

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

In the Matter of)

Microsoft Petition for Rulemaking Seeking)
Amendment of Part 15 of the Commission's Rules)
for Unlicensed Operations in the Television Bands,)
Repurposed 600 MHz Guard Bands and Duplex)
Gap, and Channel 37)

ET Docket No. 14-165

COMMENTS OF SHURE INCORPORATED

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SUMMARY

Shure recognizes the promise that white space devices hold for bolstering deployment in rural areas. However, the preexisting white space device rules reflect years of careful technical analysis and balancing of competing interests and use cases. Any substantive revisions to the white space rules should reflect a similarly rigorous process and should only occur after careful deliberation and stakeholder input.

In light of such considerations, Shure believes the Commission should not move forward with the Microsoft Petition unless it will first protect wireless microphone operations by:

- Limiting the geographic scope of devices operating pursuant to Microsoft’s proposed rule changes to “less congested areas” as defined by FCC rules;¹
- Continuing to prohibit WSD operation on channels adjacent to assigned TV channels;
- If considered at all, considering Microsoft’s geofencing “mobile fixed device” only at dramatically lower powers and subject to all rules, including distance separation rules, that apply to fixed WSDs;
- Examining the status of the WSD database and taking steps to ensure its successful operation;
- Adopting a rule that expands Part 74 eligibility to professional wireless microphone users who may not be eligible under the current rules which restrict eligibility to users who routinely use 50 microphones or more;² AND
- Considering the proposed narrowband operations only to the extent that they comply with the same emission mask requirements as wireless microphones.

¹ See *infra* Part III.

² See, e.g., 47 C.F.R. § 74.801(h).

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COMMENTS OF SHURE INCORPORATED

Shure Incorporated ("Shure"), by its undersigned counsel, hereby submits these comments on Microsoft's Petition for Rulemaking in the above-captioned proceeding.³ At the outset, Shure acknowledges that it welcomes bona fide attempts to enhance broadband deployment in rural areas and has long maintained that rural deployments are one of the most promising use cases for TV white space technologies provided appropriate interference protection mechanisms are in place to safeguard wireless microphones and other incumbent uses. However, Microsoft's proposed rules changes go well beyond rural environments and well beyond a limited "improvement" or tweaking of the White Spaces rules. Microsoft's proposed amendments signal a "sea change" in the painstakingly constructed White Spaces spectrum sharing/interference protection rules that is neither justified by the meagre technical and operational information supplied in the Petition nor Microsoft's opportunistic effort to portray these fundamental changes as limited revisions needed to address the lack of broadband available

³ *In the Matter of Amendment of Part 15 of the Commission's Rules for Unlicensed Operations in the Television Bands, Repurposed 600 MHz Guard Bands and Duplex Gap, and Channel 37*, Petition for Rulemaking of Microsoft Corporation (filed May 3, 2019) ("Microsoft Petition").

to rural populations. Only one of Microsoft’s proposed rule changes incorporates any limitation to ensure that operations under amended rules would be limited to rural areas and operations under these proposed rules would inevitably proliferate to urban and suburban areas where wireless microphones are more intensely used.

Even if Microsoft’s proposal could be recalibrated along reasonable lines and adequately supported by technical data, the proposal to allow White Space Devices (“WSDs”) with far greater power with some on fully mobile vehicles cannot be implemented without harmful interference to incumbent uses because, as a practical matter, the lynchpin mechanism the Commission created to prevent WSDs from causing interference to incumbents – the White Spaces geolocation database—has failed to launch and is currently not operational. Further, even if these issues could be addressed, Microsoft’s proposed changes throw into sharp relief the critical need to modify the Commission’s rules so that smaller scale wireless microphone users who need reliable interference-free operations are able to obtain the Part 74 licenses required to register in the database for frequency interference.

Conceptually, certain aspects of Microsoft’s proposals could potentially be viable under certain conditions but the FCC should not proceed forward with any of Microsoft’s proposed rules unless the Commission protects wireless microphone operations from the resulting interference by:

- a. Limiting the geographic scope of devices operating pursuant to Microsoft’s proposed rule changes to “less congested areas” as defined by FCC rules;
- b. Continuing to prohibit WSD operation on channels adjacent to assigned TV channels;
- c. If considered at all, considering Microsoft’s geofencing “mobile fixed device” only at dramatically lower powers and subject to all rules, including distance separation rules, that apply to fixed WSDs;

- d. Examining the status of the WSD database and taking steps to ensure its successful operation;
- e. Adopting a rule that expands Part 74 eligibility to professional wireless microphone users who may not be eligible under the current rules which restrict eligibility to users who routinely use 50 microphones or more;⁴ AND
- f. Considering the proposed narrowband operations only to the extent that they comply with the same emission mask requirements as wireless microphones.

I. INTRODUCTION AND BACKGROUND

Shure is a leading manufacturer of high-quality audio equipment including wireless microphones⁵ and other professional audio products⁶ authorized under Part 74 of the Commission's rules for secondary operations in the TV bands. Shure was an intensely involved in the years-long proceedings leading up to the adoption of the Commission's White Spaces rules that allow new unlicensed white space devices to operate in the same spectrum designated for broadcast TV and wireless microphone operations subject to registration and channel selection in a geolocation White Spaces database.

⁴ See, e.g., 47 C.F.R. § 74.801(h).

⁵ "Wireless microphones," as used herein, includes a variety of audio devices authorized under Part 74 and/or Part 15 as secondary users of locally unoccupied television channels. In addition to microphones, this equipment includes in-ear monitors, wireless intercoms, wireless assist video devices ("WAVDs") and wireless cueing ("IFB") systems. See *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, Order, 30 FCC Rcd 9551, 9588, ¶ 95 (2015) ("TV Bands Part 15 R & O") (defining a wireless microphone as "a device that converts sound into electrical audio signals that are transmitted using radio signals to a receiver which converts the radio signals back into audio signals that are sent through a sound recording or amplifying system.").

⁶ "Professional audio" microphones are used as a medium for transmission of multimedia and artistic content, and have corresponding and unique performance requirements. They must capture full audio range, have less than three (3) milliseconds of transmission latency (for some applications less than one (1) millisecond), and have reliability that meets or exceeds the expectations of a wired microphone user.

Wireless microphones continue to play an essential role in supporting productions touching on countless facets of American life, culture, and the economy. Beyond their traditional role in broadcasting and film production, wireless microphones support productions in a wide range of sectors including newsgathering, theater, music, sports, worship, civic events, transportation infrastructure, and education. Demand for wireless microphones continues to expand fueled by, *inter alia*, soaring public consumption of content in many of the aforementioned sectors; exacting expectations for high quality audio in live, recorded, broadcast productions; increased popularity of live events and experiences, e.g., (music, theater, sports, civic events); and continued growth and proliferation of channels of content distribution using broadband, cable, and satellite as well as traditional broadcast.

II. THE COMMISSION SHOULD RIGOROUSLY EVALUATE WHETHER MICROSOFT HAS JUSTIFIED REOPENING THE WHITE SPACES RULES

Microsoft's proposed rules changes go well beyond rural environments and well beyond a limited "improvement" or tweaking of the White Spaces rules. As discussed below, Microsoft's proposed "amendments" would make very significant changes to the WSD rules for power, adjacent channel operations, antenna height, narrowband channels, and even a new category of WSD in a way that raises serious interference concerns for wireless microphones and potentially other incumbent users. Shure was an active participant in the extensive rulemaking proceedings, including technical testing, in which the Commission repurposed a significant amount of spectrum previously available for wireless microphones to high-power wireless broadband in the 600 and 700 MHz bands and implemented new sharing rules to introduce a new class of unlicensed devices in the UHF and other frequencies remaining available to wireless

microphones.⁷ The existing WSD rules are a product of years of rigorous testing, evaluation, and negotiation between many stakeholders and thereby reflect a balance that enabled the introduction of new WSDs on a shared basis while still protecting wireless microphone and broadcast operations from interference. Any efforts to move outside of the careful balance established in this regime must be assessed with the same degree of rigor to prevent harmful interference to wireless microphone and broadcast operations.

III. GRANT OF ANY OR ALL OF MICROSOFT'S PROPOSED RULE CHANGES SHOULD BE LIMITED TO "LESS CONGESTED AREAS"

Shure believes Microsoft should amend its proposals to more directly focus on bolstering rural deployment by incorporating rule language in its proposal that explicitly and exclusively restricts operations under any of the newly modified rules to "less congested areas." Shure is concerned that, as currently proposed, the rules outlined in the petition that would relax certain interference protections are not sufficiently constrained to rural areas. When the FCC adopted the term "less congested areas" in its *2015 TV White Spaces Order*, it did so as a proxy for "rural areas" and as a part of a deliberate effort "to provide more flexibility to white space device operators in rural areas."⁸ In that order, the FCC defined less congested areas as "[g]eographic areas where at least half of the TV channels for the bands that will continue to be allocated and assigned only for broadcast service are unused for broadcast and other protected services and available for white space device use."⁹

⁷ See, e.g., *TV Bands Part 15 R & O*.

⁸ *Supra*, n.4 at 9572, para. 50.

⁹ *Id.*, para 51. See also 47 C.F.R. § 15.703(h). This definition also specifies that "[l]ess congested areas in the UHF TV band are also considered to be less congested areas in the 600 MHz service band.

In its petition, Microsoft speaks at length about the anticipated value of its proposed rule changes for bolstering the prospects for broadband and IOT deployments in rural areas citing rural economies and using rural schoolchildren as an example. However, as proposed, only one of Microsoft's five proposed rule changes (the power limit increase for second-adjacent channels) would be specifically limited to "less congested areas."¹⁰ Unless modified, White Space device operations that develop under the proposed relaxed rule provisions would inevitably shift and expand to urban and suburban areas in consumer, government, enterprise, and commercial activities, such as manufacturing IoT. WSDs operating under the proposed new rules would naturally proliferate to areas of greater population densities and where a greater percentage of consumers may be able and willing to purchase wireless broadband products.¹¹ Absent rule language that confines all of the proposed rules changes to "less congested areas," we can expect that WSDs operating pursuant to the relaxed interference protection requirements proposed by Microsoft will be operating in urban, suburban and other environments. At previous stages of the TV White Space proceedings, a variety of observers expressed similar concerns about the ultimate extent of Microsoft's White Spaces initiative.¹²

If adopted, many of Microsoft's proposed rule changes would likely have different impacts outside of rural areas. For example, it is foreseeable that a large number of wireless IOT

¹⁰ *Supra*, n.3.

¹¹ *See* Microsoft Petition, p. 4 et seq.

¹² *See In the Matter of Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auction et al.*, GN Docket No. 12-268, MB Docket No. 15-146, Notice of Ex Parte Communication of NAB at 1 (filed July 19, 2017) (alleging that "Microsoft is engaged in a regulatory bait and switch."); *Microsoft is Hustling Us With "White Spaces,"* WIRED.com (Jul. 26, 2017), <https://www.wired.com/story/microsoft-is-hustling-us-with-white-spaces/> (noting that Microsoft's true aim is to bolster its economic prospects for international IoT deployments and claiming that "this is the genius of the Microsoft announcement: It is framing its pitch to hit notes the FCC wants to hear, while simultaneously accomplishing its other business goals.").

devices could be operating inside the same buildings where wireless microphones are in use. Microsoft has not examined or justified the universal scope of such operations.

As we stated above at the outset, Shure has consistently been supportive of bona fide efforts to improve rural broadband deployment and has long believed that the primary opportunities for WSD deployments are in rural areas. Microsoft argues that “[t]he time is now right to address a limited number of refinements to the rules to promote further rural deployment.”¹³ For that stated goal, Shure urges the Commission to consider Microsoft’s proposed rules only for a rural context and ensure all proposed rule changes are geographically confined to less congested areas.

IV. MICROSOFT’S PROPOSED OPERATION IN CHANNELS ADJACENT TO ASSIGNED TV CHANNELS SHOULD NOT BE ADOPTED

In evaluating the merits of Microsoft’s proposed rule changes, the FCC should be guided by the principle of “do no harm” to other spectrum users. Shure agrees with the National Association of Broadcasters (“NAB”) that the FCC should deny Microsoft’s proposal to allow more than 40 mW on adjacent-channels.¹⁴ That proposal makes unsubstantiated claims about Next-Gen TV receivers, assuming “ATSC 3.0 receivers will be more robust to adjacent-channel interference” and that “the impending need to upgrade the installed base of DTV receivers ... may present an opportunity to reduce their susceptibility to adjacent-channel interference.”¹⁵ These speculative claims do not form a sound basis upon which to alter power limits in first adjacent channels. The Commission prohibited WSD operations on first adjacent channels after

¹³ Microsoft Petition, p. 3.

¹⁴ See Letter from Patrick McFadden, Associate General Counsel, NAB, to Marlene Dortch, Secretary, Federal Communications Commission, ET Docket Nos. 16-56, 14-165 (filed Mar. 21, 2019), at p. 3.

¹⁵ Microsoft petition, p. 7.

extensive examination, rigorous testing, and input by many stakeholders. Microsoft has not demonstrated any credible reason to revisit that rule and the Commission should not burden Commission staff and the many industry stakeholders with the expenditure of time, human and financial resources to cover this ground again. These issues are not yet ripe for inclusion in an NPRM until such time as it can be demonstrated that operations at higher powers in first adjacent channels can be permitted without causing interference.

V. MICROSOFT HAS NOT DEMONSTRATED SUFFICIENT TECHNICAL SUPPORT TO PERMIT HIGH POWER TRANSMITTERS TRAVELING AT HIGH SPEEDS UNDER MICROSOFT’S GEOFENCING PROPOSAL

Shure is deeply troubled by Microsoft’s proposal to allow virtually unlimited “geofenced” operation of fixed WSDs on fully mobile and “movable platforms.” (Since Microsoft’s proposal does not incorporate any boundaries to limit the speed of movement, the Commission should reject the proposed euphemistic term “moveable platforms” as misleading.) Microsoft is essentially seeking to introduce a new class of WSDs distinct from existing high power fixed WSDs and low power personal portables. Microsoft suggests that the proposed geofenced operation is similar to personal/portables because operations would be restrained to a “pre-defined, polygonal area and prescribe similar interference rules.”¹⁶ However, personal/portables capped at 100 mW of power present a completely different interference scenario than the high power transmitter travelling at high speeds that even Microsoft acknowledges would be covered by geofenced operations under its proposed rules. The proposed power of Microsoft’s geofenced operations is more akin to a high power fixed devices operating up to 16 Watts rather than the personal/portable device operating at a maximum of 100 mW and interference is far more likely to occur.

¹⁶ Microsoft Petition at 25.

Microsoft's proposal fails to provide any limit on the size of the geography geofenced, the speed of movement of the vehicle that would be transmitting at high power while moving¹⁷ or the separation distance carrying essentially a high power fixed antenna. Microsoft claims its experiment proves that its "robust" combination of protections is sufficient. If the Commission decides to further entertain Microsoft's geofencing proposal, operations under this proposal should be subject to other requirements for fixed WSDs including required separation distance. Further, Microsoft should be required to submit for public inspection a thorough and complete test report of its experiment that reflects the basis for its conclusions, including how its experimental geofenced operations interacted with the WSD database in all relevant scenarios.

VI. EXAMINATION OF THE STATUS OF WHITE SPACES DATABASE AND EXPANSION OF WIRELESS MICROPHONE PART 74 LICENSE ELIGIBILITY SHOULD BE PREREQUISITES TO FURTHER CONSIDERATION OF ANY OF MICROSOFT'S PROPOSALS

Even if Microsoft's proposal could be recalibrated along reasonable lines and adequately supported by technical data, the proposal to allow WSDs that are far greater power some of which will be transmitting on fully mobile vehicles cannot be implemented without harmful interference to incumbent uses because, as a practical matter, the lynchpin mechanism the Commission created to prevent WSDs from causing interference to incumbents – the White Spaces geolocation database—has failed to launch and is currently not operational. Shure has received consistent feedback from its wireless microphone user customers that they are going to great effort to comply with the Commission's WSD/wireless microphone rules by registering frequencies in the one or more WSD databases. However, many users are consistently advising

¹⁷ With no justification, Microsoft assumes that vehicles with a WSD operating under its proposed geofencing rules would travel no more than 60 miles per hour and thereby claims that its proposed 1.6 Km boundary and 60 second recheck requirement "ensures" that a device on a moving platform does not leave the geofenced area between the once-per minutes location checks. Microsoft Petition at n. 41.

Shure that the WSD databases are not operating and they are unable to successfully register frequencies for protection from WSDs. Shure is mindful that the WSD equipment market has not yet taken off but is concerned that the WSD database infrastructure so critical to wireless microphone interference protection has broken down and needs Commission attention. For the purpose of evaluating Microsoft's Petition, all parties will need to be confident that the WSD database will be operating reliably and as intended. That is not the case today and therefore Shure urges the Commission not to move forward with further proceedings as requested by Microsoft until it completes a thorough review of the status of the WSD database operations that form the basis of wireless microphone protections in the presence of WSDs.

Further, even if these issues could be addressed, Microsoft's proposed changes throw into sharp relief the critical need to modify the Commission's rules so that smaller scale wireless microphone users who need reliable interference-free operations are able to obtain the Part 74 licenses required to register in the database for frequency interference.

Most such use is on an unlicensed basis and is unprotected from interference because existing Commission rules incorporate a high Part 74 license eligibility threshold that has placed registering frequencies in use out of reach of users that have a need for reliable, uninterrupted professional grade audio but do not meet the threshold number of microphones. Under existing FCC rules, Part 74 license eligibility is limited to large-scale operations that routinely make use of 50 or more wireless microphones.¹⁸ Pursuant to such rules, licensed wireless microphone

¹⁸ See *Revisions to Rules Authorizing the Operation of Low Power Auxiliary Stations in the 698-806 MHz Band, Public Interest Spectrum Coalition, Petition for Rulemaking Regarding Low Power Auxiliary Stations, Including Wireless Microphones, and the Digital Television Transition, Amendment of Parts 15, 74, and 90 of the Commission's Rules Regarding Low Power Auxiliary Stations*, WT Docket Nos. 08-166 and 08-167 and ET Docket No. 10-24, Second Report and Order, 29 FCC Rcd 6103, 6103-104 (2014).

operators carrying out their events/productions are able to “register with the white spaces databases to receive interference protection at specified locations when these events/productions are performed.”¹⁹ Although the FCC has previously directly acknowledged that there are instances when a wireless microphone user that does not meet the 50-device threshold would have interference protection needs similar to a Part 74 licensee,²⁰ there are currently no avenues available under the rules for such users to obtain the interference protections they need. Today, users who need reliable, interference-free spectrum are already challenged by the loss of reserved channels as a result of the repurposing of the UHF band to make way for high power terrestrial uses authorized in the recent 600 MHz auction. As a result, unlicensed wireless microphone operations are even more vulnerable today to harmful interference from WSDs and their operation could be severely harmed by unexpected encounters with mobile WSDs operating at higher power levels as would occur if the Commission ultimately adopted rules as proposed in the Microsoft Petition.

In its 2015 petition for reconsideration, Shure proposed a direct remedy to the aforementioned problem – a “reservation system that would make registration protection available in special circumstances requiring a high degree of reliability for a user that does not typically use 50 or more microphones.”²¹ It is worth noting that there is an overwhelming and

¹⁹ *In the Matter of Promoting Spectrum Access for Wireless Microphone Operations, et al.*, Order on Reconsideration and Further Notice of Proposed Rulemaking, GN Docket Nos. 14-166, 12-268, ET Docket No. 14-165, 32 FCC Rcd 6077, 6120 (2017).

²⁰ *See Unlicensed Operation in the TV Broadcast Bands and Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz band*, ET Docket Nos. 04-186 and 02-380, Second Memorandum Opinion and Order, 25 FCC Rcd 18661, 18674-75, ¶¶ 31-32 (2010).

²¹ *In the Matter of Promoting Spectrum Access for Wireless Microphone Operations, et al.*, Petition for Reconsideration of Shure Incorporated, pp. 13-15 (filed Dec. 23, 2015).

diverse record of support for expansion of Part 74 eligibility akin to the reservation system proposed by Shure.²² However, despite this well-documented need, the Commission has yet to act on Shure’s wireless microphone licensing proposal and there has been no indication whether or when it will.

Microsoft’s proposed geofenced operations are a prime example of the reason why the Commission should not grant any of Microsoft’s proposals without first expanding Part 74 license eligibility. For instance, in the referenced mobile school bus operation scenario in Hillman, Michigan, where Microsoft envisions “[providing] internet connectivity for students on school buses using on-board WSDs,”²³ Microsoft states that no interference would occur because the project “[combined] compliance with existing technical limits and separation distances... with the use of geofencing.”²⁴

However, Shure foresees reasonably likely interference situations that must be considered. While there are parts of rural areas where there is little residential or commercial activity, there are other areas where there is significant use of wireless microphones, including uses that requires professional grade audio that deserve interference protection from WSDs. The need for this protection is even more important should the Commission consider relaxing the WSD interference protection rules and enabling WSDs operating under such rules on mobile and moveable platforms and potentially at much higher powers. While Microsoft discusses how its geofencing rule for fixed WSDs on moveable platforms would “restrain operations to a pre-

²² See generally Comments filed in ET Docket No. 14-165 (more than one hundred comments filed in support of expansion of “Part 74 license eligibility to include persons and organizations that can demonstrate the need for professional, high-quality audio and have the capability of providing it through conscientious use of wireless microphones” filed since October 2, 2017).

²³ Microsoft Petition, pp. 22-23.

²⁴ *Id.*, p. 24.

defined, polygonal area,”²⁵ it also references how the bus rides for some of the Hillman students “can be as long as two hours each way.”²⁶ Considering that some states can be traversed by vehicles in under two hours, geofencing would effectively amount to operations without limit, covering significant territory, and accordingly expanding the opportunities for interference incidents to occur.

It is not accurate to assume that there are no uses of wireless microphones in rural areas that require interference protection. Events in less populated areas requiring clear, reliable professional audio include sporting events, houses of worship, civic venues, and educational institutions. It is reasonably foreseeable that a bus travelling large distances multiple times a day would come in close contact with a school or civic venue during assemblies and events and interfere with wireless microphones in use because they were not licensed (and registered) and in fact could not be licensed because the entity does not routinely use a large number of microphones. Certainly one can foresee that a fixed device installed on a vehicle would likely come into close proximity to Houses of Worship in rural areas which could interfere with church productions that often use a dozen or so wireless microphones.

As the above examples illustrate, there are multiple anticipated instances in which professional-grade wireless microphone performance is required even though the end users often make use of fewer than fifty microphones. Audiences in those situations expect and deserve professional-grade audio just as much as those served by the current class of Part 74 eligible licensees. Given that large-scale Part 74 eligible professional audio operations (e.g., large entertainment venues, film production outfits, and megachurches) are typically located in urban

²⁵ Microsoft Petition, p. 25.

²⁶ Microsoft Petition, p. 23.

or suburban areas with higher levels of population density, it is likely that a higher percentage of rural Americans fall into the at-risk category of users who require professional-grade audio for operations with fewer than fifty microphones. These uses would be jeopardized by adoption of the rules proposed in the Microsoft Petition unless these wireless microphone operators were able to register their wireless microphone usage, albeit smaller, in the WSD database. Granting Microsoft's mobile platforms proposal exacerbates the risk of harmful interference to small-scale wireless microphone operations, and such users should no longer be forced to leave the safety and integrity of their operations and equipment to chance.

Shure urges the Commission not to initiate a rulemaking in response to Microsoft's Petition unless and until it expands Part 74 eligibility so that currently unlicensed users who need protection are afforded that protection under the Commission's rule. This approach would be the only bona fide way to prevent interference to the professional quality wireless microphone uses that would be adversely affected by WSDs operating under the rules amended as proposed.

VII. NARROWBAND WSDS SHOULD BE SUBJECT TO THE SAME OR A SIMILAR EMISSIONS MASK TO THAT OF WIRELESS MICROPHONES

In its Petition, Microsoft proposes a new category of devices which it refers to as narrowband white space devices.²⁷ In the course of proposing operating parameters for such devices, Microsoft essentially argues that existing rules are overly restrictive with respect to in-band emissions in a way that dampens the prospects for narrowband WSDs, noting that "while a WSD operating at 12.6 dBm in a 100 kHz channel...in the center of a 6 MHz channel may have a conducted adjacent-channel emission above the [prescribed] limit... 100 kHz beyond the edge of the narrowband channel, it would not...100 kHz beyond the edge of the 6 MHz channel.

²⁷ Microsoft Petition, at 21.

Thus... the key performance metric should be compliance with the existing emissions limit of -42.8 dBm at 100 kHz beyond the edge of the applicable 6 MHz channel, not within the channel.”

While Shure appreciates Microsoft’s perspective on this issue, the company believes Microsoft’s suggestion does not adequately account for the need for interference-free coexistence with wireless microphones in co-channel operations. In the wake of the Commission’s broadcast incentive auction, there are fewer TV channels available – a fact which increases the likelihood that there will be situations in which narrowband WSDs will have to share channels with wireless microphones. In the interest of ensuring effective channel sharing operations, Shure urges the Commission to subject narrowband WSDs to the same or similar emissions mask to that which is applicable to wireless microphones.

VIII. CONCLUSION

Shure respectfully submits that the Commission not move forward on any of Microsoft’s proposed rule changes unless it duly protects wireless microphone users from the resulting harms by:

- a. Limiting the geographic scope of devices operating pursuant to Microsoft’s proposed rule changes to “less congested areas” as defined by FCC rules.
- b. Continuing to prohibit fixed WSD operation on channels adjacent to assigned TV channels.
- c. If considered at all, considering Microsoft’s geofencing “mobile fixed device” only at dramatically lower powers and subject to all rules, including distance separation rules, that apply to fixed WSDs.
- d. Examining the status of the WSD database and taking steps to ensure its successful operation.
- e. Adopting a rule that expands Part 74 eligibility to professional wireless microphone users who may not be eligible under the current rules which restrict eligibility to users who routinely use 50 microphones or more;²⁸ AND

²⁸ See, e.g., 47 C.F.R. § 74.801(h).

- f. Considering the proposed narrowband operations only to the extent that they comply with the same emission mask requirements as wireless microphones.

Respectfully submitted,

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