

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

In the Matter of)	
)	
Amendment of Part 15 of the Commission's Rules)	
Regarding Unlicensed Personal Communications)	ET Docket No. 10-97
Service Devices in the 1920-1930 MHz Band)	

REPORT AND ORDER

Adopted: March 22, 2012

Released: March 23, 2012

By the Commission:

I. INTRODUCTION

1. By this action, we modify Part 15 of the rules governing the operation of Unlicensed Personal Communications Service (UPCS) devices in the 1920-1930 MHz frequency band (UPCS band) to promote more efficient use of the UPCS band and to facilitate the introduction of a new generation of unlicensed devices capable of supporting broadband connectivity using Digital Enhanced Cordless Telecommunications (DECT) technology.¹ Specifically, we eliminate the least-interfered channel monitoring threshold for UPCS devices and reduce the number of duplex system access channels that a UPCS device must define and monitor from 40 to 20 channels in order to use the least-interfered channel access method. These changes will provide UPCS devices, particularly those designed to transmit with wider bandwidths, access to more usable channels (*i.e.*, combined time and spectrum windows) than are permitted under the existing rules and unleash innovative cordless broadband technologies in the UPCS band, while limiting the potential for causing interference to other devices. We also modify the rules to remove outdated provisions and to make other minor updates.

II. BACKGROUND

2. The 1920-1930 MHz band is allocated to Fixed and Mobile services on a primary basis and is designated for use by UPCS devices on an unlicensed basis.² Currently, the major use of the 1920-1930 MHz band is for unlicensed cordless telephones that operate under Part 15 of the Commission's rules.³ The Part 15 rules provide that the 1920-1930 MHz band may be used for both asynchronous (generally data) and isochronous (generally voice) UPCS devices, with maximum and minimum emission bandwidths of 2.5 megahertz and 50 kilohertz, respectively.⁴ UPCS devices operating

¹ DECT-based radio technology facilitates voice, data, and networking applications with range requirements up to a few hundred meters.

² See 47 C.F.R. §§ 2.106, 15.301.

³ See DECT Solutions at <http://www.dect.org>. See also Plantronics, Inc. (Plantronics) Comments at 1.

⁴ See 47 C.F.R. §§ 15.303(a) and (d), 15.323(a). UPCS systems may sub-divide the 2.5 megahertz emission bandwidth as long as the sub-divided emission bandwidth is greater than or equal to 50 kilohertz. Under the Part 15 rules, a UPCS channel is defined as the combined time and spectrum windows that a transmission is intended to occupy. 47 C.F.R. § 15.323(c). Spectrum window is defined as the amount of spectrum equal to the intended emission bandwidth in which operation is desired. 47 C.F.R. § 15.303(h).

in the 1920-1930 MHz band are subject to the general conditions of operation for Part 15 devices in that they may not cause harmful interference to authorized radio services and must accept any interference received.⁵

3. To facilitate the sharing of spectrum in the UPCS band, the current rules require use of a “spectrum etiquette” that specifies a process for monitoring the time and spectrum windows that a transmission is intended to occupy for signals above a defined threshold (a “listen-before-transmit” protocol). To protect UPCS devices already using particular time and spectrum windows from transmissions from another device, each UPCS device must monitor the combined time and spectrum windows that it intends to use before beginning transmissions and defer use or find other spectrum windows if the monitored signal level is above the threshold.⁶ Transmissions may commence with the same emission bandwidth in a monitored time and spectrum window without further monitoring if no signal greater than 30 decibels (dB) above thermal noise is detected in the chosen window.⁷ Alternatively, if the UPCS system defines and the UPCS device can monitor at least 40 duplex system access channels, the UPCS device may access the time and spectrum windows with the lowest signal level below a threshold of 50 dB above thermal noise (henceforth referred to as the “least-interfered channel access method”).⁸ If the initially selected combined time and spectrum windows are unavailable, the UPCS device may either monitor and select different windows or seek to use the same windows after waiting a randomly chosen amount of time between 10 and 150 milliseconds.⁹

4. On May 6, 2010, the Commission adopted a *Notice of Proposed Rulemaking (UPCS Band NPRM)* in this proceeding that proposed changes designed to allow UPCS devices to access additional usable channels.¹⁰ The Commission took this action in response to a petition for rulemaking filed by the DECT Forum, an industry association that promotes digital cordless radio technology for short-distance voice and data applications.¹¹ In the *UPCS Band NPRM*, the Commission proposed to increase the least-interfered channel monitoring threshold from 50 to 65 dB above thermal noise and sought comment on whether some alternative value or elimination of the threshold would be more

⁵ See 47 C.F.R. § 15.5(b).

⁶ See 47 C.F.R. § 15.323(c)(1)-(12). See also n.4, supra. To prevent the monopolization of UPCS-band channels by one or more devices, the Commission’s rules also include UPCS transmission time limits. See 47 C.F.R. § 15.323(c)(3). The access threshold, transmitter power limits, and transmission time limits are designed such that frequency and time reuse both within a system and between systems are possible for indoor operations.

⁷ See 47 C.F.R. § 15.323(c)(1)-(3). UPCS devices that have a power output lower than the permitted maximum may increase their monitoring threshold by 1 dB for each 1 dB that the transmitter power is below the permitted maximum. See 47 C.F.R. § 15.323(c)(9). Thermal noise power, typically referred to as thermal noise, is produced by the random thermal agitation of electrons in an electronic circuit. The thermal noise power (in dBm) for a given emission (*i.e.*, channel) bandwidth is defined by the formula $10 \log (1000 \times kTB)$, where k is Boltzmann’s Constant (1.38×10^{-23} W/Hz/K); T is the ambient temperature in degrees Kelvin (*e.g.*, 298° K at room temperature (77° F)); and B is the emission bandwidth of the device in Hertz. See 47 C.F.R. § 15.303(j). The thermal noise in a 50 kilohertz channel at room temperature is -127 dBm.

⁸ See 47 C.F.R. § 15.323(c)(5).

⁹ See 47 C.F.R. § 15.323(c)(6).

¹⁰ See Amendment of Part 15 of the Commission’s Rules Regarding Unlicensed Personal Communications Service Devices in the 1920-1930 MHz Band, ET Docket No. 10-97, RM-11485, *Notice of Proposed Rulemaking*, 25 FCC Rcd 5118 (2010) (*UPCS Band NPRM*).

¹¹ See “Petition for Rulemaking to coordinate the service rules of the UPCS Band with those ultimately adopted for the AWS H Block,” Petition for Rulemaking, filed Aug. 15, 2008, by DECT Forum, placed on Public Notice for comment on Sept. 4, 2008 (Report No. 2873; RM-11485) (DECT Forum Petition).

appropriate.¹² The Commission also proposed to reduce the number of channels that must be defined and monitored under the least-interfered channel access method from 40 to 20 channels.¹³ It additionally sought comment on removing Sections 15.303(b) and (e), 15.307, and 15.311 regarding coordination with UTAM, Inc., since the relocation of incumbent fixed services from the band is now complete.¹⁴ The Commission further sought comment on a number of proposed updates to the Part 15 UPCS rules regarding measurement procedures and definitions.¹⁵ Eight parties filed comments in response to the *UPCS Band NPRM*; these parties all strongly support the Commission's proposals.¹⁶ No parties filed reply comments.

III. DISCUSSION

5. Based on our analysis of the record, we decide to eliminate the 50 dB above thermal noise monitoring threshold for UPCS devices. Without this threshold, after monitoring the required minimum number of channels, UPCS devices may use the combined time and spectrum windows with the lowest signal level, rather than using only those windows with the lowest signal level below 50 dB above thermal noise. Coupled with a reduction in the number of channels that must be monitored, elimination of this threshold will permit greater utilization of the UPCS band.¹⁷ For example, manufacturers could optimize cordless telephones for higher-density applications, such as office environments. These changes are also expected to encourage manufacturers to introduce innovative products and services using Internet

¹² See *UPCS Band NPRM*, 25 FCC Rcd at 5124 ¶ 14. The *UPCS Band NPRM* acknowledged that the DECT Forum and others asserted that an increase in the least-interfered channel monitoring threshold is needed so the out-of-band emissions from future devices transmitting in the 1915-1920 MHz Advanced Wireless Service (AWS) band – commonly known as the “H Block” – will not restrict UPCS devices' access to a major part of the 1920-1930 MHz band. The *UPCS Band NPRM* noted that the issue of out-of-band emissions for the “H Block” was being addressed in a separate proceeding and thus did not solicit comments on nor make any decision with respect to this issue. See *UPCS Band NPRM*, 25 FCC Rcd at 5122 ¶ 9, 5125-26 ¶ 17. Nonetheless, several commenters on the *UPCS Band NPRM* express support for increasing the monitoring threshold for this reason. See DECT Forum Comments at 1, 4; DSPG Comments at 1-3; Gigaset Comments at 1; Panasonic Comments at 2-3; Plantronics Comments at 2-3; TIA Comments at 5; and VTech Comments at 2-3.

¹³ See *UPCS Band NPRM* 25 FCC Rcd at 5123-25 ¶¶ 12-16.

¹⁴ See *UPCS Band NPRM* 25 FCC Rcd at 5126-27 ¶ 18. UTAM, Inc., which the Commission designated to coordinate and manage the transition of the 1910-1930 MHz band from incumbent fixed microwave operations to UPCS use, is a non-profit corporation composed of representatives from a broad range of UPCS equipment manufacturers that the Unlicensed PCS Ad Hoc Committee for 2 GHz Microwave Transition and Management (UTAM) incorporated in July 1993. 47 C.F.R. § 15.307(a). See also Amendment of the Commission's Rules to Establish New Personal Communications Services, GEN Docket No. 90-314, *Second Report and Order*, 8 FCC Rcd 7700, 7736 n.74, 7783 ¶ 202 (1993) (*Broadband PCS Second R&O*); UTAM Reply Comments, GEN Docket No. 90-314, ET Docket No. 92-100, filed July 20, 1993, at 10 and Appendix A, Certificate of Incorporation of UTAM, Inc.

¹⁵ See *UPCS Band NPRM* at 5127 ¶ 19.

¹⁶ See generally DECT Forum Comments; DSP Group, Inc. (DSPG) Comments; Gigaset Communications GmbH (Gigaset) Comments; Panasonic Corporation of North America (Panasonic) Comments; Plantronics, Inc. (Plantronics) Comments; Telecommunications Industry Association (TIA) Comments; Uniden America Corporation (Uniden) Comments; and VTech Communications, Inc. (VTech) Comments. Comments in this proceeding, ET Docket No. 10-97, RM-11485, may be viewed in the Commission's Electronic Comment Filing System, which can be found on the Commission's web site at http://fjallfoss.fcc.gov/ecfs/comment_search/input?z=u67ee and accessed under Doing Business Public Comment (ECFS) on the Commission's main web page at <http://www.fcc.gov>.

¹⁷ See DECT Forum's Petition, Annex I, at 7; Panasonic Comments at 3-4; Plantronics Comments at 2; TIA Comments at 5-7; Uniden Comments at 2; and VTech Comments at 3-4.

protocol connectivity to combine access to broadband and telephony applications in a new generation of cordless devices.¹⁸

6. First, we conclude that the 50 dB above thermal noise least-interfered channel monitoring threshold for UPCS devices operating in the 1920-1930 MHz band should be eliminated. Eliminating the least-interfered channel monitoring threshold will allow UPCS devices to use additional time and spectrum windows with higher signal levels and will allow access to more usable time and spectrum windows than under the current rule, thereby increasing the flexibility for innovation, utilization, and efficiency of the UPCS band.¹⁹ Further, this change will not inhibit the ability of UPCS devices to access available time and spectrum windows. Moreover, eliminating, instead of just increasing, the monitoring threshold, will provide manufacturers with the flexibility to produce UPCS systems that can operate with the maximum possible traffic capacity and thereby maximize the utilization of the UPCS band. We agree with commenters that a higher monitoring threshold would not result in an increase in interference due to the path-loss and propagation characteristics of existing UPCS deployments and because UPCS devices are designed to use minimal power at all times.²⁰ Finally, we note that although the DECT standard, which is used in over 100 countries, including all European countries, defines an upper signal limit at which a channel is considered busy and should not be used, it has no upper power threshold on least-interfered channels, and it appears that devices are operating under rules similar to those that we are adopting here without experiencing interference problems.²¹

7. Without a predetermined maximum threshold, manufacturers will also have the flexibility to select an appropriate threshold to prevent harmful interference to other UPCS devices. We expect that UPCS devices will continue to operate using the DECT standard, which includes a listen-before-transmit protocol, and that UPCS devices will continue to monitor the desired channels to avoid causing harmful interference to other UPCS devices. Thus, they will not interfere with each other once a device is transmitting on a channel. Because UPCS devices operate at relatively low power levels, two devices would need to be within less than 1 foot of each other to impact one another.²² Thus, the probability of interference occurring among UPCS devices operating with a higher monitoring threshold or between such devices and those operating under the existing monitoring threshold will remain low. Although eliminating the maximum monitoring threshold could, in some cases, result in an increased number of UPCS devices operating simultaneously in a given location, they would be operating with relatively low peak transmitter power and out-of-band emissions limits. Thus, relatively higher-power Advanced Wireless Service (AWS) and Personal Communications Service (PCS) devices (either fixed or mobile)

¹⁸ See, e.g., Panasonic Comments at 4. The UPCS band is used primarily by cordless phones that employ DECT technology – a flexible digital radio access standard for cordless communications in residential, corporate, and public environments. In addition to providing for voice and multimedia traffic, the DECT standard includes many forward-looking technical features that can allow DECT-based cordless systems to be used to offer new communications services such as Internet access and interworking with other fixed and wireless services such as Integrated Services Digital Network (ISDN) and Global System for Mobile Communications (GSM). See DECT Forum website at <http://www.dect.org/>. See also Panasonic Comments in GN Dkt. 09-157, GN Dkt. 09-51 at 7 (filed Sept. 30, 2009).

¹⁹ See, e.g., TIA Comments at 5; DECT Forum Petition, Annex I, at 7, 17-19.

²⁰ See, e.g., DSP Group Comments at 3; Gigaset Comments at 1; Panasonic Comments at 3; Plantronics Comments at 2-3; TIA Comments at 5.

²¹ See European Standard (Telecommunications series) Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 3; Medium Access Control (MAC) layer, ETSI EN 300 175-3 V1.9.1 (2005-9) at 194-199. See also DECT Forum Petition, Annex I, at 7, 9.

²² See DECT Forum Petition, Annex I, at 30.

receiving in the adjacent 1915-1920 MHz and 1930-1990 MHz bands, respectively, will not experience harmful interference in such cases.

8. Second, we conclude that the minimum number of channels that must be defined and monitored under the least-interfered channel access method can be reduced from 40 to 20 channels without posing an additional risk of interference to adjacent band or in-band operations, nor inhibiting the ability of UPCS devices to access available channels.²³ Reducing the required number of channels that must be defined and monitored to 20 channels will enable UPCS devices that define fewer than 40 channels (*i.e.*, use wider emission bandwidths) to use the least-interfered channel access method and access additional usable channels, and thereby encourage manufacturers to produce cordless products that can provide access to broadband technologies.²⁴ This action will serve the public interest by promoting increased use of the UPCS band for advanced services and allowing state-of-the-art UPCS devices that can provide higher throughputs (*i.e.*, data rates) to operate under the least-interfered channel access method, thereby further improving the efficiency of the UPCS band, while maintaining equal access to the available spectrum on a shared basis for all users.

9. We find that modifying these rules will provide significant benefits to manufacturers and consumers. Because the new rules will include no maximum monitoring threshold and fewer channels to define and monitor, UPCS-band products that have already been authorized will continue to be in compliance with our technical rules, and UPCS device manufacturers will have the option to introduce new technologies and services that will increase the utilization and efficiency of the UPCS band and benefit consumers. Manufacturers may choose to produce UPCS devices that provide higher data rates and enable access to broadband technologies, which will increase the efficiency of the UPCS band, enhance user experience, and facilitate users' cordless access to broadband applications. Manufacturers would only incur costs if they choose to take advantage of the flexibility afforded by the new rules, and even then we expect such costs would be negligible and consistent with routine design modifications that often occur over the life of a product.

10. In addition, we are taking several actions to update the rules in other ways. We are modifying the Part 15 UPCS rules to reflect that UPCS devices no longer need to protect fixed microwave incumbents in the 1920-1930 MHz band and are no longer coordinated by UTAM, Inc. Because the rules to transition the 1920-1930 MHz band from incumbent fixed microwave operations to UPCS use sunset

²³ See generally DECT Forum Comments; DSPG Comments; Gigaset Comments; Panasonic Comments; Plantronics Comments; TIA Comments; Uniden Comments; and VTech Comments. DSPG, TIA, and VTech further argue that reducing the required number of monitored channels from 40 to 20 channels is justified by the Commission's prior decision to increase the maximum UPCS emission bandwidth from 1.25 to 2.5 megahertz. See DSPG Comments at 2-3; TIA Comments at 5; and VTech Comments at 3. See Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems, ET Docket No. 00-258, Petition for Rule Making of the Wireless Information Networks Forum Concerning the Unlicensed Personal Communications Service, RM-9498, Petition for Rule Making of UT Starcom, Inc., Concerning the Unlicensed Personal Communications Service, RM-10024, Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for use by the Mobile-Satellite Service, ET Docket No. 95-18, *Sixth Report and Order, Third Memorandum Opinion and Order, and Fifth Memorandum Opinion and Order*, 19 FCC Rcd 20720, 20755 ¶¶ 79-80 (2004) (*AWS Sixth R&O*).

²⁴ See DSPG Comments at 2-3; Plantronics Comments at 2; TIA Comments at 6; and VTech Comments at 3. See the Office of Engineering and Technology's (OET's) Knowledge Database Publication No. (KDB) 377704 for an explanation of how the former least-interfered channel access rules in Section 15.232(c)(5) applied to a DECT CAT-iq system that defines five frequency bands divided into 12 time slots for each band, for a total of 60 duplex time/frequency windows. KDB 377704 can be accessed at <https://fjallfoss.fcc.gov/oetcf/kdb/index.cfm>. Note that the interpretation contained in KDB 377704 was specific to a system that defined at least 40 channels and may not be applicable to systems that define fewer than 40 channels.

in 2005, there is no longer a need for Sections 15.307(a) and (c)-(h), which set forth the expired coordination requirements.²⁵ Furthermore, because UPCS devices are no longer coordinated by UTAM, Inc., the definitions in Section 15.303(b) and (e) that were applicable when UPCS devices were either coordinatable or non-coordinatable and the UTAM, Inc.-related labeling requirement in Section 15.311 are no longer necessary.²⁶ Thus, we are eliminating Sections 15.303(b) and (e), 15.307(a) and (c)-(h), and 15.311 of the rules.

11. We maintain, however, the UTAM, Inc. membership requirement for UPCS-band device manufacturers in Section 15.307(b).²⁷ Under the relocation funding plan approved by the Commission, UTAM, Inc., acting on behalf of future unlicensed PCS manufacturers in the 1910-1930 MHz band, paid to relocate or agreed to share the costs to relocate incumbent services in the band, and future band entrants would reimburse it for their share of those incurred costs. UTAM, Inc. has informed the Commission that it has outstanding contractual liabilities from clearing the 1910-1930 MHz band of incumbent microwave stations.²⁸ Although UTAM, Inc. expects that the cost-sharing reimbursement(s) that it will eventually receive from the AWS licensee(s) of the 1915-1920 MHz band will enable it to pay these outstanding liabilities, it must remain in existence until these liabilities are paid.²⁹ UTAM, Inc. submits that for it to remain in existence, the Commission cannot eliminate the membership requirement because membership fees are its sole source of operating revenue. UTAM, Inc. argues that if the

²⁵ See “Broadband PCS Entities and Fixed Microwave Services Licensees Reminded of April 4, 2005 Sunset of Relocation Cost Compensation and Microwave Cost Sharing Rules,” Public Notice, DA 05-612, (rel. March 8, 2005). See also 47 C.F.R. §§ 24.253, 101.79.

²⁶ See “Unlicensed PCS Devices Will No Longer Be Subject To Coordination Requirements After April 4, 2005,” Public Notice, DA 05-1005, (rel. April 4, 2005).

²⁷ Under Section 15.307(b), each applicant for FCC equipment authorization of a UPCS-band device must be a participating member of UTAM, Inc. See 47 C.F.R. § 15.307(b).

²⁸ See UTAM, Inc. *Ex Parte* comments, filed April 27, 2011, at 2; UTAM, Inc. *Ex Parte* presentation, filed June 6, 2011, at 5. In 1995, the Commission affirmed its designation of UTAM, Inc. to manage the transition of the 1910-1930 MHz band from the Private Operational Fixed Microwave Service (POFS) to unlicensed PCS operations. See Amendment of the Commission’s Rules to Establish New Personal Communications Services, GEN Docket No. 90-314, *Fourth Memorandum Opinion and Order*, 10 FCC Rcd 7955, 7967 ¶ 38 (1995) (*Broadband PCS Fourth MO&O*). Some of these POFS operations were paired with links in other spectrum assigned for licensed PCS operations. In some cases, the PCS licensees assumed responsibility for relocating the paired POFS links, and UTAM, Inc. agreed to reimburse the PCS licensees a *pro rata* share for the spectrum cleared in the 1910-1930 MHz band. See UTAM, Inc. *Ex Parte* comments, filed April 27, 2011, at 2; UTAM, Inc. *Ex Parte* presentation, filed June 6, 2011, at 5. In 2004, the Commission reallocated the 1910-1920 MHz band from the UPCS for AWS and Broadband PCS operations. As part of this reallocation, the Commission determined that UTAM, Inc. was entitled to a reimbursement of 25 percent – on a *pro rata* basis – of the total costs it had incurred in clearing the 1910-1930 MHz band of incumbent microwave stations, including any future payment obligations, from future AWS licensees in the 1915-1920 MHz AWS-2 band. See *AWS Sixth R&O*, 19 FCC Rcd at 20740 ¶ 41, 20745 ¶ 53; Improving Public Safety Communications in the 800 MHz Band, Consolidating the 800 and 900 MHz Industrial/Land Transportation and Business Pool Channels, WT Docket 02-55, Amendment of Part 2 of the Commission’s Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems, ET Docket No. 00-258, Petition for Rule Making of the Wireless Information Networks Forum Concerning the Unlicensed Personal Communications Service, RM-9498, Petition for Rule Making of UT Starcom, Inc., Concerning the Unlicensed Personal Communications Service, RM-10024, Amendment of Section 2.106 of the Commission’s Rules to Allocate Spectrum at 2 GHz for use by the Mobile Satellite Service, ET Docket No. 95-18, *Report and Order, Fourth Report and Order, Fourth Memorandum Opinion and Order, and Order*, 19 FCC Rcd 14969, 15088 ¶ 227 (2004) (*800 MHz R&O*). When UTAM, Inc. receives the *pro rata* share owed by future AWS licensees, it will in turn reimburse the PCS licensees for their costs in relocating the POFS operations.

²⁹ See UTAM, Inc. *Ex Parte* comments, filed April 27, 2011, at 2.

membership requirement were eliminated, it would inequitably place the costs of maintaining UTAM, Inc. on existing members, thereby undermining the original purpose of Section 15.307(b) to equitably distribute the costs of clearing the 1910-1930 MHz band across the manufacturers producing devices that operate in the band.³⁰ As noted above, the Commission determined that cost sharing was integral to clearing the UPCS band of incumbent services so new unlicensed devices could be introduced in the band. UTAM, Inc. has made a persuasive case that it has incurred obligations, as a result of the UPCS band clearing, that have not been satisfied. We conclude that, if we were to eliminate the membership requirement, there would be no mechanism to ensure that outstanding cost sharing obligations are satisfied. The *UPCS Band NPRM* proposed no alternative that would equitably distribute these obligations among all manufacturers of equipment in the band, including those who would introduce new products in the band in the future. For these reasons, we decide to maintain the UTAM, Inc. membership requirement for UPCS-band device manufacturers contained in Section 15.307(b).

12. Also, we are correcting the Part 15 UPCS rules to make them consistent with previous Commission decisions affecting these rules. Specifically, we are removing the definition in Section 15.303(i) that was applicable when asynchronous and isochronous operations were in separate sub-bands; amending Section 15.319 to specifically state that both asynchronous and isochronous operations are permitted in the 1920-1930 MHz band, consistent with the decision in the *AWS Sixth R&O*;³¹ revising Section 15.323 to correct a typographical error in the second sentence of paragraph (a); and correcting paragraphs (d) and (e) to reference “bands” instead of “sub-bands.” In addition, we are amending Sections 15.31(a)(2) and 15.38(b)(12) of the rules to reference the latest version of the ANSI C63.17-2006 standard by which UPCS devices must be measured for compliance with the requirements in Part 15 Subpart D of the rules.

13. To help ensure that the UPCS device rules continue to reflect the most appropriate industry standards, we delegate to the Chief, Office of Engineering and Technology (OET), the authority to approve for use new versions of the ANSI C63.17 standard for methods of measurement of the electromagnetic and operational compatibility of UPCS devices to the extent that the changes do not raise major compliance issues. At the same time, we recognize the necessity to provide opportunity for notice and comment on any changes or modifications that could affect compliance with our regulations. Therefore, in cases where major changes have been made in this standard that could affect compliance, the Commission will initiate an appropriate rulemaking proceeding to consider adoption of updated versions of the ANSI C63.17 standard.

IV. PROCEDURAL MATTERS

A. Final Regulatory Flexibility Analysis

14. As required by the Regulatory Flexibility Act (RFA),³² an Initial Regulatory Flexibility Analysis (IRFA) for ET Docket No. 10-97 was incorporated into the *UPCS Band NPRM*.³³ The Commission sought written public comment on the possible significant economic impact of the proposed policies and rules on small entities in the *UPCS Band NPRM*, including comments on the IRFA. No

³⁰ *Id.* at 2-3.

³¹ See *AWS Sixth R&O*, 19 FCC Rcd at 20755 ¶ 79.

³² See 5 U.S.C. § 603.

³³ See *UPCS Band NPRM*, 25 FCC Rcd at 5132 (Appendix B).

parties commented specifically on the IRFA. Pursuant to the RFA,³⁴ a Final Regulatory Flexibility Analysis is contained in Appendix B.

B. Paperwork Reduction Analysis

15. This Report and Order contains no new and modified information collections subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13.

C. Congressional Review Act

16. The Commission will send a copy of this Report and Order in a report to be sent to Congress and the Government Accountability Office pursuant to the Congressional Review Act, *see* 5 U.S.C. § 801(a)(1)(A).

V. ORDERING CLAUSES

17. Accordingly, IT IS ORDERED, pursuant to Sections 4(i), 302, 303(e), 303(f), and 307 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 302a, 303(e), 303(f), and 307, that this Report and Order in ET Docket No. 10-97 is hereby ADOPTED.

18. IT IS FURTHER ORDERED that Part 15 of the Commission's rules IS AMENDED as set forth in Appendix A. These rule revisions will take effect 30 days after a summary of the Report and Order is published in the Federal Register.

19. IT IS FURTHER ORDERED that the Chief, Office of Engineering and Technology (OET), is DELEGATED AUTHORITY to approve for use new versions of the ANSI C63.17 standard for methods of measurement of UPCS devices to the extent that the changes do not raise major compliance issues.

20. IT IS FURTHER ORDERED that the Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this Order, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

21. IT IS FURTHER ORDERED that the Commission SHALL SEND a copy of this Report and Order in a report to be sent to Congress and the Government Accountability Office pursuant to the Congressional Review Act, *see* 5 U.S.C. § 801(a)(1)(A).

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

³⁴ *See* 5 U.S.C. § 604.

APPENDIX A

Final Rules

For the reasons discussed above, the Federal Communications Commission amends Title 47 of the Code of Federal Regulations, Part 15, to read as follows:

Part 15 – RADIO FREQUENCY DEVICES

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

AUTHORITY: 47 U.S.C. 154, 302a, 303, 304, 307, 336, and 544a.

2. Section 15.31 is amended by revising paragraph (a)(2) to read as follows:

§ 15.31 Measurement standards.

(a) * * *

(1) * * *

(2) Unlicensed Personal Communications Service (UPCS) devices are to be measured for compliance using ANSI C63.17-2006: “Methods of Measurement of the Electromagnetic and Operational Compatibility of Unlicensed Personal Communications Services (UPCS) Devices” (incorporated by reference, see § 15.38). This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51.

* * * * *

3. Section 15.38 is amended by revising paragraph (b)(12) to read as follows:

§ 15.38 Incorporation by reference.

* * * * *

(b) * * *

(12) ANSI C63.17-2006: “Methods of Measurement of the Electromagnetic and Operational Compatibility of Unlicensed Personal Communications Services (UPCS) Devices,” 2006, IBR approved for § 15.31.

* * * * *

4. Section 15.303 is amended by removing paragraphs (b), (e), and (i), and redesignating the remaining paragraphs in alphabetical order.

5. Section 15.307 is amended by removing paragraphs (a) and (c) through (h), and redesignating paragraph (b) as the introductory paragraph.

6. Part 15, Subpart D is amended by removing Section 15.311.

7. Section 15.319 is amended by revising paragraph (b) to read as follows:

§ 15.319 General technical requirements.

* * * * *

(b) All transmissions must use only digital modulation techniques. Both asynchronous and isochronous operations are permitted within the 1920-1930 MHz band.

* * * * *

8. Section 15.323 is amended by revising the caption, the second sentence of paragraph (a), the first sentence of paragraph (c)(5), the first two sentences of paragraph (d), and the first sentence of paragraph (e) to read as follows:

§ 15.323 Specific requirements for devices operating in the 1920-1930 MHz band.

(a) * * * The emission bandwidth shall be less than 2.5 MHz. * * *

* * * * *

(c) * * *

(5) If access to spectrum is not available as determined by the above, and a minimum of 20 duplex system access channels are defined for the system, the time and spectrum windows with the lowest power level may be accessed. * * *

* * * * *

(d) Emissions outside the band shall be attenuated below a reference power of 112 milliwatts as follows: 30 dB between the band and 1.25 MHz above or below the band; 50 dB between 1.25 and 2.5 MHz above or below the band; and 60 dB at 2.5 MHz or greater above or below the band. Emissions inside the band must comply with the following emission mask: In the bands between 1B and 2B measured from the center of the emission bandwidth the total power emitted by the device shall be at least 30 dB below the transmit power permitted for that device; in the bands between 2B and 3B measured from the center of the emission bandwidth the total power emitted by an intentional radiator shall be at least 50 dB below the transmit power permitted for that radiator; in the bands between 3B and the band edge the total power emitted by an intentional radiator in the measurement bandwidth shall be at least 60 dB below the transmit power permitted for that radiator. * * *

(e) The frame period (a set of consecutive time slots in which the position of each time slot can be identified by reference to a synchronizing source) of an intentional radiator operating in this band shall be 20 milliseconds or 10 milliseconds/X where X is a positive whole number. * * *

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APPENDIX B**Final Regulatory Flexibility Analysis**

Report and Order in ET Docket No. 10-97

As required by the Regulatory Flexibility Act of 1980, as amended (RFA),¹ an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the *Notice of Proposed Rulemaking (Unlicensed Personal Communications Service (UPCS) Band NPRM)* in ET Docket No. 10-97.² The Commission sought written public comment on the proposals in the *UPCS Band NPRM*, including comment on the IRFA. This present Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.³

A. Need for, and Objectives of, the Report and Order

In this Report and Order, the Commission takes steps to improve the operation of unlicensed Personal Communications Service (UPCS) devices operating in the 1920-1930 MHz band (known as the UPCS band), while limiting the potential for in-band and adjacent-band interference and maintaining equal access to the available spectrum on a shared basis for all users.

In this Report and Order, the objectives of the Commission are to improve the utilization of the UPCS band by allowing access to additional usable time and spectrum windows whose use is restricted under the current rules, to reduce infrastructure costs through allowing a greater density of UPCS devices to be used with fewer base stations, and to allow UPCS devices that use wider bandwidth channels, but define fewer than 40 channels, to use the UPCS least-interfered channel access method and access additional usable time and spectrum windows. Specifically, the Commission eliminates the 50 dB above thermal noise signal threshold that UPCS devices must monitor when using the least-interfered channel access method. Under this method, UPCS devices would survey the required minimum number of channels and use the combined time and spectrum windows with the lowest signal level, instead of using only the windows with the lowest signal level below 50 dB above thermal noise. The Commission also reduces from 40 to 20 channels the number of channels a UPCS device must define and monitor in order to use the least-interfered channel access method. In addition, this Report and Order updates the Part 15 UPCS rules to reflect that UPCS devices no longer need to protect incumbent fixed microwave radio stations in the 1920-1930 MHz band and are no longer coordinated by UTAM, Inc., and to make them consistent with previous changes to the rules.

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

No public comments were received in response to the IRFA in the *UPCS Band NPRM*.

¹ See 5 U.S.C. § 603. The RFA, see 5 U.S.C. § 601 – 612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996), and the Small Business Jobs Act of 2010, Public Law No. 111-240, 124 Stat. 2504 (2010).

² See Amendment of Part 15 of the Commission's Rules Regarding Unlicensed Personal Communications Service Devices in the 1920-1930 MHz Band, ET Docket No. 10-97, RM-11485, *Notice of Proposed Rulemaking*, 25 FCC Rcd 5118, 5132-36 (2010) (*UPCS Band NPRM*).

³ See 5 U.S.C. § 604.

C. Response to Comments by the Chief Counsel for Advocacy of the Small Business Administration

Pursuant to the Small Business Jobs Act of 2010, the Commission is required to respond to any comments filed by the Chief Counsel for Advocacy of the Small Business Administration (SBA), and to provide a detailed statement of any change made to the proposed rules as a result of those comments. The Chief Counsel did not file any comments in response to the proposed rules in this proceeding.

D. Description and Estimate of the Number of Small Entities to Which the Proposed Rule Will Apply.

The RFA directs agencies to provide a description of and, where feasible, an estimate of the number of small entities that may be affected by the proposed rules, if adopted.⁴ The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction." In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.⁵ A small business concern is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the SBA.⁶

Nationwide, there are a total of approximately 27.5 million small businesses, according to the SBA.⁷ A "small organization" is generally "any not-for-profit enterprise which is independently owned and operated and is not dominant in its field."⁸ Nationwide, as of 2002, there were approximately 1.6 million small organizations.⁹ The term "small governmental jurisdiction" is defined generally as "governments of cities, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand."¹⁰ Census Bureau data for 2002 indicate that there were 87,525 local governmental jurisdictions in the United States.¹¹ We estimate that, of this total, 84,377 entities were "small governmental jurisdictions."¹² Thus, we estimate that most governmental jurisdictions are small.

The changes adopted in this Report and Order affect fixed service (FS) stations licensed under Part 101 of our rules, UPCS stations, and wireless equipment manufacturers and frequency coordinators.

⁴ *Id.* at § 603(b)(3).

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

⁶ Small Business Act, 15 U.S.C. § 632 (1996).

⁷ See SBA, Office of Advocacy, "Frequently Asked Questions," <http://www.sba.gov/advo/stats/sbfaq.pdf> (accessed Dec. 2010).

⁸ 5 U.S.C. § 601(4).

⁹ Independent Sector, *The New Nonprofit Almanac & Desk Reference* (2002).

¹⁰ 5 U.S.C. § 601(5).

¹¹ U.S. Census Bureau, *Statistical Abstract of the United States: 2006*, Section 8, page 272, Table 415.

¹² We assume that the villages, school districts, and special districts are small and total 48,558. See U.S. Census Bureau, *Statistical Abstract of the United States: 2006*, section 8, page 273, Table 417. For 2002, Census Bureau data indicate that the total number of county, municipal, and township governments nationwide was 38,967, of which 35,819 were small. *Id.*

Fixed Microwave Services. Fixed microwave services include common carrier,¹³ private operational-fixed,¹⁴ and broadcast auxiliary radio services.¹⁵ At present, there are approximately 22,015 common carrier fixed licensees and 61,670 private operational-fixed licensees and broadcast auxiliary radio licensees in the microwave services. The Commission has not created a size standard for a small business specifically with respect to fixed microwave services. For purposes of this analysis, the Commission uses the SBA small business size standard for the category Wireless Telecommunications Carriers (except Satellite), which is 1,500 or fewer employees.¹⁶ The Commission does not have data specifying the number of these licensees that have no more than 1,500 employees, and thus we are unable at this time to estimate with greater precision the number of fixed microwave service licensees that would qualify as small business concerns under the SBA's small business size standard. Consequently, the Commission estimates that there are 22,015 or fewer common carrier fixed licensees and 61,670 or fewer private operational-fixed licensees and broadcast auxiliary radio licensees in the microwave services that may be small and may be affected by the rules and policies proposed herein. We note, however, that the common carrier microwave fixed licensee category includes some large entities.

Unlicensed Personal Communications Service. As its name indicates, the UPCS is not a licensed service. UPCS consists of intentional radiators operating in the frequency band 1920-1930 MHz that provide a wide array of mobile and ancillary fixed communications services to individuals and businesses. The Report and Order affects UPCS operations in the 1920-1930 MHz band; operations in those frequencies are given flexibility to deploy both voice and data-based services. There is no accurate source for the number of operators in the UPCS. Since 2007, the Census Bureau has placed wireless firms within the new, broad, economic census category Wireless Telecommunications Carriers (except Satellite).¹⁷ Prior to that time, such firms were within the now-superseded category of "Paging" and "Cellular and Other Wireless Telecommunications."¹⁸ Under the present and prior categories, the SBA has deemed a wireless business to be small if it has 1,500 or fewer employees.¹⁹ Census data for 2007, which supersede data contained in the 2002 Census, show that there were 1,383 firms that operated that year.²⁰ Of those 1,383, 1,368 had fewer than 100 employees, and 15 firms had more than 100 employees.

¹³ See 47 C.F.R. §§ 101 *et seq.* for common carrier fixed microwave services (except Multipoint Distribution Service).

¹⁴ Persons eligible under Parts 80 and 90 of the Commission's Rules can use Private Operational-Fixed Microwave services. See 47 C.F.R. Parts 80 and 90. Stations in this service are called operational-fixed to distinguish them from common carrier and public fixed stations. Only the licensee may use the operational-fixed station and only for communications related to the licensee's commercial, industrial, or safety operations.

¹⁵ Auxiliary Microwave Service is governed by Part 74 of Title 47 of the Commission's Rules. See 47 C.F.R. Part 74. This service is available to licensees of broadcast stations and to broadcast and cable network entities. Broadcast auxiliary microwave stations are used for relaying broadcast television signals from the studio to the transmitter, or between two points such as a main studio and an auxiliary studio. The service also includes mobile television pickups, which relay signals from a remote location back to the studio.

¹⁶ 13 C.F.R. § 121.201, NAICS code 517210.

¹⁷ U.S. Census Bureau, 2007 NAICS Definitions, "517210 Wireless Telecommunications Categories (Except Satellite)"; <http://www.census.gov/naics/2007/def/NDEF517210.HTM#N517210>.

¹⁸ U.S. Census Bureau, 2002 NAICS Definitions, "517211 Paging"; <http://www.census.gov/epcd/naics02/def/NDEF517.HTM>; U.S. Census Bureau, 2002 NAICS Definitions, "517212 Cellular and Other Wireless Telecommunications"; <http://www.census.gov/epcd/naics02/def/NDEF517.HTM>.

¹⁹ 13 C.F.R. § 121.201, NAICS code 517210 (2007 NAICS). The now-superseded, pre-2007 C.F.R. citations were 13 C.F.R. § 121.201, NAICS codes 517211 and 517212 (referring to the 2002 NAICS).

²⁰ U.S. Census Bureau, 2007 Economic Census, Sector 51, 2007 NAICS cod 517210 (rel. Oct. 20, 2009), <http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-fds_name=EC0700A1&-_skip=700&-ds_name=EC0751SSSZ5&-_lang=en>.

Thus, under this category and the associated small business size standard, the majority of firms can be considered small.

Wireless Equipment Manufacturers. This industry is comprised of businesses primarily engaged in manufacturing radio, television broadcast, and wireless communications equipment. Examples of products made by these establishments are: transmitting and receiving antennas, cable television equipment, global positioning system (GPS) equipment, pagers, cellular phones, mobile communications equipment, and radio and television studio and broadcasting equipment.²¹ In this category, the SBA has deemed a business manufacturing radio and television broadcasting equipment, wireless telecommunications equipment, or both, to be small if it has fewer than 750 employees.²² For this category of manufacturing, Census data for 2007 show that there were 919 firms that operated that year. Of those establishments, 531 had between 1 and 19 employees; 240 had between 20 and 99 employees; and 148 had more than 100 employees.²³ Since 771 establishments had fewer than 100 employees, and since only 148 had more than 100 employees, the vast majority of manufacturers in this category would be considered small under applicable standards.

Frequency Coordinators. Neither the Commission nor the SBA has developed a small business size standard specifically applicable to spectrum frequency coordinators. Since 2007, the Census Bureau has placed wireless firms within the new, broad, economic census category Wireless Telecommunications Carriers (except Satellite).²⁴ Prior to that time, such firms were within the now-superseded category of “Paging” and “Cellular and Other Wireless Telecommunications.”²⁵ Under the present and prior categories, the SBA has deemed a wireless business to be small if it has 1,500 or fewer employees.²⁶ Census data for 2007, which supersede data contained in the 2002 Census, show that there were 1,383 firms that operated that year. Of those 1,383, 1,368 had fewer than 100 employees, and 15 firms had more than 100 employees.²⁷ Thus, under this category and the associated small business standard, the majority of firms can be considered small.

E. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities.

This Report and Order allows additional flexibility for UPCS devices operating in the 1920-1930 MHz band by eliminating the signal threshold that a UPCS device must monitor when using the least-interfered channel access method. In addition, the Report and Order reduces from 40 to 20 channels the number of channels that a UPCS device must define and monitor to use the

²¹ <http://www.census.gov/econ/industry/def/d334220.htm>.

²² See 13 C.F.R. § 121.201, NAICS code 334220.

²³ http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=300&-ds_name=EC073111&-_lang=en.

²⁴ U.S. Census Bureau, 2007 NAICS Definitions, “517210 Wireless Telecommunications Categories (Except Satellite)”; <http://www.census.gov/naics/2007/def/ND517210.HTM#N517210>.

²⁵ U.S. Census Bureau, 2002 NAICS Definitions, “517211 Paging”; <http://www.census.gov/epcd/naics02/def/NDEF517.HTM>; U.S. Census Bureau, 2002 NAICS Definitions, “517212 Cellular and Other Wireless Telecommunications”; <http://www.census.gov/epcd/naics02/def/NDEF517.HTM>.

²⁶ 13 C.F.R. § 121.201, NAICS code 517210 (2007 NAICS). The now-superseded, pre-2007 C.F.R. citations were 13 C.F.R. § 121.201, NAICS codes 517211 and 517212 (referring to the 2002 NAICS).

²⁷ U.S. Census Bureau, 2007 Economic Census, Sector 51, 2007 NAICS cod 517210 (rel. Oct. 20, 2009), http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-fds_name=EC0700A1&-_skip=700&-ds_name=EC0751SSSZ5&-_lang=en.

least-interfered channel access method. This item does not contain any new reporting or recordkeeping requirements.

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

The RFA requires an agency to describe any significant alternatives that it has considered in reaching its proposed approach, which may include the following four alternatives (among others): 1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; 2) the clarification, consolidation, or simplification of compliance or reporting requirements under the rule for small entities; 3) the use of performance, rather than design, standards; and 4) an exemption from coverage of the rule, or any part thereof, for small entities.²⁸

The Commission's principal objective in this proceeding is to increase the utilization and efficiency of the UPCS band. By eliminating the signal threshold that a UPCS device must monitor under the least-interfered channel access method, we allow UPCS devices to access additional usable combined time and spectrum windows in the 1920-1930 MHz band that are restricted from use under the current rules. Our decision to reduce from 40 to 20 channels the number of channels a UPCS device must define and monitor to use the least-interfered channel access method will enable UPCS devices that can provide advanced cordless technologies and higher data rates to use the least-interfered channel access method and access additional usable time and spectrum windows, if available. Together, these changes will increase the utilization and efficiency of the UPCS band and promote the introduction of innovative products and services using Internet protocol connectivity to combine access to broadband and telephony applications in a new generation of cordless devices. Elimination of the least-interfered channel monitoring threshold will also allow manufacturers to design their devices based on density of devices, rather than range, depending on the needs of users, thereby allowing more UPCS devices to operate within close proximity to one another, which will reduce the infrastructure costs for a UPCS system. Finally, our decision to eliminate rather than just increase the least-interfered channel monitoring threshold will provide manufacturers with the flexibility to produce UPCS systems that can operate with the maximum possible traffic capacity, which will maximize the utilization of the UPCS band.

Report to Congress: The Commission will send a copy of the Report and Order, including this FRFA, in a report to Congress pursuant to the Congressional Review Act.²⁹ In addition, the Commission will send a copy of the Report and Order, including this FRFA, to the Chief Counsel for Advocacy of the SBA. A copy of the Report and Order and FRFA (or summaries thereof) will also be published in the Federal Register.

²⁸ 5 U.S.C. § 603(c).

²⁹ See 5 U.S.C. § 801(a)(1)(A).