

Federal Communications Commission

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

In the Matter of )
)
Amendment of Parts 15 and 74 of the Rules for ) ET Docket No. 21-115
Wireless Microphones in the TV Bands, 600 MHz )
Guard Band, 600 MHz Duplex Gap, and the 941.5- ) RM-11821
944 MHz, 944-952 MHz, 952.850-956.250 MHz, )
956.45-959.85 MHz, 1435-1525 MHz, 6875-6900 )
MHz and 7100-7125 MHz Bands )

ERRATUM

Released: October 8, 2024

By the Managing Director and the Chief, Office of Engineering and Technology:

On February 15, 2024, the Commission released a Report and Order, FCC 24-22, in the above-captioned proceeding. This Erratum replaces Appendix A, Final Rules, of the Report and Order with a new Appendix A. The new Appendix A contains non-substantive modifications to the amendatory text and codified text for certain sections that are necessary to conform to the publishing conventions and incorporation-by-reference requirements of the National Archives and Records Administration’s Office of the Federal Register, as indicated below:

Appendix A
Final Rules

For the reasons discussed in the preamble, the Federal Communications Commission amends 47 CFR parts 15 and 74 as follows:

PART 15 – RADIO FREQUENCY DEVICES

The authority citation for part 15 continues to read as follows:

AUTHORITY: 47 U.S.C. 154, 302a, 303, 304, 307, 336, 544a, and 549.

- 1. Section 15.38 is amended by:
a. Revising the introductory text;
b. Redesignating paragraphs (a) through (f) as paragraphs (b) through (g) and adding new paragraph (a);
c. Revising newly-redesignated paragraph (e); and
d. Removing notes 1 and 2 to § 15.38.

The revisions and addition read as follows:

§ 15.38 Incorporation by reference.

Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the Federal Communications Commission (FCC) must publish a document in the Federal Register and the material must be available to the public. All approved incorporation by reference (IBR)

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material is available for inspection at the FCC and at the National Archives and Records Administration (NARA). Contact FCC at the address indicated in 47 CFR 0.401(a); phone: (202) 418-0270. For information on the availability of this material at NARA, visit [www.archives.gov/federal-register/cfr/ibr-locations](http://www.archives.gov/federal-register/cfr/ibr-locations) or email [fr.inspection@nara.gov](mailto:fr.inspection@nara.gov). The material may be obtained from the following sources:

(a) The IBR material may be obtained from the sources in the following paragraphs of this section or from one or more private resellers listed in this paragraph (a).

(1) Accuris Standards Store, 321 Inverness Drive, South Englewood, CO, 80112; phone: (800) 332-6077; website: <https://accuristech.com>.

(2) American National Standards Institute (ANSI), see paragraph (b) of this section.

(3) GlobalSpec, 257 Fuller Road, Suite NFE 1100, Albany, NY 12203-3621; phone: (800) 261-2052; website: <https://standards.globalspec.com>.

(4) Nimonik Document Center, 401 Roland Way, Suite 224, Oakland, CA, 94624; phone (650) 591-7600; email: [info@document-center.com](mailto:info@document-center.com); website: [www.document-center.com](http://www.document-center.com).

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(e) European Telecommunications Standards Institute (ETSI), 650 Route des Lucioles, F-06921 Sophia Antipolis Cedex, France; phone: +33 4 92 94 42 00; email: [webstore@etsi.org](mailto:webstore@etsi.org); website: [www.etsi.org/](http://www.etsi.org/).

(1) ETSI EN 300 422-1 V2.2.1 (2021-11), Wireless Microphones; Audio PMSE up to 3 GHz; Part 1: Audio PMSE Equipment up to 3 GHz; Harmonised Standard for access to radio spectrum, published November 2021; IBR approved for § 15.236(g). (Available at: [www.etsi.org/deliver/etsi\\_en/300400\\_300499/30042201/02.02.01\\_60/en\\_30042201v020201p.pdf](http://www.etsi.org/deliver/etsi_en/300400_300499/30042201/02.02.01_60/en_30042201v020201p.pdf).)

(2) [Reserved]

\* \* \* \* \*

2. Section 15.236 is revised and republished to read as follows:

**§ 15.236 Operation of wireless microphones in the bands 54-72 MHz, 76-88 MHz, 174-216 MHz, 470-608 MHz, 614-616 MHz and 657-663 MHz.**

(a) *Definitions.* The following definitions apply in this section.

*600 MHz duplex gap.* An 11 megahertz guard band at 652-663 MHz that separates part 27 600 MHz service uplink and downlink frequencies.

*600 MHz guard band.* Designated frequency band at 614-617 MHz that prevents interference between licensed services in the 600 MHz service band and channel 37.

*Wireless Microphone.* An intentional radiator that converts sound into electrical audio signals that are transmitted using radio signals to a receiver which converts the radio signals back into audio signals that are sent through a sound recording or amplifying system. Wireless microphones may be used for cue and control communications and synchronization of TV camera signals as defined in § 74.801 of this chapter. Wireless microphones do not include auditory assistance devices as defined in § 15.3(a) of this part.

*Wireless Multichannel Audio Systems.* Wireless audio transmission systems using broadband digital transmission techniques for microphone and in-ear monitor system applications and other multichannel audio use.

(b) *Permissible operations.* Operation under this section is limited to wireless microphones and wireless multichannel audio systems as defined in this section.

(c) *Frequency bands.* Operation of wireless microphones is permitted in all of the following frequency

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bands. Wireless multichannel audio systems may operate only in the bands listed in paragraphs (c)(1) and (2) of this section.

- (1) Channels allocated and assigned for the broadcast television service.
- (2) The 657-663 MHz segment of the 600 MHz duplex gap.
- (3) The 614-616 MHz segment of the 600 MHz guard band.
- (d) *Power limits.* The maximum radiated power shall not exceed the following values:
  - (1) In the bands allocated and assigned for broadcast television:
    - (i) Wireless microphones: 50 mW EIRP.
    - (ii) Wireless multichannel audio systems with a bandwidth up to 1 MHz: 50 mW EIRP.
    - (iii) Wireless multichannel audio systems with a bandwidth greater than 1 MHz: 100 mW EIRP.
  - (2) In the 600 MHz guard band and the 600 MHz duplex gap: 20 mW EIRP.
- (e) *Operating locations.* Operation is limited to locations at least four kilometers outside the following protected service contours of co-channel TV stations:

Table 1 to paragraph (e)

Type of station	Protected contour		
	Channel	Contour (dBu)	Propagation curve
Digital: Full service TV, Class A TV, LPTV, translator and booster	Low VHF (2-6)	28	F(50,90)
	High VHF (7-13)	36	F(50,90)
	UHF (14-36)	41	F(50,90)

- (f) *Operating frequency and bandwidth – (1) Wireless microphones.* The operating frequency within a permissible band of operation defined in paragraph (c) of this section must comply with the following requirements.
  - (i) The frequency selection shall be offset from the upper or lower band limits by 25 kHz or an integral multiple thereof.
  - (ii) One or more adjacent 25 kHz segments within the assignable frequencies may be combined to form a channel whose maximum bandwidth shall not exceed 200 kHz. The operating bandwidth shall not exceed 200 kHz.
  - (iii) The frequency tolerance of the carrier signal shall be maintained within  $\pm 0.005\%$  of the operating frequency over a temperature variation of  $-20$  degrees to  $+50$  degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. Battery operated equipment shall be tested using a new battery.
- (2) *Wireless multichannel audio systems.* A wireless multichannel audio system may have an operating bandwidth not exceeding 6 megahertz and must have a mode of operation in which it is capable of operating with at least three audio channels per megahertz. For wireless multichannel audio systems operating in the TV bands (channels 2-36), the 6 megahertz (or less) channel must fall entirely within a single TV channel.
- (g) *Emission masks–(1) Analog systems.* Emissions within the band from  $2.5 \times B$  below to  $2.5 \times B$  above

the carrier frequency, where B is the channel bandwidth, shall comply with the emission mask in Figure 1 of section 4.2.4.2.2 of ETSI EN 300 422-1 V2.2.1 (2021-11) (incorporated by reference, see § 15.38).

(2) *Digital systems*. Emissions within the band from  $2.5 \times B$  below to  $2.5 \times B$  above the carrier frequency, where B is the channel bandwidth, shall comply with the emission mask in Figure 2 of section 4.2.4.2.2 of ETSI EN 300 422-1 V2.2.1 (2021-11) (incorporated by reference, see § 15.38).

(3) *Wireless Multichannel Audio Systems*. Emissions within the band from  $2.5 \times B$  below to  $2.5 \times B$  above the carrier frequency, where B is the channel bandwidth, shall comply with the emission mask in Figure 3 of section 4.2.4.2.2 of ETSI EN 300 422-1 V2.2.1 (2021-11), (incorporated by reference, see § 15.38).

(4) *Spurious emission limits*. Emissions outside of the emission masks listed in paragraphs (g)(1) through (g)(3) shall comply with the limits specified in section 4.2.4.1.2 of ETSI EN 300 422-1 V2.2.1 (2021-11), (incorporated by reference, see § 15.38).

3. Section 15.703 is amended by revising the definition for “white space database” to read as follows:

**§ 15.703 Definitions.**

\* \* \* \* \*

*White space database*. A database system approved by the Commission that maintains records on authorized services and provides lists of available channels to white space devices.

4. Section 15.713 is amended by:
- a. Removing and reserving paragraph (a)(2);
  - b. Revising paragraph (a)(3); and
  - c. Removing and reserving paragraphs (f) and (i).

The revision reads as follows:

**§ 15.713 White space database.**

(a) \* \* \*

(3) To register the identification information and location of fixed white space devices.

\* \* \* \* \*

**§ 15.715 [Amended]**

5. Section 15.715 is amended by removing paragraph (q).

**Part 74 – EXPERIMENTAL RADIO, AUXILIARY, SPECIAL BROADCAST AND OTHER PROGRAM DISTRIBUTION SERVICES**

6. The authority citation for part 74 continues to read as follows:

AUTHORITY: 47 U.S.C. 154, 302a, 303, 307, 309, 310, 325, 336 and 554.

7. Section 74.35 is amended by adding new section to read as follows:

**§ 74.35 Incorporation by reference.**

Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the Federal Communications Commission (FCC) must publish a document in the Federal Register and the material must be available to the public. All approved incorporation by reference (IBR) material is available for inspection at the FCC and at the National Archives and Records Administration (NARA). Contact the FCC at the address indicated in 47 CFR 0.401(a); phone: (202) 418-0270. For

information on the availability of this material at NARA, visit [www.archives.gov/federal-register/cfr/ibr-locations](http://www.archives.gov/federal-register/cfr/ibr-locations) or email [fr.inspection@nara.gov](mailto:fr.inspection@nara.gov). The material may be obtained from the European Telecommunications Standards Institute (ETSI), 650 Route des Lucioles, F-06921 Sophia Antipolis Cedex, France; phone: +33 4 92 94 42 00; email: [webstore@etsi.org](mailto:webstore@etsi.org); website: [www.etsi.org/](http://www.etsi.org/).

(a) ETSI EN 300 422-1 V2.2.1 (2021-11), Wireless Microphones; Audio PMSE up to 3 GHz; Part 1: Audio PMSE Equipment up to 3 GHz; Harmonised Standard for access to radio spectrum, published November 2021; IBR approved for § 74.861(d)(4) and (e)(7). (Available at: [www.etsi.org/deliver/etsi\\_en/300400\\_300499/30042201/02.02.01\\_60/en\\_30042201v020201p.pdf](http://www.etsi.org/deliver/etsi_en/300400_300499/30042201/02.02.01_60/en_30042201v020201p.pdf).)

(b) [Reserved]

8. Section 74.801 is amended by adding, in alphabetical order, a definition for “Wireless Multichannel Audio System” to read as follows:

**§ 74.801 Definitions**

\* \* \* \* \*

*Wireless Multichannel Audio Systems.* Wireless audio transmission systems using broadband digital transmission techniques for microphone and in-ear monitor system applications and other multichannel audio use.

9. Section 74.802 is amended by revising paragraphs (a) and (b)(1) to read as follows:

**§ 74.802 Frequency assignment.**

(a) Frequencies within the following bands may be assigned for use by low power auxiliary stations:

26.100-26.480 MHz

54.000-72.000 MHz

76.000-88.000 MHz

161.625-161.775 MHz (except in Puerto Rico or the Virgin Islands)

174.000-216.000 MHz

450.000-451.000 MHz

455.000-456.000 MHz

470.000-488.000 MHz

488.000-494.000 MHz (except Hawaii)

494.000-608.000 MHz

653.000-657.000 MHz

941.500-944.000 MHz

944.000-952.000 MHz

952.850-956.250 MHz

956.45-959.85 MHz

1435-1525 MHz

6875.000-6900.000 MHz

7100.000-7125.000 MHz

(b)(1) Operations in the bands allocated for TV broadcasting are limited to locations at least 4 kilometers

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outside the protected contours of co-channel TV stations shown in the following table. These contours are calculated using the methodology in § 73.684 of this chapter and the R-6602 curves contained in § 73.699 of this chapter.

Table 1 to paragraph (b)(1)

Type of station	Protected contour		
	Channel	Contour (dBu)	Propagation curve
Digital: Full service TV, Class A TV, LPTV, translator and booster	Low VHF (2-6)	28	F(50,90)
	High VHF (7-13)	36	F(50,90)
	UHF (14-36)	41	F(50,90)

\* \* \* \* \*

10. Section 74.861 is amended by:
- a. Revising paragraphs (d)(4) and (e)(1), (5), and (7); and
  - b. removing paragraph (i).

The revisions read as follows:

**§ 74.861 Technical requirements.**

\* \* \* \* \*

(d) \* \* \*

(4) The following emission limits apply in the 941.5-944 MHz, 944-952 MHz, 952.850-956.250 MHz, 956.45-959.85 MHz, 1435-1525 MHz, 6875-6900 MHz and 7100-7125 MHz bands.

(i) *Analog systems.* Emissions within the band from 2.5 x B below to 2.5 x B above the carrier frequency, where B is the channel bandwidth, shall comply with the emission mask in Figure 1 of section 4.2.4.2.2 of ETSI EN 300 422-1 V2.2.1 (2021-11) (incorporated by reference, see § 74.35).

(ii) *Digital systems.* Emissions within the band from 2.5 x B below to 2.5 x B above the carrier frequency, where B is the channel bandwidth, shall comply with the emission mask in Figure 2 of section 4.2.4.2.2 of ETSI EN 300 422-1 V2.2.1 (2021-11) (incorporated by reference, see § 74.35).

(iii) *Wireless Multichannel Audio Systems.* Emissions within the band from 2.5 x B below to 2.5 x B above the carrier frequency, where B is the channel bandwidth, shall comply with the emission mask in Figure 3 of section 4.2.4.2.2 of ETSI EN 300 422-1 V2.2.1 (2021-11) (incorporated by reference, see § 74.35). A wireless multichannel audio system must have an operating bandwidth B not exceeding 20 megahertz and must have a mode of operation in which it is capable of transmitting at least three audio channels per megahertz.

(iv) *Spurious emission limits.* Emissions outside of the emission masks specified in paragraphs (d)(4)(i) through (d)(4)(iii) shall comply with the limits specified in section 4.2.4.1.2 of ETSI EN 300 422-1 V2.2.1 (2021-11) (incorporated by reference, see § 74.35).

(e) \* \* \*

(1) The power may not exceed the following values.

- (i) 54-72, 76-88, and 174-216 MHz bands: 50 mW EIRP

(ii) 470-608 MHz band: 250 mW conducted power

(iii) 653-657 MHz band: 20 mW EIRP

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(5) The operating bandwidth shall not exceed 200 kilohertz, except that a wireless multichannel audio system must have an operating bandwidth not exceeding 6 megahertz in the TV bands or 4 megahertz in the 653-657 MHz band and must have a mode of operation in which it is capable of transmitting at least three audio channels per megahertz. For wireless multichannel audio systems operating in the TV bands, the 6 megahertz (or less) channel must fall entirely within a single TV channel (2-36) that is available for Part 74 LPAS use under § 74.802(b). The provisions of § 74.802(c) regarding frequency of operation within TV channels do not apply to wireless multichannel audio systems.

\* \* \* \* \*

(7) (i) *Analog systems.* Emissions within the band from  $2.5 \times B$  below to  $2.5 \times B$  above the carrier frequency, where B is the channel bandwidth, shall comply with the emission mask in Figure 1 of section 4.2.4.2.2 of ETSI EN 300 422-1 V2.2.1 (2021-11) (incorporated by reference, see § 74.35).

(ii) *Digital systems.* Emissions within the band from  $2.5 \times B$  below to  $2.5 \times B$  above the carrier frequency, where B is the channel bandwidth, shall comply with the emission mask in Figure 2 of section 4.2.4.2.2 of ETSI EN 300 422-1 V2.2.1 (2021-11) (incorporated by reference, see § 74.35).

(iii) *Wireless Multichannel Audio Systems.* Emissions within the band from  $2.5 \times B$  below to  $2.5 \times B$  above the carrier frequency, where B is the channel bandwidth, shall comply with the emission mask in Figure 3 of section 4.2.4.2.2 of ETSI EN 300 422-1 V2.2.1 (2021-11), (incorporated by reference, see § 74.35).

(iv) *Spurious emission limits.* Emissions outside of the emission masks listed in paragraphs (e)(7)(i) through (e)(7)(iii) shall comply with the limits specified in section 4.2.4.1.2 of ETSI EN 300 422-1 V2.2.1 (2021-11) (incorporated by reference, see § 74.35).

\* \* \* \* \*

11. Section 74.870 is amended by revising paragraph (c) introductory text to read as follows:

**§ 74.870 Wireless video assist devices.**

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(c) Wireless video assist devices may operate with a bandwidth not to exceed 6 MHz on frequencies in the bands 180-210 MHz (TV channels 8-12) and 470-608 MHz (TV channels 14-36) subject to the following restrictions:

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