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CARLSBAD, CALIFORNIA 92009

November 5, 2019

Ex Parte Notice via ECFS
Marlene H. Dortch
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re:  Amendment of Part 97 of the Commission's Amateur Radio Service Rules to
      Permit Greater Flexibility in Data Communications, WT Docket No. 16-239;
      Petition for Rulemaking filed by Amateur Radio Station Licensee Ron Kolarik
      (KOIDT), RM-11831 (Oct. 9, 2018);
      Petition for Rulemaking filed by the American Radio Relay League, Inc. (ARRL),
      RM-11708 (Nov. 15, 2013)

Dear Ms. Dortch:

On Friday, November 1, 2019, Loring Kutchins, President, Amateur Radio Safety
Foundation, Inc. (ARSFI); Tom Lafleur, Director, ARSFI; along with Philip Karn, Jr.,
former Vice President, Technology, Qualcomm; Ross Merlin, Continuity Systems
Technical Director, Department of Homeland Security's National Coordinating Center
for Communications SHARES program, both of whom spoke on behalf of ARSFI; and the
undersigned met with Federal Communication Commission's ("FCC" or "Commission")
representatives separately, first in a meeting with Scot Stone, Deputy Chief, Mobility
Division of the Wireless Technology Bureau ("WTB"); Suzanne Tetreault, Deputy Chief
of the WTB; Ronald Repasi, Deputy Chief of the Office of Engineering and Technology of
the WTB;  Charles Eberle, Legal Advisor to WTB, and Curt Bartholomew, Senior
Emergency Manager of the Commission's Public Safety and Homeland Security Bureau
followed by a meeting with Bill Davenport, Chief of Staff and Senior Legal Advisor to
Commissioner Geoffrey Starks.

During the meetings, we discussed the contents of the attached presentation, copies of
which were provided to the attendees. Thus, we presented an overview of the Amateur
Radio Safety Foundation, Inc., the importance of radio e-mail in the high frequency
bands for emergency communications, and Winlink's key role in providing radio e-mail
communications during emergency conditions.  We provided a detailed description of
the substantial efforts that ARSFI expends on ensuring its Winlink station operators
comply with the regulations of Part 97.  We disputed the allegations of lack of
transparency and possible interference lodged against Winlink.  We offered a
perspective on the importance of digital communications to the Amateur Radio Service

and how the Service is lagging in digital technology in comparison to the other modes of communication under the FCC's jurisdiction.  We also urged the Commission to:

1) Favorably consider the Notice of Proposed Rulemaking in WT Docket No. 16-239 and issue a final order encompassing this common sense approach to modern digital communications; and

2) Reject and dismiss RM-11831.  This request compresses existing digital communications into a smaller portion of the high frequency bands causing unworkable overcrowding. Finally, we shared our concerns that if RM-11831 becomes a regulation, additional rulemaking proceedings would be required to bring Part 97 into conformance.

On November 5, 2019, I also sent the attached presentation via email to the following:

Chairman Ajit Pai
Commissioner Brendan Carr
Commissioner Michael O'Rielly
Commissioner Jessica Rosenworcel
Commissioner Geoffroy Starks
Matthew Berry, FCC Chief of Staff
Aaron Goldberger, Wireless Legal Advisor to Chairman Pai
Will Adams, Wireless Legal Advisor to Commissioner Carr
Erin McGrath, Wireless Legal Advisor to Commissioner O'Rielly
Umair Javed, Wireless Legal Advisor to Commissioner Rosenworcel
Bill Davenport, Chief of Staff and Senior Legal Advisor to Commissioner Starks

Pursuant to Section 1.1206(b) of the Commission's Rules, I am filing this letter electronically in the above referenced dockets.  Please contact me directly with any questions.

Respectfully Submitted,

/s/Paul C. Steinhardt
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Carlsbad, CA 92009
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Attachment

*cc* via email:   Chairman Ajit Pat
Commissioner Michael O'Rielly
Commissioner Brendan Carr
Commissioner Jessica Rosenworcel
Commissioner Geoffroy Starks
Matthew Berry
Julie Knapp
Will Adams
Bill Davenport
Aaron Goldberger
Umair Javed
Erin McGrath
Suzanne Tetreault
Scot Stone
Curt Bartholomew
Ronald Repasi

# It is Time to Move Forward

Loring Kutchins, W3QA and Tom Lafleur, KA6IQA representing
the ARSFI Board of Directors,
Phil Karn, KA9Q, Ross Merlin, WA2WDT
Chris Steinhardt, KD9LF

Presented to the Federal Communications Commission
November 1, 2019

# Overview

- ARSFI
- Why a Radio Email System is Important
- Winlink Radio Email – an easy target, and not unique
- How Winlink Helps the Control Operator prevent Interference and Violations
- Transparency, On-Air Monitoring, Self-Policing
- Interference
- Recommendations to the FCC
- Appendices– False claims and accusations, rebuttals, exhibits

ARSFI

- Dedicated to efficient digital communications for safety.
- A Florida 501(c)(3) corporation since 2006.
- Winlink success--especially the adoption by government agencies--caused both a financial burden and a sense of deep responsibility for its dependability and longevity.  ARSFI was founded to satisfy both demands.
- Supports Winlink and advanced amateur projects.
- Licensed, all-volunteer workforce.

-- Prior to ARSFI all costs were paid out-of-pocket by the developers.
-- Winlink early history is written at
https://Winlink.org/content/winlink_early_history
-- The ARSFI web site: https://arsfi.org
-- Transparency: see ARSFI data at: https://www.guidestar.org/profile/20-5586920

# Why a Radio Email System is Important

**Currently deployed for California wildfires and power outages by CAOES**

- 2019 Citadel Rumble CA exercise
- 2019 Mexican wildfires,
- US Western Wildfires of 2018: Carr wildfire, ARRL article, Waccasassa Wildfire FL exercise, Camp and Woolsey fires
- Hurricanes Katrina, Rita, Wilma, Dolly, Gustav, Dennis, Jeanne, Ivan, Frances, Charley, Isabel, Irene, Sandy, Irma, Katia, Maria, Florence, Michael and Dorian.
- DHS NCC Director comments to FCC on 2017 hurricane season (Puerto Rico).
- Puerto Rico and Virgin Islands Hurricane Disaster Recovery, 2017
- ARRL 'Force of Fifty' Helps Puerto Rico After Hurricane Maria
- Mexico City Earthquake, September, 2017
- Slovenian Weather Disaster
- HMS Bounty Rescue
- Haitian Earthquake Disaster

- The Indonesian Tsunami
- Western US Flood and Fire Relief
- Tenessee Tornado Outbreak 2008
- North Carolina Agency Fiber Optic Cable Failure
- Failure of IntelSat 804
- Indian Coastal Weather Disaster
- Chilean/Peruvian Weather Disaster
- Assisting the US Coast Guard; locating lost and overdue vessels
- Australian Outback Communications
- Assisting NOAA National Weather Service, and their MAROB Program
- Gulf War "The Last Voice from Kuwait"
- Connecting doctors and remote patients during medical missions, and often at sea

Highlighted incidents in which Winlink played a significant role. For details and published articles, see https://Winlink.org/content/Winlink_was_there
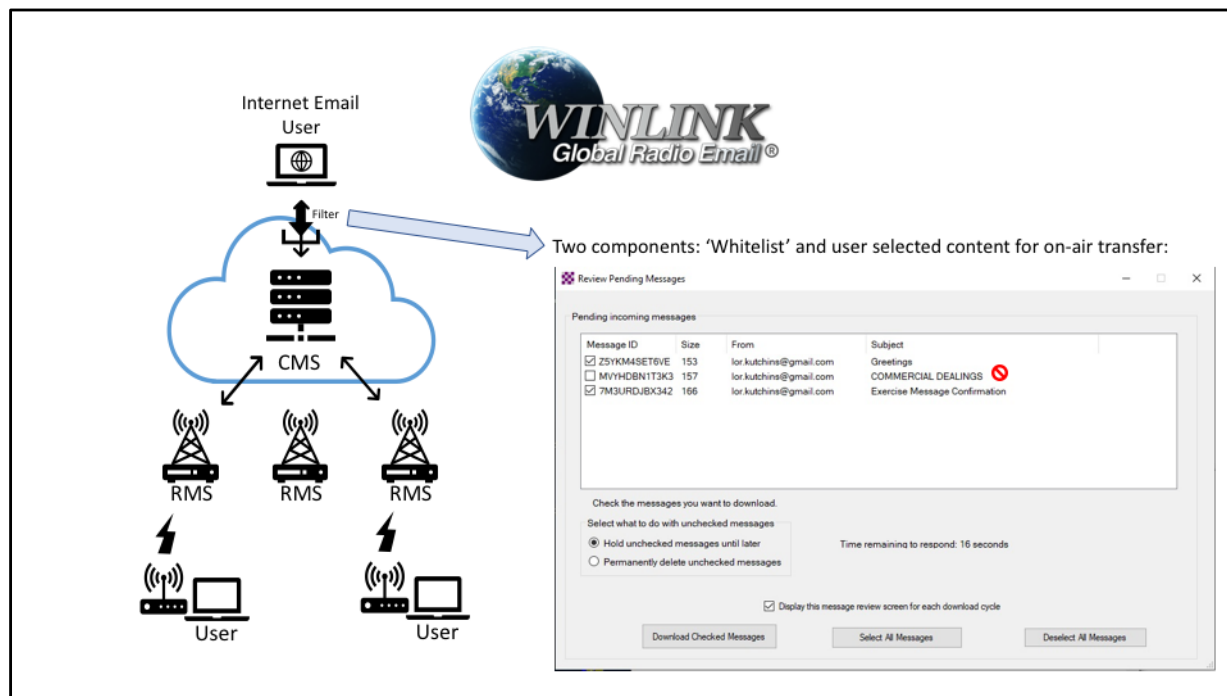
# Why a Radio Email System is Important

- Amateur Radio: ARES, RACES, ACS, AUXCOMM and many more amateur organizations around the world
- Department of Homeland Security's National Coordinating Center SHared RESources (SHARES): FEMA, US NORTHCOM, US State EMAs and National Guards, USCG, and county and municipal emergency management
- NGO critical infrastructure partners: AT&T, FedEx, Bridgestone Disaster Response, Cisco, Salvation Army (amateur radio only), Southern Baptist Disaster Relief, the International Health Service, and many more

- Government services in other countries: Mexico, Canada, countries throughout Central America and the Caribbean, the UK, Australia, the Marshall Islands, Guam
- The International Red Cross/Red Crescent
- ITU sponsored amateur radio Winlink gateways in Central America and Caribbean Islands

- 97.1(d) provides the objective to provide trained operators, technicians and electronics experts.
- Amateur radio use is the key to it all.

ALL use licensed amateur radio operators, trained and exercised on the amateur bands.

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Federal, State, County, NGO, and amateur users worldwide depend on Winlink for dependable contingency communication during incidents and missions.

Millions of dollars have been invested in equipment to use Winlink by individuals and agencies.

Refer to https://winlink.org/content/part_971_our_contributions for a summary of how Winlink contributes to the basis and purpose of the US amateur radio service.

-- Winlink began in the mid-80's and evolved to the current architecture, which was introduced in 1999. It is twenty years old. Any licensed amateur radio operator can register and use the Winlink system. They must follow the radio laws for their country and license. Winlink software and system use are completely free.

-- Winlink is a worldwide system for open email exchange by radio users. Email from and to anywhere in the world. It is interoperable between frequency, band, mode, service, networks, and internet email. More interoperable than *any* other radio system.
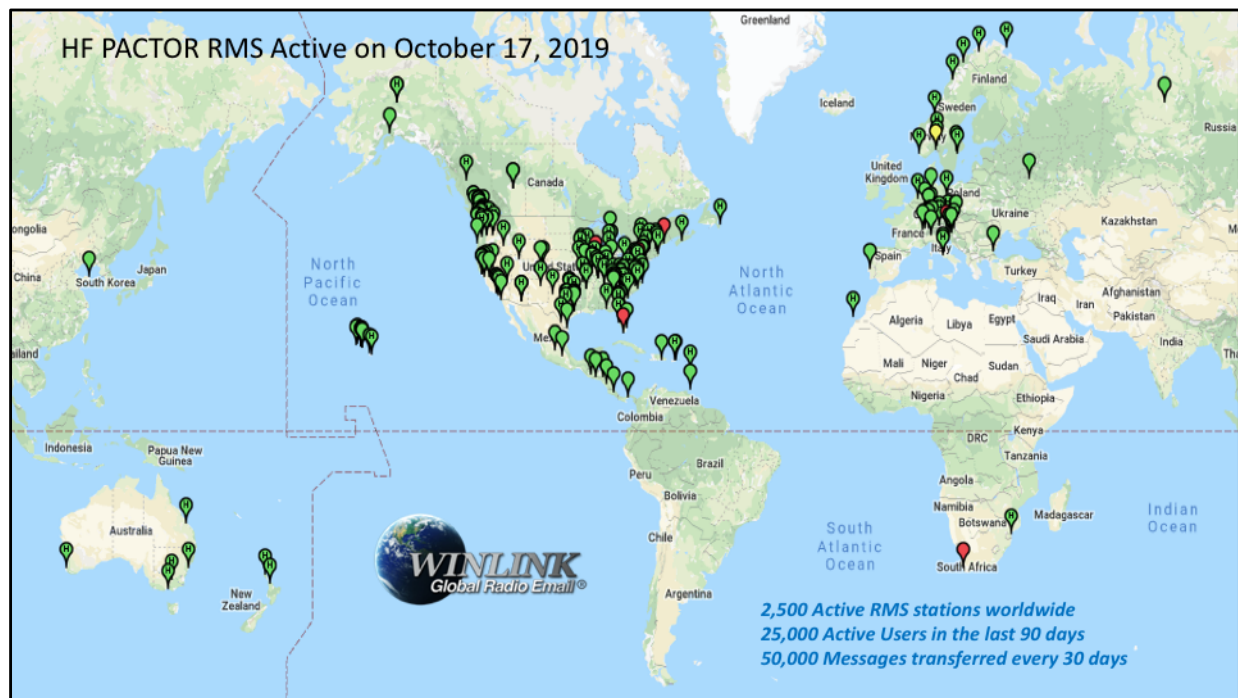
-- Adopted for contingency communications by federal, state and county government agencies, and many amateur radio organizations.

-- Used in *many* emergency response situations. Used for casual communications between amateurs, and their *chosen* correspondents, family and friends.

-- ***Internet users CANNOT communicate with a Winlink user account without advance approval. It is NOT a public or common-carrier email system.***

-- Where legal, Winlink uses these radio protocols (techniques) worldwide: AX.25, VARA FM (on VHF/UHF), Robust Packet, PACTOR 1-4, WINMOR, ARDOP, VARA HF (on HF) TELNET over TCP/IP on microwave frequencies. Three open protocols produced under ARSFI by the Winlink Team are SCAMP, WINMOR and ARDOP.

-- Radio Message Servers (RMS) are Automatically Controlled Data Stations (ACDS) that respond to interrogation by a user's station. RMS are run by volunteer amateur radio operators who contribute their equipment and time. Neither ARSFI or Winlink own or operate any RMS. RMS operators are responsible for compliance with all governing rules and good operating practices.

HF PACTOR RMS Active on October 17, 2019

2,500 Active RMS stations worldwide
25,000 Active Users in the last 90 days
50,000 Messages transferred every 30 days

## How Winlink Helps the Control Operator Avoid Interference and Violations (1)

- Automated FCC license verification and validation of users.
- Password protection mitigates call sign piracy.
- Real-time, accurate, publicly accessible frequency lists and maps.
- Inbound e-mail filter (whitelist) controlled by each operator.
- Channel 'busy detector' inhibits transmit - alerts control operator.
- CW (Morse) ID sent following all transmissions by all stations.
- Automatic profanity filter.
- FCC Third Party Traffic rules are enforced.

-- User's license is verified for currency and validity against the FCC license database, and others for redundancy and world-wide coverage.

-- All gateway (RMS) station frequencies are published and updated within minutes if changed. (Winlink.org [Tools])

-- Unless expressly permitted by the control operator, inbound messages from the internet are blocked by default.
(https://winlink.org/content/how_manage_your_whitelist_spamcontrol). Outbound messages to internet addresses contain a footer advising the recipient of no privacy and amateur radio rules limitations if they reply. Internet correspondents are always advised their messages are subject to public inspection. (appendix)

-- Passwords are not sent over the air.

-- The 'busy detector' mitigates inadvertent interference. Transmission is disabled if a frequency is busy.

-- CW (morse code) ID sent at the end of all transmissions by all stations.

-- Profanity filter bounces inbound emails if obscene words are detected. (appendix)

-- Third Party messages between US-licensed stations and stations licensed by a country without a third party agreement with the US are either bounced (if sent) or held (if to be received), with an advice message delivered in place of the message. (appendix)

## How Winlink Helps the Control Operator Avoid Interference and Violations (2)

- US RMS operators are advised of violative frequency choices.
- All RMS and client software maintain local station logs.
- Central logging for all Sessions, Messages, Tracking.
- Administrative lock-out for unacknowledged or intentional violations.
- Message viewers and activity log viewers for RMS operators.
- Enthusiastic cooperation with the ARRL Volunteer Monitor Program.
- Winlink Terms and Conditions of Use are *more conservative* than Part 97.
- An open Message Viewer. Administrative follow-up on all reported potential violations. Archived correspondence for enforcement.

-- Gateway software teaches US operators to operate within the 97.221 rules. See Exhibits.
-- Session and message logs are maintained on all stations.
-- Session, message, and tracking logs are maintained system-wide at the Central Message Servers.
-- Web apps are made available to RMS operators at Winlink.org after they log in.
-- Winlink Terms and Condition of Use and Privacy Policy are published at https://Winlink.org/terms_conditions

-- NO OTHER SOFTWARE, SYSTEM OR NETWORK GOES TO SUCH LENGTHS TO HELP CONTROL OPERATORS AVOID INTERFERENCE AND VIOLATIONS.

# Online Message Viewer: Self-Policing at Work

# Transparency, On-Air Monitoring, Self-Policing

KARN'S LAW
"Virtually anything one might do to facilitate communications and/or use the radio spectrum more efficiently will have the side effect, intended or not, of making that communication more difficult for some third parties to monitor."

-- *Phil Karn, KA9Q*

Karn's Law: https://ecfsapi.fcc.gov/file/10422455216228/rm11831.pdf

# So Far, The FCC has Moved to Encourage Advanced Digital Technology in All Services

- **TV**: NTSC-Analog →ATSC →ATSC2
- **Cell Phone**: Analog-FM →TDMA →CDMA →LTE →5G
- **Part 90 Mobile Radio**: Analog-AM →Analog-FM →P25 and DMR
- **Telephone**: Analog →56KB Digital →Digital VOIP
- **Satellite Systems**: Analog →Digital w/advanced compression, FEC
- **Amateur Radio**: Pioneered internet over radio in 1980's. What about the future?

# Transparency, On-air Monitoring, Self-Policing

- Petition RM-11831 requests improving amateur digital mode transparency by rewriting regulation 97.309(a)(4).
- Rappaport, et al, petitioned for a Declaratory Ruling on 97.113(a)(4).
- Almost all technical development of the radio art is now *DIGITAL*.
- On-air monitoring for the purposes of self-policing by rank-and-file amateur operators is limited in the face of Karn's Law.
- Public message databases are more efficient and convenient than on-air monitoring; proven effective for violation discovery and enforcement.
- On-air monitoring has been demonstrated. Free tools are available.
- **Rulemaking must not impede the advancement of the art.** It should always strive to stand the test of time and survive new developments.

https://ecfsapi.fcc.gov/file/10822196770221/ReAnalysisOfWinlinkObjectionableMessages.pdf and https://ecfsapi.fcc.gov/file/107301549501394/IncidenceCalculationsExParte0730.pdf and Enforcement Bureau TICKET # 3184322, brought, ironically, by our opposition after using Winlink online monitoring tools.

--The Radio Art is advancing DIGITALLY.  As amateur digital modes rapidly progress, monitoring them will become dependent on more advanced monitoring techniques used by the rank-and-file ham.

-- If RM-11831 proceeds as proposed, it will impede the advancement of the radio art (See 97.1(b)).

-- On-air monitoring demonstrated: Huggins: https://ecfsapi.fcc.gov/file/1073182572879/KX4O_OTA_Winlink_Decoding.pdf and https://ecfsapi.fcc.gov/file/108140794324824/KX4O_Demonstration_OTA_Decoding_Addendum.pdf  Gibby: https://ecfsapi.fcc.gov/file/10830048730238/FreeSoftwareToReadWINLINK.pdf

-- Free software for monitoring PACTOR/Winlink by Helfert, SCS: https://forums.qrz.com/index.php?threads/how-many-ham-systems-use-compression.672189/page-28#post-5195209 and SCS: https://www.p4dragon.com/en/PMON.html

-- -- These useful monitoring tools were developed using published technique descriptions, and that they have been successfully demonstrated PROVES THAT EXISTING RULES ADEQUATELY PROVIDE FOR AMATEUR SELF-POLICING. The existing rules and correct criteria is: INTENT TO OBSCURE MEANING.
-- Rewriting the rules as proposed in RM-11831 will not stand up to technological change and the test of time.

# Interference

- Winlink strives to prevent interference.
- Petition RM-11831 offers no objective statistical data that ACDS interference is above normal amateur radio levels. *Only anecdotal claims.*
- Winlink stations always provide CW (Morse Code) ID. Why no formal complaints?
- Gordon Gibby, KX4Z, presented data that demonstrates the potential for Winlink interference outside the 97.221(b) sub bands is *negligible – nearly zero.* (appendix)
- *However,* US should harmonize its allocations with the rest of the world.
  - HF radio does not honor borders.

Gordon Gibby, MD KX4Z: Analysis of Potential for Interference:
https://ecfsapi.fcc.gov/file/10408036816674/FCCRM11831-2.pdf

Interference

Example: 40 Meters -- Where ACDS Operate *Legally* in North America
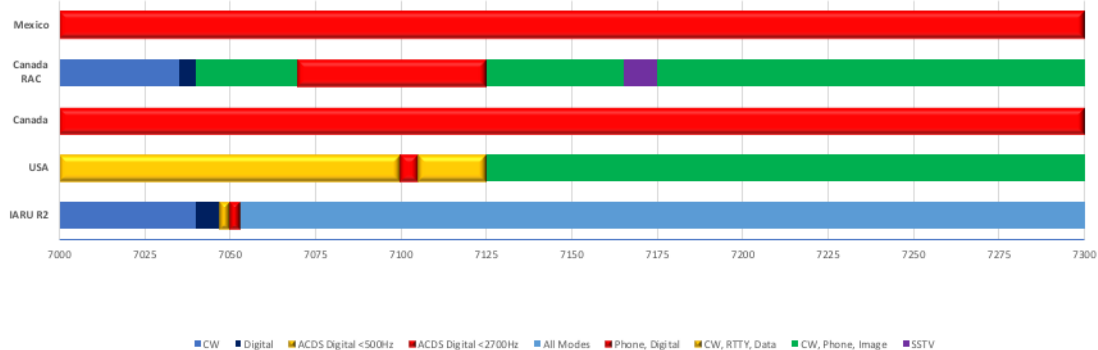
-- Automatically controlled stations can operate anywhere you see red or yellow-orange spectrum in the chart.

-- Realize that most reported out-of-band ACDS transmissions actually are legal transmissions between North American stations *outside the USA*. Therefore, foreign interference appears out of place to US operators--on all amateur bands. Refarming the CW/Digital bands to protect narrowband digital modes can be done, but will not mitigate foreign incompatibilities.

-- The ARRL Director's 14-1 vote to move all digital transmissions >500Hz bandwidth into current US ACDS 97.221(b) sub bands is *absolutely unworkable* without significant expansion or removal of these allocations.

-- The BEST Solution: Reject RM-11831 completely.

## WT Docket No. 16-239

- Immediately proceed with rulemaking on 16-239. Remove the 300 baud symbol rate limit.
- Harmonizes the US with the rest of the world!
- Doubles the efficiency with no increase of occupied bandwidth.
- Spectral efficiency reduces potential interference.
- Unlimited bandwidth ACDS signals will _not_ invade the bands.

    - Wideband ACDS are still confined to 97.221(b) limits.
    - Elsewhere, ACDS <500Hz are limited in bandwidth by 97.221(c).

- The obsolete symbol rate limit hinders all digital progress.

-- We agree with ARRL's RM-11708 that states:

"State of the art in HF digital communications has advanced substantially since the current rules were passed."

The current rules: "Prohibits radio amateurs from utilizing state of the art technology" and they would "…permit, if not actually encourage inefficient spectrum utilization."

-- Other current rules (97.221) will not allow "unlimited bandwidth ACDS robots to invade the bands."

-- The FCC issued Pactor 4 waivers for potential hurricane disaster traffic. The FCC clearly saw the advantage of double throughput in same physical bandwidth.

-- There were no reports of "special" interference from Pactor 4 during waivers (and why would there be?)

-- Temporary waivers are better than nothing but a poor substitute for eliminating the 300 baud limit permanently.

-- Under waivers there is no chance to exercise equipment and software BEFORE the waiver. No training opportunity. No experience.

-- Neither is there an incentive to make investments in equipment and software development. Few will invest and equip for only possible short term PACTOR 4 use.

## Recommendations to the FCC

- Move forward immediately on NPRM 16-239 -- remove the obsolete 300 baud symbol rate in 97.307(f)(3).
- Realize assertions about 'effective encryption' and interference are false.
- Accept the demonstrated and ECFS-documented proofs of on-air Winlink monitoring (Exhibit 1).
- Reaffirm that the existing and correct criteria for prohibited encrypted communications is *intent to obscure meaning*. See 97.113(a)(4).

-- There is no technical reason for the symbol rate limit in 2019. New modes will do no damage, and they will decrease the potential for interference by shortening on-air transmissions without requiring more signal bandwidth than presently allowed modes.
-- Rappaport's phrase "effectively encrypted" is disingenuous and factually wrong. Compression is not encryption!

-- For example: PACTOR 4 (not permitted under the 300 baud limit) uses less occupied bandwidth than PACTOR 3 (permitted) at almost double the throughput speed.

## Dismiss RM-11831 in its entirety:

- Terrific blow to EMCOMM at all levels.
- Stops technological progress.
- **Monitoring by third parties has been convincingly demonstrated;** results published and independently verified. (See Exhibit 1)
- Free software is available to the public for eavesdropping Pactor/Winlink, proving existing rules are adequate.
- The proposed deletion of 97.221(c) will cause additional interference within the currently defined 97.221(b) sub bands.
- The real potential for interference from Winlink ACDS operating under 97.221(c) has been quantified, analyzed, and is almost non-existent.
- **Refarming spectrum to protect _very narrow-band digital techniques_ will require new and carefully studied proposals _aimed at that specific purpose_.**

ARSFI Comment on RM-11831: https://ecfsapi.fcc.gov/file/10410668215598/RM-11831%20Motion%20to%20Dismiss%2BPetition.pdf
Modify 97.309(a)(4) by adapting 35 U.S.C. 112(a) as we propose in our comment on RM-11831. This clarifies the standard of disclosure of data emission techniques, and it will stand the test of time.

Radio equipment manufacturers may be required under RM-11831 to provide their proprietary code as 'open source'. This will halt their participation in the amateur radio market, and/or severely discourage their innovative contributions.

Free software now available for monitoring PACTOR/Winlink messages was developed by Dr. Gordon Gibby after Huggins demonstrated simple cut-and-paste keyboard techniques using the information documented by Jean-Paul Roubelat, F6FBB, and the Winlink team.
https://ecfsapi.fcc.gov/file/10830048730238/FreeSoftwareToReadWINLINK.pdf

SCS and Hans-Peter Helfert have released free software called PMON that uses a Raspberry Pi computer and soundcard to read PACTOR 1,2,3 and decode Winlink messages using LZHUF decompression, on the fly. Also a program called PMON_lzh

for Windows and an SCS modem is available. See Exhibit 1 for a video demonstration. Download them from https://www.p4dragon.com/en/PMON.html

These developments prove that the PACTOR technique and B2F/LZHUF compression public documentation were sufficient to develop the tools needed for on-air monitoring. There is no need for a requirement of open source software as proposed in RM-11831. Existing rules adequately provide for self-policing digital signals. Moreover, existing rules on this subject will stand technological change, whereas the RM-11831 proposal will not.

-- The ARRL's Board minutes failed to mention their plans for a proposal to change spectral allocations. Their Board minute 31 mandate is impractical without it.

# Appendices:

- Rebutting False Assertions: Gordon Gibby's response filing to the recent Rappaport ex parte filing, *Let's Avoid Missing the Forest for the Trees.*
- Gibby: Analysis of the Potential for Interference.

Gordon Gibby, MD KX4Z: Let's Avoid Missing the Forest for the Trees:
https://ecfsapi.fcc.gov/file/1017058889899/NotMissingTheForest.pdf

Gibby: Analysis of Potential for Interference:
https://ecfsapi.fcc.gov/file/10408036816674/FCCRM11831-2.pdf

24 Hours of HF Winlink Connections on October 17, 2019
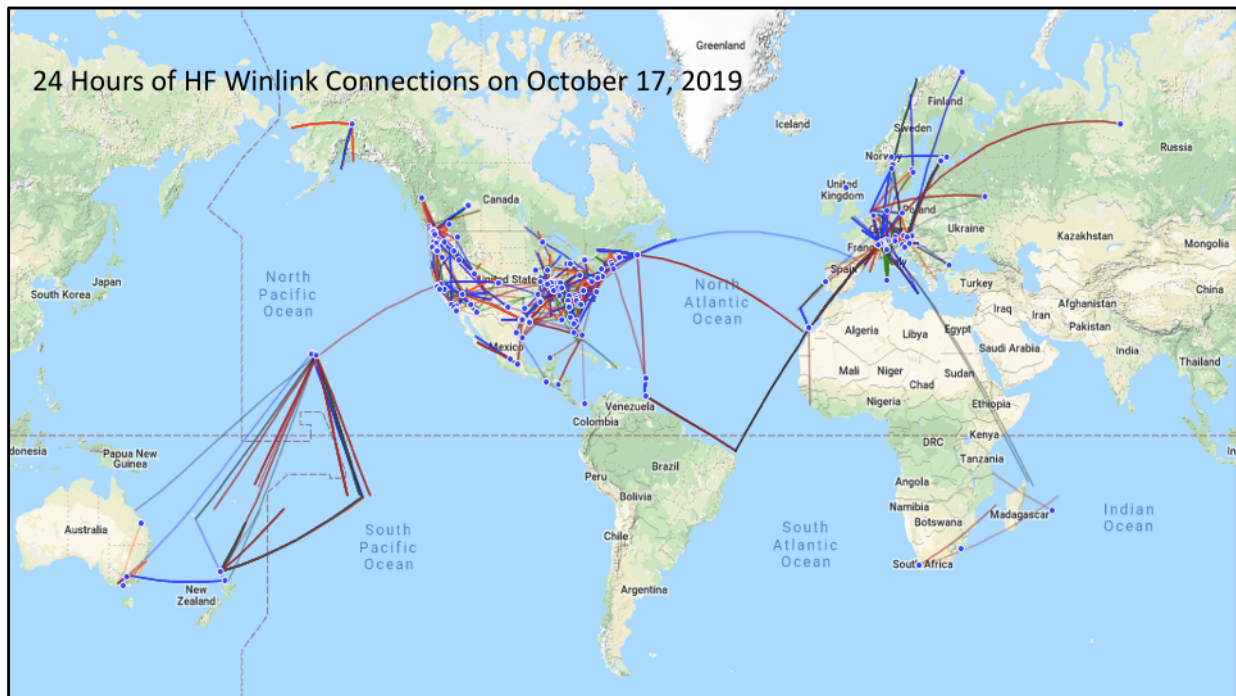
-- These are Winlink sessions over 24 hours on October 17, 2019.
-- Winlink stations outside the USA operate legally according to local rules.
-- Winlink is NOT UNIQUE: There are hundreds of similar HF ACDS Bulletin Board Systems (BBS) stations around the world. Plus ACDS stations supporting Radio Relay International, the ARRL's National Traffic System Digital (NTSD), HFLink amateur ALE, and others internationally.
-- RM-11831 action will NOT COORDINATE US BANDPLANS WITH INTERNATIONAL USE.

Exhibit 1: Live Monitoring a Winlink Message
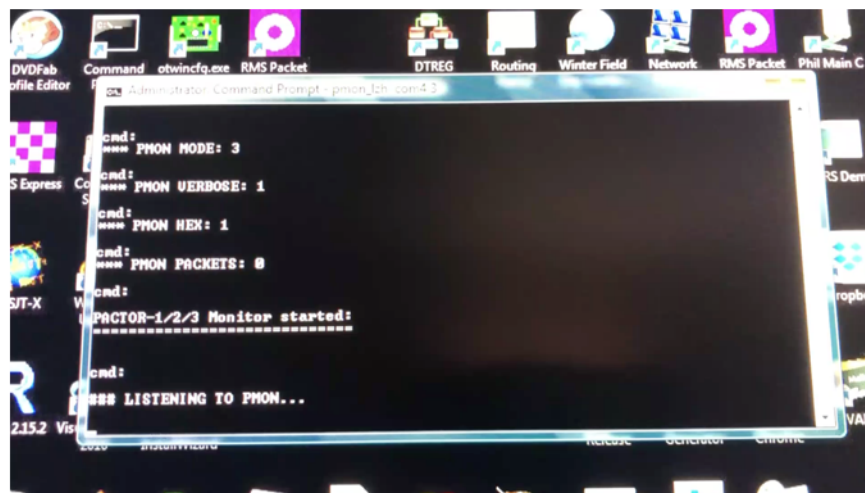
http://www.philsherrod.com/Winlink/Winlink_monitoring2.mp4

This video was recorded on October 28, 2019. It can be replayed or downloaded from the link given in the slide.

It shows the use of the free Windows utility PMON_lzh from SCS decoding a live Winlink PACTOR 3 transmission with B2F/LZHUF data compression applied by the application software prior to transmission. Decoding takes place on-the-fly, that is, it is decompressed packet-by-packet as streamed in real time. The decoded stream is then saved to a local text file. The monitoring equipment used here is the same as in a common Winlink client station with an SCS PACTOR modem.

The transmission between K4CJX and W4PHS, both in Tennessee, was a test for the purposes of recording this video. Examples of longer-range interceptions have been published and can be readily reproduced.

Another SCS utility named PMON, A Pactor Monitoring Utility for Linux, is available from the same source and requires only a $35 Raspberry Pi computer instead of an SCS PACTOR modem.

# Exhibit 2

- Message footer appended to emails delivered to internet addresses:
    - =====
    This message was sent from an amateur radio account. If you reply, be mindful that your reply will be subject to inspection by the public. If your reply contains prohibited content (profanity, personal or commercial business information, etc.) it may not reach its destination, and will endanger your correspondent's license. Ask your correspondent if you have any questions.

# Exhibit 3

- Bounce message for profanity:

  Reporting-MTA: dns; googlemail.com
  Received-From-MTA: dns; lor.kutchins@gmail.com
  Arrival-Date: Fri, 18 Oct 2019 12:15:38 -0700 (PDT)
  X-Original-Message-ID: <F288A616-18D0-42F6-84DA-9A126D09F2BE@gmail.com>

  Final-Recipient: rfc822; w3qa@winlink.org
  Action: failed
  Status: 5.0.0
  Remote-MTA: dns; cms-b.winlink.org. (23.22.0.202, the server for the domain winlink.org.)
  Diagnostic-Code: smtp; 554 - Profanity not allowed; See www.winlink.org/help
  Last-Attempt-Date: Fri, 18 Oct 2019 12:15:40 -0700 (PDT)

# Exhibit 4

- Service message returned if a user tries to send a prohibited Third-Party message:

  - Message with ID 'NJ1GVTAGJ712' and subject '//WL2K test bbahia' was rejected because delivery by of to a US station on amateur radio frequencies would violate US Part 97 Third Party Traffic rules. This message can be resent using the internet – using a direct telnet connection to a CMS or by using webmail after logging into you Winlink account at Winlink.org. Or, by connection to a gateway that permits third party traffic.

    [6W7RV >> K6IXA >> SMTP:jf.lorne@free.fr]

    If your message concerns an emergency or urgent medical matter, resend the message with the word 'EMERGENCY' in the subject and it will be accepted.

# Exhibit 5
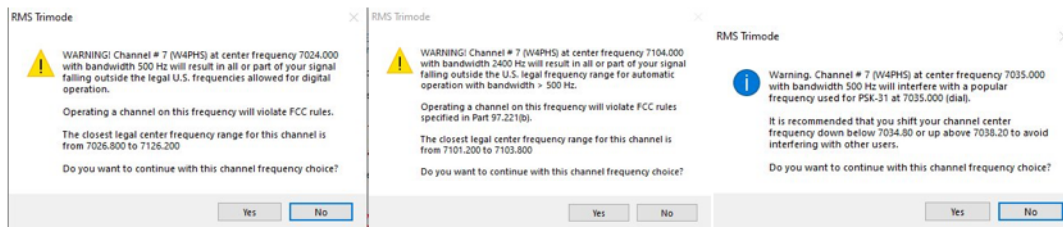
- Service message returned if a third party message is ready for delivery and the user connects to an RMS that will violate US third party rules:

  - Message with ID 'DEASCBIVD5I8' and subject 'Wx Update, US E Coast & W Atlantic' is being held at the Winlink CMS because delivery by or to a US station on amateur radio frequencies would violate US Part 97 Third Party Traffic rules. This message can be retrieved using the internet—using a direct telnet connection to a CMS or by using webmail after logging into your Winlink account at Winlink.org. Or, by connection to a gateway that permits third party traffic.

    [DF6UIC << KQ4ET <<SMTP:bounce+6101d8.b97b7-df6uic=Winlink.org@mg.mwxc.com]

# Exhibit 6

- Sample warnings shown RMS operators if they try to set up with a frequency in violation of 97.221 or interfere with popular 'watering hole' frequencies of other modes:

RMS Trimode ✕

⚠ WARNING! Channel # 7 (W4PHS) at center frequency 7024.000 with bandwidth 500 Hz will result in all or part of your signal falling outside the legal U.S. frequencies allowed for digital operation.

Operating a channel on this frequency will violate FCC rules.

The closest legal center frequency range for this channel is from 7026.800 to 7126.200

Do you want to continue with this channel frequency choice?

[ Yes ] [ No ]

RMS Trimode ✕

⚠ WARNING! Channel # 7 (W4PHS) at center frequency 7104.000 with bandwidth 2400 Hz will result in all or part of your signal falling outside the U.S. legal frequency range for automatic operation with bandwidth > 500 Hz.

Operating a channel on this frequency will violate FCC rules specified in Part 97.221(b).

The closest legal center frequency range for this channel is from 7101.200 to 7103.800

Do you want to continue with this channel frequency choice?

[ Yes ] [ No ]

RMS Trimode ✕

ⓘ Warning. Channel # 7 (W4PHS) at center frequency 7035.000 with bandwidth 500 Hz will interfere with a popular frequency used for PSK-31 at 7035.000 (dial).

It is recommended that you shift your channel center frequency down below 7034.80 or up above 7038.20 to avoid interfering with other users.

Do you want to continue with this channel frequency choice?

[ Yes ] [ No ]

# Let's Avoid Missing the FOREST for the TREES
Gordon L. Gibby MD KX4'Z

October 17 2019

## *Some Part 97.1 "fundamental purpose[s]" involved here.*

"The rules and regulations in this part are designed to provide an amateur radio service having a fundamental purpose as expressed in the following principles:

(a) Recognition and enhancement of the value of the amateur service to the public as a <u>voluntary noncommercial communication service, particularly with respect to providing emergency communications.</u>

(b) Continuation and extension of the <u>amateur's proven ability to contribute to the advancement of the radio art</u>.

(c) Encouragement and improvement of the amateur service through <u>rules which provide for advancing skills in both the communication and technical phases of the art</u>.

(d) Expansion of the existing reservoir within the amateur radio service of trained operators, technicians, and <u>electronics experts</u>.

(e) Continuation and extension of the amateur's unique ability to enhance international goodwill. "

[emphases added]

1

Stated goal of the RM-11831 Petition ("Conclusion"):

> 15. In conclusion this petition only addresses two very specific areas of concern expressed by many amateur radio operators in prior proceedings:
>
> i) interference created by stations authorized under Part 97.221 and
>
> ii) amateur digital mode transparency, present and future.[1]

:

*Those sound quite reasonable!   But let's dive deeper:*

---

1   Kolarik:   https://ecfsapi.fcc.gov/file/100918881206/PETITION FOR RULEMAKING.pdf

# Goal (i):   INTERFERENCE

Petition present <u>no objective statistical data</u>, only *anecdotal claims* for "interference." **Statistical data were subsequently gathered which demonstrate any possible interference by United State principal 97.221(c) users is negligible -- nearly zero.**[2]

No one has advanced any disagreement with those objective data.

## Item (i) can therefore be dismissed based on the objective evidence.


*Until someone produces actual objective statistical data to refute the obvious implications of the only study done to date, there is nothing of substance to be "fixed" here.*

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2    Gibby (April 8 2019):   https://ecfsapi.fcc.gov/file/10408063816674/FCCRM11831-2.pdf   No one has ever written to challenge this objectively gathered data.   In fact it has been referenced by the proponents of RM-11831.

# Goal (ii): TRANSPARENCY

Petition requested relief for improving amateur digital mode transparency by rewriting regulation as follows:

> (4) An amateur station transmitting a RTTY or data emission using a digital code specified in this paragraph may use any technique whose technical characteristics have been documented publicly, ~~such as CLOVER, G-TOR, or PacTOR~~, <u>and the protocol used can be be monitored, in it's entirety, by 3 rd parties, with freely available open source software</u>, for the purpose of facilitating communications.[3]

The requested change would <u>erase the evidence that Proprietary Techniques (CLOVER, G-Tor) were among the examples of publicly technically characterized, approved techniques</u>.

> CLOVER and G-TOR  were examples of
> - <u>advancement of the radio art</u>  (97.1(b))
> - brought about by <u>electronics experts</u>.  (97.1(d))

How do advances in the radio art affect transparency?

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"KARN's LAW"
"Virtually anything one might do to facilitate communications and/or use the radio spectrum more efficiently will have the side effect, intended or not, of making that communication more difficult
for some third parties to monitor "[4]

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3    Kolarik:  https://ecfsapi.fcc.gov/file/100918881206/PETITION FOR RULEMAKING.pdf
4    Karn:  https://ecfsapi.fcc.gov/file/10422455216228/rm11831.pdf

# TWO ROUTES

There are TWO routes to successfully monitoring a new advancement of the radio art:

1. Make <u>corresponding advances in the monitoring capabilities</u>[5]  OR

2. Outright **PROHIBIT** the advancement of the radio art.

Everyone assumed (1) was the proper path -- and that <u>advancing the monitoring capabilities  was everyone's goal</u>....

Petitioner Agreed (Then)

| |
|---|
| Ron Kolarik (Petitioner):   "A compressed message is obscured if there are no available means to decode the compression. **The petition simply asks a decoder be made available. "**[6]  [emphasis added] |

---

5   Most of the exciting developments for communications are currently being accomplished using DIGITAL transmissions systems.  Goals are increased time and spectral efficiency, and decreased error rate.  To forbid such exciting development in amateur radio -- when that is one of the 97.1 express goals -- would be a significant mistake.

6   Ignoring for the moment the discussion whether a non-encrypted message is obscured.   Kolarik, June 1, 2019: https://forums.qrz.com/index.php?threads/new-digital-petition-at-the-fcc-rm-11831.652589/page-174#post-5085217  It remained unclear why one had never been built for technically specified modulations and fully documented systems.

# SO WE SET ABOUT TO DO JUST THAT
## *ADVANCE THE MONITORING CAPABILITIES*

On two continents, teams began to work <u>free of charge</u> to create advancements in the state of the <u>radio monitoring art</u> for the benefit of those requesting improved transparency and for the good of Amateur Radio itself:

- SCS began to develop sound-card based monitoring software for PACTOR that would perform on a simple Raspberry Pi.

- Huggins demonstrated simple cut-and-paste keyboard techniques to employ the 20-year-old techniques documented by Jean-Paul Roubelat F6FBB -- and successfully **read a winlink message**[7] [8]

- Gibby created software in a matter of days to read WINLINK using a7800 PACTOR modem and a Raspberry Pi.[9]

- Helfert vastly improved  the advances by re-writing the venerable  public domain LZHUF algorithm so that it produces output on the fly rather than after accumulating all the packets.[10]  Freely available WINDOWS executable that is faster at producing output than ANYTHING PREVIOUS.

- Helfert / SCS have now released free software that uses a Raspberry Pi and a soundcard system to READ PACTOR 1,2,3 and on-the-fly decode WINLINK.  [11]


These were unforeseen <u>developments</u> after 19 years of  argument over WINLINK and PACTOR.

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7   Huggins:  https://ecfsapi.fcc.gov/file/1073182572879/KX4O_Demonstration_OTA_Winlink_Decoding.pdf  July 30, 2019.
8   Huggins:  (Improvement) https://ecfsapi.fcc.gov/file/108140794324824/KX4O_Demonstration_OTA_Decoding_Addendum.pdf August 13, 2019.
9   Gibby:  https://ecfsapi.fcc.gov/file/10830048730238/FreeSoftwareToReadWINLINK.pdf   August 30, 3019
10  Helfert:  https://forums.qrz.com/index.php?threads/how-many-ham-systems-use-compression.672189/page-28#post-5195209  Sep. 14, 2019.
11  SCS:  https://www.p4dragon.com/en/PMON.html  October 12, 2019.

# THE RESULT

There was NOT great rejoicing by those seeking transparency of digital modes.

Lee McVey: **"...Drop the compression. End of problem. "** [12]  (Liked by Ron Kolarik)

Ron Kolarik had already made clear his **candid dislike of advanced systems** and monitoring developments and his preference for ham radio of the past:[13]

> Complex protocols
> 1. identify the station, and it's location
> 2. identify the protocol
> 3. search for a WebSDR in close proximity to the station, as you've suggested, more than one if you want to try diversity
> 4. tune the WebSDR, or multiple WebSDR's, to the proper frequency
> 5. start decoder, if one is even available
> 5. capture the entire data stream with zero errors. By the time you've completed 1-5 the station is either gone, or it's in the middle of the transmission, and missing significant data to make decoding impossible
> 6. decompress the data, if compression was used, also need to know exactly what compression was used. For example: Pactor native compression can be one of several methods applied on a per packet basis
> 7. Tequila to kill the pain
>
> Open protocols
> 1. tune signal in, start decoder, done [14]

**Rappaport/ New York University :**   Even if certain protocols are "claimed" to be published, the implementation of Winlink's ARQ/adaptive compression with its data modes makes it virtually impossible for 3rd parties to intercept messages for meaning (See: McVey, Rappaport). (Sec. 97.309, Sec. 97.113). [15]

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12  W6EM:   https://forums.qrz.com/index.php?threads/arrl-report-no-consensus-reached-for-fcc-on-"symbol-rate"-issues.666183/page-84#post-5219943  Oct 8, 2019.
13  Although his Petition addressed TECHNIQUES, not SYSTEMS, this statement clearly addresses SYSTEMS.
14  K0IDT:   https://forums.qrz.com/index.php?threads/new-digital-petition-at-the-fcc-rm-11831.652589/page-132#post-5042496   April 23, 2019.
15  Rappaport / New York University:   https://ecfsapi.fcc.gov/file/1008135726267/NYU Wireless Ex Parte Filing - 10.08.19.pdf   Oct 8 2019

And unbelievably, after weeks of accusations that WINLINK would remove the viewer....the discussion on QRZ  <u>turned to reasons why even the VIEWER .....should *not* be allowed</u>!

## WHAT?????

**So perhaps these filers *actually preferred Option 2*---**

**Roll back the clock of amateur radio advances to 1987,**

**before Jean-Paul Roubelat introduced error-free and time-saving advances to amateur radio data communications....**

**back when downloading a file was an hour of wondering...and then a disconnect and failure....**

**instead of taking full advantage of advanced technologies and concepts created specifically to address their concerns?**

**Turning Attention to the Most Recent Ex Parte[16]:**

**COMPARE**

| What Dr. Rappaport Stated | Referenced Facts<br>Published Original Studies<br>Free Available Software to do the<br>"virtually impossible" |
|---|---|
| "All Data in the Amateur Radio Service must be open and cable of being readily monitored Over the Air for true meaning by third parties | A nice idea -- but NOT the current regulations. [17] |
| No obscured messages are allowed" | Misquote of actual regulation, which prohibits messages "encoded for the purpose of obscuring their meaning" [18] |
| | Actual fact is that WINLINK is quite readable using proper software.[19] [20] [21] |
| | FLDGI/FLARQ, D-RATS and likely others can be monitored using similar software techniques.  They use same or similar legal, ARQ/compression. [22]<br><br>True for years and years.<br><br>*But never addressed?*<br>*No concerns expressed?* |

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16  All subsequent portions from Dr. Rappaport are from:  Rappaport / New York University, https://ecfsapi.fcc.gov/file/1008135726267/NYU Wireless Ex Parte Filing - 10.08.19.pdf   October 8 2019

17  What is actually prohibited is "messages encoded for the purpose of obscuring their meaning, except as otherwise provided herein " Part 97.113(a)(4)

18  Part 97.113 (a) (4)

19  Gibby:  https://ecfsapi.fcc.gov/file/10830048730238/FreeSoftwareToReadWINLINK.pdf  August 30 2019

20  Gibby:  https://ecfsapi.fcc.gov/file/10906223525884/ExParteMyths.pdf  Sept 6, 2019

21  Gibby, demonstrating decoding over 900+ mile paths: https://ecfsapi.fcc.gov/file/109191626613689/InconvenientTruths.pdf  Sept 19, 2019

22  Gibby:  demonstrating need for specialized software for other systems: https://ecfsapi.fcc.gov/file/109191626613689/InconvenientTruths.pdf  Sept 19 2019

| "ACDS Stations interfere and provide obscured messages. The Winlink system/SW is run by ARSFI in the Amateur Radio Service, but also in government frequencies, and is a unique problem." | FALSE. TWICE. Original studies showed negligible problem for 97.221(C)[23]; original development of software reads WINLINK pactor easily; and multiple other systems have now been analyzed. [24] [25] [26] |
|---|---|

23  Gibby, original research:  https://ecfsapi.fcc.gov/file/10408063816674/FCCRM11831-2.pdf  April 8 2019.
24  Gibby: original software development:
    https://ecfsapi.fcc.gov/file/10830048730238/FreeSoftwareToReadWINLINK.pdf  August 30, 2019.
25  Gibby:  https://ecfsapi.fcc.gov/file/10906223525884/ExParteMyths.pdf  Sept 6 2019.
26  Gibby: original research on D-RATS:  https://ecfsapi.fcc.gov/file/10042734814100/InconvenientCorrections.pdf  Oct 30 2019.

| | |
|---|---|
| "ARSFI/Winlink refuses to adopt standard signaling codes as stipulated in Sec. 97.309, | FALSE -- a complete misreading of 97.309 which expressly approves of **techniques** meeting defined standards. [27] |
| and relies on automatic-request-query (ARQ) and dynamic compression to provide obscured messages in the Amateur Radio Service. | FALSE -- These advancements in the radio art are now 30 years old[28] and systems using them are popular all over the world;[29] [30] [31] they are only "obscured" to those who don't understand their public protocols. [32] |
| Even if certain protocols are "claimed" to be published, the implementation of Winlink's ARQ/adaptive compression with its data modes makes it virtually impossible for 3rd parties to intercept messages for meaning (See: McVey, Rappaport). (Sec. 97.309, Sec. 97.113). | The "**virtually impossible**" *we are now routinely accomplishing and publishing and demonstrating.* [33]  <br><br>**Anyone able to call up commercial software can demonstrate this.** [34] |
| | Does the author not celebrate the incredible success of the monitoring advances in the radio art, that were demanded, and subsequently produced free of charge? |

---

27  The writer misreads 97.309 (a) (4), most particularly the meaning of "such as" and the examples given:   "(4) An amateur station transmitting a RTTY or data emission using a digital code specified in this paragraph may use any technique whose technical characteristics have been documented publicly, such as CLOVER, G-TOR, or PacTOR, for the purpose of facilitating communications. "

28  F6FBB's bulletin board, beginning in 1987:   http://www.f6fbb.org/

29  FLMSG example:   https://www.gaares.org/nbems.php

30  D-RATS compressed binaries:   http://www.dstarinfo.com/drats.aspx

31  PAT:   https://getpat.io/

32  Karn:   "Apparently unfamiliar with standard practice, Rappaport characterizes ARQ as a nefarious scheme intended to obscure communications. Nothing could be further from the truth. ARQ (Automatic Request Repeat) has been a standard, generic feature of many communication protocols above the physical layer for many decades, e.g., the AX.25 Amateur Packet Radio link level protocol. It is used in 802.11 (WiFi) wireless LANs. And it is in the 3 4 Internet's Transmission Control Protocol (TCP), which I implemented for amateur packet radio in 1986. He describes ARQ as a "code" when it is actually a simple procedure. Far from being suited only to wireline communications, ARQ is essential to reliable communications. Contrary to Rappaport's claim, forward error correction (FEC) cannot guarantee reliability; it is merely an optional performance enhancement (though a very important one on radio channels). " https://ecfsapi.fcc.gov/file/10513525129724/rm11831-rebuttal-to-rappaport.pdf  May 13, 2019.

33  Gibby, demonstrations over 900 miles:   https://ecfsapi.fcc.gov/file/109191626613689/InconvenientTruths.pdf

34  PMON/LZHUF for Raspberry Pi:   https://www.p4dragon.com/en/PMON.html

| | |
|---|---|
| "ARSFI/Winlink does not provide transparency to its global email system queue, and does not allow amateur operators to review emails or files before they are sent over amateur radio stations (Sec. 97.219, 97.105)." | **MISLEADING**<br><br>Every amateur sees what they are entering; Control operators have complete control to permit or deny messages from specific internet addresses.<br><br>By default ALL internet-originated messages are denied access to the system and are rejected with a bounce message to the sender. This has been in operation since 2005. [35]<br><br>**Anyone can verify this by trying to send a message to a winlink user (if they are not already permitted mail delivery to their correspondent).**<br><br><br>FCC Official:   use your email to send a message to w3qa@winlink.org and see what happens.....you will get a reject message. |
| | The WINLINK system is an advancement in the radio art which makes it possible (for example) for Baptist Disaster Relief to make urgent requests for food in disaster areas -- and receive responses from suppliers even though normal systems are overwhelmed.   [36] |

---

35   WINLINK:   https://www.winlink.org/content/how_manage_your_whitelist_spamcontrol
36   Explanatory material written by  Wireless Society of Southern Maine:   http://www.ws1sm.com/Winlink.html   These features have been *invaluable* in the testing of the monitoring system cconstructed at the request of the RM-11831 proponents...

| | |
|---|---|
| "The Winlink system carries email from/to the **general public** over amateur radio spectrum without oversight or prior review of messages for appropriate content. [emphasis added] | FALSE: Specific operators allow specific addresses to contact them using their specific privileges -- NOT the general public as alleged. [37] |
| Self Policing is not possible (See EB complaint ticket #3184322 )." | FALSE: Self Policing is WILDLY successful as shown by original research, *far beyond any other portion of Amateur Radio* [38] [39] [40] |

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[37] It is fairly obvious that if Rappaport's claim were true, *the WINLINK system would have been overwhelmed many years ago*. Correct information: https://www.winlink.org/content/how_manage_your_whitelist_spamcontrol

[38] Gibby, original research: https://ecfsapi.fcc.gov/file/10723230403421/IncidenceCalculations.pdf

[39] Gibby, original research: https://ecfsapi.fcc.gov/file/107301549501394/IncidenceCalculationsExParte0730.pdf

[40] Gibby, original research: https://ecfsapi.fcc.gov/file/10822196770221/ReAnalysisOfWinlinkObjectionableMessages.pdf

"Statements by modem vendors such as SCS make clear that their protocols are proprietary, and unlike other proprietary protocols such as D-STAR, AMBE, DMR and Fusion, Winlink/ARSFI and its data modes do not offer a readily available decoding solution for over-the-air monitoring for true meaning.

See for yourself!
**FREE SOFTWARE TO DO IT YOURSELF**



**PMON - a PACTOR® Monitoring Utility for Linux**

PMON allows the thorough observation and documentation of all presently available PACTOR-1/2/3 transmissions (PACTOR-4 will follow in early 2020). PMON covers all PACTOR levels with the appropriate Speedlevels and packet variations. PMON will read in parallel PACTOR-2 and PACTOR-1. The very wide receiving range (frequency offset ±200 Hz), as well as the automatic sideband recognition, ease routine operation of PMON with PACTOR-2 and PACTOR-3 considerably.

PMON automatically decompresses LZHUF compressed messages on the fly. This is very useful for monitoring Winlink email transfers.

**Note**: LZHUF compression is not inherent to PACTOR, it is not the internal PACTOR Huffman/PMC compression but an external compression variant utilized by some application software, e.g. Winlink. Nevertheless, as LZHUF is widely used, PMON supports decompression even of that third party compression type.

**This tool is strictly for private use only!** This means non-commercial applications, by private persons, e.g. radio amateurs. The monitored data may be published without restriction by those



**NOW RELEASED**
-- EXECUTABLE RASPBERRY PI SOFTWARE THAT
-- READS PACTOR WITH SOUND CARD
-- ON THE FLY READS WINLINK[41]

**WINDOWS** (Executable)
Use this free polished software from real professional coders (SCS) to monitor Winlink/

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41  SCS:  https://www.p4dragon.com/en/PMON.html

| | |
|---|---|
| | Pactor traffic right off the air: https://www.qsl.net/nf4rc/Tech/RaspberryPiWinlinkDecoder/CurrentWindowsSoftware/pmon_lzh_v_1_0_7.zip <br><br> **RASPBERRY PI** (Novice Source Code) <br> TERM[42] <br> https://www.qsl.net/nf4rc/Tech/RaspberryPiWinlinkDecoder/0903/term.c <br><br> READCAPTURE[43] <br> https://www.qsl.net/nf4rc/Tech/RaspberryPiWinlinkDecoder/0907/readcapture0907a.c <br><br> LZHUF[44] <br> https://www.qsl.net/nf4rc/Tech/RaspberryPiWinlinkDecoder/lzhufuniv8.c <br> *(Compile with free gzip compiler for your version of raspberry pi. )* <br><br> THIRD INDEPENDENT DEVELOPER <br> Additional software being finished by John Trites -- completely independent development.[45] |
| This is in contrast to other HF data modes in the Amateur Radio Service, thus providing an expectation of privacy that leads to violations of the intent and purpose of amateur radio." | FALSE -- <br><br> Although an easy target for Dr. Rappaport, it has already been proved multiple times that Winlink is NOT a "unique" system. Equal effort will allow other systems to be monitored just as well as the new tools recently developed, allow Winlink messages to be monitored. [46] [47] [48] <br><br> The ARRL explained this in depth.[49] |

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42  Re adjust this to read VARA or ARDOP or WINMOR.   All WINLINK technique use the same higher layers.
43  This, the most important code, pulls out the headers and prepares ANY winlink technique for decompression by lzhuf
44  Simply based on the original public domain code, with corrections provided years later for operating systems of different word size (e.g. 32 bit versus 64 bit WINDOWS)
45  Personal communication, John Trites; successful printed output demonstrated at ARES meeting, Alachua County, October 9, 2019
46  Gibby:  https://ecfsapi.fcc.gov/file/10906223525884/ExParteMyths.pdf
47  Gibby: https://ecfsapi.fcc.gov/file/109191626613689/InconvenientTruths.pdf
48  Gibby:  https://ecfsapi.fcc.gov/file/10042734814100/InconvenientCorrections.pdf
49  ARRL:  https://ecfsapi.fcc.gov/file/10918259487629/ARRL 16-239%2C RM-11759%2C RM-11828%2C RM-11831.pdf

| | |
|---|---|
| "ARSFI/Winlink also violates ARRL's own interpretation of Sec. 97.309(a)4 requiring documentation to: (a) recognize the technique or protocol when observed on the air, (b) determine call signs of stations in communication and read the content of the transmissions." | FALSE -- in multiple ways<br><br>1. Anyone who has an ear can recognize the distinctive FSK calling sounds of PACTOR;<br>2. anyone with a DRAGON and can type PMON *can read everything*;[50]<br>3. anyone with any SCS pactor modem **can read the callsigns;[51]**<br>4. **anyone who can copy CW can likely read the callsigns; [52]**<br>5. **anyone with a raspberry pi and a soundcard can read the text using free software [53]** |

---

50  SCS: Dragon PMON command
https://www.p4dragon.com/download/Update_Info_DR7X00_Version_1_17_English.pdf  (This merely adds additional formatting to the output of other commands provided in earlier generations of PACTOR modems.)
51  Robust connect using 2-FSK, readable by all SCS modems.
52  Winlink, going well beyond requirements, sets the default to create CW ID despite this being a "technically specified" modulation.
53  SCS:   PMON for Linux:   https://www.p4dragon.com/en/PMON.html

| | |
|---|---|
| "In the ARSFI/Winlink global email system, transmissions cannot be decoded for true meaning over the air by third parties. ARSFI/Winlink data modes employ dynamic compression with ARQ which obscures messages and provides expectations of privacy with documented violations and decades of opposition. This would be prohibited through adoption of RM-11831. " | **FALSE......*amazingly* so.**<br><br>The advancement of the radio art by WINLINK went unmatched by corresponding advancement in monitoring capabilities for YEARS until volunteers wrote free software for the WINLINK detractors....in a matter days. [54]<br><br>It could have been written any time in the last 19 years that anyone seriously wanted it. All the information is on a 1999 document from F6FBB[55] and documents from WINLINK.[56]<br><br>Multiple examples of monitoring now exist -- even done over hundreds of miles. [57] [58] [59] [60] [61]<br><br>Even with a Raspberry Pi, this is not difficult at all. [62]<br><br>The FCC can easily load the software for themselves and verify its function.[63] |

54 Gibby: Initial disclosure of software to read WINLINK Pactor: https://ecfsapi.fcc.gov/file/10830048730238/FreeSoftwareToReadWINLINK.pdf August 1930 20 This could have been done at any time in the past 2 decades.

55 Fully discussed herein: Gibby: https://ecfsapi.fcc.gov/file/10808597817982/ExParteCommunicationAug8.pdf

56 WINLINK: B2F protocol: https://www.winlink.org/B2F

57 Gibby: data from 900 mile paths: https://ecfsapi.fcc.gov/file/109191626613689/InconvenientTruths.pdf September 19, 2019.

58 Examples read from September 3 2019: https://www.qsl.net/nf4rc/Tech/RaspberryPiWinlinkDecoder/0903/

59 Examples read from September 6 2019: https://www.qsl.net/nf4rc/Tech/RaspberryPiWinlinkDecoder/0906/

60 Examples read from September 8 2019: https://www.qsl.net/nf4rc/Tech/RaspberryPiWinlinkDecoder/0908/

61 Examples read from September 10 2019: https://www.qsl.net/nf4rc/Tech/RaspberryPiWinlinkDecoder/0910/

62 A simple example of WINLINK PACTOR read using a raspberry pi 4 and a Signalink: https://forums.qrz.com/index.php?threads/free-pactor-1-2-3-monitoring-software-for-raspberry-pi-available.676467/page-2#post-5225809

63 SCS software for Raspberry Pi: https://www.p4dragon.com/en/PMON.html

# Two Decades OF PROGRESS!

| Advances by the Proponents | Advances by the WINLINK/SCS |
|---|---|
| • Petition before the FCC<br>• Hundreds to thousands of comments | Vast network[64] of<br>• volunteer<br>• unpaid<br>technologically advanced electronics experts<br><br><br>Advanced PACTOR gateways<br><br><br>Short-range VHF/UHF stations |
|  | Advanced New Sound Card Modulation Techniques<br>• WINMOR[65] |

---

64   WINLINK RMS Gateways:  https://winlink.org/RMSChannels

| | |
|---|---|
| | • ARDOP[66] |
| | Widespread advancement of skills in the communications and technical phases of the art<br><br>Breathed new life into em. comm. groups.<br><br>Amateur Radio Digital & Voice Emergency Communications - 2nd Ed.<br>Gordon L. Gibby KX4Z BEE MS MD & Barry Isbelle N2DB |
| | Disaster Service -- multiple events |
| | Development of remote networked multi-modal receiver with 21-day history[67] |
| | Development of free monitoring software[68] |
| | Development of free PACTOR |

65  Muething 2008 TAPR Presentation. https://www.tapr.org/pdf/DCC2008-WINMOR-KN6KB.pdf

66  Windows:  https://ardop.groups.io/g/users   Linux: http://www.cantab.net/users/john.wiseman/Documents/ARDOPC.html ; source  code available in multiple versions, including: http://www.cantab.net/users/john.wiseman/Downloads/Beta/ardopc

67  WINLINK:   https://cms.winlink.org:444/MessageViewer.aspx

68  Gibby:  https://ecfsapi.fcc.gov/file/10830048730238/FreeSoftwareToReadWINLINK.pdf

receiving software on Raspberry Pi[69]



**PMON - a PACTOR® Monitoring Utility for Linux**

PMON allows the thorough observation and documentation of all presently available PACTOR-1/2/3 transmissions (PACTOR-4 will follow in early 2020). PMON covers all PACTOR levels with the appropriate Speedlevels and packet variations. PMON will read in parallel PACTOR-2 and PACTOR-1. The very wide receiving range (frequency offset ±200 Hz), as well as the automatic sideband recognition, ease routine operation of PMON with PACTOR-2 and PACTOR-3 considerably.

PMON automatically decompresses LZHUF compressed messages on the fly. This is very useful for monitoring Winlink email transfers.

**Note**: LZHUF compression is not inherent to PACTOR, it is not the internal PACTOR Huffman/PMC compression but an external compression variant utilized by some application software, e.g. Winlink. Nevertheless, as LZHUF is widely used, PMON supports decompression even of that third party compression type.

**This tool is strictly for private use only!** This means non-commercial applications, by private persons, e.g. radio amateurs. The monitored data may be published without restriction by those



Development of on-the-fly decompression technique[70]

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69  SCS:  https://www.p4dragon.com/en/PMON.html
70  Helfert:  https://forums.qrz.com/index.php?threads/how-many-ham-systems-use-compression.672189/page-28#post-5195209  Sep. 14, 2019.
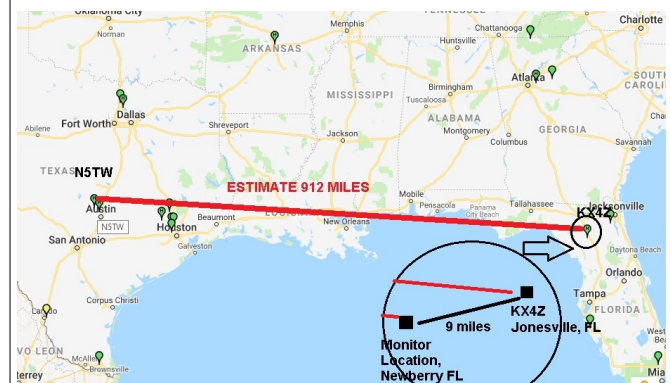
PMON_lzh.exe

User Manual    V 1.0.1 (14/Sep/2019)

© 2019 SCS Spezielle Communications Systeme GmbH & Co. KG

Initial study of advanced Diversity Receiving techniques[71]



Demonstrated dramatic benefit! Advancement of the radio art.

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## Now Lets Review NINE TRUE Statements:

1. The time-honored understanding

   *"Amateur radio communications should be readable for persons with adequate signal and appropriate hardware and software. "*[72]

2. WINLINK is not at all unique.   EASY TARGET -- but same type software work can be done to make FLDGI/FLMSG, D-RATS, FBB just as monitorable.  All were ADVANCES IN THE RADIO ART, well-received and much appreciated. [73]

3. **PACTOR (a well-specified technique )  is <u>completely readable</u>,** and *always has been using HOSTMODE option.*[74]

4. Amateurs and the FCC have always recognized the benefit of both proprietary and open-source hardware and software in the development of the radio art. [75]  This included Slow-Scan and RTTY development. [76] [77] [78]

5. WINLINK is now the **most self-policed, most-compliant and <u>only</u> objectively documented** *system* **of all of Amateur Radio.** [79]  No such data:  RTTY, SSB, CW, or FM techniques.

6. Failure to adopt freely developed improvements in radio monitoring?  Demanding removal of Advancements?   Antithetical to 97.1.....<u>should be rejected</u>.

---

72  Even Mr Kolarik has agreed to the idea that signals must be HEARD, and that there might be OWNERSHIP of relevant equipment.
73  Gibby: explanation of LZHUF myths:   https://ecfsapi.fcc.gov/file/10906223525884/ExParteMyths.pdf;  Gibby, explanation of ancient publicly described encoding:  https://ecfsapi.fcc.gov/file/10808597817982/ExParteCommunicationAug8.pdf
74  SCS, PTC-II manual:  http://www.p4dragon.com/download/SCS_Manual_PTC-IIusb_4.0.pdf  See Section 5.14, and Chapter 10 The WA8DED Hostmode is an ancient technique.  Additional commands also allow monitoring.
75  FCC Part 97.309(a)(4) includes two proprietary modes as EXAMPLES.   "(4) An amateur station transmitting a RTTY or data emission using a digital code specified in this paragraph may use any technique whose technical characteristics have been documented publicly, such as CLOVER, G-TOR, or PacTOR, for the purpose of facilitating communications. "
76  http://www.smecc.org/rtty_ratt_radio_teletype.htm  Demonstrates multiple proprietary hardware systems and their prices in the dollars of that day.
77  An advertisement for early Slow Scan proprietary hardware:  https://forums.qrz.com/index.php?threads/capturing-winlink-fc-em-pactor-messages-over-the-air-decoding.670930/page-3#post-5175316
78  https://forums.qrz.com/index.php?threads/capturing-winlink-fc-em-pactor-messages-over-the-air-decoding.670930/page-2#post-5175239 noting HAL proprietary FSK modem for RTTY with equivalent today's dollars price of $2800
79  Gibby:   https://ecfsapi.fcc.gov/file/10822196770221/ReAnalysisOfWinlinkObjectionableMessages.pdf

7. <u>Unchallenged statistical objective evidence</u>: *no need whatsoever* to change or remove 97.221(c),[80]   Petitioner & ARRL: *provided no statistical evidence at all*. 97.221(c) preserves historical evidence of proprietary and public systems well serving Amateur Radio.[81]

8. All TECHNIQUES in common discussion: quite  technically documented-- some even source code! SCS: above and beyond, free reader for Raspberry Pi!! [82]

9. The RM-11831 issue has been unnecessarily blurred by mistaken claims that WINLINK system is in some way encrypted[83] [84] [85] by using advanced techniques that have been common, and documented, for three decades[86], and are in wide usage in multiple other same-class systems.[87]   Demonstrated:  modest amount research / development -- can monitor as much as desired.   Advanced techniques explained to complement advanced systems. [88]  Recommendations already made: centralized reading vs monitoring solutions.

---

80  Gibby, original research demonstrating that transmissions of WINLINK 97.221(c) 500 Hz stations outside of 97.221(b) allotted spaces were in the hundredths (0.01) to thousandths (0.001)  of even ONE percent of available time-spectrum. https://ecfsapi.fcc.gov/file/10408063816674/FCCRM11831-2.pdf

81  Proprietary CLOVER and G-TOR -- one of which apparently was never duplicated by any other firm.

82  SCS:  Raspberry Pi reader for PACTOR and for WINLINK combined   https://www.p4dragon.com/en/PMON.html

83  Rappaport:  "effectively encrypted"  "national security"  https://ecfsapi.fcc.gov/file/1040322516387/FCC Letter RM 11831 final.pdf

84  Rappaport: "Winlink and ARSFI have never admitted this, but you can see below how the Winlink community has always enjoyed and expected its private, effectively encrypted data transmissions! They expect this and enjoy it, even though such data transmissions are forbidden in 13-1918 and 95-2106 and FCC part 97.113, and elsewhere." https://ecfsapi.fcc.gov/file/1053062773273/Dear FCC letter.docx

85  A person using the callsign of Scott Craver  claimed that being asked to give only certain characters of your WINLINK password (in clear text, no less) with 3 other characters to log in constitutes  encryption:  "In my opinion this clearly crosses the encryption line. You should never communicate anything on the bands that isn't "in the clear," and you shouldn't be using any cryptographic protocol for the express purpose of keeping any information private or secret. " https://forums.qrz.com/index.php?threads/expectation-of-privacy.666437/page-20#post-5227488

86  F6FBB -- Click on "Technical Info"   Source code available on mirrored server.   http://www.f6fbb.org/

87  FLDGI/FLMSG;  PAT; D-RATS; FBB

88  Gibby:  first data on efficacy of diversity receiving (a concept as old as World War II) contained within: https://ecfsapi.fcc.gov/file/109191626613689/InconvenientTruths.pdf

# 4 QUESTIONS THE FCC MIGHT WISH TO ASK

| QUESTION | ANSWER |
|---|---|
| 1.  Monitoring advances have been now made freely available.  What are your plans to implement a monitoring system using these techniques? | ? |
| 2. Given that so many messages have now been demonstrably read, why do you still assert it is virtually impossible? | ? |
| 3.  What prevents the creation of a small diversity receiving system (2-station pilot) using the existing Internet as proposed in filings and theoretically underpinned by Helfert? | ? |
| 4. What prevents you from taking the clear technical specifications and software of the ARDOP and WINMOR techniques, and linking them to the provided monitoring software? | ? |

# Sent by Email:

Marlene H. Dortch
Chairman Ajit Pai
Commissioner Michael O'Rielly
Commissioner Brendan Carr
Matthew Berry
Don Stockdale
Julie Knapp
Eric Burger
Will Adams
Bill Davenport
Aaron Goldberger
Umair Javed
Erin McGrath
Suzanne Tetreault
Roger Noel
Scot Stone
Michael Ha
Paul Murray
Paul Moon

Gordon L. Gibby MD
KX4Z
15216 NW 41ˢᵗ Avenue
Newberry FL  32669

April 8 2019

RE:            RM-11831


Dear Sirs:


What is the real truth regarding 97.221(c) stations' interference?   The Petitioner for RM-11831 (and some commentators) have <u>made bold statements claiming major interference to other amateur radio operators from 97.221(c) 500-Hz wide ACDS stations</u>.   It is likely that the vast majority of those stations are in the WINLINK group.    However, not all of them are in the United States, obviously.

I was unable to find any **objective data** recorded by the proponents of RM-11831 to objectively quantify the possible levels of "interference."   Therefore I gathered data from the WINLINK central system on reported high frequency (HF)  "minutes" of operation, which are gathered for all stations, including 97.221(b) and (c) stations.   By grouping them by frequency, I was able to capture the actual usage of 97.221(c) stations in the United States on both 40 meters and 20 meters.   Each USA 97.221(c) gateway was assumed to be operating at the full allowed 500 Hz bandwidth (½ kilo Hertz) in the analysis below.


**The results indicate the proponents' claims are ludicrously invalid.**

| Band | Total kHz available to General / Advance beneath 97.221(b) segment | Total number of USA 97.221(c) stations | Total reported minutes of HF operation, 2 weeks | Percentage of time-bandwidth utilized by 97.221(c) USA stations |
|---|---|---|---|---|
| 40 m | 75 kHz | 24 | 372 | 1.2 hundredths of one percent (0.012 %) |
| 20 m | 69.9 kHz | 9 | 9 | 3 ten-thousandths of one percent (0.000319 %) |

Note:   There are 20,160 minutes in a two-week time span, the time span for which operations of WINLINK 97.221(c) were totaled.

1

```
Equation:

Percentage of time-bandwidth  =     100    *          (time used   *   bandwidth used)
                                                      (  20,160    *   kiloHertz available)


                               =     100 *            (HF Minutes   *    ½ kHz)
                                                      ( 20,160 *    kiloHertz available)
```

The United States 97.221(c) WINLINK stations operating in "winlink" mode through the Central Message Server (CMS) report total times of operation in a 2 week period ending on 4/7/2019 (40 meters) and 4/8/2019 (20 meters) of vanishingly tiny fractions of one percent of the available time and bandwidth available on the 40- and 20meter bands.

As I had expected, the 40-meter band had more 97.221(c) usage; perhaps because this band has both NVIS (near-vertical incident sky wave) properties and modest long-distance properties (both of which are desirable for emergency communications), and the 97.221(b) allocation for wider-bandwidth automatically controlled stations is a mere 5 kilo Hertz on this band.

**To my knowledge, these are the <u>only objective data available</u> that can quantify the possible "interference" from 97.221(c) stations in the United States.** These data were posted on a publicly available discussion forum (QRZ.COM) and no rebuttal was offered in a space of 24 hours in the midst of a lively discussion that went on past 54 pages.

I am here presenting data only from United States 97.221(c) WINLINK gateways, and it is possible (but seemingly quite unlikely) that some small amount of additional discomfiture comes from foreign stations – however the Petitioner's requests to delete 97.221(c) will have no impact on those foreign stations.

Comparing the above results with the claims and anecdotal data provided by the Petitioner is striking:

| Filing | Quotation |
|---|---|
| RM-11831 Petitioner https://ecfsapi.fcc.gov/file/ 100918881206/PETITION FOR RULEMAKING.pdf | *"6. Interference from Automatically Controlled Data Stations (ACDS), operating under **97.221(c), continue to be a major problem on the amateur bands**. Many examples of complaints may be found in prior FCC documents, RM-113065 and RM-117086 among others. The absence of formal complaints may be due to the fact most of these stations are difficult to identify and the FCC has limited resources to enforce Part 97 violations, depending on amateur radio operators to self-regulate . "* |

| | (Emphasis added) |
|---|---|
| Thomas Adams, cited by the Petitioner. https://ecfsapi.fcc.gov/file/6518321490.pdf | *"The use of unmanned "robot" stations run by computers has **already caused a great deal of unnecessary interference** to non-digital users of the amateur bands through thier [sic] operating mode of transmitting without listening first, continually hammering until they force non-digital station to leave a given frequency "*(emphasis added) |
| Bernstein, cited by the Petitioner *https://ecfsapi.fcc.gov/file/6518321995.pdf* | *"As the number of automatic stations operating under **97.221(c) has increased, communications between attended stations using digital protocols have been increasingly disrupted** by the aforementioned hidden transmitter effect. "* **(Emphasis added)** |
| Teller, cited by the Petitioner *https://ecfsapi.fcc.gov/file/6518309211.pdf* | *"To do so would result in an unavoidable enormous increase in FCC enforcement activities, in the same manner as the inclusion of **Subpart C of 97.221, which removed limits on automatically controlled digital stations with emitted bandwidths under 500 Hz, has resulted in historically high interference** to normal radio amateur communications and should itself be rescinded. "* **(Emphasis added.)** |

In light of the ***nearly infinite gap*** between the <u>claims of the Petitioner and those whom he cites</u> regarding the "interference" created by 97.221(c) stations, and the <u>actual data of even possible "interference"</u> above, it is obvious that a vanishingly insignificant impact would follow from his wishes to delete 97.221(c). Therefore, I would ask the Federal Communications Commission to refuse his request to remove 97.221(c).


Sincerely,


Gordon L. Gibby MD
KX4Z

SCS - Spezielle Communications
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D-63454 Hanau

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**Via e-mail and ECFS**

Mr. Scot Stone
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

October 22, 2019

**Follow-up letter to your original inquiry (e-mail) dated June 08, 2018,
Regarding monitoring/transparency of our PACTOR 3/4 communications modes**

by Hans-Peter Helfert, DL6MAA,
c/o Spezielle Communications Systeme GmbH & Co. KG, Germany

Dear Mr. Stone,

As additional information to your inquiry regarding PACTOR 3 and PACTOR 4 transparency, dated June 08, 2018, I would like to inform you that there are new, very simple and cost-effective ways to monitor PACTOR transmissions, and even LZHUF[1] compression used by Winlink, BPQ, PAT and others. This software called "PMON for Raspberry Pi[2]" is now freely available, see also our press release attached to this letter. Meanwhile, there are other solutions to decode LZHUF-compressed monitoring data, even developed by amateurs.

These developments underline once again that allegations of "effective encryption" of PACTOR transmissions, in particular asserted by Prof. Theodore Rappaport and the attorneys of NYU, are completely baseless. PACTOR 3 and PACTOR 4 are sufficiently documented within the scope of the legal requirements, and now there even is a free monitoring software for everyone available (currently for PACTOR 1-3, PACTOR 4 will follow soon). The cost of purchasing a PACTOR modem can no longer be presented as a hurdle for monitoring!

In addition, this new "PMON for Raspberry Pi" software also decodes LZHUF compressed data (i.e. compression not performed by the modem itself but through the application software, such as Winlink) as soon as a corresponding "B2F header" is recognized in the

---

[1] Source Code, lzhuf.c: https://github.com/keendreams/keen/blob/master/lzhuf.c
[2] PMON for Raspberry Pi: https://www.scs-ptc.com/en/PMON.html

receive data. The software offers <u>combined</u> PACTOR monitoring and LZHUF on-the-fly decompression.

As pointed out in our commentary[3] on Prof. Rappaport's comment on RM-11831, all our PACTOR modems have <u>always included a comprehensive monitoring mode</u>. I can only reiterate this once again and underline that "open speech" was one of the fundamental goals, when designing the PACTOR protocols, even though Dr. Rappaport's vague and inaccurate claims suggest the opposite.

However, the monitoring mode of our <u>modems</u> itself does <u>not contain</u> any methods for decompression on the application layer (LZHUF decompression). In this case, when using a modem as monitoring device, decompression must be done externally by means of additional software. So, for successful Winlink monitoring using an SCS modem, you have to apply such additional LZHUF decompression software. Here again, now there is a free solution offered by SCS to read Winlink data "on the fly" using a modem. This software is called PMON_lzh.exe[4].

Even a hobby programmer was able to develop an LZHUF decoder within days, using C programming language and parsing the PMON raw (LZHUF compressed) data generated by PACTOR modems working in monitoring mode, see publications by Gordon Gibby[5] , MD.

This also works perfect for PACTOR 4.

I would like to briefly explain the technical background of application and transport layers again:

The monitoring device can only read the data that the <u>application software</u> has sent to the modems involved to the transport over the shortwave channel.

At this point, it is important to <u>distinguish very accurately</u> between the actual <u>transport</u> method (the means of transporting the bytes over the shortwave channel, e.g. PACTOR, Winmor, ARDOP, etc.) and the <u>application</u> that generates that data. Nowadays, the application usually compresses the data before sending it over the shortwave channel; so it is also at Winlink. All e-mails are compressed by the Winlink software according to the B2F standard, which uses LZHUF as the actual compression method, i.e. the amount of data to be sent is reduced to the necessary size and the shortwave channel is thereby relieved. This has <u>nothing to do with encryption or obfuscation</u>, but only serves to reduce the amount of data; so it is a technological necessity - if Winlink or others want to keep to the state of the art.

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[3] SCS reply on Dr. Rappaports comments on RM-11831:
https://ecfsapi.fcc.gov/file/10512224804129/SCS_FCC_Reply_RM11831.pdf
[4] PMON_lzh, version 1.07:  https://www.p4dragon.com/download/pmon_lzh_v_1_0_7.zip
[5] Dr. Gordon Gibby, free LZHUF decoder software:
https://ecfsapi.fcc.gov/file/10830048730238/FreeSoftwareToReadWINLINK.pdf

Of course, this compression applied by the application software means that the actual text does not immediately appear when monitoring this data using an SCS modem. The receiving data must then first be decompressed before it actually can be read.

It is really hard to follow the arguments of the PACTOR / Winlink opponents:

We do not understand how to present the additional necessary step of decompression on the application layer as a defect or mistake or omission of a necessary thing on the modem side. The modem simply does not know what kind of data will be sent by the application. Here, the question of business-damaging and libel will have to be examined, because the situation is very clear, and the necessary facts and documents have been available for years on the SCS server for public access, in particular the description of PMON monitoring mode[6] of PACTOR modems.

The real "problem" that Dr. Rappaport apparently has is decompressing LZHUF-compressed data sent by Winlink and some other amateur radio applications (FBB, BPQ, D-RATS, etc.). But the problem is not real, as LZHUF was developed and documented in the 1980's and is a very popular dictionary compression, similar to well-known LZW compression. The B2F protocol, which serves as a wrapper for LZHUF compression in amateur radio, was described by Jean-Paul Roubelat more than 20 years ago and is still available as open source code on the Internet[7], as well as the source code for actual LZHUF compression[8] The compression method criticized by Dr. Rappaport is thus "open source" - and in no way proprietary or not freely available.

In contrast to many more modern compression methods, pure LZHUF as used by Winlink, even allows on-the-fly decompression, i.e. you do not have to receive the entire file without errors in order to be able to decode anything at all. The data only must be sent to the decoder from the beginning of the file - and after the first 60 input bytes, the corresponding decompressed output will appear! The decompression continues according to this pattern, after further quite short pieces of data are input, decompressed data appears again. This allows streamed real-time monitoring of the transmission of "file compressed" data! This is a very advantageous feature of the LZHUF method and thus it offers an excellent tradeoff between good, universal compression and ease of monitoring. The only real drawback is the lack of "late entry capability". Decoding will be performed properly until there is a gap in the input data stream. Missing data in the received data stream thus (with current technology) leads to an abort of decoding. However, this is not a true obstacle to reading LZHUF-compressed file transmissions. Reading is only a matter of SNR – and in the case of fading channels it can be improved to the desired extent by applying diversity reception or other advanced techniques. Such techniques would also be required of voice transmission monitoring if one wishes a 100 % monitor despite recurrent fading.

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[6] PMON monitoring mode on SCS DR-7X00 modems, User Manual:
https://www.p4dragon.com/download/Update_Info_DR7X00_Version_1_17_English.pdf
[7] See 'documentation' for information on FBB LZHUF compressed forwarding: http://www.f6fbb.org/
[8] lzhuf.c: https://github.com/keendreams/keen/blob/master/lzhuf.c

In summary, I would like to stress again:

1.  that 'effective encryption' is a disingenuous claim by Prof. Theodore Rappaport.

2.  that compression is not encryption.

3.  that the proof-of-concept development and testing by Dr. Gibby from the documentation of Jean-Paul Roubelat and the Winlink Team proves that the current rules are sufficient to develop tools and enable amateur radio self-policing.

4.  that the current and <u>correct</u> criteria for prohibiting encoded messages is "intent to obscure meaning", and

5.  that the requirement for disclosure for the characteristics of a technique by publishing is <u>correct</u> and will survive future development, contrary to the solution proposed in RM-11831.

Respectfully,

Hans-Peter Helfert

SCS GmbH & Co. KG

**PRESS RELEASE**

**For Immediate Release**

October 11, 2019

.

**PMON[1] - An Independent PACTOR / B2F Monitor for The Raspberry Pi**

**SCS**, the company that created PACTOR, has released software for Linux to allow over-the-air monitoring for meaning of PACTOR 1/2/3 transmissions. The program requires only minimal hardware: an inexpensive Raspberry Pi 3 Model B+ (minimum) computer and an inexpensive USB sound device.

.

All **SCS** PACTOR hardware modems include a command that allows PACTOR monitoring on the fly. The PMON software now makes this possible without the use of a modem, and adds the ability to decode B2F/LZHUF compressed messages (Winlink and others) on the fly.

The program is a free download for radio amateurs from a Linux repository provided by **SCS**. Easy-to-follow instructions, program information and documentation are provided on this **SCS** web page:   https://www.p4dragon.com/en/PMON.html

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[1] NOTE: This exciting new software development for Raspberry Pi complements and surpasses previously released free **SCS** software that leveraged PACTOR modems' ability to monitor PACTOR to read Winlink for meaning. This new development allows monitoring of all kinds without even the hardware of the PACTOR modem.

Message text copied in the demonstration of over-the-air monitoring of a PACTOR / Winlink signal:

C:\PMON_LZH>pmon_lzh com16 3

PMON LZHUF-Decoder Version 1.0.6 (18-SEP-2019)
==============================================

Trying to open COM port 16...

Open COM port 16: baud=115200 data=8 parity=n stop=1 xon=off to=off odsr=off dtr =on rts=on

NOW FETCHING DATA FROM MODEM, press any key to abort
======================================================

cmd:
*** PMON MODE: 3

cmd:
*** PMON VERBOSE: 1

cmd:
*** PMON HEX: 1

cmd:
*** PMON PACKETS: 0

cmd:

PACTOR-1/2/3 Monitor started:
=============================

cmd:

### LISTENING TO PMON...

: W4PHS SHERRODI09461777
[RMS Express-1.5.24.1-B2FHM$]
;PR: 09461777
; N5TW DE W4PHS (EM66OA)
FC EM NMCT700D3FUU 2526 1272 0
F> 3D

### ====== <FC EM> HEADER FOUND, STARTING LZHUF DECOMPRESSION ======###
### UNCOMPRESSED LEN OF MESSAGE: 2526
### <Bin data>

### START OF COMPRESSED MESSAGE FOUND


### LOGICAL PACKET FOUND, LEN 250

### LZHUF OUTPUT (on the fly):

MID: NMCT700D3FUU
Date: 2019/10/27 23:14
Type: Private
From: W4PHS
To: NCS398
Subject: Constitution
Mbo: W4PHS
Body: 2394

[Constitution for the United States of America]

### <Bin data>of the United States, in Order t
o form a more perfect Union, establish Justice, insure domestic Tranquility, pro
vide for the

### LOGICAL PACKET FOUND, LEN 250

### LZHUF OUTPUT (on the fly):

common defence, promote the general Welfare, and secure the Blessings of Liberty
 to ourselves and our Posterity, do ordain and establish this Constitution for t
he United States of America.

Article. I.

### <Bin data>l legislative Power
s herein granted shall be vested in a Congress of the United States, which shall
 consist of a Senate and House of Representatives.

Section. 2. The House of Representatives shall be composed of Members chosen eve
ry second Year by the People of the sever

### LOGICAL PACKET FOUND, LEN 250

### LZHUF OUTPUT (on the fly):

al States, and the Electors in each State shall have the Qualifications requisit
e for Electors of the most numerous Branch of the State Legislature.

No Person shall be a Representative who shall not have attained to the Age of tw
enty five Years, and been seven Years a Citizen of the United States, and who sh
all not, when elected, be an Inhabitant of that State in which he shall be chose
n.

Representatives and direct Taxes shall be apportioned among the several States w
hich may be included within this Union, according to their respective N

### LOGICAL PACKET FOUND, LEN 250

### LZHUF OUTPUT (on the fly):

umbers, which shall be determined by adding to the whole Number of free Persons,
 including those bound to Service for a Term of Years, and excluding Indians not
 taxed, three fifths of all other Persons. The actual Enumeration shall be made
within three Years after the first Meeting of the Congress of the United States,
 and within every subsequent Term of ten Years, in such Manner as they shall by
Law direct. The Number of Representatives shall not exceed one for every thirty
Thousand, but each State shall have at Least one Representative; and until such
enumeration shall be made, the State of New Hamp

### LOGICAL PACKET FOUND, LEN 250

### LZHUF OUTPUT (on the fly):

shire shall be entitled to chuse three, Massachusetts eight, Rhode?Island and Pr
ovidence Plantations one, Connecticut five, New?York six, New Jersey four, Penns
ylvania eight, Delaware one, Maryland six, Virginia ten, North Carolina five, So
uth Carolina five, and Georgia three.

When vacancies happen in the Representation from any State, the Executive Author
ity thereof shall issue Writs of Election to fill such Vacancies.

The House of Representatives shall chuse their Speaker and other Offic

### LOGICAL PACKET FOUND, LEN 22

### LZHUF OUTPUT (on the fly):

ers; and shall have the sole Power of Impeachment

###====== MESSAGE COMPLETED, DECOMPRESSION FINISHED ======###

NN
FF

PMON OFF

THANK YOU FOR USING PMON_lzh!

C:\PMON_LZH>

_____


Messages demonstrating Winlink's use in the current Wildfire and Power Outages events in California:


From: CALIFORNIA@winlink.org
Date: October 26, 2019 at 4:56:15 PM CDT
To: AFA9DY@winlink.org, KJ6IX@winlink.org, KI6VKV@winlink.org,
KA6ARC@winlink.org, W7PHX@winlink.org, armine.white@fema.dhs.gov,
WA6CQE@winlink.org, WA6JFZ@winlink.org, ben.green@caloes.ca.gov,
bkpennington1@comcast.net, KK6FKW@winlink.org, WA6DMS@winlink.org,
AE6LA@winlink.org, WS6P@winlink.org, K1OES@winlink.org, K3OES@winlink.org,
KF6OBI@winlink.org, N6SAC@winlink.org, WA6EQQ@winlink.org,
CREBC@winlink.org, David.Meyer@caloes.ca.gov, AD6NR@winlink.org,
KG6SJT@winlink.org, john.hudson@caloes.ca.gov, KK6RJR@winlink.org,
KA6IYS@winlink.org, laura.goudreau@fema.dhs.gov, K6SDR@winlink.org,
mike.beckstrand@caloes.ca.gov, N6KZB@winlink.org, MODOCARES@winlink.org,
N7JIL@winlink.org, W6RDF@winlink.org, CAORCO@winlink.org, W6HK@winlink.org,
W7OEM@winlink.org, N6CKV@winlink.org, K6TQM@winlink.org,
KE6CWP@winlink.org, KJ6LDJ@winlink.org, W6MSU@winlink.org,
W6TUW@winlink.org, W6LFR@winlink.org, KO6GM@winlink.org,
KG6DGZ@winlink.org, K4cjx@comcast.net, KS6Z@winlink.org, W6DOM@winlink.org,
K6KYU@winlink.org
Subject: //WL2K State response to Public Sefety Programmed Shutoff and fires
Reply-To: CALIFORNIA@winlink.org
In response to the Public Safety Power Shutdown and three major fires we are
activating the SOCC. We will be asking for checkins on the CESN on 7192 KHz LSB.
We will also be on Winlink with our address of WGY939, tactical call CALIFORNIA and
SHARES ALE WGY939. Please respond with your status?
We expect to be activated until 1200 Hours on Tuesday 10/29
Jim Price KO6GM
Communications Center Operations Officer
Communications Reserve Unit
California Governor's Office of Emergency Services
hjamesprice@gmail.com

W: 916-845-8624
C: 503-577-1152


------ Forwarded Message ------
From: "CREBC@winlink.org" <CREBC@winlink.org>
To: "CALIFORNIA@winlink.org" <CALIFORNIA@winlink.org>;
"K6RJF@winlink.org" <K6RJF@winlink.org>; "AI6KU@winlink.org"
<AI6KU@winlink.org>; "xe2si@crebc.org" <xe2si@crebc.org>;
"xe2gf@outlook.com" <xe2gf@outlook.com>; "N8KBC@winlink.org"
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Cc: "n6kzb.xe@gmail.com" <n6kzb.xe@gmail.com>;
"john.hudson@caloes.ca.gov" <john.hudson@caloes.ca.gov>;
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<KR6RG@winlink.org>; "bslosson@gmail.com"
<bslosson@gmail.com>;
"GREG@winlink.org" <GREG@winlink.org>
Sent: 10/27/2019 09:39:00
Subject: CREBC XE2BNC Information SITREP CREBC - 2019-10-27
09:15
Status: REAL EVENT
1. To: Interested parties. San Diego ARES - CA OES ACS
2. Event Name: Fire / wind events started 10/25
3. Event Type/Description/Location:
Wind driven fires. Air contamination.
Northern areas of Baja CA MX. Tecate - Playas de Tijuana - Tecate -
Rosarito - and environs.
4. Current Situation Summary:
Winds have diminished and area wild land fires are contained.
No info at this time on fires further south into BAJA CA MX
Temperatures have dropped, but will rise again during the week.
No power issues or public communication issues at this time.
UHF system on Otay Mtn USA 448.500 (backup rptr), did not recover
after USA power outages. Site owner has been made aware. All other
CREBC systems are functional and on battery/solar.
CREBC still on phone standby for activation as needed.
5. Current Operational Period Planned Actions:

One club member monitoring news alerts.
6. Next Operational Period Planned Actions:
Continue monitoring and having at least 2 club members able to respond, 30 minute notice.
7. Efforts by other Agencies or Organizations:
Baja CA MX and Tijuana Protection Civil are active. Area fire services are on high staffing and/or call back.