

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

In the Matter of:)
)
The Amendment of Part 97 of the)
Commission's Amateur Radio)
Service Rules to Permit Greater)
Flexibility in Digital Data)
Communications) RM-11708
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By: William Dawson)
Amateur Radio Licensee, K5AXW)
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To:)
The Chief, Wireless)
Telecommunications Bureau)
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Via: The ECFS)
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COMMENTS:

Please note the following with reference to the American Radio Relay League ("ARRL") Petition RM-11708 and Erratum submitted on November 26, 2013 ("Petition"):

I concur with the Petition with the following proposed modifications:

- 1) Reference 47 C.F.R. Part 97 Subpart D-Technical Standards §97.305 (c):

(c) A station may transmit the following emission types on the frequencies indicated, as authorized to the control operator, subject to the standards specified in § 97.307(f) of this part.

Wavelength band	Frequencies	Emission types authorized	Standards see §97.307(f), paragraph:
MF:			
160 m	Entire band	RTTY, data	(3) (2) (7).
160 m	Entire band	Phone, image	(1), (2).
HF:			
80 m	Entire band	RTTY, data	(3) (2), (7), (9).
75 m	Entire band	Phone, image	(1), (2).
60 m	5.332, 5.348, 5.3585, 5.373 and 5.405 MHz	Phone, RTTY, data	(14).
40 m	7.000-7.100 MHz	RTTY, data	(3) (2), (7), (9)
40 m	7.075-7.100 MHz	Phone, image	(1), (2), (9), (11)
40 m	7.100-7.125 MHz	RTTY, data	(3) (2) (7), (9)
40 m	7.125-7.300 MHz	Phone, image	(1), (2)
30 m	Entire band	RTTY, data	(3) (2) (7).
20 m	14.00-14.15 MHz	RTTY, data	(3) (2) (7).
20 m	14.15-14.35 MHz	Phone, image	(1), (2).
17 m	18.068-18.110 MHz	RTTY, data	(3) (2) (7).
17 m	18.110-18.168 MHz	Phone, image	(1), (2).
15 m	21.0-21.2 MHz	RTTY, data	(3) (2) (7), (9).
15 m	21.20-21.45 MHz	Phone, image	(1), (2).
12 m	24.89-24.93 MHz	RTTY, data	(3) (2) (7).
12 m	24.93-24.99 MHz	Phone, image	(1), (2).
10 m	28.0-28.3 MHz	RTTY, data	(4) (2) (7).
10 m	28.3-28.5 MHz	Phone, image	(1), (2), (10).
10 m	28.5-29.0 MHz	Phone, image	(1), (2).
10 m	29.0-29.7 MHz	Phone, image	(2).
VHF:			
6 m	50.1-51.0 MHz	MCW, phone, image, RTTY, data	(2), (5).
Do	51.0-54.0 MHz	MCW, phone, image, RTTY, data, test	(2), (5), (8).
2 m	144.1-148.0 MHz	MCW, phone, image, RTTY, data, test	(2), (5), (8).
1.25 m	219-220 MHz	Data	(13)
Do	222-225 MHz	RTTY, data, test MCW,	(2), (6), (8)

		phone, SS, image	
UHF:			
70 cm	Entire band	MCW, phone, image, RTTY, data, SS, test	(6), (8).
33 cm	Entire band	MCW, phone, image, RTTY, data, SS, test, pulse	(7), (8), and (12).
23 cm	Entire band	MCW, phone, image, RTTY, data, SS, test	(7), (8), and (12).
13 cm	Entire band	MCW, phone, image, RTTY, data, SS, test, pulse	(7), (8), and (12).
SHF:			
9 cm	Entire band	MCW, phone, image, RTTY, data, SS, test, pulse	(7), (8), and (12).
5 cm	Entire band	MCW, phone, image, RTTY, data, SS, test, pulse	(7), (8), and (12).
3 cm	Entire band	MCW, phone, image, RTTY, data, SS, test	(7), (8), and (12).
1.2 cm	Entire band	MCW, phone, image, RTTY, data, SS, test, pulse	(7), (8), and (12).
EHF:			
6 mm	Entire band	MCW, phone, image, RTTY, data, SS, test, pulse	(7), (8), and (12).
4 mm	Entire band	MCW, phone, image, RTTY, data, SS, test, pulse	(7), (8), and (12).
2.5 mm	Entire band	MCW, phone, image, RTTY, data, SS, test, pulse	(7), (8), and (12).
2 mm	Entire band	MCW, phone, image, RTTY, data, SS, test, pulse	(7), (8), and (12).
1mm	Entire band	MCW, phone, image, RTTY, data, SS, test, pulse	(7), (8), and (12).
	Above 275 GHz	MCW, phone, image, RTTY, data, SS, test, pulse	(7), (8), and (12).

2) Reference 47 C.F.R. Part 97 Subpart D-Technical Standards §97.307 (f) :

(f) The following standards and limitations apply to transmissions on the frequencies specified in §97.305(c) of this part.

(1) No angle-modulated emission may have a modulation index greater than 1 at the highest modulation frequency.

(2) No non-phone emission shall exceed the bandwidth of a communications quality phone emission of the same modulation type. The total bandwidth of an independent sideband emission (having B as the first symbol), or a multiplexed image and phone emission, shall not exceed that of a communications quality A3E emission.

~~(3) Only a RTTY or data emission using a specified digital code listed in §97.309(a) of this part may be transmitted. The symbol rate must not exceed 300 bauds, or for frequency shift keying, the frequency shift between mark and space must not exceed 1 kHz. [RESERVED]~~

~~(4) Only a RTTY or data emission using a specified digital code listed in §97.309(a) of this part may be transmitted. The symbol rate must not exceed 1200 bauds, or for frequency shift keying, the frequency shift between mark and space must not exceed 1 kHz. [RESERVED]~~

(5) A RTTY, data or multiplexed emission using a specified digital code listed in §97.309(a) of this part may be transmitted. ~~The symbol rate must not exceed 19.6 kilobauds.~~ A RTTY, data or multiplexed emission using an unspecified digital code under the limitations listed in §97.309(b) of this part also may be transmitted. The authorized bandwidth is 20 kHz.

(6) A RTTY, data or multiplexed emission using a specified digital code listed in §97.309(a) of this part may be transmitted. ~~The symbol rate must not exceed 56 kilobauds.~~ A RTTY, data or multiplexed emission using an unspecified digital code under the limitations listed in §97.309(b) of this part also may be transmitted. The authorized bandwidth is 100 kHz.

3) Reference 47 C.F.R. Part 97 Subpart D-Technical Standards §97.221 (c) :

~~(2) No transmission from the automatically controlled station occupies a bandwidth of more than 500 Hz. [RESERVED]~~

I justify the aforementioned modifications to the Commission's rules and the Petition based on the following:

- A. The Commission's rules¹ already define the original Petition's modifications to § 97.307 (f) (3) (excluding the original APPENDIX portion "The authorized bandwidth is 2.8 kHz"). The Erratum's justification of the deletion of "unspecified digital codes" along with the Erratum's APPENDIX is inconsistent with the Petition's stated justifications of "It is best to permit flexible experimentation with digital emissions to the greatest extent possible"² and "allowing higher HF data rates and facilitating experimentation with data emissions"³ The proposed modification herein to § 97.305 (c) to include the provisions of § 97.307 (f) (7) is necessary to support the Petition's justifications.
- B. Existing Commission's rules⁴ already address the issue of "authorized bandwidth". The Petition Article IV 2.8 kHz bandwidth justification is inconsistent with existing technical standards⁵⁶ relating to the Commission's rules⁷ for authorized emission types and good engineering practice⁸;
- C. Existing NTIA and ITU-R emission and bandwidth measurement standards and procedures are readily available for use by amateur radio control operators vs. defining new standards and procedures to support the Petition's proposed authorized bandwidth of 2.8 kHz;
- D. The Petition as modified herein, supports the continued advancement and utilization of additional data modulation techniques (either commercial or open source) that are consistent with the purpose of the Amateur Radio Service⁹. Many modulation techniques are already used in other licensed and unlicensed wireless services¹⁰ and are supported⁵⁶ by both commercial and open development platforms (such as software defined radio (SDR)) with the potential of increased spectral efficiency or reuse and additional communications methods.

¹ 47 C.F.R. § 97.307 (f) (7)

² ARRL Petition RM-11708 Article IV, Paragraph 11

³ ARRL Petition RM-11708 Article II, Paragraph 13

⁴ 47 C.F.R. § 97.307 (f) (2)

⁵ NTIA Manual of Regulations And Procedures For Federal Radio Frequency Management, Chapter 5, Section 5.3.1.1, particularly paragraph 1 reference to "authorized bandwidth¹ (BW)"

⁶ ITU-R Recommendation SM.1138-2 – Determination of necessary bandwidths including examples for their calculation and associated examples for the designation of emissions

⁷ 47 C.F.R. § 97.307

⁸ 47 C.F.R. § 97.101 (a)

⁹ 47 C.F.R. § 97.1

¹⁰ ITU-R Recommendation F.240-7 and M.1798

- E. The Commission rules already address the issue of interference and frequency sharing¹¹. The Petition as modified herein supports the use of improved data modulation techniques with faster bit transmission rates pursuant to the justification within the Petition¹² “the Amateur Service utilizes new data emission types, the efficiency of Amateur data communications will increase. This is because, with increased data throughput, the duration of transmissions is reduced for a given message and the efficiency in the use of a given frequency increases.”
- F. The proposed change to the Commission’s rules §97.221 (c) (2) herein removes a non-referenced specification bandwidth limitation for automatically controlled digital stations. The benefits are defined in D. above and I do not concur with the Petition’s concern¹³ relating to “a plethora of automatically controlled stations usurping the limited spectrum available”. Per E. above, the number of automatically controlled stations can actually increase and such stations still have the responsibility for compliance with interference and frequency sharing requirements. (Existing and emerging data applications (such as WINMOR) support channel monitoring activity to prevent transmission on occupied frequencies).

Considering the above, I request that the Commission issue a Notice of Proposed Rule Making adopting the Petition as modified herein.

Best Regards,

William Dawson

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Submitted – December 19, 2013

¹¹ 47 C.F.R. § 97.101 (b) and (c)

¹² ARRL Petition RM-11708 Article III, Paragraph 10

¹³ ARRL Petition RM-11708 Article II, Paragraph 8