

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

In the Matter of	)	
	)	
Public Interest Spectrum Coalition, Petition for	)	WT Docket No. 08-167
Rulemaking Regarding Low Power Auxiliary	)	
Stations, Including Wireless Microphones, and the	)	
Digital Television Transition	)	
	)	
Amendment of Parts 15, 74 and 90 of the	)	ET Docket No. 10-24
Commission's Rules Regarding Low Power	)	
Auxiliary Stations, Including Wireless	)	
Microphones	)	

Comments of  
Thomas C. Smith

**Opening Summary**

I filed comments in the original notice concerning WT Dockets Nos. 08-166 and 08-167 and was quoted in the notice several times. I would like to address some of the specifics in the further notice as the Commission seeks to adopt rules concern the use of wireless microphones in the TV bands by ineligible users,

In this Notice of Further Rulemaking, the FCC has effectively admitted that it has not kept up with technological changes as they affect the use of wireless equipment in the sound reinforcement and entertainment industries. While many in the broadcast industry are concerned about the intrusion of other user's in spectrum that was assigned for our use, we have to admit that in the case of wireless microphones and other wireless equipment used in sound reinforcement, the equipment is being used by a very large number of ineligible users and there is no going back and ending the use of this equipment by those user's. The Commission needs to create rules to get a handle on the use of these units by those who are ineligible under the current rules.

**Unlicensed Operation under Part 15**

First, I believe that the proposed rules concerning the 50 milliwatt limitation and the requirement the wireless microphones and other devices allowed under the proposed rules meet the same standards as similar equipment operating under Part 74 as far as operating bandwidth, out-of-band emissions and the meeting of separation requirements when operating on the same channel as a nearby co-channel TV station are proper. I do have deep concerns concerning the term "Wireless Audio Devices" and the description of such devices. I believe the definition of "an intentional radiators to transmit voice, music and other material over short distances" is overly broad. Using that definition, that could

include all kinds of consumer devices such as baby monitors, remote home speakers systems and wireless intercoms in homes and businesses. The Commission should define the “Wireless Audio Devices” as wireless microphones, wireless musical instrument transmitters, and personal monitoring systems to be used for sound reinforcement and audio and video recording. Also included would be two-way systems used for the management of stage and talent in the production of entertainment and other presentations for an audience. Any two-way system to be used for stage management should have to be designed to operate with wired intercom systems designed for stage use. The Commission is not seeking to increase the types of devices that use these bands, but to acknowledge the use of those ineligible for a license to use devices currently allowed operation in the TV bands under the rules.

Since these devices operate under low power and are normally at locations that are at a distance from homes and other residences, the need for GPS and the connection to a database is not necessary. There is enough history to show that these devices do not create a large amount of interference.

### **Licensed Operation**

The Commission asks the question if licensing under part 74 should be extended to others then those currently allowed under part 74. This discussion would not have come up if it were not for the approval of unlicensed TV broadband devices. The groups that are asking for the right to a license are groups that have used this technology for a long time and have a lot invested in their use. These groups include the entertainment industry and the major and minor sports leagues, along with other users that present all kinds of programs to large groups. These users have a significant effect on both local and the nation’s economies. The rules should be changed to allow those not currently eligible to be licensed under part 74 to either be licensed under part 74 or allow them to be licensed under part 90 with part 90 sharing the TV band for wireless microphone use only. The rules for the football coaching intercom systems use by the NFL and universities should be a model for any additional licensed users. These rules could be useful for any license that would be itinerant, such as touring shows that use their own wireless systems particularly as it refers to coordination.

What parties should be eligible? Licenses should be granted to theaters, performing arts centers, entertainment complexes, arenas, stadiums, religious facilities, convention centers and government and educational facilities. It is well known about the use of wireless microphones in entertainment and religious facilities, but educational facilities are using wireless mikes in lecture halls and classrooms more and more allowing instructors freedom of movement while assisting them to be heard by all of their students. The Commission should also allow touring shows to license their own systems with coordination requirements similar to these required for the coaching intercom systems for Pro or college football teams. They should also be required to file with the TVBD database for the time they will be in any area. Touring shows normally perform at known locations such as theaters or arenas which normally would be licensed themselves or should be know to the high power TVBD operator.

Limitations on the eligibility of obtaining a license under part 74 or whatever the Commission decides to license them under should be broad enough to cover most eligible fixed locations. It could be considered discriminatory to license one church and not the one down the street just because they are much smaller. The same would go for schools and theaters. Any limitation should only extend to small users such as small bands, Wedding DJ's, bars and taverns and other similar venues. These would be difficult to track and compliance in updating the TVBD database would be low among these groups. Most of the smaller users would no doubt opt to be covered under Part 15 rules anyway. TVBD operators should know what smaller facilities would have wireless mike operation and could plan their facilities to be spaced a sufficient distance from many of them.

Traveling Broadway type shows and major music tours should be allowed to be licensed either directly or through a sound company that provides services to these tours. While they may perform at facilities that may also hold a license, these shows have their own unique needs, which should be considered.

### **Marketing and Licensing of Wireless Microphones.**

Any wireless microphone or other device should include information on the need to license, and how to go about it. Any device that is eligible under Part 74 should be labeled as such. As far as limiting the sales of higher-powered Part 74 equipment to licensed users, I am not sure on how a dealer could police it. Would a purchaser have to show a copy of the license or application and how would that work when much of the sales of this equipment is by mail order. This is an issue for dealers to comment on. The only thing that I can add to this is that the Commission makes any licensing of wireless microphones as easy as possible. That would include using a form that is simpler than form 601. In my earlier comments I suggested using a web based automated system, which the Commission noted in the Report and Order (paragraph 74, footnote 205). At the time, I suggested that the currently ineligible users register with the FCC rather than be licensed, but an online license system could be workable and would increase compliance.

### **Long-Term Solutions**

I doubt that either of the so-called long-term solutions that the Commission proposes in the Notice is practical. Digital modulation while it may solve some interference issues would not necessarily be more efficient. Because of the need for good fidelity and low delay, audio in a wireless microphone system cannot be data compressed. Most of the efficiency of digital transmission is because of data compression, which means that data is thrown away that contains information that greatly adds to the fidelity of a signal. A twenty-bit sample system at a sample rate of 48 kHz would have a data rate of 960 kilobits per second. That would be considered a reasonable system and even that would require some audio companding to lower the number of bits per sample to get it to fit in a 200 kHz bandwidth signal. The other issue is that of the efficiency of spectrum usage. Because of the large number of users of wireless microphones and the fact that a large

number will be unlicensed, it would be impossible to manage the band in such a way to get high levels of spectrum use in a small portion of the TV bands. If users don't get licenses, how would you get them to contact a band manager? Unless the FCC is the band manager, there would be many users that would have questions of fairness.

### **Part 90 Licensing**

Licensing under Part 90 would be preferable to me, but unless more spectrum is allotted for wireless microphones, it is not practical. The only way Part 90 could work is if it shares with Part 74. I could see that with Part 90 operation secondary to Part 74 users, but protected by TVBDs. The reason Part 90 is not currently used is little equipment is available and eight channels are of little use for many users needs. Also I doubt many know of it's availability.

### **Closing Comments**

The Commission needs to address this issue in a timely matter. There are a number of parties to protect including TV stations, the TV viewer, the current Part 74 users, the rest of the wireless microphone users and the TV Band device operators. This will require a lot of coordination among all of the users to avoid interference and it is made more difficult due to the TVBD's and possibly wireless microphones being unlicensed.

I am a broadcast technician with nearly 40 years of experience and have been involved in the frequency coordination process. The views stated in these comments are solely mine.

Respectfully submitted March 1, 2010

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