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October 7, 2019

VIA ELECTRONIC FILING

Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Notice of Ex Parte: 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, ET Docket No. 14-165 and RM-11840; Request for Amendment of Part 74 of the Commission's Rules to Advance the Use of Spectrum Efficient Wireless Microphone Equipment, CG RM-11821; Promoting Spectrum Access for Wireless Microphone Operations, GN Docket No. 14-166; Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions, GN Docket No. 12-268

Dear Ms. Dortch:

On October 3, 2019, Mark Brunner, Vice President, Corporate and Government Relations and Edgar Reihl, Director, Spectrum Policy with Shure Incorporated (“Shure”) and Catherine Wang and Ross Slutsky of Morgan Lewis & Bockius LLP, outside counsel to Shure, met with Julius Knapp, Ira Keltz, Michael Ha, Steve Jones,¹ Paul Murray, Martin Doczkat, and Gulmira Mustapaeva from the Office of Engineering and Technology to discuss the above-referenced proceedings. We reiterated the views expressed in prior Shure filings on the numerous technical and policy issues raised in these dockets. Given the ongoing evolution of the Commission’s approach to the issues and industry response, we discussed the need to give current attention to the following matters:

I. The Microsoft TV White Spaces Petition for Rulemaking

Shure updated Commission staff on its innovation in wireless microphone technologies to meet the increasing need for high quality, professional audio with even greater spectrum efficiencies. Demand for wireless microphones technologies continues to grow in all sectors -- broadcasting, music, theater, religious, sports, business, education, etc. – and today, wireless microphones are important in virtually all areas of the country: urban, suburban and rural. Shure reminded staff

¹ Participating via telephone.

that it has been a long-time supporter of making use of unoccupied spectrum in rural areas and similarly supports efforts to expand rural broadband access. However, the rule changes proposed in Microsoft's petition create unacceptable risks of harmful interference for other spectrum users and would affect spectrum users far beyond rural areas. Shure noted that gains in wireless microphone spectrum efficiencies are only possible in spectrum free from interference.

In our meeting, we discussed Shure's concerns that the changes to the White Spaces rules that Microsoft proposes involve significant alterations to applicable power levels, adjacent channel operations, permissible antenna heights, and narrowband channels, and would create a new category of White Space devices ("WSDs") for "moveable platforms" which would, as proposed, permit high-power fully mobile operations. Shure noted that the Commission has already rejected a proposal for mobile WSDs by Motorola.² Shure observed that the rulemaking petition does not include the data and technical analysis that would be needed to support significant changes to the TV White Space rules or to show that interference would be mitigated.

While Microsoft argues that the proposed rule changes are needed for rural broadband deployment, Shure noted that only one of Microsoft's five proposals is actually geographically confined to rural areas and, if adopted without limit, WSDs operating with higher powers and pursuant to other proposed changes could easily (and would likely) be distributed for operation in suburban and urban areas where wireless microphone operations are more prevalent. Shure discussed the importance of ensuring that any rule change considered be appropriately limited to "less congested areas"³ (or other metric to define rural areas) so that any device permitted to operate at higher powers, antenna heights, on mobile platforms, or pursuant to other revised rules are not permitted to operate in more populous areas.

Microsoft's mobile platforms proposal raises particular concerns as it would, in effect, authorize high power transmitters travelling at high speeds. Despite its references to "geofenced operations," Microsoft's proposal does not incorporate any geographic boundaries or place any limits on speed of movement or separation distances. Microsoft's petition also is not sufficiently specific regarding applicable power levels (referencing only that its school bus experiment in Hillman, Michigan "required an EIRP greater than 100 mW" to operate.") We discussed the scenario in which a vehicle with a higher power White Space device operating under the proposed rules would travel past schools, sporting venues, Houses of Worship, or other community uses during a live performance, causing temporary, unpredictable interference. In that scenario, wireless microphone operators experiencing interference would have no visibility into the source of the interference and would have no way to remedy the problem. Shure recommended that if the FCC decides to consider a mobile WSD proposal, it should only do so

² See *In re Unlicensed Operations in the TV Broadcast Bands, Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Bands*, Second Memorandum Opinion and Order, ET Docket Nos. 04-186, 02-380 (rel. Sept. 23, 2010), paras. 77-78.

³ The FCC uses the term less congested areas as a proxy for rural areas. The term specifically refers to "[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." See 47 C.F.R. § 15.703(h).

at dramatically lower power levels and subject to all rules, including separation distance rules, that apply to fixed WSDs.

We discussed the fact that Microsoft's proposals are predicated on the idea that other spectrum users can protect themselves by relying on the White Space databases. We discussed feedback from Shure's customers that the databases are not functioning as promised. The only database that is currently operating is Nominet, and customer feedback has raised some questions about its full functionality for protecting wireless microphone operations. Further, we discussed the need for expanded Part 74 license eligibility, which is even more important to protect wireless microphone operators in rural areas where WSDs operating under the proposed relaxed rules would present an even greater risk of interference.

In summary, Shure recommended that the staff:

- conduct a thorough analysis of the Microsoft proposals and ask Microsoft to provide more specific technical information including limits on radiated power and height above ground for mobile devices;
- limit the geographic scope of devices operating pursuant to any of Microsoft's proposed rule changes to "less congested areas;"
- reject Microsoft's proposal to allow more than 40 mW on adjacent channels;
- reject or substantially revise Microsoft's "mobile platforms" proposal;
- only consider the proposed narrowband operations to the extent that they comply with the same emission mask requirements as wireless microphones;
- adopt 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; and
- examine the status of the WSD databases and take steps to ensure their successful operation.

II. Other Matters

On other matters, Shure also reiterated its support for Sennheiser's Wireless Multi-Channel Audio Systems ("WMAS") petition for rulemaking.⁴ Shure views WMAS as a robust opportunity for boosting spectral efficiency. Shure also provided a brief update on its work with the Aerospace & Flight Test Radio Coordinating Council ("AFTRCC") to make available spectrum for wireless microphones in the 1.4 GHz band.

Finally, Shure updated the FCC on its efforts to prepare customers for the upcoming deadline for transitioning out of the 600 MHz band and inquired about the timing of carrier commencement of actual service.

If you have any questions regarding this meeting, please do not hesitate to contact the undersigned.

Respectfully submitted,

/s/ Catherine Wang

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⁴ *In the Matter of Sennheiser Electronic Corporation, Request for Amendment of Part 74 of the Commission's Rules to Advance the Use of Spectrum Efficient Wireless Microphone Equipment*, RM-11821, Petition for Rulemaking (filed Aug. 17, 2018).