

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

In the Matter of)
)
Amendment of Part 97 of the Commission's)
Rules Governing the Amateur Radio Service) **RM-11306**
Concerning Permitted Emissions and)
Control Requirements)

**To: The Chief, Wireless Telecommunications Bureau
VIA OFFICE OF THE SECRETARY**

**REPLY COMMENTS OF ARRL,
THE NATIONAL ASSOCIATION FOR AMATEUR RADIO**

ARRL, the National Association for Amateur Radio, also known as the American Radio Relay League, Incorporated (ARRL), by counsel, pursuant to Section 1.405 of the Commission's Rules, 47 C.F.R. §1.405, and pursuant to the *Public Notice*, Report No. 2748, released January 6, 2006, hereby respectfully submits its reply to the comments filed in response to the above-captioned Petition for Rule Making (the Petition) filed by ARRL on November 14, 2005. ARRL's Petition requests that the Commission issue at an early date a Notice of Proposed Rule Making, proposing changes in the rules governing the Amateur Radio Service in order to regulate Amateur band segmentation not by emission types, but by bandwidth maxima. The petition seeks for the Amateur Radio Service the flexibility to experiment with new digital transmission methods and types to be developed in the future, while permitting, and not detracting from, the continued use of present operating modes as long as there are radio amateurs

who wish to use them. In reply to the arguments and suggestions contained in comments filed thus far, ARRL replies as follows.

1. There were more than 900 comments filed in response to the ARRL Petition. This inordinately large response to a petition for rule making was expected by ARRL. It is gratifying and is entirely appropriate, given the magnitude of the proposal set forth in the ARRL Petition. The response illustrates that ARRL's extensive publicity surrounding its proposal since the concept was first developed in 2002 was successful. ARRL has repeatedly notified both ARRL members and non-members of the concept of regulation of subbands by bandwidth rather than emission mode. It has repeatedly asked members *and non-members* for input about it, and has received extensive feedback, which was utilized in the development of the final plan. Though ARRL took into account in developing its Petition the comments of hundreds of radio amateurs, those who filed comments in response to the Petition are appropriately and understandably reflecting concern about what is obviously a substantial shift in regulatory philosophy.

2. It is gratifying that the volume of comments is as high as it is. There is obviously no apathy in the Amateur Radio community, as the volume of comments reflects. While many of the comments reveal some misunderstanding about the specific proposals in the ARRL Petition, the high interest of the Amateur Radio community is well-taken. Many comments show the investment of a good deal of thought about the proposal. Indeed, it is obvious that the ARRL Petition is controversial, as would be expected where any substantial shift in regulatory philosophy is proposed. It would be worrisome to ARRL had the Amateur community not responded actively to the Petition. The response is substantial; the comments are strongly stated; and the interest reflected among the commenters is indicative of a healthy, dedicated group of licensees.

3. It is also understandable and expected that many of the comments reflect a reluctance to change the *status quo*. For those many radio amateurs who regularly use traditional emission modes, especially in the high frequency (HF) Amateur allocations, there is not a perceived need to change the rules. That sentiment appears repeatedly in the comments, especially in those brief comments consisting of a few sentences. They suggest, in general, that “it is not necessary to fix anything, because nothing is broken.” Other comments phrase the matter differently, but the sentiment is the same. They believe that their particular mode of operation, such as single-sideband telephony, is threatened by the advent of digital emission modes. They are comfortable with the *status quo*, because the current regulations are not encouraging toward digital modes and therefore the current regulatory scheme, they feel, “protects” them. They fear the development of digital stations using bandwidths wider than 500 Hz which respond automatically to stations operated under local or remote control. Again, the reluctance to change is normal and expected. Their comfort level with the status quo is high for these licensees, and they have not hesitated to tell the Commission so. A third manifestation of the fear of change set forth in some of the comments is in the argument that ARRL’s petition is “responding to the needs of a very few” or that the Petition indicates that ARRL “is not listening to the majority of radio amateurs,” or to its own membership.

4. Most interesting is the dichotomy in the comments regarding double sideband amplitude modulation (DSB-AM), and the ARRL proposal to continue to accommodate those interested in using this mode. Those who are interested in and actively use DSB-AM feel that the ARRL proposal, (though it would permit a 9 kHz necessary bandwidth for that mode, and would permit such everywhere that a bandwidth of at least 3.5 kHz is permitted) has not adequately accommodated or encouraged DSB-AM. Some of those commenters argue that DSB-AM is

treated as a “legacy” emission mode, which they suggest is somehow demeaning. Others, quite to the contrary, suggest that the ARRL Petition overly caters to AM-DSB, though it is, they say, a wasteful, spectrum-inefficient emission mode that has no place any longer in HF Amateur Radio, and that the ARRL Petition should have proposed the elimination of DSB-AM in order to promote spectrum efficiency.

5. Perhaps most compelling is the dichotomy reflected in the comments with respect to the overall philosophy of subband regulation. It is this debate that is at the core of the *animus* contained in some of the filed comments. On the one hand, there are those who suggest that regulation of Amateur subbands by bandwidth maxima is nothing more than overregulation wrapped in a different cloak. They note that some other countries do not regulate Amateur subbands at all, relying instead on that country’s radio amateurs to develop their own band plans and to adhere to them, which has, they argue, worked well.¹ They suggest that as the regulatory model for Amateur bands in the United States. On the other side (a considerably more numerous group among those who filed comments) are those who suggest that any increased reliance on voluntary band plans as a substitute for subband regulation by emission mode is misplaced. They argue that it is unrealistic to believe that those who wish to experiment with digital modes will respect those using now-prevalent analog emissions (again, especially in the HF bands). They suggest a fundamental incompatibility between digital emissions (especially those not under local or remote control), and analog emission modes. Some in this group argue that digital experimentation should be conducted by Experimental License, Special Temporary Authority, or by waiver, rather than by any liberalization or modification of the subband regulations now in

¹ In fact, there are two types of band plans: (1) those regional band plans recommended by the International Amateur Radio Union (IARU), the worldwide federation of national Amateur Radio societies, and (2) those voluntary band plans developed by radio amateurs in a particular country.

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

6. ARRL would suggest that these rather polarized arguments validate the ARRL Petition, because they indicate that ARRL's Petition is a reasonable middle ground in a difficult regulatory area. The comments filed by Nickolaus E. Leggett, N3NL, for example, state the situation succinctly:

The ARRL's proposed bandwidth regulations are a reasonable concept for the future of amateur radio regulation. These regulations would allow new radio communication technologies to be invented, developed, and applied by amateur radio operators without the need for changes to the Commission's regulations. At the same time, these regulations would allow amateur radio operators to continue using their traditional communications modes such as Morse Code (continuous wave), double-sideband amplitude modulation, single-sideband amplitude modulation, frequency modulation, radio teletype, and analog television.

Comments of Nickolaus E. Leggett, at 1,2.

ARRL is attempting in its Petition to create a regulatory environment that does exactly as Mr. Leggett states: to create an accommodating framework for the addition of new, digital emission modes, and for flexible experimentation with new technology, while at the same time protecting the continued use of existing Amateur Radio emission modes for as long as anyone wishes to use them. ARRL does not believe that there is any inherent incompatibility between analog and digital emissions of similar bandwidths, or that a somewhat increased reliance on voluntary band plans (necessary to accompany the regulatory structure proposed), is misplaced. The current level of enforcement in the Amateur Service is quite adequate, thanks to the stellar performance of the Commission's Special Counsel for Amateur Radio Enforcement, and there is no reason to believe that the level of voluntary cooperation in the use of shared allocations, which is now

better than in virtually all other radio services, will markedly deteriorate, necessitating increased enforcement, if the ARRL proposal is adopted.

7. With respect to those who fear the advent of digital emissions in the Amateur HF bands, ARRL would suggest that the problem is not that there is incompatibility, or that there might be incompatibility in the future between analog and digital emission modes as digital emissions become more prevalent. The problem is that the current regulatory structure is disaccommodating to digital emission modes, and the result is that there is too little experimentation at present with digital emission modes in the Amateur Service. This is unhealthy in what is fundamentally an experimental radio service, and it will, in time, if not corrected, result in the Amateur Service falling behind in technical innovation, long a hallmark of the Service and a fundamental obligation pursuant to Section 97.1 of the Commission's rules. To the extent that those who are concerned with any change in the regulations believe that this constitutes "catering to the few at the expense of the many" or that ARRL is not listening to the "majority" of Amateur Radio operators, ARRL strongly disagrees. *All should be accommodated by the regulatory structure of Amateur subbands, and technology changes demand regulatory changes in this instance.* ARRL continues to believe that its Petition is a measured response to progress in digital telecommunications technology and successfully balances the interests of all, regardless of which of the polarized opinions in this proceeding, if any, constitutes a "majority" view. To the extent that the success of this philosophy necessitates the participation and cooperation of all Amateurs in the development of, and increased reliance on, modernized voluntary band plans, ARRL is optimistic that such participation and cooperation will be available, as it always has been in the past in similar transitional phases of the history of the Amateur Radio Service.

8. The suggestion in some of the comments that the ARRL Petition was not adequately vetted to the Amateur community is not well-taken. The proposal to regulate subbands by bandwidth maxima was adopted in principle by the ARRL Board of Directors in July of 2002. A related report dealing with HF digital modes and operating practices, developed by a panel of experts, was provided to the Board prior to its July, 2003 meeting. The report was and is available on the ARRL web site.² This report stimulated considerable comment from the Amateur community, both pro and con. The ARRL Executive Committee decided that a synopsis and explanation of the proposal should be made available publicly before any petition was filed, in order to give members and non-members an opportunity to understand what is being proposed, and why. ARRL has twice solicited comment from its members (and non-members as well) with respect to the details of its proposal. Each time, hundreds of comments were received at *bandwidth@arrl.org*. The proposal has been adjusted to accommodate the input received. Ultimately, a substantially modified version of the proposal was adopted by the ARRL Board of Directors, which is a representative entity, elected by ARRL's membership. Since the concept was adopted, ARRL has written four editorials³ on the subject in its monthly journal, *QST*. Those editorials were published on ARRL's web site, *www.arrl.org*, where they were and are publicly available. In August of 2004, ARRL issued bulletins, also publicly available, urging comments from interested persons on the proposal. The ARRL Letter, which is publicly distributed directly to 67,000 groups and individuals and is received indirectly by even more, is aired on Amateur repeater systems and via e-mail lists. It contained announcements and discussion of the proposal on October 22, 2004 and July 22, 2005. Following that voluminous

² <http://www.arrl.org/announce/reports-0307/hf-digital.html>

³ September, 2004; April, 2005; June, 2005; and October, 2005.

publicity,⁴ available to both members and non-members of ARRL, and following substantial input from the Amateur community, the ARRL Board, in July 2005, made substantial edits to the draft petition. The ARRL Petition is, appropriately, the most thoroughly vetted regulatory proposal ever developed by ARRL. No one can reasonably claim that this Petition is a surprise, or that it was developed without complete candor and many opportunities for debate by all interested parties.

9. As to what is apparently the “minority view” that *any* subband regulation is unnecessary, ARRL strongly disagrees with that argument as well. The United States has a very large number of licensees in the Amateur Service -- more numerous than in any other individually licensed radio service administered by the Commission. The bands, especially the HF bands, are heavily occupied. This is not to say that all HF bands are occupied to capacity all of the time, but they are heavily occupied nonetheless. To proceed from a strict emission mode-based regulation philosophy to a complete absence of band segmentation by regulation is ill-advised and untimely. ARRL’s plan attempts to segment emission modes of similar bandwidths in a manner that accommodates the varied needs and interests of all, while insuring compatibility by grouping like-bandwidth emissions together. Absent this, or if the common denominator in the HF bands is a generic, wide bandwidth limit of, for example, 6 or 9 kHz, as some have suggested, there would be a substantially increased threat to established narrow-bandwidth emission modes, and spectrum efficiency would not be encouraged. ARRL has attempted to minimize that effect, while at the same time creating a reasonably liberal experimentation framework, by proposing, in general in the HF bands, 200 Hz, 500 Hz and 3.5 kHz bandwidths. This, and the proposal to utilize necessary bandwidths rather than occupied bandwidths (which

⁴ Notably, the ARRL proposal was actively discussed in a variety of other Amateur Radio media as well as through ARRL’s varied information dissemination mechanisms.

permits determination of the permissibility of a certain emission mode by calculation rather than by actual measurement)⁵ generally necessitates grouping compatible emission types together. The specified maximum bandwidths in the ARRL Petition appendix are slightly wider than the necessary bandwidths for presently used telegraphy, RTTY and SSB telephony (as examples), and that is done in order to permit experimentation without fear of substantially exceeding currently conventional necessary bandwidths. The idea is to establish a regulatory framework looking forward ten to fifteen years, without the benefit of, and without the need for, a crystal ball to predict the nature of new or refined communications modes, whether analog or digital. During that period, we do know that incumbent operating modes will continue. An inherent ancillary benefit of the ARRL plan is that the changes proposed will eliminate much of the currently cumbersome procedures for determining whether a new digital communications technology is or is not permitted under the Part 97 regulations.

10. There are also comments filed which suggest that ARRL was overly conservative in suggesting a 3.5 kHz bandwidth for most of the HF segments now used for analog telephony, because data rates are artificially limited thereby. Because there is not presently an effective bandwidth limitation on HF digital operations,⁶ the ARRL proposal would create one, thus somewhat limiting data rates. That is a correct claim, but again, protection of incumbent operations is of paramount importance in the ARRL plan, and considerably wider bandwidths

⁵ Some comments object to the conversion from occupied bandwidth to necessary bandwidth, believing that Amateurs should have to measure, rather than merely calculate, the bandwidth of their proposed emissions. ARRL would suggest that calculation of necessary bandwidth is a reasonable method of determining the bandwidth of a transmitted signal, is a flexible means of encouraging experimentation, and is an objective method of determining the legality of an emission under experimentation or use. It also facilitates enforcement, where necessary. It is also worth noting that, under the ARRL proposal, Section 97.101(a) is retained and unchanged. That section requires that in all respects not otherwise provided for in the rules, Amateur stations must be operated in accordance with good engineering and good amateur practice. Good engineering and good amateur practice dictates the use of minimum bandwidth, and minimization of spurious and harmonic emissions.

⁶ The existing bandwidth limit of 500 Hz applies only to automatically controlled stations where the station is responding to interrogation by a station under local or remote control. See 47 C.F.R. § 97.221(c).

sufficient to accommodate high data rate experimentation and operation are available in the higher frequency bands, thus providing some flexibility in digital experimentation, but still permitting reasonably high data speeds in the HF bands below 29 MHz..

11. ARRL's Petition will modernize the Commission's regulations to permit experimentation with automated systems. To those who argue that ARRL's interest in promoting regulations which accommodate digital communications technologies (including automated digital systems) is catering to the minority, ARRL notes that the Commission, in Docket 98-143, has already determined that modern communications systems are automated:

We note, moreover, that the design of modern communications systems, including personal communication services, satellite, fiber optic, and high definition television systems, are based on digital communication technologies...[M]odern communication systems are designed to be automated systems.

15 FCC Rcd. 315 at 319 (1999)

Again, ARRL understands the predictive fear reflected in some of the comments of a proliferation of automatically controlled stations at HF. Automatic control in the HF segments does present some risk of interference. However, again, ARRL believes that a balance has been reached between encouraging new digital technologies and systems and protection of incumbent analog emission modes in shared bands. The present rules permit fully automatic stations in small segments of the HF bands. [§ 97.109(e) and §97.221(b)]. ARRL's proposal is to maintain that provision, with minor modification.

12. Also, what is commonly referred to as "semi-automatic control," where a station which is automatically controlled cannot initiate transmissions, and all communication must be initiated by a station under local or remote control by a control operator, is permitted by the present Section 97.221(c), but only under the significant constraint of a limitation of 500 Hz

bandwidth. ARRL continues to suggest that this is practical as a generalized operating practice in the HF bands. The current Section 97.221(c)(1) limitation, that stations under automatic control (outside the specific segments where automatically controlled stations can operate without this limitation) cannot initiate communications without interrogation by a station under local or remote control, has worked reasonably well to date in the narrowband segments of the HF bands. The 500 Hz bandwidth limitation for these stations is not necessary for interference avoidance whether or not such operation is permitted in the wider bandwidth segments of the HF bands or only in the narrowband segments. Therefore, ARRL proposed to modify Section 97.221(c) to delete the limitations on semi-automatic control and to permit the same throughout the amateur HF bands. 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. While interference between and among amateur stations in shared, heavily used HF allocations cannot be completely prevented, there is no present incompatibility between semi-automatic data operation and incumbent analog emission modes, due to the adherence of most amateurs to voluntary band plans. ARRL predicts that, in the future, adherence to voluntary band plans will be sufficient, as is the case now, to minimize instances of interference in the HF bands. Neither is the case. The “semi-automatic control” concept is a reasonable method of minimizing any interaction between or among amateur stations using similar bandwidths because of the necessity of a human operator determining

when an automatically controlled HF digital station can transmit. Just as there are inevitable instances of Amateur stations using analog telephony emissions transmitting on the same or adjacent frequencies of other stations due to propagation shifts and skywave transmission characteristics of the band (despite the operators' use of listen-before-transmit operating procedures), which are resolved through cooperation, the same techniques can be expected to be implemented by digital stations.

13. The regulation of emission modes in Amateur Radio Service allocations is a limiting factor with respect to Amateur Radio experimentation. It leads to attempts to put new technology into a regulatory framework that was designed to deal not with digital emissions, but rather with older, analog technologies. 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. Some comments object to the mixture of emission mode and bandwidth regulation in the ARRL proposal. While some instances of this are inevitable, they are kept to a minimum in the proposal. ARRL is unwilling to disenfranchise existing operating modes in the process of accommodating others. There are emission types that are in use today such as DSB-AM which do not necessarily fall neatly into a sub-band division by maximum bandwidth (without at the same time creating inefficiencies in the use of the limited HF spectrum). Those emissions can continue to be accommodated for those who wish to use them, without detracting from the use of the bands by others and without diverging substantially from the paradigmatic change suggested herein. The special provision for DSB-AM, for example, neither discourages nor promotes DSB-AM or any other emission mode. It is one of the specific provisions necessary to accommodate

as many different operating modes in the limited spectrum available as possible. The ARRL proposal is not, as some comments suggest, fairly characterized as a “hybrid” plan of emission mode regulation and regulation by bandwidth maxima. It is, rather, a nearly pure regime of regulation of the bands by maximum bandwidth only. This is both necessary and sufficient in order to preclude usurpation of the narrow and crowded bands by any one type of emission or user, and yet flexible enough to permit accommodation of new modes in an “overlay” fashion. The ARRL petition does not favor one mode at the expense of another.⁷ It merely allows expansion of the repertoire of options that Amateurs may pursue, compatibly. The Petition places increased responsibility on the Amateur community to establish workable, accepted band plans, for these bands, but ARRL is confident that the ongoing effort to do that will be successful. ARRL is firmly committed to completing a competent and acceptable band plan to accompany the rule changes, and has commenced that effort already.

Therefore, the foregoing considered, ARRL, the National Association for Amateur Radio, again respectfully requests that the Commission issue a Notice of Proposed Rule Making at an early date, looking toward adoption of the rule changes set forth in the attached Appendix, and

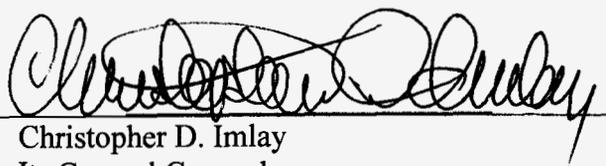
⁷ There is no basis for those comments which suggest that ARRL is pushing Winlink, for example, (which is not an emission mode, but a mode-independent network), or certain emission modes over other types of communications technologies, techniques or emissions. The ARRL proposal opens some doors and closes none; whichever operating modes, techniques or technologies proceed through those doors would be, to a greater extent than is now the case, determined by the Amateur community itself.

adopt the proposed regulatory scheme herein as a blueprint for the future of Amateur Radio regulation.

ARRL, the National Association for Amateur Radio

225 Main Street
Newington, CT 06111-1494

By: _____



Christopher D. Imlay
Its General Counsel

Booth, Freret, Imlay & Tepper, P.C.
14356 Cape May Road
Silver Spring, MD 20904-6011
(301) 384-5525

February 21, 2006