

Dear FCC,

I am a 51 year old Amateur Extra Class operator and have held an Amateur Radio license for 25 years. I have no pecuniary interest in any of the relevant technologies. I oppose RM-11831 and any other bill that would restrict Winlink or other ARQ-type digital modes. Further, I oppose any bill that removes or restricts any Amateur Radio Digital Modes.

(1) SUPPORT FOR DIGITAL MODES: As with all other forms of modern communication (i.e. music, video, telephony, etc.), it is inevitable that Amateur Radio will gravitate from analog modes to digital modes, over time. Digital modes and their promotion are important to the Amateur Radio hobby for the following reasons:

(1a) TECHNOLOGICAL ADVANCEMENT: In general, digital modes allow for higher absolute performance gains compared to analog modes. Once analog technology reaches its limits, digital technology continues to advance to higher levels. This is important for the advancement of Amateur Radio - both from an operational as well as an educational point of view.

(1b) COST: In the (hypothetical) case where an analog mode and a digital mode offer similar performance, the cost of the analog mode equipment will typically be substantially more expensive than the digital mode equivalent.

(1c) SUPERIOR PERFORMANCE: Digital modes allow for communication that is simply not possible with analog modes. For example, the digital modes of Pactor modems allow Amateur Radio operators to communicate with one another in situations where an analog mode of operation would simply not "get through". For example, often an analog mode signal is simply indiscernible from atmospheric noise; whereas, a digital mode signal can be discerned even when the atmospheric background noise is considerably "louder" than the digital mode signal itself. This is important for Amateur Radio, as it allows Amateur Radio operators to communicate at farther distances, under more challenging conditions, and with a higher degree of certainty. This is especially important during emergency operations; whereby, Amateur Radio operators provide vital communication assistance when other forms of communication are unavailable and/or disrupted. Providing emergency assistance to communities/states/nations in times of need is a cornerstone of the Amateur Radio community. Any tool (such as Pactor Modem digital modes, compression, ARQ, and Winlink) that improves an Amateur Radio operator's ability to perform these vital services is welcome and should not only be preserved but also advanced/improved in capability.

(1d) EFFICIENT USE OF SPECTRUM: For a given function, digital modes often consume less bandwidth than analog modes. This often allows for more efficient use of the radio spectrum.

(1e) REDUCED CONSUMPTION OF FREQUENCY: Digital modes are often more efficient than analog modes; therefore, more information can be transferred in a shorter period of time - the result is that an Amateur Radio operator can "get on, and get off" of a particular frequency, which in turn frees-up the frequency for use by another Amateur Radio operator. For example, using Pactor modem (digital mode) technology, an Amateur Radio operator can send a multi-page email message in a matter of a few seconds; thereby, only needing to use a given radio frequency for a few seconds. By contrast, relaying the same information by speaking into a radio's microphone, would take minutes rather than seconds. Furthermore, relaying the same information via Morse code might take hours. Because information is transferred less efficiently, these analog modes actually consume a given radio frequency for a longer period of time; thus, fewer Amateur Radio operators are able to use the given radio frequency in a given period of time. The use of ARQ digital modes results in even lower total transmission times than non-ARQ digital modes, and, therefore, even further reduces frequency consumption.

(1f) U.S. COMPATIBILITY / COOPERATION: Adoption of RM-11831 (and related filings) would cause US Amateur Radio operators to be less compatible with the Amateur Radio operators of other nations, which would be a detriment to global cooperation. This would negatively affect Amateur Radio both as a hobby and as a valued resource of emergency communications.

(1g) U.S. CAPABILITY: Should RM-11831 (and related filings) be adopted, Amateur Radio operators in other nations will continue to use digital modes (including ARQ-based digital modes) and will continue to advance their own capabilities while leaving US Amateur Radio operators behind.

(1h) U.S. CREDIBILITY: Should RM-11831 (and related filings) be adopted, the United State's status on the world stage will certainly be reduced as other nations become the innovators and the U.S. is left behind.

(2) SUPPORT FOR COMMERCIAL HARDWARE/SOFTWARE: While Open-Source software offers an array of functionality to many Amateur Radio operators, it is unrealistic to expect that all software used by Amateur Radio operators should be open-source. Commercial (non-open-source) software provides the following benefits to the Amateur Radio hobby:

(2a) RESEARCH & DEVELOPMENT: The days of ham radio operators building ALL of their own equipment from scratch and writing ALL of their own software is for the most part over. Nearly all Amateur Radio operators purchase most their equipment from one or more manufacturers. These manufacturers invest heavily in research and development (R&D), and Amateur Radio operators benefit from this R&D in the form of more advanced/capable hardware and software. It is to be expected that these manufacturers will keep some or all of their hardware and software proprietary to protect competitive advantages.

(2b) COMPETITION: Allowing manufacturers to profit from the fruits of their labor, encourages competition between existing manufacturers and encourages new start-up companies to join the industry. In the end, Amateur Radio operators benefit from better technology, higher quality equipment, more variety, and lower costs.

(2c) ADVANCEMENT OF HOBBY: Many open-source projects die before they get off the ground and/or are abandoned when their developer no longer has the time/energy/resources to continue development. However, a manufacturer, who may receive a return on their investment, is motivated to carry projects to completion and to employ adequate resources to do so in a timely fashion. This results in the continuous advancement of the Amateur Radio hobby and the associated technology. That said, some highly-motivated Amateur Radio operators will continue to be inspired by commercial software and motivated to write open-source software to mimic or possibly even surpass the capabilities of commercial software. In turn, commercial software providers will strive to stay ahead of free and open-source software in order to justify the cost of their products. Thus, the availability of both open-source and commercial (i.e. proprietary) software, ensures the best environment for the advancement of the Amateur Radio hobby.

(2d) SUPPORT: A manufacturer of a paid product or service has a certain level of responsibility to support their customers. Open-source developers have no responsibility whatsoever to support their creations. While some open-source projects do enjoy a nice level of support, there is no requirement or even expectation that an open-source project will offer support now or in the future. While Amateur Radio licensees are often very self-sufficient and are encouraged to increase their skills in the hobby, no one can be an expert in every area of the hobby. Further, most Amateur Radio operators enter the hobby with far less than expert-level

skills in even one area of the hobby. It is vital that Amateur Radio operators are able to grow and innovate at their own pace - this is often best achieved by purchasing some equipment and/or software that is a "known quantity" and which is professionally/commercially supported, while being more experimental in other areas of the hobby. For example: If an Amateur Radio operator has a high interest in Antenna design, the Amateur may choose to buy a commercially-available Radio Transceiver which is complete, functional, and professionally supported, while also choosing to build his/her own antenna using a custom design and with no commercial support. This is a very typical scenario that allows for growth and innovation, while not overwhelming the Amateur Radio operator to the point of disheartenment.

(2e) CHOICE: When both open-source software and commercial software is available and permitted within the hobby, Amateur Radio operators benefit by having greater choice.

(3) "COMPRESSION NOT EFFECTIVELY ENCRYPTION": Effective encryption is only achieved when data moves from a sender to a recipient in such a way as to explicitly prevent ANY 3rd party from gleaning the meaning of the data even if the 3rd party has access to the data stream. If there is any point between the sender and the recipient that allows ANY 3rd party to glean the meaning of the data that is being sent between the sender and the recipient then by definition there is no effective encryption. Compression is simply a method of sending data more efficiently; it is not a method of sending data more privately. Furthermore, Amateur Radio operators are permitted to use abbreviations and acronyms so long as the abbreviations/acronyms are not expressly intended to obscure the meaning of a communication. Compression meets this standard, as compression is expressly implemented to achieve better communication efficiency/speed; compression is not expressly implemented to achieve obscurity - much less encryption.

(3a) DIGITAL MODES NOT UNIQUE SITUATION IN AMATEUR RADIO: As its name suggests, Morse CODE is a method of encoding data (e.g. words, numbers, punctuation, concepts, etc.) into a form that offers the sender and the recipient distinct advantages over other forms of communication (e.g. voice). While all Amateur Radio operators are free to learn Morse Code, many (if not most) Amateur Radio operators do not learn Morse Code. Of those Amateur Radio operators who do learn Morse code, many only learn to send and receive Morse code at a low rate of speed or at a reduced level of comprehension. The fact that many/most Amateur Radio operators could not "decode" a Morse Code conversation between two other Amateur Radio operators should not be grounds for disallowing the use of Morse Code on the Amateur Radio bands. Further, an Amateur Radio operator who is "eavesdropping" on a Morse Code conversation between two other Amateur Radio operators is not obliged to require the two ham operators (who are conversing via Morse Code) to slow down simply because he/she wishes to "monitor" the conversation but is incapable of "handling" the speed and/or complexity of the conversation.

Like Morse Code, digital modes are a method of encoding data (e.g. words, numbers, punctuation, concepts, etc.) into a form that offers the sender and the recipient distinct advantages over other forms of communication (e.g. voice). While all Amateur Radio operators are free to learn computer programming, many (if not most) Amateur Radio operators do not learn computer programming. Of those Amateur Radio operators who do learn computer programming, many never progress beyond a basic level. The fact that many/most Amateur Radio operators could not "decode" a digital (e.g. compressed, etc.) conversation between two other Amateur Radio operators should not be grounds for disallowing the use of Digital Modes on the Amateur Radio bands. Further, an Amateur Radio operator who is "eavesdropping" on a Digital Mode conversation between two other Amateur Radio operators is not obliged to require the two ham operators (who are conversing via a Digital Mode) to reduce the

complexity of their conversation simply because he/she wishes to "monitor" the conversation but is incapable of "handling" the complexity.

(4) WINLINK ALREADY ALLOWS FOR MONITORING: Winlink email is monitored by the gateway operators to ensure compliance with FCC rules.

(4a) GUILTY UNTIL PROVEN INNOCENT?: The proponents of RM-11831 seem to believe that Amateur Radio operators who use Winlink are guilty until proven innocent.

(4b) SUPER ROBUST MONITORING IN PLACE: While I believe it goes above and beyond the FCC requirements, ANY licensed Amateur Radio operator (even those operators who do not use Winlink) may monitor the messages that pass through the Winlink system. In fact, the ability to monitor all messages via the Internet gateway allows for much more robust monitoring than could be accomplished by monitoring the direct radio communication, as radio communication reception is limited by distance and signal quality; whereas, Internet-based monitoring has no such limitation.

In summary, the promotion of all digital modes - including ARQ - will continue to become increasingly important to the advancement of the Amateur Radio hobby as a whole and to Amateur Radio operators' contributions to Emergency Communications and to global compatibility. Progress requires change, and people, in general, do not like change...at least not in the beginning. The FCC should only consider the expansion of digital modes and not the reduction of same.

Respectfully,

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