

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

<b>In the Matter of</b>	)	
	)	
<b>Permitting Remote Pickup Auxiliary Stations to Utilize Modern Digital Technologies</b>	)	<b>WT Docket No. 15-36</b>
	)	<b>RM-11648</b>
	)	<b>RM-11649</b>
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**To: The Commission**

**Comments of EIBASS**

Engineers for the Integrity of Broadcast Auxiliary Services Spectrum (EIBASS) hereby respectfully submits its comments in the above-captioned Notice of Proposed Rulemaking relating to digital Part 74, Subpart D, Remote Pickup (RPU) stations.

**I. Close Enough for Government Work: Not**

1. EIBASS is disappointed that the FCC still believes that users should either apply for more bandwidth than they require to create a programmable center frequency or apply for the necessary bandwidth and create an un-programmable RPU center frequency. The unique needs of Part 74 RPU operations require a licensee be able to select from mixture of analog and digital modulation as well as wideband and narrowband bandwidth; which means a “one size fits all” solution does not work for this application. The Commission believes this solution the above problem is to allow users to program center frequency “as-close” as possible works because operating on a nearby, frequency synthesizer programmable frequency will be close enough when the allowable RPU frequency tolerance of  $\pm 0.00025\%$ <sup>1</sup> is factored in. Besides not fixing the problem, such an approach means using up part of the allowable frequency tolerance as a back-door frequency offset. This will create a coordination nightmare as some users will program the “upper” offset and other users will use the “lower” offset, with no method of actually figuring out what frequency the users are operating on. Additionally, there will be confusion as users add new radios to their system and their try to figure out exactly what frequency to program the new radios to. The Commission should instead fix the RPU center frequency problem directly, and adopt center frequencies that are exactly programmable using no finer than a 0.00025 MHz

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<sup>1</sup> Section 74.464 of the Part 74, Subpart D, RPU rules. This is the frequency tolerance for base stations. Mobile stations are allowed  $\pm 0.0005\%$ .

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(250 Hz) frequency synthesizer step. While the latest land mobile radios are capable of digital modulation with as small as a 0.000 001 MHz frequency synthesizer step, there is still a substantial universe of analog radios that are incapable of being programmed to the center frequencies now required by Section 74.402 of the Commission's rules.<sup>2</sup> This is an unnecessary restriction, one that could be fixed simply by redefining the allowable center frequencies to accommodate existing radios.

2. EIBASS notes that "program transmission" is second in the Commission's priority of use for Part 74; only safety of property and life have a higher priority. Because broadcasters use RPU frequencies for program feeds where both signal quality and the latency of a digital signal can be an issue, the use of analog radios must continue. As technology improves latency issues may decrease, and for internal communications, not intended for re-broadcast, latency is no more a problem than for land mobile communications. But Part 74 RPU use is different from Land Mobile use, and this difference requires the continued availability of analog radios, because the current generation of digital radios are not capable of being tuned to 50-kHz wide channels. Indeed, Motorola digital radios require a special license key to be able to program even 25 kHz wide channels.

3. EIBASS agrees that the Commission can dispense with 100-kHz wide RPU channels for new RPU stations, with grandfather rights granted to existing RPU licensees authorized for such wide channels as we are unaware of any manufacturers that make radios that can operate on a 100 kHz wide channel other than Part 74, Subpart H, Low Power Auxiliary (wireless microphones) are allowed 200 kHz wide channels. Further, wireless microphones have neither the necessary power for the long distance transmissions typically used in RPU operations, nor are they available on the frequencies typically used for RPU operations.

### **II. A Blanket Waiver for Immediate Digital Modulation Should Be Granted**

4. Nevertheless, there will be some RPU applications where digital operation can be immediately applied, and for that reason the Commission should re-think its decision not to grant an immediate blanket waiver to allow (but not require) digital RPU operations. The waiver can

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<sup>2</sup> At paragraph 13, the NPRM make the puzzling statement "Neither EIBASS nor SBE has claimed that analog equipment cannot program those frequencies." To the contrary, the whole point of the October 4, 2011, EIBASS petition for rulemaking (RM-11649), or the similar November 7, 2011, SBE filing (RM-11648), was that there was a large universe of RPU radios that could not be programmed to the center frequencies specified in the current FCC rules. The EIBASS filing included documentation of resulting RPU application "return" letters, meaning that in some cases broadcasters gave up trying to update their RPU licenses.

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include a caveat that if a different digital standard is ultimately adopted, licensees electing early digital operation pursuant to a blanket waiver will have no grandfather rights.

5. EIBASS finds the Commission's reluctance to grant a blanket waiver for digital RPU operations puzzling in light of the recent blanket waivers of eight Part 80 Automated Maritime Telecommunications System (AMTS) rules, to allow 220 MHz AMTS frequencies to be used for positive train control (PTC)<sup>3</sup>; in effect, a band re-allocation from Part 80 Maritime to Part 90 Railroad Radio service by blanket waiver. Whereas a blanket waiver allowing (but not requiring) digital modulation for RPU stations would not alter the allowable uses of RPU channels.

6. While the NPRM notes that broadcasters could request individual rule waivers to allow digital modulation, doing so seems to EIBASS to be a needless administrative complication and expense (both for the waiver filing fee, and for the preparation of exhibits and support necessary to justify a waiver). Again, if the public interest has been interpreted by the Commission as justifying a blanket waiver to allow re-purposing AMTS to land mobile PTC, surely there is a similar public interest justification for granting a blanket waiver to allow (but not require) RPU stations to use digital modulation. EIBASS notes that no party has come forth to justify denial of such a blanket waiver based on causing interference to other licensed stations.

7. The blanket waiver EIBASS proposes for digital RPU operation should include the 26 MHz high frequency (HF) RPU band, in addition to the 160 MHz very high frequency (VHF) and 450 MHz ultra high frequency (UHF) RPU bands.

### **III. Digital RPU Transmissions Should Use the ATSC A/82 Watermark Technique for Identification**

8. EIBASS urges that the Commission adopt the watermark identification protocol for a digital signal specified in the Advanced Television Systems Committee (ATSC) A/82 Data Return Link (DRL) standard. The Commission has yet to adopt station identification (ID) requirements of digitally modulated Public Land Mobile Radio Stations (PLMRS). The Commission should forthwith adopt the elegant simplicity of a watermark ID, which overlays a pre-defined and simple digital protocol to an incoming digital signal that identifies the transmission regardless of the many permutations of digital modulation, payload encryption, symbol rate, bit rate, or the various amount of forward error correction (FEC) that are employed.

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<sup>3</sup> March 4, 2015, Order, *In the matter of National Railroad Passenger Corporation (dba AMTRAK) and Request for Waiver of AMTS Rules to Implement Positive Train Control*, WT Docket 11-27; DA 15-287.

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While having PLMRS licensees using digital modulation must "provide the Commission with the means to decode the digital transmission," this could become administratively and technically burdensome to both the Commission and PLMRS licensees, and does not solve the fundamental need of allowing individual licensees the ability to identify a digital signal. It is much simpler to apply an existing ATSC standard to identify digital radios, thus allowing all interested parties and the Commission to obtain signal identification, while not also requiring disclosure of other digital modulation parameters.

9. In both the RPU and the Land Mobile world, the ability to quickly identify an unknown, interfering user is critical. Requiring the Commission to get involved in identification of unknown digital users would add not only a significant burden to the FCC, but also a long lag time from the time a problem is reported to the time the unknown user is identified. In a time when the Commission has proposed to cut its field Enforcement Bureau staff in half and close two-thirds of its field offices<sup>4</sup>, it is all the more important that licensees have the ability to directly identify digital transmissions. Even if the Commission is provided with digital decoding information, and it's not clear how the Commission would even get this information much less keep it current, EIBASS has to wonder how the Commission would know which digital decoding sequence to use for an unknown digital signal. Keep trying multiple digital decoding keys that all digital licensees theoretically have provided the Commission, until one works? A watermark not only takes the identification problem off the Commission's hands, but also solves the problem of figuring out which set of ever changing digital parameters, including encryption keys, are needed to identify an unknown digital user.

10. However, a watermark ID that only applies to Part 74, Subpart D, RPU stations, and not to the much larger universe of digital Land Mobile radios in general, means that broadcasters would not be able to use commercial off-the-shelf (COTS) radios, with the resulting cost benefits. Therefore the need for COTS radios is more important than an elegant, universal method of identifying Land Mobile signals with digital modulation. EIBASS, hopes, however, that this rulemaking results in COTS radios with watermark ID capability.

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<sup>4</sup> According to a March 11, 2015, ARRL article "FCC Enforcement Bureau Poised To Shrink," <http://www.arrl.org/news/fcc-enforcement-bureau-field-resources-poised-to-shrink>. Also a March 12, 2015, Radio World article, "FCC Possibly Downsizing Enforcement Field Offices," <http://www.radioworld.com/TabId/64/Default.aspx?ArticleId=274963>.

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### IV. Summary

11. The Commission needs to fix the RPU center frequency problem outright, and not apply a band aid approach of "close enough" where the RPU frequency tolerance rule is used as a surrogate for fixing an administratively caused channel center frequency offset problem. The decision not to grant a blanket waiver to allow (but not require) digital modulation for RPU stations should be reversed. The watermark ID specified in the ATSC A/82 DRL standard should be adopted as the method for identifying digitally modulated RPU signals if doing so can be implemented for digitally modulated Land Mobile radios in general, and not just for Part 74, Subpart D, RPU operations.

Respectfully submitted,

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