THIS DATE
CANCELLED
F.C.C.
OFFICE OF THE SECRETARY

DOCKET FILE COPY DUPLICATE

RECEIVED
JUL 19 1999
FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Request for change Part 97.305	)	
of the Commission's Rules to limit	)	RM - 9673
certain types of transmissions	)	
on prescribed portions of the	)	
Amateur VHF and UHF bands	)	

COMMENTS ON CSVHFS'S REQUEST FOR RULE MAKING ON
AMATEUR VHF/UHF EMISSION STANDARDS

John Mock <kd6pag@qsl.net> [1]
1274 64th Street
Emeryville, CA 94608

SUMMARY and INTRODUCTION

The Central States VHF Society (CSVHFS) is proposing some minor changes to Section 97.305(c), which defines how what emissions are permitted in the amateur frequency bands; in other words, how the VHF and UHF amateur bands are to be used. There are already restrictions in how the amateur shortwave bands may be used and CSVHFS proposes similar limitations in the VHF and UHF bands. At VHF and UHF frequencies, this has been a matter of a "gentlemen's agreement" in terms of usage until recently. But as the demographics and make up of the amateur service has changed, many feel these agreements are no longer effective enough and that formal rule making is the best solution to this problem.

Unfortunately, RM-9673 has some serious inconsistencies between the body of the text of the proposal and the summary of the changes in Appendix A. This has made it difficult for anyone not intimately familiar with the Commission's procedures to determine what would happen if this proposal were adopted. Hence discussion so far has focused on the inconsistencies and not on the merits of the proposal.

These comments attempt to address the actual proposal, and suggest changes or clarifications. However, the whole process has been so seriously flawed from a procedural standpoint so far, that the Commission is not receiving the kind of information from the amateur community it needs to make an informed decision. Therefore, the Commission may want to give serious consideration to setting this proposal aside on procedural grounds and suggest that a new proposal be submitted, possibly from a wider segment of the amateur community.

COMMENTS ON THE PROPOSAL

I. The Proposal and its inconsistencies

There are really two parts to this proposal. The first is to restrict the types of emissions permitted in the sub-bands ordinarily used for long distance communications, propagation studies and experimentation in the VHF and UHF bands (specifically 50-50.3 MHz, 144-144.3 MHz, 222-222.15 MHz and 432-432.5 MHz). These kinds of operations are frequently called "weak-signal" operation. In essence, the CSVHFS is asking the existing band plans, such as are summarized by the American Radio Relay League (ARRL)[2] which has been common practice for many years, with some minor changes to be discussed later[3], be adopted as formal rules.

The problem with the first part is that Appendix A goes beyond that, in unintentionally eliminating certain other digital modes in common use, which are heavily used in certain parts of the country. Currently, we have:

> Sec. 97.305 Authorized emission types.
>
> (a) An amateur station may transmit a CW emission on any frequency authorized to the control operator.
>
> ...
>
> (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 Sec. 97.307(f) of this part.
>
> ...

VHF:			
6 m	50.1-51.0 MHz	MCW, phone, image, RTTY, data	(2), (5).
"	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).
"	222-225 MHz	MCW, phone, image, RTTY, data, test.	(2), (6), (8).
UHF:			
70 cm	Entire band	MCW, phone, image, RTTY, data, SS, test.	(6), (8).

[4]

The Proposal suggests:

Wavelength band	Frequencies	Emission type authorized	Standard
6 m	50.0-50.1 MHz	RTTY, data	(4)
	50.1-50.3 MHz	Phone, image, RTTY	(1), (2)
	50.3-54.0 MHz	MCW, phone, image[,] RTTY	(2), (5)
2 m	144.0-144.1 MHz	RTTY, data	(4)
	144.1-144.3 MHz	Phone, image	(1), (2)
	144.3-148.0 MHz	Phone, image	(2)

1.25 m	222.0-222.15 MHz	Phone, image	(1), (2)
	222.15-225.0 MHz	MCW, phone, image, RTTY, data, test	(2), (6)
70 cm	420.0-431.8 MHz	MCW, phone, image RTTY, Data, ss, test	(6), (8)
	431.8-432.5 MHz	Phone, image	(1), (2)
	432.5-450.0 MHz	MCW, phone, image RTTY Data, ss, test	(6), (8)

[5]

The problem is that emission standard (8) [c.f. Sec. 97.307(f)], and along with the descriptions "data" and "test" were omitted from Appendix A for the 6 meter and 2 meter bands. At 222.15-225.0 MHz, it is listed in the "emission type authorized" column, but not in the "Standard" column. That could mean that conventional packet radio would not be permitted in the bands where it is currently most used! So, of course, a significant part of the amateur community is up in arms over this omission.

In addition, the CSVHFS proposal asks that between "431.8 and 432.5 MHz the same provision[s] with respect to emission standards be employed as is employed the HF bands below 29 MHz."[6] However, the ARRL Band Plan does not show the same sub-bands, as 431.8-432 MHz are shown as part of ATV channel 2, with 'Mixed-mode and weak-signal work' extending up to 433 MHz. Perhaps the intent of the proposal was to separate 'weak-signal' from other operations, but this change was neither discussed nor justified.

The second part of the proposal pertains to expanding the usage of the first 100 KHz of the 6 meter and 2 meter amateur bands to allow certain new digital modes. Recent developments are resulted in digital modes that are quite similar to CW in terms of intelligibility as very weak signals and also in terms of bandwidth. Like CW, these new modes are also sensitive to disturbance by wider band signals, perhaps including SSB and AM. Many amateurs feel they are compatible with CW in terms of spectrum usage and also competitive in terms of the ability to communicate under very poor conditions. Therefore, it is being proposed that these kinds of emissions be allowed in the currently CW-only sub-bands.

Presumably to avoid having to define new emission standards, the CSVHFS is proposing to permit the same kinds of digital modes allowed in HF in what is currently the CW-only sub-bands. Unfortunately, we have another inconsistency here. The body of the text states:

> We believe, however that between 50.0 and 50.1 MHz and 144.0 and 144.1 MHz, the standards as apply between 28.0 and 28.3 MHz may be applied rather than the more limiting standard applied to the lower HF bands, namely (3) which limits data transmission rates to 300 bauds.
>
> [7]

Yet, again looking at Appendix A, we have

Wavelength band	Frequencies	Emission type authorized	Standard

6 m	50.0-50.1 MHz	RTTY, data	(4)
	50.1-50.3 MHz	Phone, image, RTTY	(1), (2)
	50.3-54.0 MHz	MCW, phone, image[,] RTTY	(2), (5)
2 m	144.0-144.1 MHz	RTTY, data	(4)
	144.1-144.3 MHz	Phone, image	(1), (2)
	144.3-148.0 MHz	Phone, image	(2)

...

[8]

There, we have the emission standard given as (4), which specifies 1200 baud rather than 300 baud RTTY as a basis:

Sec. 97.307 Emission standards.

...

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

...

(3) Only a RTTY or data emission using a specified digital code listed in Sec. 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.

(4) Only a RTTY or data emission using a specified digital code listed in Sec. 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.

[9]

So again, there are serious inconsistencies, and it is quite apparent that what is in the Appendix A is not what the proposal intended.

II. Is emission type 97.307(f)(3) appropriate for CW-only sub-bands?

As noted in the previous section, the intent of the second part of the proposal seems to be to permit modes comparable to CW in the current CW-only sub-band. But even Sec. 97.307(f)(3) may be overly generous as an emission standard. A better way of approaching this may be to specify a bandwidth directly. It seems doubtful that the intent would be to permit RTTY, which can take more than twice as much bandwidth (given up to 1 kHz frequency-shift keying) as a conventional CW signal (250-500 Hz)[10].

So, are emission types under Sec. 97.307(f)(3) really appropriate in what is currently a CW-only sub-band? Or should a new class of emissions be defined which more closely meets the intent of the proposal to permit digital modes comparable to CW.

III. What about fast-scan ATV interference?

The proposal focuses on FM-based modes (both voice and digital) as causes

of interference to 'weak-signal' operations. But does it really solve our band planning problems? Another fairly recent development is the widespread availability of cable-ready televisions and VCRs. This is a real convenience, since cable channels 57, 58, 59, and 60 according to the ARRL Handbook[11] correspond to three out of four commonly used fast-scan amateur television (ATV) channels. Unfortunately, these require 6 MHz of bandwidth and filtering problems are such that it is difficult to use adjacent ATV channels for in-band ATV repeaters.[12] So, especially in areas such as Northern California where heavy demand for frequency allocations for voice as resulted in the ATV channel corresponding to Cable Channel 60 is being reused for FM repeaters, there may be considerable temptation to use cable channel 59 for ATV.

The problem with cable channel 59 is that, being 6 MHz wide, it occupies all of 432-438 MHz. This includes both the 'weak-signal' sub-band at 432-433 MHz, and the Satellite sub-band at 435-438 MHz. So, if we start with a video carrier at 433.25 MHz (the usual place for cable channel 59), then we have most of the video signal with +/- 1 MHz, which includes about 75% of the current 'weak-signal' sub-band. The sound sub-carrier is about 4.5 MHz above the main carrier, so it appears at 437.75 MHz, almost at the top of the Satellite sub-band, with the video signal covering most of that sub-band. The color sub-carrier at 3.58 MHz[13] is a particular problem, as 436.83 MHz is only 25 KHz away from the downlink of our most popular amateur satellite, AO-27. But the problem locally is in numerous places throughout the satellite sub-band, and the 60 Hz noise from the vertical retrace portion of the video is easily confused with power line noise. Thus the real culprit is not readily identified.

Since the satellite sub-band is by international agreement,[14] we may be in violation of treaty obligations by permitting such usage for terrestrial purposes. This is in addition to ATV operation at cable channel 59 being disruptive to 'weak-signal' work. If such ATV operation is contrary to "good amateur practice"[15], or is an inappropriate frequency selection under Section 97.101(b), then a clarifying statement that ATV operation on cable channel 59 is inappropriate might be sufficient and no formal rule making action may need to be taken.

The long term solution for amateurs doing fast-scan television is to begin adopting newer technology instead of using NTSC format over the air, which is a poor use of the amateur spectrum in the 70cm band and likely to become obsolete in the consumer market in the next 10-20 years. There already exists much better means of doing full-action video, which are already being used over the Internet (even over voice-grade lines) and from newer commercial satellite to existing consumer televisions.

IV. Are the beacon sub-bands addressed?

The current beacon sub-bands are listed in Part 97:

Sec. 97.203 Beacon station.

...

(d) A beacon may be automatically controlled while it is transmitting on the 28.20-28.30 MHz, 50.06-50.08 MHz, 144.275-144.300 MHz, 222.05-222.06 MHz or 432.300-432.400 MHz segments, or on the 33 cm and shorter wavelength bands.

[16]

The current proposal removes protection from the 50.06-50.08 MHz beacon sub-band from interference from RTTY or data emissions. Yet signals at 6 meters do propagate internationally during certain parts of the solar cycle, and may be the subject of internation agreements. In the other beacon sub-bands above 6 meters, the proposal in theory may represent an improvement. But the real question is how it will work in practice. The proposal should have explicitly addressed or at least discussed the beacon sub-bands.

CONCLUSION

The CSVHFS, a comparatively small organization, is proposing changes to the permitted emissions in the amateur VHF and UHF bands that are in theory worthy of serious consideration. Unfortunately, the proposal itself is seriously flawed, not in what was proposed, but how it was presented. As a consequence, considerable confusion has resulted. This has seriously degraded the depth of analysis of this proposal has receieved, and the Commission is unlikely to get the kind of information it needs to make an informed decision about this proposal. While the concepts may be worthy, the presentation of the proposal to the Commission is too badly flawed.

Therefore, the Commission is respectfully urged to reject this proposal on procedural grounds rather than on the merits of the proposal. The Commission should instead consider expressing an interest in hearing a more comprehensive proposal, preferrably by a broader-based amateur organization.

Respectfully submitted:

John Mock <kd6pag@qsl.net>
1274 64th Street
Emeryville, CA 94608

FOOTNOTES:

[1] A second generation computer professional with 25 years of experience, the author did pioneering work with one of the first Network UNIX systems on the ARPANET, on font design for the Xerox Graphics Printer (grandfather of the Apple LaserWriter), real-time digitally synthesized music, and has implemented numerous network protocols, including the amateur AX.25 and APRS protocols. Other interests in amateur radio include satellite operations and weak-signal work.

[2] http://www.arrl.org/field/regulations/bandplan.html

[3] The proposal suggests 431.8-432.5 MHz for 'weak-signal' work, while the ARRL band plan shows 432-433 MHz for 'weak-signal' and related operations.

[4] 47 CFR Part 15, Section 97.305(c). [Table reformatted for readability]

[5] Central States VHF Society (CSVHFS), "Petition For Rule Making" [RM-9673], ("Request for change Part 97.305 of the Commission's Rules to limit certain types of transmissions on prescribed portions of the Amateur VHF and UHF bands"), May 3, 1999. Appendix A.

[6] http://www.arrl.org/field/regulations/bandplan.html

[7] CSVHFS, Sec. "Proposal" Par. 1.

[8] ibid., Appendix A.

[9] 47 CFR Part 15, Section 97.307(f).

[10] American Radio Relay League [ARRL], "The ARRL Handbook for Radio Amateurs" (1998 Edition), p. 12.33 (Table 12.14).

[11] ibid., p. 30.41 (Reference #30.52).

[12] ibid., pp. 12.48-49. Note Fig. 12.61 which shows the occupied spectrum.

[13] ibid.

[14] http://www.arrl.org/field/regulations/bandplan.html

[15] 47 CFR Part 15, Section 97.101(a).

[16] 47 CFR Part 15, Section 97.203(d).