TIMEWAVE
TECHNOLOGY INC.

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

In the Matter of   )
)   RM-11831
Amendment of Part 97 of the   )
Commission's Amateur Radio Service   )
Rules to Reduce Interference and   )
Add Transparency to Digital Data Communications   )

To: The Chief, Wireless Telecommunications Bureau
Via: ECFS

<u>COMMENT</u>

Randall R. Gawtry, President, Timewave Technology Inc., and Partner, HRD Software, LLC., pursuant to Section 1.405 of the Commission's Rules (47 C.F.R. §1.405), hereby respectfully provides comments on
Petition for Rulemaking, RM-11831.

26 April 2019

Re: Comment on RM-11831

Thank you for the opportunity to comment on RM-11831. This letter represents my personal position and the position of my two companies on this matter.

My credentials include more than 50 years of field and laboratory experience in data and voice communications, signal processing and instrumentation covering the frequency ranges of <1 Hz to >10 GHz. This work encompasses physiological, subterranean, underwater, fresh and saltwater surface, terrestrial, fixed structure, aeronautical, and space environments. Clients include a multitude of industries, medical companies, commercial entities, government administrations and all branches of the U.S. military and many government operations which shall remain unnamed. My education includes a B. of Physics and three years of Electrical Engineering graduate work at the University of Minnesota as well as MBA from the University of St. Thomas in Minnesota. Past employers include North American Rockwell Corporation, Cubic Corporation and Electronic Design Company.   I have been president of Timewave Technology Inc. since its inception in 1984 and also have been an owner of HRD Software, LLC. since its inception in 2012.   The latter two companies both design, manufacture and sell products

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to the amateur radio market worldwide. I am an author and co-author of several papers in the fields of instrumentation and communications. I hold an Amateur Extra Class license and have been an amateur radio operator for 59 years.

I have great concern about the intent of the RM-11831 to modify the current Part 97 regulations with apparent little regard for the well-known principles of science and engineering and for the application of those principles to further the art of amateur radio operation.

The first requirement to maintain and/or modify a well-designed environment is the necessity of accurately assessing the current state of the environment. That assessment is clearly lacking in RM-11831. This assessment should be conducted by an independent, technically competent engineering team.

It is well worth noting that RM-11831 will have no effect on amateur radio operations in other countries in the world. There are no electromagnetic barriers at our borders. Signals freely propagate around the world. Recall the days of shortwave and commercial stations that blanketed the airwaves from the other side of the world as well as from a few miles on the southern side of our borders. Propagation may vary from year-to-year and day-to-day but we cannot repeal the laws of physics that govern it. Conflicting regulations between our country and other countries will only worsen amateur radio operating conditions.

It has been claimed that the ACDS stations transmit without first listening on their frequency. The stations do listen on their frequencies and do not transmit unless the frequency is clear. What hasn't been considered is that apparent transmission without listening is a direct result of unfavorable and/or rapidly-changing propagation between at least two of the stations involved in the on-the-air collision. To assert this is a new phenomenon unique to ACDS stations is astounding! This situation has been part of the amateur radio environment since it began more than 100 years ago. Multiple operating strategies have evolved to accommodate these conditions in amateur radio operation as well as in commercial, government and military frequency services. Trying to avoid on-the-air collisions by restricting ACDS operations to a small band of frequencies is likely to guarantee that most of the communications (including emergency traffic) will be throttled to the point it will become inefficient when it is most needed.

It is also claimed that the commercial traffic is also sent over the Winlink system. As indicated .in the ARSFI response, the traffic is most efficiently monitored at the servers so that appropriate action can be taken to stop it. Further, as an indication of what can be

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done using the current technology, an independent group (Volunteer Monitor Program) under the auspices of the ARRL is being formed to help monitor and self-police the amateur bands. The combination of these efforts with the support of the amateur radio industry will build a better operating environment (and may help rid us of some of the issues that are not related to the topic of this discussion!) My companies strongly support this new organization.

The requirement that any mode that an operator can't immediately decode should not be allowed does not recognize how amateur radio technology advances. The same argument could be heard in the early 1960s when SSB was beginning to be a popular mode and not all amateur radio operators had SSB equipment, whether by choice or by economic necessity. Ultimately most operators bought SSB equipment. When packet radio became popular, they didn't have free packet software they could download from the internet and load into their computers. Most operators quickly invested in Terminal Node Controllers. In fact, it is extremely difficult to decode Morse code that is hand-sent with a bug (a mechanical semiautomatic keyer dating to the 19th century) or straight key above 50 words per minute. Most hardware or software decoders still have some difficulty with those signals and only a few of us can copy them by ear. Should we outlaw hand-sent high-speed Morse code? (It is worth noting that an *ex post facto* examination of Morse code communications is feasible, just as it is with PACTOR 4 or any other data mode used today.)

Furthermore, there seems to be some confusion about the difference between encryption and encoding.

Encryption is the process of manipulating a signal by digital or analog means such that the data therein cannot be recovered by a third party without the possession of the corresponding decryption tools. The intent is to hide the data.

Encoding is the process of manipulation a signal to permit the data to be added to the signal so that it may be transmitted through a channel and the data recovered by a receiving party with the appropriate decoding tools. We call this latter process modulation and demodulation. Its intent has nothing to do with encryption and decryption. The general intent is to provide a method that many operators can use for their communications with each other. They will require the necessary modulators and demodulators. The availability and not the cost of the modulators and demodulators should be the determining factor in the use of a given mode.

Note that a skilled practitioner of hardware and software engineering could duplicate any of the modes currently used in amateur radio today. It would not necessarily be easy,

economically feasible or even legal if patents were involved, but many such people exist in the technical world.

Also note that if any two operators choose to use encryption and decryption of the data before and after <u>any</u> modulation/demodulation process, it may be illegal in certain services such as amateur radio.

It appears that some operators expect free software for operation of some modes. If they find someone to volunteer to give them free software that has not been mis-appropriated from its rightful owner, they should do so. If they expect to have the long-term support of the manufacturers of hardware and software data controllers and modems, they should expect to pay for those products, just as they do for radios. No manufacturer is going to give away the details of how to build his product that he may have spent many years and hundreds of thousands (or even millions) of dollars in development. That includes both software source code and hardware products. He will gladly sell you his products that contain his intellectual property so you can enjoy the benefits of his efforts. FCC regulations should support both the use of free and open source software as well as the economic environment that enables the development and production of equipment and software by commercial entities. The combination is synergistic and supports the technical, public service and economic growth of the amateur radio service.

RM-11831 should be dismissed.

It is detrimental to the existing and evolving emergency communication systems in our country and the world.

It is detrimental to the technical growth of the amateur radio service and its participants.

It is detrimental to the economic growth of the amateur radio industry.

It is detrimental to the world-wide communications community that shares the ionosphere.

Respectfully,

Randell R. Gawtry

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