

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

**In the Matter of**

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**RESPONSE EFFORTS UNDERTAKING ) ET Docket No. 17-344  
DURING THE 2017 HURRICANE SEASON )**

Comments by Steve Waterman, Winlink Radio Email System  
Administrator

1. Personal Background

I, Steve Waterman, have had an Amateur radio license since 1955. My interest in Amateur radio led me to seek a career as both vice president of an independent telecommunications company providing network design software and consulting, and as a vice president for a non-regulated subsidiary of a Bell Operating Company. Currently, in my retirement, I serve as a volunteer for various civil authorities, including county and state governments' emergency management (TEMA), my Homeland Security District Communications Committee, and Federal agency committees such as the FEMA RECCWG and DHS NCC SHARES. Thus, my profession has always been closely related to my hobby and now, my retirement volunteer work.

As the immediate past President of the ARSFI, a 50(c)3 organization that exists to fund *the Winlink Radio Email System*, I have been involved with Winlink and its predecessors, since their inception. Currently, Winlink supports both Amateur radio and non-Amateur services, worldwide, including emergency services for US civil

authorities at all levels, and their NGO critical infrastructure partners. I currently also serve as a member of the Winlink development team, and as the worldwide Winlink administrator for both Amateur radio and government radio services. I have been a member of the ARRL for over 55 years, and currently serve as an Assistant Director in supporting the ARRL.

Although I did not physically deploy during any of these recent hurricane communications events, I was involved as the Winlink administrator with the ARRL deployment to Porto Rico, the Southern Baptist Disaster Relief deployments, the Salvation Army deployments, and the maritime community all on the Amateur spectrum, and the DHS NCC SHARES deployment on NTIA channels. My comments follow:

### **Introduction:**

The Federal Communications Commission asked for input regarding communications during the 2017 Hurricane Season, and for the volunteer communicator (Amateur radio operator), the Commission asks two questions: (1) To what extent were response efforts facilitated by Amateur Radio operators; and (2) Going forward, should efforts be made to increase the use of Amateur Radio services in connection with the planning, testing and provision of emergency response and recovery communications?

Below is my response on several issues:

1. Professional ESF2 employees, who also hold an Amateur license, have severe restrictions on their ability to use the Amateur spectrum under FCC Part 97.113.

2. Also under FCC Part 97.113, HIPAA and other non-public data transfer is not allowed due to the inability of the control operator to obscure data. Most information sent during any casualty event is such data. Only health and welfare data is left for public observation. If the Commission wishes to increase the capabilities of the Amateur operator to provide emergency communications, this is an important issue.

3. In Part 97.221, the amount of band space allocated to higher speed data transfer is severely limited. This needs review if Amateur radio is to play any role in bridging to the Internet email system, or any other relevant digital data transfer during any real-life emergency. This is another important issue for emergency communications.

4. The Commission has gone silent with RM-11708. It has been four long years in suspension. There is absolutely no technical reason for continuing this suspension. The Commission had it right in RM-11708, which is not relevant until it approves the deletion of the symbol rate rule.

### **Background:**

The Amateur service has been a Public Service, and not classified as a true emergency service, mainly due to the restrictions imposed in FCC Part 97:

**Part 97.113(a)(I)** A station licensee or station control operator may participate on behalf of an employer in an emergency preparedness or disaster readiness test or drill, limited to the duration and scope of such test or drill, and operational testing immediately prior to such test or drill. Tests or drills that are not government-sponsored are limited to a total time of one hour per week; except that no more than twice in any calendar year, they may be conducted for a period not to exceed 72 hours.

**Part in 97.113 (a)(4)** as "for the purpose of obscuring meaning,"

#### **§97.221 Automatically controlled digital station.**

(a) This rule section does not apply to an auxiliary station, a beacon station, a repeater station, an earth station, a space station, or a space telecommand station.

(b) A station may be automatically controlled while transmitting a RTTY or data emission on the 6 m or shorter wavelength bands, and on the 28.120-28.189 MHz, 24.925-24.930 MHz, 21.090-21.100 MHz, 18.105-18.110 MHz, 14.0950-14.0995 MHz, 14.1005-14.112 MHz, 10.140-10.150 MHz, 7.100-7.105 MHz, or 3.585-3.600 MHz segments.

(c) Except for channels specified in §97.303(h), a station may be automatically controlled while transmitting a RTTY or data emission on any other frequency authorized for such emission types provided that:

(1) The station is responding to interrogation by a station under local or remote control; and

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

**97.301(f) (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.

The Commission has recently altered Part 97.113(a)(1) to allow government employees, who are being paid for their time to remain on the Amateur bands during emergencies and emergency exercises to some extent, but not critical infrastructure partners, who, according to FEMA, are the majority of services provided during an emergency and immediately thereafter. This hampers Amateurs since most all emergencies involve a formal Incident Command Process, and those leading real-life incidents have no time or tolerance for such restrictions. Thus, the lack of dependency on Amateur radio use even when it is the only means of communicating.

Part 97.113(a)4 also restricts agencies using Amateur radio when they have no other reliable local communications infrastructure because it will not allow these agencies to obstruct the data that is being sent. Such data can be sensitive and need obscuring. HIPAA information exchanged between ICS Shelters, hospitals and others cannot be legally sent. Data between agencies and Intra-agency information may not be protected from the public. This severe restriction certainly limits the ability of a Communications Unit Leader to utilize Amateur radio, even though it may be his only option.

Part 97.221 allows a very small spectrum for actual data transfer, which falls under this ruling. For example, how much high-speed data at 2.4 KHz (Factor 3) can be sent and received on the 40 Meter Part 97 spectrum totaling an allowable 5 KHz total? But what about about two, three or a hundred such stations all operating simultaneously? After all, 2.4 KHz is the average bandwidth for a voice LSB signal. Why would the modern Amateur not want more than 5 KHz on 40 meters or 15 KHz on other HF Amateur bands for digital operations such as data transfer? Considering the rise in digital communications in today's world, giving the users of Amateur

radio in the United States a total 5 to 15 KHz for selected bands, renders such communications highly ineffective. This may be partially remedied to some extent by deletion of the antiquated and highly restrictive 300-baud symbol rate rule that the FCC eliminated with a 60 day STA, recently.

Regarding Part 97.301, the commission has also placed a NPRM, RM-11708, up for comments, but since it was adopted in July 27, 2016, no response has occurred. *It hangs in limbo*. In the opinion of this individual, their written order was exactly what was needed in order to provide the speed and accuracy necessary for emergency communications, and on a broader scale, for the advancement of the radio art.

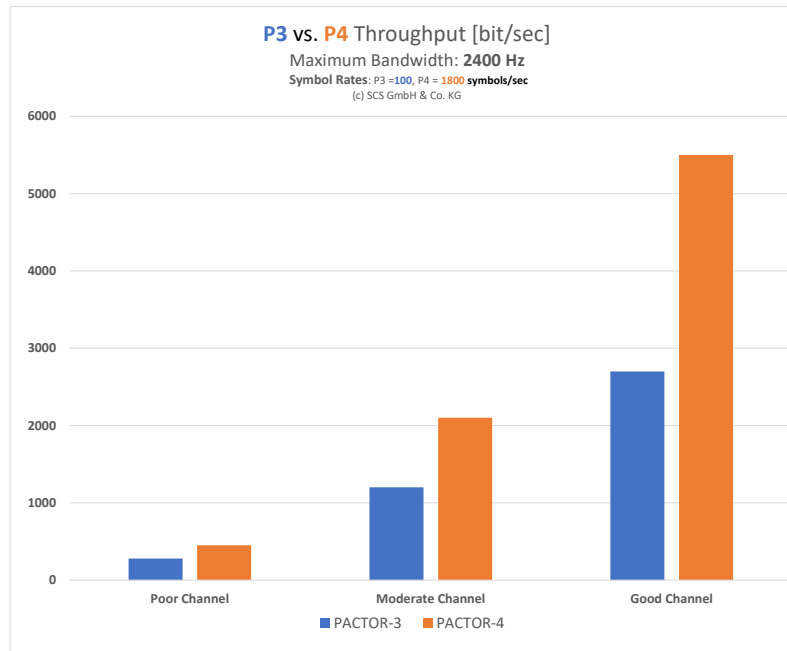
1. RM-11708 did not restrict bandwidth while eliminating the 300 baud symbol rate rule. Fortunately, the Commission has not limited bandwidth on any mode other than automatic operation outside the Part 97.221 sub-bands, and has stated in several Rule-Makings that it “impedes the Radio Art.”

2. The Commission has gone silent either because of the negative comments, which for the most part, had nothing to do with the symbol rate rule, or they just deemed it irrelevant, which is strange since they offered the 60 day STA in order to more effectively handle data transfer with no additional bandwidth.

To take 18 x 100 baud tones with a bandwidth of 2.4 KHz and a maximum speed of 2700 bps, and expect it to be as efficient as one 1800 baud tone with the exact same 2.4 KHz bandwidth, but with a speed of over 5500 bps.

In other words, the *accumulated* symbol rates of Pactor 3 and Pactor 4 are identical, and at the same 2.4 KHz bandwidth. Pactor 4 utilizes 1 carrier modulated at 1800 symbols / second. ( $R_{\text{symbol}} = 1 * 1800 = 1800$  bps). Pactor 3 utilizes up to 18 carriers modulated at 100 symbols / second. ( $R_{\text{symbol}} = 18 * 100 = 1800$  bps). Nevertheless, the Pactor 4 waveform is the better one regarding the channel capacity of selective fading HF channels. It allows very

good "adaptive equalizing", and thus allows better exploitation of the channel capacity. And, it has a lower Peak-to-Average-Power Ratio (PAPR, Crest Factor). Pactor 4 will generate LESS adjacent channel interference compared to Pactor 3.



Obviously, the FCC must agree with their RM-11708 ruling since they did allow the use of protocols, which exceed the current 300 baud symbol rate rule for the 60 day period following the recent disaster in Porto Rico and its adjacent areas. *The problem was that very few if any Amateurs deployed had such protocols available. Such hardware is not in the toolbox, currently, simply because it is not allowed. How could it be?*

The Amateur service is now quite different than it was when the symbol rate rule was written. Modern digital OFDM and other similar protocols used are no longer applicable to the direct relationship between symbol rate and bandwidth. However, the rule does definitely impede the ability to provide effective protocols, including those used by our own government. The United States is the only

country that restricts data communications by such a rule. It is the only country that will not allow Factor 4.

### **Conclusion:**

The Commission obviously recognizes the importance of enhancing the ability to provide digital data transfer over the Amateur spectrum. They have both offered RM-11708 since July of 2016, and more recently, have opened up the symbol rate rule restriction during a 60 day period with the intent of allowing higher speed data to be used during these hurricane caused casualty events.

For an *initial* recommendation when using Amateur radio for a last resort means of communicating when no other communications infrastructure is available, including the bridging email and their attachments over HF radio to the Internet, I would ask the Commission to finish its work with RM-11708, and allow those who have an interest to provide equipment that would allow the use of higher speed protocols, and at the same bandwidths that are now being used.

At some point in the future, these other restrictions mentioned should also be reviewed, hopefully, to allow the Amateur community to be better equipped to assist with the emergency communications processes deployed in today's incidents.

Amateur radio can be a valuable asset to the communications process during many incidents where local communications is not available. It is much easier to integrate it into the NIMS ICS when current severe restrictions are not imposed. The first of these, which also contributes to enhancing the radio art would be the deletion of the current symbol rate rule per RM-11708.

Thank you for offering the opportunity to comment.