

**BEFORE THE  
FEDERAL COMMUNICATIONS COMMISSION  
Washington D.C. 20554**

|   |   |                      |
|---|---|----------------------|
| In the Matter of                            | ) |                      |
|   | ) |                      |
| Revision to Rules Authorizing the Operation | ) | WT Docket No. 08-166 |
| of Low Power Auxiliary Stations in the      | ) |                      |
| 698-806 MHz Band                            | ) |                      |
|   | ) |                      |
| Public Interest Spectrum Coalition,         | ) |                      |
| Petition for Rulemaking Regarding Low       | ) | WT Docket No. 08-167 |
| Power Auxiliary Stations, Including         | ) |                      |
| Wireless Microphones, and the Digital       | ) |                      |
| Television Transition                       | ) |                      |
|   | ) |                      |

**REPLY COMMENTS OF SHURE INCORPORATED**

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Dated: October 20, 2008

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## SUMMARY

Shure Incorporated (“Shure”) and other commenters recognize the need to transition low power auxiliary stations (“LPAS”), including wireless microphones, currently operating in the 698-806 (“700”) MHz band to an alternative spectrum home. However, such a transition must strike a “balance” between the need to avoid disrupting critical incumbent services that offer enormous public benefits and the need to introduce new services. The comments reflect that a “flash cut” transition, which the FCC has never before proposed to relocate an incumbent service, would be unprecedented, burdensome, unnecessary, and virtually impossible to accomplish. At an absolute minimum, a “balanced” transition from the 700 MHz band must ensure that comparable spectrum is made available for wireless microphone operations and allow a reasonable amount of time for wireless microphone manufacturers to build new equipment and make it available to 700 MHz wireless microphone operators.

Many agree that the available spectrum for LPAS use after the DTV transition is far less than the Commission tentatively concluded and is not comparable to the spectrum currently available. Most of the spectrum in the core TV bands is occupied or unsuitable for wireless microphone operations, and the availability of “white space” spectrum in the remainder of the core TV bands is threatened by the possible introduction of interfering uses.

Shure agrees with the numerous commenters that voiced loud opposition to the unprecedented request that wireless microphone manufacturers relocate microphone users from the 700 MHz band. The Commission has a well established policy for allocating relocation costs: the emerging spectrum entrant pays. Attempting to impose relocation costs on wireless microphone manufacturers would turn this precedent on its head.

Moreover, the Commission lacks the prerequisite statutory authority to require an equipment manufacturer to pay for the relocation of a licensed incumbent.

Shure urges the Commission to clarify that any future prohibition on the manufacture of 700 MHz wireless microphones expressly exempt equipment built for export. Equipment manufactured solely for export is not subject to the Commission's statutory authority, and such a rule would harm the public interest.

Wireless microphone manufacturers cannot be charged with responsibility for deciding who is eligible to purchase and operate wireless microphones. Part 74 regulates the eligible use of wireless microphones; it does not regulate the eligibility of users. An equipment manufacturer's obligations are limited to certifying its wireless microphone equipment, and manufacturing devices that comport with its certifications.

Finally, Shure urges the Commission to expand eligibility for wireless microphones and streamline its licensing procedures. Part 74 should be updated to reflect expanded eligibility for professional uses that provide public benefit, including: theaters, live music producers, government bodies, convention and conference facilities, and houses of worship. Part 74 licensees should have access to a limited number of protected channels and a geolocation database capable of restricting unlicensed operations in close proximity to the licensee in unused TV channels. Non-Part 74 microphone operations should also be permitted "by rule" in protected channels and on an unprotected basis in unused TV channels.

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**REPLY COMMENTS OF SHURE INCORPORATED**

Shure Incorporated (“Shure”), by its undersigned counsel, hereby submits these Reply Comments in response to the Notice of Proposed Rulemaking (“NPRM”) released August 22, 2008, in the above-captioned matter regarding various issues relating to low power auxiliary stations (“LPAS”), including wireless microphones, operating in the 698-806 (“700”) MHz band.

I. A Flash Cut Transition Would Unnecessarily Harm Wireless Microphone Operations

As stated in Shure’s initial comments, Shure does not oppose the Commission’s stated intent to clear the 700 MHz band of current Broadcast Auxiliary Service (“BAS”) secondary operations. However, the “flash cut” transition proposed in the NPRM should not be adopted.<sup>1</sup> Commenters familiar with wireless microphone operations uniformly

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<sup>1</sup> See *Revision 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*

agree that a Commission order mandating immediate exit of these secondary operations from the 700 MHz band would be unprecedented, burdensome, unnecessary, and virtually impossible to accomplish in any case.<sup>2</sup> In fact, neither the Commission nor any commenter has provided an example of a prior Commission "flash cut" because the Commission has *never* attempted to implement such a transition.

The NPRM's proposed "flash cut" approach completely disregards the burden on incumbent operations. Audio-Technica USA, Inc. ("Audio-Technica") pointed out that the Commission provides "no reasoned explanation for its tentative decision to disrupt the operations of existing BAS Licensees" and prematurely render LPAS equipment deployed in the field obsolete.<sup>3</sup> In this case, more time is needed to prevent disruption of incumbent services that provide important benefits to the public. In addition, equipment owners need time to amortize and replace equipment made obsolete by the cessation of operation in the 700 MHz band.

A "flash cut" transition would force LPAS operators to make significant procurement decisions in an uncertain environment. By far, most 700 MHz users will look to replace their audio systems with those operating in the unassigned TV channels in the core TV bands. However, that spectrum is being hotly pursued by various technology companies for other uses that have the potential to cause significant interference to

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*Rulemaking Regarding Low Power Auxiliary Stations, Including Wireless Microphones, and the Digital Television Transition*, WT Docket No. 08-167, Notice of Proposed Rulemaking and Order, FCC 08-188 at ¶ 2 (Aug. 21, 2008) ("*NPRM*").

<sup>2</sup> See e.g., Comments of Audio-Technica U.S., Inc., WT Docket Nos. 08-166 and 08-167 at 6 (filed Oct. 3, 2008) ("Audio-Technica Comments"); Comments of Sennheiser Electronic Corporation, WT Docket Nos. 08-166 and 08-167 at 14 (filed Oct. 3, 2008) ("Sennheiser Comments").

<sup>3</sup> Audio-Technica Comments at 6.

wireless microphone operations. Shure has presented a reasonable and carefully researched spectrum solution to the Commission that would allow new devices and services to be introduced into the core TV bands, while at the same time ensuring that wireless microphones receive minimally sufficient protected spectrum in which to consolidate all core TV band and 700 MHz band operations.<sup>4</sup> Yet even if the Commission adopts Shure's proposal, all LPAS manufacturers would still need time to manufacture and/or develop equipment that works properly in whatever protected spectrum is available in the crowded core TV bands after the DTV transition.

The Commission has a well-established approach for relocating incumbent services that cannot be met with a "flash cut." In the past, the Commission has recognized that a transition process should "balance" the need for a new service with the burden on the incumbent.<sup>5</sup> In particular, the Commission has adopted reasonable

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<sup>4</sup> In an effort to bring greater certainty to future wireless microphone use, Shure recently took the lead to develop a wireless microphone solution plan in ET Docket No. 04-186 which provides minimally sufficient protected channels for wireless microphones centered around channel 37 in the UHF TV band, where available, and channel 11 in the VHF TV band. This plan requires all new white space devices to be managed by geolocation and a database and calls for 6 protected UHF channels and 2 protected VHF channels. After a three year transition period, these channels would be reduced to 4 UHF and 2 VHF. Shure recommended that microphones using these protected channels be licensed "by rule" in a way that dispenses with onerous and unnecessary individual licensing. For large-scale events, where additional channels are needed for a specific time in a specific location, microphone users would be able to enter their operating parameters in a database that would create a protective zone around the relevant venue where white space devices would not be permitted to operate during that time and at that location. Shure recommended that users given access to this database for expanded coverage be licensed pursuant to rules that expressly expand and clarify the Part 74 eligibility requirements. See "Shure Presentation: White Space Solutions" attached to Letter from Catherine Wang, Counsel to Shure Incorporated, to Marlene H. Dortch, Secretary, FCC, ET Docket No. 04-186 (filed Sep. 25, 2008).

<sup>5</sup> In determining that fixed microwave operations could continue to operate in Ka-band spectrum on a co-primary basis for a ten-year period, the FCC "recogniz[ed] the importance of providing continuity of service to the public, as well as the need to reasonably protect investments in existing terrestrial fixed service operations and fixed service operations at an advanced stage of planning." *Redesignation of the 17.7-19.7 GHz Frequency Band, Blanket Licensing of Satellite*

transition times to avoid disruption to users and minimize stranded investment in equipment. For instance, in *PCS (Emerging Technologies)/Fixed Microwave Transition*, the Commission stated with regard to fixed microwave services that provided "vital services to the public," that it "consider[s] it essential that the [transition] process not disrupt the communications services provided by the existing [incumbent]."<sup>6</sup> The Commission added that a three year negotiation process for relocation of non-public safety fixed microwave licensees (2 years voluntary and 1 year involuntary) provided a "reasonable balance between the need to ensure orderly relocation of fixed microwave facilities where necessary to permit provision of emerging technology services and the national interest in facilitating development of new technologies and services."<sup>7</sup> In other instances, "balanced" transitions involving relocation have lasted longer than a decade to ensure incumbent operations are not disrupted<sup>8</sup>.

Moreover, several parties shared Shure's concern that a transition out of 700 MHz is not reasonable when no suitable alternative spectrum can be identified.<sup>9</sup> In prior

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*Earth Stations in the 17.7-20.2 GHz and 27.5-30.0 GHz Frequency Bands, and the Allocation of Additional Spectrum in the 17.3-17.8 GHz and 24.75-25.25 GHz Frequency Bands for Broadcast Satellite-Service Use*, IB Docket No. 98-172, Report and Order, 15 FCC Rcd 13430 at ¶ 63 ("Ka-Rebanding Order"). Concerning the ten-year transition the Commission stated that it "adopt[ed] a ten year sunset, noting that a balance must be struck between burdens on [new entrant] licensees and [incumbent] licensees that provides an adequate transition period while giving effect to our redesignation decision." *Id.* at ¶ 69.

<sup>6</sup> *Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies*, ET Docket No. 92-9, Third Report and Order and Memorandum Opinion and Order, 8 FCC Rcd 6495 at ¶ 13 ("*PCS (Emerging Technologies)/Fixed Microwave Transition*").

<sup>7</sup> *Id.* at ¶ 16.

<sup>8</sup> *See e.g., Ka-Rebanding Order*. Grandfathered fixed microwave operations that did not present an interference threat were allowed to continue in bands reallocated to satellite service after a ten-year transition period.

<sup>9</sup> *See e.g., Sennheiser Comments at 3; Audio-Technica Comments at 12.*

transition cases, the Commission has found that comparable spectrum must be made available to the incumbents when making such a transition.<sup>10</sup> One measure of comparability is the replacement spectrum authorized for incumbent use.<sup>11</sup> It should be as good or better than the spectrum currently in use. However, in the instant case it is a myth that wireless microphones have access to more than 300 MHz of spectrum outside the 700 MHz band.<sup>12</sup> Further, the PISC Petition and some Commenters have suggested the Commission make available 5 MHz of spectrum in the 2 GHz range.<sup>13</sup> However, as discussed below in Section III, neither the 300 MHz of spectrum cited by the Commission, nor the 5 MHz proposed by others would be comparable spectrum. Therefore, the Commission must make provisions for wireless microphone operation in the core TV band before wireless microphones can be expected to vacate the 700 MHz band. Accordingly, the 700 MHz proceeding must be linked to the outcome of the White Spaces proceeding.

The Commission must set a reasonable transition period so that users can move their operations out of the 700 MHz band in an orderly fashion. Shure does not object to the eventual transition, but as Nady Systems points out, auction bidders “were not

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<sup>10</sup> *PCS (Emerging Technologies)/Fixed Microwave Transition* at ¶ 36.

<sup>11</sup> *Id.*

<sup>12</sup> *See NPRM* at ¶ 18.

<sup>13</sup> *See Complaint of Public Interest Spectrum Coalition (PISC) Against Shure, Inc., Nady Systems, Inc., VocoPro, Audio2000, Sennheiser Electronic Corporation, Audix Microphones, Electro Voice, Hisonic International, Inc., Pyle Audio, et al.; Petition To Create a General Wireless Microphone Service (GWMS), Informal Complaint and Petition for Rulemaking* at xii (filed Jul. 16, 2008) (“*PISC Petition*”); *see also* Comments of State of California, Department of General Services, Telecommunications Division, WT Docket Nos. 08-166 and 08-167 at 2 (filed Oct 3, 2008) (“*State of California Comments*”); Sennheiser Comments at 16.

promised that the band would be wiped clear of other users.”<sup>14</sup> Therefore, the Commission should not act irrationally merely to placate the auction winners that complain -- they were clearly made aware that some of the spectrum they were buying would be occupied by incumbent users for a period of time, since the Commission has not yet established a digital transition plan for low power, Class A, and TV translator stations.<sup>15</sup> Further, as MSTV noted, new services will require time to build out; in some cases it may be years before 700 MHz spectrum is fully utilized. It is also worth noting that most wireless microphones (especially those used in indoor events) do not use the full 250 milliwatts permitted by the rules. Therefore a wireless microphone, which typically radiates a few milliwatts of power at best, does not pose a serious interference threat to new wireless services, whereas low power and class A TV stations will be operating in the band for some time with kilowatts of power. Therefore, incumbent users such as wireless microphones can be afforded a reasonable time period to move out of the band without harming new entrants.

Finally, PISC and the White Spaces Coalition argue against a transition period, intimating that 700 MHz equipment users are all unauthorized and deserve no protection or consideration by the Commission. PISC even goes so far as to argue that manufacturers should be specifically charged with the responsibility for clearing the 700 MHz band, and at the same time be investigated by the Commission’s Enforcement

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<sup>14</sup> See Comments of Nady Systems, Inc., WT Docket Nos. 08-166 and 08-167 at 9 (filed Oct. 3, 2008) (“Nady Systems Comments”).

<sup>15</sup> WCAI has incorrectly stated that all TV stations will have vacated the 700 MHz band by February 19, 2009. See Comments of The Wireless Communications Association International, Inc., WT Docket Nos. 08-166 and 08-167 at 1 (filed Oct. 3, 2008) (“WCAI Comments”).

Bureau for questionable, at best, charges of rule violations.<sup>16</sup> PISC and the White Spaces Coalition fail to put forth any credible support for this argument. Their motive and zeal seems to be based on their desire to discredit the wireless microphone community in order to gain leverage in the White Spaces spectrum debate. Yet in their zeal to discredit and burden the wireless microphone community, they dangerously urge the Commission to depart from a rational rulemaking process and instead succumb to a thinly veiled self interested spectrum grab by these groups.

II. PISC's Suggestion that Manufacturers Should Be Responsible For Relocation of 700 MHz Operations Should Be Dismissed

Shure agrees with the many Commenters who voiced loud opposition to PISC's unprecedented request that wireless microphone manufacturers pay the cost for relocating wireless microphones from the 700 MHz band<sup>17</sup> This request would eviscerate established and repeatedly reaffirmed Commission precedent, has no legal basis, and should be dismissed without further consideration.

As a general matter, attempting to require an equipment manufacturer to pay relocation costs would turn long-standing precedent on its head and seriously undermine the Commission's established relocation policies. To the limited extent the Commission has required reimbursement of relocation costs in the past, it has not deviated from the established practice of placing such costs squarely "on the shoulders of the new [spectrum] entrant."<sup>18</sup> In the vast majority of cases where new regulations require existing equipment to be decommissioned, and where relocation costs are not assessed,

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<sup>16</sup> See *PISC Petition* at 3-15.

<sup>17</sup> See Sennheiser Comments at 20; Audio-Technica Comments at 15; Nady Systems Comments at 8-10

<sup>18</sup> *Ka- Rebanding Order* at ¶ 78.

the Commission typically allows such equipment to be amortized and gradually retired.<sup>19</sup> The Commission has *never* required a manufacturer of equipment compliant with FCC Rules at the time of manufacture to pay compensation to an end user when new regulations necessitate a change of equipment.

Even if Commission precedent were not well-defined, which it is, the Commission could not impose relocation costs on wireless microphone manufacturers because it lacks the prerequisite statutory authority to mandate such measures.<sup>20</sup> Shure was a manufacturer of 700 MHz wireless microphone equipment, not an ongoing operator whose continued use of the spectrum is regulated by the Commission. The ongoing operation of wireless microphones is regulated under Part 74 of the FCC Rules, which imposes no obligation on manufacturers beyond obtaining equipment certification.<sup>21</sup> Manufacturers of wireless equipment must build equipment that satisfies the FCC Rules in force at the time of manufacture, not future rules that have yet to be drafted or put into effect.<sup>22</sup> Every Shure wireless microphone operating in the 700 MHz

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<sup>19</sup> *Licensing of Space Stations in the Domestic Fixed-Satellite Service and Related Revisions of Part 25 of the Rules and Regulations*, CC Docket No. 81-704, Report and Order, 55 RR 2d 577 (“2-Degree Spacing Order”) (allowing earth stations designed to communicate with satellites spaced four degrees apart in geostationary orbit to be fully amortized after a mandate to tighten orbital spacing to two degrees); *see also Replacement of Part 90 by Part 88 to Revise the Private Land Mobile Radio Services and Modify the Policies Governing Them*, PR Docket No. 92-235, Report and Order and Further Notice of Proposed Rulemaking, 10 FCC Rcd 10076 (“PLMRS Narrowbanding Order”) (allowing users to amortize equipment in the field fully and giving manufacturers a full ten years to begin making narrowband radios).

<sup>20</sup> Pursuant to Section 302 of the Communications Act, 47 U.S.C. § 302, the Commission has statutory authority to make “reasonable regulations” regarding the manufacture of devices such as wireless microphones that intentionally emit radio frequency energy. 47 U.S.C. § 302(a).

<sup>21</sup> *See* 47 C.F.R. § 74.851.

<sup>22</sup> *See* 47 U.S.C. § 302. Pursuant to the authority delegated under § 302, the Commission has adopted rules pertaining to the manufacture, importation and marketing of RF devices under 47 C.F.R. Part 2. Rules pertaining to the ongoing operation of wireless microphones and other LPAS devices are found under 47 C.F.R. Part 74.

band was compliant with the applicable regulations in force at the time of manufacture, sale, and disposition to third party distributors.<sup>23</sup> As a manufacturer, Shure has no further responsibility to police, groom or otherwise clear the 700 MHz band. Moreover, because Shure microphones are sold by third party distributors to remote end users, Shure has limited knowledge regarding where the remainder of the 700 MHz microphones it manufactured are operated or how many have already been retired.

Given the complete lack of both precedent and authority, Shure urges dismissal of this transparent attempt by PISC to bait the Commission into taking action that could only be described as arbitrary and capricious.

### III. Alternative Spectrum for Wireless Microphones

The comments make clear that there is little basis for the Commission's tentative conclusion that because there is over 300 megahertz of spectrum in other bands available for use by LPAS, prohibiting them from using the 700 MHz band will have minimal impact on their operations. Only one of the commenters specifically supported this tentative conclusion, Metro PCS Communications, and yet they offered nothing new in support beyond merely citing the Commission's tentative conclusion.<sup>24</sup> Yet on the other hand, both Shure and SBE clearly showed that of the 300 megahertz of spectrum cited by the Commission, very little of it would actually support users' wireless audio needs. Both Shure and SBE demonstrated that a very significant portion of the spectrum identified is occupied by the primary user, television broadcasting, and that other portions

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<sup>23</sup> All Shure wireless microphones sold or distributed in the United States have been certified by the FCC under Part 2 of the FCC Rules and satisfy the RF parameters necessary to be operated in compliance with Part 74 of the FCC Rules.

<sup>24</sup> See Comments of MetroPCS Communications, Inc. at 3, WT Docket Nos. 08-166 and 08-167 (filed Oct. 3, 2008) ("MetroPCS Comments").

are not suitable for wireless microphones due to technical reasons such as long wavelengths that make compact antennas necessary for hand-held or body-worn wireless microphones impractical.<sup>25</sup>

Only a few of commenters supported PISC's proposal to move wireless microphones to the 2 GHz AWS band, and even then they were not very enthusiastic about it and found that additional spectrum would still be needed.<sup>26</sup> On the other hand, the majority of the commenters recognized that such a move would not be a viable alternative. While some were opposed to any grant of new spectrum to LPAS,<sup>27</sup> most commenters recognized that the 2 GHz band would be impractical and provide too little spectrum.<sup>28</sup> This band is already planned for use by next generation licensed terrestrial networks and has high intrinsic value for this use.<sup>29</sup> Because of the neighboring mobile satellite operations, wireless microphone users would be faced with a situation where an adjacent band has millions of users operating at relatively high power, which will likely interfere with wireless microphones.<sup>30</sup> In addition, the allocated amount of spectrum

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<sup>25</sup> See e.g., Comments of the Society of Broadcast Engineers, Incorporated at 4, WT Docket Nos. 08-166 and 08-167 (filed Sept. 26, 2008) ("SBE Comments") (noting that the Commission's conclusion that 300 MHz of spectrum would be available for LPAS use was "flatly wrong").

<sup>26</sup> See Audio-Technica Comments at 11; see also Sennheiser Comments at 16; State of California Comments at 2.

<sup>27</sup> See SBE Comments at 15; see also Metro PCS Comments at 7.

<sup>28</sup> See Nady Systems Comments at 11; see also Sennheiser Comments at 16; Comments of New ICO Satellite Services G.P. at 4, WT Docket Nos. 08-166 and 08-167 (filed Oct. 3, 2008) ("ICO Satellite Comments"); Comments of Shure Incorporated at 12-13, WT Docket Nos. 08-166 and 08-167 (filed Oct. 3, 2008) ("Shure Comments"); Comments of Thomas C. Smith at Thomas Smith Comments at 6, WT Docket Nos. 08-166 and 08-167 (filed Oct 8, 2008) ("Smith Comments").

<sup>29</sup> See ICO Satellite Comments at 2.

<sup>30</sup> See e.g., Metro PCS Comments at 6, Shure Comments at 12-13.

would be too small to support the number of wireless microphones that are needed even for small productions.

Finally, the propagation characteristics in this frequency range are vastly inferior to the UHF band for wireless microphone applications, further contributing to the lack of support for PISC's proposal to move wireless microphones to the 2 GHz AWS block.

As an alternative, the White Spaces Coalition proposed to limit "general wireless microphone" use to channels 2-20. But as discussed in previous filings, this is not a viable home for wireless microphones. For example, channels 2-6 are unsuitable for wireless microphone operation due to the inability of compact, low-gain antennas to efficiently radiate the long wavelengths in the low-VHF band. Also, there is a real likelihood that the new operations in channels 2-4 may be discouraged to protect set top cable and DTV converter boxes. As for the other channels, Channels 7-13 are usable by wireless microphones, but many of these channels will be occupied by local TV broadcasting stations after the transition. Channels 14-20 are also usable by wireless microphones, but in 13 major markets, many of these channels are occupied by Public Safety and PLMRS stations. Thus, there would be few functional channels available for wireless microphones in this portion of the core TV band.

Proposals to banish general wireless microphone use to the Part 15 ISM bands (*e.g.*, 915 MHz, 2.4 GHz, and 5.8 GHz) are also impractical. The proponents (and the Commission) are well aware that these bands are heavily occupied by a wide variety of

incompatible devices that would interfere with wireless microphones, notably Wi-Fi and Bluetooth.<sup>31</sup>

In summary, the vast majority of the comments filed reject the Commission's tentative conclusion that due to alternative existing spectrum, wireless microphone users will be minimally impacted by moving out of the 700 MHz band. Further, PISC's alternative proposal to move wireless microphones to the 2 GHz AWS band is not feasible. Even though these previously mentioned proposals are not viable, Shure recognizes that it is imperative that 700 MHz users have a suitable spectrum home in order to transition out of the band. Therefore, Shure emphasizes again to the Commission that its proposal offered in Docket 04-186 provides an opportunity for wireless microphones to transition out of the 700 MHz while continuing to provide the high quality and interference free services that wireless microphone users demand.

#### IV. Coexistence Issues

Some of the Commenters addressed issues related to the commingling of wireless microphones and White Space devices in the same spectrum.<sup>32</sup> Shure reiterates here what it has demonstrated in the White Spaces proceeding, that commingling of wireless microphones and White Space devices will result in a serious degradation of wireless microphone operations and would be impractical. For this reason, wireless microphones should operate in protected channels identified on a per-market basis and on a per-event/per-location basis.

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<sup>31</sup> Although Metro PCS claims that unlicensed users operating in the Part 15 bands must avoid causing interference to each other, that is not in agreement with the FCC rules for those bands. Unlicensed devices may not interfere with licensed users; however, they must accept any interference caused to them by other unlicensed devices.

<sup>32</sup> See Thomas Smith Comments at 7; see also Audio-Technica Comments at 14, n. 15, Sennheiser Comments at 11-13, Nady Systems Comments at 10-11.

Given the current immature state of spectrum sensing technology, allowing White Space devices to operate in the same frequencies as wireless microphones is not a satisfactory solution even if those devices operate at the same or lower power levels. A low power White Space device can wreak havoc with a wireless microphone system, just as uncoordinated low power microphones can disrupt each other.

Although wireless microphones are permitted by rule to operate with up to 250 milliwatts of power, very few do. Most wireless microphones operate with 10-50 milliwatts of power, producing an EIRP of a few milliwatts at best when worn on the body. White Space devices will potentially operate with tens to thousands of times as much power,<sup>33</sup> and will pose a serious interference threat if allowed to share the same channels. Professional wireless microphones cannot share the same channels as White Space devices absent a highly reliable interference protection mechanism. Today, no technology exists that will reliably serve this purpose. Therefore, the two types of devices must operate in different TV channels to avoid interference. Shure's proposal accomplishes this task by establishing certain protected channels for wireless microphones on a per-market basis.<sup>34</sup>

## V. Manufacturing Issues

Several of the Commenters support the FCC's proposal to prohibit the manufacture, import, sale, offer for sale, or shipment of devices that operate as LPAS in

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<sup>33</sup> 1 Watt = 1,000 mW. The Commission has proposed to allow certain White Space devices to operate with up to 4 Watts of power.

<sup>34</sup> One commenter (Thomas Smith) has suggested that the primary objective in evaluating the various proposals for the White Spaces and the 700 MHz band should be to determine how well they protect important existing uses of these bands, including TV broadcasting, wireless microphones, and other important services such as medical telemetry and radio astronomy.

the 700 MHz band.<sup>35</sup> However, none of the Commenters specifically address the issue of the manufacture of equipment for export. Instead they focus on potential interference problems in the United States. As Shure detailed in its comments, there are many countries where the use of wireless microphones in the 700 MHz spectrum is legal. In fact, the proposal to prohibit the manufacture of 700 MHz systems for export is a serious concern to the U.S. wireless microphone industry, since many foreign countries *require* wireless microphones to operate in the 700 MHz band. If this provision is adopted, U.S. companies will be forced to move entire product lines offshore. This will not be limited to just the 700 MHz band versions, and will result in the loss of many U.S. jobs.

Further, the FCC does not have the authority to prohibit the manufacture of electronic devices for export merely because of potential interference problems in the United States. 47 U.S.C. 302(a) states that the "Commission may, consistent with the public interest, convenience and necessity, make reasonable regulations governing the interference potential of devices which in their operation are capable of emitting radio frequency energy by radiation, conduction, ...." Subsection 302(c), however, states that Section 302 "shall not be applicable to.... devices or home electronic equipment and systems manufactured solely for export..."

There are a number of Commission decisions that make reference to this limitation on the Commission's authority. For example, in a 2002 order that prohibited the sale of certain radar detectors the Commission noted that "[e]quipment manufactured in this country solely for export is exempt from compliance with the requirements

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<sup>35</sup> See APCO Comments at 2; State of California Comments at 1; Verizon Comments at 5.

promulgated under Section 302 of the Communications Act."<sup>36</sup> Further, in a 1984 Notice of Proposed Rulemaking regarding an exemption from Part 15 for certain industrial computers sold in very small quantities, the Commission stated that "[c]omputers sold to the U.S. Government or any of its agencies and computers manufactured for export are exempt from the FCC marketing regulations by statute, 47 U.S.C. 302(c)."<sup>37</sup>

Therefore, the Commission should expressly state in its final rules that any prohibition on the manufacture, import, sale, offer for sale, or shipment of wireless microphones for use in the 700 MHz band only applies to such devices intended for sale or operation in the United States, and not in foreign markets.

## VI. Licensing Issues

Commenters raised several points related to the licensing of wireless microphones and the obligations and liabilities of manufacturers. Several commenters agreed with Shure's position that wireless microphone manufacturers cannot be charged with responsibility for deciding who is eligible to purchase and operate a wireless microphone, and who is not.<sup>38</sup> In particular, there are no Commission rules that impose this responsibility on manufacturers. For instance, Part 74 does not regulate the eligibility of users. Rather, it regulates the situations that are eligible for wireless microphone use. Likewise, Section 2.803 of the Commission's Rules only places restrictions on when a device can be sold or marketed, not to whom such equipment can be sold. The

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<sup>36</sup> *Review of Part 15 and other Parts of the Commission's Rules*, ET Docket 01-278, First Report and Order, 17 FCC Rcd 14063 at n. 45 (Jul. 19, 2002).

<sup>37</sup> *Amendment of the Exemptions in Subpart J of Part 15 of the Commissions Rules*, Gen. Docket 84-801, Notice of Proposed Rulemaking, 98 FCC 2d 1211 at n. 1 (Aug. 21, 1984).

<sup>38</sup> *See* Audio-Technica Comments at 16; *see also* Nady Systems Comments at 7, 10; Sennheiser Comments at 9-10.

manufacturer's legal obligation is to manufacture equipment that meets the Commission's technical standards, and obtain the required equipment authorization. Not only are there no restrictions on to whom the manufactures may sell their equipment, there is no evidence that any manufacturers have attempted to deceive anyone by their marketing practices.<sup>39</sup>

Commenters arguing in favor of finding manufacturers accountable for "illegally" marketing and selling wireless microphones to entities without licenses make such arguments without any support in the law. For instance, Verizon specifically states that it "cannot attest to the claims made by the PISC against certain manufacturers of wireless microphones," yet it still believes that manufacturers that promoted unauthorized uses of such devices should be held accountable by requiring them to replace illegal wireless microphones with new devices that are designed to operate outside of the 700 MHz band.<sup>40</sup> Verizon does not cite any case law or rules for supporting PISC's position, but says this "would appear to be the only effective remedy for accomplishing the Commission's overarching objective in this proceeding."<sup>41</sup> This would be the height of arbitrary and capricious for the Commission to accept Verizon's and PISC's position that despite there being no violation of any law, the Commission should still attempt to require wireless microphone manufacturers to foot the bill for implementing the Commission's new policies. In all prior Commission proceedings where relocation costs have been provided it has been the emerging spectrum entrant *benefitting* from the

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<sup>39</sup> See Nady Comments at 7.

<sup>40</sup> Comments of Verizon Wireless at 7, WT Docket Nos. 08-166 and 08-167 (filed Oct. 3, 2008) ("Verizon Comments").

<sup>41</sup> See Verizon.Comments at 7.

relocation that pays to deploy comparable facilities for the outgoing spectrum incumbent in another frequency. The wireless microphone manufacturers are receiving no benefit under this proposal.

Some of the Commenters also made it clear that the Commission does not rigidly enforce its own standards in granting licenses, and that in previous policy decisions it envisioned use beyond the limited situations covered in Part 74.<sup>42</sup> In fact, Nady notes that throughout the 1980s and early 1990s, FCC officials were made aware of the need to change the rules to reflect the growing class of “unauthorized” wireless microphone users, and the FCC officials said there was no need to change the regulations since the Commission had not received any interference complaints. In fact, the Commission in several instances specifically acknowledged the public interest benefits of the use of wireless microphones by entities other than broadcasters.<sup>43</sup>

Commenters agree that the FCC should broaden eligibility for Part 74 licensing to include additional classes of professional users, such as theaters, live music producers, government bodies, convention and conference facilities, and houses of worship. Under a broadened eligibility regime, Part 74 licensees would have priority over other wireless microphones licensed “by rule” when operating in the protected wireless microphone channels and would also be eligible for expanded protected channels through the database for special events and other location-dependent productions.

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<sup>42</sup> See Nady Comments at 4-5.

<sup>43</sup> *Id.*

Finally, several commenters are in agreement with Shure that the existing licensing system is burdensome and unwieldy.<sup>44</sup> The Commission should consider modernizing and streamlining the licensing process for Part 74 LPAS by establishing an automated online registration system. Non-Part 74 wireless microphones should be licensed “by rule”, secondary to TV and licensed Part 74 users. They should be permitted to operate in protected wireless microphone channels and also in other locally unused TV channels on an unprotected basis.

## VII. Conclusion

The comments do not support an abrupt “flash cut” transition for incumbent wireless microphones operating in the 700 MHz band. A balanced transition requires a more gradual approach that ensures the wireless microphone incumbents in the 700 MHz band have access to comparable spectrum and new equipment before relocation. Given that the emerging entrants in the 700 MHz band are not expected to activate network infrastructure in the near future, the Commission can rework and extend its relocation plan to correct the current shortcomings without threatening to create interference for either incumbent or new entrant. Shure and other commenters urge the Commission to reject requests to impose penalties or relocation costs on wireless microphone manufacturers, which have no basis in law or fact. In light of the expanded uses of wireless microphones that offer enormous benefits to the American public, Shure also urges the Commission to expand license eligibility and allow operation “by rule” on protected channels, and to permit online registration for traditional Part 74 licensees.

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<sup>44</sup> See Sennheiser Comments at 9-11; Nady Systems Comments at 4-5.

Finally, the Commission should clarify that equipment built for export is exempt from any future prohibition on the manufacture of 700 MHz wireless microphones.

Respectfully submitted,

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Dated: October 20, 2008