REPLY COMMENTS OF SENNHEISER ELECTRONIC CORPORATION

Sennheiser Electronic Corporation (“Sennheiser”) hereby replies to comments filed in the above-captioned proceeding, and in support of the Commission’s goal of preserving vacant white space channels for use by wireless microphones and white space devices. It will be vitally important to the wireless microphone community to have access to UHF spectrum after the 600 MHz transition, and the Commission’s proposals in this proceeding, with some minor modifications, will satisfy at least part of this need.

1 Sennheiser is part of Sennheiser Electronic GmbH & Co. KG, headquartered in Germany, which is a global leader in advanced microphone technology, RF-wireless and infrared sound transmission, headphone transducer technology, and active noise cancellation. Sennheiser Electronic Corporation is the main U.S. sales and marketing office, located in Old Lyme, Connecticut. Sennheiser also has a research center in San Francisco, California, and a manufacturing plant in Albuquerque, New Mexico that produces the majority of Sennheiser wireless microphones sold in North America, South America, Canada, and Asia.

DISCUSSION

A. Parties Agree that Preserved White Space Channels are Needed.

Multiple parties filed in support of the proposal to preserved white space channels, and also demonstrated the Commission’s authority under Title III of the Communications Act of 1934 as well as Section 6403(i)(1) of the Spectrum Act to set aside channels for unlicensed use.3

In initial comments, Sennheiser suggested placing the preserved white space channel(s) above Channel 21. Google additionally raised concerns regarding the sensibility of placing the preserved white space channel(s) in Channels 14-20, noting that certain channels may likely be auctioned off at a later date and then become unavailable for unlicensed use.4 For the reasons set out by both parties, it would be in the best interest of the unlicensed community to keep the preserved white space channel above Channel 21.

Sennheiser additionally suggested in its comments that the criteria for ensuring that a vacant white space channel is available should be based on the maximum protection zone for co-channel operations with television stations, which is 4 km.5 Others agreed. CEA asked that “an applicant’s vacant channel demonstration must show that at least one vacant channel remains in the larger of the two areas,” meaning 4 kilometers from the proposed station’s contour.6 Microsoft similarly requested that the Commission require that vacant channel availability be shown “in a manner that is consistent with the Commission’s Part 15 rules.”7 The Commission should ensure that its adopted rules follow this approach, which would provide clarity for the

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3 See Comments of Microsoft at 6-9; Comments of CEA at 11; Comments of Shure at 10-11.
4 Comments of Google at 28.
5 Comments of Sennheiser at 5.
6 Comments of CEA at 9.
7 Comments of Microsoft at 22.
unlicensed community and also simplify the required vacant channel demonstrations for broadcasters.

The Wi-Fi Alliance has suggested that the preserved white space channel should be available only to WSDs, and that wireless microphones should be precluded from use of the channel(s) because there is already sufficient spectrum available. The Alliance could not be more mistaken. The Commission has already determined that the preserved white space channel(s) will be jointly shared by both WSDs and wireless microphones. This proceeding is certainly not the time nor place to seek reconsideration of that decision. And the Alliance’s justification for the Commission to reverse course is entirely inaccurate. The newly allocated spectrum for wireless microphones is an insufficient substitute for the UHF spectrum, in part because it is located in higher frequency bands with less useful propagation characteristics. In the instance of 1.4 GHz, the band is encumbered by incumbents; wireless microphone operators may only access the band after demonstrating necessity and must show the ability to coordinate around and protect incumbents. In all instances, the newly available spectrum is available only to licensed wireless microphone users, whereas the preserved white space channels are available for unlicensed wireless microphone use. Barring wireless microphones from the preserved white space channel(s) would all but eliminate access to UHF spectrum for unlicensed users. As Sennheiser has continually demonstrated, there are many high-profile performing arts groups that do not qualify for Part 74 licensing, yet still require UHF spectrum. It would be unfair to take this away.

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8 Comments of the Wi-Fi Alliance at 3-4.
9 Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions, Report and Order, 29 FCC Rcd 6567 at ¶ 269 (2014) and Broadcast Incentive Auction Scheduled to Begin on March 29, 2016, Procedures for Competitive Bidding in Auction 1000, Including Initial Clearing Target Determination, Qualifying to Bid, and Bidding in Auctions 1001 (Reverse) and 1002 (Forward), Public Notice, FCC 15-78 at ¶ 32 (rel. Aug. 11, 2015).
Wireless microphones are ubiquitous and have seen tremendous growth as U.S. consumer demand for more and better content grows. Indeed, the 21st century is the “golden age” of media and media creation, due to the growth and demand for content, especially for use on mobile devices. Shure requested that the Commission reserve at least two preserved white space channels for shared wireless microphone and WSD use.10 Microsoft similarly suggested that the Commission preserve a second vacant channel.11 Sennheiser agrees that wireless microphones require more UHF spectrum, and strongly supports having more than one preserved white space channel available for shared use.

In a similar vein, Sennheiser agrees with Shure’s request that the Commission make a “commitment to the long-term preservation of vacant channels.”12 The wireless microphone community, after years of being shuffled around to meet the needs of other spectrum users, must be assured that whatever investments are made in equipment at this juncture will truly be long-term investments. Wireless microphone manufacturers must be assured that the time and investments that they make in developing new technologies will not be futile.

Finally, Shure asked that the Commission reaffirm that licensed wireless microphone operators may register for interference protection for operations on the white space channels.13 Sennheiser agrees that maintaining the registration mechanism is important to professional wireless microphone users.

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10 Comments of Shure at 6-7.
11 Comments of Microsoft at 6.
12 Comments of Shure at 9.
13 Comments of Shure at 8.
B. *The Vacant Channel Demonstrations Should Consider Significant Registered Wireless Microphone Use.*

Several parties suggested that broadcasters should account for “significant wireless microphone reservations” when making a vacant channel demonstration.\(^\text{14}\) Sennheiser agrees. Determining the availability of vacant channels for unlicensed users should account for locations and times where channels are not available due to reservations by licensed wireless microphone users, such as near Broadway and other large performing arts venues. Sennheiser has demonstrated throughout this and related proceedings that there is huge demand for licensed wireless microphone use in certain locations, use which could preclude channels being available to unlicensed users, both WSDs and unlicensed wireless microphones alike.

Google suggests that a channel be considered “occupied” if it is in use for “at least 50 percent of the day for 25 out of the last 30 days because of Part 74 reservations.”\(^\text{15}\) Sennheiser agrees.\(^\text{16}\) Microsoft’s similar suggestion that a broadcaster be required to show that a channel has been available “more often than not” over the course of the previous 30 days is, in Sennheiser’s view, a less clear measure.\(^\text{17}\) Google’s proposal should be adopted.

**CONCLUSION**

Sennheiser fully supports the Commission’s plan to preserve at least one UHF white space channel in each area for use by both wireless microphones and white space devices, and additionally supports proposals to set aside two preserved white space channels in each market.

\(^\text{14}\) Comments of Google at 2, 30-31; Comments of CEA at 10-11.
\(^\text{15}\) Comments of Google at 29.
\(^\text{16}\) Sennheiser agrees that looking at the period of time for which the television white spaces databases store information regarding microphone reservations – which is 30 days – would simplify broadcaster vacant channel demonstrations.
\(^\text{17}\) Comments of Microsoft at 21.
Further, it supports requiring that vacant channel demonstrations account for significant wireless microphone reservations. Finally, Sennheiser reiterates its previously-noted support that a preserved white space channel be made available in markets where a television station is placed in the Duplex Gap. These measures will aid the wireless microphone community in obtaining access to much-needed UHF spectrum after the 600 MHz transition.

Respectfully submitted,

/s/
Joe Ciaudelli
Director, Spectrum Affairs
Sennheiser Electronic Corporation
1 Enterprise Drive
Old Lyme, CT 06371
(860) 434-9190

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