

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-)	WT Docket No. 08-166
806 MHz Band)	
)	
Public Interest Spectrum Coalition, Petition for)	
Rulemaking Regarding Low Power Auxiliary)	WT Docket No. 08-167
Stations, Including Wireless Microphones, and)	
the Digital Television Transition)	
)	
Amendment of Parts 15, 74 and 90 of the)	
Commission's Rules Regarding Low Power)	ET Docket No. 10-24
Auxiliary Stations, Including Wireless)	
Microphones)	

To: Wireless Telecommunications Bureau and Office of Engineering and Technology
(Filed electronically through ECFS)

COMMENTS OF CP COMMUNICATIONS PA, LLC

1. Introduction. CP Communications PA, LLC ("CP Communications" or "Company") hereby submits these comments in response to the Commission's ("FCC's" or "Commission's") public notice released on October 5, 2012 in the above-captioned proceedings.¹ CP Communications is a leading source for the rental of wireless production equipment--including wireless microphones, wireless in ear monitors, wireless intercom and wireless cueing --to the broadcast, theatrical, live event, film, corporate, entertainment and other industries.²

¹ *The Wireless Telecommunications Bureau and the Office of Engineering and Technology Seek to Update and Refresh Record in the Wireless Microphones Proceeding*, WT Docket Nos. 08-166, 08-167, ET Docket No. 10-24, Public Notice, 27 FCC Rcd 12067 (Wireless Telecom. Bur. and Office of Engineering and Technology 2012).

² It is important to note that many of these industries utilize wireless production equipment for the creation of valuable content to be consumed by the public through various outlets (e.g., broadband, cable, broadcast, etc.).

CP Communications' clientele also rely on its expertise in coordinating technical aspects of an event's communications needs such as, for example, RF-engineering for wireless microphone deployment purposes. As a result, CP Communications has developed first-hand knowledge of the technical, licensing, registration and spectrum availability issues surrounding wireless microphones and other low power auxiliary station ("LPAS") devices.³

2. Summary of Issues. LPAS Devices have become ubiquitous in entertainment and sports production over the last 20 years. Every live and recorded entertainment and sports production that consumers digest utilizes many channels of wireless LPAS Devices to maximize the experience for the consumer.⁴ As discussed below, there exists a formidable and pervasive class of LPAS Device users--currently ineligible for licensing under current Part 74 rules--with specific needs which only licensed operations and access to sufficient spectrum can adequately satisfy. The steps the Commission has taken to accommodate them are not yet sufficient to meet the need. Eligibility should be broadened to include certain types of venues (as discussed below), customers of companies that provide LPAS Device rental on a regular basis, and production companies which bear the primary responsibility for purchasing or renting and deploying LPAS Devices. There is still not access to sufficient spectrum to meet demand. Within the available spectrum, the "White Spaces" registration procedure in the TV broadcast band is not sufficient to protect operations, because the scope and timing of deployment at many events is decided less than 30 days in advance. Finally, the Commission must be very cautious in forcing increased efficiencies through digital transmission schemes, as the latency, or time

³ For the discussion herein, wireless microphones and other LPAS devices will be referred to collectively as "LPAS Devices."

⁴ While CP Communications itself holds licenses to help it serve some customers, others choose only to rent equipment and need access to wireless channels.

delay, inherent in digital equipment can be unsuitable for audio applications where very high audio quality is required and/or the performer must listen to the audio output via ear pieces.

3. Need for Flexible Large-Scale Deployment. Currently, unlicensed LPAS Device users who require access to additional channels (*i.e.*, beyond any channels that may be placed off limits to “white space” devices (“WSDs”)) must seek FCC approval to register and “reserve” channels in geo-location databases at least thirty days prior to first use. In CP Communications’ experience, for a majority of cases there is simply not thirty days’ advance notice of the need for LPAS Devices given to those responsible for equipment deployment. This is true even in large venues that might qualify for database registration, because device use at those venues varies significantly depending on the type of event involved. Even if there is advance notice that LPAS Devices will be needed, the actual quantities and frequency sets for the equipment are often not known until much closer to the actual date of the event – as little as one day ahead of time⁵ -- and in some cases, even the venue of a performance may be changed at the last minute. In order for equipment deployment coordinators to account for these unknowns and to ensure adequate channels are available to accommodate necessary LPAS Devices, there is a strong incentive to reserve more channels in the database than will actually be needed.⁶ The result is that the pre-approval registration system impedes LPAS Device deployment and can contribute to inefficient use of spectrum. A more flexible and short-time system is needed.

⁵ For example, live-events can often involve numerous performers or acts, each with differing audio communications and LPAS Device needs/requirements. Entities responsible for LPAS Device deployment, such as CP Communications, are often not provided with specific parameters until days before the actual event. The amount of notice given is not within CP Communications’ control, and the likelihood of changing the last-minute behavior of performers is remote.

⁶ Although some modifications to the registration can be made later, any modifications which require channels beyond what was initially reserved would trigger another thirty day advance Commission approval and registration cycle.

4. Real-Time Transmission and Spectrum Availability. CP Communications understands that the upcoming effort to repack the television broadcast spectrum may result in up to 120 MHz, or about 50%, less UHF spectrum within which both LPAS Devices and WSDs can operate. The reduction in availability will result in greater competition for spectrum usage. The resulting congestion also means that real-time, high carrier-to-noise ratio (“CNR”) signals (*e.g.*, LPAS Devices) will suffer to a higher degree than those that can tolerate greater latencies, and by extension lower CNR (*e.g.*, WSDs). No matter what RF technological advances are made in LPAS Devices, *consistent* real-time transmission and reception will always be absolutely critical, as auditory unintelligibility can begin with latency (time delay) of as little as three milliseconds. Audio applications contrast with non-aural broadband applications, where users will easily accept, and may never really know about, a web page or email that takes an additional second or two to download.

5. Protection from WSDs. WSDs pose an obvious and serious threat to successful deployment of LPAS Devices. If hundreds, or thousands, of spectators at a venue are using spectrum for their wireless devices, that spectrum cannot be used for devices that are part of the production of the event. CP Communications has recent experience operating both wireless microphones and wireless intercoms in the unlicensed 2.4 GHz band. Based on this experience, the Company believes it will be critically important for LPAS Devices to have a more certain level of interference protection from the mass of consumer WSDs. In situations where 2.4 GHz spectrum usage by consumer devices is not actively and deliberately restricted, the spectrum becomes so congested upon audience arrival that wireless production devices become virtually unusable. Because 2.4 GHz WiFi is so pervasive, and in many cases even mandated to be available to the audience by the venue or the production (this is in fact a policy of the National

Football League), operating LPAS production equipment in this spectrum is almost always effectively—even if not technically—precluded in large scale events. The anticipated proliferation of WSDs in the TV band is likely to present similar issues for LPAS Devices and negatively impact both capacity and real-time transmission needs. Given personal/portable WSDs have not yet been introduced into the market in the mass of numbers expected, the current registration system for unlicensed LPAS Devices has not yet been fully proven to provide adequate protection from WSDs, especially from the aggregate effect of thousands of simultaneous WSDs operating at any given time and place.

6. Real-Time Transmission and Safety Issues. LPAS Devices are also used for real-time transmission and communication in aspects of production events that are very much actual life-safety circumstances. For example, production events could involve multi-ton set pieces moving about actors, crew in active suspension (“flying” via a harness and hoist system), or the need for production management to warn personnel of severe weather, or other sudden dangers, at outdoor events. All of these safety issues often require the need for staff and other personnel to coordinate quickly (*i.e.*, in real-time) and reliably (*i.e.*, without interference) via LPAS Devices.

7. Expansion of Part 74 License Eligibility. Eligibility criteria should be broad enough to adequately address the issues and needs discussed herein and should include entities with technical knowledge that are able to accept and fulfill regulatory responsibilities and be held accountable for compliance. Thus eligibility should further be extended to professional sound companies, audio-visual companies and production companies that, as a regular course of business rent, provide or are otherwise responsible for the operations of significant numbers of LPAS Devices. This is an important class, as many venues are merely raw spaces rented or

leased to events/productions which must provide for—often through companies such as CP Communications—all production elements. Moreover, if licensing is restricted to specific locations rather than on a nationwide basis (subject to coordination at each venue), eligibility should not be based solely upon minimum seating/capacity or minimum LPAS Device count requirements. Such limited criteria would categorically exclude many venues and users which require licensed operations to satisfy critical needs.⁷

8. Technological and Economic Impediments to Spectrum Efficiency. Although it is certainly in both the Commission's and the public's interest to promote the most spectrally efficient transmission schemes possible, it is actually also in the best interests of wireless microphone users to at least the same degree, if not more so. Even today, before considering the upcoming loss of approximately 50% of the UHF TV spectrum, large scale events are increasingly experiencing spectrum shortages when using FM wireless products. As a general matter, manufacturers are responding to the need for more efficiency with new digital products that are proving to be far more spectrally efficient in terms of payload in a given occupied channel bandwidth (*e.g.*, digital television).

9. However, just as with the initial deployments of first generation digital cellular phones and digital land mobile radios ("LMR"), wireless microphone manufacturers and users are experiencing a learning curve of equipment and performance limitations regarding the specific needs of their customers. Audio applications require near-zero latency with a wide

⁷ CP Communications generally agrees with the proposed eligibility criteria in the Comments of Sennheiser Electronic Corporation, submitted March 1, 2010 in the above-captioned proceedings. With respect to venue eligibility, CP Communications agrees with Sennheiser's proposal to base, in part, eligibility on tracking the Americans with Disabilities Act's requirements for permanently installed assistive listening systems. *See* 28 C.F.R. Part 36 Appendix A § 4.1.3(19)(b). Any location with an assistive listening system needs wireless microphones to capture sound to feed into the system.

audio frequency response for both wireless microphones and in-ear monitors. The laws of physics still dictate a minimum amount of spectrum required once these two parameters are defined as constants.

10. While microphone manufacturers have introduced some potentially viable first generation digital products, equivalent performance (latency and audio frequency response in this case) to the current crop of upper-tier FM based products comes at significantly higher prices, and performance is still in doubt. Between cost and performance issues, firms like CP Communications can presently utilize new digital offerings in only a small subset of deployments.⁸

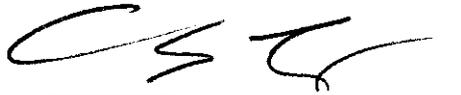
11. All these factors together mean that a near term digital answer which simultaneously addresses the issues of spectral efficiency, latency, audio quality and price is not likely. Spectrum efficiency improvements will come as quickly as technological advances and market economics permit. For this reason we ask that the Commission understand that mandating a new spectrum efficiency target is not a technically or economically simple task, and doing so in the near-term would likely present significant performance and economic issues for small companies involved in the manufacturer, usage and deployment of LPAS Devices.

⁸ It is important to note that professional wireless equipment is unlike consumer wireless gear that usually replaced every few years and is designed, mass-manufactured, and priced accordingly. Professional equipment has a much longer useful life, is much more costly because of lower manufacturing volume, and must be purchased with a view toward relatively long-term usage.

12. Conclusion. CP Communications urges an expansion of Part 74 license eligibility as detailed above, and requests that the Commission refrain from adopting any near-term new spectrum efficiency requirements at this time. The Commission should also take into account the specific needs and issues detailed above to ensure that any regulatory changes do not prevent the public from reaping the full benefits of LPAS Device usage.

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Respectfully submitted,



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