

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

In the Matter of)	
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)	
Promoting Spectrum Access for Wireless Microphone Operations)	GN Docket No. 14-166
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)	
Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions)	GN Docket No. 12-268
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REPLY COMMENTS OF NATIONAL FOOTBALL LEAGUE

The National Football League (“NFL”) agrees with the dozens of commenters who urge the Commission to ensure that sufficient spectrum is available for wireless microphones. The NFL relies on wireless microphones for communications among coaches, players, referees, and others at every live game. Like many other commenters, the NFL is concerned that the spectrum auction and repacking process will result in increased interference for wireless microphones. The NFL is encouraged by the Commission’s openness to a wide range of options to accommodate wireless microphones.¹ The NFL urges the Commission to minimize the disruption that repacking causes for wireless microphone users, and to maximize the amount of spectrum available for this important technology.

¹ Notice of Proposed Rulemaking, *In the Matter of Promoting Spectrum Access for Wireless Microphone Operations; Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, GN Docket Nos. 14-166 and 12-268 (rel. Sept. 30, 2014) (“NPRM”).

I. WIRELESS MICROPHONES ARE VITAL TO THE NFL'S OPERATIONS

Just as wireless microphones are “essential to producing high-quality performances”² for arts organizations nationwide, the technology is also crucial for professional sports, including football.

Every NFL game relies on hundreds of wireless microphones for high-quality communications. Wireless microphones allow coaches to call plays to quarterbacks and defensive players via headsets that are installed in the players' microphones. Referees use wireless microphones to quickly communicate with replay officials. Broadcasters and journalists rely on wireless microphones to interview players from the sidelines. These communications are essential to the success of live games. Stadium officials use wireless microphones for security and crowd management.

The NFL agrees with Shure that alternative wireless microphone applications, such as microphones that are used in corporate settings and in higher frequencies, “may not be suitable for more demanding professional audio applications depending on propagation, service rules and ambient radiofrequency noise levels.”³ Indeed, the NFL has spent millions of dollars to upgrade its wireless microphones from analog to digital. No other technology can serve as an adequate substitute for wireless microphones.

Accordingly, the NFL shares commenters' concerns that the spectrum auction and repacking -- combined with the Commission's decision to stop reserving two UHF channels for wireless microphones -- will result in less high-quality spectrum for professional wireless

² Comments of Performing Arts Wireless Microphone Working Group at 1 (Feb. 3, 2015).

³ Comments of Shure, Inc. at 13 (Feb. 4, 2015).

microphones.⁴ The NFL agrees with Broadcast Sports, Inc. that the demand for wireless microphones for programming “is on a dramatic increase, but the available UHF television band spectrum available for them is shrinking to levels that will be acute in a very short period of time.”⁵

II. THE COMMISSION SHOULD MAXIMIZE THE SPECTRUM AVAILABLE FOR WIRELESS MICROPHONES

The NFL welcomes the Commission’s evaluation of new bands for wireless microphone operations. However, the Commission should attempt to maximize the amount of UHF spectrum that is available for wireless microphones, as UHF spectrum is particularly well suited for the technology.⁶ The NFL agrees with the Society of Broadcast Engineers that “it is apparent that there is not going to be sufficient UHF television spectrum for [wireless microphones] looking forward[,]” and that the Commission should reinstate the reservation of two UHF channels for wireless microphone use.⁷ The Commission reserved two UHF channels for wireless microphones less than five years ago, when it allowed white space devices to operate

⁴ See Comments of National Association of Broadcasters at 2 (Feb. 4, 2015) (“[T]he Commission’s decision to eliminate these two reserved channels following the incentive auction and repacking will significantly harm broadcasters’ newsgathering operations and the viewing public.”); Comments of Audio-Technica U.S., Inc. at 7 (Feb. 4, 2015) (“wireless microphones will effectively lose access to spectrum above and beyond the spectrum that will be repurposed as a result of the incentive auction.”); Society of Broadcast Engineers, Inc. at 1 (Feb. 4, 2015) (“In a series of orders establishing repeatedly modified and increasingly constrictive band plans for the UHF television allocations, the Commission has serially, in a *very* short period of time, substantially reduced the available spectrum for UHF wireless microphones in the UHF television band.”).

⁵ Comments of Broadcast Sports, Inc., at 17 (Feb. 4, 2015).

⁶ See Comments of Sennheiser Electronic Corp. at 26 (Feb. 4, 2015) (“However, hyper-critical applications require the use of UHF channels that are clean from out-of-band emissions from adjacent services (and other noise), and are not reliant of the proper operation of white space database systems and devices.”).

⁷ Comments of the Society of Broadcast Engineers, Inc. at 11 (Feb. 4, 2015).

in unused UHF spectrum alongside wireless microphones.⁸ At the time, the Commission recognized that the white space devices would consume much of the unused UHF channels.⁹ Nothing has changed in the past five years that reduces the need for dedicated UHF spectrum for wireless microphones.

In addition to preserving as much UHF spectrum as possible for wireless microphones, the Commission should continue to examine additional bands for the technology. Commenters in this proceeding have expressed a wide range of opinions about a number of potential bands, and the NFL does not have firm views for or against any particular band at this point. The NFL notes that a number of commenters have expressed support for allowing wireless microphones to operate in the 6875-7125 MHz band,¹⁰ and hopes the Commission will further explore that band, along with others. The private sector and the FCC must work closely together to identify bands that would be most useful for wireless microphones, and those bands should *supplement* spectrum available to wireless microphones on the UHF band.

III. THE COMMISSION SHOULD ALLOW WIRELESS MICROPHONE USERS SUFFICIENT TIME TO TRANSITION OUT OF REPACKED BROADCAST SPECTRUM

The NFL shares commenters' concerns that the forced transition from the 600 MHz band is "particularly difficult" because many wireless microphone operators recently were

⁸ Unlicensed Operation in the TV Broadcast Bands, ET Docket No. 04-186, Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band, ET Docket No. 02-380, *Second Memorandum Opinion and Order*, 25 FCC Rcd 18611 ("White Space Order") (September 23, 2010).

⁹ *See id.* (Statement of Commissioner Michael Copps) ("Recognizing the importance of licensed wireless microphones to electronic newsgathering and the reality that many venues—Broadway theaters, sports arena, churches and schools—have come to rely on unlicensed wireless microphones, we have gone to great lengths to accommodate their needs.").

¹⁰ *See, e.g.*, Comments of Broadcast Sports, Inc. at 15 ("A very good option for replacement spectrum is to make available for licensed wireless microphone users only, on a coordinated basis, a total of 26 megahertz of bandwidth within the band 6875-7125 MHz (the '7 GHz Band'); Comments of Society of Broadcast Engineers at 15 (same).

forced to migrate from the 700 MHz band and invest in new technology.¹¹ Accordingly, the NFL agrees with the National Association of Broadcaster's proposal to allow wireless microphones to continue to operate in the 600 MHz band until the new occupants are ready to use the spectrum *and* the Commission has identified alternative bands for wireless microphones.¹² This "use it until it's needed" approach to spectrum management maximizes efficiency and minimizes operational costs until they are necessary and thus is in the public interest.



In short, wireless microphones are essential to the success of NFL games. The NFL shares other commenters' concerns that the spectrum auction and repacking will result in increased interference for wireless microphone users. Accordingly, the NFL respectfully requests the Commission maximize the amount of UHF spectrum and new bands that are available to wireless microphone users, and minimize the disruption caused by the spectrum auction and repacking.

Respectfully submitted,

/s/

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¹¹ Comments of Sennheiser Electronic Corp. at 19 (Feb. 4, 2015).

¹² See Comments of National Association of Broadcasters at 3-4.