

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of

**RECOMMENDATIONS APPROVED BY
WORLD RADIOCOMMUNICATION
CONFERENCE ADVISORY COMMITTEE**

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IB Docket No. 16-185

COMMENTS OF SHURE INCORPORATED

Shure Incorporated (“Shure”), by its undersigned counsel, hereby submits these comments in response to the Public Notice in the above-captioned docket.¹ By this Public Notice, the Commission seeks comments on draft recommendations by the World Radio Conference Advisory Committee (“WRC-19 Advisory Committee” or “WAC”) to assist the Commission in its upcoming consultations with the U.S. Department of State and the U.S. Department of Commerce’s National Telecommunications Information Administration (“NTIA”), for the upcoming WRC-19 and the further planning for WRC-23.

Established in 1925, Shure is the leading U.S.-based global manufacturer of high-quality wireless microphones and other professional audio products classified as low-power auxiliary devices under Part 74 of the Commission’s Rules and in some other countries referred to as Programme Making and Special Events (“PMSE”) equipment. Shure has participated extensively in various regulatory proceedings in the United States

¹ DA 19-172 of March 11, 2018.

and in other countries grappling with the scarcity of spectrum available to meet the increasing demand for high quality audio in a broad range of applications, particularly in the context of larger scale productions.² As a long-time proponent of wireless microphone innovation and development that enhances efficient use of spectrum, Shure has contributed its extensive product experience and technical expertise to help shape spectrum policies and technical requirements in a way that addresses competing demands for spectrum and facilitates evolving wireless microphone technologies. In the U.S., that effort includes participation in the Commission's various proceedings over the past 15 years addressing changes in spectrum rules that affect wireless microphones.³

² See, e.g., *Revisions to Rules Authorizing the Operation of Low Power Auxiliary Stations in the 698-806 MHz Band, et al.*, Report and Order and Further Notice of Proposed Rulemaking, 25 FCC Rcd 643 (2010); *Unlicensed Operation in the TV Broadcast Bands, Additional Spectrum for Unlicensed Devices below 900 MHz and in the 3 GHz Band*, Second Memorandum Opinion and Order, 25 FCC Rcd 18661 (2010); *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Report and Order, 29 FCC Rcd 6567 (2014); *Amendment of Part 15 of the Commission's Rules for Unlicensed Operations in the Television Bands, Repurposed 600 MHz Band, 600 MHz Guard Bands and Duplex Gap, and Channel 37, and Amendment of Part 74 of the Commission's Rules for Low Power Auxiliary Stations in the Repurposed 600 MHz Band and 600 MHz Duplex Gap, Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, ET Docket No. 14-165, GN Docket No. 12-268, Notice of Proposed Rulemaking, FCC 14-144 (rel. Sept. 30, 2014); *Amendment of Part 15 of the Commission's Rules for Unlicensed Operations in the Television Bands et al.*, ET Docket No. 14-165, GN Docket No. 12-268, Report and Order, FCC 15-99 (rel. Aug. 11, 2015); *In the Matter of Promoting Spectrum Access for Wireless Microphone Operations, et al.*, GN Docket Nos. 14-166, 12-268, Notice of Proposed Rulemaking, FCC 14-145 (rel. Sep. 30, 2014); *In the Matter of Promoting Spectrum Access for Wireless Microphone Operations, et al.*, GN Docket Nos. 14-166, 12-268, Report and Order, FCC 15-100 (rel. Aug. 11, 2015).

³ The Commission has considered policies that have shifted the spectrum available for wireless microphone operations, including in some cases eliminating wireless microphone access to certain spectrum, developed sharing rules that enable new services to coexist with wireless microphones, and new spectrum bands in which wireless microphones can share with incumbent users, cf. FCC 15-100 (*Report and Order of 08/05/15*), FCC 15-99 (*Report and Order of 08/11/15*) and FCC 15-140 (*Report and Order of 10/22/15*): Wireless microphones that operate in the 600 MHz service band (the 617-652 MHz and 663-698 MHz frequencies) will be required to cease operation by no later than July 13, 2020. In 2010, the FCC already prohibited the operation of wireless microphones and similar devices (e.g., wireless intercoms, wireless in-ear monitors, wireless audio instrument links, and wireless cueing equipment) in the 700 MHz Band (i.e., 698 - 806 MHz) - cf. FCC 10-16 (*Report and Order of 01/14/10*).

Shure herein comments on ATTACHMENT B to the Public Notice recognizing that the draft proposals set forth therein are not formally agreed by the World Radio Conference Advisory Committee. One of the proposals (DOCUMENT WAC/085 (11.03.19)⁴ for a new resolution supports the study of additional frequency bands for wireless microphones for ENG⁵ outside of the 600 MHz and 700 MHz bands, historically the principal frequency bands in which wireless microphones have operated, based on the continued increase in demand for wireless microphone operations globally in a wide variety of applications across a number of industry sectors. Such studies would be consistent with this Commission's ongoing efforts to address wireless microphone spectrum in the context of soaring demand for other wireless services,⁶ and the studies would support the examination of harmonizing spectrum policies in other countries with the Commission's actions on these issues.

Shure highlights that although the resolution proposes studies of potential additional bands between the broad range of 150 MHz and 2000 MHz, it must be recognized that there are many spectrum bands within this range that are home to incumbent services that are not compatible with secondary wireless microphone

⁴ See Attachment B at 9-14.

⁵ The Proposal refers to "terrestrial electronic news gathering systems" (ENG) which is also known as Service Ancillary to broadcast and Programme Making (SAP/SAB) – cf. para. 1 of Section "Background Information."

⁶ One example is the FCC's Broadcast Incentive Auction, which was completed on April 13, 2017. Specifically, most (but not all) of the spectrum on TV channels 38-51 (614-698 MHz), has been repurposed for use by wireless services and will not continue to be available for wireless microphone use – cf FCC 15-140 (*Report and Order of 10/22/15*) at 22 and *Incentive Auction R&O*, 29 FCC Rcd at 6846, para. 687 in connection with 47 CFR Part 15, § 15.236, Operation of wireless microphones in the bands 54-72 MHz, 76-88 MHz, 174-216 MHz, 470-608 MHz and 614-698 MHz.

operations on a co-channel or adjacent channel basis and thus U.S. rules do not identify these bands for Part 74 wireless microphones operations. For one example, Global Navigation Services (i.e., GPS, GLONASS, Galileo, and other GNSS systems⁷ operate on spectrum bands that are not identified in the Commission's rules for wireless microphone secondary use and thus would not be the focus of a study established as a result of the Resolution. The spectrum range identified for study is not a proposal to consider anew all spectrum choices in that range but rather reflects only that the propagation characteristics of frequencies above 2 GHz are not optimal for professional audio user needs⁷⁸ as recognized by the FCC⁹ and ITU.¹⁰

Specifically, we comment on Agenda item 10,

RESOLUTION 810 (WRC-15) to be replaced by a NEW RESOLUTION [USA-2023] = USA 100 (XXX)/2 and a DRAFT NEW RESOLUTION [USA/10/XX] (WRC-19) to consider, on the basis of ITU-R studies in accordance with Resolution [USA/10/XX] (WRC-19), appropriate regulatory actions, Studies on additional frequency bands outside the 600 MHz and 700 MHz bands between 150 MHz to 2 000 MHz, and worldwide and/or regional harmonization for terrestrial electronic news gathering systems ("*Resolutions*").

Shure urges the Commission to support this initiative in the WAC membership so that the Resolutions will be approved by WRC-19. The public demand for ENG and other content reliant on PMSE equipment continues to grow worldwide and will require sufficient bandwidth to produce complex programs in higher audio resolution formats.

⁷ These services operate worldwide at 1164-1215 MHz, 1215-1300 MHz, and 1559-1610 MHz and the mobile-satellite service bands at 149.9-150.05 MHz, 399.9-400.05 MHz, 406-406.1 MHz, 1518-1525 MHz, 1525-1559 MHz, 1610-1626.5 MHz, 1626.5-1660.5 MHz, 1668-1675 MHz, and 1980-2010 MHz.

⁸ Cf. Shure's Comments in FCC's GN Dockets No. 14-166 and No. 12-269, available at (<https://ecfsapi.fcc.gov/file/60001026498.pdf>) at 8 & 9.

⁹ FCC 15-100, ¶ 11: <https://www.fcc.gov/search/#q=FCC%2015-100&t=edocs>

¹⁰ ITU-R BT 2338, sections 6.2 & 7: <https://www.itu.int/pub/R-REP-BT.2338-2014>

This Commission and participating stakeholders have devoted significant time and resources to successfully developing spectrum solutions for wireless microphones and other affected services and further appropriate ITU-R study would support potential harmonization. This Resolution, with suggested amendments below, creates significant potential for ITU-R countries to harmonize wireless microphone frequencies with the bands already permitted in Region 1 countries.¹¹

Shure has the following suggestions to improve the discussions before and during WRC-19:

- (1) The term “ENG” as used in the Resolution covers more than newsgathering. As stated in footnote 3 of the Resolution, ENG covers various additional applications of wireless microphones, such as coverage of cultural events (theaters, concerts), sporting events and conventions (i.e., events commonly understood to utilize PMSE equipment). Therefore, Shure suggests the addition in this footnote 3 that ENG “*currently*” represents the mentioned applications.
- (2) Frequency characteristics are different for video and audio ENG below 2 GHz. Therefore, the header of the Resolution USA /10(XXX)/3 wording should include “... for terrestrial *audio and video* electronic newsgathering. Shure further suggests a new subsection “i” be added to the Resolution USA/10(XXX)/3 that “*i) in the future, ENG should be replaced by a broader definition that includes additional audio and video applications, such as coverage of cultural events (theaters, concerts, sporting events), gatherings and conventions (jointly referred to by many regulators and ITU reports as “PMSE”).*”
- (3) Further studies of suitable alternative spectrum outside the 600 and 700 MHz bands are useful so that WRC-23 can consider specific measures such as spectrum harmonization of bands designated for ENG. Other regulators look to the Commission as a source of important guidance for actions elsewhere. Ideally, the studies should cover the entire spectrum of bands that ENG/PMSE uses and

¹¹ United Kingdom just opened access to 960 -1164 MHz in December 2018: https://www.ofcom.org.uk/_data/assets/pdf_file/0017/130751/Ofcom-CAA-joint-communication-Dec-2018.pdf. Several European countries allocate 1350-1400 MHz: <https://www.cept.org/eco/eco-tools-and-services/>

that are affected by the spectrum transitions worldwide. Therefore, in the second line of the “resolves” section of Resolution USA/10(XXX)/3, Shure suggests the additional language “for ENG *audio* operations from the 600 to 700 MHz bands *and other bands affected by the spectrum transitions worldwide.*”

(4) In addition to the measures enumerated in the Resolutions, Shure supports the development of a global data base of the ENG bands. US Working Party 6A has already laid the groundwork for such a data base that could be hosted by the ITU and populated by the various international regulatory bodies worldwide. The relevant spectrum information from the previously supplied CEPT EFIS data base (<https://www.efis.dk/>) should also be integrated. The Commission should promote these efforts and support a worldwide ENG data base on the ITU-R level. Shure therefore suggests a new subsection 5 to the Resolution USA/10(XXX)/3: “5. *to work on a public data base of frequencies that are open for ENG in the various countries, managed and updated by ITU-R.* “

Shure supports the Commission’s efforts during WRC-19 and beyond to ensure that sufficient, viable spectrum is available for ENG/PMSE to meet the growing demand for high quality audio in many applications and sectors and so that wireless microphone users around the globe know in advance which bands are available and can avoid expensive adjustments.

Respectfully submitted,

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