

Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554

In the Matter of	)	
	)	
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
	)	
	)	

**COMMENTS OF MOTOROLA, INC.**

**I. INTRODUCTION**

Motorola, Inc. (“Motorola”) hereby submits these comments in response to the Federal Communications Commission’s (“Commission”) Further Notice of Proposed Rulemaking (“FNPRM”) in the above-captioned proceeding.<sup>1</sup> In the FNPRM, the Commission proposes to revise its rules to permit the operation of wireless microphones and other low power audio devices in the core TV bands on an unlicensed basis under Part 15 by entities that are not eligible for licensing under Part 74, Subpart H. The Commission also seeks comment on whether it should expand the categories of users who might be eligible for a Part 74, Subpart H wireless

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<sup>1</sup> Revisions to Rules Authorizing the Operation of Low Power Auxiliary Stations in the 698-806 MHz Band, Public Interest Spectrum Coalition, Petition for Rulemaking Regarding Low Power Auxiliary Stations, Including Wireless Microphones, and the Digital Television Transition, Amendment of Parts 15, 74 and 90 of the Commission’s Rules Regarding Low Power Auxiliary Stations, Including Wireless Microphones, *Report and Order and Further Notice of Proposed Rulemaking*, WT Docket Nos. 08-166 and 08-167, ET Docket No. 10-24, 25 FCC Rcd 643 (rel. Jan. 14, 2010) (“FNPRM”).

microphone license and on whether it should also adjust the Part 90 rules to enable additional use of wireless microphones under that Part. Motorola supports each of these proposals, with some qualifications put in place to protect existing and newly licensed 700 MHz, public safety, and land mobile users, as well as to ensure the efficient use of available TV band spectrum by TV white spaces devices.

**II. UNLICENSED USE OF WIRELESS MICROPHONES SHOULD BE ALLOWED WITH APPROPRIATE SAFEGUARDS.**

Motorola supports the Commission's proposal to allow the unlicensed use of wireless microphones under Part 15. Allowing unlicensed use under Part 15 is the most viable approach to immediately provide a legal solution to the unauthorized use of legacy equipment in the band. This approach will provide the required degree of certainty for wireless microphone users and manufacturers while also allowing sufficient flexibility to cover the many use cases for wireless microphones. However, certain limitations should be adopted to protect licensees in adjacent bands and to ensure the most efficient use of spectrum by TV Band Devices ("TVBDs").

The FNPRM contemplates allowing wireless microphones to operate in the core TV bands on channels 2-51 with separation distances mandated to protect operating TV stations from co-channel interference.<sup>2</sup> This proposal places the responsibility for identifying available channels on the wireless microphone user and risks interference to television licensees, land mobile, public safety, and commercial wireless licensees.

Motorola has previously advocated that the Commission should establish a set of four TV channels per market area for the use of Part 15 wireless microphones.<sup>3</sup> The channels to be made

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<sup>2</sup> FNPRM, ¶ 11.

<sup>3</sup> See Letter from Steve B. Sharkey, Senior Director, Regulatory and Spectrum Policy, Motorola, Inc. to Marlene H. Dortch, Secretary, Federal Communications Commission, *Ex Parte*

available for wireless microphones should be selected by the Commission in coordination with affected licensees on a state or regional level. Motorola believes that there are numerous opportunities to identify a sufficient number of channels for Part 15 wireless microphones in each market. First, Motorola notes that TVBDs are not permitted to operate on the first adjacent channels inside a VHF television station's protected service contour.<sup>4</sup> At least some of these adjacent channels could be used by Part 15 wireless microphones, which would not have to compete for spectrum access with TVBDs. In addition, in the 13 metropolitan markets where land mobile systems are authorized to operate on channels 14-20, the Commission has already made the channels immediately adjacent to channel 37 unavailable for TVBDs, thus freeing these channels for possible wireless microphone use.<sup>5</sup> The Commission could expand this decision nationwide, making these channels available for wireless microphone use in every market.<sup>6</sup> Coupled together, these opportunities will provide an adequate supply of spectrum for Part 15 wireless microphones.

Making a set of at least four channels per market available for wireless microphones will also promote efficient use of spectrum by TVBDs. Currently personal/portable TV band devices are not allowed to operate below 21, or, in the 13 TV/land mobile sharing markets, on the first

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in WT Docket No. 08-166, ET Docket No. 04-186 at 2 (Aug. 6, 2009) (“Motorola Aug. 6 *Ex Parte*”).

<sup>4</sup> See 47 C.F.R. § 15.712(a) (requiring TVBDs to keep a separation of between 0.1 and 0.74 km from the protected contour of an adjacent channel television station).

<sup>5</sup> See 47 C.F.R. § 15.707(a); *FNPRM*, ¶ 111; *In the Matter of Unlicensed Operations in the TV Broadcast Bands*, Second Report and Order and Memorandum Opinion and Order, 23 FCC Rcd 16807, 16906 Appx. B (2008).

<sup>6</sup> Motorola believes that the Commission should strive to identify channels for unlicensed wireless microphone use that fall below UHF-TV channel 37 to avoid the need for possible future relocations should the reallocation of additional television broadcast spectrum for mobile broadband uses come to fruition. See *e.g.*, Data Sought on Uses of Spectrum, NBP Public Notice # 26, DA 09-2518, released December 2, 2009.

open channel on either side of channel 37. By expanding the latter exclusion nationwide and identifying two additional channels in the VHF high band for unlicensed wireless microphone operations, the Commission can minimize conflicts between unlicensed wireless microphone and TVBD operations. This approach will provide a more structured use of the frequencies by unlicensed wireless microphones and will enhance spectral use for all unlicensed devices, both TVBD and unlicensed wireless microphones. In order to protect land mobile systems and public safety interests, when choosing the four channels per market, unlicensed use of wireless microphones under Part 15 should not be allowed in TV channels 14-20 anywhere in the country.

Adopting this proposal will also enable elimination of the requirement that all personal/portable TVBDs be equipped with spectrum sensing capabilities.<sup>7</sup> As Motorola has previously discussed, the ability of TVBDs to accurately identify low power wireless microphone operations is unproven and the sensing requirement is likely to result in inefficient spectrum use.<sup>8</sup> Under the current sensing requirement, TVBDs will produce frequent false detections and due to the omnidirectional and distributed sensing requirements, the costs and complexity of TVBDs will rise and these devices will also regularly abandon channels in a significantly wider area than is necessary to protect wireless microphone operations.

Finally, the Commission should consider authorization of wireless microphones under the TVBD rules. In the long term, this would enable more efficient spectrum sharing between unlicensed wireless microphone operations, other TVBDs, and primary services in the band. Applying TVBD rules to wireless microphones would enable expansion of unlicensed wireless

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<sup>7</sup> Motorola acknowledges that the FNPRM specifically indicates that the elimination of the monitoring requirement would be addressed in the TV white spaces proceeding rather than in response to the instant FNPRM. *FNPRM*, n. 297.

<sup>8</sup> Motorola Recon Petition at 9-15.

microphone use beyond the four designated channels identified per this proposal. Ideally, all future unlicensed wireless microphones would be compliant with the TVDB rules which would obviate the need for specific channel designations as proposed here. The Commission should encourage wireless microphone manufacturers to develop techniques that provide both spectrum efficiency and the requisite audio quality desired.

**III. THE COMMISSION SHOULD EXPAND THE ELIGIBILITY CATEGORIES FOR PART 74 LICENSEES IN A CAREFULLY LIMITED FASHION.**

The Commission should adopt a limited expansion of eligibility under Part 74 Subpart H to create additional categories of wireless microphones or other low power auxiliary stations.<sup>9</sup> Only entities that fall within one of the defined set of categories, such as broadcasters, cable television operators, and some film and television producers, are eligible for a Part 74 license.<sup>10</sup> Consistent with the Commission's precedents in this area, Motorola supports a limited expansion of Part 74 eligibility to encompass some uses with needs similar to those of broadcast licensees.<sup>11</sup>

The Commission seeks comment on proposals to expand Part 74 eligibility to include large theaters, entertainment complexes, sporting arenas, and religious facilities as well as other uses such as convention centers and educational institutions.<sup>12</sup> Motorola supports a limited expansion of the Part 74 eligibility rules for use of wireless microphones in TV channels 38-51 in support of live broadcast and professional entertainment venues as a means of legalizing many

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<sup>9</sup> *FNPRM*, ¶ 127-128.

<sup>10</sup> *See* 47 C.F.R. § 74.832(a)(1)-(6).

<sup>11</sup> *See* Amendment of Part 2 and Subpart D, Part 74 of the Commission's Rules and Regulations with Respect to the Use of Wireless Microphones, *Report, Memorandum Opinion and Order*, 63 FCC 2d 535, ¶ 31 (1977).

<sup>12</sup> *FNPRM*, ¶ 127-133.

existing users who are currently unauthorized.<sup>13</sup> All Part 74 wireless microphone operations should be protected in the TV white spaces databases as location and time-specific operations, with the exception of ad hoc uses for electronic news gathering, for which entering a specific location is not practical.

The FNPRM seeks comment on which entities should be issued licenses under the expanded eligibility.<sup>14</sup> Under the expanded Part 74 Subpart H eligibility rules, wireless microphone licenses should be issued to the owner or operator of the facility or venue, rather than the performing group, sports team, or religious organization. A main justification for use of Part 74 licensed wireless microphones as opposed to Part 15 unlicensed devices is the expanded number and range of microphones required, which will often have site-specific characteristics. Furthermore, licensing based on the facility as opposed to the user will improve coordination efforts as the database entries will be location and channel specific, and the facility operator will be in the best position to gauge the requirements for microphone operation. By creating more certainty and accountability with respect to database entries, this approach will further promote efficient use of TV white spaces spectrum by TVBDs. Motorola notes that licensing the facility operator does not prohibit professional sound companies from providing equipment and services involving wireless microphones; it merely means that they will be doing so in accordance with and pursuant to the license of the facility operator.

#### **IV. THE COMMISSION SHOULD ADOPT APPROPRIATE LABELING AND MARKETING REQUIREMENTS FOR WIRELESS MICROPHONES.**

In the FNPRM, the Commission seeks comment on whether it should adopt new marketing and labeling requirements in conjunction with its proposed expansion of authorized

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<sup>13</sup> See also Motorola Aug. 6 *Ex Parte* at 2.

<sup>14</sup> FNPRM, ¶ 131.

wireless microphone use.<sup>15</sup> Motorola supports the codification of new requirements for labeling and marketing that are consistent with the rule parts under which wireless microphones are operating.

The history of wireless microphones demonstrates that there has been widespread operation of these devices outside the uses for which they have been authorized. Whether this has been more often due to intentional disregard for the Commission's rules or a misunderstanding of the applications for which wireless microphones have been authorized is irrelevant. In conjunction with legalizing the use of wireless microphones for many of the currently unauthorized users, the Commission should adopt clear rules on the marketing of these devices and helpful labeling requirements that are designed to ensure proper operation of wireless microphones consistent with the new rules. Of particular concern is that the higher powered devices permitted under Part 74 will continue to be marketed to and purchased by users who plan to operate them as unlicensed devices.

## V. CONCLUSION

The high demand for wireless microphones has been evidenced by the widespread unauthorized use of these devices. Similarly, the fact that these devices have been able to coexist with broadcast licensees demonstrates that with appropriate safeguards, most users of unauthorized wireless microphones should be able to find an authorized solution. In expanding the realm of authorized wireless microphone use, however, the Commission must balance the actual demands of wireless microphone users with the need for interference free operation of primary land mobile, public safety, television licensees, as well as considering how best to promote the efficient use of TV white spaces spectrum

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<sup>15</sup> *FNPRM*, ¶ 141-144.

Respectfully submitted,

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