

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

In the Matter of

Promoting Spectrum Access for Wireless
Microphone Operations

GN Docket No. 14-166

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

ET Docket No. 14-165

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

GN Docket No. 12-268

COMMENTS OF MICROSOFT CORPORATION

Paula Boyd
*Senior Director, Government
and Regulatory Affairs*

Michael Daum
Director, Technology Policy

MICROSOFT CORPORATION
901 K Street NW, 11th Floor
Washington, DC 20001

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I. INTRODUCTION AND SUMMARY.

The Commission has taken significant steps to ensure that wireless microphones have access to sufficient spectrum in which to operate. So there is no need to expand Part 74 Low Power Auxiliary Services (“LPAS”) eligibility for operations in the TV bands and 600 MHz band, especially when this action will undermine wireless broadband services and the potential to connect 24 million rural Americans to broadband. In the past several years, the Commission has made substantial accommodations for wireless microphone operations. These efforts have included opening up almost 150 MHz of new spectrum in addition to the spectrum below 700 MHz for LPAS to help provide “new homes” for wireless microphones.¹ Additionally, the Commission has made several rule changes that benefit wireless microphones in areas of the TV bands and 600 MHz band where white space devices cannot operate.

The *Further Notice* seeks comment on expanding LPAS eligibility to include additional performing arts organizations that use fewer than 50 wireless microphones.² As the Commission recognizes, however, it is important to do so in a manner that both promotes spectral efficiency and “ensur[es] that spectrum . . . remains available for other uses, such as by white space devices.”³ The Commission should take three steps to accomplish these goals.

¹ See *Promoting Spectrum Access for Wireless Microphone Operations and Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Report and Order, 30 FCC Rcd. 8739, 8820 (2015) (“Wireless Microphones First R&O”) (statement of then-Commissioner Ajit Pai).

² *Promoting Spectrum Access for Wireless Microphone Operations, et al.*, Order on Reconsideration and Further Notice of Proposed Rulemaking, FCC No. 17-95, GN Docket Nos. 14-166, 12-268, ET Docket Nos. 14-165, 10-24, WT Docket Nos. 08-166, 08-167, ¶¶ 77-93 (rel. July 14, 2017) (“Wireless Microphone FNPRM”).

³ See *id.* ¶¶ 89-92.

First, the Commission should require any new class(es) of LPAS licensees to use the significant amount of spectrum already available outside of the TV band and 600 MHz bands, including the new spectrum bands recently allocated by the Commission. These bands can easily accommodate productions using fewer than 50 wireless microphones—particularly given recent advances in wireless microphone technologies that have improved the spectral efficiency of LPAS devices. Preserving the status quo with respect to Part 74 eligibility where white space devices operate would also provide incentives to deploy more efficient wireless microphone technologies in the other areas of the TV band and 600 MHz band where the rules do not permit white space devices.

Second, while the Commission should not expand Part 74 eligibility in the TV white spaces, if the Commission does so, it should at least include meaningful safeguards to ensure that spectrum remains available for white space device operations. In particular, the Commission should require new Part 74 LPAS licensees to demonstrate that spectrally efficient wireless microphone technologies currently available in the market would be insufficient to accommodate their operations and that white space database reservations would not eliminate the last available vacant television channel in their location.

Finally, the Commission should only expand Part 74 eligibility if it can do so in a way that reasonably limits that expansion to actual performing arts organizations. Although the *Further Notice* seeks comment on granting licenses to “certain professional theater, music, performing arts, or similar organizations that operate wireless microphones,”⁴ the proposed rule is far more expansive—potentially opening up Part 74 to any entity that could demonstrate need

⁴ *Id.* ¶ 77.

and capability to provide professional audio.⁵ Attempting to assess eligibility on a case-by-case basis based on vague claims of need and technical competence would also be administratively burdensome and result in inconsistent outcomes based on the judgment of the staff assessing those requests.

II. THE COMMISSION HAS MADE SUBSTANTIAL ACCOMMODATIONS FOR WIRELESS MICROPHONE OPERATIONS, AND SUPPORTING PERFORMING ARTS ORGANIZATIONS REQUIRES NO FURTHER ACTION IN THE TV AND 600 MHZ BANDS.

As the Commission has recognized, it has already taken numerous steps “to accommodate wireless microphone users’ needs by providing access to spectrum in various frequency bands,”⁶ even as spectrum demand for wireless broadband and other critical applications continues to skyrocket. This recognition should inform the Commission’s future decisions regarding additional accommodations for wireless microphones, including the proposals in this proceeding. Indeed, this should be the case particularly when those decisions would decrease the utility of other socially and economically beneficial wireless uses.

There are Substantial Existing Wireless Microphone Accommodations in the TV Band and 600 MHz Band. The Commission has implemented several rule changes to accommodate wireless microphone operations in the television bands. Some of these changes have promoted efficient microphone operations without significantly impacting other uses. For example, the Commission has provided additional flexibility regarding VHF channel transmit power measurements to “help wireless microphones with small internal or external antennas overcome some of the efficiency loss that results from the longer wavelengths in VHF frequencies.”⁷ It

⁵ *Id.* at Appendix C, Proposed 47 C.F.R. § 74.801

⁶ Wireless Microphone FNPRM ¶ 4.

⁷ Wireless Microphones First R&O ¶ 23.

also permitted wireless microphones to operate co-channel with broadcasters at closer distances than previously permitted,⁸ legitimizing what appears to have been a widespread and long-standing practice of co-channel operation notwithstanding previous FCC rule requirements.⁹

Significantly, however, other changes have come at the cost of diminishing the utility of the TV band for white space devices. These changes include reserving a portion of the duplex gap exclusively for licensed wireless microphone use,¹⁰ permitting unlicensed microphones—but not white space devices—to access most of the guard band between channel 37 and 600 MHz downlink frequencies,¹¹ and creating a technologically infeasible database “push” requirement (which is currently on hold pending petitions for reconsideration by parties that have raised procedural and substantive concerns).¹²

There are Substantial Existing Wireless Microphone Accommodations Outside of the TV Band. The Commission has also taken several steps to accommodate the long-term needs of wireless microphone operations by increasing spectrum availability outside of the television bands. As part of these efforts, the Commission opened up three additional spectrum bands for wireless microphone operations under Part 74, including (1) most of the 941-944 and 952-960 MHz bands; (2) the 1435-1525 MHz band (for fixed venues with a need to deploy large numbers

⁸ *Id.* ¶ 28.

⁹ Comments of Microsoft Corporation at 14-15, WT Docket No. 08-166, WT Docket No. 08-167, ET Docket No. 10-24 (filed Jan. 25, 2013).

¹⁰ Wireless Microphones First R&O ¶¶ 38-40.

¹¹ *See* 47 C.F.R. § 15.236(c)(4).

¹² *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 Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Order, ET Docket No. 14-165 and GN Docket No. 12-268 (rel. Sept. 15, 2017).

of microphones); and (3) the 6875-6900 MHz and 7100-7125 MHz bands.¹³ These actions alone potentially free up almost 150 MHz of additional spectrum for licensed wireless microphone operations. Figure 1 illustrates the spectrum available for wireless microphone operations outside of the TV band and 600 MHz band as a result of recent actions undertaken by the Commission.

Figure 1: Spectrum Available for Wireless Microphone Operations Outside of the TV Bands

<i>Frequency Band</i>	<i>Licensed/Unlicensed</i>	<i>Rule Part</i>
26.1-26.48 MHz (VHF)	Licensed	Part 74
161.625-161.775 MHz (VHF)	Licensed	Part 74
Portions of 169-172 MHz band (VHF)	Licensed	Part 90
88-108 MHz (FM)	Unlicensed	Part 15
450-451, 455-456 MHz (UHF)	Licensed	Part 74
941.5-952, 952.85-956.25, 956.45-959.85 MHz (UHF)	Licensed	Part 74
902-928 MHz, 2.4 GHz, 5 GHz (ISM bands)	Unlicensed	Part 15
1435-1525 MHz Band	Licensed (larger, fixed venues)	Part 74
1920-1930 MHz (unlicensed PCS)	Unlicensed	Part 15
6875-6900 MHz and 7100-7125 MHz (7 GHz Band)	Licensed	Part 74
Ultra-wideband (3.1-10.6 GHz)	Unlicensed	Part 15

The Commission intends to enable newly eligible LPAS licensees to operate in spectrum outside of the 600 MHz band and TV band—specifically the new 900 MHz, 1.4 GHz, and 7 GHz wireless microphone bands.¹⁴ The Commission should adopt this proposal, since rules that encourage wireless microphones to use these frequencies will promote efficient spectrum use both inside and outside the TV bands.

¹³ See Wireless Microphone FNPRM ¶ 90.

¹⁴ *Id.*

However, the Commission should not expand Part 74 LPAS eligibility in the TV bands and 600 MHz band where spectrum available for white space devices is already highly constrained. The success of TV white spaces technologies will require reliable access to a minimum of three usable 6 MHz-wide channels in each market.¹⁵ Thus, any meaningful increase in the number of entities that are capable of excluding unlicensed broadband operations from these frequencies could render white spaces technologies infeasible. For example, if the Commission's rules do not impose efficiency criteria, a newly eligible Part 74 LPAS licensee could exclude unlicensed operations simply by reserving a channel to accommodate a single 200 kHz narrowband microphone. Because there is no need to grant further special rights to wireless microphones in the TV bands and 600 MHz band to achieve the Commission's goal of supporting small performing arts organizations, the cost of doing so and undermining consumer wireless services is not justified.

¹⁵ See, e.g., Letter from Govs. Bevin, Brownback, Bryant, Burgum, Hickenlooper, Hutchinson, Inslee, McAuliffe, Raimondo, and Scott to Chairman Pai, GN Docket No. 12-268, ET Docket No. 14-165, MB Docket No. 15-146, ET Docket No. 16-56 (filed Sep. 21, 2017) (requesting that the Commission ensure access to “at least three white space channels in every U.S. market”); see also *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*, Notice of Proposed Rulemaking, 30 FCC Rcd. 6711, ¶ 10 n.26 (2015) (“Vacant Channel NPRM”) (explaining that the Commission has taken actions in the Incentive Auction proceeding “to make available a significant amount of spectrum for white space device operations, including in the post-auction television bands, in order to help create certainty for the unlicensed industry and thereby promote greater innovation in new devices and services, including increased access to broadband services across the country.”).

III. COMMISSION POLICIES SHOULD RECOGNIZE AND PROMOTE THE USE OF EFFICIENT WIRELESS MICROPHONE TECHNOLOGIES.

As the *Further Notice* observes, “[w]ireless microphone technology has improved substantially in recent years.”¹⁶ Microsoft agrees that more efficient technologies are now available, and also agrees with the Commission that these improvements should “be part of the solution” for accommodating wireless microphone operations “in the spectrum-constrained environment.”¹⁷ The Commission should account for this efficiency in three ways.

First, the Commission should recognize the increased utility of VHF band spectrum for wireless microphone operations. As the Commission observes, “wireless microphone users . . . have access to additional spectrum in the TV bands . . . where unlicensed white space devices cannot operate.”¹⁸ This spectrum includes not only the three megahertz guard band, but also “vacant TV channels that are available for wireless microphone operations but not available for white space device operations (based on applicable operational rules for white space devices operations)”¹⁹ For example, personal/portable white space devices may not operate in the VHF TV bands below channel 14.²⁰

Although wireless microphone manufacturers previously have told the Commission that VHF wireless microphone equipment was largely unavailable in the marketplace,²¹ this no

¹⁶ Wireless Microphone FNPRM ¶ 89 n.269.

¹⁷ *See id.*

¹⁸ Wireless Microphone FNPRM ¶ 89.

¹⁹ *Id.* n.270.

²⁰ *See* 47 C.F.R. § 15.707(a)(1).

²¹ *See Office of Engineering and Technology and Wireless Telecommunications Bureau Announce Nationwide Launch of Unlicensed Wireless Microphone Registration System*, Public Notice, 27 FCC Rcd. 15,102, 15,106 (2012) (“It is our understanding at this time,

longer appears to be the case. For example, while Shure previously ceased manufacturing VHF wireless microphones in 2004, it has recently been able to take advantage of “dramatic radio circuitry advances [that] have fueled the development of VHF systems that incorporate features like wide tuning range and greater spectral efficiency that were previously available only on UHF systems.”²² As a result, Shure has introduced new VHF microphone systems that “match their UHF counterparts feature for feature, offering high-quality sound, 42 MHz of predictable tuning bandwidth, networking capabilities, and a full range of antenna accessories for optimized RF coverage.”²³ In fact, according to Shure, VHF systems “may be more efficient at transmitting through air, walls and human bodies” than their UHF counterparts.²⁴ The Commission can also reasonably expect even greater utilization of the VHF band as a result of its recent rule changes providing additional flexibility for VHF microphone operations.²⁵

Second, the Commission should recognize wireless microphone manufacturers’ continuing advances in digital technologies. For example, according to a recent Sennheiser Electronic Corporation (“Sennheiser”) filing, Sennheiser and “all other major manufacturers” now offer digital systems, and frequently introduce new ones.²⁶ Using digital technologies

through feedback from the wireless microphone industry, that as a practical matter there is very little professional quality equipment available in the VHF spectrum (Channels 2-13).”).

²² Davida Rochman, *The Search for Spectrum: Wireless Systems in the VHF Band*, SHURE BLOG (Dec. 2, 2016) (quoting Gino Sigismondi, Shure Associate Director of Technical Support and Training), <http://blog.shure.com/the-search-for-spectrum-wireless-systems-in-the-vhf-band/>.

²³ *Id.*

²⁴ *Id.*

²⁵ See Wireless Microphones First R&O ¶ 23.

²⁶ Letter from Joe Ciaudelli, Director, Spectrum Affairs, Sennheiser Electronic Corporation, to Marlene H. Dortch, Secretary, FCC, at 2, ET Docket No. 14-165 (filed July 5, 2017).

means that, in certain circumstances, “dozens of microphones” can access a single 6 MHz channel simultaneously.²⁷

Sennheiser maintains that the digital technologies which result in highly efficient spectrum use are appropriate only for “less demanding applications,” citing factors such as diminished audio quality, decreased reliability, and latency.²⁸ But these claims are at odds with wireless microphone manufacturers’ own marketing materials. For example, Sennheiser advertises its D1 digital system—which uses the 2.4 GHz band—as a technology “that makes no compromises when it comes down to reliability, sound quality or user-friendliness,”²⁹ while Shure’s recently introduced Axient digital wireless system, which Shure advertises for uses such as “pro touring, theater production and television broadcasting,” includes a mode that can enable up to 47 wireless mic channels in a 6 GHz channel “while maintaining exceptional audio quality.”³⁰

Wireless microphone manufacturers have made substantial progress in addressing reliability and latency issues as well. For example, Shure advertises technological enhancements such as “Quadversity” digital receive antenna diversity technology, which helps provide “pristine digital audio in the midst of even the most challenging of environments.”³¹ Sennheiser similarly advertises receive antenna diversity solutions, as well as technologies such as transmission error

²⁷ *Id.* at 3.

²⁸ *Id.*

²⁹ SENNHEISER, *Evolution Wireless D1* (2017), <https://en-us.sennheiser.com/wireless-microphone-vocal-stage-live-evolution-d1>.

³⁰ SHURE, *Shure Introduces Axient® Digital Wireless System* (Apr. 24, 2017) (“*Shure Introduces Axient*”), <http://www.shure.com/americas/news-events/press-releases/shure-introduces-axient-digital-wireless-system>.

³¹ *Id.*

correction and “intelligent learning algorithms” that can replace corrupted signals.³² And while certain specific applications such as in-ear monitoring of vocal performances may require extremely low latency (*e.g.* < 5 milliseconds),³³ wireless microphone manufacturers now offer digital systems with latency performance that exceeds even this demanding threshold.³⁴

Third, even if there are cases where digital technologies are not suitable, or interference mitigation would render high-density uses (*e.g.* more than 40 microphones per 6 MHz channel) infeasible, the Commission should assume that entities are able to use spectrum efficiently. Some manufacturers still appear to make analog microphones that would enable only a handful of narrowband transmissions even in a full 6 MHz channel,³⁵ but this is technically unnecessary and the Commission should not reward such inefficient use of valuable spectrum resources. As the Commission has recognized, while it previously found that “6-8 high-fidelity analog wireless microphones operated on a six-megahertz TV channel, . . . in more recent years such analog operations may allow twice that many on a channel.”³⁶ Thus, the Commission’s rules should assume at least this more reasonable level of efficiency even if operators claim that they are unable to take advantage of digital technologies.

³² SENNHEISER, *Sennheiser Announces the Digital 6000 Series* (Nov. 15, 2016) (“*Sennheiser Announces Digital 6000 Series*”), <https://en-us.sennheiser.com/news-sennheiser-announces-the-digital-6000-series>.

³³ See YAMAHA, *Audio Quality in Networked Systems* § 5.5 (2017), http://www.yamahaproaudio.com/europe/en_gb/training_support/selftraining/audio_quality/chapter5/05_absolute_latency/.

³⁴ See *Shure Introduces Axient* (advertising a latency of 2 milliseconds); *Sennheiser Announces Digital 6000 Series* (advertising latency of 3 milliseconds).

³⁵ See, *e.g.*, LINE 6, INC., *Wireless Microphone Technology Guide 9* (2010), available at <http://line6.com/media/pdf/Line%20%20Wireless%20microphones%20Whitepaper%20UK.pdf> (“Analog wireless frequencies need to be spaced apart, typically by at least 1MHz, in order for them to operate with minimal interference.”).

³⁶ Wireless Microphone FNPRM ¶ 89 n.269.

To appropriately reflect and encourage adoption of these advances, the Commission should not expand the categories of entities that can reserve TV band spectrum based on unreasonable claims of spectrum need resulting from the use of inefficient devices. The introduction of more efficient wireless microphone technologies will allow wireless microphone users more than sufficient access to frequencies—both in the 600 MHz band and elsewhere—where white space devices cannot operate, accommodating performing arts operations that use fewer than 50 wireless microphones.

IV. IF THE COMMISSION DOES EXPAND PART 74 ELIGIBILITY IN THE TV AND 600 MHz BANDS, IT SHOULD DO SO IN A NARROWLY TAILORED MANNER.

The Commission seeks to expand LPAS eligibility to include additional performing arts organizations in a manner that (1) “effectively serve[s] the Commission’s goal of promoting efficient use of spectrum, and spectrally efficient wireless microphones,”³⁷ and (2) “ensur[es] that spectrum . . . remains available for other uses, such as by white space devices.”³⁸ For the reasons set forth above, the Commission should do so by preserving the status quo with respect to Part 74 in spectrum shared with white space devices while expanding eligibility in other Part 74 spectrum. If the Commission does expand Part 74 eligibility in channels shared with TV white spaces devices, however, it should at minimum create rules that assume that microphone operators will take advantage of efficient technologies already available in the marketplace, and will not unnecessarily waste spectrum resources. In addition, the Commission should only

³⁷ Wireless Microphone FNPRM ¶ 91. *See also* ¶ 87 (seeking comment on “how the Commission would determine whether there is actual need for a license and that the spectrum would be used in a spectrally efficient manner”).

³⁸ *Id.* ¶ 89.

expand Part 74 eligibility if it can do so in a way that reasonably limits that expansion to actual performing arts organizations.

A. Wireless Microphone Expansion Should Not Undermine Consumer Internet Access.

Expanded Part 74 eligibility grants wireless microphones an extraordinary right—not only access to spectrum but the right to exclude consumers from that spectrum—a right usually reserved for auction winners. So, if the Commission were to grant this unusual right, it should require three responsibilities.

First, the Commission should require newly eligible applicants for Part 74 licenses to submit with their application a short explanation of why it would be technologically infeasible to accommodate their events with other available guard band and TV band spectrum (including VHF spectrum) using efficient wireless microphone technologies. As the Commission has recognized, even existing analog technologies may now allow up to 16 wireless microphones per 6 MHz channel.³⁹ Thus, the Commission should require applicants to demonstrate that, even if they were to deploy an average of at least 2.5 narrowband microphones for each megahertz of TV band and 600 MHz band spectrum available at their location where TV white spaces devices do not operate, this spectrum would still be insufficient to accommodate a production of fewer than 50 microphones.

Second, the white space database channel registration process should ensure that newly eligible LPAS entities reserve spectrum only when needed. To do so, the Commission should require registrants to provide specific information about their operations, including (1) the name of the performance, (2) the number of microphones being used and the specific channels on

³⁹ See Wireless Microphone FNPRM ¶ 89 n.269.

which the microphones will be deployed, and (3) the specific dates and times that wireless microphones are being used, as well as dates and times when they are not being used. The rules should also include appropriate penalties for misrepresentation of this information. Registrations should be valid for a period not to exceed one month, after which time the rules should permit the licensee to file a new registration if needed. And full-day reservations should not be allowed, as these registrants are limited to use for performance purposes.

Finally, given the scarcity of spectrum available for white space operations and the need for reliable access to at least 18 MHz of spectrum,⁴⁰ the Commission should make clear that there should never be any cases where a newly eligible LPAS entity that routinely uses fewer than 50 wireless microphones could reserve the last vacant channel that would otherwise be available for white space devices. It should do so by permitting perspective registrants to reserve TV band spectrum only after they have examined the list of channels in a white space database and determined that at least one vacant television channel would remain available for personal/portable white spaces device operations at their particular location after they make their reservation.

B. The Commission Should Narrowly Limit Part 74 Expansion to Performing Arts Organizations.

When the Commission extended Part 74 low power broadcast auxiliary license eligibility to large venues three years ago, it determined that this expansion struck an appropriate balance among users of the white spaces because it would provide meaningful benefit for a “limited” number of users without “unduly restricting the amount of spectrum available for other uses in

⁴⁰ See *supra* p. 4 and note 13.

the television bands,” including white space devices.⁴¹ In contrast, as the Commission then recognized, “a ‘broad expansion’ of eligibility” would not serve the public interest because it “could significantly reduce the amount of spectrum available for other uses of the TV bands.”⁴² The *Further Notice*’s proposed amendments to Part 74, however, would result in the broad eligibility that the Commission has carefully sought to avoid.

Although the *Further Notice* seeks to limit Part 74 expansion to a subset of “theater, music, and performing arts organizations” that use fewer than 50 microphones,⁴³ the actual draft rules do not achieve the Commission’s stated goal. Indeed, the proposed rules extend well beyond the Commission’s stated goal, because they would confer Part 74 eligibility to any wireless microphone users that could ostensibly “demonstrate a particular need for, and the capability to provide, professional high-quality audio” that “is an integral part” of an event or a production.⁴⁴ This vague standard appears to include virtually any type of microphone user willing to apply for a license—not only performing arts organizations but also users such as yoga studios and corporate meeting spaces.

Significantly, this rule would also for the first time force the Commission to determine Part 74 LPAS eligibility subjectively on a case-by-case basis.⁴⁵ Each prior expansion of Part 74 offered bright-line distinctions: an entity either was an eligible cable television system operator

⁴¹ Wireless Microphone FNPRM ¶ 80 n.249 (citing *Revisions to Rules Authorizing the Operation of Low Power Auxiliary Stations in the 698-806 MHz Band Public Interest Spectrum Coalition, et al.*, Second Report and Order, 29 FCC Rcd. 6103, ¶¶ 6, 9 (2014) (“Wireless Microphones Second R&O”).

⁴² Wireless Microphones Second R&O ¶ 6.

⁴³ Wireless Microphone FNPRM ¶ 85.

⁴⁴ Wireless Microphone FNPRM Appendix C, Proposed 47 C.F.R. § 74.801.

⁴⁵ See Wireless Microphone FNPRM ¶ 91 (seeking comment on “how the Commission should administer the proposed case-by-case approach”).

under Part 76 of the Commission’s rules, or it was not;⁴⁶ it either engaged in movie/television production, or it did not;⁴⁷ it either held a Broadband Radio Service license, or it did not;⁴⁸ and a venue either routinely used 50 or more wireless microphones in its performances, or it did not.⁴⁹ In contrast, the proposed rules would potentially provide this same valuable right to exclusive spectrum use, and the ability to exclude other users, to any entity that can “otherwise demonstrate” that they “need” it for an event.⁵⁰ Because these decisions would be made on a case-by-case basis, they risk “leav[ing] important decisions to the whims of the Commission or staffer reviewing the request at the time.”⁵¹ And even if the Commission could implement its approach in a way that did not result in inconsistent outcomes, it would still need to devote substantial resources in order to individually assess a potentially large number of applications.⁵²

⁴⁶ See 47 C.F.R. § 74.832(a)(3).

⁴⁷ See 47 C.F.R. §§ 74.832(a)(4)-(5).

⁴⁸ See 47 C.F.R. §§ 74.832(a)(6).

⁴⁹ See 47 C.F.R. §§ 74.832(a)(7)-(8).

⁵⁰ Wireless Microphone FNPRM Appendix C, Proposed 47 C.F.R. § 74.801.

⁵¹ Wireless Microphone FNPRM Statement of Commissioner O’Rielly. Questions in the *Further Notice* further underscore the difficulty of implementing the Commission’s proposal. For example, the Commission seeks comment on how it “should administer the proposed case-by-case approach” in a way that would “effectively serve the Commission’s goal of promoting efficient use of spectrum and spectrally efficient wireless microphones,” (Wireless Microphone FNPRM ¶ 45), a tacit recognition that a case-by-case approach that results in a more than limited expansion would fail to do so. Similarly, the *Further Notice* asks how its proposed approach should account for “venues . . . where particular events would merit licensed and protected access to spectrum, (e.g. provisional-level stage productions), while other events generally would not merit interference protection and are more appropriate for unlicensed access.” (Wireless Microphone FNPRM ¶ 86).

⁵² See Wireless Microphone FNPRM ¶ 91 (seeking comments about the costs and benefits of a case-by base approach.).

Each of these reasons underscores why the Commission should not expand Part 74 LPAS eligibility in spectrum where TV white spaces devices operate. If the Commission does move forward with an expansion in these bands, however, it should take steps to attempt to mitigate the inherent subjectivity in the case-by-case approach. First, the Commission should expressly define the class of additional Part 74 LPAS eligible entities as “performing arts organizations” in its rules. Second, the Commission should assess eligibility under this definition by requiring the applicant to show that it is engaged in a discipline recognized as a performing art. For example, the rules could require the applicant to submit an exhibit demonstrating that it is involved in the production of performances that the National Endowment for the Arts recognizes as eligible for grants—such as music, theatre, opera, dance, or folk arts.⁵³ Finally, the license application should include an attestation, under penalty of perjury, that access to spectrum on a Part 74 basis will only be used for these purposes to address situations where multipurpose venues may host both eligible and ineligible activities.⁵⁴ Taking these steps would help reduce the number of potential applicants that could unnecessarily seek licenses even if they are engaged in uses—such as corporate seminars, exercise classes, or karaoke bars—that are “more appropriate for unlicensed access.”⁵⁵

V. CONCLUSION.

The Commission’s rules and the results of the incentive auction already severely constrain the frequencies where consumers may operate TV white spaces devices to improve

⁵³ NATIONAL ENDOWMENT FOR THE ARTS, *ART WORKS Guidelines: Grant Program Description* (2017), <https://www.arts.gov/grants-organizations/art-works/grant-program-description#disciplines>.

⁵⁴ See Wireless Microphone FNPRM ¶ 86.

⁵⁵ *Id.*

internet access. It is therefore critical that the Commission ensure that new wireless microphone licenses do not foreclose access to the limited amount of remaining spectrum available. The Commission should not expand the class of Part 74 wireless microphone users in the TV and 600 MHz bands, because doing so is not necessary to ensure performing arts organizations have access to adequate wireless microphone frequencies. If it nonetheless resolves to do so, the Commission should create rules that assume licensees will deploy spectrally efficient wireless technologies—including technologies that take advantage of the almost 150 MHz of additional spectrum the Commission made available two years ago. The Commission should also decline to adopt a case-by-case approach when assessing new licensee eligibility, which would result in an assignment system that is administratively burdensome, subjective, and likely ungovernable.

Respectfully submitted,

/s/ Paula Boyd

Paula Boyd

*Senior Director, Govt. and Regulatory
Affairs*

Michael Daum

Director, Technology Policy

MICROSOFT CORPORATION

901 K Street NW, 11th Floor

Washington, DC 20001

(202) 263-5900

October 2, 2017