

**Comments from Eric M. Tichansky
Amateur Radio Extra Class Licensee NO3M
FCC Part 5 Grantee WG2XJM**

in response to

Request for Comments regarding FCC ET Docket No. 15-99

prepared August 8, 2015

Introduction

I have held an Amateur Radio license for twenty (20) years (Extra class for nineteen (19) years). Most of my on-air operating activities are exercised on the 160M band, including weak signal communications, which in many ways parallel operational behavior and propagation characteristics at 630M. A significant aspect of my Amateur Radio related activities besides on-air operations includes the design and construction of various equipment and antennas.

I have operated under Part 5 grants on the frequency range of the proposed 630M band since May 2012, originally under the American Radio Relay League's (ARRL) WD2XSH grant and later under my own WG2XJM grant (effective Oct 24, 2012). From May 2012 to present, I have logged 7500+ hours of transmissions within the band limits of the proposed 630M band (472 – 479 kHz), utilizing emissions 150HA1A, 100HN1A, 2K00G1D, 500HF1B, 500HJ2B, 2K00J2D, and 2K80J3E. Effective two-way communications have been consistently established with other Part 5 grantees as well as reception reports received from both domestic and foreign individuals monitoring the 472-479 kHz frequency range.

Intent

It is my intent within this document to present my comments, opinions, and recommendations with regard to the Commission's request for comments re: **FCC ET Docket No. 15-99**, specifically those paragraphs related to the secondary allocation of the 630M band for Amateur Radio use. The comments, opinions, and recommendations presented herein are largely based on actual operating experience on the frequencies of the proposed 630M band and are expressed to the best of my knowledge and belief.

Antenna Height

re: ET Docket No. 15-99, Paragraph 20

It is my opinion and recommendation that the Commission does **NOT** enforce specific structural (ie. antenna) height restrictions beyond that already prescribed in **47 CFR § 97.15** and **FAA Code of Federal Regulations, Title 14, Part 77.9 (b)**. This will permit Amateur Radio stations to utilize existing or new structures that satisfy the aforementioned, established regulations. Line-of-sight with power transmission lines vs. a “shielded” (eg. man-made or nature structures in signal path) radiator should not result in any practical difference in field strength intensity in the far field due to low absorption inherent to this frequency range.

Power Output

re: ET Docket No. 15-99, Paragraph 21

It is my opinion and recommendation that the Commission **ONLY** define an EIRP limit on power output for operations within the proposed 630M band per **RR 5.80A (WRC-12)**, namely a **5W EIRP limit** for all areas of the United States except for station locations within 800 km of the Russian Federation, in this case limited to 1W EIRP. It is my opinion and recommendation that the Commission **NOT** define or enforce a transmitter output power limitation, so as to not cause an unnecessary limitation and burden upon Amateur Radio stations in an attempt to approach the EIRP limitation due to the typically low antenna efficiency at this frequency range. Doing so will allow stations to adjust transmitter output as needed for a particular antenna installation to achieve reasonable and effective communications. However, **if the Commission decides a transmitter output power limitation is necessary, I recommend setting that limit to 1.5 kW PEP, per 47 CFR § 97.313 (b).**

Emissions and Bandwidth

re: ET Docket No. 15-99, Paragraph 22

With considerable on-air experience under my Part 5 grant facilitating effective two-way communications with other Part 5 U.S. stations within the frequency limits of the proposed 630M band, it is my opinion and recommendation that the Commission define and enforce permissible **emissions in line with that of the 30 Meter Amateur Radio band**, per **47 CFR § 97.305 (c) (Authorized emission types)** and **47 CFR § 97.307 (f)(3) (Emission standards)**, modified with a maximum bandwidth of 500 Hz. All modes tested for effective two-way communications thus far have satisfied that bandwidth restriction. Such a bandwidth definition will also preserve reasonable and effective use of the limited spectrum within the 630M band limits (472-479 kHz) and should foster future experimentation with emissions employing new operating modes and encoding techniques to advance the art of weak-signal communications and noise mitigation inherent with these frequencies, due in part to the low power output levels and antenna efficiencies, higher atmospherically propagated noise, et.al.

Prerequisite License Class

re: ET Docket No. 15-99, Paragraph 22

I am in agreement and recommend the Commission make **immediately available the 630M band to Amateur Extra, Advanced, and General Class licensees**, similar to comments previously submitted by the American Radio Relay League (ARRL) in response to the **WRC-07 NPRM**. Contrary to other recent comments submitted in regard to **ET Docket No. 15-99**, I see no reasonable justification in doing otherwise, from a technical or bureaucratic standpoint, including suggestions regarding a phase-in period of license classes, et.al.

Exclusionary zone and Fixed Locations

re: ET Docket No. 15-99, Paragraphs 8-15, 17-19

There is continuing evidence through conversation with other Part 5 experimenters in communication with power industry representatives and in direct communication with power industry representatives by the Commenter, that much of, if not all, proclaimed PLC operations over power transmission lines within or around the 630M band (and perhaps other LF/MF frequencies) have been migrated to fiber and wireless transport mediums. In addition, only a very small proportion (**less than 0.08%**) of estimated PLC operations were within the 405-495 kHz spectrum, per *Table 4, pg. 3-17, of NTIA 85-181*, which is noted as being very dated (c. 1979). The Commission has also noted (**Paragraph 8**), that

no harmful interference reports have been filed to date from either allocated radio services or PLC operators as a result of Part 5 grant operations by Amateur Radio operators over the past several years. In some cases, power output **significantly in excess of the proposed 5W EIRP** limit has been used by these Part 5 stations as permitted under their individual grant, including operations from my own Part 5 station (WG2XJM) approaching the 100W ERP (164W EIRP) limitation per the WG2XJM grant.

Therefore, it is my recommendation that the Commission **NOT** define and enforce an operating exclusionary zone in regards to 630M band Amateur Radio operations, unless further compelling evidence is submitted otherwise, as it appears to be largely unnecessary if there is no practical chance of causing any interference to PLC operations within the 472 – 479 kHz frequency range. The exclusionary zone may be more appropriate for consideration regarding the 2200M band, however, comments herein are focused on the 630M band. Ultimately, the recognition of the existence of PLC operations and tolerance to interference within or around the proposed 630M band lies with the power industry submitting adequate and recent evidence to reflect current operations and tolerances, which, thus far, appears to be lacking. However, if an exclusionary zone is not implemented in regards to 630M Amateur Radio operation, it would be recommended that the Commission provide clear and specific verbiage regarding cessation of Amateur Radio operations of a particular station in the event harmful interference is caused to Part 15 PLC operations if harmonious co-existence is an objective. In addition, if an exclusionary zone is not defined and enforced, limiting transmissions from fixed locations would also be deemed unnecessary.

If the Commission determines an exclusionary zone is necessary, my recommendation is to set the separation distance at **500 meters for operation at the full 5 W EIRP** power limit ^{1 2}, and **1 W EIRP between 100 to 500 meters**, with the intent to re-visit the matter of an exclusionary zone, perhaps **within 5 years or less after the band is allocated for Amateur Radio use to consider eliminating such a zone henceforth.**

Conclusion

In general, I support the Commission's proposal to provide a secondary allocation of the 630M band to Amateur Radio licensees in the United States, and hope the aforementioned recommendations will be considered in the establishment of the modifications proposed for **47 CFR § 97.**

Respectfully Submitted
Eric M. Tichansky

2015/08/08

Footnotes:

1. Re: ET Docket No. 15-99 Comments filed by James F. Hollander, 06/11/2015
2. Re: ET Docket No. 15-99 Comments filed by Neil Owen Klagge, 06/09/2015