

Amateur Radio Safety Foundation, Inc.  
Loring A. Kutchins, W3QA, President  
2018  
1054 Fork Point Road,  
Orinetal, NC, 28571

February 22,

Reply to Comments  
RESPONSE EFFORT UNDERTAKEN DURING 2017 HURICANE  
SEASON

PS Docket No. 17-344, WT Docket 16-239 NRPM, RM11708, RM-11306

Dear Federal Communications Commission,

This is my reply to comments made by Dr. Theodore Rappaport, PE, N9NB in Docket 17-344 dated February 20, 2018 and posted on February 22, 2018. Dr. Rappaport argues passionately from his point-of-view. I do not entirely disagree with some of his points, but we oppose each other because of antiquated spectrum management principles that we have outgrown which the FCC tries to manage by patching rather than reforming. There is recognized danger of harmful interference between wide-band and narrow-bandwidth stations if they must share the same spectrum without sane management. Where we differ is on many technical points where he spreads untruths and false facts, and promotes them among the amateur community. Many of these have surfaced in his arguments and I will address them.

I have an insiders view of the operation and development of Winlink. I am the President of the Amateur Radio Safety Foundation, Inc, a non-profit, public-benefit corporation founded to fund projects in the interest of Amateur Radio, technical education, and advancement of the radio art, particularly with respect to applications for disaster relief, readiness, and contingency communications during communications emergencies. Our major project is Winlink Global Radio Email. I have been involved as a user, developer, administrator, and technical contributor to Winlink and it's predecessor systems since the 1990s. I am a trained biologist, engineer, software developer, entrepreneur, and licensed radio amateur since 1964. I have an Amateur Extra license, W3QA. I am also licensed by the DHS NCC SHARES program as NWL4KL. I operate a Winlink station and administer the system daily. I was present and directly involved with the ARRL's operation in Puerto Rico and with SHARES disaster recovery operations there.

Dr. Rappaport's arguments are skewed by his point-of-view. He shows poor knowledge of the Winlink system for a professor of communications, and N9NB is not a user of the system, so it is understandable that he is unfamiliar with many of it's technical details, although he would have you believe otherwise. He repeatedly refers to the amateur radio service as a 'hobby' and emphasizes it's hobby culture and aspects. However, it only take a quick read of Part 97.1 to clarify that the amateur radio service is based upon five principles, none of which is to provide anyone with a hobby. The principles are: a) value to the public as a voluntary noncommercial communications service, particularly in emergencies, b) promote the proven ability of amateurs to contribute to

the advancement of the radio art, c) encourage and improve advancing skills in communication and technical phases of the art, d) expand the existing reservoir of operators, technicians and electronics experts, and e) encourage the ability of amateurs to enhance international good will. Dr. Rappaport's stated interests are in narrowband CW operation. He does not mention interest in digital technologies, software defined radios, technology development, any of the many digital modes and systems, APRS, ARDEN, HSMM, packet radio, or the (digital) electronics maker phenomenon taking place today. I would assert that a growing portion of the amateur radio community is interested in these aspects of the service over CW operation. I am a long-time CW operator, and besides my interests in digital technologies, I operate CW regularly. Thus, I assert that Dr. Rappaport has more concern for the current playground he enjoys than the current developments that interests tomorrow's community.

Dr Rappaport has a reputation for promoting anti-Winlink information among the community. He repeatedly sends inaccurate technical information on Winlink, and technologies like Pactor around in support of his emotional dislike for Winlink, it's developers and administrators. We do not ask why. We state the facts when he gets them wrong. His propensity to wage campaigns should inform the Commission to weigh his comments appropriately. He stoops to suggesting hidden agendas, outrageous speculated financial links to motivate thoughts of ARRL-Waterman-Poor-SCS collusion and devious financial gains at the public's spectrum's expense. Weigh such arguments carefully. The Amateur Radio Safety Foundation and Winlink's operations, data, mail traffic, and people are open to investigation by the Commission and anyone who would request it. The ARSFI is Winlink's only means of support. The Board of Directors and all Winlink participants are volunteers.

The issues the ARRL and Steve Waterman raise are not about Pactor, or Winlink, but are out of genuine concern for finding a sane way for wide- and narrow-bandwidth signals to share the HF bands, mitigate their ability to cause mutual interference, and provide good service. Winlink not only uses Pactor, but Robust Packet, VHF/UHF Packet, APRS, SHF HSMM/WiFi, WINMOR, ARDOP, and very soon VARA. WINMOR, ARDOP and VARA are all have wideband characteristics. This is not about making Pactor 4 legal on the US amateur bands, it is about enabling a future of new and enabling technologies. Winlink people happen to develop them. The symbol rate limit is detrimental to developing better and faster technologies. It has served it's purpose while digital modes were in their infancy, but today, more service can be retrieved from the same 2.4 Khz bandwidth by Pactor 4 than Pactor 3, for instance. (Dr. Rappaport incorrectly states in his paragraph 22 that it is 2.8 kHz.) It moves twice the data per unit time in the same bandwidth. It has a +300 symbols/sec. rate. It is illegal only in the USA. The rest of the world manages spectrum by bandwidth rather than by emission type or content. But this is not just about Pactor 4.

There are a host of often-repeated themes in Dr. Rappaport's twenty-nine paragraph comment. One of the most egregious is his assertion that Winlink's (he says Pactor's) compression algorithms are proprietary, secret, and constitute effective encryption of over-the-air signals. Dr. Rappaport is unfamiliar with a Pactor modem and how Winlink software uses it. All connections to the modem are by the W8DED host mode, publicly

described. The modems have the ability to be used in a mode without the native compression modes. The command is the M0de command, documented on page 68-69 of the SCS PTC-Illusb modem manual. It also appears in other model manuals. Winlink software initializes the hardware in ASCII mode and runs it's B2 compression as part of the B2F message forwarding protocol. This is documented at <http://winlink.org/B2F> and on the F6FBB.org web site. B2F is a Winlink extension to the F6FBB Packet radio forwarding protocol, and the same public, documented compression algorithms have been used or years in amateur radio packet bulletin board systems. NOS, JNOS, BPQ32, FPAC, WORLI, and many others use the same algorithm known as LZH or LZ HUF. You can see the detailed description at <http://www.onicos.com/staff/iz/formats/lzh.html>. Downloading the many different source code files available by 'googling' LZH or LZHUF will inform about the history of the open sharing of the code over it's development. There are no amateur radio applications I am aware of that use an SCS Pactor modem with it's native compression in the USA. Only one of the three SCS 'MOdes' is proprietary, level 2. Level 1 is Huffman coding, and that's documented publicly on Wikipedia:

[https://en.wikipedia.org/wiki/Huffman\\_coding](https://en.wikipedia.org/wiki/Huffman_coding)

Because it is incompatible with the community of amateur users, few uses the built-in compression, and no responsible licensed amateur would, unless unknowingly. Professor Rappaport is wrong, so now evaluate all the 'encryption' and 'daily rules violations' he frequently repeats through his comments. A sharp technician answered a dare several years ago online, and used his resourcefulness to code a program that would monitor on-air Pactor 3 transmissions.

Also egregious is Dr. Rapapport's assertion (paragraph 23) that ARQ Pactor can not be monitored on the air. In fact, if he had read the Pactor modem manual he would have learned that the 'Listen Mode' is designed just for reading and decoding every ARQ packet with enough Signal-to-Noise. Dr. Rappaport is wrong again. This can be done regardless of which native compression mode is used (if used).

Background on the compression schemes used in the SCS modem is covered in chapter 15 of the afore mentioned manual, and model's as well.

Many of the stories of past comments on other related Dockets that Dr. Rapapport relates are glossed over and accepted as valid, However, I find it very hard to believe a comment from an unlicensed yachtsman saying he is just looking for free email at sea is not planted by the opposition, and 'fake'. There are too many of these to believe, and I suspect are the product of a 'campaign' brought to the FCC comments site.

We practice openness and self-regulation at Winlink. An army of licensed sysops—over 2000 worldwide on any given day—manage their stations according to their local rules, monitor the traffic going through their stations (they are responsible for it) and call out and inform any rule violators found. It happens, just as in any other facet of amateur radio. But because we have so many active at it, with on-line tools to manage at the Winlink.org site, I will suggest we have fewer problems that most other facets of the

amateur service in the USA, or worldwide. Three-to-four Winlink system administrators also oversee monitoring and are involved daily. Offenders are reported to their licensing authority, and banned from the using the system. We gladly open the Winlink system to any who care to inspect, any time!

Professor Rappaport's attempts to diminish the ARRL/ARC operation in Puerto Rico is to be taken in light of his bias. I was online and on-air during the deployment with the aim of optimizing the Winlink system for they use and help them through training snags. Mike Burton, N6KZB, another on out team, assisted greatly. We dedicated two 'superstations' with large antennas in Mexico and Texas, to the team in Puerto Rico. Of the 22 operators sent, all but five handled disaster recovery and organizational traffic, and thirteen passed a total of over five hundred messages over three weeks. Joe, W1WCN acted as HQ operator, and can testify who did what, and how well, as can I. Dr. Rappaport's third-party characterizations need to be discounted heavily. Stress and personalities inflamed a few as seen on the videos and on Reddit, but that is common with all major disaster recovery operations. Most are not used to operating in chaos.

Dr. Rappaport is also quick to criticize Winlink and HF digital operations for emergency use, saying it 'occasionally' contributes. Stories of lives and property saved are posted on the Winlink web site <https://winlink.org>. There is not a week that goes by without something surfacing like a boat the USCG has asked us to locate, a family thanking us for getting information to them or from them in an emergency, and there are many, many untold stories of Winlink's involvement in every major hurricane, flood, and wildfire. EOCs and emergency managers are well acquainted with Winlink across the US, They have many stories about the value of HF contingency communications in a communications emergency. Dr. Rappaport dies not recognize it, but Puerto Rico had a communications emergency.

Lastly, I completely agree with Dr Rappaport in his paragraph 28. "The Commission should look at all three IARU band plans for applicable standards." The Commission should reform it's amateur radio spectrum management to adopt regulation by bandwidth, not emission type or content. Only that will get us out of the conflicts we have today.

Thank you for the opportunity to comment.

Sincerely,

Loring Kutchins, W3QA  
President,  
Amateur Radio Safety Foundation, Inc.

