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Small Entity Compliance Guide

Promoting Spectrum Access for Wireless Microphone Operations Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions

Report and Order

GN Docket No. 14-166; GN Docket No. 12-268

FCC 15-100, Released August 11, 2015

This Guide is prepared in accordance with the requirements of Section 212 of the Small Business Regulatory Enforcement Fairness Act of 1996. It is intended to help small entities—small businesses, small organizations (non-profits), and small governmental jurisdictions—comply with the new rules adopted in the above-referenced FCC rulemaking docket(s). This Guide is not intended to replace the rules and, therefore, final authority rests solely with the rules. Although we have attempted to cover all parts of the rules that might be especially important to small entities, the coverage may not be exhaustive. As a result, in any civil or administrative action against a small entity for a violation of a rule or rules, the content of the Small Entity Compliance Guide may be considered only as evidence of the reasonableness or appropriateness of proposed fines, penalties or damages. This Guide may, perhaps, not apply in a particular situation based upon the circumstances, and the FCC retains the discretion to adopt approaches on a case-by-case basis that may differ from this Guide, where appropriate. Any decisions regarding a particular small entity will be based on the statute and regulations.

In any civil or administrative action against a small entity for a violation of rules, the content of the Small Entity Compliance Guide may be considered as evidence of the reasonableness or appropriateness of proposed fines, penalties or damages. Interested parties are free to file comments regarding this Guide and the appropriateness of its application to a particular situation; the FCC will consider whether the recommendations or interpretations in the Guide are appropriate in that situation. The FCC may decide to revise this Guide without public notice to reflect changes in the FCC's approach to implementing a rule, or to clarify or update the text of the Guide. Direct your comments and recommendations, or calls for further assistance, to the FCC's Consumer Center:

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I. OBJECTIVES OF THE PROCEEDING

As explained in the initial *Report and Order* in GN Docket No. 12-268 (*Incentive Auction R&O*),¹ full power and Class A television broadcasters will have an opportunity in the “reverse auction” phase of the forthcoming 600 MHz Band incentive auction to return some or all of their broadcast spectrum usage rights in exchange for incentive payments. A broadcaster’s decision to participate in the reverse auction will be wholly voluntary. By facilitating this voluntary return of spectrum usage rights and reorganizing the broadcast television bands, the Commission can recover a portion of ultra-high frequency (“UHF”) spectrum in the 600 MHz Band currently used for television broadcasting for a “forward auction” of new, flexible-use licenses suitable for providing mobile broadband services.

The repurposing of broadcast television band spectrum for wireless services set forth in the *Incentive Auction R&O* will significantly alter the regulatory environment in which wireless microphones operate. Currently, wireless microphone users rely heavily on access to unused channels in the television bands. Following the incentive auction, with the repacking of the television band and the repurposing of current television spectrum for wireless services, there will be fewer frequencies in the UHF band available for use for wireless microphone operations. The Commission therefore took several steps in the *Incentive Auction R&O* to accommodate wireless microphone operations – including providing more opportunities to access spectrum on the channels that will remain allocated for television post-auction and making the 600 MHz Band “guard bands” available for wireless microphone operations – while also recognizing that the reduction of total available UHF band spectrum will require many wireless microphone users to make adjustments over the next few years regarding the spectrum that they access and the equipment they use. To facilitate wireless microphone users’ ability to make these adjustments, the Commission provided in the *Incentive Auction R&O* that users could continue to access spectrum repurposed for wireless services during the post-auction transition period, under specified conditions, as they transition affected services to alternative spectrum.

In this subsequent *Report and Order* in GN Docket No. 14-166 and GN Docket No. 12-268 (the “Order”),² the Commission took several additional steps to accommodate the long-term needs of wireless microphone users. In particular, the Commission provided additional opportunities for wireless microphone operations in the TV bands following the upcoming incentive auction, and also provided new opportunities for wireless microphone operations to access spectrum in other frequency bands where they can share use of those bands without harming existing users.

Concurrently with this Order, the Commission adopted a *Report and Order* in ET Docket No. 14-165 concerning white space devices and unlicensed wireless microphones. Please see the *Small Entity Compliance Guide* in that proceeding for a description of the requirements for white space devices and unlicensed wireless microphones.

¹ *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, GN Docket No. 12-268, Report and Order, 29 FCC Rcd 6567 (2014). A Small Entity Compliance Guide for the *Incentive Auction R&O* is available at <http://www.fcc.gov/document/incentive-auctions>.

² *Promoting Spectrum Access for Wireless Microphone Operations, Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, GN Docket No. 14-166, GN Docket No. 12-268; Report and Order, 30 FCC Rcd 8739 (2015).

II. REGULATIONS AND POLICIES THAT THE COMMISSION ADOPTED OR MODIFIED, INCLUDING RECORDKEEPING AND OTHER COMPLIANCE REQUIREMENTS

A. Background

Wireless microphones play an important role in enabling broadcasters and other video programming networks to serve consumers, including as they cover breaking news and live sports events. Many types of users employ wireless microphones – both licensed and unlicensed – in a variety of settings. Wireless microphone operations range from professional uses, with the need for numerous high-performance microphones along with other microphones, to an individual consumer’s use of a handheld microphone at a conference or in a karaoke bar. Wireless microphones enhance event productions in a variety of settings – including theaters and music venues, film studios, conventions, corporate events, houses of worship, and Internet webcasts. They also help create high quality content that consumers demand and value. The Commission has authorized wireless microphone operations in different spectrum bands to accommodate the growing use of these devices by different users. The technical and operational rules for wireless microphone operations in these different bands have varied, depending on the band, and generally are designed to enable wireless microphone users to operate in shared bands along with other users.

B. Wireless Microphone Use of TV Bands

1. Licensed Use of VHF TV Band

The Order revised the Commission’s rules to provide more opportunities for licensed wireless microphone use of VHF channels. While the Commission did not permit power levels of up to 250 milliwatts (mW) conducted power, as is permitted on UHF frequencies, it revised its rules that currently measure the 50 mW limit in terms of conducted power by specifying the 50 mW limit in terms of effective or equivalent isotropically radiated power (EIRP). Specifying the power levels in terms of EIRP instead of conducted power will be beneficial to wireless microphone users in the VHF band, where the efficiency of antennas is lower due to the longer radio wavelengths. This approach will allow manufacturers to adjust the conducted power output of a device to compensate for low antenna efficiency, thus helping to address wireless microphone operators’ interest in making greater use of this spectrum without the need for a larger antenna. By revising the rules to specify the current 50 mW power limits in terms of EIRP, the Order addressed concerns that wireless microphone operations not increase the potential for interference to TV broadcasts. This revision represents a balance in addressing the concerns raised, and will increase the performance and usability of wireless microphones operating on this VHF spectrum without significantly increasing the risk of interference to TV use. Specifying the power limit in terms of EIRP also ensures uniformity in the maximum radiated power for wireless microphone operations (licensed and unlicensed) in the VHF band. Moreover, this change does not necessitate any increase in the four kilometer separation distance between wireless microphones and co-channel TV contours. The Commission began accepting applications to certify LPAS devices under this revised rule on December 17, 2015.

2. Licensed Co-Channel Operations Closer Than Specified Separation Distances in TV Bands

In the *Incentive Auction R&O*, the Commission permitted licensed wireless microphone users to operate closer to television stations than permitted under the revised separation distances (*i.e.*, no closer than 4 kilometers from the outside of the digital television contours), provided that they coordinated their operations with affected broadcasters. The Commission noted, however, that several commenters had proposed to permit wireless microphone operations on a co-channel basis without requiring coordination, such as in locations where the TV signal falls below a specified threshold, where the microphones are shielded from the TV signals due to building attenuation, or where no over-the-air television receivers are in operation.

In the Order, the Commission permitted closer co-channel operations by licensed wireless microphone operators on any TV channel where the TV signal falls below a threshold of -84 decibel-milliwatts (dBm) over the entire TV channel, provided certain conditions are met. Such operations will be limited to systems operating at an indoor location, and not in an itinerant fashion where the signal threshold could be ever-changing, and the location is not being used for over-the-air television viewing. The Commission also required that the licensed operators must have the requisite wireless microphone systems for determining the threshold at the location, as well as the professional qualifications for evaluating the signals. Additionally, the Commission required that the signals be measured where the wireless microphones would be operated at the location, and must be scanned across the full six-megahertz TV channel; to the extent directional antennas are employed, they must be rotated to the place of the maximum signal at the location.

3. Adoption of ETSI Emission Mask Standards for Analog and Digital Wireless Microphones in TV Bands

The technical rules applicable to part 74 LPAS devices operations in the TV bands set forth specified out-of-band emission mask requirements for wireless microphones, regardless of whether the device is analog or digital, and had not been revised since 1987. To promote more efficient use of the limited TV band spectrum available for wireless microphones, the Commission adopted the ETSI standard emission masks for LPAS devices used by wireless microphone licensees under part 74. Specifically, the Order required that emissions from analog and digital unlicensed wireless microphones comply with the emission masks in Section 8.3 of ETSI EN 300 422-1 v1.4.2 (2011-08), *Electromagnetic compatibility and Radio spectrum Matters (ERM); Wireless microphones in the 25 MHz to 3 GHz frequency range; Part 1: Technical characteristics and methods of measurement*. This standard is available at www.etsi.org. For analog emissions, the Commission will apply the analog mask contained in Section 8.3.1.2 of this standard; for digital emissions, the below 1 GHz digital emission mask contained in Section 8.3.2.2. Requiring wireless microphones to meet these more stringent emission requirements will protect authorized services in adjacent bands from harmful interference, and will improve spectrum sharing by wireless microphones. Outside of the frequency range where the ETSI masks are defined (one megahertz above and below the wireless microphone carrier frequency), the Commission required that emissions comply with the same limit as the edge of the ETSI masks – specifically, 90 decibels below the level of the

unmodulated carrier. These masks are also adopted for the operations now permitted in other bands, as described below in Section II.C.

4. Low Power Auxiliary Devices Used by Nuclear Power Plants

The Order concluded that extending the existing waiver of the Commission's rules to permit nuclear power plants the continued use of spectrum in the core TV bands would serve the public interest. Consequently, the Order granted a permanent waiver of the rules to allow the continued use of wireless headsets at nuclear power plants, under the same conditions as the current waiver, in the spectrum that will continue to be allocated for television following the incentive auction. In addition, this waiver will permit nuclear power plants to continue to access the spectrum repurposed for 600 MHz Band wireless service during the transition period, but no later, provided that they meet the conditions for secondary operations in this band. The terms of this waiver do not extend to include operations in the 600 MHz guard bands, including the duplex gap, which will no longer be allocated for broadcast TV.

5. Licensed Wireless Microphone Operations in the Duplex Gap

The *Incentive Auction R&O* provided that broadcasters and cable programming networks using wireless microphones on a licensed basis could operate in a portion of the duplex gap, where they would be protected from interference by unlicensed devices in order to have access to spectrum for certain programming, including emergency information. In the Order, the Commission concluded that expanding eligibility to the other licensed part 74 entities should not cause any problems for broadcasters and cable programming networks because the licensed entities will be obligated to coordinate their operations when and where necessary. The Order noted that, as a general matter, these different licensees will likely operate at different locations and not interfere with each other.

6. Transition Out of the 600 MHz Band Repurposed for Wireless Services

Following the upcoming incentive auction, certain existing television channels in the UHF band will be repurposed for 600 MHz Band wireless services. In the *Incentive Auction R&O*, the Commission provided for a multi-year period to help smooth the transition as wireless microphone operators take steps to obtain new equipment and transition out of the use of this spectrum no later than the end of post-auction transition period. Specifically, following the auction these operators may continue to access the 600 MHz Band during the transition period, but no later, subject to certain conditions. To the extent that either licensed or unlicensed wireless microphone users operate in the 600 MHz Band during the transition period, then consistent with their secondary or unlicensed status they will not be entitled to any interference protection from operations of the primary 600 MHz licensees. Moreover, wireless microphone users will be required to cease operation if they cause harmful interference to any 600 MHz Band licensee.

a. Consumer Education and Outreach; Disclosure Requirements

The Commission required anyone selling, leasing, or offering for sale or lease wireless microphones that operate in the 600 MHz Band to provide certain disclosures to consumers. These entities must display those disclosures, the text of which will be developed by Commission staff, at the point of sale or lease, in a clear, conspicuous, and readily legible manner. In addition, those disclosures must be displayed on the website of the manufacturer (even in the event the manufacturer does not sell wireless microphones directly to the public) and of dealers, distributors, retailers, and anyone else selling or leasing the devices. The Commission found that such disclosures are necessary to ensure that consumers are informed that their wireless microphones may be used, under specified conditions, no later than the post-auction transition period. Thus, such disclosures will help ensure that wireless microphone users comply with their obligations during the transition period and will cease operating on the 600 MHz Band after the end of the transition period. The nature and effective date of these disclosure obligations are described below.

In addition, the Commission found that several means should be employed to provide as much notice as possible to users of the need to clear the 600 MHz Band of wireless microphones. The Commission directed its staff to prepare the specific language that must be used in the disclosure, and establish a page on its website and prepare and release consumer publications, including a Consumer Fact Sheet and answers to Frequently Asked Questions, that inform the public of its decisions affecting wireless microphone operations in the repurposed 600 MHz Band and the guard bands. The Commission further directed its staff to identify and contact organizations that represent entities that are known to be users of wireless microphones in the 600 MHz Band, including groups that represent theaters, houses of worship, and sporting venues. The Commission will inform these entities of its decisions affecting wireless microphone operations in the repurposed spectrum and available resources for information on options for wireless microphone use going forward.

The Order emphasized that the Commission expects all manufacturers of wireless microphones to make significant efforts to ensure that all users of such equipment capable of operating in the 600 MHz Band are fully informed of the decisions affecting them. Specifically, the Commission expects these manufacturers, at a minimum, to ensure that their users are informed of the need to clear the 600 MHz Band by the end of the transition period. Further, the Order emphasized that the Commission expects all manufacturers to contact dealers, distributors, and anyone else who has purchased wireless microphones and inform them of the need to clear the 600 MHz Band of wireless microphone use. The Commission noted that manufacturers should also provide such information to any users that have filed warranty registrations for 600 MHz Band equipment with the manufacturers. The Commission expects manufacturers also to post this information on their websites and include it in all of their sales literature. In addition, the Order encouraged manufacturers to offer rebates and trade-in programs for any 600 MHz Band wireless microphones, similar to what was done previously with respect to transitioning wireless microphone users out of the 700 MHz band. In contacting dealers and distributors, the Commission expects manufacturers to inform them that they should: (1) inform all customers who have purchased wireless microphones that are capable of operating in the 600 MHz Band of the Commission's decision to clear the band of such devices; (2) post such information on their

websites; (3) include this information in all other sales materials; (4) provide information in sales materials, including on their websites, on the availability of any relevant rebate offerings and trade-in programs; and (5) comply with the foregoing disclosure requirements.

b. Post-Auction Prohibition of the Certification, Manufacture, or Marketing of LPAS Devices Operating on the 600 MHz Band

The Order adopted transition rules for the TV bands, the guard bands (including the duplex gap), and the repurposed 600 MHz Band that will allow the Commission to gradually phase out older wireless microphones and introduce new ones that are compliant with the modified part 74 technical rules. The Order adopted cutoff dates that will require applications to certify wireless microphones under those modified rules nine months after the release of the forthcoming *Channel Reassignment Public Notice (Channel Reassignment PN*, which will be issued following the conclusion of the 600 MHz Band incentive auction), or no later than 24 months after the December 17, 2015 effective date of the new rules, whichever occurs first. The Order required that manufacturing and marketing of all part 74 wireless microphones that do not comply with the rules for operation in the 600 MHz Band cease 18 months after release of the *Channel Reassignment PN*, or no later than 33 months after December 17, 2015, whichever occurs first.

c. Modification of LPAS Licenses to Remove Authorization for Operations on the 600 MHz Band

The Order modified existing LPAS licenses to the extent necessary to delete frequencies identified as repurposed for the 600 MHz Band in the *Channel Reassignment PN*, effective on the date that the post-auction transition period ends. The LPAS licenses will continue to include authorization to use all frequencies other than those in the repurposed 600 MHz Band. If a licensed user must cease operations of a wireless microphone prior to the end of the post-auction transition period (*i.e.*, because it causes harmful interference to any 600 MHz licensee's operations), the license relating to that wireless microphone will be modified automatically without Commission action to delete the authorization to operate on the repurposed 600 MHz Band, effective on the date that operations are required to cease. The staff was directed to modify LPAS licenses accordingly.

C. Wireless Microphone Use of Other Bands

1. 169-172 MHz Band

The Order authorized creating new channel centers between the existing neighboring pairs of channels (*i.e.*, 169.475, 170.275, 171.075, and 171.875 MHz), concluding that the record supports permitting operation on these new channel centers with a bandwidth of up to 200 kilohertz. However, to protect Federal operations and the other secondary non-Federal services, the Order rejected a suggestion that the Commission authorize wireless microphone operations in the 169-172 MHz band on an unlicensed basis pursuant to part 15. Unlicensed operations would eliminate the Federal Government's ability to review and object to new

assignments in this primary Federal band. Instead, wireless microphone operations in this band will be licensed pursuant to part 90, and applications will be subject to Government coordination.

2. 944-952 MHz Band

The Order expanded eligibility for operations in the 944-952 MHz band to include all entities currently eligible to hold LPAS licenses for operation in the TV bands. This modification will help address the need for additional spectrum outside of the TV bands for this entire group of licensed users.

3. 941-944 MHz and 952-960 MHz Band

The Order opened most of the 941-944 and 952-960 MHz bands – the 2.5 megahertz of spectrum between 941.5-944 MHz and the 6.8 megahertz of spectrum between 952.85-956.25 MHz and 956.45-959.85 MHz – for use by wireless microphones and other LPAS license eligible entities currently operating in the TV broadcast bands and for whom the Commission has expanded eligibility to operate in the 944-952 MHz band. Because wireless microphones operate at low power over short distances, and incumbent fixed point-to-point systems in these bands employ directional antennas and operate with fairly high effective isotropic radiated power, the Order found that the risk of interference between LPAS operations and incumbent fixed point-to-point operations is low.

4. 1435-1525 MHz Band

The Order authorized limited use of this band for licensed wireless microphones operations, with secondary status in the band in the table of allocations, but with the provision that certain conditions and safeguards designed to protect existing aeronautical mobile telemetry services are met. Eligibility to use this band will be restricted to professional users – including broadcasters, professional television and cable programmers, professional sound engineering companies, and operators at major venues that manage and coordinate wireless microphone operations.

5. 6875-7125 MHz Band

The Order permitted broadcast auxiliary services stations and cable television relay stations, as well as the other entities eligible to hold LPAS licenses under part 74, to operate wireless microphones on a licensed, secondary basis in this band on two 25 megahertz channels that the Commission is setting aside for such use on the top and bottom channels of this band (6875-6900 MHz and 7100-7125 MHz). The Order declined to make the entire band available for wireless microphone use because there has been no demonstration that there is a need for all 250 megahertz of spectrum.

III. RECORDKEEPING AND OTHER COMPLIANCE REQUIREMENTS

The Order required wireless microphone users seeking access to the 944-952 MHz band to coordinate their proposed use through their local frequency coordinators. Also, as detailed under Section IIC 5a above, the Order required anyone selling, leasing, or offering for sale or lease wireless microphones that operate in the 600 MHz Band to provide certain written disclosures to consumers. One way for affected parties to fulfill this disclosure requirement would be for them to display the consumer disclosure in a prominent manner on the product box by using a label (either printed onto the box or otherwise affixed to the box), a sticker, or other means. Another way to fulfill the disclosure requirement would be to display the text immediately adjacent to each wireless microphone offered for sale or lease and clearly associated with the model to which it pertains. For wireless microphones offered online or via direct mail or catalog, the disclosure must be prominently displayed in close proximity to the images and descriptions of each wireless microphone. The Order required manufacturers, dealers, distributors, and other entities that sell or lease wireless microphones for operation in the 600 MHz Band to comply with the disclosure requirements no later than three months following issuance of the *Channel Reassignment PN*.

IV. INTERNET LINKS

Report and Order

- https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-100A1.docx
- https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-100A1.pdf
- https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-100A1.txt