

Subject: Amateur Service Proceedings WT16-239; RM-11708; RM-11759

Exparte VIA Email

Mr. Scot Stone, Wireless Telecommunications Bureau

Dear Mr. Stone:

I am not currently using any digital modes on the HF amateur bands. My interest in the above Proceedings is solely to conserve and preserve the availability of spectrum for the United States Amateur Radio Service and to maintain the integrity of that Service. Historically, the Service has proved itself most valuable through mode flexibility. That is to say, as conditions and situations present themselves, amateurs could and still can pick and choose how best to communicate to fit the situation. Whether it be normal operation; or during local, regional, or international emergencies.

You have before you two Proceedings that propose to expand the consumption of spectrum for digital modes (WT16-239 and RM-11708). Unfortunately, at the expense of other modes. More pointedly, to accommodate wide-bandwidth modes such as PacTors 3 and 4, in that the symbol rate ceiling, as presently codified in digital sub bands, does not accommodate them. Only PacTors 1 and 2 can be used across the HF digital sub bands. PacTor 1 is a Specified Code, whereas PacTor 2 is not. Expansion of the amount of spectrum that would be occupied by PacTors 3 and 4 serves to further limit beyond what has been available to other, more efficient digital codes and various modes such as analog and digital phone, slow scan television, and CW. Expanding bandwidth in all digital sub bands would diminish the flexibility and utility of the Amateur Service. The third Proceeding, RM-11759, I will discuss in my concluding remarks.

As I and others have cautioned you, Unspecified Codes are already in use on the HF bands wherever and whenever PacTors 2 and 3 are employed. There remains no question that not all of the technical details of PacTors 2, 3, and 4 have been or will be released by the author in order to be decoded by listeners using non-SCS hardware. Especially the specifics as to how PacTors accomplish data compression. SCS, the creator of PacTor, so much as admitted that to you in its June 8, 2018 email memo response to your inquiry. Their memo begged a response back from the Commission to require demonstrated proof that PacTor transmissions can be fully and accurately decoded by third parties. To my knowledge, no such response was forthcoming either from you or the Office of Engineering and Technology (OET) to ask for and obtain the needed clarification. Also, the cost of their SCS-endorsed software noted in their memo is approximately \$20,000 per copy, and offered only to the Signals Intelligence community.

Even more importantly, when PacTors and other digital codes are operated in what is called the “Automatic Repeat Query” or ARQ configuration, there is apparently no way to separate the repeat-request queries and hand-shaking data apart from intended content; and no way to correct errors, making receipt via a third SCS modem likely a bunch of gibberish. This means that other amateurs and the Commission itself cannot reasonably monitor the content of what’s being transmitted. A dangerous situation that now exists that will be exacerbated should you choose to adopt WT16-239 and/or RM-11708. It’s simply amazing that Packet Radio third parties have been accurately monitoring transmitted content for years, even with its repeat requests from inaccurate checksums of received data. Yet PacTor, supposedly a derivation from Packet, apparently cannot mask handshaking and checksums from message content. Repetition is acceptable when monitoring; gibberish is not. For the Commission to maintain an objective oversight posture in these Proceedings and in the rule promulgation process, OET must itself conduct or at least witness a demonstration of third party decoding of PacTor ARQ content to verify that it can actually be done and the results cognizant.

You have been inundated, as of late, by PacTor and ARQ-enthusiast comments. At the behest of the Amateur Radio Safety Foundation, Inc., (ARSF) a Florida non-profit, hundreds of their paid Winlink subscribers have filed repetitious objections to Comments pointing out the risks in continued Unspecified Code ARQ use in the Amateur Service HF bands. ARSF is but a holding company umbrella for the assets of the Winlink network. ARSF Directors comprise the “Winlink Team,” and have been historically paid by ARSF for their efforts. ARSF, in fact, appears to be a misnomer. It is unclear just what relevance ARSF’s name has to the safety of amateur radio, or to the safety of individual Amateur Service operators while maintaining or operating their equipment. Its website indicates no former, ongoing or planned safety-related activities, procedures or products with a purpose of making amateur radio any safer. About as much akin to safety as someone chasing an ambulance after the fact.

If ARSF’s Winlink network cannot be operated so as to allow accurate third party decoding of all of its transmitted content on US amateur HF spectrum, then Winlink itself must also be shuttered. Surely, the outcome of these proceedings should not be influenced by throngs of whiners. As if children, about to have their toys taken away for misbehavior. The dangers and risks to the continued and augmented use of Amateur Service spectrum as it exists today have been eloquently outlined in these Proceedings by Dr. Rappaport, Ms. Carson, and Mr. Kolarik. Dr. Rappaport is a recognized expert in the field of wireless communications and an adviser to the Commission. The content of the subject, effectively-encrypted communications cannot be meaningfully decoded “over the air” by anyone besides the two interlocked stations that are communicating. And, to repeat, ostensibly not by the Commission or the Federal Bureau of Investigation either.

47CFR§97.113(a)4 clarifies the issue at hand: “No amateur station shall transmit messages encoded for the purpose of obscuring their meaning.” In its recent rebuttal to Dr. Rappaport in these Proceedings, ARSF carefully notes that its station identifiers and headers of its Winlink message content are not obscured. Notably absent is any reference to the “meat” of the communications: The body and any attachments. So, apparently, ARSF thinks that it can avoid the issue of Winlink transfers remaining obscured by not mentioning message content. It also

sheepishly offers links to various amateur radio digital software collections, most of which is freeware. None of it offers decoding of PacTors 2, 3 or 4. In its somewhat humorous reference to ARQ beginnings with packet radio, yes, that is correct. However, as I point out above, X.25 packet checksum errors result in resends of ASCII text, which is easily tolerated, where PacTor's handshaking includes much more than just a checksum in its resend requests. Signal strength and directions to each modem to shrink or expand the number of OFDM subcarriers is also going back and forth, which gets in the way of ordinary text decoding for anyone trying to decode it.

ARSF also attempts to diminish the value of third party monitoring citing the ever-increasing complexity of digital communications. The Commission has for years had Amateur Service volunteer observers through what is termed its Amateur Auxiliary who monitor amateur transmissions. A formal agreement with the National Association for Amateur Radio (ARRL) established the service and ARRL supplies a cadre of amateur radio volunteers whose purpose is to assist the Commission in monitoring Amateur Service transmissions. It is no secret that the Commission has had to reduce Enforcement Bureau facilities and staffing for budgetary reasons as of late. The Amateur Auxiliary has, as a result, become even more useful to the Commission to determine what is and is not compliant with rules and regulations. Which transmissions are obscured and which are not. If these volunteers cannot decode Winlink and Unspecified digital codes to monitor content, then who will? Is it appropriate for only the Winlink Team to be able to monitor its own relayed transmission content with no other independent oversight?

I am very concerned that when such communications are discovered to have been used to effect or coordinate serious crimes, a price will be paid by all US amateur operators. For example, if it were determined that international terrorists or drug traffickers had used ARQ digital communications on the amateur bands to cipher content, would the public (and, the Commission, for that matter) demand exaggerated actions to limit or perhaps even end the US Amateur Service on HF spectrum? Perhaps rightfully so, if needed to bring an end to such abuses. Amateurs must be able to continue assisting your Enforcement Bureau in ensuring proper use of amateur radio spectrum. They can't when they cannot effectively decode transmitted content.

Again, my only interests are in preserving the efficient, legal use of sparse HF spectrum; and maintaining the Amateur Service itself as we now know it. And with that being said, maximum bandwidth in general-use digital sub bands should remain at not more than 500Hz; automatic digital relay stations should continue to be confined to single segments per amateur band, approximately wide enough for two simultaneous communication channels; (not more than 6kHz overall segment width, with occupied bandwidth of each channel at 2.8kHz or less) along with a requirement that all such transmissions to and from automatic stations be openly and fully decodable by third parties. Stations must be identifiable and their transmitted content openly decodable by all to ensure that it complies with all United States laws, regulations and international agreements.

The ARRL has proposed granting Technician Class licensees expanded HF privileges, including digital operation besides CW. Adoption would be contrary to the long-standing Commission

tradition of incentives for licensee upgrade. RM-11759, therefore, should be dismissed in the interest of maintaining that tradition.

Respectfully,

/s/

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