

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

In the Matter of)	
)	
Promoting Spectrum Access for Wireless)	GN Docket No. 14-166
Microphone Operations)	
)	
Amendment of Part 15 of the Commission's Rules)	ET Docket No. 14-165
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)	GN Docket No. 12-268
Opportunities of Spectrum Through Incentive)	
Auctions)	

October 16, 2017

**REPLY COMMENTS OF
THE PERFORMING ARTS
WIRELESS MICROPHONE WORKING GROUP**

The Performing Arts Wireless Microphone Working Group files these comments in reply to comments filed in the above-cited dockets.¹ We strongly support the Commission's proposal to expand 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.

The Performing Arts Group

The Performing Arts Wireless Microphone Working Group (the "Performing Arts Group") is a coalition of national performing arts service organizations predominantly serving the

¹ See, Wireless Microphones Order on Reconsideration and Further Notice of Proposed Rulemaking, FCC 17-95 (released July 14, 2017) (the "FNPRM").

professional not-for-profit performing arts and presenting fields, including educational theatre. Member organizations of the Performing Arts Group and the respective members of those organizations would benefit directly from the Commission's proposal. The current Performing Arts Group participants are: the Alliance of Resident Theatres / New York, the Association of Performing Arts Professionals, the Broadway League, Dance/USA, the Educational Theatre Association, the League of American Orchestras, the National Alliance for Musical Theatre, OPERA America, the Performing Arts Alliance, the Recording Academy, and Theatre Communications Group.

Comments Overwhelmingly Supported Expanding Part 74 Eligibility

Five of the six comments overwhelmingly supported expanding eligibility for Part 74 licenses to performing arts organizations.² They recognize that organizations not meeting the 50-device threshold also need protection in the white spaces databases and could benefit immensely from the benefits of Part 74 rules. The majority of comments supported the Commission's two-pronged proposal of a demonstration of (a) need and (b) qualifications to meet the obligations of a Part 74 licensee. No commenter supported replacing the current 50-device threshold with another based on any specific metric.

Demonstration of Need

As with entities that are already qualified for Part 74 licenses, performing arts organizations not currently eligible for Part 74 licenses have audiences that expect high quality, professional

² See, Comments of CP Communications, LLC ("CP Communications"), October 2, 2017; Comments of the Performing Arts Group, October 2, 2017; Comments of the Recording Academy ("Recording Academy"), October 2, 2017; Comments of Sennheiser Electronic Corporation ("Sennheiser"), September 29, 2017; and Comments of Shure Incorporated in Response to Further Notice of Proposed Rulemaking ("Shure"), October 2, 2017.

audio.³ Sennheiser notes that this requires extremely high fidelity, reliability, and low latency performance.⁴

Performances before a live audience are essential to a showing of need. This can be demonstrated through an applicant's history of productions, its mission, and its cultural contributions to its community.⁵

Along with the audience expectation of professional quality, there should be a demonstration of need that cannot be filled by wired devices, such as the movement of performers on stage, musicals with singers competing with orchestras, feeding sound to assistive listening systems, and productions with complex scenery movements or other backstage activities.⁶ Sennheiser suggests that the creation of content that will have commercial value demonstrates need.⁷

Demonstration of an Applicant's Qualifications

Commenters proposed that having experience presenting performing arts before a public audience be a basic factor signifying qualification for a license.⁸ Microsoft suggests that Part 74

³ Shure, p. 9.

⁴ Sennheiser, p. 3; CP Communications, p. 3 ("stage performers must have audio quality as good as a live voice and very low latency (< 3 ms)"). The Performing Arts Group must, however, disagree with Sennheiser's opinion that lower quality is acceptable for schools. Many schools, especially those offering magnet theatre arts programs, spend months producing and preparing presentations that achieve professional levels of performance and technical expertise. Audio engineering details are supervised by competent and experienced teachers who provide students with their first opportunities to become the performing and audio professionals of tomorrow.

⁵ Performing Arts Group, p. 6.

⁶ Performing Arts Group, pp. 4 and 6.

⁷ Sennheiser, p. 7. Sennheiser also adds longevity of the organization, and its stature in the community to its criteria for demonstration of need, but these qualities may be better suited to the demonstration of an organization's qualifications.

⁸ Performing Arts Group, p. 8; the Recording Academy, p. 5.

qualifications should be based on the type of organization, specifically performing arts organizations 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.⁹ Although these categories would encompass all of the members and constituents of the Performing Arts Group, we believe that listing specific types of organizations has led to problems in the past with Part 74 and could unintentionally and harmfully exclude performing arts organizations that may not immediately come to mind, such as hybrids and emerging genres and disciplines. Such organizations could have the same professional needs for a license and should not be excluded if they meet the criteria the Performing Arts Group recommends.

The most important qualification, without doubt, is technical expertise. This can be stated as technical guidance and frequency coordination by qualified professionals active in audio engineering, who have academic degrees or equivalent professional experience and who are familiar with radio-frequency coordination.¹⁰ Shure amplifies this criterion by requiring sufficient knowledge and training with respect to wireless spectrum availability, radiofrequency fundamentals, antenna systems, frequency coordination, and operating authority limitations.¹¹

The Performing Arts Group would also require certifications promising to register only the frequencies actually needed at specific times and locations, and to keep logs of all wireless microphone uses, including frequencies, for all performances.¹²

Membership in a professional or service organization shows up in the Recording Academy's comments as one possible indicator of qualification and in Sennheiser's comments as a

⁹ Comments of Microsoft Corporation, October 2, 2017 ("Microsoft"), p. 16.

¹⁰ Performing Arts Group, pp. 6-7.

¹¹ Shure, pp. 10-11.

¹² Performing Arts Group, p. 11.

demonstration of need. Because the performing arts include such a wide range of disciplines, the examples of organizations are extremely varied. The Performing Arts Group does not recommend that membership in any group be used as the sole or exclusive demonstration of need or qualification. Membership in some organizations may be available only to a small, select portion of the field or may require payment of dues or some other gating factor totally unrelated to actual need or qualification to operate wireless microphones.

Microsoft Comments Stand Alone in Opposing the Commission's Proposals

Among commenters in response to the FNPRM, only Microsoft opposes expanding Part 74 license eligibility beyond the arbitrary 50-unit threshold. Microsoft's comments, however, provide facts that demonstrate why license expansion to performing arts organizations is important.

Microsoft notes that the Commission has made substantial accommodations for wireless microphone users and specifically points to the 2015 Wireless Microphone First Report and Order which expanded permissible operation of wireless microphones co-channel with broadcast television stations.¹³ A quick check of Microsoft's citation leads to this Commission decision from 2015: "We will permit closer co-channel operations by *licensed* wireless operators . . ."¹⁴ Careful co-channel operations can increase spectrum efficiency because, at the power levels that wireless microphones use, generally within enclosed venues, they do not interfere with broadcast television reception. Co-channel use should not interfere with any white-space device that cannot operate on a co-channel basis, but as the Commission's 2015 order makes clear, this accommodation requires the wireless operator to be licensed. Thus, Microsoft provides an argument in favor of expanded

¹³ Microsoft, pp. 3-4.

¹⁴ *Promoting Spectrum Access for Wireless Microphone Operations*, 30 FCC Rcd. 8739 (2015), ¶ 28 (emphasis added).

Part 74 license eligibility.

Microsoft claims that VHF-TV channels provide a protected space for wireless microphones because personal/portable white space devices cannot operate in channels below 14.¹⁵ However, fixed white space devices can operate in unused VHF channels, at power levels up to 10 watts EIRP, compared to wireless microphones' power level of 0.05 watt.¹⁶ This further demonstrates the need for registration in the white spaces database and therefore a Part 74 license for qualified wireless microphone users.

Microsoft also mentions several spectrum blocks that are newly available for wireless microphones, but the chart it provides demonstrates that these frequencies are available only for *licensed* wireless microphone users.¹⁷ Microsoft joins the Performing Arts Group – and other commenters who have addressed the issue – in supporting the Commission's proposal to enable newly eligible LPAS licensees to operate in spectrum outside the TV band.¹⁸ Again, Microsoft's intention is to free up TV Band spectrum for white space devices,¹⁹ but this goal is much more easily reached if professional performing arts organizations are eligible for Part 74 licenses.

Finally, Microsoft claims that there are new wireless microphone devices ready to be purchased and operated in spectrum outside the TV Band.²⁰ But Sennheiser, with its years of wireless microphone technology and manufacturing experience states that, of these new frequencies, only the 900 MHz band would be useful for wireless microphone users and the spectral

¹⁵ Microsoft, p. 7.

¹⁶ 47 CFR §§15.709(a)(2) and 15.236(d)(1).

¹⁷ Microsoft, pp. 4-5 (emphasis added).

¹⁸ Microsoft, p. 5.

¹⁹ Microsoft, p. 6.

²⁰ Microsoft, pp. 8-9.

efficiency that Microsoft is seeking is already available in the TV Band.²¹ Even if equipment were to become available in the very near future, it would require nonprofit performing arts organizations and educational institutions to collectively expend millions of dollars to replace equipment that they were required to purchase when the 700 MHz band became unavailable in 2010. This would be a case of Microsoft asking nonprofit arts organizations to foot the bill for new equipment without any evidence that continuing their use of wireless microphones with database protection would cause any harm whatsoever.

Microsoft's objections to expanded Part 74 licensing eligibility appears to be related to its proposed "Rural Broadband Strategy."²² With its admirable goal of bringing broadband internet service to rural areas by July 2022, Microsoft's plan would use TV white spaces to serve areas with population densities from two to 200 people per square mile.²³ The Performing Arts Group does not expect a great number of organizations to register rural uses in the white space databases, even if they are qualified and licensed.²⁴ The number of performing arts organizations located in sparsely populated areas is small. Microsoft's "Dynamic Spectrum Access" software and devices can identify frequencies that are available and even switch from one group of channels to another as different channels become available to avoid interference with wireless microphone signals registered in the white spaces databases.²⁵ Wireless microphones do not have this capability and audiences would not tolerate the interference if microphones were to switch frequencies mid-

²¹ Sennheiser, pp. 8-9.

²² See, Microsoft, *A Rural Broadband Strategy* (White Paper, July 10, 2017) ("RBS"), available at: <https://msblob.blob.core.windows.net/ncmedia/2017/07/Rural-Broadband-Strategy-Microsoft-Whitepaper-FINAL-7-10-17.pdf>

²³ RBS, p. 12.

²⁴ The other advantages available to Part 74 licensees should lessen the need for registration.

²⁵ RBS, p. 14.

performance. But there is no evidence that the protected use of limited numbers of wireless microphones during scheduled performances in specific locations would interfere with Microsoft's strategy. In fact, expanding Part 74 licensing to performing arts organizations could actually support Microsoft's Rural Broadband Strategy.

Conclusion

The Performing Arts Group applauds the Commission's thoughtful and considerate approach to increasing eligibility for Part 74 LPAS licenses and urges the Commission to adopt the proposals in the FNPRM. We believe that license eligibility should be based on a demonstration of need and professional qualifications and could be met through a set of certifications, with a more extensive presentation required when an organization cannot satisfy the certifications.

To establish the need for a Part 74 license, the applicant should certify that:

- It provides live presentations to the public and its audiences have an expectation of high-quality, professional audio, free from interference; and
- Wired microphones will not suffice because its performers must move around a stage, it presents musicals where voices must compete with an orchestra, or its productions have complex scenery and lighting cues that must be communicated without interference for safety concerns;
- It may use wireless microphones to feed its ADA-required hearing assistance systems.

To establish its qualifications for a Part 74 license, the applicant should certify that:

- It has a mission and history of professional-quality wireless audio presentations to the public;
- It has technical guidance and frequency coordination by qualified professionals,

active in audio engineering, who have academic degrees or equivalent professional experience and who are familiar with radiofrequency coordination;

- It will register for protection only the specific frequencies, times, and locations where wireless microphones are needed for productions;
- It will keep logs of all wireless microphone uses, including frequencies, for all performances.

We are willing to work with Commission staff to further develop these requirements as necessary.

Respectfully submitted,

Laurie Baskin
Director of Research, Policy & Collective Action
Theatre Communications Group
520 Eighth Avenue, 24th Floor
New York, NY 10018
(212) 609-5901 x 228

on behalf of:

Alliance of Resident Theatres / New York
Association of Performing Arts Professionals
The Broadway League
Dance/USA
Educational Theatre Association
League of American Orchestras
The National Alliance for Musical Theatre
OPERA America
Performing Arts Alliance
Recording Academy
Theatre Communications Group

David H. Pawlik
attorney at law
1513 Defoe Street
Rockville, Maryland 20850
(301) 340-3329
Pro Bono Counsel for
Theatre Communications Group and
Alliance of Resident Theatres / New York

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