

Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington, DC. 20554

<b>In the Matter of</b>	)	
	)	
<b>Interference Immunity</b>	)	<b>ET Docket No. 03-65</b>
<b>Performance Specifications</b>	)	
<b>for Radio Receivers</b>	)	
	)	
<b>Review of the Commission's</b>	)	<b>MM Docket No. 00-39</b>
<b>Rules and Policies Affecting the</b>	)	
<b>Conversion to Digital Television</b>	)	
	)	
	)	

**To: The Commission**

**ADDITIONAL COMMENTS of Nickolaus E. Leggett**  
**N3NL Amateur Radio Operator**

The following is a set of comments from Nickolaus E. Leggett, an amateur radio operator (Extra Class licensee – call sign N3NL), inventor (U.S. Patents # 3,280,929 and 3,280,930 and one electronics invention patent application pending), and a certified electronics technician (ISCET and NARTE). This is my second set of comments in this proceeding. My first set of comments was filed on March 31, 2003.

This set of additional comments is focused primarily on the impact of receiver performance specifications on low-income and experimenter users of radio receivers in various radio services. The comments include broadcast radio receivers and receivers used in amateur radio and radio astronomy.

## **AM and FM Broadcast Band Radios**

Low-income listeners have had access to the AM and FM broadcast bands for years. This access is provided by very inexpensive “transistor radios” providing satisfactory reception of local AM and FM broadcast stations. Standards that improve the performance of these broadcast band receivers could easily increase their parts count, complexity, and cost. Such a development would have a negative social effect of closing the poor out of the broadcast connection to their communities and the Nation.

Any new broadcast radio receiver standards should be flexible enough that the future production of inexpensive radios is protected. A retail price target or cap of ten dollars per radio should be included in the standards for a basic AM or FM receiver. Manufacturers should be allowed to ignore the standards when a basic radio’s cost to the consumer would be pushed above the cap by the impact of the standards.

This issue of broadcast radio affordability becomes even more important as the broadcast world moves towards digital technology. At the current time, digital technology is more expensive than the simpler traditional analog radio technology. Poor people cannot afford this digital technology. The Commission should address this problem by either requiring broadcast stations to continue transmitting analog signals along with digital signals for a decade or more. Or the Commission can work with the standards setting bodies to make sure that a cheap digital receiver is accommodated by the receiver performance standards.

## **Short Wave Radios**

The issue of affordability applies to radios that receive short wave broadcasts. The current high-power international short wave broadcasts can be received by very simple radios

such as regenerative receivers or even crystal sets. A crystal set is a non-powered radio consisting of a diode rectifier component and a tuned circuit (coil and capacitor).

This ease of reception is very important in that it allows people in third-world nations to receive international broadcasts from outside the borders of their nations. This is a useful capability for people who are in authoritarian nations or who are too poor to purchase more advanced radios. Many people in the World are too poor to purchase advanced radios.

The Commission should encourage the manufacture of simple short wave radios that can be an export product from the United States to other nations. Any receiver performance standards, directed at international short wave broadcast receivers, should be structured so that very simple and inexpensive radios can be manufactured here in the United States. In addition, the Commission should examine the role of analog AM technology in international broadcasting. Converting short wave broadcasting to digital modes would probably price the radio receivers out of the reach of the majority of third-world residents. Thus the Commission should work internationally to retain some AM short wave broadcasting and with the standards organizations to permit the manufacture and marketing of very inexpensive digital short wave radios.

### **Amateur Radio Receivers**

The amateur radio service is oriented towards experimental and self-training operation by licensed radio amateurs (refer to Part 97.1 of the Commission's rules listed in Appendix A of this document). Much of the experimental work in amateur radio is focused on low power (QRP) stations that are built from kits or are homemade. Imposing receiver performance standards on these low power stations would reduce the design choices available in their production. In addition, the resultant increased complexity would reduce the field-repairability of these otherwise simple radios. As I have already pointed out in docket RM-10412, field repairability

is an important factor in the self-training, electronic experimenting, inventing, and extended emergency communications aspects of amateur radio.

In addition, many amateur radio stations are frequency agile using variable frequency oscillators (VFOs). This enables a constantly changing frequency spacing between amateur stations that would defeat the purpose of many specific receiver standards.

The Commission should avoid establishing any receiver performance standards in the amateur radio service. The amateur operators themselves can act through the American Radio Relay League (ARRL) to set up receiver performance guidelines if they feel such a step is necessary.

### **Radio Astronomy Service**

Radio astronomy operation requires very specialized high-sensitivity broadband receiver design. Many radio astronomy installations are one-of-a-kind installations that are assembled for specific scientific purposes.

This activity requires unusual radio receiver assemblies that are best left to the design of the experimenter in this important field of science.

### **Homemade Radios**

The Commission should not attempt to impose any receiver performance standards on radios that are made by the user. Such standards would be basically impractical and would also conflict with the significant educational value of making one's own receiver. A person learns a lot from building his own radio because he must plan the layout and connectivity of the components and then he must implement this layout to create a working radio receiver. In doing this, the person learns to read published schematic diagrams showing the components' connectivity. Eventually he progresses to an even more advanced state of knowledge where he

designs his or her own radio receiver from basic electronic principles. This is the art of radio frequency electronic engineering. Some of these experimenters produce new innovations and inventions such as the recent invention of a variable capacitor formed using a conducting liquid.

If the Commission attempts to impose receiver design standards on the person building his own receiver, the educational and inventive process will be inhibited by the introduction of additional complexity and filtering/bandwidth aspects that deflect the builder from his own personal goals in building his receiver. Radio experimenters are a precious aspect of the electronics discipline and they should be allowed to learn and grow undisturbed by regulatory intrusions.

### **Private Standard-setting Organizations**

Private standard-setting organizations have a useful role to play in receiver design. However, it is important to remember that the output of such organizations does not necessarily equal the public interest. This is because the private organizations have a definite view that is not necessarily representative of society as a whole. This requires that the Commission, as a representative of the Nation as a whole, should provide some guidance and limits to the activities of the private standards-setting organizations.

### **Suggested Actions**

The Commission should carefully consider that receiver performance standards can have a negative impact on the access by the poor to radio broadcasts. In addition, receiver performance standards are not appropriate in experimental radio services such as amateur radio and radio astronomy.

**Respectfully submitted,**

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## **APPENDIX A – Basis and Purpose of the Amateur Radio Service**

### **97.1 Basis and purpose.**

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 voluntary noncommercial communication service, particularly with respect to providing emergency communications.
- (b) Continuation and extension of the amateur's proven ability to contribute to the advancement of the radio art.
- (c) Encouragement and improvement of the amateur service through rules which provide for advancing skills in both the communications and technical phases of the art.
- (d) Expansion of the existing reservoir within the amateur radio service of trained operators, technicians, and electronics experts.
- (e) Continuation and extension of the amateur's unique ability to enhance international goodwill.