

June 28, 2013

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

RE: Notice of *Ex Parte* Communication  
GN Docket No. 12-268

Dear Ms. Dortch:

On June 26, 2013, the representatives identified below from the Radio Television Digital News Association, CBS, FOX and the National Association of Broadcasters (hereinafter, the “News Representatives”) met with members of the Office of Engineering & Technology (OET) to discuss as part of the above-referenced proceeding the critically important role that wireless microphones play in newsgathering across all types of media – from broadcast television and radio to online to newspapers to bloggers. In particular, the News Representatives provided oral answers to a list of technical questions about wireless microphones that had been provided to them by OET. A copy of the questions, together with a summary of the News Representatives’ responses, is attached hereto as Attachment A.

During the meeting, the News Representatives reiterated the importance of wireless microphones for critical applications relating to breaking news and asked that the Commission retain in each market the two channels reserved today for interference-free wireless microphone use. The News Representatives emphasized that news organizations often serve as the first wave of first responders to emergencies, providing vital information that helps American consumers stay informed and, in many instances, saves lives. Without interference-free wireless microphones and related low power devices, reporters would have no reliable way to disseminate information to viewers and listeners, whether via television or radio or online, nor would they be able to communicate effectively with their producers from the field. Ultimately, consumers would suffer the consequences if interference imperils a reporter’s ability to provide timely, crucial information, especially in times of emergency and local and national crisis.

For all of these reasons, the News Representatives urged the OET attendees to work with other Commission Offices and Bureaus to ensure that news gatherers maintain the same ability they have today to use wireless microphones without risk of interference. This letter is being submitted electronically in the above-referenced docket, which has been granted permit-but-disclose status, pursuant to Section 1.1206(b) of the Commission’s Rules. Should you have any questions concerning this submission, kindly contact the undersigned.

Respectfully submitted,

/s/  
Jared S. Sher  
Vice President, Associate General  
Counsel, News Corporation

/s/  
Anne Lucey  
Senior Vice President for Regulatory  
Policy, CBS

News Representative Attendees	Commission Staff Attendees
<p>Kathy Kirby, General Counsel to the Radio Television Digital News Association</p> <p>Anne Lucey, Senior Vice President for Regulatory Policy, CBS</p> <p>Robert Seidel, Vice President, Engineering &amp; Advanced Technology, CBS</p> <p>Jared Sher, Vice President &amp; Associate General Counsel, News Corporation</p> <p>John Cook, Legal Intern, News Corporation</p> <p>Bruce Franca, Vice President, Science and Technology, National Association of Broadcasters</p>	<p>Julie Knapp</p> <p>Alan Stillwell</p> <p>Ira Keltz</p> <p>Jamison Prime</p> <p>Geraldine Matise</p> <p>Serey Thai</p> <p>Bruce Romano</p> <p>Robert Weller</p> <p>Matthew Hussey</p>

cc: Julie Knapp  
Alan Stillwell  
Ira Keltz  
Jamison Prime  
Geraldine Matise  
Serey Thai  
Bruce Romano  
Robert Weller  
Matthew Hussey

# **ATTACHMENT A**

## Wireless Microphone Questions

**1. How do you manage the frequencies used by wireless mics in the studio and at remote sites? The microphones we are familiar with do not have their frequencies of operation on either the microphone or the mic's user manual. How are wireless mic frequencies managed when there are multiple users at a common event/location?**

Microphones generally are purchased to match the useable frequencies in a particular geographic area. In many instances, newsgatherers in an area coordinate between themselves to avoid interference. At large events, a frequency coordinator is often assigned to coordinate the frequencies for each user. In this case, newsgathering entities hold meetings in advance of the event to determine the equipment that will be used and to work out compatible arrangements.

**2. How many different makes/models of mics do you use in different types of production and how are the different types used?**

The number and types of microphones vary depending on the newsgathering entity and the circumstances. The major manufacturers of wireless microphones and related equipment are: Shure Inc., Sennheiser Electronic Corp., and Lectrosonics, Inc. A typical local television news program uses multiple microphones and wireless cueing devices for studio and field on-air reporting, for remote feeds, and for communications between producers, directors, reporters and photographers. In large markets, where multiple news organizations are covering dozens of events on a given day, hundreds of devices across hundreds of wireless channels can be utilized at any time.

**3. Are any wireless mics used that do not operate in UHF TV spectrum? If not, are such mics available and why are they not used? Similarly, are other devices (IFB, etc.) available that operate in frequency bands other than UHF TV?**

Most professional equipment utilized by newsgatherers (including wireless microphones and related low power devices such as IFBs and wireless intercoms) is designed for use solely in the UHF band. UHF equipment is smaller and lighter than that designed to operate in lower bands. The noise floor is generally higher in the VHF band, and VHF frequencies require a larger antenna for comparable efficiency. Microphones that may be available in other frequencies lack reliable propagation characteristics, or require line-of-sight to be maintained between a microphone and a receiver – which is infeasible in a dynamic newsgathering environment.

**4. What are the power levels of the mics and other devices (IFB, ear monitors, etc.) you use? What is the effective operating range of the mics and other devices? What factors influence the operating range and which of those factors are under your control?**

Although some situations require higher power to transmit a quality signal, most wireless microphones operate at 50 mW. Effective range depends on the application and environment, as well as manufacturers' specifications because of antenna size/gain and frequency used. In-studio use is generally short-range and lower power; outdoor reporting requires higher power (sometimes up to 250

mW) for longer ranges and to account for uncontrollable environmental factors. Reporting during a severe weather emergency can also require increased power to maintain a quality transmission.

**5. Do you use low power auxiliary devices (mics and other audio devices) that provide different levels of audio quality? If yes, do mics/devices that provide lower levels of audio quality use less bandwidth?**

Yes. An earpiece used to enable a producer to communicate with a reporter in the field does not require the same audio quality as a microphone used by a speaker whose report is being transmitted to television viewers or radio listeners. In situations where lower quality audio devices can be used, they often have a reduced RF bandwidth, in comparison to wireless microphones that generally require high fidelity and wider bandwidth.

**6. How much physical separation is needed between the receivers of mics that operate on the same and adjacent channels? What factors influence that separation? How much do directional antennas improve frequency reuse. How does the distance between the mics and their receivers affect this separation? What ratio of D/U is needed to avoid interference between co-channel mics?**

Physical separation requirements vary based on a variety of factors relating to the microphone application and the environment. Newsgatherers employ good RF engineering practices and try to avoid co-channel and adjacent channel operation at a single location. Indoor operations (such as news studios) where microphones typically remain located close to the receiver can be managed differently than a report from a field location, where a reporter may have to operate at a significant distance from the receiver. In an indoor case, adjacent channel or even co-channel operation in another part of the building may not be a problem, especially if the building is well-shielded. The D/U ratio also varies by environmental factors and by manufacturer. Ideally, one would like a D/U of about 20 dB.

**7. How many mics can you operate on the same 6 MHz TV channel and how does that vary with the distance between the mics and their receivers? What frequency spacing is typically needed? Does the required spacing vary between makes/models?**

The record of this proceeding includes data from wireless microphone manufacturers, who are best equipped to respond to this question. See Comments and Reply Comments of Shure Inc., Sennheiser Electronic Corp., and Lectrosonics, Inc. in GN Docket No. 12-268. As indicated in response to question no. 6, many factors, including manufacturer specifications and the application/environment, affect the distance separation required. The risk of intermodulation interference increases with the number of microphones used at particular location. Especially in high-density circumstances, channel separation and the number of microphones in use must be coordinated to avoid this type of interference.

**8. What is the IM3 performance of wireless mics and receivers? Does IM performance vary with the technical quality of the mic? How much of a problem is IM3 in actual use?**

IM3 can present major problems at newsgathering sites where many crews are deployed. Although we do not have data about the IM3 performance of particular types of wireless microphones, this could be tested in a laboratory if further information is required. Because most microphones are at least

somewhat frequency-agile, when IM is a problem at a particular site, users can try to change to an alternative available channel.

**9. Do you rely on structural features to provide protection for wireless mics from interference? How much attenuation of signals do you figure for different types of structures?**

Yes – structural attenuation is taken into account whenever microphones are put into use. Because attenuation varies based on the type of building and location, in most instances, wireless microphone operations are subjected to trial-and-error testing before they are used to support field reporting.

**10. Do you currently use digital wireless mics? If so, how many can be operated within the same TV channel? Does that number vary if digital mics from different manufacturers are used? What are the technical characteristics and advantages/disadvantages of those mics (D/U levels for avoiding interference, range of operation, IM3 performance, etc.)?**

Newsgatherers are using and testing digital wireless microphones, but these products have not yielded significant improvements in spectral efficiency or in the number of microphones that can be operated in a single channel. Digital microphones also present important disadvantages in comparison to analog products – most notably increased latency and the “cliff effect” (lack of warning before a device fails). In an environment where news organizations have to serve viewers with near-100% reliability, using digital microphones to try to boost efficiency while diminishing dependability would not be an acceptable trade-off for consumers.

**11. Is body absorption a factor in wireless mic use and how does that vary with the manner in which the mic is used (body work vs. handheld)? Are there standard practices for minimizing such absorption?**

Yes, body absorption is a factor and varies depending on the application and environment in which the microphone is used. This issue is diminished for operations in the UHF band. In most situations, microphones are tested prior to their use in news operations.

**12. Do you own your own mics or rent them (or some combination of both)?**

Most newsgathering entities own their microphones.

**13. How do you look for and select channels that are suitable for use by your mics?**

Manufacturers provide tools to aid in selecting microphone channels. In addition, the Society of Broadcast Engineers (SBE) and local frequency coordinators provide guidance. Because devices are at least somewhat frequency-agile, operators can select alternative channels when needed. Ultimately, newsgathering entities rely on close coordination between themselves to minimize interference risks.