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

In the Matter of	)	
	)	
Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions	)	GN Docket No. 12-268
	)	

REPLY COMMENTS OF THE WALT DISNEY COMPANY, CBS CORPORATION, VIACOM, INC., NEWS CORPORATION, TIME WARNER INC., AND UNIVISION COMMUNICATIONS, INC.

EXECUTIVE SUMMARY

The Walt Disney Company, CBS Corporation, Viacom, Inc., News Corporation, Time Warner Inc., and Univision Communications (each, individually, a "Programmer" and, collectively, the "Programmers"), respectfully submit these reply comments ("Reply Comments") to respond to comments concerning the effects of the incentive auctions conducted by the Federal Communications Commission ("FCC" or "Commission") on wireless microphone and other low power auxiliary station ("LPAS") users. Specifically, the Programmers urge the FCC to ensure maximum flexibility, and to preserve in each market sufficient spectrum, for wireless microphone and other LPAS operations.

In these Reply Comments, the Programmers further document the various functions of wireless microphones and other LPAS and the critical role these devices play in the production of high-quality programming. The Programmers rely extensively on wireless microphones and other LPAS to create and deliver high-quality programming to the American public, and to enable audiences to experience events that they otherwise cannot attend in person. The Programmers utilize a significant number of wireless microphones and other LPAS devices, as well as a significant amount of spectrum to support these many devices, in every market in the country. In light of this heavy reliance and the consequent dependence of the public on wireless microphones, the Commission must take great care not to restrict or limit the amount of dedicated spectrum authorized for wireless microphone operation and must ensure that sufficient spectrum remains after repacking for wireless microphones to operate interference-free.

The Programmers strongly urge the FCC to retain two safe harbor channels, as these channels were specifically designated because the FCC recognized the importance of protecting wireless microphone operations in all markets, and because there is no suitable substitute for this spectrum. The Programmers further encourage the Commission to allow operation and protection of licensed wireless microphone operations in the guard bands established between television and new wireless broadband operations.

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I. INTRODUCTION

The Walt Disney Company ("Disney"),[1] CBS Corporation, Viacom, Inc., News Corporation,[2] Time Warner Inc., and Univision Communications (each, individually, a "Programmer" and, collectively, the "Programmers"), respectfully submit these reply comments ("Reply Comments") in the above-captioned proceeding[3] to respond to comments concerning the effects of the incentive auctions conducted by the Federal Communications Commission ("FCC" or "Commission") on wireless microphone and other low power auxiliary station ("LPAS") users. The Programmers use wireless microphones and other LPAS to produce high-quality local and national news, sports and other entertainment programming of great interest to the American public. The Reply Comments further document in this proceeding the need for and extensive use of wireless microphones and other LPAS in the production of programming. The Programmers urge the FCC to ensure maximum flexibility, and to preserve in each market sufficient spectrum, for these operations. The Programmers also strongly support retaining two channels reserved for wireless microphone use.

II. THE COMMISSION MUST ENSURE MAXIMUM FLEXIBILITY FOR WIRELESS MICROPHONES AND THAT SUFFICIENT SPECTRUM REMAINS FOR WIRELESS MICROPHONE AND LPAS OPERATIONS.

The Programmers, which include producers and distributors of news, sports, and other entertainment programming, use wireless microphones every day on an extensive and widespread basis in every market throughout the country. Such use is not occasional, fleeting

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[1] Disney is filing these Reply Comments on behalf of itself, the ABC Owned Television Stations and ESPN (80% owned by Disney). The ABC Owned Television Stations are located in the following markets: New York (WABC-TV), Los Angeles (KABC-TV), Chicago (WLS-TV), Philadelphia (WPVI-TV), San Francisco (KGO-TV), Houston (KTRK-TV), Raleigh-Durham (WTVD(DT)), and Fresno (KFSN-TV).

[2] News Corporation is filing these Reply Comments on behalf of itself and its subsidiary Fox Television Stations, Inc. (which is the licensee of 27 television stations), as well as Fox News Channel and Fox Entertainment Group, Inc.'s other cable programming networks.

[3] *See Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, GN Docket No. 12-268, Notice of Proposed Rulemaking (rel. Oct. 2, 2012) ("*Incentive Auction NPRM*").

use, but is necessary to ensure that the sounds of events are heard by audiences, as well as to facilitate seamless communications between producers and talent. To this end, the Programmers use hundreds of frequencies on any given day for coverage of news, sports, and other events. The public, in turn, relies on the Programmers' ability to use wireless microphones to produce high-quality programming. Accordingly, the Commission must take care not to restrict the amount of spectrum currently authorized for wireless microphone operations. In addition, the FCC must ensure the availability of sufficient spectrum for wireless microphone uses such as those described herein.

A. Wireless Microphones Serve Many Vital Functions In The Delivery Of The Viewer Experience and the Production of Programming.

Wireless microphones and other LPAS are critical to the delivery of programming to the public. Specifically, wireless microphones are vital for creating the viewing experience that the American public has come to expect, as wireless microphones facilitate, *inter alia*, access to the ambient sounds of live events, as well as the delivery of the performances, observations and remarks provided by reporters, commentators, and other entertainers. Wireless microphones also are used for providing direction and cues to on-air talent. For these same reasons, wireless microphones are essential to broadcast radio production as well.

The Programmers involved in news production use wireless microphones both in-studio as well as in the field for coverage of "breaking news" and other events of importance to both national and local audiences.[4] Such devices range from wireless microphones, "interruptable

[4] *See* Comments of The Walt Disney Company to the *Notice of Proposed Rulemaking* in GN Docket No. 12-268, at 42 (filed Jan. 25, 2013) ("Disney Comments") (explaining that WLS-TV, Chicago, Illinois ("WLS"), uses wireless microphones to facilitate coverage of 30 to 50 breaking news events at disparate locations throughout Chicago each day, and for each of the 7 in-studio programs it produces). KABC-TV, Los Angeles, California ("KABC") also uses UHF television spectrum to employ a two-way radio communication system to support its "in-the-field" coverage efforts.

feedbacks",[5] and headset systems.[6] These devices enable national news networks and local broadcast stations to deliver multiple hours of local news to their audiences each day.[7]

The Programmers involved in the production of sports programming likewise depend heavily upon wireless microphones.[8] Sports programmers use wireless microphones in their studios, for their commentators, for on-the-field reports, and in their production efforts.[9] Wireless microphones also aid in the ability of sports programmers to deliver the sounds of events to the public. Such sports programmers use wireless microphones and other LPAS to cover events throughout the nation, often in congested urban areas where sporting events are likely to occur. Wireless microphones are equally critical for television and movie production, which typically require intensive use of wireless microphones on multiple sets within the same production lot or studio.

The importance of wireless microphones increases when considering that wireless microphones often are the Programmers' only option. Wireless microphones are required in

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[5] IFBs are LPAS, licensed under Part 74 of the FCC's rules and used to send cues and program audio to talent on the set. *See* Disney Comments, *supra* note 4, at 41 (stating that television station KABC-TV, Los Angeles, California ("KABC") operates between 25 and 100 wireless microphones and other itinerant communications links each day).

[6] These wireless devices alone utilize hundreds of available wireless frequencies. For further discussion of the number of frequencies used by the Programmers daily, *see infra* Section II.B.

[7] For instance, wireless microphones are critical to the ability of television broadcast station KABC to deliver over 7 hours of local news on a daily basis to its viewers in Los Angeles, California. *See* Disney Comments, *supra* note 4, at 41.

[8] Similarly, sports teams and leagues themselves use wireless microphones extensively to help provide uninterrupted entertainment to fans. As the National Football League ("NFL") described in its comments in this proceeding, wireless microphones are essential, as they allow coaches, players, referees, and other game and team officials to communicate efficiently before, during and after a game. *See* Comments of National Football League to *Notice of Proposed Rulemaking* in GN Docket No. 12-268 and to *Public Notice* in WT Docket Nos. 08-166 and 08-167 & ET Docket No. 10-24, at 2-3 (filed Jan. 25, 2013) ("NFL Comments") ("Coaches rely plays to quarterbacks via headsets that are installed in the players' helmets. Referees on the field consult with replay officials in the press box. And journalists broadcast live reports from the sidelines."). Significantly, the NFL reports numerous instances of wireless microphone interference during games and states that such interference during games has increased, despite the NFL's recent costly upgrade of its microphones from analog wireless microphones to "state-of-the-art" digital wireless microphones and the NFL's careful management and coordination of its spectrum. *See id.* at 4.

[9] *See* Disney Comments, *supra* note 4, at 41 (explaining the essential nature of wireless microphones to ESPN as they allow producers to communicate directly with the talent).

many venues due to venue-specific prohibitions on the use of wired microphones. Sports programmers are able to use wireless microphones where laying cable is not possible or practical, or where using wired microphones may create a safety hazard to the participants or general public.[10] Financial considerations also preclude the use of wired microphones. For instance, for coverage of large geographic areas or of certain sporting events (*e.g.*, golf matches), it simply is too costly to use any other option but wireless microphones to communicate and bring audio to audiences. Even in many studios, wired microphones are impractical. Thus, wireless microphones are essential to the production of programming and its proper delivery to the public.

B. Programmers Rely On Wireless Microphone Operations On An Extensive And Widespread Basis Every Day And Require Spectrum To Support These Needs.

The number of wireless microphones and other LPAS, and number of corresponding frequencies required, to create and deliver high-quality programming cannot be understated. The numbers of devices and frequencies used by the Programmers involved in news production illustrate this magnitude. For example, at any given time, CNN's domestic bureaus use approximately 341 LPAS devices alone. CBS This Morning, which airs 6 days per week, is allocated 54 frequencies, of which at least 46 are used each show, while the CBS Evening News uses 40 frequencies, 7 days per week. Fox News Channel likewise relies upon more than 350 wireless microphones and other LPAS devices at its New York studio headquarters and scores more devices to cover major events such as the Democratic and Republican conventions, political forums, and candidate debates in cities across the country. Similarly, Fox Television Stations' broadcast outlets have news operations in 16 different markets. Fox uses 32 wireless microphones in each market (20 for in-the-field newsgathering and 12 for use in-studio by

[10] Indeed, one of the most common sources of liability at professional events is injury resulting from an individual tripping over cable.

anchors and on-air reporters) for a daily total of up to 512 wireless microphones. At least 2 wireless microphones on 2 distinct frequencies are used by each crew that Fox sends into the field to cover each event. These numbers add up quickly when one considers how many events Fox crews cover at its stations across the country, such as Occupy Wall Street (3 or more crews dispersed in the northeast area), the G8 Summit (3 or more crews dispersed in the Chicago area), Hurricane Sandy (60 or more crews dispersed in the northeast area), the school shooting in Newtown, Connecticut (40 or more crews dispersed in the northeast area), the January Nor'Easter (60 or more crews dispersed in the northeast area), the Los Angeles manhunt for former police officer Christopher Dorner (10 or more crews dispersed in the Los Angeles area), and other significant political events, including Presidential and Congressional races (300 or more total crews dispersed to cover various events nationwide throughout the campaign), and the fiscal cliff (300 or more total crews dispersed nationwide over several months). Such live, on-the-spot coverage serves the public interest by making viewers and listeners aware of safety concerns, such as severe weather conditions and other emergencies, as well as other important events throughout nation.

The ability to use a multitude of wireless microphones, LPAS, and corresponding frequencies also aids in the coverage of a diverse array of events by the Programmers involved in news production. For instance, Univision's KMEX-DT, Los Angeles, California ("KMEX") in Los Angeles, airs three different newscasts each day. Its morning news program, Noticias 34: Primera Edicion typically requires 9 to 13 wireless microphones, along with 6 associated IFB feeds and 4 private-line channels, utilizing up to 23 different 200 kHZ frequency slots, depending on the show.[11] At 6:00 pm, KMEX produces the top-rated early newscast in any

[11] Even considering an average of 18 slots on any given day, each consuming 300 MHz of spectrum (device plus guard interval), 5.5 MHz spectrum is utilized across the band.

language among all adults ages 18-49. KMEX also airs a newscast at 11:00 pm. In a typical 24-hour period, KMEX may air approximately 15 stories from operators in the field from locations across the region, including coverage of events such as the Latino vote in the Los Angeles Mayoral election and a fire in Jurupa Valley. These three newscasts utilize a total of 19 different wireless microphone units, which are critical to its coverage of these diverse and culturally important events.

Moreover, most events are covered by multiple users of wireless microphones and LPAS. Local and national news events are almost always covered by multiple programmers, requiring the coordination of spectrum among a large number of users. KABC, for example, must coordinate spectrum for its wireless needs with at least 7 other local news operations from the Los Angeles area alone, as well as with any additional major television networks and sports production companies that cover the event.[12] KMEX recounts similar experiences in the Los Angeles area, indicating that there often may be 25 or more different news crews (both local and national) covering a single major breaking news event in the area. Coordination of spectrum among the various users is particularly difficult when covering news events in major urban areas, where the available spectrum is even more congested.[13]

Like the news programmers, the Programmers involved in sports programming use wireless microphones and supporting spectrum extensively to bring the viewing public the coverage it has come to expect. For instance, nearly 60% of the 3,200 events televised by ESPN in 2012 utilized spectrum in the broadcast television band to support wireless microphone

[12] This task is quite difficult, given that Los Angeles is one of the markets in which UHF spectrum is highly congested, due to the fact that the city is home to a significant number of entities that require wireless microphones, including film and television production studios, theme parks, and other entertainment venues.

[13] *See* Disney Comments, *supra* note 4, at 44 (describing the use of wireless microphones by entities covering the second inauguration of President Barack Obama on January 21, 2013, which required extensive coordination and over 108 MHz total bandwidth over twenty-five UHF television channels to support wireless microphones, IFBs (for cueing talent and program return), and communications channels).

operations.[14] TNT uses between 10 and 20 wireless microphones and related low power equipment, utilizing as many channels, for *every* broadcast of an NBA game during the regular season and post-season playoffs, which includes broadcast of the game itself and the corresponding delivery of its audio, as well as broadcast of the related studio show. For special events, such as the NBA All-Star weekend or the conference finals, TNT uses over 100 wireless microphones and related low power equipment, utilizing as many channels. CBS Sports uses at least 46 frequencies in-studio, 6 days per week. During events such as March Madness, CBS Sports uses all of its allotted 52 frequencies. Fox Sports uses wireless microphones and other LPAS to produce more than 8,000 live sports events per year (in excess of 30,000 hours of live sports programming), between its broadcast and cable networks, including its regional sports networks. To this end, Fox Sports depends heavily on wireless microphones at its coverage of NFL and Major League Baseball games. During NFL coverage on Sundays, Fox Sports will cover up to 8 NFL games on one day. At each of the 8 stadiums, Fox typically uses between 8 and 16 wireless microphones per game to provide audio from game announcers, players, referees, sidelines interviews, and other ambient game sounds (via on-field parabolic microphones).[15] For playoff games and the Super Bowl, Fox's usage increases dramatically: A Super Bowl can use up to 75 wireless microphones with 40 to 48 at the stadium and the remainder in nearby venues. With the aid of wireless microphones and LPAS, these programmers are able to deliver the real sounds of sporting events to members of the public that otherwise are unable to attend the events in person.

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[14] *See* Exhibit A, ESPN Remote UHF Utilization. Notably, ESPN's estimated use of television spectrum for its wireless microphone operations is conservative, and ESPN often requires more frequencies and channels than listed on Exhibit A.

[15] *See also* Disney Comments, *supra* note 4, at 41 (stating that ESPN uses 40 frequencies over 12 television channels to support its wireless microphone operations at a Monday Night Football game).

Wireless microphones also are essential to the studio operations of the sports programmers. ESPN, for example, estimates that, in 2012, its typical studio operations in Bristol, Connecticut alone used 245 UHF frequencies over 31 channels *in a single day*. Fox Sports's usage is similar. During NFL coverage on Sundays, Fox Sports operates two studios in Los Angeles. One stage utilizes 8 microphones and IFBs (and backups) on 32 concurrent channels. The other stage has 5 microphones and IFBs (and backups) on 20 concurrent channels.[16] At a separate location in Los Angeles, Fox also operates a production facility for national newscasts on MundoFox (a Spanish-language broadcast network) and programming for Fox Sports Deportes. This facility utilizes 6 wireless microphones and 4 IFBs simultaneously across different channels.

Sports programmers have observed that there is often a shortage of wireless microphone spectrum at sports events. As described by the Society of Broadcast Engineers ("SBE"), at events such as the NFL Super Bowl, extensive efforts are required to accommodate the number of wireless microphones necessary to provide the coverage that the public expects.[17] SBE further observed that at a recent Formula One automobile race in Texas, "there was an acute shortage of [wireless microphone] spectrum and well over 120 [wireless microphones] were in use at any given time."[18] No amount of technical improvements or improved coordination is likely to alleviate this congestion.

The same set of challenges applies to movie and television production studios and production lots across the country, particularly in New York and Los Angeles. Studios have

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[16] These devices also are used at other times throughout the week to support coverage of college football, Ultimate Fighting Championship, and soccer.

[17] *See* Comments of the Society of Broadcast Engineers, Incorporated to the *Notice of Proposed Rulemaking* in GN Docket No. 12-268 and to the *Public Notice* in WT Docket Nos. 08-166 & 08-167 & ET Docket No. 10-24, at 7 n.17 (filed Jan. 25, 2013) ("SBE Comments").

[18] *See id.* This shortage of spectrum existed despite the fact that this event took place well outside the nearest metropolitan area of Austin, Texas. *See id.*

significant demand for wireless microphones across multiple productions and can suffer from similar shortage of available spectrum. For example, Paramount Pictures at its Los Angeles production facility has coordinated 170 frequencies for wireless microphone use on all of the productions across the lot. Similar challenges face production companies in New York where multiple studios share the same building, and each individual production requires the use of 30 or more transmitters on any given day.

In light of the foregoing, the FCC must not take any action that will reduce the amount of spectrum available for these wireless microphones and other LPAS in any market, as these operations are essential to the production of high-quality programming. The FCC also must remain cognizant that some markets have unique congestion challenges that may require additional measures beyond those articulated in these Reply Comments.[19] Because of the extensive use of wireless microphones and other LPAS, as described above, and the heavy reliance placed upon these devices for the creation of the viewer experience, any reduction in available spectrum for wireless microphone use without a corresponding action to offset such a reduction will diminish the Programmers' ability to serve the public.[20]

III. THE FCC, AT THE VERY LEAST, MUST RETAIN TWO DEDICATED CHANNELS FOR WIRELESS MICROPHONES AND AUTHORIZE SPECTRUM FOR INTERFERENCE-FREE WIRELESS MICROPHONE COMMUNICATIONS.

The two channels reserved for wireless microphone use, known as the "safe harbor channels," are essential for ensuring that wireless microphones can perform without interference from unlicensed TV bands devices in all markets. The repacking in the television band is almost certain to reduce the amount of available spectrum for wireless microphone operation, making

[19] Examples of such markets include, but are not limited to, New York City, Los Angeles, and Nashville.

[20] In Los Angeles, for example, most television news operations rely heavily on the 2 GHz band for their electronic news gathering operation because virtually all of the 7 GHz and 13 GHz bands are consumed with fixed links. While great efforts are expended on coordination and efficient usage, congestion often forces local news operations to use unlicensed bands, which does not ensure interference-free wireless communications.

the safe harbor channels even more important. In the *Incentive Auction NPRM*, the Commission recognizes that the repacking may result in a reduced amount of spectrum being available in the core television bands for use on a secondary basis by licensed wireless microphones under the LPAS rules and for use by unlicensed wireless microphones.[21] Nonetheless, the Commission proposes to make available for general unlicensed use (1) the two safe harbor channels *and* (2) newly available guard band spectrum. No corresponding increase in the amount of available spectrum for or protection received by LPAS or unlicensed wireless microphones is proposed. The Programmers strongly urge the FCC not to eliminate the two safe harbor channels, as these channels were specifically designated because the FCC recognized the importance of protecting wireless microphone operations in all markets, and because there is no suitable substitute for this spectrum. The Programmers further encourage the Commission to allow operation and protection of licensed wireless microphone operations in the guard bands established between television and new wireless broadband operations.

A. The FCC specifically recognized the importance of reserving two channels for wireless microphone operations in its *White Spaces Proceeding*.

As the National Association of Broadcasters observes, the Commission expressly determined in its *White Spaces Proceeding* that it was necessary to reserve two channels for wireless microphone use to ensure that wireless microphones and other LPAS, including those used in electronic news gathering ("ENG") activities, would be protected from interference from white spaces devices.[22] In this way, the Commission guaranteed that at least two channels would remain available for wireless microphones in all markets. However, even with the two

[21] *Incentive Auction NPRM* ¶ 224.

[22] *See* Comments of the National Association of Broadcasters to the *Notice of Proposed Rulemaking* in GN Docket No. 12-268, at Section IV.B.5 (filed Jan. 25, 2013) ("NAB Comments") (citing *Unlicensed Operation in the TV Broadcast Bands*, Second Memorandum Opinion and Order, ET Docket Nos. 04-186 and 02-380, 25 FCC Rcd 18661 (2010)).

reserved channels, there has been significantly less spectrum available for wireless microphones than existed before 2010.[23] To further erode the availability of interference-free spectrum for wireless microphone and other LPAS operation will diminish significantly the ability of the Programmers to engage in ENG activities and produce other important news, sports, and entertainment programming.[24] The Commission simply cannot reasonably expect that shared operations between wireless microphones and other unlicensed users in the guard band will be adequate, particularly when the amount of available spectrum in the core television bands will be reduced via repacking.[25] The need to preserve spectrum for wireless microphone operation in *all* markets is no less pressing today than it was in 2010. Further, considering that wireless microphones were forced out of the 700 MHz band in the *White Spaces Proceeding* to make room for white spaces devices, it is inappropriate for the Commission to consider once again reducing the amount of spectrum available for wireless microphones a mere three years later. As SBE recognizes in its comments, many wireless microphones were operating in the 700 MHz band and a lot of equipment had to be modified or replaced with equipment that was not capable of operation above 698 MHz.[26] Users of such equipment relied upon Commission guidance that broadcast frequencies would continue to be available for wireless microphone operation.[27] For

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[23] *See* NFL Comments, *supra* note 8, at 3.

[24] *See* SBE Comments, *supra* note 17, at 9. Indeed, some commenters insist that two channels of at least 12 MHz each (for 24 MHz total) be reserved exclusively for wireless microphone operation. *See* Comments of Robert Bosch LLC to *Notice of Proposed Rulemaking* in GN Docket No. 12-268 and to the *Public Notice* in WT Docket Nos. 08-166 & 08-167 & ET Docket No. 10-24, at 12-13 (filed Jan. 25, 2013) ("Bosch Comments"); SBE Comments, *supra* note 17, at 12-13.

[25] Bosch Comments, *supra* note 24, at 12-13; SBE Comments, *supra* note 17, at 12-13.

[26] *See* SBE Comments, *supra* note 17, at 4.

[27] *See, e.g.*, Comments of Shure Incorporated to *Notice of Proposed Rulemaking* in GN Docket No. 12-268 and to the *Public Notice* in WT Docket Nos. 08-166 & 08-167 & ET Docket No. 10-24, at 9-12 (filed Jan. 25, 2013) ("Shure Comments") (acknowledging the "concerted effort of the industry" to disseminate information and make equipment available and stating that its good faith efforts come "with an expectation that its cooperation will be met with regulations that offer a reasonable degree of certainty for the large population of users and the industries that rely on the operation of this equipment").

these reasons, the Programmers support the continued retention of two safe harbor channels for wireless microphone operations.

B. Despite the claims of some commenters, there is no suitable substitute for UHF spectrum for operation of wireless microphones.

It is imperative that the FCC preserve sufficient spectrum for wireless microphone operators, including the Programmers. As described above, there is significant demand for spectrum for wireless microphone operations each day, and that demand will continue to grow. Thus, any reduction of UHF spectrum for wireless microphone use, such as that proposed in the *Incentive Auction NPRM*, will further congest the available UHF spectrum, increasing interference or hindering entirely the ability to use wireless microphones, and thereby degrading the quality of programming such as that produced by the Programmers.[28]

Some parties in this proceeding have suggested that wireless microphones could operate entirely in other bands in lieu of in the UHF spectrum, and that the two channels reserved for wireless microphone operation are unnecessary. These claims are not well-founded. No suitable substitute exists for UHF spectrum, especially given its unique qualities which enable low power signals to propagate over long distances and facilitate the use of small antennas with minimal gain.[29] Further, UHF spectrum has been harmonized globally for wireless microphone use, and manufacturers have developed equipment in reliance on this global harmonization. Should the FCC take action to further mitigate the use of wireless microphones in the UHF band, equipment costs may increase as manufacturers are forced to develop wireless equipment that can only be used in the U.S. Moreover, the bands suggested as substitutes by these commenters (*e.g.*, Part 90

[28] Unfortunately, however, UHF spectrum for wireless microphone use often already is congested and unavailable, particularly given that wireless microphones no longer are permitted in the 700 MHz band.

[29] *See* Shure Comments, *supra* note 27, at 14-15 ("This spectrum provides the optimum balance of signal characteristics and has important technical advantages for wireless microphones. No other spectrum with comparable characteristics is available.").

frequencies, the 900 MHz band, the 2.4 GHz band)[30] either have too few channels, already are used to capacity, or are sufficiently congested that wireless microphones could not operate without significant interference.[31] The characteristics of these bands also lead to unreliable performance and the impairment of audio quality.[32]

The Programmers urge the Commission to continue to permit wireless microphone use to the maximum extent permitted under current rules and to adopt rules that will support the extensive spectrum needs of wireless microphones. Specifically, the Commission should (i) retain spectrum solely for use by wireless microphone systems, including by retaining two channels currently reserved for wireless use and by creating new blocks of spectrum for wireless microphones to operate on an interference-free basis; (ii) authorize operation of wireless microphones in guard band spectrum that may be established in this proceeding; and (iii) permit wireless microphones to operate in any spectrum authorized for WiFi and other unlicensed devices, including on unused spectrum (*i.e.*, white spaces) in the television band.

IV. CONCLUSION

As demonstrated herein, wireless microphones and other LPAS play a critical role every day in the delivery of high-quality and important programming to the American public. Accordingly, the Programmers urge the Commission not to take any action that would restrict or

[30] *See, e.g.*, Comments of Audio-Technica U.S., Inc. to *Notice of Proposed Rulemaking* in GN Docket No. 12-268 and to the *Public Notice* in WT Docket Nos. 08-166 & 08-167 & ET Docket No. 10-24, at 15 (filed Jan. 25, 2013) ("A-T Comments"); Comments of Google Inc. and Microsoft Corporation to *Notice of Proposed Rulemaking* in GN Docket No. 12-268 and to the *Public Notice* in WT Docket Nos. 08-166 & 08-167 & ET Docket No. 10-24, at 52 (filed Jan. 25, 2013).

[31] Indeed, one such commenter who recommends operation of wireless microphones in Part 90 frequencies even acknowledges that too few channels exist and that "Part 90 frequencies are presently insufficient for anyone but the smallest users." *See* A-T Comments, supra note 19, at 16; *see also* Comments of Public Interest Spectrum Coalition to *Notice of Proposed Rulemaking* in GN Docket No. 12-268 and to the *Public Notice* in WT Docket Nos. 08-166 & 08-167 & ET Docket No. 10-24, at 18, 47 (filed Jan. 25, 2013) (explaining that the 900 MHz band is fully occupied by farmers, who use it to control tractors, combines and irrigation systems, and that the 2.4 GHz band is congested in many urban locations and does not propagate very well).

[32] *See* Comments of Sennheiser Electronic Corporation to *Notice of Proposed Rulemaking* in GN Docket No. 12-268 and to the *Public Notice* in WT Docket Nos. 08-166 & 08-167 & ET Docket No. 10-24, at 4 (filed Jan. 25, 2013) (stating that "[u]sers of wireless microphones have no adequate substitute for UHF TV frequencies").

otherwise inhibit the ability of wireless microphones to be used for the delivery of such programming. The FCC also must retain a sufficient amount of spectrum for licensed wireless microphones and other LPAS in every market. To do otherwise would be contrary to the public interest.

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EXHIBIT A

ESPN Remote UHF Utilization

In 2012, ESPN televised approximately 3,200 events, 1,784 of which utilized wireless microphones, communications and talk back to talent.

The following is a conservative representation of one week of wireless utilization across all of the ESPN networks nationwide.

The TV Channel totals as listed below are indicative of the available frequencies/channels coordinated in a given market.

Tuesday 11/06/2012:

1-College Football Game: 25 UHF Frequencies @ 2.604 MHz Total Bandwidth over 9 TV Channels.

Wednesday 11/07/2012:

1-College Football Game: 25 UHF Frequencies @ 2.604 MHz Total Bandwidth over 9 TV Channels.

2-NBA Games: 24 UHF Frequencies @ 2.352 MHz Total Bandwidth over 8 TV Channels.

Thursday 11/08/2012:

2-Studio Shows Veterans Day: 20 UHF Frequencies @ 2.160 MHz Total Bandwidth over 8 TV Channels.

2-College Football Games: 50 UHF Frequencies @ 5.208 MHz Total Bandwidth over 18 TV Channels.

1-Soccer Game: 7 UHF Frequencies @ 720 KHz Total Bandwidth over 3 TV Channels.

Friday 11/09/2012:

6-College Basketball Games: 36 UHF Frequencies@ 3.888 MHz Total Bandwidth over 18 TV Channels.

1-College Football Game: 25 UHF Frequencies@ 2.604 MHz Total Bandwidth over 9 TV Channels.

1-NBA Game: 12 UHF Frequencies @ 1.176 MHz Total Bandwidth over 4 TV Channels.

Saturday 11/10/2012

1-Studio Show Game Day: 20 UHF Frequencies @ 2.160 MHz Total Bandwidth over 8 Channels.

21-College Football Games: 525 UHF Frequencies @ 54.684 MHz Total Bandwidth over 189 TV Channels.

1-NASCAR Event: ESPN utilizes one, 6 MHz TV channel for communications. Due to the crowded spectrum in the UHF TV channels, ESPN utilizes frequencies under a STA the 1.4 and 2.3 GHz bands to accommodate the wireless microphones use.

Sunday 11/11/2012:

4-College Basketball Games: 100 UHF Frequencies @ 2.592 MHz Total Bandwidth over 36 TV Channels.

1-NASCAR Event: ESPN utilizes one, 6 MHz TV channel for communications. Due to the crowded spectrum in the UHF TV channels, ESPN utilizes frequencies under a STA the 1.4 and 2.3 GHz bands to accommodate the wireless microphones use.

1-NHRA Event: ESPN utilizes one, 6 MHz TV channel for communications. Due to the crowded spectrum in the UHF TV channels, ESPN utilizes frequencies under a STA the 1.4 and 2.3 GHz bands to accommodate the wireless microphones use.

1-Soccer Game: 7 UHF Frequencies @ 720 KHz Total Bandwidth over 3 TV Channels.

Monday 11/12/2012:

9-College Basketball Games: 54 UHF Frequencies @ 6.120 MHz Total Bandwidth across 27 TV Channels.

1-Studio Show NFL Game Day: 20 UHF Frequencies @ 2.160 MHz Total Bandwidth over 8 Channels.

1-Monday Night NFL: 40 UHF Frequencies @ 4.248 MHz Total Bandwidth over 12 TV Channels.

ESPN Studio Operations:

Bristol, CT:

245 UHF Frequencies @ 24.2 MHz Total Bandwidth over 31 TV Channels.

Los Angeles Studio Operations:

42 UHF Frequencies @ 3.320 MHz Total Bandwidth over 8 TV Channels.

Longhorn Studio Operations:

34 UHF Frequencies @ 3.384 MHz Total Bandwidth over 13 TV Channels.

Charlotte Studio Operations:

31 UHF Frequencies @ 3.072 MHz Total Bandwidth over 10 TV Channels.