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February 10, 2014

**VIA ELECTRONIC FILING**

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

**Re: *EX PARTE NOTICE***  
 Expanding the Economic and Innovation Opportunities of Spectrum Through  
 Incentive Auctions, *GN Docket No. 12-268*

Revisions to Rules Authorizing the Operation of Low Power Auxiliary Stations in  
 the 698-806 MHz Band, *WT Docket No. 08-166*

Public Interest Spectrum Coalition, Petition for Rulemaking Regarding Low  
 Power Auxiliary Stations, Including Wireless Microphones, and the Digital  
 Television Transition, *WT Docket No. 08-167*

Amendment of Parts 15, 74 and 90 of the Commission's Rules Regarding Low  
 Power Auxiliary Stations, Including Wireless Microphones, *ET Docket No. 10-24*

Dear Ms. Dortch:

On February 6, 2014, the individuals identified in the table below from the professional audio (“pro-audio”) industry met with Howard Symons, AJ Glusman and Edward Smith of the Incentive Auction Task Force, Ira Keltz and Paul Murray of the Office of Engineering and Technology, and Sue McNeil and Sade Oshinubi of the Wireless Telecommunications Bureau to discuss issues related to the above-referenced proceedings.

Mark Brunner	Senior Director of Global Brand Management	Shure Incorporated
Roger Charlesworth	Executive Director	DTV Audio Group
Joe Ciaudelli	Chief U.S. Correspondent, Spectrum Affairs	Sennheiser USA
Henry Cohen	Senior RF Engineer/Designer & FCC Liaison	CP Communications
Susan Fox	Vice President, Government Relations	The Walt Disney Company

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Jackie Green	Vice President of R&D/Engineering	Audio-Technica U.S.
Amy Klein	Associate Principal Counsel	ESPN
Peter Larsson	Co-Founder and General Manager	Broadcast Sports, Inc.
Louis Libin	President and Founder	Broad Comm, Inc.
Kevin Parrish	RF Engineer, Field & Satellite Operations	NBC Network News
Brooks Schroeder	Senior Coordinator	Frequency Coordination Group, LLC
Jeffrey Willis	Coordinating Technical Manager	ESPN
Karl Winkler	Director of Business Development	Lectrosonics

Also in attendance were Catherine Wang and Tim Bransford of Bingham McCutchen LLP, outside counsel to Shure Incorporated.

During this meeting the group discussed issues affecting the current and future regulation and operation of wireless microphones and complementary systems in the pro-audio context. Specifically:

- We described the growing public demand for more sophisticated, complex professional productions in entertainment, news, sports and business that require increasing use of wireless microphone technology. That growth in multimedia content is, in fact, fueling the growing demand for mobile broadband.
- We discussed the fact that the UHF band is critically important to support wireless microphone operations in professional productions today. Even today, users and coordinators are facing serious shortages of UHF spectrum needed to support live events. Due to interference and propagation attributes, the UHF band has been the preferred spectrum choice for wireless microphone manufacturers and professional users for decades. As a result of the mandated transition of wireless microphones out of the 700 MHz band in 2010, many professional users have concentrated their operations in the UHF 600 MHz band now targeted for the incentive auctions.
- Manufacturers, frequency coordinators, and users have diligently responded to the continuing shrinkage of clear spectrum available for wireless microphone use together with the growing demand for more wireless microphone use by driving wireless microphone technology to increase efficiencies, preparing to share spectrum by using the geolocation databases, encouraging use of non-UHF spectrum suitable for specific wireless microphone applications, and using sophisticated coordination techniques to increase frequency reuse. For longer term planning purposes, these parties continue to explore flexible uses in a range of other spectrum bands that have the potential to support some wireless microphone operations

provided that changes are made to technical and legal requirements and incumbent uses. The parties will continue these efforts but recognize that identifying additional non-UHF spectrum and achieving all changes necessary to make such spectrum available to support growth in professional wireless microphone operations is years off and not likely within the timeframe of implementation of the incentive auctions and resulting wireless broadband uses of the 600 MHz band.

- In planning for the further reduction of available UHF spectrum, we discussed how the two (2) reserve UHF channels dedicated to wireless microphones in each market provide critical clean spectrum to professional users, and the need to preserve two channels in the UHF and/or high VHF bands.
- We supported rules that would permit professional use wireless microphones to operate in the proposed guardbands and mid-band gap in the 600 MHz range with priority through geolocation databases which would enable wireless microphone users access to expanded frequencies for the duration and at the location of events requiring additional frequencies for wireless microphone operations.
- We discussed the need to align VHF wireless microphone rules with service rules applicable to UHF microphones to make the VHF a more suitable band for pro-audio use.
- We also highlighted that the current Part 74 rules are grossly out-of-date and the public interest requires that they be revised so that all professional wireless microphone operations are eligible for Part 74 wireless microphones licensing. This change would ensure that wireless microphones used in theatrical, touring, concert, and other productions with professional audio needs will be covered by a Part 74 license that enables flexible and efficient use of the geolocation database technologies that will be critical to successful spectrum sharing in the future.

Attached please find copies of written materials circulated to staff during our meeting. If you have any questions regarding this ex parte notice, please do not hesitate to contact the undersigned.

Very truly yours,

/s/

Catherine Wang

cc: AJ Glusman  
Ira Keltz  
Sue McNeil  
Paul Murray  
Sade Oshinubi  
Edward Smith  
Howard Symons

## BIOS – DTV AUDIO GROUP FCC MEETINGS 2-5/6-2014

**Mark Brunner (Shure Incorporated)** is Shure's Senior Director of Global Brand Management. In his 25 years at the company, he has held management positions in various disciplines, including International Marketing, Product Management, Public Relations, and Government Affairs. He is the current President of PAMA, the Professional Audio Manufacturers Alliance, and since 2005 has been active in working with the FCC and international regulators on spectrum issues of importance to wireless microphone users and manufacturers.

**Roger Charlesworth (DTV Audio Group)** is an independent consultant on media production technology, and serves as Executive Director of the DTV Audio Group. Concerned with promoting best practices for production and distribution of audio for digital television and related media, the DTVAG brings together network operational and engineering management and staff alongside key vendors and manufacturers to facilitate practical application of existing and emerging television audio standards for loudness management, accessibility, and multi-channel audio. With additional support from the Sports Video Group, the educational initiatives of the DTVAG are underwritten by ESPN, Fox Networks, NBCUniversal, and Turner Broadcasting. The DTVAG Wireless Spectrum Working Group promotes dialog on production spectrum issues amongst a wide range of users and manufacturers.

**Joe Ciaudelli (Sennheiser USA)** leads Spectrum Affairs for Sennheiser USA. Hired in 1987, Joe has provided frequency coordination for large multi-channel wireless microphone systems used by Broadway productions, major theme parks, and broadcast networks. He wrote the Turbo-RF software which became the industry standard planning tool of the time. He also wrote the white paper "Large Multi-Channel Wireless Mic Systems," published by industry trade journals, the NAB and InfoComm proceedings, and the Audiocyclopedia. Joe has served in various capacities at Sennheiser USA including Director of Marketing, Director of Market Development & Education and Director of Advanced Projects & Engineering. Joe also holds patents for the narrow angle hologram technology.

**Henry Cohen (CP Communications)** is Senior RF Engineer/Designer and FCC liaison at CP Communications, after heading Production Radio Rentals for 20 years. His RF work began in the late 70s servicing LMR systems. Moving into entertainment production in the early 80s, Henry has acted as an RF systems technician, designer, consultant and/or coordinator for numerous Fortune 500 clients and large corporate meeting productions; Broadway theatrical productions and the Broadway League; large musical concert events; televised special events, including the major political conventions, presidential inaugurations, presidential debates and the last NYC Papal visit; and major league sporting events including MLB All Stars and World Series, NBA All Stars and the recent NFL Super Bowl. He was extensively involved with the original "White Space Device" proceedings and the subsequent 700MHz band re-allocation as it concerned wireless microphones.

**Jackie Green (Audio-Technica U.S.)** is a Director of Audio-Technica U.S., Inc. and the Vice President of R&D/Engineering. In her 28 years with Audio-Technica she has initiated and lead to patent and/or product realization technologies such as dual-band companding, Ethernet control of wireless, split-band adaptive DSP, fractal and specialty antennas, distributed/coordinated wireless reception, high density analog wireless, remote clock sync methods and more. Her responsibilities at the company span consumer and professional audio products including headphones, noise cancelling methods, phono cartridges, microphones/transducers and mixers and electronics. Jackie brought Audio-Technica's first wireless product to market in the early 1990's, and she has participated in FCC regulatory matters since the early 2000s.

**Amy Klein (ESPN)** has been an Associate Principal Counsel at ESPN since 2012, handling legal matters relating to affiliate sales and marketing. Prior to joining ESPN, she served as Senior Counsel & Legal Advisor to Federal Communications Commission Chairman Julius Genachowski, with particular responsibility for wireless, public safety and engineering and technology matters. Previously, she was Subcommittee Counsel to Chairman Rick Boucher for the Subcommittee on Communications, Technology, and the Internet of the House Committee on Energy and Commerce; Senior Counsel to Chairman John Dingell on the House Committee on Energy and Commerce for telecommunications and Internet matters; Legislative Counsel to Senator Claire McCaskill for Senate Commerce Committee issues and Legislative Counsel to Mr. Boucher.

**Peter Larsson (Broadcast Sports, Inc.)** is co-founder and General Manager of Broadcast Sports Inc. For over 30 years, Broadcast Sports has supplied wireless video and wireless audio systems to the sports, news and entertainment industries. Broadcast Sports Inc. serves a wide variety of customers such as ESPN, CBS, NBC, FOX, and ABC in support of such events as the Daytona 500, Indy 500, Democratic and Republican Conventions, the Super Bowl, the Summer and Winter X games, and the Masters and PGA Golf Championships.

**Louis Libin (Broad Comm)** is the NYC frequency coordinator for under 1 GHz. Louis has coordinated hundreds of events world-wide, including multiple political conventions, Presidential Inaugurations, other special events and many sporting events including air races and shows, through his company Broad Comm. Libin has advised clients on spectrum and FCC issues for over two decades and has filed hundreds of FCC applications. Louis studied physics and electrical engineering and has patents in wireless and mobile television. Louis is also the executive director of the Advanced Television Broadcasting Alliance, whose goal is to preserve and promote the efficient and effective use of all television broadcast spectrum. The alliance represents almost 700 mostly LPTV stations.

**Kevin Parrish (NBC News)** works as an RF Engineer at NBC Network News Field & Satellite Operations based in New York City. For more than 35-years he's been actively working in television news with extensive worldwide experience in live remote-broadcasting and field production. His responsibilities include engineering and spectrum management oversight for the networks domestic news bureaus and field crews. Mr. Parrish has been actively involved for many years in frequency coordination efforts at major news related events of national significance such as the Democratic & Republican National Conventions and Presidential Inaugurations.

**Brooks Schroeder (Frequency Coordination Group, LLC)** is one of the nation's preeminent frequency coordinators. He has spent over ten years specializing in Wireless Frequency Coordination and production RF system design. After an eight year term with Professional Wireless in Orlando, Brooks founded the Frequency Coordination Group. From Cirque du Soleil and NBC, to major music festivals like Lollapalooza, Austin City Limits, to the Super Bowl halftime show and other major sporting events, Frequency Coordination Group provides world-class wireless coordination, design, and support around the globe.

**Tom Sahara (Turner Sports)** is the Vice President of Operations and Technology for Turner Sports and since 1997 has been in roles of increasing responsibility of all technical systems and operations for sports productions for Turner Broadcasting. In his current role, he is responsible for remote production, studio production and on-air operations. He has been a member of the host broadcast technical staff for three Olympics and is currently the Advisory Board Chairman of the Sports Video Group.

**Jeffrey Willis (ESPN)** is the Coordinating Technical Manager for ESPN, Inc. His 32 years with the company has been centric to the remote venue aspects of the Broadcast Industry, with duties ranging from holding the position of Engineer-in-Charge of a Mobile Production truck to Operational Planning and Technical Management of a sporting venue for Broadcast purposes. Notable project involvement from concept and planning to execution include both Summer and Winter X Games, ESPN's HD service, ESPN 3D, Longhorn Network, Southeast Conference Network. Since 2007, Jeff has been active in regulatory matters that impact the way RF technologies are deployed for content contribution.

**Karl Winkler (Lectronsonics, Inc.)** is Director of Business Development and a 10-year veteran of Lectrosonics, Inc. In this role he is involved with product development, training and technical product support, primarily with professional wireless microphone users. Mr. Winkler has provided frequency coordinations and wireless microphone band plans for a variety of users including theaters, top touring music acts, major motion picture and TV productions. Previously Mr. Winkler was previously employed at Sennheiser Electronic Corp. as a product manager, and prior to that the U.S. Air Force Band in Washington, DC as an audio engineer.