

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

In the Matter of)	
)	
Amendment of Parts 15, 73 and 74 of the)	MB Docket No. 15-146
Commission's Rules to Provide for the)	
Preservation of One Vacant Channel in the UHF)	
Television Band For Use By White Space Devices)	
and Wireless Microphones)	
)	
Expanding the Economic and Innovation)	GN Docket No. 12-268
Opportunities of Spectrum Through Incentive)	
Auctions)	

ORDER ON RECONSIDERATION

Adopted: May 11, 2022

Released: May 11, 2022

By the Commission:

I. INTRODUCTION

1. In this Order on Reconsideration, we deny the Petitions for Reconsideration filed by Sennheiser Electronic Corporation (Sennheiser) and Shure Incorporated (Shure) (collectively, Petitioners) requesting reconsideration and reversal of a Commission Report and Order (*Termination Order*) that declined to adopt rules proposed in a 2015 Notice of Proposed Rulemaking (*2015 NPRM*) to preserve a vacant channel in the television (TV) bands for use by white space devices and wireless microphones and terminated the proceeding.¹ We uphold the conclusions and reasoning in the *Termination Order*. Although we have concluded that we should not proceed with the proposals in this docket, the Commission is committed to supporting white space devices and wireless microphones and has pursued, and continues to pursue, avenues to ensure adequate spectrum availability for the important services they provide.

II. BACKGROUND

A. The 2015 NPRM and Dormant Docket Public Notice

2. In the order adopting rules to implement the broadcast television spectrum Incentive Auction (*Incentive Auction R&O*), the Commission recognized that there would be fewer unused television channels in the TV bands after the auction and repacking process.² The Commission anticipated, however, that at least one channel in the ultra-high frequency (UHF) broadcast TV band

¹ Petition for Reconsideration of Sennheiser Electronic Corp., MB Docket No. 15-146, GN Docket No. 12-268 (filed Jan. 7, 2021) (Sennheiser Petition); Petition for Reconsideration of Shure Inc., MB Docket No. 15-146, GN Docket No. 12-268 (filed Jan. 7, 2021) (Shure Petition). See *Amendment of Parts 15, 73 and 74 of the Commission's Rules to Provide for the Preservation of One Vacant Channel in the UHF Television Band for Use by White Space Devices and Wireless Microphones; Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, MB Docket No. 15-146, GN Docket No. 12-268, Report and Order, 35 FCC Rcd 14272 (2020) (*Termination Order*).

² *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Report and Order, 29 FCC Rcd 6567, 6683-84, 6701, paras. 269, 309 (2014) (*Incentive Auction R&O*) (subsequent history omitted).

would be available for shared use by unlicensed white space devices or wireless microphones.³ Seeking to “create certainty for the unlicensed industry, thereby promoting greater innovation in new devices and services, including increased access for broadband services across the country,” the Commission looked specifically to make spectrum available in the TV bands, the 600 megahertz (MHz) guard bands, and channel 37, some of it on a nationwide basis.⁴ With respect to wireless microphones, the Commission similarly recognized that, following the Incentive Auction and repacking, “much of the UHF spectrum that currently is unused and available for wireless microphone operations may no longer be available” and stated its intent to open a rulemaking proceeding “to explore additional steps [it could] take, including the use of additional frequency bands by wireless microphones.”⁵

3. Subsequently, the Commission adopted the *2015 NPRM* in which it tentatively concluded to preserve a vacant UHF channel in all geographic areas nationwide, and proposed to secure access for use either by unlicensed white space devices or wireless microphones.⁶ Again, the Commission emphasized its finding “that following the incentive auction and repacking of the television bands there would likely be fewer unused television channels available for use either by unlicensed ‘white space’ devices or wireless microphones.”⁷ The Commission explained that it “sought to ‘strike a balance between the interests of all users of the television bands,’ including secondary broadcast stations as well as wireless microphone and white space device operators, for access to the UHF TV spectrum.”⁸

4. Specifically, the Commission proposed new rules that would require television stations applying for new or modified facilities “to make a demonstration that their proposed new, displacement, or modified facility will not eliminate the last available vacant UHF channel in an area for use by white space devices and wireless microphones.”⁹ Under the Commission’s proposal, applicants for Low Power Television Service (LPTV), TV translator, and Broadcast Auxiliary Service (BAS) facilities would be required to make the demonstration “commencing with the post-auction displacement filing window for operating LPTV and TV translator stations,” during a “Special Displacement Window.”¹⁰ Class A stations would make a vacant channel demonstration with applications for modification after the Post-Auction Transition Period.¹¹ The Commission also sought comment on whether full-power television station licensees should have to do the same after the post-auction transition period.¹²

³ *Id.* at 6683-84, 6701 paras. 265-69, 309.

⁴ *Id.* at 6682, 6683, paras. 264, 266; *Termination Order*, 35 FCC Rcd at 14273, para. 3.

⁵ *Incentive Auction R&O*, 29 FCC Rcd at 6704-05, para. 316.

⁶ *Amendment of Parts 15, 73 and 74 of the Commission’s Rules to Provide for the Preservation of One Vacant Channel in the UHF Television Band for Use by White Space Devices and Wireless Microphones; Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, MB Docket No. 15-146, GN Docket No. 12-268, Notice of Proposed Rulemaking, 30 FCC Rcd 6711 (2015) (*2015 NPRM*).

⁷ *Id.* at 6712, 6716, paras. 2, 10.

⁸ *Id.* at 6715, para. 8 (citing *Incentive Auction R&O*, 29 FCC Rcd at 6683, para. 269).

⁹ *Id.* at 6717, para. 12.

¹⁰ *Id.* at 6717-19, paras. 12-17; *Incentive Auction Task Force and Media Bureau Announce Post Incentive Auction Special Displacement Window April 10, 2018, Through May 15, 2018, and Make Location and Channel Data Available*, Public Notice, 32 FCC Rcd 1234 (IATF and MB 2018) (referring to a filing timeframe following the completion of the Incentive Auction for analog-to-digital replacement translators (DRT), LPTV, and TV translator stations displaced by repacking); *Incentive Auction Task Force and Media Bureau Extend Post Incentive Auction Special Displacement Window Through June 1, 2018*, Public Notice, 33 FCC Rcd 3794 (IATF and MB 2018).

¹¹ *2015 NPRM*, 30 FCC Rcd at 6717, 6725-26, paras. 12, 35-36.

¹² *Id.*

5. A range of interested parties filed comments in response to the *2015 NPRM*, supporting and opposing the Commission's initial proposal. White space device proponents emphasized how an open UHF channel would incent investment and innovation in devices that rely on unlicensed spectrum.¹³ Wireless microphone manufacturers, including Petitioners, similarly supported the proposal to preserve one UHF channel, citing benefits for their wireless microphone operations.¹⁴ In opposition, various television broadcasters and broadcaster associations expressed their concern that the Commission underestimated how its proposal would affect them. Specifically, broadcast commenters expressed concerns about its impact on the implementation of the next generation broadcast television standard (ATSC 3.0) and on the roll out of new or improved services, and suggested the proposal was contrary to the longstanding precedent of favoring licensed services over unlicensed.¹⁵

6. The Incentive Auction concluded on April 17, 2017. It established a more efficient spectrum plan. It repurposed 84 MHz of low-band spectrum, including 70 MHz of licensed spectrum for 600 MHz wireless services. To clear the 600 MHz band for wireless use, channels 38 through 51 were reallocated from the television band, decreasing the number of channels available for use by television stations and other users of the broadcast television spectrum to the new "core" channels 2 through 36. While some reverse auction winners ceased operating as a result of their winning bid, most of those television station winners continue to operate in the new TV band, either by moving to VHF channels or entering into channel sharing agreements.¹⁶ By the end of the post-incentive auction transition period, 987 full power and Class A TV stations moved to new channel assignments in the smaller TV band.¹⁷ The LPTV Special Displacement Window that was referenced in the *2015 NPRM* was held in Spring 2018 and resulted in the grant of new channel assignments in the new TV band to over 2,100 LPTV stations.¹⁸ In November 2020, the Media Bureau lifted a number of filing freezes on full power and Class

¹³ See, e.g., Comments of Microsoft Corporation; Comments of Google, Inc.; Comments of the Wireless Internet Service Providers Association; Comments of Wi-Fi Alliance; and Comments of the Consumer Electronics Association (initial comments received Sept. 30, 2015 in MB Docket No. 15-146).

¹⁴ See, e.g., Comments of Sennheiser Electronic Corporation (rec. Sept. 30, 2015) (Sennheiser 2015 Comments); Comments of Shure Incorporated (rec. Sept. 30, 2015) (Shure 2015 Comments); Comments of Performing Arts Wireless Microphone Working Group.

¹⁵ See, e.g., Comments of National Association of Broadcasters; Comments of the Society of Broadcast Engineers; Comments of Sinclair Broadcast Group, Inc.; Comments of Gray Television, Inc.; Comments of Public Broadcasting System, America's Public Television Service and the Corporation for Public Broadcasting; Comments of Advanced Television Broadcasting Alliance; Comments of Low Power Spectrum Rights Coalition; and Comments of National Translator Association (initial comments received Sept. 30, 2015 in MB Docket No. 15-146); see also Reply Comments of 21st Century Fox, Inc., CBS Corporation, The Walt Disney Company, NBC Owned Television Stations (reply comments received Oct. 30, 2015 in MB Docket No. 15-146).

¹⁶ A total of 175 full power and Class A stations were reverse auction winners, accepting over \$10 billion to relinquish their licenses to broadcast on their own 6 MHz channel. Only 41 of those winning bidder television stations, however, went off the air as a result of accepting a winning bid while 30 stations accepted bids to move to VHF channels and the other 104 stations are channel sharing to make more efficient use of spectrum in the television band. The sharing stations are still making their content available to viewers as the sharee of the spectrum licensed to another television broadcaster, now with an influx of capital that can be invested into programming and services to the communities they serve.

¹⁷ *Termination Order*, 35 FCC Rcd at 14276, para. 10 (citing News Release, FCC, Post-Incentive Auction Transition Successfully Meets 39-Month Deadline (July 13, 2020), <https://docs.fcc.gov/public/attachments/DOC-365479A1.docx>).

¹⁸ See *Incentive Auction Task Force and Media Bureau Announce Post-Incentive Auction Special Displacement Window April 10, 2018, Through May 15, 2018, and Make Location and Channel Data Available*, MB Docket No. 16-306, GN Docket No. 12-268, Public Notice, 33 FCC Rcd 1234 (IATF and MB 2018); *Incentive Auction Task Force and Media Bureau Extend Post-Incentive Auction Special Displacement Window Through June 1, 2018*, MB Docket No. 16-306, GN Docket No. 12-268, Public Notice, 33 FCC Rcd 3794 (IATF and MB 2018).

A applications that were established in August 2004 in preparation for the DTV transition, and largely continued in place through the incentive auction and 39-month post-incentive auction transition period.¹⁹

7. In June 2020, the Commission’s Consumer and Governmental Affairs Bureau sought comment on whether this proceeding should be deemed a “dormant docket” and terminated pursuant to section 0.141(h) of the Commission’s rules due to the age and lack of activity in the docket.²⁰ Sennheiser, Shure, Lectrosonics, and a professional engineer, supported the adoption of rules and proposals set forth in the *2015 NPRM* and therefore opposed terminating the docket.²¹ They suggested the Commission should leave the docket open, refresh the record, and adopt the proposal to retain a vacant channel in markets across the country where possible.²² The National Association of Broadcasters (NAB) disagreed and supported the termination of the docket, stating that it was “long overdue,” considering “that the only new fact before the Commission in years in this proceeding is the reduction of available channels due to the incentive auction and repack.”²³ The Consumer and Governmental Affairs Bureau subsequently issued an order terminating several dormant dockets but did not terminate this proceeding given the existence of opposing comments.²⁴

B. The Termination Order

8. In December 2020, the Commission unanimously issued a Report and Order declining to adopt the rules proposed in the *2015 NPRM* for a nationwide vacant channel and terminating the proceeding.²⁵ The Commission described how “[t]he spectrum landscape has changed significantly since 2015,” undermining “the goal of creating a *nationwide* solution,” which had been an essential ingredient to proponents of the *2015 NPRM*.²⁶ The Commission noted that analyses using the Commission’s TVStudy software revealed that there are numerous major metropolitan areas in the United States that have no vacant 6 MHz channels.²⁷ The Commission further explained that it had taken a “number of significant steps to ensure that white space device and wireless microphone operations can flourish,”

¹⁹ *Media Bureau Lifts Freeze on the Filing of Television Station Minor Modification Applications and Rulemaking Petitions Effective Fifteen Days After Publication in the Federal Register*, Public Notice, 35 FCC Rcd 11993 (MB 2020). This action was effective on November 27, 2020. See 85 FR 73706 (Nov. 19, 2020). These included freezes on petitions for rulemaking to change channels, for new channel allotments, and to change communities of license. The Media Bureau has received petitions to substitute a UHF channel for a VHF channel, to change a station’s community of license, or to allot a new channel. Such petitions are subject to a notice of proposed rulemaking proceeding, seeking comment on the proposed rule changes and, if appropriate, are adopted through a report and order and published in the Federal Register.

²⁰ *Consumer and Governmental Affairs Bureau Seeks Comment on Termination of Certain Proceedings as Dormant*, Public Notice, CG Docket No. 20-158, 35 FCC Rcd 5525 (CGB 2020); 47 CFR § 0.141(h).

²¹ *Termination Order*, 35 FCC Rcd at 14276, para. 11 (citing Comments of Sennheiser Electronic Corp., MB Docket No. 15-146 (rec. Aug. 5, 2020) (Sennheiser 2020 Comments); Reply Comments of Sennheiser Electronic Corp., MB Docket No. 15-146 (rec. Aug. 20, 2020) (Sennheiser 2020 Reply Comments); Reply Comments of Shure Inc., MB Docket No. 15-146 (rec. Aug. 20, 2020) (Shure 2020 Reply Comments); Comments of Edgar C. Reihl, MB Docket No. 15-146 (rec. Aug. 5, 2020); Comments of Lectrosonics, Inc., CG Docket No. 20-158 (rec. Aug. 4, 2020)).

²² *Id.* at 14276, para. 11 (citing comments and reply comments received).

²³ *Id.* at 14276-77, para. 12 (citing Reply Comments of National Association of Broadcasters, MB Docket No. 15-146, at 1, 3 (rec. Aug. 5, 2020)).

²⁴ *Termination of Certain Proceedings as Dormant*, Order, CG Docket No. 20-158, DA 20-1138 (CGB 2020).

²⁵ *Termination Order*, 35 FCC Rcd 14272.

²⁶ *Id.* at 14277-78, para. 14 (emphasis in original) (describing how “today’s TV band is smaller and more densely packed than it was at the time the Commission adopted the *2015 NPRM*”).

²⁷ *Id.* at 14277-78, para. 14 nn.39, 40.

since the adoption of the *2015 NPRM*.²⁸ With the adoption of such new and achievable initiatives, the Commission concluded that the “regulatory approach proposed in the *2015 NPRM* is no longer needed and is outweighed by the burden that such an action would place on the broadcast users of the TV band.”²⁹ Instead, the Commission explained that it “believe[d] that [its] more recent actions in other proceedings [will allow] for more robust service and efficient spectral use in the post-Incentive Auction television band as well as in the 600 MHz guard bands and 600 MHz wireless services” and will “allow for enhanced fixed white space device operations in rural areas.”³⁰ Considering wireless microphone users specifically, the Commission noted the steps being taken in other proceedings to ensure sufficient access to spectrum.³¹

9. The *Termination Order* noted that the Commission had “adopted several changes to ensure sufficient spectrum would continue to be available for wireless microphone use.”³² In 2015, the Commission “revised its rules to provide more opportunities for wireless microphones to access spectrum by allowing greater use of the VHF broadcast television channels and more co-channel operations with television stations and adopted more efficient analog and digital technical standards to ensure more efficient use of the available spectrum.”³³ The Commission also expanded eligibility for the licensed use of the 600 MHz duplex gap to all potential wireless microphone licensees, and encouraged wireless microphone use in spectrum bands outside of the broadcast television band, including UHF spectrum in the 900 MHz band.³⁴

²⁸ *Id.* at 14278-79, para. 15.

²⁹ *Id.* at 14279, para. 15.

³⁰ *Id.* at 14278-79, para. 15 (citing *Amendment of Part 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; Amendment of Part 74 of the Commission’s Rules for Low Power Auxiliary Stations in the Repurposed 600 MHz Band and the 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, Report and Order, 30 FCC Rcd 9551 (2015) (*White Spaces R&O*); *Amendment of Part 15 of the Commission’s Rules for Unlicensed White Space Devices; 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; Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, ET Docket Nos. 16-56 and 14-165, GN Docket No. 12-268, Report and Order and Order on Reconsideration, 34 FCC Rcd 1827 (2019) (*White Spaces Order on Reconsideration*); *Unlicensed White Space Device Operations in the Television Bands*, ET Docket No. 20-36, Notice of Proposed Rulemaking, 35 FCC Rcd 2101 (2020) (*White Spaces NPRM*); *Unlicensed White Space Device Operations in the Television Bands*, ET Docket No. 20-36, Report and Order and Further Notice of Proposed Rulemaking, FCC 20-156, 35 FCC Rcd 12603 (2020) (*2020 White Spaces R&O and FNPRM*)).

³¹ *Id.* at 14278-79, para. 15 (citing *Promoting Spectrum Access for Wireless Microphone Operations; Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, GN Docket Nos. 14-166, 12-268, Report and Order, 30 FCC Rcd 8739 (2015) (*Wireless Microphones R&O*); *Promoting Spectrum Access for Wireless Microphone Operations; Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, GN Docket Nos. 12-268 and 14-166, ET Docket No. 14-165, Order on Reconsideration and Further Notice of Proposed Rulemaking, 32 FCC Rcd 6077 (2017) (*Wireless Microphones Order on Reconsideration and FNPRM*)).

³² See *Wireless Microphones R&O*, 30 FCC Rcd 8739; see also *White Spaces R&O*, 30 FCC Rcd at 9554-55, para. 7 (codifying rules for unlicensed wireless microphone operations in the broadcast television bands in 2015).

³³ *Termination Order*, 35 FCC Rcd at 14280-81, para. 20; *Wireless Microphones R&O*, 30 FCC Rcd 8739.

³⁴ See *Wireless Microphones R&O*, 30 FCC Rcd at 8744, para. 11 (adopting revisions to provide new opportunities for wireless microphone operations in the 169-172 and 944-952 MHz bands, and opening portions of three other sets of spectrum bands (the 941-944 and 952-960 MHz bands (on each side of the 944-952 MHz band), the 1435-1525, and the 6875-7125 MHz bands) for sharing with licensed wireless microphone operations under specified conditions).

10. The *Termination Order* described additional Commission action taken in the 2017 *Wireless Microphones Order on Reconsideration and FNPRM* to ensure the capability of wireless microphones following the Incentive Auction and repacking process.³⁵ Specifically, the Commission had made a number of clarifications and adopted technical revisions to rules for licensed and unlicensed wireless microphone operations in the TV bands, including enabling use of the 600 MHz guard band and duplex gap and enabling licensed wireless microphone operations in several frequency bands outside of the TV and 600 MHz bands, including the UHF spectrum in the 900 MHz band.³⁶ In the Further Notice of Proposed Rulemaking, the Commission noted its intent “to ensure that certain professional theater, music, performing arts, or similar organizations that currently operate wireless microphones on an unlicensed basis can obtain licenses to operate in the broadcast television bands as well as other frequency bands, including UHF spectrum in the 900 MHz band, if necessary, to ensure that they can provide the public interest benefits of significantly enhanced event productions to the American people.”³⁷

11. The Commission has consistently recognized the public interests served by white space devices and wireless microphones.³⁸ The *Termination Order* concluded that actions taken to support white space device and wireless microphone users “subsequent to issuance of the 2015 NPRM provide a better alternative for addressing their needs than through efforts to preserve a vacant channel.”³⁹ The Commission also found that those actions have achieved the benefits sought by white space device proponents and satisfied the concerns expressed by wireless microphone operators as contemplated by the 2015 NPRM and obviate the need to impose a vacant channel preservation requirement on television broadcasters.⁴⁰ Conversely, the Commission explained that preservation of a “robust over-the-air broadcast television service” requires “an important spectrum allocation priority, especially to rural areas without adequate MVPD [(multichannel video programming distributor)] and broadband service alternatives.”⁴¹

³⁵ See *Promoting Spectrum Access for Wireless Microphone Operations; Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, GN Docket Nos. 14-166 and 12-268, ET Docket No. 14-165, Order on Reconsideration and Further Notice of Proposed Rulemaking, 32 FCC Rcd 6077 (2017) (*Wireless Microphones Order on Reconsideration and FNPRM*); *Termination Order*, 35 FCC Rcd at 14280-81, paras. 20-22.

³⁶ See *Wireless Microphones Order on Reconsideration and FNPRM*, 32 FCC Rcd at 6079-80, para. 2; *Termination Order*, 35 FCC Rcd at 14280-81, paras. 20-21.

³⁷ *Termination Order*, 35 FCC Rcd at 14280-81, para. 20 (citing *Wireless Microphones Order on Reconsideration and FNPRM*, 32 FCC Rcd at 6069-70, 6119, paras. 2, 77). The comment period closed on this FNPRM on August 30, 2021.

³⁸ *Incentive Auction R&O*, 29 FCC Rcd at 6696-97, para. 300. See also 2015 NPRM, 30 FCC Rcd at 6716, para. 10; *Promoting Spectrum Access for Wireless Microphone Operations et al.*, GN Docket Nos. 14-166, 12-268, et al., Order on Reconsideration and Further Notice of Proposed Rulemaking, 32 FCC Rcd 6077, 6080-81, para. 4 (2017); Sennheiser Petition at 3.

³⁹ *Termination Order*, 35 FCC Rcd at 14281, para. 23. Actions to support white space operations identified by the Commission include the 2015 *White Spaces R&O*, *id.* at 14279, para. 16 (citing *White Spaces R&O*, 30 FCC Rcd at 9553, para. 3 (modifying several rules to allow unlicensed service use in the post-Incentive Auction television band as well as in the 600 MHz guard bands and 600 MHz wireless services band)); the 2019 *White Spaces Order on Reconsideration*, *id.* at 14279, para. 16 (citing *White Spaces Order on Reconsideration*, 34 FCC Rcd at 1828, 1841, 1850-53, paras. 1, 41, 62-67 (increasing the maximum permissible fixed white space device antenna height above ground level in less congested areas, such as rural and underserved areas)); and the proceeding initiated in 2020 to further support white space operations, *id.* at 14279-80, paras. 16-18 (citing *White Spaces NPRM*, 35 FCC Rcd at 2103, paras. 6-7 (adopting new, targeted rules to “spur the continued growth of the white space device ecosystem”)).

⁴⁰ *Id.* at 14278-79, 14281, paras. 15, 23 (citing 2015 NPRM, 30 FCC Rcd at 6716, para. 11).

⁴¹ *Id.* at 14282, para. 23.

12. Looking ahead, the Commission “recognized the promise of next generation ATSC 3.0 service by over-the-air television broadcasters to expand the universe of potential uses of broadcast spectrum capacity for new and innovative services in ways that will complement the nation’s burgeoning 5G networks and usher in a new wave of innovation and opportunity.”⁴² Having restructured the TV band since the 2015 NPRM, the Commission found “that to now adopt a requirement that primary and/or secondary television stations protect spectrum availability for white space devices and wireless microphones in the smaller, more densely packed television band, would not serve the public interest.”⁴³ On balance, the Commission found “that seeking to preserve a vacant channel for shared use by white space devices and wireless microphone operations at this time, considering all of the actions that the Commission has taken since 2015 to promote those users’ interests, [is] outweighed by the burdens of the proposals on broadcasters and we terminate the proceeding.”⁴⁴

13. Since the *Termination Order*, the Commission has continued to pursue paths to support access to spectrum by wireless microphone users. In April 2021, the Commission adopted a Notice of Proposed Rulemaking for the operation of Part 74 low-power auxiliary station (LPAS) devices to permit a recently developed type of wireless microphone system, referred to as a Wireless Multi-Channel Audio System (WMAS), to operate in the TV bands and other LPAS frequency bands on a licensed basis.⁴⁵ The emerging technology, already permitted in Europe under the applicable European Telecommunications Standards Institute (ETSI) standards, “would enable more wireless microphones to operate in the spectrum available for wireless microphone operations, and thus advances an important Commission goal of promoting efficient spectrum use.”⁴⁶ The Commission is now reviewing the record of that proceeding.⁴⁷ Additionally, the Commission recently upheld slightly modified requirements intended to protect licensed wireless microphone users from interference caused by white space devices.⁴⁸ In so doing, the Commission recognized the opportunities provided for licensed wireless microphone users. Specifically, these users now “have immediate and exclusive access to a 4-megahertz portion of the 600 MHz duplex gap and can also use a 2-megahertz portion of the 600 MHz guard band where white space devices are not permitted to operate,” “these wireless microphone operators potentially could make use of the 6-megahertz of the 600 MHz duplex gap available for unlicensed operations if white space devices are

⁴² *Id.* (citing *Promoting Broadcast Innovation Through ATSC 3.0*, MB Docket No. 20-145, Declaratory Rulemaking and Notice of Proposed Rulemaking, 35 FCC Rcd 5916 (2020)).

⁴³ *Id.* at 14282, para. 23.

⁴⁴ *Id.*

⁴⁵ *Amendment of Parts 15 and 74 of the Rules for Wireless Microphones in the TV Bands, 600 MHz Guard Band, 600 MHz Duplex Gap, And 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*, ET Docket No. 21-115, RM-11821, FCC 21-46, Notice of Proposed Rulemaking, 36 FCC Rcd 7908 (Apr. 22, 2021) (*Wireless Microphone WMAS NPRM*).

⁴⁶ *Id.* at 7908, para. 1.

⁴⁷ *See, e.g.*, Comments of Sennheiser Electronic Corp., ET Docket No. 21-115, RM-11821 (rec. Aug. 2, 2021); Reply Comments of Sennheiser Electronic Corp., ET Docket No. 21-115, RM-11821 (rec. Aug. 30, 2021); Comments of Shure Inc., ET Docket No. 21-115, RM-11821 (rec. Aug. 2, 2021); Reply Comments of Shure Inc., ET Docket No. 21-115, RM-11821 (rec. Aug. 30, 2021).

⁴⁸ *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; Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions; Unlicensed White Space Device Operations in the Television Bands; Unlicensed Operation in the TV Broadcast Bands*, ET Docket Nos. 14-165, 20-36, and 04-186, GN Docket No. 12-268, Second Order on Reconsideration and Order, FCC 22-6 (rel. Jan. 26, 2022) (*White Spaces 2nd Order on Recon., FNPRM, and Order*).

not operating at that location,” and, in many parts of the country, one or more unused vacant TV channels may be available for wireless microphones that are not being used by white space devices.⁴⁹

C. Petitions for Reconsideration

14. Two wireless microphone manufacturers – Sennheiser and Shure – filed petitions for reconsideration of the *Termination Order*.⁵⁰ Both support the regulatory structure the Commission proposed in the *2015 NPRM*. Sennheiser asks the Commission to “reverse course, reinstitute the [2015] NPRM, and adopt the proposals set forth therein” for three reasons:⁵¹ a preference for a preserved vacant UHF channel for wireless microphones over other solutions;⁵² consideration of the importance of the UHF TV band to wireless microphone users in the content creation industry;⁵³ and that additional burdens on TV broadcasters would not stifle innovation.⁵⁴ Shure similarly argues that the Commission’s actions since the *2015 NPRM* did not adequately provide spectrum comparable to a vacant channel in the TV band;⁵⁵ that regulatory actions limiting available UHF spectrum since 2015 have had negative implications;⁵⁶ and that the *Termination Order* failed to adequately examine the number of vacant channels available after the Incentive Auction or the “nature and extent of administrative burdens” the vacant channel proposal would impose on broadcasters.⁵⁷

15. The record reflects support for the Petitions and opposition from NAB. A large number of comments were received in support of the Petitions.⁵⁸ Generally, the comments are similar statements expressing strong support for the important functions performed by wireless microphones and support for the designation of one UHF channel for wireless microphone use. Issues are identified regarding the adequacy of higher-frequency alternatives to a vacant UHF channel,⁵⁹ as well as the past costs imposed on wireless microphone users when spectrum availability was moved.⁶⁰ On the other hand, NAB opposed

⁴⁹ *Id.* at para. 22.

⁵⁰ See Sennheiser Petition; Shure Petition (collectively Petitions); *see, e.g.*, Letter from Erich Bechtel, President, Audible Difference Inc., to Marlene H. Dortch, Secretary, FCC, MB Docket No. 15-146 (rec. Apr. 23, 2021) (supporting the Petitions); Comments of the National Association of Broadcasters, MB Docket No. 15-146 (filed Aug. 20, 2020) (opposing the Petitions) (NAB 2020 Comments). No white space device proponents sought reconsideration.

⁵¹ Sennheiser Petition at 5.

⁵² *Id.* at 7-12.

⁵³ *Id.* at 12-15.

⁵⁴ *Id.* at 15-18.

⁵⁵ Shure Petition at 5-12.

⁵⁶ *Id.* at 12-16.

⁵⁷ *Id.* at 16, 16-20.

⁵⁸ In total, approximately 180 such comments were received from individuals and engineers that use wireless microphones, performing arts institutions and associations, religious venues, etc. *See, e.g.*, Comments of The Recording Academy at 3 (rec. Apr. 9, 2021) (stating there are no “practical alternatives for clean UHF spectrum for the audio production community”); Letter from Christopher A. Cecil, Director of Engineering, Cecil Electronic/Global Touring U.S., to Marlene H. Dortch, Secretary, FCC, MB Docket No. 15-146 (filed Apr. 14, 2021) (supporting the Petitions); Letter from Stephen Winstead, to Marlene H. Dortch, Secretary, FCC (filed Apr. 9, 2021) (stating “support for the designation of one channel in the UHF TV band for use by wireless microphones and transmitters”). The majority of comments received in support of the petitions for reconsideration were from individuals and entities that did not previously participate in the underlying proceeding.

⁵⁹ *See, e.g.*, Comments of CP Communications at 2 (rec. Apr. 9, 2021) (Comments of CP Communications).

⁶⁰ *See, e.g.*, Comments of Clean Wireless Audio LLC at 2 (rec. Apr. 1, 2021) (stating the “cost to vacate first the 700MHz band, then a short time later the 600MHz band without sufficient time for proper return on investment, was (continued....)”).

the Petitions, agreeing with the conclusions in the *Termination Order* that central assumptions underlying the 2015 NPRM are no longer viable.⁶¹ Specifically, NAB argues that the preservation of at least one vacant channel on a nationwide basis, “is no longer achievable,” and that it was therefore “entirely appropriate” to close this proceeding in light of the burdens to broadcasters.⁶² NAB further responded that Petitioners’ policy arguments have been considered and rejected and therefore offer no basis for reconsideration. This includes the burden a vacant UHF channel would place on broadcasters,⁶³ “the particular importance of UHF spectrum for wireless microphones,”⁶⁴ and the timing of the *Termination Order*.⁶⁵

16. Both Shure and Sennheiser filed replies to NAB’s opposition.⁶⁶ Both emphasized comments in support of the Petitions, even if a vacant channel could not be provided for wireless microphone use in every market.⁶⁷ According to Petitioners, recent Commission efforts to date have not achieved their goals because alternative frequency bands are not comparable to UHF frequencies, which is the industry standard.⁶⁸ Further, Sennheiser and Shure argue that NAB is wrong that reconsideration is not appropriate,⁶⁹ and question the burdens placed on broadcasters.⁷⁰ Instead, Shure suggests preserving a

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a significant hardship”); Comments of Gotham Sound and Communications, Inc. at 2 (rec. Apr. 9, 2021) (Comments of Gotham Sound).

⁶¹ Opposition to Petitions for Reconsideration of the National Association of Broadcasters at 2 (rec. Apr. 9, 2021).

⁶² *Id.*

⁶³ *Id.* at 4-5 (stating that requirements on broadcasters seeking new or modified facilities “to submit a study demonstrating that their application would not eliminate the last vacant channel in their particular area . . . could have the effect of freezing broadcasters in place and limiting their ability to improve service to viewers in their markets” (citing Comments of the National Association of Broadcasters at 2, 18-19, GN Docket No. 12-268, WT Docket No. 12-269, AU Docket No. 14-252, MB Docket No. 15-146 (rec. Sept. 30, 2015); Reply Comments of the National Association of Broadcasters at 17-18, GN Docket No. 12-268, WT Docket No. 12-269, AU Docket No. 14-252, MB Docket No. 15-146 (rec. Sept. 30, 2015)).

⁶⁴ *Id.* at 5-6 (stating the Commission has considered but rejected “the particular importance of UHF spectrum for wireless microphones” (citing Sennheiser 2015 Comments at 2; Sennheiser Reply Comments at 1; Comments of Shure Incorporated, at 3-5, CG Docket No. 20-158 (rec. Aug. 5, 2020) (Shure 2020 Comments); Letter from Mitchell Lazarus to Marlene H. Dortch, Attachment at 8-9, GN Docket No. 12-268, MB Docket No. 15-146 (Mar. 28, 2018)).

⁶⁵ *Id.* at 6 (disputing “that the Commission should not have terminated the vacant channel proceeding during the presidential transition, because the proceeding was ‘contentious’ or ‘controversial’” (citing Shure Petition at 5 n.11)).

⁶⁶ Reply of Sennheiser Electronic Corporation (rec. Apr. 19, 2021) (Sennheiser Recon Reply Comments); Shure Incorporated Reply to Opposition (rec. Apr. 19, 2021) (Shure Recon Reply Comments).

⁶⁷ Shure Recon Reply Comments at 2-4 (citing Comments of Clean Wireless Audio LLC at 2 (rec. Apr. 1, 2021); Comments of CP Communications at 3; Comments of Gotham Sound at 3; Comments of MSG Entertainment Group, LLC at 6 (rec. Apr. 9, 2021)); Sennheiser Recon Reply Comments at 1-2, 3 (arguing “the FCC’s focus on a small handful of DMAs that may not have a vacant channel available to justify dismissing the entire proceeding was arbitrary and capricious and contrary to the public interest”).

⁶⁸ Shure Recon Reply Comments at 4-5 (citing Comments of CP Communications at 2; Comments of Matthew Emerson (CEAVCO Audio Visual Co.) at 1 (rec. Apr. 12, 2021); Comments of Dave Rupsch at 1, MB Docket No. 15-146 (rec. Apr. 8, 2021); Comments of The Broadway League at 1 (rec. Apr. 14, 2021); Comments of Edgar C. Reihl at 2-3 (rec. Apr. 9, 2021); Comments of Scott Stedronsky (Stage Right, Inc.) at 1-2 (rec. Apr. 14, 2021); Comments of CPR Media Solutions at 1-2 (rec. Apr. 9, 2021)); Sennheiser Recon Reply Comments at 6 (“Contrary to NAB’s assertions, recent FCC actions have significantly decreased the ability of content creators to provide valuable, mission-critical content to consumers.”).

⁶⁹ Shure Recon Reply Comments at 5 (citing *Amendment of Part 74 of the Commission’s Rules Regarding FM Translator Interference*, Order on Reconsideration, MB Docket No. 18-119, FCC 20-141, 35 FCC Rcd 11561,

(continued....)

vacant channel for wireless microphones in every market where there are at least two vacant channels available.⁷¹ Sennheiser also filed an ex parte in which it disagrees with the Commission's assertion in the *Termination Order* that currently there is no vacant 6 MHz channel in multiple major metropolitan areas and included information that purported to identify a vacant channel suitable for wireless microphones use in nearly every top 50 market.⁷²

III. DISCUSSION

17. Parties may petition for reconsideration of final orders in a rulemaking proceeding pursuant to section 1.429 of the Commission's rules. The Commission may grant a petition for reconsideration in whole or in part or may deny or dismiss the petition.⁷³ For the reasons explained below, we deny the Petitions, and affirm the Commission's decision in the *Termination Order* to decline to adopt the proposals of the *2015 NPRM* and terminate this docket.

18. As the Commission held in the *Termination Order*, we find that adoption of the rules proposed in the *2015 NPRM* would not strike the most reasonable balance that would best serve the public interest.⁷⁴ We make this determination in light of other actions taken by the Commission since the *2015 NPRM* that will support wireless microphone users and the burdens that the proposal would impose on broadcasters. Because we agree that the totality of these circumstances support the findings in the

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11562, para. 3 (2020) ("Reconsideration is generally appropriate only where the petitioner shows either a material error or omission in the original order or raises additional facts not known or not existing until after the petitioner's last opportunity to respond.").

⁷⁰ *Id.* at 6 (citing Shure Petition at 17-20), 7 (explaining that "[t]oday there is no wireless microphone equipment that has been certified for use in the 1.4 GHz or 7 GHz bands ... because Commission rules and operational limitations based on shared use and the Part 74 license requirement, materially encumber the spectrum [while] [t]he limited sliver of UHF spectrum available for wireless microphone operations in the 900 MHz band remains encumbered by SBE coordination obligations in addition to the Part 74 license requirement."), 8 ("argu[ing] that the extent of the alleged burden on broadcasters has been greatly exaggerated as the Commission has required all ATSC 3.0 functionality be accomplished within the existing broadcaster channel assignments"), 9 ("fail[ing] to consider or address the obvious merits of reserving a vacant channel wherever possible"); Sennheiser Recon Reply Comments at 4 (disagreeing that it is burdensome for broadcasters "to ensure a vacant channel remains before seeking new or modified facilities").

⁷¹ Shure Recon Reply Comments at 9; *see also* Shure Recon Reply Comments at 3 ("Even with [the two UHF channels exclusively reserved for wireless as part of the 700 MHz reallocation] and other various spectrum bands available, the industry faced steep technical challenges to stage professional productions with the limited available spectrum.").

⁷² *See* Letter from Michael Lazarus and Ashley Brydone-Jack, Counsel for Sennheiser Electronic Corporation, to Marlene H. Dortch, Secretary, FCC, MB Docket No. 115-146 (filed Dec. 7, 2021) (Sennheiser Ex Parte). Sennheiser suggests that the list of channels it identifies in its ex parte letter should be reserved for wireless microphone use. *See also* Letter from Michael Lazarus and Ashley Brydone-Jack, Counsel for Sennheiser Electronic Corporation, to Marlene H. Dortch, Secretary, FCC, ET Docket Nos. 04-186, 14-165, 20-36, 21-115, MB Docket No. 15-146, GN Docket Nos. 12-268, 14-166 (filed Feb. 24, 2022) (Sennheiser Feb. 24 Ex Parte); Letter from Michael Lazarus and Ashley Brydone-Jack, Counsel for Sennheiser Electronic Corporation, to Marlene H. Dortch, Secretary, FCC, MB Docket No. 115-146 (filed Apr. 11, 2022) (Sennheiser Apr. 11 Ex Parte); Letter from Michael Lazarus and Ashley Brydone-Jack, Counsel for Sennheiser Electronic Corporation, to Marlene H. Dortch, Secretary, FCC, MB Docket No. 115-146 (filed Apr. 13, 2022) (Sennheiser Apr. 13 Ex Parte).

⁷³ 47 CFR § 1.429(a), (i).

⁷⁴ *Termination Order*, 35 FCC Rcd at 14274, 14277-78, paras. 6, 15 (citing *White Spaces R&O*, 30 FCC Rcd 9551; *White Spaces Order on Reconsideration*, 34 FCC Rcd 1827; *White Spaces NPRM*, 35 FCC Rcd 2101; *2020 White Spaces R&O and FNPRM*, 35 FCC Rcd 12603).

Termination Order, we reject the Petitioners' claim that the Commission's action was arbitrary and capricious.⁷⁵

19. Petitioners do not dispute the Commission's finding that "[t]he spectrum landscape has changed significantly since 2015"⁷⁶ and acknowledge steps taken in other dockets since 2015 in support of wireless microphone use.⁷⁷ The Commission has explained that, with the Incentive Auction and channel repacking now complete, a single, nationwide vacant channel is not possible.⁷⁸ However, Petitioners argue the Commission should have weighed more heavily the issues they claim favor reviving the 2015 docket, in whole or in part.⁷⁹ Both Petitioners' central argument in favor of reconsideration of the *Termination Order* is that the spectrum needs of wireless microphone users require the preservation of a vacant UHF channel in the TV band as proposed in the *2015 NPRM*.⁸⁰ Sennheiser argues that other proceedings were not intended to replace the *2015 NPRM* vacant channel proposal,⁸¹ and that because the *2015 NPRM* contemplated changes from the Incentive Auction, these foreseen changes cannot be relied upon by the Commission to terminate the proceeding.⁸² Shure argues the other proceedings should continue while revisiting issues raised in this docket in 2015, such as whether something short of a nationwide vacant channel can be preserved for wireless microphone use.⁸³ According to Sennheiser, the Commission's "failure to consider relevant facts established in the record," reliance on evidence that included statements from the NAB, and "the Commission's focus on a small handful of DMAs that may not have a vacant channel available to justify dismissing the entire proceeding was arbitrary and capricious and contrary to the public interest."⁸⁴ Shure similarly challenges the Commission's "uncritically accepted" assertion in the record regarding the burden of the 2015 proposal on licensed broadcasters,⁸⁵ and accuses the Commission of "consider[ing] recent developments and regulatory changes affecting broadcasters but fail[ing] to update the record or take into account developments in the use of spectrum and regulatory rules affecting wireless microphone users."⁸⁶ For the reasons discussed below, we disagree.

20. We reaffirm the conclusions the Commission reached in the *Termination Order* that the steps the Commission has taken in other proceedings since the *2015 NPRM* provide a better alternative

⁷⁵ 5 U.S.C. § 706(2)(A).

⁷⁶ *Termination Order*, 35 FCC Rcd at 14277, para. 14; *see, e.g.*, Sennheiser Petition at 17 n.50 (acknowledging "the reduction in the TV band"); Shure Petition at 3 (acknowledging, "over the course of the past decade, wireless microphone access to UHF spectrum has continued to shrink due to the repurposing of the 700 MHz and 600 MHz bands").

⁷⁷ Sennheiser Petition at 9; Shure Petition at 8.

⁷⁸ *Termination Order*, 35 FCC Rcd at 14277, para. 14; Shure Petition at 20; *see also infra* paras. 21-24.

⁷⁹ Sennheiser Petition at 15 (arguing the Commission did not adequately "consider the potential negative impact and real-world harms that termination of the [2015] NPRM will have on the content creation industry"); Shure Petition at 5 (arguing "the Termination Order should be reconsidered because it fundamentally misstates the circumstances facing wireless microphone operators with respect to spectrum access"). *See also* Sennheiser Ex Parte; Sennheiser Feb. 24 Ex Parte at 2-3; Sennheiser Apr. 11 Ex Parte at 5; Sennheiser Apr. 13 Ex Parte at 5.

⁸⁰ Sennheiser Petition at 7-11; Shure Petition at 7-11.

⁸¹ Sennheiser Petition at 9.

⁸² *Id.* at 17 n.50. Shure alleges that the Commission must seek further comment on pertinent circumstances that have changed since 2015. Shure Petition at 5.

⁸³ Shure Petition at ii, 20-23.

⁸⁴ Sennheiser Petition at 7, 11; Sennheiser 2020 Recon Reply Comments at 3, 5.

⁸⁵ *See, e.g.*, Shure 2020 Recon Reply Comments at 8 (citing *Termination Order*, 35 FCC Rcd at 14281-83, para. 23).

⁸⁶ Shure Petition at 1.

for addressing the needs of wireless microphone providers than through efforts to preserve a vacant channel in light of the burdens the vacant channel proposal would impose on broadcasters.⁸⁷ For example, the Commission made several changes in the *Wireless Microphones R&O* to ensure sufficient spectrum would continue to be available for wireless microphone use.⁸⁸ Following the Incentive Auction and repacking, the Commission revised its rules, as well as analog and digital technical standards, in favor of access to spectrum for wireless microphones in the VHF broadcast television channels and more co-channel operations with television stations.⁸⁹ The Commission now allows wireless microphone licensees to use spectrum in the 600 MHz duplex gap in addition to unused channels in television band spectrum.⁹⁰ Outside of these bands, the Commission has also provided new opportunities for use in UHF spectrum in the 900 MHz band when, in 2017, the Commission further revised rules for both licensed and unlicensed wireless microphone operations in the TV bands, the 600 MHz guard band and duplex gap, as well frequency bands outside of the TV and 600 MHz bands.⁹¹

21. The Commission's continued commitment to supporting wireless microphone users access to spectrum is also demonstrated by the work the Commission has done since the *Termination Order* was issued. For example, the 2022 *White Spaces 2nd Order on Recon., FNPRM, and Order* includes improved protection for licensed wireless microphone users from white space devices and

⁸⁷ See *Termination Order*, 35 FCC Rcd at 14283, para. 23 (“find[ing] that, on balance, seeking to preserve a vacant channel for shared use by white space devices and wireless microphone operations at this time, considering all of the actions that the Commission has taken since 2015 to promote those users’ interests, are outweighed by the burdens of the proposals on broadcasters and we terminate the proceeding”); *Wireless Microphones R&O*, 30 FCC Rcd at 8742, para. 3 (“This proceeding was initiated to explore steps to address wireless microphone users’ longer term needs.”); *Wireless Microphones Order on Reconsideration and FNPRM*, 32 FCC Rcd 6077.

⁸⁸ *Termination Order*, 35 FCC Rcd at 14280, para. 20 (citing *Wireless Microphones R&O*, 30 FCC Rcd 8739). While revising rules in 2017 to “make additional spectrum resources available to accommodate wireless microphones users’ needs over the long term . . . to enable the development of a suite of devices that operate in different bands and can meet wireless microphone users’ various needs while efficiently sharing the spectrum with other users,” the Commission considered concerns raised by Sennheiser and Shure. See, e.g., *Wireless Microphones R&O*, 30 FCC Rcd at 8741, 8744-45, 8749, paras. 4, 13 (discussing manufacturing steps taken “for more efficient use of available spectrum, including the increasing use of newer digital technologies that can greatly expand the number of microphones on a TV channel for many types of applications that do not require the highest sound fidelity” (citing Comments of Sennheiser Electronic Corporation at 6, GN Docket Nos. 14-166 and 12-268 (rec. Sept. 29, 2017) (Sennheiser 2017 Comments); Comments of Shure Incorporated at 8-9, 36, GN Docket Nos. 14-166 and 12-268 (rec. Oct. 2, 2017) (Shure 2017 Comments)), 24 (discussing opportunities for licensed wireless microphone use of these VHF channels (citing Shure 2017 Comments at 30-31)), 31 (adopting the ETSI standard emission masks for LPAS devices used by wireless microphone licensees under our Part 74 rules (citing Sennheiser 2017 Comments at 11; Shure 2017 Comments at 32-33)), 65 (discussing miscellaneous VHF/UHF bands for wireless microphone use (citing Sennheiser 2017 Comments at 21; Shure 2017 Comments at 40-41)), 129 (supporting the use of a portion of the 7 GHz band for wireless microphones (citing Sennheiser 2017 Comments at 25; Shure 2017 Comments at 44)), 138 (considering pairing the 2020-2025 MHz band with the 1920-1930 MHz band for wireless microphone uses (citing Reply Comments of Sennheiser Electronic Corporation at 17, GN Docket Nos. 14-165, 14-166, 12-268 (rec. Oct. 16, 2017); Shure 2017 Comments at 42)).

⁸⁹ *Termination Order*, 35 FCC Rcd at 14280-81, para. 19 (citing *Wireless Microphones R&O*, 30 FCC Rcd at 8744, para. 11 (adopting revisions in favor of wireless microphone operations in the 169-172 MHz band and 944-952 MHz bands, portions of the 941-944 MHz and 952-960 MHz bands (on each side of the 944-952 MHz band), the 1435-1525 MHz band, and the 6875-7125 MHz band).

⁹⁰ *Id.* at 14281, para. 19 (citing *Wireless Microphones R&O*, 30 FCC Rcd at 8744, para. 11; *Wireless Microphones Order on Reconsideration and FNPRM*, 32 FCC Rcd at 6079-80, para. 2); see also *Wireless Microphone WMAS NPRM*, 36 FCC Rcd 7908.

⁹¹ *Termination Order*, 35 FCC Rcd at 14281, paras. 20-21 (citing *Wireless Microphones Order on Reconsideration and FNPRM*, 32 FCC Rcd at 60119, para. 77).

recognized additional access to portions of the 600 MHz duplex gap and guard band.⁹² Although not necessary to support our decision to terminate this proceeding, we also note that the Commission's continued commitment to supporting wireless microphone users access to spectrum is demonstrated in proceedings pending before the Commission. For example, the 2021 *Wireless Microphone WMAS NPRM* proposed technical rules to permit WMAS operation in the TV and other frequency bands on a licensed basis, in response to a Sennheiser petition for rulemaking.⁹³ The Commission also sought to advance its goal of efficient spectrum use by proposing to update technical rules to require compliance with the ETSI standards in the *Wireless Microphone WMAS NPRM*, which will enable more wireless microphones to operate in the spectrum available for wireless microphone operations.⁹⁴

22. When the *Termination Order* was issued, the Commission was aware of Petitioners' arguments about why the Commission's alternative actions to support spectrum access for wireless microphone users are not a substitute for the availability of TV band spectrum.⁹⁵ Sennheiser and Shure asserted that the Commission's actions to support spectrum access outside the TV band were inadequate because TV band UHF spectrum is uniquely valuable to wireless microphone users.⁹⁶ The Commission ultimately rejected such positions.⁹⁷ Despite the arguments concerning technical differences in frequencies and implementation critiques related to alternate spectrum solutions, we continue to find that, on balance, seeking to preserve a vacant channel for wireless microphone operations is outweighed by the burdens of the proposals on broadcasters.⁹⁸ Sennheiser, for example, describes issues with wireless microphone use of specific spectrum bands the Commission identified for use by wireless microphone operators in other proceedings.⁹⁹ In a 2017 proceeding involving technical and operational issues

⁹² *White Spaces 2nd Order on Recon., FNPRM, and Order* at para. 22.

⁹³ *Wireless Microphone WMAS NPRM*, 36 FCC Rcd 7908.

⁹⁴ *Id.* at 7908, para. 1.

⁹⁵ *Termination Order*, 35 FCC Rcd at 14280-81, para. 20 (describing the "several changes" the Commission made "to ensure sufficient spectrum would continue to be available for wireless microphone use" (citing *Wireless Microphones R&O*, 30 FCC Rcd 8739; *White Spaces R&O*, 30 FCC Rcd at 9554-55, para. 7)).

⁹⁶ For example, in both their comments in response to the dormant docket public notice and in their Petitions, Sennheiser and Shure describe the UHF TV band as a technically reliable national and global standard that should be adopted by the Commission. Sennheiser 2020 Comments at 2, 12; Sennheiser Petition at 12; Shure 2020 Comments at 3; Shure 2020 Reply Comments at 5-6; Shure Petition at 3. Sennheiser and Shure also repeat claims that wireless microphone operation in the 600 MHz guard bands and duplex gap is encumbered by a lower 20 mW output power and subject to a high noise due to out-of-band emissions. Sennheiser 2020 Comments at 5; Sennheiser Petition at 10; Shure 2020 Comments at 4-5; Shure Petition at 9. Further, Sennheiser and Shure repeatedly argued that higher frequency bands designated for wireless microphone use are insufficient because they do not mimic the characteristics of the UHF TV band and their use requires prior frequency coordination. Sennheiser 2020 Comments at 5; Sennheiser Petition at 9-10; Shure 2020 Comments at 5-6; Shure Petition at 10-11. Additionally, Sennheiser and Shure previously claimed that the 941.5-944 MHz and 1435-1525 MHz bands are insufficient because they are restricted to "non-itinerant applications." Sennheiser 2020 Comments at 5; Sennheiser Petition at 9; Shure 2020 Comments at 5-6; Shure Petition at 9-11.

⁹⁷ *Termination Order*, 35 FCC Rcd at 14283, para. 23.

⁹⁸ Sennheiser Petition at 7-11; Shure Petition at 7-11.

⁹⁹ Sennheiser Petition at 9-10 (describing issues with wireless microphone usage in the 941.5-944 MHz and the 1435-1525 MHz bands ("restricted to fixed locations (i.e., non-itinerant applications)"); the 944-960 MHz band ("requir[ing] SBE coordination prior to use at a location, which often takes weeks to resolve"); the 6875-6900 MHz and 7100-7125 MHz bands ("the short wavelength . . . limits their usefulness to very short-range, line-of sight applications"); "licensed use of 4 MHz within the 600 MHz duplex gap" ("The 20 mW restriction operated within the high noise duplex gap impairs reliability and limits applications."); the VHF band (30 - 300 MHz) ("challenged by antenna size and efficiency, as well as a high RF noise floor generated from electronic devices in many environments"). See also *id.* at 9-10 ("These bands simply do not offer the flexible access, functionality and usage

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concerning wireless microphones,¹⁰⁰ Sennheiser described these concerns and its support for wireless microphone “interference protection in TV band spectrum” as particularly important in “hyper-critical performances.”¹⁰¹ Shure also takes issue with the “frequencies identified by the Commission in 2017” for wireless microphones operations.¹⁰² According to Shure, issues it raised in other dockets emphasize how other Commission initiatives cannot replace the vacant channel proposal and that “the need to preserve a vacant channel for wireless microphone operations” remains.¹⁰³ However, Shure’s concerns with the loss of a vacant channel and need for “interference protection in the TV” band were considered by the Commission in that proceeding in 2017.¹⁰⁴ Thus despite these technical differences and Petitioner critiques, we believe that on balance the alternate solutions provide a better alternative for addressing the needs of wireless microphone providers than the efforts to preserve a vacant channel in light of the burdens the vacant channel proposal would impose on broadcasters.

23. We recognize the Petitioners’ preference for UHF TV band spectrum to the alternatives adopted to assist the wireless microphone operations, but this is not sufficient grounds to reconsider the Commission’s conclusion not to pursue the *2015 NPRM*. We note that the *Termination Order* does not find that the other proceedings to support spectrum access for wireless microphones are a perfect substitute for the UHF TV band spectrum. We also note that the Commission’s decision not to pursue the *2015 NPRM* did not lessen the spectrum access that wireless microphones currently enjoy in the TV band and indeed the Commission has continued to find ways, and additional spectrum, to accommodate wireless microphones in the future outside of the crowded TV bands. Furthermore, technical issues raised by Petitioners and commenters related to the differences between spectrum in the TV band and other bands have been considered in other dockets.¹⁰⁵ Moreover, although not necessary to support our decision to terminate this proceeding, we also note that the Commission continues to explore these issues in pending proceedings. For example, the *Wireless Microphones Order on Reconsideration and FNPRM* asks how we can ensure that all types of unlicensed wireless microphones users -- including professional theater, music, performing arts, and similar organizations -- can obtain licenses to operate in the broadcast television bands, as well as UHF spectrum in the 900 MHz band, if necessary.¹⁰⁶ This proceeding is also considering issues regarding the licensed use of 4 MHz within the 600 MHz duplex gap.¹⁰⁷ Wireless

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opportunities that the vacant UHF channel was meant to make available in light of the 700 MHz and 600 MHz reallocations.”).

¹⁰⁰ See *Wireless Microphones Order on Reconsideration and FNPRM*, 32 FCC Rcd at 6079, para. 1.

¹⁰¹ Sennheiser 2017 Comments at 2-3 (“Sennheiser fully supports a path to Part 74 licensing for professional arts organizations which require interference protection in TV band spectrum in order to produce high-quality productions.”).

¹⁰² Shure Petition at i.

¹⁰³ *Id.* at 8.

¹⁰⁴ Shure 2017 Comments at 6 (“The decision to eliminate both the unlicensed database registration pathway and the two reserved wireless microphone channels, in anticipation of the TV Band repacking which would result from the 600 MHz Incentive Auction, left no means for an unlicensed wireless microphone operator facing demands for professional grade audio to secure interference protection in the TV Band.”); Reply Comments of Shure Incorporated, Docket Nos. 14-166, 14-165, 12-268, at 12 (rec. Oct. 16, 2017).

¹⁰⁵ See generally Sennheiser Petition at 9-12; Shure Petition at 7-12; Letter from James McCullagh, Live Audio Engineer, to Marlene H. Dortch, Secretary, FCC, MB Docket No. 15-146 (filed Apr. 8, 2021); Comments of The Oregon Shakespeare Festival at 1-2 (rec. Apr. 19, 2021) (discussing spectrum and equipment use).

¹⁰⁶ *Id.* See *Wireless Microphones Order on Reconsideration and FNPRM*, 32 FCC Rcd 6077.

¹⁰⁷ *Wireless Microphones Order on Reconsideration and FNPRM*, 32 FCC Rcd at 6079-80, para. 2; Sennheiser Petition at 9-10; Shure Petition at 6-11. See, e.g., Letter from Damon Gold, Owner/Operator, Bigwater Productions, to Marlene H. Dortch, Secretary, FCC, MB Docket No. 15-146 (filed Apr. 8, 2021) (supporting one or more vacant channels in the UHF TV band for wireless microphone use, “[b]ecause of the penetration characteristics of

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microphone usage in the 941.5-944 MHz and the 1435-1525 MHz bands was considered as part of the *Wireless Microphones R&O*.¹⁰⁸ We also recently took action to protect wireless microphone users from potential white space device interference.¹⁰⁹ While not the Petitioners' preferred approach, we find that, in weighing the needs of all spectrum users, the Commission was justified in not pursuing the *2015 NPRM*, and instead addressing Petitioners' concerns in other proceedings.

24. In weighing those needs, we further affirm that the Commission reasonably concluded that the *2015* vacant channel proposal would impose undue burdens on the broadcast users of the TV band. Shure describes the Commission as having "been vigorous in its efforts to promote and protect the interests of the broadcasting community" and in "prioritiz[ing] the spectrum demands of white space interests [over] the spectrum needs of wireless microphone users."¹¹⁰ Sennheiser disagrees with the Commission that the *2015 NPRM* proposals would unduly burden broadcasters and stifle innovation,¹¹¹ and claims that the Commission afforded undue consideration to broadcaster use of spectrum, given that only a small percentage of households receive television over-the-air.¹¹² Further, Sennheiser claims that the cost of requiring a broadcaster to demonstrate that a new or modified facility would not eliminate a vacant channel, and would be "minimal compared to the benefit of allowing wireless microphones to operate in the UHF TV band."¹¹³

25. We find the Commission adequately weighed the needs of all spectrum users, and supported its decision not to pursue the proposals in the *2015 NPRM* for several reasons, including changed circumstances since 2015 and the alternate initiatives taken by the Commission since 2015.¹¹⁴ We agree with the Commission's decision that the proposal would impose undue burdens on broadcasters "both in congested areas where a vacant channel may not be available in the television band and in less

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frequencies in the 400-600Mhz spectrum," over spectrum above 900 MHz).

¹⁰⁸ *Wireless Microphones R&O*, 30 FCC Rcd at 8744, para. 11; Sennheiser Petition at 9-10; Shure Petition at 6-11; see *Termination Order*, 35 FCC Rcd at 14281, para. 21 n.60 (addressing spectrum allocation considerations).

¹⁰⁹ *White Spaces 2nd Order on Recon., FNPRM, and Order*, at para. 22.

¹¹⁰ Shure Petition at 12-13, 14. Shure describes three examples it believes demonstrate that the Commission prioritized spectrum use of others over wireless microphone users since the *2015 NPRM*: (1) "[white space device (WSD)] stakeholders seeking prospectively to create a market for WSDs" (citing *Unlicensed White Space Device Operations in the Television Bands*, Report and Order and Further Notice of Proposed Rulemaking, ET Docket No. 20-36, 35 FCC Rcd 12603 (2020) (*2020 TVWS Order*)); (2) a potential "ATSC 3.0 item that would optimize the interests of broadcasters to the detriment of wireless microphone users" (citing *Promoting Broadcast Internet Innovation through ATSC 3.0*, Report and Order, MB Docket No. 20-145, 35 FCC Rcd 14492 (2020)); and (3) an "NPRM pertaining to technical rules governing the use of Distributed Transmission Systems ('DTS')," that it fears "would result in signal spillover that would materially reduce the amount of spectrum available for wireless microphones, White Space devices, and other co-channel operations" (see *Rules Governing the Use of Distributed Transmission System Technologies Authorizing Permissive Use of the "Next Generation" Broadcast Television Standard*, MB Docket No. 20-74, GN Docket No. 16-142, Report and Order, 36 FCC Rcd 1227 (2021)). *Id.* at 13-16.

¹¹¹ Sennheiser Petition at 15.

¹¹² *Id.* (citing Nielsen, *The Nielsen Local Watch Report* (Q2 2018), <https://www.nielsen.com>).

¹¹³ *Id.* at 16.

¹¹⁴ *Termination Order*, 35 FCC Rcd at 14281-83, para. 23 (Public Interest Analysis). Nor do we find issue with the Commission's continuation of prioritizing the licensed use of spectrum over unlicensed uses considering the combined actions that the Commission has taken since 2015 to promote wireless microphone usage. *Id.* at 14282, para. 23 (citing *2015 NPRM*, 30 FCC Rcd at 6721, para. 19). See Sennheiser Petition at 13-14, 15 (arguing that "the FCC has been vigorous in its efforts to promote and protect the interests of the broadcasting community, but it has yet to strike the appropriate balance sought in 2015 by giving proper weight to the needs of wireless microphone users").

congested areas where more spectrum is available such that analysis is not warranted.”¹¹⁵ As NAB and a number of broadcasters noted in their 2015 comments, adoption of the proposed rules would serve to freeze full power stations in place and hamstringing their ability to expand or innovate to better serve their viewers.¹¹⁶ And the proposal would require “novel engineering studies” that “would be expensive and time-consuming, particularly for smaller broadcasters” where “the cost of conducting such studies is likely to be multiples of current engineering design costs.”¹¹⁷ Significantly, television stations would bear the administrative burden of studying and proving the availability of channels for other users in order to receive approval of an application that is otherwise grantable in the public interest.¹¹⁸ The Commission properly decided “not [to] deviate from previous Commission decisions that use of the TV bands by primary and secondary broadcast users have priority over wireless microphones and white space devices.”¹¹⁹ Further, although Petitioners’ opine that the adoption of the 2015 proposals would not hinder the development of ATSC 3.0 service by broadcasters,¹²⁰ including new and innovative uses of broadcast

¹¹⁵ *Termination Order*, 35 FCC Rcd at 14283, para. 23; see Sennheiser Petition at 16; Shure Petition at 17-20; Sennheiser Recon Reply Comments at 4; Shure Recon Reply Comments at 4-5; Letter from Patrick McFadden, Deputy General Counsel, National Association of Broadcasters to Marlene H. Dortch, Secretary, FCC, MB Docket No. 15-146 (filed Jul. 28, 2021) (noting “costly technical studies to demonstrate that any application does not eliminate the last vacant channel in a given area”).

¹¹⁶ See Letter from Patrick McFadden, Deputy General Counsel, NAB, to Marlene H. Dortch, Secretary, FCC, MB Docket No. 15-146 et al., at 1 (filed Oct. 29, 2020) (NAB 2020 Letter) (stating that the proposal “would unreasonably restrict the ability of broadcasters to expand service to viewers or offer new and improved service through ATSC 3.0 ... hamper broadcasters’ ability to undertake a successful transition to an improved technology by preventing them from modifying their coverage to facilitate successful sharing and simulcasting arrangements that preserve or improve service to viewers.”); NAB 2015 Comments at 2 and Reply Comments at 17 (stating that adoption of the preservation plan will cause harm to existing television services that viewers rely on today by freezing broadcasters in time and preventing the potential for dynamic and innovative new service offerings); One Media 2015 Reply Comments at 3 (stating that for several years after repacking has been completed broadcasters will need flexibility to adjust their service areas to the extent possible); Sinclair 2015 Comments at 3 (stating that adoption of the plan would destroy vast numbers of broadcast facilities and limit the service area and future growth potential of all others simply to promote availability of an unlicensed service).

¹¹⁷ NAB 2020 Letter at 2.

¹¹⁸ NAB 2015 Comments at 2 (“Troublingly, the Commission does not acknowledge the harms associated with its proposal. Instead, the [2015] NPRM simply asserts that there should be a large number of vacant channels available for displaced LPTV and translator stations, so the impact should be minimal. Of course, if this were true, there would be no reason for the Commission to propose reserving a channel for unlicensed – there would be plenty of channels available for everyone. In short, the Commission’s proposal would cause real, tangible harm in the near term, yet would produce benefits that are speculative at best. For these reasons, the Commission should not adopt its initial proposal.”).

¹¹⁹ *Termination Order*, 35 FCC Rcd at 14279, 14281-82, paras. 15, 23. See, e.g., *Unlicensed Operation in the TV Broadcast Bands; Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band, ET Docket Nos. 04-186 and 02-380*, Second Report and Order, 23 FCC Rcd 16807, 16827, para. 50 (2008) (deciding that future broadcast uses of the television band will have the right to interference protection from TV band devices); *Amendment of Parts 73 and 74 of the Commission’s Rules to Establish Rules for Digital Low Power Television*, Further Notice of Proposed Rulemaking and Memorandum Opinion and Order, 25 FCC Rcd 13833, 13849, para. 47 (2010) (dismissing a petition requesting the Commission condition the authorization of digital companion channels for low power television stations on the acceptance of unlicensed operations on the digital channel); *Digital Television Distributed Transmission System Technologies*, MB Docket No. 05-312, Report and Order, 23 FCC Rcd 16731, 16743, para. 19 (2008) (declining to restrict TV operations to provide more vacant channels for the operation of unlicensed devices).

¹²⁰ “Sennheiser is on the record with its support for the ATSC 3.0 television standard,” and does not believe that “the adoption of a single vacant channel would hinder the development or adoption of this standard, [considering] advances in compression coding and multiplexing.” Sennheiser Petition at 16-17. Shure takes issue with the Commission’s reference, in the *Termination Order*, to technical advances of ATSC 3.0 “that would materially

(continued....)

spectrum that the ATSC 3.0 standard enables,¹²¹ we believe the Commission properly balanced concerns raised in the record that the proposed rules would hamstring the ability of broadcasters to innovate.¹²² Petitioners' support of a scheme that would forgo the nationwide solution proposed by the Commission and sought by proponents of the *2015 NPRM*¹²³ would not ameliorate cost and regulatory compliance burdens for licensed broadcasters.

26. We acknowledge Shure's assertion that the *2015 NPRM* was an integral part of a multi-proceeding effort to support wireless microphones¹²⁴ and that the *Incentive Auction R&O and 2015 NPRM* contemplated that the Incentive Auction would result in changed circumstances.¹²⁵ We do not, however, believe these factors mandate reconsideration. As described herein, the Commission continues to balance and support various spectrum users' needs in multiple proceedings balancing all the facts and circumstances and has concluded that the actions taken in other proceedings to make spectrum available for wireless microphones have achieved the balance sought in the *Incentive Auction R&O* while also addressing the needs of licensed broadcast stations displaced by the Incentive Auction.¹²⁶ For the same reason, we do not believe that Sennheiser's insistence that we pursue the *2015 NPRM*'s proposals in addition to the other proceedings supporting wireless microphones mandates reconsideration.¹²⁷

27. While the focus of the *2015 NPRM* was on a nationwide vacant channel solution,¹²⁸ Petitioners contend that a non-nationwide solution would also benefit wireless microphones and thus the inability to achieve a nationwide solution does not justify termination of the proceeding.¹²⁹ We disagree.

(Continued from previous page)

reduce the amount of spectrum available for wireless microphones, White Space devices, and other co-channel operations" and suggests the Commission should have further developed the record to examine the potential impact of innovation, including ATSC 3.0. Shure Petition at 15, 16 (citing *Termination Order*, 35 FCC Rcd at 14281-82, para. 23).

¹²¹ See *Promoting Broadcast Innovation Through ATSC 3.0*, MB Docket No. 20-145, Declaratory Rulemaking and Notice of Proposed Rulemaking, 35 FCC Rcd 5916, 5916-17, para. 2 (2020). The accompanying Notice of Proposed Rulemaking sought comment on how to further promote the deployment of efficient spectrum use as part of the transition to ATSC 3.0. *Id.* at 5925-35, paras. 18-37. See also *Promoting Broadcast Internet Innovation Through ATSC 3.0*, MB Docket No. 20-145, Report and Order, 35 FCC Rcd 14492, 14492, para. 1 (2020).

¹²² *Termination Order*, 35 FCC Rcd at 14282, para. 23.

¹²³ Shure Petition at ii, 20-23; Sennheiser Petition at 7 n.20; Sennheiser 2020 Recon Reply Comments at 3; Sennheiser Ex Parte at 2; Sennheiser Feb. 24 Ex Parte at 2-3; Sennheiser Apr. 11 Ex Parte at 5; Sennheiser Apr. 13 Ex Parte at 5; see *2015 NPRM*, 30 FCC Rcd at 6716, para. 10 ("We tentatively conclude that preserving a vacant channel *in every area* for use by white space devices and wireless microphones will ensure that the public continues to have access *across the nation* to the significant benefits described above, consistent with our intent to strike a balance between the interests of all users of the television bands, including secondary broadcast stations as well as [white space] devices and wireless microphones, for access to the UHF TV spectrum.") (emphasis added and internal citations omitted). See, e.g., Letter from Paul Margie, Counsel to Microsoft, Corp., to Marlene H. Dortch, Secretary, FCC, MB Docket Nos. 15-146 et al., at 2 (filed Feb. 15, 2018) (requesting preservation of spectrum "nationwide ... to ensure that three channels will remain available in every market, including in urban areas.").

¹²⁴ Shure Petition at 8 (citing *Incentive Auction R&O*, 29 FCC Rcd at 6701, para. 310).

¹²⁵ Sennheiser Petition at 17 n.50. Shure alleges that the Commission must seek further comment on pertinent circumstances that have changed since 2015. Shure Petition at 5.

¹²⁶ See para. 31 *infra*.

¹²⁷ Sennheiser Petition at 9.

¹²⁸ The *2015 NPRM* clearly contemplated a *nationwide* regulatory scheme. *2015 NPRM*, 30 FCC Rcd at 6716, para. 10. See also Sennheiser Reply at 2-3 (citing *2015 NPRM*, 30 FCC Rcd at 6729-30, para. 48 which merely addresses technical matters related to grid size); Shure Petition at 21 (citing *2015 NPRM*, 30 FCC Rcd at 6718, para. 15, which clearly asserts the proposal seeks channels "in every area" and "across the nation").

¹²⁹ Shure Petition at 21; Sennheiser 2020 Recon Reply Comments at 3.

A non-nationwide vacant channel solution would necessarily provide fewer benefits than the proposal as originally conceived without diminishing any of the burdens on broadcasters, especially in rural areas without adequate MVPD and broadband service alternatives, and if anything would therefore further support the Commission's balance of the needs of the various spectrum users.

28. We also reject Shure's unsupported argument that the Commission erred by unanimously adopting the *Termination Order* during the "lame duck" transition period after the national presidential election, which resulted in a change of the party with control over administrative agencies.¹³⁰ Shure's argument is unavailing because it lacks any legal support and, in any event, is now moot because we reject the Petitions on the merits.

29. Market analyses provided by Shure and Sennheiser purporting to indicate vacant channel availability in major DMAs do not support reconsideration.¹³¹ Neither submission alters our conclusion in the *Termination Order* that TVStudy software reveals that there are numerous major metropolitan areas in the United States that have no vacant, 6 MHz channels.¹³² In its petition, Shure describes an "independent preliminary analysis of channel availability" that it conducted using a tool that it developed to "calculate[] vacant channel availability after drawing information from the FCC TV database."¹³³ Using the tool, Shure compiled a list of channels it claims are vacant in the top 10 DMAs.¹³⁴ But the "preliminary analysis" is flawed. For example, channels listed as available in multiple markets, including the two listed for Houston, two for Dallas, two for Los Angeles, and one for Chicago, do not qualify as vacant channels because they are adjacent to land mobile.¹³⁵ Others, including the remaining channels listed for Dallas, Los Angeles, and Chicago also do not qualify as vacant channels because they are identified in LPTV or Class A construction permits or licenses.¹³⁶ Similarly, Sennheiser's ex parte purportedly "update[d] the Commission on new developments" to offer a data analysis. On the basis of that analysis,

¹³⁰ See Shure Petition at n.11.

¹³¹ Shure Petition at 21-22; Sennheiser Ex Parte; Sennheiser Feb. 24 Ex Parte at 2-3; see also Sennheiser Apr. 11 Ex Parte at 3; Sennheiser Apr. 13 Ex Parte at 3. We note that the information provided by Sennheiser is a late-filed supplement to its petition. See 47 CFR § 1.429(d). In the underlying proceeding Sennheiser did not submit any analysis of spectrum availability in major markets, but the information in the ex parte was available during the pendency of the proceeding and so it cannot be deemed a fact that was "unknown" or that "could not have been known by the petitioner at the time of the last opportunity." *Creation of an Additional Private Radio Service*, 1 FCC Rcd at 5.

¹³² *Termination Order*, 35 FCC Rcd at 14277-78, para. 14 ("Analyses using the Commission's TVStudy software reveal that there are numerous major metropolitan areas in the United States that have no vacant, 6 MHz channels.").

¹³³ Shure Petition at 21 n.53.

¹³⁴ Shure Petition at 21-22.

¹³⁵ Channels 16 and 18 in Houston, 15 and 17 in Dallas, 17 and 19 in Los Angeles, and 16 in Chicago are all adjacent to land mobile and therefore could not qualify as a vacant channel. The Commission proposed that a TV channel be considered available if it can accommodate both wireless microphones and 40 milliwatt personal/portable white space devices operating in a manner that meets the rules for protecting co-channel TV stations, other authorized services, and certain receive sites in the TV bands. *2015 NPRM* at 6726, para. 37. White space devices are not permitted to operate in locations where adjacent TV channels are used by land mobile radio services, so a TV channel in such locations would not be considered available under the proposals in the *2015 NPRM*. See 47 CFR § 15.712(d).

¹³⁶ Also, Channel 26 in Dallas is authorized to K26KC-D, channel 27 in Los Angeles to KPOM-CD, and in Chicago, channels 27 to W27EB-D, channel 28 to WEDE-CD, and channel 36 to WRJK-LD. See FCC, *Licensing and Management System (LMS)*, Modification of a License for LPTV Station Application, <https://enterpriseefiling.fcc.gov/dataentry/public/tv/draftCopy.html?displayType=html&appKey=25076ff37f185ced017f1d4d87df0164&id=25076ff37f185ced017f1d4d87df0164&goBack=N> (LMS file numbers: K26KC-D: 0000185207, KPOM-CD: 0000136453, W27EB-D: 0000151822, WEDE-CD: 0000112254, WRJK-LD: 0000105856). Additional channels listed have similar problems and cannot qualify as vacant channels.

it asserts that, with the exception of Phoenix, Arizona, “in almost every major DMA in the United States, there is a vacant channel that could be designated for wireless microphones.”¹³⁷ This analysis is also unconvincing. First, by identifying Phoenix as a market that lacks a vacant channel, the ex parte concedes that the Commission was correct in its assertion in the *Termination Order* that a nationwide vacant channel solution in the TV band as proposed in the *2015 NPRM* is no longer possible.¹³⁸ Furthermore, the analysis described in the ex parte is flawed for several reasons, and therefore it does not undermine the assertion in the *Termination Order* that numerous major metropolitan areas have no vacant 6 MHz channels. First, the analysis is inaccurate in stating that certain channels are available. For example, the ex parte assertion that channel 16 in Salt Lake City is available overlooks a displacement construction permit issued for that channel.¹³⁹ Second, the analysis incorrectly assumes that the identification of an available channel in a specific location demonstrates that the channel could be preserved across an entire DMA. Again, the example of channel 16 in Salt Lake City is illustrative, as the Salt Lake City DMA includes the entire state of Utah and portions of neighboring states. Within that DMA a number of TV translators occupy channel 16, which would disqualify the channel as vacant throughout the entire DMA.¹⁴⁰ Third, some of the channels that the ex parte identifies as available in large markets, such as New York and Los Angeles, could not be deemed vacant for the purposes of the *2015 NPRM* proposals because those channels have land mobile reservations on adjacent channels.¹⁴¹ Finally, the ex parte analysis was performed using a third-party tool found on an internet webpage that utilizes standards that are not consistent with Commission rules to protect TV operations from wireless microphones which in many cases will overstate channel availability as compared to what was proposed in the *2015 NPRM* and is not a reliable method for evaluating the Vacant Channel proposal.¹⁴²

30. Commenters in support of Petitioners also argue for the adoption of a vacant channel as originally proposed as being necessary to the use of wireless microphones given the TV band’s unique characteristics that support wireless microphone use.¹⁴³ Such commenters describe the initially proposed preservation of a vacant UHF channel as a known, reliable preference to alternate spectrum.¹⁴⁴ But aside

¹³⁷ Sennheiser Ex Parte at 1; Sennheiser Feb. 24 Ex Parte at 2-3; Sennheiser Apr. 11 Ex Parte at 3; Sennheiser Apr. 13 Ex Parte at 3.

¹³⁸ *Termination Order*, 35 FCC Rcd at 14277-78, para. 14.

¹³⁹ Low power television station K43JV, Provo, Utah, holds a displacement construction permit for channel 16 which covers Salt Lake City. See FCC, *Licensing Management System (LMS)*, File number 0000049057 (found at <https://enterprise.filing.fcc.gov/dataentry/public/tv/draftCopy.html?displayType=html&appKey=25076ff36267d92a0162681dce9b00fa&id=25076ff36267d92a0162681dce9b00fa&goBack=N>).

¹⁴⁰ See FCC, *TV Query Results*, <https://transition.fcc.gov/fcc-bin/tvq?call=&fileno=&state=UT&city=&chan=16&cha2=16&single=1&serv=&type=&facid=&asrn=&list=2&size=9> (showing many channel 16 licenses in the state of Utah).

¹⁴¹ *2015 NPRM*, 30 FCC Rcd at 6726, para. 37; 47 CFR § 15.712(d).

¹⁴² The tool used to prepare the analysis submitted with the ex parte is found at <https://www.rabbitears.info/searchmap.php>. That tool utilizes the Longley-Rice model, independent of contour, to predict signal levels at a single point. However, the criteria for determining channel availability proposed in the *2015 NPRM* requires both white space devices and wireless microphones to be outside the protected contour of co-channel TV stations. *2015 NPRM* at 6726, para. 37; 47 CFR §§ 15.712(a)(2), 74.802(b)(1).

¹⁴³ See, e.g., Letter from Nevin Steinberg, Modern Projects, Inc., to Marlene H. Dortch, Secretary, FCC, MB Docket No. 15-146 (filed Apr. 8, 2021); Letter from Neil A. Shaw, Menlo Scientific Acoustics, Inc., to Marlene H. Dortch, Secretary, FCC, MB Docket No. 15-146 (filed Apr. 8, 2021).

¹⁴⁴ See, e.g., Letter from Scott Alan Thompson Acoustic Services, LLC, to Marlene H. Dortch, Secretary, FCC, MB Docket No. 15-146 (filed Apr. 9, 2021) (“support[ing] the designation of one channel in the UHF TV band for use by wireless microphones as originally planned by the FCC due to the importance of UHF TV band spectrum for wireless microphone use”); Letter from Abner J Jerez, Live Quality Productions, to Marlene H. Dortch, Secretary, FCC, MB Docket No. 15-146 (filed Apr. 9, 2021).

from the expressions of support for the proposal, these comments raise no new arguments and offer no new evidence. Indeed, none of the comments even address the technical, legal, or policy issues raised in the proceeding, or the 2015 NPRM's specific proposals, or the findings in the *Termination Order*. Thus, while we share the commenters' support for the important work of the wireless microphone industry and are committed to supporting the industry's access to spectrum, the comments do not provide us with grounds to grant reconsideration.

31. In summary, and consistent with the public interest analysis in the *Termination Order*,¹⁴⁵ while we recognize the important benefits provided by wireless microphones in the TV bands, we find that other actions that the Commission has taken to support these users subsequent to issuance of the 2015 NPRM provide a better alternative for addressing their needs than through efforts to preserve a vacant channel in light of the burdens the vacant channel proposal would impose on broadcasters. We agree with the conclusion in the *Termination Order* that we can no longer say that the 2015 NPRM's proposals "will not significantly burden broadcast applicants."¹⁴⁶ In light of changed circumstances, we conclude that the Commission should not deviate from previous Commission decisions that use of the TV bands by primary and secondary broadcast users have priority over wireless microphones and white space devices.¹⁴⁷ We believe that preserving robust over-the-air broadcast television service remains an important spectrum allocation priority, especially to rural areas without adequate MVPD and broadband service alternatives.¹⁴⁸ We continue to recognize the promise of next generation ATSC 3.0 service by over-the-air television broadcasters to expand the universe of potential uses of broadcast spectrum capacity for new and innovative services in ways that will complement the nation's burgeoning 5G networks and usher in a new wave of innovation and opportunity.¹⁴⁹ Having restructured the TV band, we find that to now adopt a

¹⁴⁵ *Termination Order*, 35 FCC Rcd at 14282, para. 23.

¹⁴⁶ 2015 NPRM, 30 FCC Rcd at 6716, para. 11. See Media General 2015 Comments at 5; NAB 2015 Comments (stating the "proposal would cause real, tangible harm in the near term, yet would produce benefits that are speculative at best"); NAB 2015 Reply Comments (the proposal will severely damage LPTV and translator services, significantly restrict broadcaster innovation, remove channels available for potential increased diversity in media ownership).

¹⁴⁷ See 2015 NPRM, 30 FCC Rcd at 6721, para. 19 (citing *TV White Spaces Second Report and Order*, 23 FCC Rcd at 16827, para. 50 ("[F]uture broadcast uses of the television band will have the right to interference protection from TV band devices.")). Cf. *Amendment of Parts 73 and 74 of the Commission's Rules to Establish Rules for Digital Low Power Television*, Further Notice of Proposed Rulemaking and Memorandum Opinion and Order, 25 FCC Rcd 13833, 13849, para. 47 (2010) (dismissing as moot request to condition the authorization of LPTV digital companion channels on the acceptance of unlicensed operations on the channel, stating that "[i]ssues related to the relative spectrum use priorities of licensed stations and unlicensed devices were appropriately addressed in the unlicensed devices proceeding (citing *TV White Spaces Second Report and Order*)); *Digital Television Distributed Transmission System Technologies*, MB Docket No. 05-312, Report and Order, 23 FCC Rcd 16731, 16743, para. 19 (2008) (declining to restrict TV operations to provide "more vacant channels" for the operation of unlicensed devices).

¹⁴⁸ See Meredith 2015 Reply Comments at 1-2 (free over-the-air broadcasting provides an opportunity for viewers to receive high-quality programming without paying for an expensive monthly Internet subscription and provides rural and other hard-to-reach viewers the opportunity to experience the same benefits as their urban counterparts); One Media 2015 Reply Comments at 4 (broadcasters must be able to make changes in their facilities to adapt to changing conditions, whether that be the need to serve new or larger communities or to deploy new and better technology).

¹⁴⁹ *Promoting Broadcast Innovation Through ATSC 3.0*, MB Docket No. 20-145, Declaratory Rulemaking and Notice of Proposed Rulemaking, 35 FCC Rcd 5916 (2020). See Media General 2015 Comments at 5-6 (adoption of the preservation plan would remove broadcasters' flexibility for post-auction facility changes and hinder their deployment of innovative services, such as ATSC 3.0); One Media 2015 Reply Comments at 2 (proposed vacant channel showing could severely limit and may altogether preclude broadcasters' efforts to deploy ATSC 3.0 in a manner that provides the greatest public interest benefits); Pearl 2015 Comments at 2 (television stations must retain their flexibility to offer expanded and innovative services such as ATSC 3.0 in the future).

requirement that primary and/or secondary television stations protect spectrum availability for wireless microphones in the smaller, more densely packed television band, would not serve the public interest. Therefore, we find that, on balance, seeking to preserve a vacant channel at this time, considering all of the actions that the Commission has taken since 2015 to promote wireless microphones interests, are outweighed by the burdens of the proposals on broadcasters.

32. We therefore affirm the Commission's decision in the *Termination Order* to decline to adopt the proposals of the *2015 NPRM* and to terminate this docket, and disagree with Petitioners that the Commission's rejection of the *2015 NPRM* warrants reconsideration.

IV. CONCLUSION

33. For the reasons stated above, we deny the Petitions filed by Sennheiser and Shure requesting reconsideration and reversal of the *Termination Order* and decline to adopt rules proposed in the *2015 NPRM* to preserve a vacant channel for use wireless microphones use.

V. ORDERING CLAUSES

34. Accordingly, **IT IS ORDERED** that, pursuant to sections 1, 4(i), 4(j), 303(r), and 405 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 154(i), 154(j), 303(r), 405 and section 1.429 of the Commission's rules, 47 CFR § 1.429, the captioned Petitions for Reconsideration **ARE DENIED**, for the reasons discussed herein.

35. **IT IS FURTHER ORDERED** that, should no petitions for reconsideration or petitions for judicial review be timely filed, MB Docket No. 15-146 **SHALL BE TERMINATED** and the docket closed.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary