-229, *Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Communications Requirements Through the Year 2010*, *Request for Waiver of Pierce Transit*, WT Docket No. 96-86, *Order*, 23 FCC Rcd 433 (PSHSB 2008).

the appropriate means for promoting the rapid construction and deployment of a nationwide, interoperable broadband public safety network that would serve public safety and homeland security needs.¹⁴

8. *Low Power Auxiliary Service under Part 74 Subpart H of the Rules.* Over the years, the Commission has licensed broadcast low power auxiliary stations on various spectrum bands.¹⁵ Under existing rules, devices that may be authorized as low power auxiliary stations are intended for such uses as wireless microphones, cue and control communications, and synchronization of TV camera signals.¹⁶ Where authorized, these devices currently may operate on a secondary basis in spectrum that historically has comprised a total of more than 400 megahertz in twelve frequency bands. The 700 MHz Band falls within the 698-806 MHz portion of one of the twelve bands: the 614-806 MHz band (Channels 38-69).¹⁷

9. Subpart H of Part 74 of our rules governs “low power auxiliary stations” generally.¹⁸ As set forth in Section 74.801 of our rules, devices authorized as low power auxiliary stations are “intended to transmit over distances of approximately 100 meters.”¹⁹ Section 74.803 states that low power auxiliary station usage in the UHF-TV spectrum – which comprises Channels 14-69, including spectrum in the 700 MHz Band (Channels 52-69) – is “secondary to TV broadcasting and land mobile stations . . . and must not cause harmful interference” to such operations.²⁰ Section 74.861, which relates to the technical requirements for low power auxiliary stations,²¹ provides that the maximum permitted output power for

¹⁴ See Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, WT Docket No. 06-150, Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band, PS Docket No. 06-229, *Third Further Notice of Proposed Rulemaking*, 23 FCC Rcd 14301 (2008).

¹⁵ See 47 C.F.R. § 74.802(a).

¹⁶ *Id.* §§ 74.801, 74.831. Low power auxiliary stations authorized under Part 74 typically are used in conjunction with Broadcast Auxiliary Service (BAS) stations. 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, Telecommunications Industry Association, Petition for Rule Making Regarding Digital Modulation for the Television Broadcast Auxiliary Service, RM-9418, Alliance of Motion Picture and Television Producers, Petition for Rule Making Regarding Low-Power Video Assist Devices in Portions of the UHF and VHF Television Bands, RM-9856, *Report and Order*, 17 FCC Rcd 22979, 23011 n.159 (2002) (*BAS Report and Order*). As noted in the *TV White Spaces Second Report and Order*, low power auxiliary stations can include electronic news gathering crews and other media that operate on an itinerant basis. See Unlicensed Operation in the TV Broadcast Bands, ET Docket No. 04-186, Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band, ET Docket No. 02-380, *Second Report and Order and Memorandum Opinion and Order*, 23 FCC Rcd 16807, 16862 ¶ 157 (2008) (*TV White Spaces Second Report and Order*) *recons. pending*.

¹⁷ See 47 C.F.R. § 74.802(a). Seven of these frequency bands encompass all of the VHF and UHF broadcast television spectrum (except for Channel 37). Those bands are: 54-72 MHz; 76-88 MHz; 174-216 MHz; 470-488 MHz; 488-494 MHz (except in Hawaii); 494-608 MHz; and 614-806 MHz. The five other frequency bands are: (1) 26.100-26.480 MHz (spectrum for land mobile, broadcast, maritime, and remote pickup broadcast); (2) 161.625-161.775 MHz (except in Puerto Rico or the Virgin Islands) (spectrum for land mobile and remote pickup broadcast); (3 & 4) 450-451 MHz and 455-456 MHz (spectrum for land mobile and remote pickup broadcast); and (5) 944-952 MHz (spectrum for aural broadcast auxiliary stations, public mobile, and fixed microwave). *Id.*

¹⁸ Part 74 also contains rules of general applicability to all services under the Subparts of Part 74, including Subpart H, as described therein. See 47 C.F.R. § 74.1.

¹⁹ 47 C.F.R. § 74.801.

²⁰ *Id.* § 74.803(b).

²¹ *Id.* § 74.861.

low power auxiliary stations in the 614-806 MHz band is 250 milliwatts (mW).²² That rule also states that such stations “shall be operated so that no harmful interference is caused to any other class of station operating in accordance with the Commission’s rules and regulations and with the Table of Frequency Allocations.”²³ In addition, Section 2.106, Footnote NG115 of the Table of Frequency Allocations provides that these frequencies may be used for wireless microphones and wireless video assist devices on a non-interference basis, subject to the terms and conditions set forth in Part 74.²⁴

10. Under Section 74.832, only certain entities may be issued licenses authorizing the use of low power auxiliary stations. In particular, these entities fall within the following categories: (1) licensees of AM, FM, TV, or International broadcast stations or low power TV stations; (2) broadcast network entities; (3) certain cable television system operators; (4) motion picture and television program producers as defined in the rules; and (5) certain entities with specified interests in Broadband Radio Service (BRS) and Educational Broadcast Service (EBS) licenses, *i.e.*, BRS licensees (formerly licensees and conditional licensees of stations in the Multipoint Distribution Service and Multi-channel Multipoint Distribution Service), or entities that hold an executed lease agreement with a BRS licensee or conditional licensee or entities that hold an executed lease agreement with an Educational Broadcast Service (formerly Instructional Television Fixed Service) licensee or permittee.²⁵ Cable television operations, motion picture and television program producers may be authorized to operate low power auxiliary stations only in the bands allowed for TV broadcasting.²⁶ All classes of broadcast auxiliary stations provided for in Subpart H, except wireless video assist devices (WVADs), may be operated on a short-term basis under the authority conveyed by a Part 73 license or a broadcast auxiliary license without prior authorization, subject to conditions.²⁷

11. A number of low power auxiliary station licensees have been authorized to operate on the 700 MHz Band. Our records reflect that of the 958 active low power auxiliary station licenses, 153 include the authority to operate in the 700 MHz Band. Of these 153 licenses, two authorize operation only at certain frequencies in the 700 MHz Band. Licensees also determine the geographic scope of their licenses. Some licenses authorize operation on a nationwide basis, or on a statewide basis. The geographic scope of some licenses is not mappable.²⁸ For many licenses, the geographic scope is based on specific geographic coordinates using a “radius around centerpoint” definition that ranges from 1 kilometer to 322 kilometers.²⁹ As the record indicates, a single licensee may operate multiple

²² *Id.* § 74.861(e)(1)(ii).

²³ *Id.* § 74.861(g). Additionally, the licensee of any Part 74 station that causes harmful interference to radio communications involving safety of life or protection of property is required to promptly eliminate the interference. *Id.* § 74.23(a). If the harmful interference described in Section 74.23(a) of the Rules cannot be promptly eliminated, “the operation of the offending equipment shall temporarily be suspended and shall not be resumed until the harmful interference has been eliminated or the threat to the safety of life or property has passed.” *Id.* § 74.23(b).

²⁴ *Id.* § 2.106 NG115.

²⁵ *See id.* § 74.832(a)(1)-(6).

²⁶ *Id.* § 74.832(d).

²⁷ *Id.* § 74.24.

²⁸ Some licenses are not “mappable” because the description provided is not easily or readily translated to a particular geographic area. *See* Revisions to Rules Authorizing the Operation of Low Power Auxiliary Stations in the 698-806 MHz Band, WT Docket No. 08-166, Public Interest Spectrum Coalition, Petition for Rulemaking Regarding Low Power Auxiliary Stations, Including Wireless Microphones, and the Digital Television Transition, WT Docket No. 08-167, *Notice of Proposed Rulemaking and Order*, 23 FCC Rcd 13106, 13109 ¶ 7 & n.19 (2008) (*Notice and Order*, respectively).

microphones.³⁰

12. As a general matter, wireless microphones operate in a relatively narrow bandwidth and may choose a frequency from multiple vacant channels available for operation.³¹ Many wireless microphones are used “regularly and predictably, such as at major sporting events facilities, movie studio lots, and television studios.”³² The nature of wireless microphones and their use is such that they operate for relatively short periods of time at various times (which may, however, sometimes be frequent and scheduled), and “the specific frequencies they use for operation often change from time to time, even at locations such as major event venues.”³³

13. *Wireless Microphone Use under Part 90 and Part 15 of Our Rules.* In addition to authorization under Part 74, wireless microphone use may be authorized on a licensed basis under Part 90 of our rules and on an unlicensed basis under Part 15 of our rules. Under Part 90, entities eligible for an Industrial/Business Pool license may operate a low power wireless microphone on certain frequencies between 169.445 and 171.905 MHz. Eligible entities are those engaged in (i) operation of a commercial activity, (ii) operation of educational, philanthropic or ecclesiastical institutions, (iii) clergy activities, or (iv) operation of hospitals, clinics or medical associations.³⁴ The output power of Part 90 wireless microphones may not exceed 50 milliwatts,³⁵ and the wireless microphone licensees are “unprotected from interference from other licensed operations in the band.”³⁶ In addition, “[i]f any interference from wireless microphone operation is received by any Government or non-Government operation, the wireless microphone must cease operation on the frequency involved.”³⁷ There also are unlicensed wireless microphone uses under Part 15 of our rules. Sennheiser notes that unlicensed wireless microphone products are available in the 49 MHz, 902-928 MHz, and 2.4 GHz bands but states that they are generally unsuited to professional applications.³⁸

14. *Notice of Proposed Rulemaking (Notice) and the 700 MHz Freeze Order (Order).* In the *Notice* adopted in August 2008, the Commission sought comment on a number of matters relating to the operation of broadcast low power auxiliary stations in the 700 MHz Band. First, the Commission
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²⁹ Licenses with a radius around centerpoint have an area of operation defined by a set of geographic coordinates (latitude and longitude) which define the center point of the area of operation and a radius that extends out from that center point. *Notice*, 23 FCC Rcd at 13110 ¶ 7 & n.20. The two licenses that are authorized to operate only at frequencies in the 700 MHz Band are licensed on the “radius around centerpoint” basis.

³⁰ Audio-Technica in its Comments states that “[a] single wireless microphone system generally consists of as many as 8-10 microphones, although for large event productions the number of microphones could be in excess of 40.” Audio-Technica Comments at 18. In addition, a single licensee “may operate any number of wireless microphone systems.” *Id.* at 19.

³¹ See *TV White Spaces Second Report and Order*, 23 FCC Rcd at 16843, 16844 ¶¶ 93, 95.

³² *Id.* at 16883 ¶ 220.

³³ *Id.* at 16876 ¶ 197.

³⁴ 47 C.F.R. § 90.35(a).

³⁵ *Id.* § 90.265(b)(2).

³⁶ *Id.* § 90.265(b)(4).

³⁷ *Id.*

³⁸ See Sennheiser Comments at 8. Sennheiser states that “[t]he low available power and high interference levels” make these wireless microphones unreliable, while “the narrow bandwidth of most units impairs audio quality.” *Id.*; see also Shure Reply Comments at 11-12 (Part 15 spectrum bands are heavily occupied by “a wide variety of incompatible devices that would interfere with wireless microphones, notably Wi-Fi and Bluetooth”).

tentatively concluded to amend our rules to make clear that the operation of low power auxiliary stations within the 700 MHz Band would no longer be permitted after the end of the DTV transition because such operations could cause interference to new public safety and commercial wireless services in the band.³⁹ The Commission also tentatively concluded to prohibit the manufacture, import, sale, offer for sale, or shipment of devices that operate as low power auxiliary stations in the 700 MHz Band, effective after publication of the revised rules in the Federal Register.⁴⁰ For those licensees that have obtained authorizations to operate low power auxiliary stations in spectrum that includes the 700 MHz Band beyond the end of the DTV transition, the Commission tentatively concluded to modify these licenses so as not to permit such operations in the 700 MHz Band after the end of the DTV transition which, at that time, was February 17, 2009.

15. The Commission also sought comment on issues raised by PISC in its informal complaint and petition for rulemaking.⁴¹ Specifically, PISC requested that the Commission: (1) “[b]egin an investigation against Shure, Inc., and the other manufacturers” listed in its informal complaint, “for willfully and knowingly marketing and selling wireless microphones to unauthorized users for ineligible purposes in violation of Part 74, Subpart H, and for engaging in deceptive advertising practices designed to persuade ineligible users such as houses of worship, theaters, corporate event venues, and members of the general public” that they could “legally purchase and operate wireless microphones operating on vacant broadcast UHF Channels without a license and for purposes prohibited by the Commission;” (2) “[g]rant a general amnesty to all unauthorized users of wireless microphones deceived by the illegal and deceptive marketing of manufacturers, permit use of the illegal equipment on a going forward basis until the Commission authorizes” the new General Wireless Microphone Service (GWMS) proposed by PISC, and require those manufacturers that “engaged in illegal marketing to migrate the unauthorized users of Part 74, Subpart H equipment to the new GWMS by replacing equipment authorized for Part 74, Subpart H;” (3) “[i]mmediately reclassify all licensed wireless microphone systems operating pursuant to Part 74, Subpart H as secondary” to all commercial and public safety wireless systems “authorized to operate on television Channels 52-69 following the shut off of analog television transmission;” (4) “[o]rder that manufacture, sale, and advertisement for sale of wireless microphone systems operating on channels 52-69 cease immediately;” and (5) “[c]reate a new ‘General Wireless Microphone Service’ . . . licensed by rule pursuant to Section 307(e) to operate on vacant broadcast UHF channels below Channel 52 on a secondary basis to broadcast licensees and individually licensed wireless microphone systems,” and authorized “on a primary basis to operate on the 2020-[20]25 Band currently authorized for broadcast auxiliary service (BAS) and under consideration for reallocation in Docket Nos. WT 07-195, WT 04-356 (“AWS-2/AWS-3 Proceeding”).”⁴²

16. The Commission included, in conjunction with the *Notice*, an *Order* that imposed a freeze, effective August 21, 2008, on the filing of new license applications that seek to operate on any 700 MHz Band frequencies after the end of the DTV transition.⁴³ In the *Order*, the Commission also imposed a freeze on granting any request for equipment authorization of low power auxiliary stations that would operate in any of the 700 MHz Band frequencies. In addition, the Commission held in abeyance, until the

³⁹ *Notice*, 23 FCC Rcd at 13113 ¶ 14.

⁴⁰ *Id.* at 13114 ¶ 17.

⁴¹ *See Id.* at 13114-15 ¶¶ 20-22; *see also* Complaint of Public Interest Spectrum Coalition (PISC) Against Shure, Inc., Nady Systems, Inc., VocoPro, Audio2000, Sennheiser Electronic Corporation, Audix Microphones, Electro Voice, Hisonic International, Inc., Pyle Audio, *et al.*; Petition To Create a General Wireless Microphone Service (GWMS), *Informal Complaint and Petition for Rulemaking* (filed July 16, 2008) (“PISC Petition” or “Petition”).

⁴² PISC Petition at i-ii.

⁴³ *See Order*, 23 FCC Rcd at 13115-16 ¶¶ 23-24.

conclusion of this proceeding, any pending license applications and equipment authorization requests that involve operation of low power auxiliary stations on frequencies in the 700 MHz Band after the end of the DTV transition.

17. The deadline for comments on the *Notice* was October 3, 2008, and the deadline for reply comments was October 20, 2008. Both of these dates preceded the Commission's adoption of the *TV White Spaces Second Report and Order* (discussed below) and the enactment of the DTV Delay Act that extended the DTV transition deadline from February 17, 2009, to June 12, 2009. Nineteen comments and 11 reply comments were filed in response to the *Notice*. A list of commenters and reply commenters can be found in Appendix A.

18. *TV White Spaces Second Report and Order*. In the *TV White Spaces Second Report and Order* adopted on November 4, 2008, the Commission adopted rules to allow unlicensed radio transmitters to operate in the TV "white spaces," which is the broadcast television spectrum at locations where that spectrum is not being used by licensed services, provided that these unlicensed devices ("TV Band Devices") comply with various technical requirements set forth in Part 15, Subpart H.⁴⁴ In addition, the Commission afforded a number of protections to licensed wireless microphone users in the *TV White Spaces Second Report and Order*. It found that licensees using wireless microphones authorized under Part 74, which can operate at higher power limits than the unlicensed TV Band Devices, can be adequately protected under an approach that provides for registration of sites and times where such microphones are operated and where the unlicensed TV Band Devices have a spectrum sensing capacity to provide protection in addition to the registration system.⁴⁵

19. In the *TV White Spaces Second Report and Order*, the Commission also considered the need to ensure that channels remain available for use by wireless microphones authorized under Part 74. The Commission stated that it is not practical for licensed wireless microphones that operate on an itinerant basis, such as those used by electronic news gathering crews and other media activities, to register with the database.⁴⁶ Accordingly, the Commission determined that channels from 2 – 20 will be restricted to fixed unlicensed TV Band Devices and anticipated that this "will generally ensure that an adequate number of UHF channels are available for interference free operation of these important itinerant wireless microphone users."⁴⁷ In addition, in 13 major markets where certain channels between 14 and 20 are used for land mobile operations, the Commission decided to leave two channels between 21 and 51 free of new unlicensed TV Band Devices and therefore available for wireless microphone use by licensed entities.⁴⁸

⁴⁴ See *TV White Spaces Second Report and Order*, 23 FCC Rcd at 16808 ¶ 1.

⁴⁵ *Id.* at 16876 ¶ 198. Noting that some wireless microphone users licensed under Part 74 may operate anywhere in their service area and choose a frequency from multiple vacant channels available for operation, the Commission concluded that it was not practical to require that the locations of the wireless microphones employed by these users be included in the database. *Id.* at 16843 ¶ 93. In these instances, the Commission determined that spectrum sensing was "the most reasonable and appropriate approach for detecting the presence of TV band services that operate on an intermittent basis or are not in the database," and it required that all unlicensed TV band devices incorporate a spectrum sensing capability to detect unregistered wireless microphones and to use that capability in determining the available channels in their area. *Id.*

⁴⁶ See *id.* at 16862 ¶ 157.

⁴⁷ *Id.*

⁴⁸ *Id.* at 16808-09, 16862 ¶¶ 1, 157.

III. REPORT AND ORDER

20. In this Report and Order, we establish a firm deadline of June 12, 2010 (one year from the end of the DTV transition) for wireless microphones and other low power auxiliary stations to cease operation in the 700 MHz Band. We also adopt an early clearing mechanism by which 700 MHz public safety and commercial licensees can provide notice that they are initiating operations in the 700 MHz Band. The operators of wireless microphones and other low power auxiliary stations must clear the band within 60 days after such notice. In addition, we prohibit the manufacture, import, sale, lease, offer for sale or lease, or shipment of wireless microphones and other low power auxiliary stations intended for use in the 700 MHz Band.

21. With regard to users who are not eligible for, or who do not hold Part 74, Subpart H license authorizations, we waive our Part 15 rules for a limited period to permit all such users to operate on an unlicensed basis subject to a number of conditions in the 700 MHz Band until June 12, 2010 and in the core TV bands while we consider issues raised in the Further Notice. In addition, we adopt certain disclosure requirements under which manufacturers, dealers, distributors, and other entities that sell or lease these devices must display a consumer disclosure at the point of sale or lease informing consumers of the conditions that apply to the operation of wireless microphones and other low power auxiliary stations.

A. Low Power Auxiliary Station Operations in the 700 MHz Band After the End of the DTV Transition

22. **Background.** Entities licensed to operate low power auxiliary stations currently may operate those devices on a secondary basis in twelve frequency bands that are specified in our rules: (1) 26.100-26.480 MHz; (2) 54-72 MHz; (3) 76-88 MHz; (4) 161.625-161.775 MHz (except in Puerto Rico or the Virgin Islands); (5) 174-216 MHz; (6) 450-451 MHz; (7) 455-456 MHz; (8) 470-488 MHz; (9) 488-494 MHz (except in Hawaii); (10) 494-608 MHz; (11) 614-806 MHz; (12) 944-952 MHz.⁴⁹ The 700 MHz Band (698-806 MHz) falls within a portion of one of these twelve bands, the 614-806 MHz band (Channels 38-69). In the *Notice*, the Commission tentatively concluded to amend our rules to clarify that low power auxiliary stations would not be permitted to operate within the 700 MHz Band after the end of the DTV transition, and to modify existing licenses that authorize such operations in the 700 MHz Band so as not to permit their operation in that band past February 17, 2009, which at that time was scheduled to be the end of the DTV transition.⁵⁰

23. **Need to Clear the Band.** Most commenters agree that low power auxiliary stations should not be allowed to continue to operate on the 700 MHz Band indefinitely. A number of commenters, including public safety interests, commercial wireless service providers and related trade organizations, an engineering firm, an organization representing engineering interests, and a state governmental body, generally support our tentative conclusion to revise our rules to prohibit the operation of such devices in the 700 MHz Band after the end of the DTV transition.⁵¹ Groups, including wireless

⁴⁹ See 47 C.F.R. § 74.802(a).

⁵⁰ *Notice*, 23 FCC Rcd at 13113-14 ¶¶ 14-16.

⁵¹ See APCO Comments at 1-2; AT&T Reply Comments at 2; CTIA Reply Comments at 1; St. Clair Comments at 1-2; MetroPCS Comments at 2-3; Motorola Comments at 3; NPSTC Comments at 1, 4-6; State of California Comments at 1; V-COMM Comments at 1, 10; Verizon Wireless Comments at 1, 5-8; SBE Comments at 2-3; see also White Spaces Coalition Comments at 2 (supporting the determination that channels 52-69 should be fully available for public safety as well as commercial wireless services at the end of the DTV transition). As explained elsewhere in this Report and Order, WCA and PISC support the ban, but also suggest that a waiver procedure may be appropriate. WCA Comments at 1 & n.2; PISC Reply Comments at 5-7.

service providers, public safety groups, and public service organizations, in *ex parte* filings, support preventing low power auxiliary stations' operations in the 700 MHz Band.⁵²

24. A number of commenters express concern with interference from the operation of low power auxiliary stations in the 700 MHz Band.⁵³ Public safety commenters and the State of California contend that the use of low power auxiliary stations poses a danger of interference with radios used for public safety operations.⁵⁴ SBE argues, and St. Clair agrees, that there is a potential incompatibility between wireless microphone operations and the commencement of public safety communications.⁵⁵ V-COMM states that low power auxiliary stations have the potential to cause substantial harmful interference to new services operating in the 700 MHz Band.⁵⁶ V-COMM notes that low power auxiliary

⁵² See, e.g., Letter from John Marinho, Vice-President, Global Government & Public Affairs, Alcatel-Lucent, Robert M. Gurss, Director, Legal and Government Affairs, APCO, Jeanine A. Poltronieri, Executive Director, External Affairs, AT&T Services, Inc., Ronald R. Smith, Authorized LLC Representative, Bluegrass Wireless, LLC, Eric Graham, Director, Government Relations, Cellular South, Jouett Brenzel, Corporate Counsel, Cincinnati Bell Wireless, Christopher Guttman-McCabe, Vice President, Regulatory Affairs, CTIA, Mark A. Stachiw, Executive Vice President, General Counsel & Secretary, MetroPCS, Steve Sharkey, Senior Director, Regulatory & Spectrum Policy, Motorola, Dr. Brian Fontes, Executive Director, National Emergency Number Association, Harold Feld, Senior Vice President, Media Access Project on behalf of PISC, Dean R. Brenner, Vice President, Government Affairs, QUALCOMM Inc., Todd B. Lantor, Regulatory Counsel, Rural Cellular Association, Grant Spellmeyer, Director – Regulatory Affairs, U.S. Cellular, Donald C. Brittingham, Assistant Vice President – Wireless/Spectrum Policy, Verizon Wireless, to Kevin J. Martin, Chairman, Michael J. Copps, Commissioner, Jonathan S. Adelstein, Commissioner, Deborah Taylor Tate, Commissioner, Robert M. McDowell, Commissioner, FCC, *Ex Parte* in WT Docket Nos. 08-166 and 08-167 (filed Nov. 13, 2008) (“Alcatel-Lucent, et al. Nov. 13 *Ex Parte*”); see also Letter from Brian M. Josef, Director, Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in WT Docket Nos. 08-166 and 08-167 (filed Nov. 13, 2008) (“CTIA Nov. 13 *Ex Parte*”) (*ex parte* by CTIA only); Letter from Alex Curtis, Director of Policy and New Media, Public Knowledge, to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in WT Docket Nos. 08-166 and 08-167 and ET Docket No. 04-186, on behalf of PISC (filed Apr. 22, 2009) (“PISC et al. Apr. 22 *Ex Parte*”) (*ex parte* of Public Knowledge, New America Foundation, and PISC); Letter from Jef Pearlman, Equal Justice Works Fellow and Staff Attorney, to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in WT Docket Nos. 08-166 and 08-167 and ET Docket No. 04-186 (filed Apr. 15, 2009) (“Public Knowledge et al. Apr. 15 *Ex Parte*”) (also on behalf of Public Knowledge and New America Foundation urging prohibition of wireless microphones and other low power devices that operate in the 700 MHz Band); Letter from Chris Fischer, President, APCO, Christopher Guttman-McCabe, Vice President, Regulatory Affairs, CTIA, Dr. Brian Fontes, Executive Director, National Emergency Number Association (NENA), and Ralph A. Haller, Chair, NPSTC, to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in WT Docket Nos. 08-166 and 08-167 (filed Apr. 7, 2009) (“APCO et al. Apr. 7 *Ex Parte*”) at 2 (require all wireless microphones and other low power auxiliary station devices to cease operation in the 700 MHz Band); Letter from John T. Scott, Vice President & Deputy General Counsel, Regulatory Law, Verizon Wireless, to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in WT Docket Nos. 08-166 (filed Apr. 15, 2009) (“Verizon Wireless Apr. 15 *Ex Parte* meeting with Acting Chairman Copps”) at 1 (urging the Commission to clear operation of wireless microphones and other low power auxiliary station devices from the 700 MHz Band).

⁵³ See AT&T Reply Comments at 2-4; V-COMM Comments at 1-2, 5-10; Performing Arts Alliance Comments at 1-2; Verizon Wireless Comments at 3-5; MetroPCS Comments at 2-3; CTIA Reply Comments at 3-7; WCA Comments at 2-6; Letter from Christopher Guttman-McCabe, Vice President, Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in PS Docket No. 07-287, GN Docket No. 09-51, WT Docket Nos. 09-30, 08-166 and 08-167, WC Docket No. 07-52, CC Docket No. 94-102 (filed Aug. 5, 2009), Attachment: Overview of Key Public Safety & Homeland Security Regulatory Issues (“CTIA Aug. 5 *Ex Parte*”) at 11.

⁵⁴ See APCO Comments at 2; NPSTC Comments at 4-5; State of California Comments at 2.

⁵⁵ See SBE Comments at 2-3; St. Clair Comments at 1-2. Motorola adds that the wireless microphone operations are incompatible with wide area wireless networks and should be prohibited. Motorola Comments at 3.

⁵⁶ V-COMM Comments at 5. V-COMM states that it is an engineering firm specializing in providing “expertise to wireless operators and governmental agencies in system design, network engineering, implementation, network (continued....)”

stations “can operate at similar power levels as anticipated CMRS 4G devices that will be deployed and will be strong enough to desensitize mobiles and base stations within a large area,” and that 4G devices “are expected to operate at 200 milliwatts nominally which is even lower power than the . . . [low power auxiliary station] device maximum permitted levels [of 250 milliwatts].”⁵⁷ In an *ex parte* filing, V-COMM presents data showing a range of interference from wireless microphones to CMRS and public safety base stations and devices, based upon varying power levels employed by the wireless microphones, and contends that because of such harmful interference, wireless microphones, CMRS, and public safety services are not compatible and cannot co-exist in the 700 MHz Band.⁵⁸ V-COMM provides analyses of co-channel, OOBE, and intermodulation interference from low power auxiliary stations to public safety and commercial wireless systems.⁵⁹ V-COMM also points to one instance of actual measured interference related to wireless microphone operations.⁶⁰ In its *ex parte* filing, V-COMM also addresses interference from commercial and public safety operations to wireless microphone systems.⁶¹

25. Conversely, two wireless microphone manufacturers suggest that the threat of interference to new 700 MHz operations from low power auxiliary station licensees in the band after the DTV transition may be low.⁶² Shure comments that the *Notice* did not cite any instances of actual interference,⁶³ that most wireless microphones do not use the full power permitted by the rules and do not pose a serious interference threat to new wireless services, and that low power and Class A TV stations will operate in the band for a time with kilowatts, not milliwatts, of power.⁶⁴ SBE notes that commercial broadband is not necessarily in the same category as public safety in terms of interference susceptibility.⁶⁵

(Continued from previous page) _____
expansion, system performance and optimization.” *Id.* at 1.

⁵⁷ *Id.* at 5.

⁵⁸ Letter from Sean Haynberg, Director of RF Technologies, V-COMM, to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in WT Docket No. 08-166 (filed Apr. 17, 2009), Attachment: Wireless Microphone Interference Study CMRS & Public Safety in 700 MHz (“V-COMM Apr. 17 *Ex Parte*”) at 14, 15, 20. A filing by CTIA, made also on behalf of APCO and several commercial wireless service providers, notes a range in the impact area for interference from wireless microphones based on varying power levels. Letter from Christopher Guttman-McCabe, Vice President, Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in WT Docket Nos. 08-166 and 08-167 (filed Jan. 30, 2009), on behalf of CTIA, APCO, AT&T, U.S. Cellular, and Verizon Wireless, Attachments: Interference Between Mobile Radio Systems and Wireless Microphones, Interference with Mobile System Uplink, Interference with Mobile System Downlink (“CTIA et al. Jan. 30 *Ex Parte*”). V-COMM has included data of wireless microphone transmit outward power ranging from 10 milliwatts to 250 milliwatts. V-COMM Apr. 17 *Ex Parte* at 14-15. The comments of two manufacturers, Shure and Nady, suggest that most wireless microphones are designed for, or are used at, lower power levels. See Shure Reply Comments at 13 (commenting that most wireless microphones operate with 10-50 milliwatts of power); Nady Comments at 7-8 (commenting that in practice, wireless microphones’ actual output is generally only a maximum of 15 milliwatts).

⁵⁹ V-COMM Comments at 5-8.

⁶⁰ *Id.* at 8-10.

⁶¹ See V-COMM Apr. 17 *Ex Parte* at 3-13.

⁶² See Nady Comments at 7-8; Audio-Technica Comments at ii, 7-8. Audio-Technica also claims the proposal to move licensees out of the band lacks empirical support of interference threats to new operations. *Id.* at 7-10.

⁶³ See Shure Comments at 4.

⁶⁴ See Shure Reply Comments at 6.

⁶⁵ See SBE Comments at 3. SBE comments that low power auxiliary station devices operate at relatively low power levels and low field strengths, making interference to commercial broadband less likely, but also notes that it is very difficult to coordinate two disparate mobile services operating in the same spectrum and in the same area. *Id.*

26. *Timing for Clearing of the Band.* A number of commenters oppose delaying the ban on the use of low power auxiliary stations in the 700 MHz Band beyond the end of the DTV transition. In their comments, APCO and NPSTC note the importance of February 17, 2009 (formerly the date of the end of the DTV transition) as the date that additional public safety deployments may commence.⁶⁶ SBE comments that February 17, 2009, is a reasonable date for low power auxiliary stations to cease operating in the 700 MHz Band.⁶⁷ CTIA comments that interference protection, especially involving public safety, is a Commission policy goal, and comments that a delay is inappropriate and places an unnecessary burden on 700 MHz licensees.⁶⁸

27. Some commercial licensees in the 700 MHz Band assert that delaying the ban would adversely affect the ability of licensees to meet their build-out obligations. AT&T claims that, with the 700 MHz build-out requirements, any potential delay runs contrary to public policy and the Commission's goals, that 700 MHz commercial users should not have to justify interference, and that public safety users should not have to slow their deployment.⁶⁹ MetroPCS comments that a delay would negatively affect the build-out of the 700 MHz Band.⁷⁰ It also states that users of low power auxiliary stations have been well aware of the time the DTV transition was coming and that a timely implementation of the prohibition will help to clear unauthorized users from the band.⁷¹ MetroPCS further contends that a delay would constitute a *de facto* modification of licenses won in Auction No. 73.⁷² With respect to its planned use of the spectrum to deploy 4G services, Verizon Wireless has stated that "it will launch commercial service using [Long Term Evolution] technology in the 700 MHz band in 30 cities in mid-year 2010, and limited testing and operation of the technology is occurring in some markets already."⁷³

28. In an *ex parte* filing, a group of public safety organizations and CTIA state that they would prefer that all wireless microphones and other low power auxiliary stations cease operations in the 700 MHz Band coincident with the DTV transition, but they are willing to support a limited period of low power auxiliary station operations in the band, subject to two conditions.⁷⁴ They note that the Commission must act quickly to set a date certain for when the operation of such devices will cease, but

⁶⁶ See APCO Comments at 2; NPSTC Comments at 4.

⁶⁷ See SBE Comments at 3.

⁶⁸ CTIA Reply Comments at 7.

⁶⁹ See AT&T Reply Comments at 4. MetroPCS claims that allowing low power auxiliary users to operate in the 700 MHz Band would "unnecessarily and unfairly frustrate the expectations of 700 MHz bidders." MetroPCS Comments at 3; see also MetroPCS Reply Comments at 3-4 (commenting that new licensees should not have to alter their testing procedures to determine interference from low power auxiliary users when they build-out).

⁷⁰ MetroPCS Reply Comments at 2-4.

⁷¹ *Id.* at 4-5.

⁷² *Id.* at 5-6. MetroPCS also opposes arguments that considerations relating to the transition for low power television support a phase out for low power auxiliary station operations, and comments that if a delay is adopted for low power auxiliary station operation in the band then additional time should be provided for build-out by 700 MHz licensees. *Id.* at 6-8.

⁷³ Letter from Adam D. Krinsky, Counsel to Verizon Wireless, to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in WT Docket Nos. 08-166 and 08-167; ET Docket Nos. 02-380 and 04-186 (filed Sept. 16, 2009) ("Verizon Wireless Sept. 16 *Ex Parte*") at 1 (citing to Verizon Wireless Aug. 14, 2009 press release). See also Verizon Wireless Comments at 2 n.2 (commenting that it plans to begin testing in 2009 and continue with wide-scale commercial deployment in 2010).

⁷⁴ APCO et al. Apr. 7 *Ex Parte* at 2-3.

that it should not extend beyond February 18, 2010 (one year after the original DTV transition deadline), and the Commission should ensure that any public safety or commercial systems deployed prior to the deadline can operate free of interference from wireless microphones or other low power auxiliary stations.⁷⁵ In an *ex parte* filing, Verizon Wireless states that it would prefer that “wireless microphones and other devices cease operations in the 700 MHz Band at the end of the DTV transition,” but also supports the position taken by the public safety organizations and CTIA for “adoption of a limited extension but under no circumstances should continuing operations in the band extend beyond February 18, 2010.”⁷⁶ Motorola indicates support for adoption of the Commission’s tentative conclusion in the *Notice*, but also expresses support for a firm deadline for low power auxiliary stations in the 700 MHz Band to cease operation.⁷⁷

29. By contrast, a number of other commenters – particularly those who argue that there is not a significant interference concern – argue that the prohibition on operation in the 700 MHz Band should not occur until some significant time after the DTV transition (originally February 17, 2009) to allow for a reasonable transition or phase-out. Some proposals include, for example, elements reflecting the Commission’s treatment of LPTV and Class A stations, and TV translators, or some other method.⁷⁸ Shure proposes a 24-month transition period,⁷⁹ and the Professional Audio Manufacturers Alliance

⁷⁵ *Id.*

⁷⁶ See Letter from Adam D. Krinsky, Counsel to Verizon Wireless, to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in WT Docket Nos. 08-166 and 08-167 and ET Docket Nos. 02-380 and 04-186 at 2 (filed May 13, 2009) (footnote omitted) (“Verizon Wireless May 13 *Ex Parte*”); see also Letter from Adam D. Krinsky, Counsel to Verizon Wireless, to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in WT Docket Nos. 08-166 and 08-167; ET Docket Nos. 02-380 and 04-186 (filed July 27, 2009) (“Verizon Wireless July 27 *Ex Parte*”) at 1 (reiterating support for a deadline no later than February 18, 2010, which is “a compromise date first proposed by public safety and commercial wireless representatives in light of the existing and near-term deployments in the band”).

⁷⁷ See Letter from Kimberly M. Baum, Director, Spectrum and Telecommunications Regulation, Motorola, to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in WT Docket Nos. 08-166, 08-167, and 06-150, WP Docket No. 07-100, PS Docket No. 06-229, ET Docket Nos. 04-186, 02-380, and 03-201 (filed Mar. 6, 2009) (“Motorola Mar. 6 *Ex Parte*”) at 1 & n.2. Motorola expresses support for a firm deadline proposed by CTIA and other parties, and states that “an earlier deadline would be necessary in cases where a public safety or commercial licensee is already initiating service.” See *id.* at 1 (noting Letter from Steve Largent, President and CEO, CTIA, Dr. Brian Fontes, Executive Director, NENA, Chris Fischer, President, APCO, and Ralph A. Haller, Chair, NPSTC, to Michael Copps, Acting Chairman, FCC, *Ex Parte* in WT Docket Nos. 08-166 and 08-167 (filed Feb. 23, 2009) (“CTIA et al. Feb. 23 *Ex Parte*”).

⁷⁸ For example, Audio-Technica proposes that in the absence of any demonstrated incidence of harm, low power auxiliary stations should be allowed to transition out of the band on the same schedule that the Commission ultimately adopts for other users like LPTV stations. Audio-Technica Comments at 7-8. Nady calls for a gradual transition, and a “fair and equitable” sharing of frequencies by new services and the existing services currently using the frequencies, and/or relocation of existing uses to other frequencies, suggesting a procedure which involves negotiation of voluntary relocation agreements by emerging technology providers and existing users, with those parties having co-primary status during the transition. See Nady Comments at 7, 8-10. Another commenter, Thomas Smith, supports a transition period which need not run longer than a year and a half in rural areas and perhaps 3-6 months in major markets. Thomas Smith Comments at 3. Sennheiser comments that a more flexible schedule, perhaps excluding channels 63-64 and 68-69, can be adopted. Sennheiser Comments at 20.

⁷⁹ Shure opposes the Commission’s proposal and recommends that users operating in the 700 MHz Band, other than users operating in the public safety bands at 763-775 MHz and 793-805 MHz, be given a 24-month transition period. See Shure Comments at 2, 5-14; see also Letter from Catherine Wang, Counsel to Shure, to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in WT Docket Nos. 08-166 and 08-167; ET Docket No. 04-186 at 1 (filed May 28, 2009) (“Shure May 28 *Ex Parte*”) at 2 (recommending a two-year transition period).

(PAMA), an organization that includes several commenters, requests a minimum two-year transition period.⁸⁰ In its most recent filing, MSTV proposes that, at a minimum, licensed wireless microphones should be allowed to continue operating in the 700 MHz band until the earlier of: (1) notification to the licensee that wireless service will commence operations within 30 - 60 days, or (2) February 10, 2011.⁸¹ MSTV also proposes that stations cease operating wireless microphones on channels devoted to public safety (channels 63, 64, 68 and 69) earlier, if required by the Commission.⁸² In addition, MSTV has proposed that unauthorized wireless microphone operations cease by February 17, 2010, unless the user is within one of the new classes of eligible users it proposes and has applied for a Part 74 license by that date.⁸³ MSTV proposes that, for users in the newly eligible classes, “applicants will be transitioned out of the 700 MHz band under the same phase-out plan described above for existing wireless microphone licensees.”⁸⁴

30. Some commenters claim that we have not given sufficient advanced notice that wireless microphone operations would be prohibited in the band.⁸⁵ For example, Shure argues that the Commission did not propose to amend its rule until the *Notice* and that it continued to authorize equipment prior to issuance of the *Notice*.⁸⁶ Shure and another wireless microphone manufacturer, Nady,

⁸⁰ *Ex Parte* Comments of Professional Audio Manufacturers Alliance in WT Docket Nos. 08-166 and 08-167 (filed Jan. 5, 2009) (“PAMA Jan. 5, 2009 *Ex Parte* Comments”) at 6-8. PAMA states that its members include Audio-Technica, Sennheiser, and Shure. *Id.* at 1 n.2.

⁸¹ Letter from David L. Donovan, President, Maximum Service Television, to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in ET Docket Nos. 02-380 and 04-186; WT Docket Nos. 08-166 and 08-167 (filed January 5, 2010) (“MSTV Jan. 5, 2010 *Ex Parte*”) at 1.

⁸² *Id.*

⁸³ *Id.*, Attachment at 2 (recommending that the classes of users eligible to use wireless microphones in the core TV bands under Part 74 be expanded to include theaters, live music producers, government bodies, and houses of worship).

⁸⁴ *Id.* In previous filings, including comments and reply comments filed jointly with NAB, MSTV proposed a transition plan for licensed as well as currently-unauthorized wireless microphones that could extend as long as February 17, 2012. See Letter from David L. Donovan, President, Maximum Service Television, to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in WT Docket Nos. 08-166 and 08-167; ET Docket Nos. 02-380 and 04-186 (filed August 25, 2009) (“MSTV Aug. 25 *Ex Parte*”), Attachment: “A Balanced Plan for Transitioning Wireless Microphones Out of the 700 MHz Band” at 1; MSTV/NAB Comments at 2; MSTV/NAB Reply Comments at 2; Fox Television Stations Reply Comments at 1-2 (supporting MSTV/NAB). MSTV/NAB argued that its proposed phase-out is consistent with precedent, and is more conservative than the transition for LPTV stations, Class A stations, and TV translators because its proposal includes a firm end-date. See MSTV/NAB Comments at 6-7. In reply comments, MSTV/NAB proposed that the notice would specify the date on which service will begin, which date should be no sooner than 120 days before the date when the notice was sent. The licensed wireless microphone user would then be required to cease all operations in the applicable geographic area on that frequency within 60 days before the date service begins. MSTV/NAB Reply Comments at 5. Verizon Wireless argues that MSTV’s proposal for a transition period that could extend until February 17, 2012, subject to market-by-market clearing, would do away with a nationwide “date certain” for wireless microphones to vacate the 700 MHz Band and “instead would create a splintered, market-by-market transition as public safety entities and commercial wireless providers across the country are engaging in and preparing for deployments well in advance of February 2012.” Verizon Wireless July 27 *Ex Parte* at 1.

⁸⁵ See MSTV/NAB Comments at 7-9; Audio-Technica Comments at 5-7; Sennheiser Reply Comments at 3; Shure Comments at 3-5; MSTV Aug. 25 *Ex Parte*, Attachment at 2; Letter from David L. Donovan, President, Maximum Service Television, to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in ET Docket Nos. 02-380 and 04-186; WT Docket Nos. 08-166 and 08-167 (filed Sept. 5, 2009) (“MSTV Sept. 25, 2009 *Ex Parte*”) at 3.

⁸⁶ Shure Comments at 5.

rely on prior Commission decisions to argue that there must be a balanced transition process involved in relocating incumbent services.⁸⁷ Shure also argues that the Commission has allowed longer transition periods and has balanced the need for a new service to avoid disruption to users and minimize stranded investment.⁸⁸

31. Some of these commenters also claim that implementation of the prohibition should be delayed to prevent disruption. Shure alleges that “significant 700 MHz use and equipment exists and a transition will be complex, costly and disruptive.”⁸⁹ MSTV/NAB and Shure claim that unnecessary costs will be incurred to replace equipment.⁹⁰ Some commenters also assert that wireless microphone use will decrease with attrition over time,⁹¹ that no real interference is shown,⁹² and that many manufacturers have already stopped manufacturing 700 MHz equipment.⁹³ Audio-Technica and Thomas Smith note that the 700 MHz D Block has not been auctioned,⁹⁴ and they and another commenter argue that build-out by new licensees in the 700 MHz Band will be gradual.⁹⁵ In an *ex parte* filing, MSTV urges the Commission to reject proposals to “ban wireless microphones without regard to the timing of entry into the 700 MHz band by new licensees” and asserts that the Commission’s performance requirements “do not require commercial 700 MHz licensees to meet *any* buildout benchmark until February 2013.”⁹⁶

32. Some parties propose that, for a period of time following the DTV transition, the Commission should require licensees operating low power auxiliary stations to cease operations pursuant to certain notification procedures. For example, as described above, MSTV proposes that “*licensed* wireless microphones be allowed to continue operating in the 700 MHz band until the earlier of the following events: (1) notification to the station that wireless service will commence operations within 30

⁸⁷ See *id.* at 7; Shure Reply Comments at 3-5; Letter from Catherine Wang, Counsel to Shure, to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in WT Docket Nos. 08-166 and 08-167; ET Docket No. 04-186 at 1 (filed July 27, 2009) (“Shure July 27 *Ex Parte*”) at 1; Nady Comments at 8-10.

⁸⁸ See Shure Comments at 7; Shure Reply Comments at 3-5; Shure July 27 *Ex Parte* at 1; Nady Comments at 8-10.

⁸⁹ See Shure Comments at ii; see also *id.* at 7-10 (commenting that a “longer transition timeframe is critical to address a range of practical issues”). PAMA does “not oppose the eventual transition of secondary wireless microphone operations out of the 700 MHz band but does object to proposals that will cause unnecessary harm to wireless microphone manufacturers and users.” PAMA Jan. 5, 2009 *Ex Parte* Comments at 3-4 (footnote omitted).

⁹⁰ MSTV/NAB asserts that “[r]e-tuning equipment to cease operation in the 700 MHz band will cost on average \$50,000 to \$75,000 per station.” MSTV/NAB Comments at 4; see also MSTV Aug. 25 *Ex Parte*, Attachment at 2 (wireless microphones are purchased “with the expectation that they will work for three to five years”; the Commission’s Notice was not issued until August 2008, “after many existing licensees had purchased new wireless microphones”). Shure claims that “[r]eplacing dozens or hundreds of wireless audio channels with new gear can mean an average expenditure of \$50,000 to \$250,000 or more,” and also asserts that it is “aware of large users who stand to incur expenses of several million dollars in order to replace 700 MHz equipment.” Shure Comments at 8.

⁹¹ See Nady Comments at 8.

⁹² See Audio-Technica Comments at 7; Sennheiser Comments at 15-16.

⁹³ See Shure Comments at ii; Audio-Technica Comments at 5, 8-9. PAMA states that some manufacturers “ceased development in this band, yet legacy wireless still exists in the field despite action initiated 10 years ago.” PAMA Jan. 5 *Ex Parte* at 4.

⁹⁴ See Audio-Technica Comments at 9; Thomas Smith Comments at 3.

⁹⁵ See MSTV/NAB Comments at 5; Audio-Technica Comments at 9; Thomas Smith Comments at 3; see also MSTV Aug. 25 *Ex Parte* at 2 (“[t]he FCC’s performance requirements do not require commercial 700 MHz licensees to meet *any* buildout benchmark until February 2013”).

⁹⁶ MSTV Aug. 25 *Ex Parte*, Attachment at 1.

- 60 days, or (2) February 10, 2011.⁹⁷ The group of public safety organizations, together with CTIA, suggests that the Commission “establish a 60-day notification process for any public safety or commercial operations occurring prior to February 18, 2010, and require that all 700 MHz wireless microphone and other . . . [low power auxiliary station] device operations in that particular market cease within the 60-day period.”⁹⁸ CTIA subsequently clarified its position that “in the event that a 700 MHz licensee intends to operate in the band prior to the nationwide hard date for vacating the band, CTIA supports a 60-day notification to the affected low power auxiliary station licensees.”⁹⁹ Verizon Wireless notes that low power auxiliary station licensees operate on a secondary basis and must not cause harmful interference, but also states that “a 700 MHz commercial wireless licensee should notify [low power auxiliary station] licensees in a particular market if it intends to initiate operations in that market prior to the Commission-adopted nationwide deadline to cease [low power auxiliary station] operations in the 700 MHz band. [Low power auxiliary station] licensees would in turn be required to cease 700 MHz operations in that market within 60 days.”¹⁰⁰

33. *Other Arguments.* PISC and WCA argue against any delay in implementation of the ban, but suggest that a waiver procedure, if subject to certain limitations, could be appropriate. PISC argues that such waivers, which would be available only for licensed systems, would be available for good cause shown, especially where the 700 MHz licensee has not raised any objection, but that the operation of these systems under a waiver should continue for no more than the two years, and preferably less.¹⁰¹ PISC comments that any waiver must include a clear designation of the systems as secondary to the new 700 MHz licensees, and include a requirement that the low power auxiliary station licensee cease operations if the 700 MHz licensee has deployed a functioning system. In arguing that its waiver proposal should be available to licensees, PISC states that “[s]ystems operating without a license have no entitlement to protection” and “have no legal standing to demand protection.”¹⁰² WCA proposes that a waiver should be available if the licensee can demonstrate either that due to unique or unusual factual circumstances, the application of a deadline would be unduly burdensome, or that the applicant has no reasonable alternative to using the 700 MHz Band for such a short period of time.¹⁰³ WCA notes that in either case, the waiver applicant should be required to establish that none of the 700 MHz licensees will

⁹⁷ MSTV Jan. 5, 2010 *Ex Parte*. See also MSTV/NAB Reply Comments at 2 (proposing that licensed wireless microphone operations cease upon the earlier of sixty days prior to the date on which the 700 MHz licensee intends to begin service, “per a notice sent to the affected wireless microphone licensees,” or February 17, 2012); Fox Television Stations Reply Comments at 1-2 (supporting MSTV/NAB).

⁹⁸ APCO et al. Apr. 7 *Ex Parte* (filing for APCO, CTIA, NENA, and NPSTC) at 2. Earlier *ex parte* filings proposed the use of notification procedures. See CTIA et al. Jan. 30 *Ex Parte* (attachment: “Revisions to Rules Authorizing the Operation of LPAS Devices in the 700 MHz Band”); Letter from Brian M. Josef, CTIA, to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in WT Docket Nos. 08-166 and 08-167 (filed February 19, 2009) (“CTIA February 19 *Ex Parte*”) (attachment: “Revisions to Rules Authorizing the Operation of LPAS Devices in the 700 MHz Band”); see also CTIA et al. Feb. 23 *Ex Parte*.

⁹⁹ Letter from Christopher Guttman-McCabe, Vice President, Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in WT Docket Nos. 08-166 and 08-167, and ET Docket Nos. 04-186 and 02-380 (filed May 15, 2009) (“CTIA May 15 *Ex Parte*”).

¹⁰⁰ Letter from Adam D. Krinsky, Counsel to Verizon Wireless, to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in WT Docket Nos. 08-166 and 08-167 (filed Apr. 23, 2009) (“Verizon Wireless Apr. 23 *Ex Parte*”) at 1-2.

¹⁰¹ PISC Reply Comments at 6. PISC states that “[n]eedless to say, this waiver policy should apply exclusively to licensed systems.” *Id.*

¹⁰² *Id.* at 6-7.

¹⁰³ WCA Comments at 1 n.2.

be operating in the geographic area for which the waiver is sought during the duration of the waiver, or that they consent to the issuance of the waiver.

34. Several commenters also express concern about the availability of spectrum other than 700 MHz Band spectrum for wireless microphone use. For instance, some commenters, including SBE, Audio-Technica, and Shure, argue that additional spectrum outside of the 700 MHz Band should be made available for wireless microphone use.¹⁰⁴ Audio-Technica argues that the amount of broadcast spectrum available is reduced by the digital transition and operation of other entities, including low power television.¹⁰⁵ SBE contends that “the loss of a significant amount of spectrum that was formerly available” for wireless microphones will “inevitably force (and in fact already has forced) . . . [low power auxiliary station] incumbents into other bands, most especially the television broadcast channels below Channel 52, and has intensified the uses of those channels to the extent that there is insufficient spectrum for licensed [low power auxiliary station] operation going forward.”¹⁰⁶ Shure claims that “[m]ost of the spectrum in the core TV bands is occupied or unsuitable for wireless microphone operations, and the availability of ‘white space’ spectrum in the remainder of the core TV bands is threatened by the possible introduction of interfering uses.”¹⁰⁷ Sennheiser comments that “[t]here is no adequate substitute for the UHF TV-band frequencies.”¹⁰⁸ Motorola suggests that the TV White Spaces proceeding and a future proceeding could address this issue.¹⁰⁹ Thomas Smith, an individual who asserts that he has experience as a broadcast technician and has been involved with frequency coordination, comments that we should encourage greater use of the 900 MHz and 2.4 GHz Bands, although that alone would not address the issue of sufficient spectrum.¹¹⁰ SBE comments that, while more spectrum is needed for existing wireless microphone licensees, “there is ample Part 15 spectrum at 902-928 MHz and 2.4 GHz for unlicensed

¹⁰⁴ See SBE Comments at 4, 8; Audio-Technica Reply Comments at 2-3; Shure Reply Comments at ii, 4-5, 9-12. SBE argues that replacement spectrum should be provided for licensed low power auxiliary operations, and not for unlicensed operations. SBE Comments at 8. Shure and SBE do not agree with the Commission’s statement in the *Notice* that low power auxiliary stations will continue to have access to more than 300 megahertz of spectrum under the rules. See Shure Comments at 11; SBE Comments at 4. SBE argues that for some of this spectrum, the amount that will be available for low power auxiliary station device operations “will be minimal” due to distance separations required under the Commission’s rules. SBE Comments at 4-5. For other portions of the spectrum, SBE claims that there are “few, if any, options for WMs and LP Aux facilities displaced from the 700 MHz band, because . . . there are other uses that effectively preclude WM operation in these bands.” *Id.* at 5. Shure contends that “there is very little useable spectrum to support users’ wireless audio needs.” Shure Comments at 11. Shure claims that many of the spectrum bands are occupied by the primary user, many bands have long wavelengths which render those bands unsuitable for hand-held or body-worn operations, other bands are only small portions of spectrum that cannot support low power auxiliary station device operations, and some bands are subject to interference. *Id.* Shure argues that after removing the 700 MHz Band spectrum, “a total of 264 MHz remains available by rule for wireless microphone use,” but that “it is fallacious to conclude that wireless microphones have the full use of this spectrum.” *Id.*

¹⁰⁵ See Audio-Technica Comments at 6-7.

¹⁰⁶ SBE Comments at 3-4 (footnote omitted); see also *id.* at 3-6, 8-9.

¹⁰⁷ Shure Reply Comments at ii. See *id.* at 9-12; Shure Comments at ii, 11-14.

¹⁰⁸ See Sennheiser Comments at 8.

¹⁰⁹ Motorola Comments at 4-5. Motorola’s comments were filed before the *TV White Spaces Second Report and Order* was released. A subsequent Motorola proposal includes recommendations for operation of wireless microphones in the TV bands. See Letter from Steve B. Sharkey, Senior Director, Regulatory and Spectrum Policy, Motorola, to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in WT Docket 08-166 and ET Docket 04-186 (filed Aug. 6, 2009) (“Motorola Aug. 6 *Ex Parte*”), Attachment: “Motorola Recommendations on Wireless Microphones.”

¹¹⁰ Thomas Smith Comments at 6.

[wireless microphones] to be used by unlicensed, non-technical persons.”¹¹¹ Audio-Technica disagrees with the assertion that there is ample spectrum for unlicensed wireless microphones, claiming that those spectrum bands only support unlicensed operations such as cordless phones, children’s toys, and microwave ovens.¹¹² Sennheiser comments that unlicensed wireless microphones that operate in the 49 MHz, 902-928 MHz, and 2.4 GHz bands are not suitable for professional use.¹¹³ In *ex parte* filings, the Coalition of Wireless Microphone Users (“CWMU”), which includes operators of theatres, notes the reduction of available spectrum for wireless microphone use by the dedication of the 700 MHz Band for other services, and proposes to expand the list of entities eligible for a Part 74 low power auxiliary station license that would permit operation on spectrum outside of the 700 MHz Band.¹¹⁴

35. Other commenters assert that there is sufficient spectrum available in other bands for wireless microphone use. CTIA argues that allowing low power auxiliary stations to operate only on channels below Channel 52 is sufficient to accommodate wireless microphone users, where such operation is permitted, and use of additional spectrum is unnecessary.¹¹⁵ CTIA and MetroPCS refer to the Commission’s statement in the *Notice* that more than 300 megahertz of spectrum is available.¹¹⁶ CTIA concludes that users of low power auxiliary stations will therefore retain access to this amount of spectrum if the Commission prohibits operations in the 700 MHz Band.¹¹⁷ The White Spaces Coalition takes the position that the availability of 300 megahertz for licensed low power auxiliary station operations is adequate, but not if the rules are expanded to include “the large numbers of currently unauthorized wireless microphone systems.”¹¹⁸

36. Discussion. In order to make the 700 MHz Band fully available to public safety and commercial licensees, we are revising our rules to clarify that low power auxiliary stations, including wireless microphones, will no longer be allowed to operate in the 700 MHz Band except under the specified conditions, and for the limited time period, as adopted herein. Specifically, we establish a “hard” date of June 12, 2010 – one year from the date of the DTV transition¹¹⁹ – by which all operations

¹¹¹ SBE Comments at 8.

¹¹² Audio-Technica Reply Comments at 4.

¹¹³ Sennheiser Comments at 8.

¹¹⁴ See Letter from Charlotte St. Martin, Executive Director, The Broadway League, to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in WT Docket Nos. 08-166 and 08-167 (filed Feb. 13, 2009) (filed on behalf of the Coalition of Wireless Microphone Users) (“CWMU Feb. 13 *Ex Parte*”) at 2-5; see also Letter from Antoinette Cook Bush, Counsel to the Coalition of Wireless Microphone Users, to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in WT Docket Nos. 08-166 and 08-167 (filed Mar. 17, 2009) (“CWMU Mar. 17 *Ex Parte*”); Letter from Antoinette Cook Bush, Counsel to the Coalition of Wireless Microphone Users, to Marlene Dortch, Secretary, FCC, *Ex Parte* in WT Docket Nos. 08-166 and 08-167 (filed Apr. 16, 2009) (“CWMU Apr. 16 *Ex Parte*”). The African Methodist Episcopal Church (“AMEC”) has joined CWMU. Letter from Dr. Richard Allen Lewis, CFO of AMEC, to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in WT Docket Nos. 08-166 and 08-167 and ET Docket Nos. 04-186 and 02-380 (filed June 10, 2009) (“AMEC June 10 *Ex Parte*”).

¹¹⁵ CTIA Reply Comments at 8.

¹¹⁶ See *id.* at 8-9; MetroPCS Comments at 3 & n.7. In the *Notice*, the Commission notes that “[l]ow power auxiliary stations are also authorized for use in over 300 megahertz of spectrum in 11 other frequency bands ranging from 26 MHz to 950 MHz.” *Notice*, 23 FCC Rcd at 13114 n.51.

¹¹⁷ CTIA Reply Comments at 8-9 (citing *Notice*, 23 FCC Rcd at 13114 ¶ 18).

¹¹⁸ White Spaces Coalition Comments at 3-4. The Coalition also argues that other options exist for wireless microphone operations, including under Parts 15 and 90 of the Commission’s rules. *Id.* at 10-11.

¹¹⁹ See DTV Act § 3002; DTV Delay Act § 2.

of such devices by all users (including unauthorized users) must have ceased in the band. In addition, we will require that operations of these devices cease earlier than that date, pursuant to certain notification procedures, in those areas where 700 MHz public safety or commercial licensees are or will be entering and operating in the band prior to June 12, 2010. Finally, we underscore that, if at any time users of low power auxiliary stations cause harmful interference to a 700 MHz public safety or commercial licensee, those users must cease operations in the band immediately. We find that this approach best balances the interests of public safety and commercial licensees to operate without interference while providing entities currently operating low power auxiliary stations in the 700 MHz Band with a reasonable amount of time to remove their operations from the band and relocate them to other bands. In addition, we outline below our consumer outreach plan to provide users with information concerning their use of low power auxiliary station devices as they transition from the 700 MHz Band.

37. *Need to Clear the Band.* Based on the record, we find that we need to be establishing expeditious time frames and procedures for clearing wireless microphones from the 700 MHz band on our path to providing an interference-free environment for new services in the 700 MHz Band, especially public safety services that are used to protect safety of life, health, or property. We find that low power auxiliary stations could interfere with public safety and commercial base and mobile receivers. Such interference raises the potential for a disruption of vital public safety services and commercial services. As V-COMM comments, low power auxiliary stations can operate at similar power levels, and are authorized at even higher power levels (250 milliwatts), compared with the power levels at which public safety devices are expected to operate (200 milliwatts).¹²⁰ These power levels employed by the respective devices pose a significant risk of co-channel interference and would be strong enough to disrupt the operations of both public safety and commercial mobiles and base station receivers in the 700 MHz Band.¹²¹ The risk of interference also is present to commercial and public safety systems when the wireless microphones and other low power auxiliary stations are operated at lower power levels, including as low as 10 milliwatts.¹²² This risk of interference supports our determination to prohibit operation of low power auxiliary stations in the 700 MHz Band. In addition, interference from low power auxiliary stations would lead to relatively large “dead zones” around such devices, resulting in effective loss of coverage to commercial and public safety mobiles and portable devices.¹²³ We find the potential for such a result raises a significant threat of interference, which is particularly disturbing when considering that this could occur in public safety spectrum while being used to protect the safety of life, health, or property.¹²⁴ In addition, we note the potential for interference to wireless microphone and other low power auxiliary station operations by commercial and public safety operations.¹²⁵

¹²⁰ See V-COMM Comments at 5; 47 C.F.R. § 74.861(e)(1)(ii).

¹²¹ See V-COMM Comments at 5-7.

¹²² See V-COMM Apr. 17 *Ex Parte* & Attachment at 14, 15, 20; CTIA et al. Jan. 30 *Ex Parte* (Attachments: Interference with Mobile System Uplink, Interference with Mobile System Downlink).

¹²³ V-COMM Comments at 6-7.

¹²⁴ CTIA et al. Jan. 30 *Ex Parte* (Attachments: Interference Between Mobile Radio Systems and Wireless Microphones; Interference with Mobile System Uplink; Interference with Mobile System Downlink).

¹²⁵ See *id.*; V-COMM Apr. 17 *Ex Parte* at 3-13.

38. In addition to co-channel interference,¹²⁶ the record indicates that low power auxiliary stations have the potential to cause additional interference, such as adjacent band interference, due to out-of-band emissions (OOBE) and intermodulation interference caused by emissions from multiple devices.¹²⁷ These emissions and intermodulation products may potentially be strong enough to cause interference to commercial and public safety base stations and mobile devices.¹²⁸ Intermodulation interference can occur when multiple low power auxiliary station transmitters are combined or used in close proximity with each other. Thus, commercial or public safety operations can receive interference at venues where multiple low power auxiliary station transmitters are used, such as at concerts or sporting events.¹²⁹ V-COMM, for example, indicates that interference can occur in a wide variety of settings, and also discusses its own experience with co-channel interference in the 700 MHz Band caused by low power auxiliary stations.¹³⁰ This potential for interference further supports prohibiting the operation of such devices, including wireless microphones, in the 700 MHz Band.

39. Clearing the 700 MHz Band is consistent with the Commission's previous findings relating to use of the 700 MHz Band in connection with the DTV transition.¹³¹ When the Commission in 2001 adopted rules for commercial services in a portion of the 700 MHz Band, it declined to grant a request filed by SBE that the Commission "afford continued secondary status to Part 74 low power broadcast auxiliary devices (such as wireless microphones) operating in the Lower 700 MHz Band, and to establish a new service in Part 95 of our Rules to accommodate their use."¹³² The Commission observed that insofar that the "Lower 700 MHz Band will host extensive broadcast use throughout the DTV transition, it is unlikely that new licensees will rapidly occupy the band to the extent that users of the low power broadcast auxiliary devices of the type SBE discusses will have to immediately cease all operation."¹³³ Thus, it contemplated that low power broadcast auxiliary devices would be losing their secondary status and would have to vacate the band upon completion of the DTV transition in a particular local market.¹³⁴

40. In addition, the Commission in 2002 expressly excluded from the 700 MHz Band

¹²⁶ While V-COMM's analysis references co-channel interference, it actually applies to all interference which substantially falls within the pass band of the public safety or commercial receiver. We also note that in a given event there can be multiple microphones, *see* Nady Comments at 11, which can increase the likelihood of interference.

¹²⁷ *See* V-COMM Comments at 7-8.

¹²⁸ *Id.* at 7.

¹²⁹ *See id.* at 7-8.

¹³⁰ *Id.* at 8-10.

¹³¹ *See* CTIA Reply Comments at 6 & n.18, 7 (commenting that the Commission has "repeatedly prohibited the use of low power auxiliary devices at Channels 52-69 in anticipation of the DTV transition").

¹³² *See* Reallocation and Service Rules for the 698-746 MHz Spectrum Band (Television Channels 52-59), GN Docket No. 01-74, *Report and Order*, 17 FCC Rcd 1022, 1037 ¶ 33 & n.105 (2002) (footnote omitted; citing SBE Comments at 4-5, GN Docket 01-74, May 14, 2001).

¹³³ *Id.* at 1038 ¶ 33.

¹³⁴ Prior to the DTV Act, analog broadcasters were required to cease operations by December 31, 2006, but the Commission was to extend the end of this transition in certain circumstances. Extensions were to be granted at the request of broadcast licensees on a market-by-market basis if one or more of the four largest network stations or affiliates were not broadcasting in digital, if digital-to-analog converter technology was not generally available, or if 15 percent or more of television households were not receiving a digital signal. *See* 47 U.S.C. § 309(j)(14)(A)-(B) (2005).

wireless video assist devices, which are another type of Part 74, Subpart H low power auxiliary station device, because of the reallocation of TV Channels 52-69 to wireless services, including public safety services.¹³⁵ The Commission stated that “[wireless video assist devices] will not be allowed to use . . . [Channels 52-69] in the UHF-TV band due to a recent spectrum reallocation of those channels to uses other than broadcasting.”¹³⁶ Also, in 2006 the Commission determined in the TV White Spaces proceeding that the new low power, unlicensed devices under consideration there will not be permitted to operate on TV Channels 52-69.¹³⁷ The Commission stated that the spectrum “ha[s] been reallocated for services other than broadcast television and will no longer be part of the TV bands after the transition.”¹³⁸

41. We conclude that parties have had time to know, and reason to believe, that authorized low power auxiliary stations would not be allowed to operate in the 700 MHz Band at the end of the DTV transition. The DTV Act was enacted over three years ago, and the Commission, as noted above, has on various occasions indicated that the 700 MHz Band would not be a permanent home for low power auxiliary stations, including wireless microphones.¹³⁹ Further, a number of manufacturers warned their customers on their websites that, after the end of the DTV transition, frequencies in the 700 MHz Band will no longer be available for wireless microphone use under the Commission’s rules.¹⁴⁰ There has been adequate lead time for low power auxiliary station users, including wireless microphone users, and equipment manufacturers to anticipate and take measures to prepare for the reasonably anticipated consequences resulting from the end of the DTV transition, including the availability of the spectrum for public safety and other uses and the need for entities operating low power auxiliary stations to vacate the 700 MHz Band. Moreover, the need to ensure interference-free operations in the 700 MHz Band as soon as is practicable, particularly for public safety operations, compels us to act to prohibit further use of the band for these wireless microphone and other low power auxiliary station users. Nevertheless, as we discuss below, a short transition period may prevent unnecessary disruption of wireless microphone operations and allow an orderly transition to other spectrum. Our determination in this Report and Order balances the requirements of those using low power auxiliary stations in the 700 MHz Band with the needs of new 700 MHz licensees to access the spectrum in a timely fashion.

42. *Transition Date.* In order to provide current low power auxiliary station users a reasonable opportunity to remove their systems from the 700 MHz band, we find that allowing them to continue to operate in the 700 MHz Band for a limited period of time under certain conditions serves the

¹³⁵ See *BAS Report and Order*, 17 FCC Rcd at 23037 ¶ 155.

¹³⁶ *Id.* That 2002 order is the last in which the Commission adopted significant revisions to the Commission’s Part 74, Subpart H rules addressing low power auxiliary stations. See generally *BAS Report and Order*, 17 FCC Rcd 22979. In addressing petitions for reconsideration in 2003, the Commission only made minor changes to the rules governing the frequency bands that can be used by WVADs. 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, Telecommunications Industry Association, *Petition for Rule Making Regarding Digital Modulation for the Television Broadcast Auxiliary Service*, RM-9418, Alliance of Motion Picture and Television Producers, *Petition for Rule Making Regarding Low-Power Video Assist Devices in Portions of the UHF and VHF Television Bands*, RM-9856, *Memorandum Opinion and Order*, 18 FCC Rcd 21828 (2003).

¹³⁷ *Unlicensed Operation in the TV Broadcast Bands*, ET Docket No. 04-186, *Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band*, ET Docket No. 02-380, *First Report and Order and Further Notice of Proposed Rule Making*, 21 FCC Rcd 12266, 12267 ¶ 2, 12275 ¶ 21 (2006).

¹³⁸ *Id.* at 12275 ¶ 21.

¹³⁹ See *Notice*, 23 FCC Rcd at 13111-13 ¶¶ 11-12.

¹⁴⁰ *Id.* at 13112 ¶ 11 & n.40.

public interest. We find that all entities currently operating low power auxiliary stations in the 700 MHz Band must vacate the band by June 12, 2010. This deadline of June 12, 2010, coupled with the obligation to cease operations earlier pursuant to notice, as described below, strikes the best balance between the needs of public safety and commercial licensees to operate without interference in the 700 MHz Band with the concern that entities currently operating low power auxiliary station devices in the 700 MHz Band have sufficient time to remove their operations from the band and relocate them to other bands.

43. With respect to the timing for requiring that users of low power auxiliary stations cease operating in the 700 MHz Band, our revised rules provide that entities operating low power auxiliary stations may continue those operations in the 700 MHz Band as late as June 12, 2010, subject to the conditions set forth in this Report and Order. In setting June 12, 2010, as the latest possible date for these entities to transition from the 700 MHz Band under the conditions adopted in this Report and Order, we recognize that low power auxiliary station users should have a short period to transition their operations not already transitioned out of the 700 MHz Band, which should prevent unnecessary disruption of wireless microphone operations. The record supports a transition period for users of low power auxiliary stations to remove their operations out of the 700 MHz Band, but commenters differ on the length of this period.¹⁴¹

44. We find that the transition period and process that we adopt, which terminates on June 12, 2010, is a reasonable period for those parties that may need to continue to operate in the band and will ensure that this spectrum is cleared on a timely and orderly basis for use by public safety and commercial wireless services. We also find that these requirements, coupled with the notice procedures described herein, will adequately address any concerns that the operation of low power auxiliary stations in the 700 MHz Band will cause interference to public safety and commercial 700 MHz Band licensees with the end of the DTV transition.¹⁴² Although entities operating low power auxiliary stations will have until June 12, 2010 to complete their exit from the band and their migration to other bands where they would be authorized to operate, subject to the conditions we adopt herein, we nevertheless encourage such users to cease operations in the 700 MHz Band as soon as possible. In addition, we find that the public interest is served by applying the transition procedures that we adopt in this Report and Order to users of low power auxiliary stations that do not hold a license. This finding is based upon our determination that the public interest will be served by allowing this use in this limited context for the limited duration discussed herein.¹⁴³

¹⁴¹ See MSTV/NAB Comments at 2-3, 6-7; Shure Comments at 2, 5-14; PAMA Jan. 5, 2009 *Ex Parte* at 6-8; Motorola Aug. 6 *Ex Parte*, Attachment; Verizon July 27 *Ex Parte* (arguing that wireless microphone operators vacate the 700 MHz frequencies no later than February 18, 2010); APCO et al. Apr. 7 *Ex Parte* (arguing that they prefer that wireless microphone and low power auxiliary station device use in the 700 MHz Band should cease coincident with the end of the DTV transition, but that a February 18, 2010, deadline provides sufficient time for users to transition out of the band); MSTV Jan. 5, 2010 *Ex Parte* (arguing that “licensed wireless microphones be allowed to continue operating in the 700 MHz band until the earlier of the following events: (1) notification to the station that wireless service will commence operations within 30 - 60 days, or (2) February 10, 2011”); MSTV Aug. 25 *Ex Parte* (arguing that licensed wireless microphones must vacate the band sixty days before commencement of operations by a 700 MHz entrant, or February 17, 2012, whichever comes first); Shure July 27 *Ex Parte* at 1 (restating Shure’s support for “a reasonable two-year transition period”); Motorola Aug. 6 *Ex Parte*, Attachment (proposing that the use of wireless microphones in channels 52-69 be prohibited effective June 12, 2010).

¹⁴² See, e.g., California Comments at 2; Motorola Comments at 3; APCO Comments at 2; AT&T Reply Comments at 2-4; CTIA Reply Comments at 3-7; V-COMM Comments at 1-2, 5-10; Verizon Wireless Comments at 3-5; Performing Arts Alliance Comments at 1-2; NPSTC Comments at 4-5.

¹⁴³ We discuss more fully below our decision to permit users that do not hold a low power auxiliary station license a temporary authorization to operate in the 700 MHz Band, during the transition period adopted herein.

45. While we agree with MSTV/NAB that low power auxiliary station licensees authorized to operate in the 700 MHz should be afforded some opportunity to migrate out of the band,¹⁴⁴ we cannot agree with the time frame they suggest, given the potential for interference with public safety and commercial broadband licensees and the clear determination in Congress's enactment of the DTV Act of 2005 that the 700 MHz band would no longer be a broadcast band in the near term. In addition, we are not persuaded that low power auxiliary station licensees, many of which are associated with high-power broadcast stations that have had significant notice of the need to vacate the 700 MHz band on a timely basis, should have a different and longer timeframe to vacate the 700 MHz Band than other users in the band, as proposed by MSTV. In addition to the need to clear the band because of the potential for interference, we are concerned that adding another layer of complexity – establishing a different set of band clearing rules for a particular subset of users -- is likely to add significantly to consumer confusion, as well as to undermine our efforts to clear the 700 MHz Band. On this issue, our judgment is that keeping a single, uniform nationwide date, rather than adopting two separate transition dates, is essential to clearing the 700 MHz Band in a timely, orderly, and effective fashion in a manner that is equitable to all the affected parties. We also are not persuaded of the need for a shorter timeframe, such as a February 18, 2010, hard date as suggested by CTIA, Verizon Wireless, and several public safety groups.¹⁴⁵ As discussed above, we are placing operating limitations on low power auxiliary station users and adopting notification procedures that enable new 700 MHz licensees to clear the band of low power auxiliary station users in markets in which they will be operating. Further, we note that, based on the record before us and publicly available information, it is anticipated that there will be only limited rollout of new commercial services in the 700 MHz Band prior to mid-year 2010.¹⁴⁶ To the extent that spectrum in the 700 MHz Band needs to be clear of low power auxiliary station use for the initiation of new operations, which includes system testing or trials, we are adopting a clearing mechanism that provides for a 60-day notification process. Accordingly, we find the additional one-year period after the end of the DTV transition during which these low power auxiliary station users may continue to operate in the 700 MHz Band provides a reasonable amount of time for those entities to migrate from the band, yet also allows for the new 700 MHz licensees to access the spectrum in order to provide new services to the public.

46. *Early Clearing.* In addition to setting June 12, 2010, for the clearing of the 700 MHz Band by wireless microphones, we also provide procedures for clearing low power auxiliary station operations in the 700 MHz Band prior to that time to the extent that a public safety or commercial licensee has initiated, or will be initiating, operations in the 700 MHz Band in particular market(s) before that date.¹⁴⁷ Wireless microphones will be required to cease operations before June 12, 2010, only after

¹⁴⁴ See MSTV/NAB Comments at 2-4; MSTV Jan. 5, 2010 *Ex Parte*; see also Shure Comments at ii (wireless microphone users “will face difficult financial, technical and logistical issues and it is not reasonable to expect these users to ‘turn on a dime’ and cease 700 MHz operations virtually overnight”); PAMA Jan. 5, 2009 *Ex Parte* at 7 (wireless microphone users face “significant practical problems that would make an immediate prohibition unreasonable”).

¹⁴⁵ See APCO et al. Apr. 7 *Ex Parte*.

¹⁴⁶ In terms of its planned use of the spectrum to deploy 4G services, Verizon Wireless indicated in its comments that it plans to begin testing in 2009 and continue with wide-scale commercial deployment in 2010. Verizon Wireless Comments at 2 n.2. In an *ex parte* filing, Verizon Wireless states that it “will launch commercial service using LTE technology in the 700 MHz band in 30 cities in mid-year 2010, and limited testing and operation of the technology is occurring in some markets already.” Verizon Wireless Sept. 16 *Ex Parte* at 1 (citing to Verizon Wireless Aug. 14, 2009 press release). To date, no other carrier has commented in this proceeding on its plans to deploy commercial services in the 700 MHz Band prior to 2010.

¹⁴⁷ The record supports adoption of an early clearing mechanism pursuant to a notification procedure. For example, MSTV, as a part of its proposal, suggests that “licensed wireless microphones be allowed to continue operating in the 700 MHz band until the earlier of the following events: (1) notification to the station that wireless service will (continued....)

they have been provided 60 days' advance notification, as set forth below.

47. The notification process will work as follows. During the transition period, which will end on June 12, 2010, a 700 MHz commercial or public safety licensee may notify the Commission that it will be initiating operations on specified frequencies in particular market(s). The wireless operations initiated by the public safety or 700 MHz commercial licensees can include system testing or trials. Upon such notification, the Wireless Telecommunications Bureau or the Public Safety and Homeland Security Bureau will issue a public notice that will be available on the Commission's website and that identifies the affected market area(s). Users of low power auxiliary stations, including wireless microphone users, in those areas must cease operation within 60 days of the release of the notice.¹⁴⁸ The Commission's website will provide a central location for the low power auxiliary station users to find information on markets in which 700 MHz licensees are beginning operations prior to June 12, 2010. In addition, any 700 MHz commercial or public safety licensee may, at its option, notify any entity operating low power auxiliary stations of its intention to initiate operations on specified frequencies in the market in which the low power auxiliary station user is operating. Upon receipt of such notice, the low power auxiliary station user in the affected market area must cease operation within 60 days. For entities that have already initiated such operations, these entities may, upon the effective date of this order, follow the same notifications procedures, triggering the same 60-day cessation obligation for users of low power auxiliary stations.

48. In the event that both of these notice provisions are used to provide notice to a particular user of a low power auxiliary station(s), the user will be required to cease operations in the market(s) in accordance with whichever notice provides for earlier termination of such operations. This process should place only a limited burden on public safety and commercial licensees, which have the primary rights to use 700 MHz Band spectrum. Further, as noted above, notwithstanding any early clearing mechanisms adopted herein, low power auxiliary station users that cause harmful interference to a 700 MHz commercial or public safety licensee must cease operations immediately consistent with the Commission's rules for secondary use.¹⁴⁹ We also intend to be in continuous communication with the public safety community to ascertain the extent of public safety use of the 700 MHz Band to help ensure that public safety agencies are able to operate free from harmful interference.

49. *Other Arguments.* We are not persuaded by certain commenters that we should delay the transitioning of low power auxiliary stations and discontinue our efforts to clear the 700 MHz Band of

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commence operations within 30 - 60 days, or (2) February 10, 2011)." MSTV Jan. 5, 2010 *Ex Parte*. See also MSTV/NAB Reply Comments at i, 2, 3 (recommending a notice procedure that would require the licensed wireless microphone user to cease all operations throughout the applicable geographic area on the frequency within 60 days before the date service begins). CTIA supports a 60-day notification to affected low power auxiliary station licensees; these licensees, in turn, would be required to vacate the band within the 60-day period. CTIA May 15 *Ex Parte*. In addition, CTIA and other parties propose that low power auxiliary station licensees be required to cease operations within 60 days of receiving notice that a public safety or commercial licensee will be initiating or changing operations. See CTIA et al. Jan. 30 *Ex Parte* (Attachment: "Revisions to Rules Authorizing the Operation of LPAS Devices in the 700 MHz Band"); CTIA Feb. 19 *Ex Parte* (attachment: "Revisions to Rules Authorizing the Operation of LPAS Devices in the 700 MHz Band"); CTIA et al. Feb. 23 *Ex Parte*; APCO et al. Apr. 7 *Ex Parte* at 2. Verizon Wireless suggests that the Commission provide a 60-day notification process whereby new licensees can notify wireless microphone and other low power auxiliary station device users in a particular market of the need to vacate the 700 MHz band. Verizon Wireless Mar. 18 *Ex Parte* at 1.

¹⁴⁸ In providing for this central location for low power auxiliary station device users to find information on markets in which 700 MHz licensees are initiating operations, we will establish a specific webpage, accessible through the Commission's website, where the 700 MHz notification public notices will be posted.

¹⁴⁹ See 47 C.F.R. §§ 74.803(b), 74.861(g).