

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

In the Matter of)	
)	
Amendment of Parts 2, 15, 80, 90, 97, and 101 of the)	
Commission's Rules Regarding Implementation of)	ET Docket No. 15-99
the Final Acts of the World Radiocommunication)	
Conference (Geneva, 2012)(WRC-12), Other)	
Allocation Issues, and Related Rule Updates)	

**REPLY OF JOHN H. DAVIS TO COMMENTS BY JAMES WHEDBEE, ARRL,
FREDERICK RAAB, GEORGE MAGIROS AND OTHERS, FILED IN SUPPORT OF
PROPOSED AMATEUR RADIO SERVICE IN THE 2200 AND 630 METER BANDS**

INTRODUCTION

1. The comments filed in this proceeding on or before August 31, 2015, by the above named organization and individuals, and other amateur operators and experimental licensees not specifically named here, have not only been universally supportive of the idea of new amateur LF and MF allocations, but have also provided insights into how these amateur bands could be implemented while fully protecting the unlicensed incumbent users. If anything, out of a sincere desire to protect PLC operations, it appears to me that a few of the individual filers may have proposed more complicated regulations than are necessary or desirable to achieve that goal. I believe both sides' interests are better served by rules that are clear, direct, and as simple as possible under the circumstances, since such rules will promote more exact compliance and therefore greater safety to the power grid. None the less, I view the more elaborate proposals as evidence of the amateur community's willingness to be good neighbors, which is the key to spectrum sharing. I further commend ARRL and Dr. Raab for their additional analyses of interference potential, the results of which appear to be fully supported by the record of experimental operation in both proposed bands. In addition, ARRL's further elaboration on

current standards for PLC equipment provides further assurance, not only that intercepted fields from amateur operation at a 1 km separation will not affect PLC operation, but also that PLC operation is unlikely to impact amateur operations as well. That information prompts me to amend one of my own recommendations below.

PHYSICAL SEPARATION REQUIREMENTS AND EIRP LIMITS

2. The analyses of ARRL and Dr. Raab, combined with the practical experience of the Part 5 licensees, make it clear that a 1 km separation distance will provide ample protection at the internationally recognized EIRP limits for these bands. Only if operation is contemplated at distances less than 1 km should any form of quasi-coordination or notification really be necessary. As I demonstrated at paragraph 9 in my own comments, most amateurs should have no problem in identifying the presence of transmission lines and determining their compliance with the separation requirement, although it would be helpful to have industry-amateur cooperation as a double-check in doubtful cases over difficult terrain.

3. Filings by some of the Experimental Service licensees provide support for my earlier recommendation that the Commission should afford amateurs some flexibility in transmitter power where the licensee has the means to determine EIRP by actual measurement. Others appear to justify my belief that NEC-based calculation of antenna efficiency is a viable alternate option, while others without such means at their disposal could be allowed to operate under specific antenna height and TPO restrictions that might differ between the two bands. Taken together, the comments to date suggest all these options should be available to the amateur service in these bands, with the chosen method of power determination to be documented in the station records.

CONCERNS FOR FUTURE POWER LINE EXPANSION

4. While some commenters question the advisability of keeping the power grid reliant on a technology that its own users claim is vulnerable to disruption, amateurs at large continue to express no desire to force PLC users off these bands. The existing systems have clearly posed no problem to amateur operation thus far, and there is no reason to suppose they will in future. Still, in order to assure that remains true, I continue to see no alternative to prohibiting new PLC installations within the affected bands if spectrum sharing is to work. I propose to address some of the reasons in a separate Reply to the Comments of the Utilities Telecom Council.

5. However, the ARRL explanation of newer PLC systems' technology and operating protocols has provided sufficient reassurance on some points that I feel comfortable in downgrading my own recommendation at paragraph 12 in my original Comments. I wrote:

I suggest explicitly allowing replacement of existing PLCs in the 2200 meter band as needed, but only with the same frequency, power, and modulation types presently used, and only along the same transmission line routes where they are currently used. This way, a system operator would not have the expense of re-engineering the PLC for another frequency, no amateur would have to cease operation or relocate, and if any form of quasi-coordination had been employed to determine a safe operating location for any particular amateur station, that process would not have to be repeated just because hardware is being replaced.

In light of the ARRL Comments, I now believe frequency, power, and route should be confined to those currently in use, but the reference to emission types could be omitted. The same applies to 630 meters, if indeed any PLC systems currently operate in the proposed band.

OPERATOR REQUIREMENTS

6. In its August 31 Comments, ARRL repeated its position from 2013 that the bands should be fully available to General, Advanced and Extra Class licensees. This time, they went on to state at 33:

...it would be consistent with Commission policy to make the 2200-meter frequency band available to Amateur Extra, Advanced, and General Class licensees. Technician and Novice class licensees have more limited frequency privileges and it would be unlikely that any significant number of those licensees, if any, would choose to experiment in this band. They might more properly be excluded therefrom.

I note that ARRL *did not ask* any Technician or Novice licensees whether they might choose to experiment in these bands. While it is true that Technician and Novice licensees share the same limited privileges in the no-longer-very-experimental HF communication bands, that's where the comparison between the two classes ends. There is no automatic link between their skill sets. Near the end of my own Comments, filed almost simultaneously with ARRL's on August 31, I showed that in the bands above 50 MHz, Technicians have all the same privileges, responsibilities, and need to build or adapt equipment for experimental purposes, as will be the case at 2200 meters. Therefore, I still believe it would be consistent with Commission policy to make that band available to Technician Class, whether or not 630 meters is included.

EMISSION TYPES AND BANDWIDTH SPECIFICATION

7. Comments from various filers have suggested specific bandwidth limits, while others, including ARRL, feel that such restrictions would needlessly hinder experimentation. I tend to favor the latter view myself, believing that the narrowest possible modes will be the norm on 2200 meters by default because of their proven performance advantages over great distances, but have no objection to wider emissions for experimentation on a local basis. (One commenter suggested that wider emissions be allowed, but with a non-interference requirement in the rules.) Either way, specification of emission types and bandwidths will have no effect on operation of PLC systems, only other amateur operators. If the Commission does impose bandwidth limits, I respectfully suggest using those set by the IARU for Region 2, but leaving emission types unspecified.

8. The questions of automatic control and computer-driven modes that I voiced in the Docket 12-338 proceeding seem to have prompted some comment in the current proceeding. In his June 29 filing, James Whedbee at section “[7] RESPONSES TO PARAGRAPH 180 OF THE NPRM” offers the following:

(a) John H. Davis' Recommendations -- I support Mr. Davis' recommendation for the 630 Meter and 2200 Meter bands that automatically controlled stations be prohibited; however, his recommendation regarding software-driven modes should be rejected as an unnecessary burden upon future innovation.

And ARRL, at paragraph 33 in their original Comments on August 31, stated:

Should automatic control be permitted in these bands? The answer to this is yes, because propagation beacons are an important component of experimental operation in these bands. Should software-driven modes that determine their own operating frequency without human intervention be prohibited? This is something of a moot point given the very small bandwidths of each band.

9. For the record, I have no objection to automatic control to the same extent that it is allowed in any existing amateur band. Nor do I have any objection to “software-driven modes” in general. As other commenters noted, these are in wide use in various amateur bands and by Experimental Service licensees at 2200 and 630 meters already, and have proven most beneficial. As noted in my own Comments of August 31 at paragraph 30, it is only a handful of software that concerns me: those that can choose their own transmitting frequency without operator confirmation. As I noted, one such technique (OPERA) sends an on-off keyed signal on a given frequency for a set number of minutes, then repeats the sequence during the next cycle on a different frequency that may be some hertz away from the first. While it would not impact users outside the amateur bands, I suggest that such behavior is *not* moot to other amateurs in a band such as 2200 meters that is only 2.1 kHz wide to begin with. Beyond that one point, though, I think any disagreement about “software driven modes” may be just a question of definition or semantics.

10. George Magiros correctly interprets my intentions in his Comments of August 31, in his section titled "Unnecessary restrictions will not be conducive to experimentation." He states:

I read the Davis proposal prohibiting "software-driven modes that determine their own operating frequency without human intervention" as meaning that transmissions must be supervised. I oppose any reading of the Davis proposal that would restrict experimentation.

I endorse and fully concur with that statement myself.

CONCLUSION

11. While various amateur commenters have expressed views that differ somewhat on the specifics, I am convinced we have all been working toward the same goal of making new opportunities available for experimentation and self-training in the Amateur Radio Service, while fully protecting the incumbent users. I am confident that the FCC will be able to sort out our ideas in a way that will best serve the public interest.

Respectfully submitted,

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September 30, 2015