

To the FCC in the matter of WTB 16-239

Commissioners,

It is clear that numerous hams do not truly comprehend how difficult it really is to design a wide bandwidth data mode such as the one that Gerald F. (Rick) Meuthing KN6KB, John Wiseman G8BPQ and I have been working on for the last almost three years now. Many of them seem to think that it's simple because, while they may understand the technical aspects of it, they overlook the need to test the code in real conditions to see how it acts under those types of conditions that a software simulation simply cannot reproduce. They also do not understand the need to provide multiple bandwidth options and data rates to enable the most efficient data transfer possible, nor do they understand, as mentioned by Phil KA9Q, how wide bandwidth signals can actually be more efficient with less error correction data than a narrow bandwidth mode. They further do not understand that what may work fine at lower latitudes (modulation methods like Phase Shift Keying and Quadrature Amplitude Modulation) do not work as well if at all at higher latitudes and that restricts the usable bandwidth that a mode can support, as does the very nature of the majority of radio hardware used with the Amateur Radio Service. Development of new modems such as the ARDOP software modem we are developing are a balancing act if you want to provide a truly useful technology to the hobby.

There is also the little detail of data compression that needs to be addressed; Winlink does in fact use a documented compression protocol, and shuts off the default proprietary compression when using Pactor hardware modems. There are a number of open source projects that are unofficial but accepted methods of access to the Winlink system that people can see the source code for that would once and for all establish the openness of the data compression. I have dealt with busy channel detection in a second submission that will be attached to this one.

They also seem to not realize the impact that revoking the authorization to use proprietary data modes such as Pactor would have on our Emergency Communication capabilities. When most other countries, including those to our immediate north and south do permit the use of such modes, and many disasters can be of an international scope, removal of tools that would enable efficient interoperability with international ham emergency communication teams would have a decidedly negative impact on international goodwill which is also a tenant of Part 97 rules, as much as anything else. Claims that vhf/uhf are adequate do not have support since any infrastructure that would be used on those bands could, and likely would, be rendered unusable by the same circumstances that led to our being called on in the first place; see the after action reports for Cascadia Rising for an example of what would be expected during a real communication scenario. Claims of permitting proprietary communication technology to be allowed having any significant national security threat ignores the very real possibility that such things wouldn't necessarily be recognized as such even if everything was plainly readable as it went through the Winlink system, or clearly audible passing through any of the digital voice systems that use a variation of the AMBE vocoder from DVSI.

Comments from hams like Michael Ferguson further distort things by implying that development of high data rate modes with no apparent restrictions on bandwidth will naturally follow the example of the Internet, or that more is being done than has ever been allowed by those developing systems like Winlink or PSKMail. The reality is that the development teams behind those systems fully understand the limitations of HF radio, perhaps better than most hams realize, and have designed in limitations without being required to do so. It is also abundantly clear that many hams commenting have absolutely no clue that spectrum allocations already exist for wide bandwidth signal or they would not be suggesting that you create them. Further, as Janis Carson so kindly points out in her latest submissions, though mostly applied to supporters of this rulemaking, there is a lot of “using cut and paste duplicate statements” on both sides. However, her comments and conclusions ignore that no current or planned modulation technology being requested can utilize more than 3 kHz bandwidth on HF even if the transmitting radio is theoretically capable of transmission at those bandwidths. She also ignores that when your predecessors originally established the current ACDS bands, they correctly decided to avoid establishment of such a band on 160 meters and pushes for one to be established simply because the IARU bandplans show the option.

I have also attached a copy of the busy channel detection code used in ARDOP and screenshots of the user interface of the modem to show the waterfall display that is available.

Finally, as there is currently no bandwidth limit defined for HF in Part 97, with the exception of one for FSK and the requirement that automatic stations outside the 97.221 sub-bands be 500 Hz, the vast majority of hams that operate on HF clearly voluntarily keep themselves separated by bandwidth. And it is evident that what little operation on other bandwidth signals that do occur in the segment that the majority of respondents want to have reduced to 500 Hz maximum bandwidth do not significantly interfere with the majority of narrow bandwidth operations. Far more often, it is two much closer bandwidth modes that encounter this, or operators that seem to believe that they have a right to transmit on a frequency that is in use by a mode they don't like and cause deliberate interference to the other station. No bandwidth limit is therefore needed. And as your predecessors so eloquently stated in their report and order in RM-11392 “We also believe that imposing a maximum bandwidth limitation on data emissions would result in a loss of flexibility to develop and improve technologies as licensees’ operating interests change, new technologies are incorporated, and frequency bands are reallocated. Additionally, we believe that amending the amateur service rules to limit the ability of amateur stations to experiment with various communications technologies or otherwise impeding their ability to advance the radio art would be inconsistent with the definition and purpose of the amateur service. Moreover, we do not believe that changing the rules to prohibit a communications technology currently in use is in the public interest.” The latter two parts of the quote are particularly important to understand; while they were specifically focused on the allowance of Pactor 3 and the wider bandwidths that uses, it also applies to modes like Olivia MFSK, Contestia and MT-63, which all have multiple bandwidth modes that would no longer be usable in the same band segments where the 500 Hz and narrower versions are currently used alongside their wide counterparts.

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