

Winlink Legality Concerns

The recent RM-11708 proposal has brought a lot of focus on automated digital stations like Winlink with serious concerns about their legality and fit into ham radio. While not a lawyer, the comments in this document are meant as guidelines for a detailed analysis by appropriate ARRL and FCC personnel. Before we look at rewarding automated digital stations with increased bandwidth, we need to understand what they are doing, if it's in the spirit of ham radio and examine their legality.

Part 97 - Interfering (QRMIing) Existing QSOs

Automated digital stations lack proper busy frequency detectors. They fire up at will generating interference to existing human to human communications. All one has to do is to operate CW or RTTY and you will experience QRM from automated digital stations. Recently, during the costly "FT5ZM" Amsterdam Island DXpedition, one of these automated RMS Express stations was very active sending and receiving routine emails directly on the transmit frequency of FT5ZM in the 40M foreign phone band, essentially jamming the DX station for well over an hour. Interference has also been reported to the recent ARRL portable centennial operations. During the recent ARRL RTTY RU contest, I was QRMed on 80, 40, 20 and 15 meters by automated digital stations. Since the interfering stations are unattended, they will simply interfere for hours so the only option for a human operator is to QSY and find another clear frequency.

There are FCC rules on interference and ARRL guidelines for considerate operators. Automated digital stations do not adhere to either set of rules.

Part 97 - Competing with Commercial Services

FCC Part 97.113 deals with Prohibited Amateur Communications, the rules specifically state routine communications are prohibited in cases where other radio services are available.

FCC Part 97.113 a: No amateur station shall transmit, (5) Communications, on a regular basis, which could reasonably be furnished alternatively through other radio services.

If you peel back the Winlink EMCOMM packaging, the primary use of HF Winlink is a global Internet Service Provider, ISP. Winlink markets itself to boat owners and claims to be used by over 10,000 sailors. (http://www.dtreg.com/Winlink_Radio_Network.pdf) Unfortunately, there are other competing commercial services available performing the same function:

1. Yachtsmen can use a "radio service" called Sailmail that uses a SSB HF transceiver on the boat in the authorized marine bands. Sailmail charges an annual vessel fee of \$250.
2. Yachtsmen can use satellite based data services.

Winlink is currently providing a cost-free amateur radio based communication alternative to commercial services for yachtman, in violation of FCC Part 97.113 a

Part 97 - Operating outside unattended subband

The follow chart shows published frequencies and modes for unattended Winlink stations that are operating Pactor 3. The bandwidth of Pactor 3 is 2.2 KHz which is illegal per part 97 on the operating frequencies listed below.

Callsign	Frequency	Mode	Hours	QTH
AJ4GU	10,122.900 KHz	Pactor 1,2,3	00-23	McDonough, GA, USA
K0SI	10,131.500 KHz	Pactor 1,2	00-23	Columbia, mo, usa
K0SI	10,138.000 KHz	Pactor 1,2,3	00-23	Columbia, mo, usa
K0SI	10,139.000 KHz	Pactor 1,2,3	00-23	Columbia, mo, usa
K1SGA	10,139.500 KHz	Pactor 3	00-23	White River Jct, VT, USA
K6IXA	14,063.900 KHz	Pactor 1,2	00-23	Atwater, CA, USA
K6IXA	14,063.900 KHz	Pactor 1,2	00-23	Atwater, CA, USA
K6IXA	14,064.000 KHz	Pactor 3	00-23	Atwater, CA, USA
K6JGL	14,065.900 KHz	Pactor 1,2	00-23	torrance, ca, usa
K6JGL	14,066.500 KHz	Pactor 1,2,3	00-23	torrance, ca, usa
K7DAV	14,066.900 KHz	Pactor 3	00-23	Farmington, UT, USA
K7DAV	14,096.200 KHz	Pactor 1,2	00-23	Farmington, UT, USA
K7DAV	14,097.000 KHz	Pactor 1,2,3	00-23	Farmington, UT, USA
K7EK	14,097.500 KHz	Pactor 1,2,3	00-23	Spanaway, WA, USA
K7EK	14,098.000 KHz	Pactor 1,2,3	00-23	Spanaway, WA, USA
K7EK	14,098.500 KHz	Pactor 1,2,3	00-23	Spanaway, WA, USA
K7EK	14,098.700 KHz	Pactor 1,2,3	00-23	Spanaway, WA, USA
K8KHW	14,098.700 KHz	Pactor 1,2,3	00-23	Newport, Ohio, USA
KC4TVO	18,098.900 KHz	Pactor 3	00-23	Bakersville, NC, US
KK5AN	3,580.000 KHz	Pactor 3	00-23	Killeen, Texas, Bell
KK5AN	3,584.500 KHz	Pactor 3	00-23	Killeen, Texas, Bell
N4MEH	7,062.900 KHz	Pactor 1,2,3	00-23	ANDERSON, SC, ANDERSON
N4MEH	7,063.040 KHz	Pactor 1,2,3	00-23	ANDERSON, SC, ANDERSON
N4MEH	7,065.900 KHz	Pactor 1,2,3	00-23	ANDERSON, SC, ANDERSON
N7YRT	7,065.900 KHz	Pactor 1,2,3	00-23	Valley, WA, USA
N7YRT	7,066.900 KHz	Pactor 1,2	00-23	Valley, WA, USA
N7YRT	7,067.500 KHz	Pactor 3	00-23	Valley, WA, USA
N7YRT	7,067.900 KHz	Pactor 1,2,3	00-23	Valley, WA, USA
W1EO	7,069.500 KHz	Pactor 1,2,3	00-23	carlisle, ma, usa
W1EO	7,072.000 KHz	Pactor 1,2,3	00-23	carlisle, ma, usa
W1EO	7,075.900 KHz	Pactor 1,2,3	00-23	carlisle, ma, usa
W1EO	7,076.900 KHz	Pactor 1,2,3	00-23	carlisle, ma, usa
W5KAV	7,076.900 KHz	Pactor 1,2,3	00-23	Rochester, Washington, United States
W5KAV	7,083.000 KHz	Pactor 1,2,3	00-23	Rochester, Washington, United States
W5SEG	7,085.000 KHz	Pactor 1,2,3	00-23	Seguin, TX, USA
W5SEG	7,089.000 KHz	Pactor 1,2,3	00-23	Seguin, TX, USA
W5SEG	7,089.000 KHz	Pactor 1,2,3	00-23	Seguin, TX, USA
W5SEG	7,096.000 KHz	Pactor 1,2,3	00-23	Seguin, TX, USA
W5WSR	7,096.500 KHz	Pactor 1,2,3	00-23	Lake Jackson, Texas, USA
W5WSR	7,099.800 KHz	Pactor 1,2,3	00-23	Lake Jackson, Texas, USA

Rules for then control operator side of automatic digital stations can be found in 47 CFR 97.3(a) definitions for remote operations:

"(39) Remote control. The use of a control operator who indirectly manipulates the operating adjustments in the station through a control link to achieve compliance with the FCC Rules."

"(44) Telecommand. A one-way transmission to initiate, modify, or terminate functions of a device at a distance."

"(45) Telecommand station. An amateur station that transmits communications to initiate, modify or terminate functions of a space station."

Note that the FCC doesn't define a "remote control station" and remote control is not an authorized transmission under 47 CFR 97.111 so we have to assume that the station remotely controlling the automated digital stations is a telecommand station (telecommand is an authorized transmission per 47 CFR 97.111(b)(3)).

Telecommand stations fall under 47 CFR 97.213 where (a) says that if the station being telecommanded does not have a wireline control link, then the link must be done via an auxiliary station and (b) says that there must be "Provisions [...] incorporated to limit transmission by the station [under telecommand] to a period of no more than 3 minutes in the event of malfunction in the control link."

I suspect that the Winlink probably meets (b) but (a) is a problem because, per 47 CFR 97.201(b), "An auxiliary station may transmit only on the 2 m and shorter wavelength bands, except the 144.0-144.5 MHz, 145.8-146.0 MHz, 219-220 MHz, 222.00-222.15 MHz, 431-433 MHz, and 435-438 MHz segments."

Since that likely never the case, how are Winlink stations legal on HF? Winlink is either an "automatically controlled digital station" under 97.221, and hence are limited in bandwidth and restricted to the automatic digital sub-band, or they are being remotely controlled by stations under 97.213's telecommand provisions, in which case they can only be controlled by wireline or auxiliary station and the stations remotely controlling Winlink stations never meet the definition of an auxiliary station. Thus current Winlink operations are highly questionable and possibly illegal under current part 97 rules.

Part 97 - Transmitting Encrypted Messages

Amateur radio is not set up to be an encrypted service. As the FCC and ARRL have both said on numerous occasions in the past, we all need to know what is being said via amateur radio, and by whom. After all, that is a key to the self policing aspect of our great hobby. Besides that, when a real emergency does exist, we need a transparent way to ensure that all know what is going on, so that frequencies can be properly cleared and made available for responders.

With the new PACTOR modes, it is virtually impossible for an Official Observer to actually perform their duties with regard to the automated email servers that are in operation. A functional Official Observer program is essential to ensure the integrity and lawful use of amateur spectrum.

Pactor 3 and Pactor 4 are proprietary protocols. The encoding/decoding is not open source. It's very questionable if these waveforms are legitimate within the amateur radio bands and it's explicitly forbidden in the regulations.

Part 97 – The Spirit of Amateur Radio

The ARRL is promoting RM-11708 primarily for Winlink which is providing Internet services over HF. Amateur radio is not a global Internet Service Provider, where folks use it primarily to avoid paying for maritime data plans, Facebook posts, blog posts, and to send text messages to their non ham buddies. We need to evaluate the appropriateness of email systems on HF, particularly broadband modes. Providing Internet services over HF is NOT in the spirit of amateur radio.

Conclusion

One of the hardest parts of parenting is when a teenager learns to drive. If the teenager is not responsible driving the old 4-cylinder “clunker” automobile, you simply do not give the teenager the keys to the new Corvette.

In this case the parent is the ARRL who has responsibility for managing emerging technologies like Winlink to make sure the technology is sound, fit, legal and in the spirit of amateur radio. As the parent, the ARRL has failed in vetting out Winlink, its legality and appropriateness in amateur radio.

In addition, the ARRL has been negligent in spectrum management and band planning allowing Winlink automated digital stations to spread across the CW/Data sub bands causing interference to legacy low bandwidth CW/Data human to human communications. If the ARRL were responsible parents they would have realized the interference issues caused by automated digital stations and taken action via band planning moving automated digital stations into their own sub band away from main stream human to human CW/DATA operating frequencies.

The ARRL claims they will manage the 2.8 KHz wider RM-11708 bandwidths thru band planning. If the ARRL cannot adequately manage the current narrower bandwidth automated digital interference issues, how can we expect them to be able to manage the wider 2.8 KHz bandwidths of RM-11708?

The keys to the Corvette (RM-11708) should not be given to both the irresponsible teenager and to its parent, the ARRL, as both have demonstrated a serious lack of responsibility in vetting out Winlink legality issues, operating in the spirit of amateur radio and in spectrum and interference management.

RM-11708 should NOT be approved.

Terry Gerdes, AB5K