

REPLY TO WT 16-239 COMMENTS BY ARRL FILED 10/11/16

JANIS CARSON, AB2RA, timely filed before 11/10/16

Also filing as a reply under **RM-11708** and **RM-11759**.

Replying to ARRL comment:

<https://ecfsapi.fcc.gov/file/1011120327463/Comments%20of%20ARRL%20on%20NPRM%2010112016%20FINAL.pdf>

The original comments of ARRL which opened this proceeding were filed November 13, 2013. After 3 years, there is nothing new in this ARRL comment of 10/11/16 to “mitigate” the effects of wider band emissions; it is a rehash of the same original defective concept, and it took 20 pages to restate it. ARRL insists on pursuing 2.8 Khz wide band emissions everywhere in the current CW/DATA bands as originally planned by them. However, there are significant statements that reveal new flaws and contradictions within ARRL's own document. I will present arguments on each point later in this document.

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THE FIVE CHOICES AND THEIR CONSEQUENCES:

1. **CLOSE THE PROCEEDING, DISMISS IT WITH PREJUDICE**, AS ANOTHER ARRL BADLY CONCEIVED IDEA. It is not without precedent; the original ARRL “regulation by bandwidth” concept was widely opposed by an overwhelming number of amateurs years ago, because it would have placed HF digital email in the VOICE/IMAGE band segments. That FCC RM-11306 ran from November 2005 until it was withdrawn by ARRL and closed in June 2007 was essentially the same concept as RM-11708. It was not that separation of incompatible emissions, “regulation by bandwidth” was a bad idea. It was because amateurs who operated VOICE wisely recognized the threat at that time to THEIR VOICE/IMAGE operations, and did not want wide band digital in THEIR band segment. In fact, many of the current arguments in RM-11708 and WT 16-239 are exactly the same. I refer you to ARRL's own reply comments still filed under RM-11306:

<https://ecfsapi.fcc.gov/file/6518329398.pdf>

“The conversion to segmentation by bandwidth provides a regulatory environment that is conducive to the accommodation of newer technologies, including those not yet designed or developed. The regulation of emissions by bandwidth is the most flexible means of encouraging experimentation with new communications techniques in the Amateur Service.”

“There are comments which predict, as the result of this proposed change, a proliferation of “robot stations” which will disrupt the incumbent SSB telephony that now predominates in the wider bandwidth segments of the HF bands. They claim that there is no foolproof method of insuring that interference will not occur. Some argue that a “listen-before-transmit” protocol, to be effective as an interference avoidance mechanism, must listen for a minimum of ten minutes

before transmitting to prevent interference to an ongoing communication on a particular frequency.”

“They fear that extensive Commission enforcement efforts would be required in order to enforce any increased reliance on voluntary band plans.”

Sound familiar? The fact STILL is that these data “ROBOTS” are incompatible with HUMAN operations in the Amateur Service, regardless of whether they are CW/NARROW DATA or VOICE/IMAGE emissions.

On top of that, the current FCC choice to create a NEW CLASS OF DATA EMISSION that has NO BAND WIDTH LIMIT AT ALL simply exacerbates the incompatibility and eliminates the enforceable actions in all Part 97 rules in this spectrum.

THE ONLY POSSIBLE SUCCESSFUL MITIGATION THAT CAN BE APPLIED IS TO SEPARATE ALL NON-HUMAN ROBOT DATA EMISSION AND ITS NEW CLASS OF DATA EMISSION, REGARDLESS OF BANDWIDTH, INTO ITS OWN BAND SEGMENT OR DISALLOW IT ALTOGETHER.

By default, after RM-11306 ended, the ACDS ROBOTS and internet email content wound up in the CW/DATA segment. As predicted then, demand grew far beyond the original ACDS segments and Winlink began offering Pactor 3 connections outside the ACDS segment under a legally “vague” rule concerning “auto responding” stations, which are functionally NO DIFFERENT from ACDS stations. This was proven in an ex parte presentation by Ted Rappaport. Now ARRL seeks to deploy Pactor 4, an even wider emission EVERYWHERE in the CW/DATA segment. ARRL's 2.8 Khz band width limit in no way “mitigates” the “congestion” that will inevitably result. FCC took it further by abolishing ALL band width regulation. **I WOULD FAVOR THIS OUTCOME, DISMISSAL WITH PREJUDICE, WITH NO CHANGES TO PART 97.** I would add that if you do that, FCC should declare an indefinite moratorium on further HF band planning petitions from ARRL as well as the petitioner of RM-11769 to end this once and for all.

2. **ELIMINATE ANY WIDE BAND INTERNET EMAIL DATA CONNECTIONS AND ACDS ON HF ALTOGETHER, ALONG WITH DISMISSING WT 16-239.** There certainly have been sufficient comments with proof to justify this action. The ex parte filing by Ted Rappaport presented evidence of current ongoing problems. The total HF spectrum is less than some individual VHF or UHF bands. A significant number of commenters on WT 16-239 favored this choice. **I WOULD NOT HAVE A PROBLEM WITH THIS OUTCOME.**
3. **ADOPT ARRL's PROPOSAL OF 2.8 Khz band width and allow it everywhere in the CW/DATA segment.** While it is clear that the **baud rate is an obsolete INDIRECT method** of regulating band width, it is not clear that allowing 2.8 Khz wide emissions everywhere in the CW/DATA segment is proven to be a good idea either. By ARRL's own statements, to be discussed later, that has potential for making the current problems with compatibility between wide and narrow emissions even worse than they are now. **Further, 2.8 Khz is still an INDIRECT METHOD of regulating that interaction, which has been proven by current conditions to not work. It replaces one broken concept with another broken concept and should be permanently rejected without further consideration. This makes a bad situation worse. I DO NOT FAVOR THIS OUTCOME.** Very few filers on 16-239 supported 2.8 Khz without separate segments.

4. **ADOPT FCC'S PROPOSAL OF NO BAND WIDTH LIMITS ON DATA EMISSION EVERYWHERE IN THE CW/DATA SEGMENT.** ARRL disagrees strongly with FCC on this outcome, and gives **good reasons in its comments why it will not work**. I am happy to find myself in agreement with ARRL on at least this point. I understand the FCC's frustration with these repeated petitions on the same related subject. By this outcome, FCC gets to walk away from regulation duties and costs, and leave amateur radio to its own solutions. FCC by this action would take a bad situation to worse, then to CATASTROPHIC. The result will be conflict which will result in massive interference to legitimate incumbent uses, as well as legitimate emergency communications. Once an operator encounters unidentifiable incompatible interference on the frequency he has been occupying, the likely choice will be to turn on an amplifier to increase power and continue. That signal MIGHT have been an inconsequential email, a defective Part 15 lighting device, or a legitimate Emergency Communication that could not be decoded, and citations could result. Since there are no rules to enforce, any FCC regulatory responses will be even more expensive. The cost will be collapse of a significant portion of the amateur service and loss of any narrow band innovation that might have eventually grown up from it.

To put it in an analogy, I refer to the wisdom of Solomon, in which two women disputed which was the actual mother of a baby. Solomon drew his sword and offered to divide the baby in two equal parts. The real mother spoke up against that, to save her child from death. And Solomon, having identified the true mother, reunited the infant and true mother. **In this case, the FCC, on the throne of Solomon in this analogy, has offered to dash the infant to the ground, killing it, and throw both mothers out of court.** This is not due diligence.

I DO NOT FAVOR THIS OUTCOME EITHER. Moreover, I have filed reply comments to the FCC's WT 16-239 pointing out the contradictions of having 100 Khz band width limits on UHF, 20 Khz limits on VHF, and NO LIMITS ON HF. The total HF amateur spectrum is less than some VHF/UHF bands. This FCC action would also violate international agreements and band plans. See my reply comments at:

<https://ecfsapi.fcc.gov/file/1005214251324/FCC%2016-239%20DISMISSorSTAY1.pdf>

5. **TAKE THE BEST IDEAS OF ALL THE FILINGS, COMBINE THEM INTO A CONCEPT THAT ACTUALLY WORKS BY DIRECT METHODS OF REGULATING INCOMPATIBLE EMISSIONS, AND MAKE IT POSSIBLE FOR THE FCC TO GET OUT OF THE BUSINESS OF MICROMANAGING DATA MODES AS IT WISHES.** So called "regulation by band width" got a bad name years ago, in another failed ARRL attempt to insert wide data into the VOICE/IMAGE band segments. Separation of narrow and wide band signals was not a bad idea. VOICE operators just did not want to share their segment with wide band data. And the VOICE segments were significantly congested before the Novice segment reformatting, which deleted separate Novice segments, and combined their diminishing ranks into the existing CW segments allowed to General class. It reassigned those old Novice frequencies to other more abundant license classes, and their preferred mode, VOICE; in fact, **FCC was spot on when it divided 80 meters up properly, ten years ago.** ARRL now at this late date, seeks to undo that good FCC decision in RM-11759, another misguided ARRL petition.

Examining filings on WT 16-239, more than 90% of the filers are opposed to WT 16-239. More than 80% of those opposing filers favor approximately the lower 100 Khz of each major HF amateur band to be CW/NARROW DATA less than 400 or 500 Hz emissions, with a SEPARATE WIDE DATA/ACDS segment between the narrow segments and the

VOICE/IMAGE segments. THIS INDICATES OVERWHELMING SUPPORT OF SEPARATE SEGMENTS FOR CW/NARROW DATA FROM WIDE DATA/ACDS. Most also reject any WIDE DATA or ACDS on any bands that are 200 KHz wide or less; this would include 160 meters and 30, 17, and 12 meters. Call it “regulation by band width” or anything you want. This is a **DIRECT METHOD to separate incompatible emissions** that NONE of the other 4 options accomplish. Simply put, this is the ONLY choice that works, “mitigating” the severe “congestion” ARRL itself admitted, and the resultant expensive FCC enforcement expenditures that will result if any other choice than Option 5 is implemented.

I have filed comments which show proposed band plans in detail, which are actually ARRL's own voluntary HF band plan proposal published in their QST July 2015 magazine:

<https://ecfsapi.fcc.gov/file/1091422828084/filing%2016239%20changes%20to%20fcc%20part%2097%20B.pdf>

<https://ecfsapi.fcc.gov/file/109011952607702/FCC%20FILING%20docket%2016%20239%20FINAL10%20%20rm11708.pdf>

ARRL has had the opportunity to view these and other filings requesting the 100 KHz and has rejected them, clinging to its original 2.8 KHz petition, **WHICH WILL NOT WORK** to mitigate interference between the incompatible emissions. **This makes it clear that ARRL always intended, from 2005 in RM-11306 until today, to engage in predatory “vulture” spectrum management to simply take the lower 100 KHz of each major HF band and use it for its wide band data commercial email. Wrapping it in an “emergency communications” label does not now conceal its actual purpose** of wide use of amateur radio for email to areas of the world that are under served by internet connections. While internet service to Alaska, ocean going vessels, Australian outback, parts of Africa, and any other isolated areas is a worthwhile goal, it is NOT the stated purpose in Part 97 rules of amateur radio. It belongs in a commercial setting, **outside the amateur allocations.**

The filers who simply voiced the desire to use Part 4 did not address any of the FCC guidelines stated in WT 16-239 notice. Nor did they offer any workable mitigation or discuss any of the possible costs or offsets to the benefits.

While this argument has yet to be settled, in the interim, **OPTION 5 AS PRESENTED HERE IS THE ONLY CHOICE THAT WILL WORK. AND IT ALLOWS THE FCC TO EXIT FROM THE DETAILS OF EACH NEW DIGITAL MODE. I RECOMMEND IT AS THE ONLY VIABLE OPTION.**

Opposing comments were made by over 90% of the filers on WT16-239. Those opposing WT 16-239 supported separate band segments as detailed in Option 5 by over 80%.

Option 5 allows new wide data modes to experiment freely and flourish in their own segment. Any interference issues can be resolved voluntarily within their own wide band data segments, without impact on incumbent legitimate users of other segments of the HF spectrum, or unnecessary costs to the FCC on repeated enforcement work. It allows Emergency Communications to use as much bandwidth as it needs to accomplish its goal right now. Later software methods surely can be developed to insert a flag in the Packet Header for the Emergency Communications and inhibit the casual HF email transmission until the traffic has been passed. This is not “rocket science”. To fail to protect Emergency Communications from

“commercial” traffic is just plain lazy and negligent. If Winlink cannot be retrofitted, then ARDOP or some other method like STANAG should become the standard. If they cannot correct this, they do not belong in the business of writing software, and some one else with the qualifications should be engaged to complete the work properly. I have participated in regular CW traffic nets that use a yellow form that specifically notes the priority of each message traffic. The HUMAN CW net control station ensures that the Emergency and Urgent traffic is handled FIRST. Only after that, are casual messages transmitted. Are we now being told that modern digital methods cannot possibly implement this simple feature?

This becomes even more essential as new unforeseen digital methods such as PiGate are offered.

See <http://www.pigate.net/>

Do you truly believe that this technology will be limited to Emergency Communications? What will the FCC do when multiple Alaskan communities buy smart phones and set up an Amateur Radio HF email server because the US government has failed to provide last mile connectivity infrastructure to rural areas? If this operation is FREE, what incentive will a commercial provider have to make it available, and still make a just profit? Is this a legitimate use of Amateur Radio? Should the FCC collect a per email or per email server license fee to pay for the inevitable costs of enforcement as it does with any other commercial use of radio?

The FCC is absolutely correct in not wanting to be back here in a couple years with new technology like this after it has locked itself in at 2.8 KHz. Unlimited band width will prevent obsolescence. But some regulation to put it in its own segment, like Option 5 does, is the best chance for success.

THE EXISTING PROBLEMS WITH ACDS AND WIDE DATA RIGHT NOW

To avoid duplication here, I reference the ex parte filing of Ted Rappaport and others before the FCC, which document existing problems with wide band data and ACDS “ROBOT” stations:

<https://ecfsapi.fcc.gov/file/1092719005718/Winlink%20Compilation%20pt2.pdf>

<https://ecfsapi.fcc.gov/file/1092719005718/exparte%20September%2026%202016%20attachment.docx>

<https://ecfsapi.fcc.gov/file/10925839109476/FCC%20exparte%20letter%209%2025%202016.docx>

<https://ecfsapi.fcc.gov/file/10925839109476/K7NHV%20Winlink%20Handout.pdf>

<https://ecfsapi.fcc.gov/file/10925839109476/FCCNPRM%20Docket%2016-239%20Final.pptx>

<https://ecfsapi.fcc.gov/file/10925839109476/Winlink%20compilation%20pt1.pdf>

Doing the same thing as we have will not work with an **entirely new class of emissions** with unlimited band width OR even 2.8 KHz band width. We need a 21st century band plan, with separate segments for the new class of emissions. **A common definition of insanity** is doing the same thing over and over and expecting different results. **OPTION 5 IS THE ONLY PLAN THAT FIXES ALL OF THE PROBLEMS BY A DIRECT METHOD.**

It leaves open the arguments about whether HF email as a competition to Sailmail and the like for later. It allows FCC to permit any band width, within an assigned segment. It allows Emergency Communications to use as much bandwidth as it needs to accomplish its goals right now.

CONTRADICTIONS AND FLAWS IN ARRL FILING, POINT BY POINT

The following quotes and reply comments are in reference to ARRL filing:

<https://ecfsapi.fcc.gov/file/1011120327463/Comments%20of%20ARRL%20on%20NPRM%2010112016%20FINAL.pdf>

PAGE 1 TO 2: “In the vital interest of the Amateur Radio Service incompatible, intensive use of shared bands with dissimilar emission types, ARRL states as follows:”

“Eliminating the symbol rate limitations for data emissions, and substituting or retaining a reasonable maximum authorized bandwidth for those same emissions would permit the utilization of all HF data transmission protocols presently legal in the Amateur Radio Service, and as well a number of state-of-the-art protocols that are spectrum-efficient but prohibited solely due to the symbol rate limit, without enabling usurpation of the limited spectrum by overly wide bandwidth data stations.”

REPLY COMMENTS:

ARRL refers to only CURRENT digital modes “presently legal” and “prohibited” specifically Pactor 4. FCC desires to end this constant barrage of petitions for rule making for each new nuance of digital technology. ARRL fails to address the FCC need to open the process to NEW modes without a lengthy FCC rule making process and lengthy comment period (3 years again?) that “unduly burdens” software developers from introducing significant new innovations.

ARRL now *finally admits that it is even possible to usurp the whole band*, that is, the lower 100 Khz that 90% of 16-239 filers have requested as a separate segment from ARRL's wide band segment. I maintain that it is possible with 2.8 Khz band width becoming legal in the whole segment to usurp the whole CW/DATA segment unless a separate allocation for wide band digital and “ROBOT” emissions is not established. Imagine abolishment of the current ACDS allocation restrictions; then imagine that each major city in America has its own ACDS ROBOT station for email, on its own frequency. Since the entire lower CW/DATA segment is available for use, why would any of the “ROBOT” stations share a frequency and suffer the slowing of throughput due to busy channels? Given the current cavalier attitude toward regulations, what is to prevent ONE “ROBOT” station from running several channels in tandem for the same data to increase throughput speed as some STANAG modes do? They could claim that EACH channel is less than the 3 Khz, and should be considered legal and proper. Even if the band width is only 2.8 Khz apiece with a slight adjoining guard band to total 3 KHz, severe “congestion” will result. If the FCC's proposal of NO BAND WIDTH limit is adopted, it is even worse.

Here is the example, figured for 20 meters or 40 meters, which are open to radio propagation world wide at most parts of the daytime and much of the night. Each email ROBOT will need its own “channel”. **That channel, once assigned, cannot be shared with anything else, due to propagation on these bands, and the constant traffic for email.** Any competing “HUMAN” stations that attempt to use what appears to be a vacant channel at the time will be reported for interfering. The the FCC has to sort it out in an enforcement proceeding.

Possible coastal cities: Seattle, Portland, Juneau, Anchorage, San Francisco, San Diego, San Antonio, Houston, New Orleans, Miami, Jackson, Charleston, Raleigh, Norfolk, Washington DC, Philadelphia, New York, Boston, Augusta (Maine).

Possible inland cities, to serve inland waters, and the Mississippi River: Chicago, Detroit, Buffalo, Rochester, ST Paul (MN), St Louis (MO),

Possible inland cities, to serve rural areas: Cheyenne, Boise, Santa Fe, Lincoln (NE)

That is a total of 29 cities.

Just to be sure, put 2 in Hawaii and 2 in Puerto Rico.

Do not forget that Mexico will need at least 5, and Canada will need 5 for coastal use and some more for the undeveloped Northwest Territories.

That is a total of 43; call it 50 for round figures to cover bad propagation and busy channels.

Fifty times 3 Khz is 150 Khz total, just for North America and its waters.

For full coverage of US and coastal waters, that takes up ALL of the approximately 100 Khz currently available to CW/DATA operations in the amateur service. That is essentially extermination of a significant portion of the amateur community. IF that were for true Emergency Communications, would it be justified? Keep in mind that Emergency Communications often takes place OUTSIDE the amateur spectrum. **IF it only were for commercial operations parallel to Sailmail, hidden in a wrapper that attempted to conceal the actual intent, would it be justified?**

THIS IS EXACTLY WHAT ARRL IS PROPOSING. OPTION 5 IS THE ONLY WAY TO PREVENT THIS SCENARIO. ROBOTS need to be placed in their own generous segment by themselves, to give incentive to share channels amongst themselves. Otherwise, they will simply spread out through the available spectrum like Hydrilla.

This should make it abundantly clear why spectrum management techniques that were acceptable on UHF and VHF are NOT suitable for the HF spectrum. In a given area, many channels are available on the large swaths of Amateur allocations at VHF/UHF, and they do not propagate past roughly 100 miles. **The FCC proposal WT 16-239 maintains 20 Khz and 100 Khz band widths for VHF and UHF, but abolishes all limits on HF. This is “overly vague” and inconsistent.** Voice repeaters are widespread on 2 meters, but allowed only in a narrow group of channels on the upper portion of the 10 meter HF band. HF is a very different environment that needs its own unique treatment. It would have been far better never to have permitted wide spread use of HF for email servers. But it must be regulated effectively now.

PAGE 3: “However, it is also critically important, given the intensive and extensive use of the crowded, shared HF bands (including the RTTY/data subbands), to: (1) standardize the criteria used to determine the permissibility of data transmissions, and (2) to establish some reasonable ground rules, flexibly tailored to protect incumbent, well-established RTTY, narrow-bandwidth data and Morse telegraphy users from interference. A reasonable bandwidth limitation was deemed critical by ARRL in order to facilitate compatible sharing in the bands in which data transmissions are made under local or remote control.”

“**PERMISSIBILITY**”: ARRL wishes to lock in an already obsolete 2.8 Khz emission for Winlink. FCC wants to move away from limitations that will bring us back to rule making for every new digital method.

“**PROTECT INCUMBENTS FROM INTERFERENCE**”: ARRL fails to deliver protection by 2.8 Khz **INDIRECT** regulation because it allows it everywhere. The “overly vague” difference between ACDS and “auto responding” is not a protection; it is already being violated. The example previously about the various 30 cities having an email server demonstrates how this will happen. **Option 5 with separate band segments is a DIRECT method that absolutely guarantees protection of CW/Narrow DATA.** It also protects legitimate Emergency Communications from interference from CW/Narrow DATA, which can neither read call signs nor content on Pactor 2, 3, 4.

FOOTNOTE 8 IS OF INTEREST. MANY PEOPLE ARE IGNORING 60 METERS AS A UNIQUE CASE. I SUBMIT IT IS *NOT* A UNIQUE CASE. WHILE 2.8 KHZ DATA IS PERMITTED, NO ROBOTS ARE PERMITTED, BECAUSE VOICE AND OTHER DATA OPS FOR GOVT AND MIL USERS MIGHT GET INTERFERENCE FROM A WINLINK ROBOT.

SO ACKNOWLEDGING THAT INTERFERENCE IS POSSIBLE FROM A ROBOT IN THAT 60 METER CASE, ALSO APPLIES EXACTLY TO DISSIMILAR EMISSION TYPES WITHIN THE LOWER 100 KHZ PORTIONS OF ANY HF BAND. THIS ABSOLUTELY DEMONSTRATES A PRECEDENT FOR WHAT WE ARE REQUESTING, A 100 KHZ AREA WHERE NO WIDE BAND DATA OR ROBOTS ARE ALLOWED, WITH A SEPARATE SEGMENT HIGHER IN FREQUENCY THAT QUARANTINES ROBOTS AND WIDE DATA. THIS NEEDS NO PROOF THAT IT WORKS; ARRL'S PROPOSAL CLEARLY HAS A LOT OF "VOLUNTARY" COMPLIANCE AND UNSUPPORTED ASSUMPTIONS TO SWALLOW. FURTHER, ARRL IS THE ONLY ARBITER OF THOSE "VOLUNTARY" BAND PLANS, AND HAS A TERRIBLE TRACK RECORD IN RECENT DECADES OF RESPECTING RANK AND FILE AMATEUR ISSUES. ITS CONDUCT IN THE HF BAND PLANNING AFFAIR AND OTHER AREAS HAS BEEN SHOWN TO BE AUTOCRATIC, AS PUBLISHED IN PUBLIC FORUMS. PART 97 RULES SHOULD ADOPT SEPARATE SEGMENTS FOR HUMANS AND ROBOTS TO PREVENT "ARBITRARY AND CAPRICIOUS" BAND PLANS BY ARRL FROM CARVING UP THE HF BANDS TO SUIT THEIR AGENDA.

FACT: 80% OR MORE OF USA AMATEUR OPERATORS CHOSE *NOT* TO SUPPORT ARRL BY MEMBERSHIP DUES, AND THOSE THAT ARE MEMBERS ARE OFTEN AT ODDS WITH ARRL POLICIES, ESPECIALLY WITH REGARD TO MF/HF ISSUES. Making Part 97 Rules include a separate band segment, as Option 5 proposes, for all ROBOT stations regardless of their emission band width separate from HUMAN stations prevents ARRL from manipulating the unenforceable "voluntary" HF band plans without proper public input.

PAGE 4: "while protecting dissimilar emission types and incumbent users from interference from wide-bandwidth data emissions that simply cannot be accommodated in the RTTY/data subbands,"

AND 2.8 KC MAX BW DOES NOTHING TO GUARANTEE THAT. OPTION 5 DOES.

PAGE 5: "At the same time, a 2.8 kilohertz bandwidth limit is sufficiently narrow that it limits the ability of any given Amateur station using data emissions of that bandwidth or less to usurp overly large portions of the limited, crowded and shared RTTY/data subbands."

TRUE, *ONE* STATION CANNOT USURP, BUT THERE WILL BE MULTIPLE 2.8 KHZ STATIONS, EACH DEMANDING ITS OWN "CHANNEL" 24/7/365. INCUMBENT USERS SHARE THOSE CHANNELS. ROBOTS DO NOT. THEREFORE A SEPARATE BAND FOR ROBOTS IS ABSOLUTELY ESSENTIAL. ARRL ARGUMENT IN THIS CASE IS SPECIOUS. SEE THE DETAILED EXAMPLE IN THIS FILING ON PAGE 6. NOTE THAT "SPECIOUS" IS USED IN THE LEGAL SENSE HERE. ARRL PROPOSAL DOES NOT WORK. OPTION 5 WORKS.

"However, they offered no evidence that the relief proposed in the ARRL Petition would create a situation in which data transmissions will overwhelm the subband, precluding narrow bandwidth emission communications."

ARRL HAS OFFERED NO EVIDENCE THAT SUCH WIDER DATA EMISSIONS ANYWHERE IN THE CW/DATA SEGMENT WILL *NOT* CAUSE INTERFERENCE. IT IS INCUMBENT ON THE

PETITIONER, ARRL, TO PROVIDE THE PROOF. BESIDES, PROOF CONTRADICTING ARRL WAS OFFERED IN THE EX PARTE PRESENTATION REFERENCEC EARLIER. THE EXAMPLE ON PAGE 6 OF THIS FILING SHOWS EXACTLY HOW THAT INTERFERENCE AND CONGESTION WILL OCCUR. ARRL IS NOT OFFERING ANY RELIEF OR MITIGATION. OPTION 5 DOES.

PAGE 6: “Commission regulations that needlessly preclude experimentation with data technologies should not be preserved as an alternative to cooperative sharing arrangements in the HF bands through voluntary band plans, coupled with some minimal “traffic laws” that are necessary to ensure equitable and compatible sharing in very limited spectrum. Indeed, the high degree of responsibility that cooperative sharing at HF has always required has been standard procedure since the beginning of Amateur Radio and it has worked well to date. Indeed, due to growth of the Amateur Service and the static bandwidths of the RTTY/data subbands, the ability of radio Amateurs to compatibly share that spectrum is being constantly tested.

SHARING BETWEEN HUMANS AND ROBOTS INTUITIVELY DOES NOT WORK AND CONTINUED EXPERIENCE SHOWS THAT. VOLUNTARY BAND PLANS HELP ONLY WHEN THEY ARE FOLLOWED. ROBOT USERS CONSIDER IT OPTIONAL, SECONDARY TO DELIVERING DATA. ACDS EMERGENCY COMMS WILL BE SUBJECT TO INTERFERENCE FROM HUMAN USERS AS WELL AS EMAIL ROBOTS WHO CANNOT DISTINGUISH THE STATION OR WHAT THE DATA PAYLOAD IS. WE ONLY PROPOSE THAT ALL ROBOT USERS ARE QUARANTINED TO A SEGMENT WHERE THEY CAN FIGURE OUT HOW TO SOLVE THOSE PROBLEMS FOR THEMSELVES. ARRL PROPOSAL DOES NOT WORK. OPTION 5 DOES. TO PREVENT FURTHER PROBLEMS, A SEPARATE BAND SEGMENT IN PART 97 RULES NEEDS TO BE ESTABLISHED FOR CW/NARROW DATA AND WIDE DATA/ROBOTS.

ARRL SEEKS IN ITS COMMENTS TO “PRESERVE COMMISSION REGULATIONS THAT NEEDLESSLY PRECLUDE EXPERIMENTATION” by repudiating the FCC initiative to eliminate band width restrictions. OPTION 5 ALLOWS THE FCC INITIATIVE, AND WORKS.

PAGE 6 ITEM 9: “Notwithstanding any of the foregoing, those who either opposed deletion of the symbol rate limit or supported that deletion but opposed the ARRL’s proposed 2.8 kilohertz maximum bandwidth for locally and remotely controlled data emissions in the MF and HF bands have a very valid concern that absolutely must be addressed. They collectively express a predictive, unquantified fear that an increase in the number of data emissions in the RTTY/data subbands will create new incompatibility 13 between data emissions and ongoing CW, RTTY and narrow bandwidth data modes (such as PSK-31) that are and have long been popular in the low ends of MF and HF bands. This concern must be addressed.”

SO NOW WE WHO HAVE FILED OPPOSING COMMENTS have a “very valid concern that absolutely must be addressed.” And the previous ARRL filings that dismissed them as “misinformed” and exaggerated were not so wrong after all?

FOOTNOTE 13 PAGE 7: “They argue that mixing of “wide bandwidth” data emissions where narrow bandwidth emissions such as CW and PSK 31 operate now will result in interference to those narrower emission types because licensees using HF data emissions may disregard ongoing communications before commencing transmissions. A corollary argument is that the benefits to a few operators who choose to experiment with and use HF data emissions which necessitate higher symbol rates than are now permitted should not come at the expense of many thousands of licensees who regularly operate

narrowband data, RTTY and CW in the lower segments of the HF bands. ARRL is sensitive to this concern.”

“They argue that (it) will result in interference to those narrower emission types because licensees using HF data emissions may disregard ongoing communications before commencing transmissions”

Yes, as a matter of fact we did argue EXACTLY THAT, very effectively, in the ex parte presentation referenced previously.

“ARRL is sensitive to this concern.” IF THEY ARE NOW, THAT IS A MAJOR CHANGE IN POLICY. And their plan of 2.8 Khz does nothing to effectively “mitigate” that concern. Option 5 does.

END OF PAGE 7: “Had the Commission proposed to enact both of the proposals in ARRL’s Petition rather than just one, the fears expressed by these commenters would be overstated. **As it is, those fears might well be realized.**”

We were absolutely correct on all points, but it is refreshing to see ARRL at least acknowledging that, albeit belatedly.

ARRL POINT NUMBER 11: “ARRL noted in its Petition that there are emissions which are utilized by the United States government, such as STANAG, which has a 2400-baud symbol rate and emissions can fit within a channel bandwidth of 2.8 kHz. That emission is not now permitted in the Amateur Service at HF, despite its efficiency and utility in emergency and disaster relief communications due to the symbol rate. The Amateur Service could utilize this and other similar emission types for improved interoperable communications with United States government agencies; thus to better contribute to emergency communications efforts than it is able to now with the symbol rate limitation in place.”

WE WHOLEHEARTEDLY AGREE THAT THE FCC SHOULD ABOLISH BAND WIDTH LIMITATIONS TO ALLOW EVEN 24 KHZ VERSIONS OF STANAG, ONLY FOR EMERGENCY COMMUNICATIONS. THIS WOULD NOT BE POSSIBLE WITH THE ARRL PROPOSAL, BUT IT WOULD BE ALLOWED UNDER OPTION 5, WHICH STILL PROTECTS NARROW MODES.

FOOTNOTE 17: “STANAG has a data speed of between 2400 and 9600 bits per second.”

AS I NOTED IN MY EARLIER COMMENTS, WINLINK IS *ALREADY* OBSOLETE. STANAG IS BETTER IN THE SAME BAND WIDTH AND PROVIDES INTEROPERABILITY WHICH WINLINK DOES NOT. FURTHER, STANAG IS A SYSTEM WHICH DOES NOT DEPEND ON A SINGLE PROPRIETARY SUPPLIER, BUT A NETWORK OF DEFENSE CONTRACTORS WHO ARE MUCH BETTER EQUIPPED TO IMPLEMENT SECURITY MEASURES AND ENSURE AVAILABILITY OF EQUIPMENT, UPGRADES, AND SOFTWARE UPDATES IN THE FUTURE. GOVERNMENT GRANTS CAN BE PROPERLY BID OUT TO GET THE TAXPAYERS THE BEST VALUE AND FUNCTIONALITY, RATHER THAN DEPENDING ON A SINGLE SOURCE SUPPLIER.

PAGE 9 ITEM 13. “Nor would the Notice proposal have any effect whatsoever on automatically controlled stations using data emissions at MF or HF. Any automatically controlled data communications at MF or HF are limited as follows: (1) they must operate within nine very narrow specific HF subbands; 18 or (2) they may operate on any other frequency within the RTTY/data subband, 19 if (and only if) they transmit only in response to interrogation by a station

under local or remote control, and if they utilize an occupied bandwidth no greater than 500 hertz. 20 The fear of interference from automatically controlled stations noted in some of the comments filed in response to the ARRL Petition is not a valid one.”

BUT THE “ROBOTS” ARE ALREADY USING FACTOR 3 GREATER THAN 500 HZ OUTSIDE THE CURRENT ACDS “ROBOT” ALLOCATION, SEE TED RAPPAPORT EX PARTE. THIS IS WHY AN UNAMBIGUOUS PART 97 RULE IS NEEDED. A TOTALLY SEPARATE BAND SEGMENT AS OPTION 5 PROVIDES WORKS. NONE OF THIS PREVENTS AN ATTENDED TRUE EMERGENCY OP AS THE “CASCADIA RISING” EXERCISE MODELLED FROM USING HUMAN TO HUMAN SENDING OF MULTIPLE FILES, OUTSIDE THE ROBOT SEGMENT USING NARROW BAND CLOVER IN THE CW/NARROW DATA SEGMENT. THAT IS WHAT THEY DID IN THE EXERCISE, AND *OUR* OPTION 5 PROPOSAL IN NO WAY INHIBITS THAT. IN FACT, CLOVER *CAN* BE IDENTIFIED AS AN EMCOMM OP AND AVOIDED. FACTOR2+ CANNOT. THIS ALERTS USERS THAT EMERGENCY OPERATIONS ARE ON CHANNEL.

PAGE 10: “The Commission absolutely should not have attempted, as the Notice proposal does, to “cherry pick” the proposal. ARRL attempted, in proposing both the deletion of the symbol rate limit and the adoption of a 2.8 kHz maximum bandwidth for data emissions at HF, to balance the two objectives of facilitating use of new and future data emissions, and protecting against potential usurpation of the entire subband by a few data stations.”

SO WE HAVE AGREEMENT THAT THE FCC PROPOSAL 16-239 AS WRITTEN DOES NOT WORK. THE POINT WE DISAGREE ON IS THE 2.8 KC BW LIMIT FIXES IT. IT FIXES NOTHING. OPTION 5 DOES.

“At the same time, it is clearly not desirable to have a few data stations using large swaths of spectrum for a single emission to the detriment of simultaneous use by other stations using other, narrower bandwidth emission modes. So it would be reasonable to respond to the inquiry at paragraph 8 of the Notice by saying that the benefits of elimination of the symbol rate limit (without more) outweigh the congestion that should be anticipated. However, it could also be said fairly that the drawbacks of the same action outweigh the benefits. The answer depends entirely on a licensee’s point of view. ARRL’s view, however, is that there is a “win-win” situation, in which the benefits of elimination of the symbol rate limits can be achieved without suffering the drawbacks of “increased congestion” in the RTTY/data subbands by simply adopting ARRL’s 2.8 kilohertz maximum bandwidth limitation along with deleting the symbol rate limit.”

SO WE HAVE AGREEMENT ON THE COST/BENEFIT TOO. JUST THE ARRL PROPOSAL DOES NOT WORK. OPTION 5 IS A DIRECT METHOD OF REGULATING THAT WORKS. OPTION 5 IS THE **ONLY** WIN-WIN SOLUTION.

END OF PAGE 11: “(FCC’s) laudable goal of minimal regulation in this instance and of the need for equitable access to limited spectrum by hundreds of thousands of Amateur licensees (using different emission modes with different occupied bandwidths).”

The ARRL now thinks CW/narrow DATA users DO HAVE RIGHTS AFTER ALL?

ARRL: “It (FCC)noted that only the digital codes specified in Section

97.309(a) may be used for MF/HF data emissions, footnote 22”

“FOOTNOTE 22 It is unclear why this point is relevant. The fact is that pursuant to Section 97.309(a), a data emission using a digital code specified in that section can use “any technique whose technical characteristics have been documented publicly... (examples omitted) for the purpose of facilitating communications. This is a very flexible enabling provision and not a limiting one. It does not preclude one or a few stations from usurping the entire HF subband with one emission or a few emissions.”

WE SURE DO AGREE ON THAT POINT. THE TABLE 97.309(a) CANNOT PROTECT ANYONE. PART 97 BAND SEGMENTATION AS IN OPTION 5 CAN. Further, FCC will constantly be tinkering with what modes are on the list, as new modes emerge, unless Option 5 is adopted.

ARRL PAGE 12 END: “The conclusion was thus that these rules, separately or in the aggregate, are sufficient to negate ARRL’s reason for proposing a bandwidth limitation: to facilitate compatible sharing among amateur licensees.”

AND THERE IS NO NEGATION OF OPTION 5’S BETTER SOLUTION OF BAND SEGMENTS, EITHER. OPTION 5 WORKS FOR SURE, ARRL’S PLAN IS UNLIKELY TO WORK, DEPENDING ON VOLUNTARY COMPLIANCE OF PEOPLE WHO ALREADY HAVE DEMONSTRATED A HABIT TO DISREGARD EVEN PART 97 RULES. SEE TED RAPPAPORT EX PARTE REFERENCE CITED EARLIER.

ARRL CONTINUED: “The Notice also expressed a reluctance to impose a 2.8 kilohertz bandwidth limitation because, though such would accommodate HF data emissions that are in common use today, a bandwidth limit could preclude Amateur use of future technologies or result in a loss of flexibility to develop and improve technologies. The Notice calls for comment on these conclusions, however, and the Commission does ask whether it should establish emission bandwidth standards for amateur service MF/HF RTTY and data emissions, and if so what the maximum bandwidth should be, the basis for the particular limitation, and **whether the limit should apply across the bands or only in particular subbands.**”

OPTION 5 FOR FCC NO BAND WIDTH LIMIT IN SEPARATE SEGMENTS **DOES NOT “result in a loss of flexibility to develop and improve technologies”**. ARRL 2.8 KHZ BW DOES LIMIT DEVELOPMENT. SO OPTION 5 IS A BETTER SOLUTION ON THAT ISSUE AS WELL! Option 5 just works differently from the ARRL proposal: it establishes in Part 97 rules ROBOT/WIDE DATA **only in particular subbands.**

ARRL END OF PAGE 13: “(2) the substitution of an overly restrictive maximum bandwidth limitation for an overly restrictive symbol rate limitation would not constitute progress and might potentially limit future experimentation. In ARRL’s view, both of these conclusions are spot-on.”

OPTIONS 5 BAND WIDTH PART 97 SEGMENTATION PLAN FOR 100 KC + A ROBOT/WIDE SEGMENT DOES NOT IMPOSE an overly restrictive symbol rate limitation. It allows the FCC plan to eliminate band width restrictions, but contains them in a special segment. ARRL 2.8 Khz plan fails on this issue.

ARRL CONTINUED: “However, because it is critical in ARRL’s **view** that the overly restrictive symbol rate restrictions be eliminated, there must at the same time be some maximum

occupied bandwidth limitation for locally or remotely controlled data emissions in the existing HF and MF RTTY/data subbands. ARRL is of the firm view that 2.8 kilohertz is a reasonable balance for that maximum.”

THESE ARE UNSUPPORTED AND UNPROVABLE ARRL OPINIONS (“view”). OTHERWISE KNOWN AS “SPECIOUS”, IN A LEGAL SENSE. OPTION 5 WORKS. ARRL'S DOESN'T.

ARRL PAGE 14 & 15, ITEM18: “In the specific context of the admixture of data and other modes in the HF and MF bands, reliance solely on voluntary band planning is expecting quite a lot. ARRL is in complete agreement that voluntary band plans - the tried-and-true manifestation of the exercise of responsible self-regulation in Amateur spectrum management (especially at HF) is critical to compatible shared use of the small, intensely used HF and MF bands and subbands. The Amateur Service in the United States does an admirable job of adherence to voluntary band plans overall. But just as increased automobile traffic in urbanized areas necessitates not only driver courtesy but also some traffic signals, increased use of data emissions in the HF and MF data and RTTY subbands necessitates adherence by licensees not only to voluntary band plans but also adherence to some fixed limits that (1) prevent a few individuals from usurping the entire band and (2) ensure basic access by all.”

WE ARE IN TOTAL AGREEMENT WITH ALL THESE POINTS ABOUT THE FAILURE OF VOLUNTARY ARRL BAND PLANS, EXCEPT FOR ONE:

FCC SHOULD ESTABLISH A BAND PLAN IN PART 97, NOT LEAVE IT TO THE ARRL VOLUNTARY BAND PLANS. EVEN ARRL ADMITS IT IS expecting quite a lot .

ROBOTS AND HUMANS IS THE TRUE ISSUE, NOT BAND WIDTH.

OPTION 5 IS ENFORCEABLE.

ARRL'S ISN'T.

IMPORTANT: ARRL'S PROPOSAL IS TOO "VAGUE" IN THE LEGAL SENSE OF THAT WORD.

ARRL ITEM 19: “ARRL seeks to balance the laudable goal of minimal regulation in this instance against the need for equitable access to limited spectrum by hundreds of thousands of Amateur licensees, each of whom has earned the same right to operate using a very wide variety of emission types in these limited, shared allocations.”

ARRL SEEKS, AND FAILS, TO CONCEIVE A PLAN THAT WORKS FOR EVERYONE, INCLUDING THE FCC.

BUT AT LEAST NOW THEY RECOGNIZE THERE IS A PROBLEM THAT NEEDS TO BE FIXED. OPTION 5 FIXES IT.

ARRL CONTINUED: “Specification of a 2.8 kilohertz bandwidth maximum would not prohibit any emissions that are now being commonly conducted, and at the same time accommodate most digital emissions that are anticipated for the foreseeable future.

OPTION 5 HAS NO SUCH LIMITATIONS OF A NEAR “FORESEEABLE FUTURE”. IT AGREES WITH FCC ON NO BAND WIDTH LIMIT ON WIDE BAND DATA EMISSIONS. AND OPTION 5 WORKS DIFFERENTLY, AS REQUESTED IN THE FCC WT 16-239 INSTRUCTIONS, BY “whether the limit should apply across the bands or only in particular subbands.” PARTICULAR SUB BANDS IS THE ONLY SOLUTION THAT WORKS.

ARRL CONTINUED: “The Commission’s Notice asserts, absolutely correctly, that the 60-meter channels are unique because the channelization scheme there, necessitated by the need for compatible sharing of the band with primary government users, is not found in any other MF or HF band.”

THEY ARE *NOT* UNIQUE. SEE PREVIOUS 60 METER DISCUSSION ABOVE. THE REASONS ARE THE SAME, FOR PROTECTION OF INCUMBENT USERS AS GOVT USERS. WIDE DATA ROBOTS WILL EVENTUALLY BE CHANNELIZED. THE SAME PROCEDURES NEED TO BE INVOKED IN PART 97 RULES. OPTION 5 ALLOWS THIS ASSIGNMENT OF CHANNELS TO INDIVIDUAL HF EMAIL SERVERS WITHIN THE NEW WIDE BAND DATA “ROBOT” SEGMENT.

ARRL END OF PAGE 16

“(3) precluding the use of data emissions in the HF RTTY/data subbands that would utilize too large an occupied bandwidth and thus usurp the limited spectrum available for sharing with incumbents and future users of dissimilar emissions. Because of this last goal, ARRL strongly disagrees with the Commission’s tentative conclusion that elimination of the symbol rate limit should be accomplished without adding any maximum bandwidth limitation. There must be some limit on occupied bandwidth for data emissions at MF and HF.”

NO, THERE MUST BE SOME LIMIT BY SEGMENT WHERE THE ACTIVITY CAN OCCUR. BAND WIDTH LIMIT DOES NOT ADDRESS THIS ISSUE EFFECTIVELY. **WE HAVE BEEN ARGUING THAT FOR 3 YEARS. ARRL *FINALLY* ADMITS THERE IS A PROBLEM. NOW WE ONLY DISAGREE ON HOW TO FIX IT.**

ARRL: “Nor is it necessary to specify a larger bandwidth to accommodate foreseeable new technologies, and a larger maximum bandwidth for data emissions in the HF spectrum would reduce the number of stations that can simultaneously share the small, intensely utilized subbands at MF and HF compatibly. ARRL believes that the maximum bandwidth should therefore be 2.8 kilohertz.”

HOW MANY STATIONS CAN SHARE THE FREQUENCIES IN THE ROBOT/WIDE SEGMENT IS NOT A PROBLEM TO INCUMBENT NARROW BAND USERS, AS LONG AS ALL EMISSIONS INCLUDING SPURIOUS PRODUCTS ARE CONTAINED WITHIN THE NEW ROBOT/WIDE DATA SEGMENT PROPOSED IN OPTION 5. THIS IS THE AREA THAT SELF-REGULATION AND EXPERIMENTATION CAN SHINE. THEY CAN WORK TOGETHER TO DEVELOP REASONABLE METHODS OF FREQUENCY SHARING WITHIN THEIR OWN SEGMENT AND COMMUNITY OF USERS. THEY SHOULD NOT BE ALLOWED TO CONTINUOUSLY SPREAD OUT INTO OTHER SEGMENTS LIKE HYDRILLA.

ARRL: “The Commission should also leave intact the requirement now in the rules for the RTTY and data subbands listed above that data emissions must be a specified digital code listed in § 97.309(a) of the FCC rules. Nor should the Commission change the restrictions on automatically controlled digital stations. The Section 97.221 rule should remain unchanged. That rule now prohibits automatically controlled RTTY or data emissions below 6 meters unless: (1) the automatically controlled station is responding to an interrogation and the occupied bandwidth is less than 500 Hz; or (2) the station is transmitting in one of nine very small HF subbands listed in the rule.

WE STRONGLY DISAGREE WITH THIS STATEMENT. **THE ISSUE IS NOT BANDWIDTH, IT IS ROBOTS.** COMBINE THE WIDE DATA AND ROBOTS INTO ONE CATEGORY AND PUT

THEM IN THEIR OWN SEGMENT. **THE LEGALLY “VAGUE” RULE REFERENCED ABOVE WILL NOT EVEN BE RELEVANT, SINCE THAT OPERATION WILL ALL OCCUR IN A NEW WIDE DATA/ROBOT SEGMENT UNDER OPTION 5. WIDE DATA IS NOT USED FOR HUMAN TO HUMAN CONTACTS. IT IS ONLY USEFUL FOR DATA TRANSMISSION SUCH AS EMAIL. ROBOT NARROW DATA COEXISTS FINE WITH ROBOT WIDE DATA, ACCORDING TO THEM. SO PUT ROBOT NARROW BAND EMISSIONS IN THAT SEGMENT, AND LET THEM WORK IT OUT WITH VOLUNTARY SPECTRUM MANAGEMENT. NO FCC EXPENSIVE ENFORCEMENT NEEDED. NO CONSTANT FCC TINKERING WITH WHICH DIGITAL “CODES” ARE ALLOWED IN THE FCC TABLES. ARRL STRONGLY MAINTAINS THAT VOLUNTARY PLANNING WORKS. LET THEM PROVE IT, IN THEIR OWN ROBOT/WIDE BAND WIDTH DATA SEGMENT. OPTION 5 ALLOWS THEM TOTAL FREEDOM TO PLAN IT AS THEY WISH, WITH NO IMPACT ON OTHER USERS OF HF SPECTRUM.**

“the automatically controlled station is responding to an interrogation and the occupied bandwidth is less than 500 Hz”

Pactor 3 is already being offered outside those band limits, in violation of the rule. Moving it all into a “ROBOT” band segment ends the ambiguity and eliminates the legally “vague” current rules.

ARRL END OF PAGE 18. ARRL ITEM 24: “It can be fairly debated whether or not 2.8 kHz is the proper maximum bandwidth for data emissions. Greater bandwidth for data emissions would permit a wider array of data emissions now and in the future. **However, even 2.8 kHz could arguably permit usurpation of the subbands to the detriment of CW and other narrow bandwidth emissions.**”

“At the same time, it would not be desirable to have a few data stations using large swaths of spectrum to the detriment of other modes.”

WHICH IS EXACTLY WHAT WE HAVE BEEN SAYING ALL ALONG. AND THEY NOW ADMIT THAT THEIR 2.8 KC MAX BAND WIDTH “MITIGATES” NOTHING AS FAR AS “CONGESTION”. OPTION 5 WORKS BY BAND SEGMENTS. ARRL BAND WIDTH MAXIMUM 2.8 KHZ DOES NOT WORK AT ALL. REALLY? ARRL TOOK 20 PAGES TO SAY THAT THE PEOPLE THAT FILED OPPOSING COMMENTS TO ARRL'S PETITION WERE RIGHT AFTER ALL? THESE COMMENTERS WERE NOT MISINFORMED? WHAT A COLLOSSAL WASTE OF THE TIME OF THE FCC AND ALL THE PEOPLE WHO HAD TO WRITE COMMENTS EXPLAINING WHY ARRL WAS WRONG! END THIS CONSTANT PETITIONING AND CONFLICT THAT BEGAN WITH RM-11306 IN 2005! PLEASE ADOPT OPTION 5 AS PART 97 RULES. DO NOT PROCRASTINATE. REGULATE.

Respectfully submitted, /s/ Janis Carson, AB2RA, Extra Class, licensed since 1959, 40 year ARRL member.

COMPLETE BAND PLANS AND SUGGESTED FCC PART 97 RULES TO IMPLEMENT OPTION 5 ARE IN MY PREVIOUS COMMENTS AT:

<https://ecfsapi.fcc.gov/file/109011952607702/FCC%20FILING%20docket%2016%20239%20FINAL10%20%20rm11708.pdf>

<https://ecfsapi.fcc.gov/file/1091422828084/filing%2016239%20changes%20to%20fcc%20part%2097%20B.pdf>