

2004 ANNUAL MEETING
ARRL BOARD OF DIRECTORS

ARRL EMC Committee Semi-Annual Report

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**For The
American Radio
Relay League**

**Board of Directors Meeting
January 16-17, 2004**

**Submitted By
Dennis Bodson, W4PWF
Chairman, ARRL EMC Committee**

Mission Statement:

The EMC Committee monitors developments in the Electromagnetic Compatibility (EMC) field and assesses their impact on the Amateur Radio Service. The Committee informs the ARRL Board of Directors about these activities and makes policy recommendations for further action, if appropriate.

The overall goals of the committee are:

- Advise the ARRL Board about issues related to radio-frequency interference
- Advise the ARRL HQ staff on the content of its publications

- Make recommendations to the ARRL Board and HQ staff

Members of the Committee:

- Mr. Dennis Bodson, W4PWF, ARRL Roanoke Division Director, EMC Committee Chairman
- Mr. Jody Boucher, WA1ZBL, RFI troubleshooter, Northeast Utilities
- Mr. Ed Hare, W1RFI, ARRL Laboratory Manager, HQ Staff Liaison
- Mr. Ron Hranac, N0IVN, Board of Directors, Society of Cable Telecommunications Engineers
- Mr. Steve Jackson, KZ1X, VDSL and wireless communications
- Dr. Ron McConnell, W2IOL, T1E1.4 VDSL Standards Committee
- Mr. Mike Gruber, W1MG, ARRL Lab RFI Engineer
- Cortland Richmond, KA5S, EMC Engineer
- Mr. Mark Steffka, WW8MS, Automotive EMC engineer
- Mr. Walt Stinson, W0CP, ARRL Rocky Mountain Division Director

- Dr. Steve Strauss, NY3B, Home Phone Networking Alliance Technical Committee
- Mr. Hugh Turnbull, W3ABC, ARRL Honorary Vice President

The EMC Committee is pleased to welcome Mr. Richmond as its newest member. He comes to the committee with years of professional EMC-engineering experience.

HQ Staff:

The role of the ARRL HQ staff consists of the following:

- Answer individual inquiries from hams (and sometimes their neighbors) about RFI problems
- Write and publish articles about RFI
- Write and publish the ARRL RFI Book
- Design and update ARRL's RFI web pages
- Maintain a database at ARRL to facilitate EMC case tracking and reporting
- Work with ARRL's D.C. office on various spectrum and RFI-related filings
- Maintain contact with industry
- Participate in standards and industry groups. This includes ANSI C63, Society of Automotive Engineers EMC and EMR committees, Home Phone Networking Alliance, VDSL, HomePlug, FCC and individual companies.

Mr. Gruber handles the majority of the staff work on EMC matters. In the 2nd half of 2003, wrote a major revision to ARRL's web page on electrical interference, adding a [frequently-asked-questions](http://www.arrl.org/tis/info/powerline-FAQ.html) section (<http://www.arrl.org/tis/info/powerline-FAQ.html>) that describes in detail the steps hams need to take to work with the ARRL and FCC on power-line interference cases.

2003 Year Total RFI-case statistics:

New RFI Cases - 370
 Total Cases Handled - 440
 New electrical power-line cases - 122
 Power companies sent ARRL Letter - 49
 Power companies sent FCC 1st Letter - 24
 Power companies send FCC 2nd Letter – 14
 EMC/RFI-related emails Total - 2780

Electric Utilities:

Power-line interference has continued to be the number one interference problem reported to ARRL HQ. These cases are being worked on by HQ staff, in cooperation with Riley Hollingsworth of the FCC. Although most of the cases are resolved or well on their way to a successful resolution, a number of older cases are still open. As a follow-up to the letters the FCC sends to electric-utility companies, the FCC has been sending a second letter, reminding utilities of the importance of the FCC rules. The FCC and HQ staff discuss all open cases

monthly. Several cases are poised to go to the FCC regional offices for investigation and possible enforcement action.

Broadband Over Power Line (BPL):

Broadband over power line (BPL) is the use of electrical wiring or power-distribution lines to carry high-speed digital signals. There are two types of BPL of concern to amateurs. Both have signals that occupy most or all of the HF range, extending into low VHF. The power-line or electrical wiring can act as an antenna and radiate these signals. In-building BPL can be used to network computers within a building. It uses the building wiring to carry digital signals from one computer to another. Most in-building BPL operates under the HomePlug industry specification[1]. Access BPL provides broadband Internet access to homes and businesses, using a combination of techniques and wiring. Several field trials on BPL are underway in various cities.

Mr. Hare visited a number of BPL trial areas, documenting BPL interference in the ARRL video at <http://www.arrl.org/tis/info/HTML/plc#video>. ARRL also continued to provide the FCC and industry with [additional information](#) about BPL. (See http://www.arrl.org/tis/info/HTML/plc/#Amateur_Interference_Studies).

The EMC Committee continues to monitor ARRL's overall BPL efforts and offer its guidance where appropriate.

ARRL's information on BPL is found at <http://www.arrl.org/bpl>.

Automotive EMC:

Mr. Hare continues as the ARRL representative on the Society of Automotive Engineers EMC and EMR Committees. The Headquarters staff continues to send all reports of automotive EMC problems to interested people in the automotive industry. While these reports are advisory, they are helpful to the industry in planning for future designs. At this time, Mr. Steffka has been involved in helping ARRL staff with a pending "Automotive RFI" survey. He has also responded to a number of automotive-interference issue and questions and has provided additional information to ARRL on how to diagnose automotive RFI problems.

Cable Television:

As a whole, the cable industry is continuing to do a good job at adhering to the FCC's regulations about leakage and interference. ARRL has received few reports of problems, indicating that most systems are either clean or are addressing complaints effectively. The few cases ARRL has been involved with have been addressed through Mr. Hranac, the cable-industry member of this committee. He generally refers the report to the senior technical management of the involved cable company, who then in turn help the local system resolve the reported problem. In a few of those cases, the problem was caused by something external to the cable equipment. In those cases, the cable company helped to locate the sources as a service to their customers.

Database:

The ARRL HQ staff maintain a database of RFI reports and cases. This is used primarily as a case-management tool for the several hundred RFI cases ARRL handles every year, but the information the Lab staff are gathering about types of interference cases, involved equipment and frequencies will provide a wide range of reporting capability. This database was used to help prepare a portion of ARRL's comments to the FCC BPL NOI.

An example of the report capabilities of the database for the total 2003 cases:

RFI FROM:	
Power Line Noise	122
Amateur Radio	39
Unknown	52
Appliances & Electrical Devices	32
Automotive	20
Computer	36
Electric Fence	19
BC Station	14
TV	12
Medical Device	6
Cordless Phone	5
CATV	3
Street Light	4
Cell Phone Tower	2
Engine (Stationary)	1
ATM Machine	1
Paging System XMTR	1
Repeater (Non-Amateur)	1
Railroad	1
Other	1
Miscellaneous	13
RFI TO:	
Amateur Radio	267
FM & TV	13
Electrical Device	12
CATV	9

Stereo & Intercom	7
Medical Device (Pacemakers)	7
Automotive	6
Telephones	5
Repeater (Non-Amateur)	2
Unknown	3
Cordless Phone	3
AM Broadcast Radio	3
Computer	3
On-Star (Automotive)	2
Part 15 Device (Baby Monitor)	1
Pipe Organ (Church)	1
TV	1
MARS Station	1
Miscellaneous	25
TOTAL 2003 cases:	370

Committees: ARRL continues to be represented on professional EMC committees. Messrs. Bodson and Hare continue to represent the interests of Amateur Radio on the ANSI C63 RFI committee. Mr Bodson has been appointed as the C63 representative and HQ staff liaison Mr Hare is ARRL's alternate. At the October C63. Mr. Hare was appointed to chair Subcommittee 5 – Immunity. Mr. Hare also chairs the C63 committee's ad-hoc working group on power-line communications devices. This continues to be a hot topic of discussion at the C63 meetings.

The C63 committee is working on developing industry standards for immunity, emissions and testing of electronic devices. ARRL serves as a resource to the committee to protect the interests of Amateur Radio. Subcommittee 1 continues to work on a variety of EMC projects, primarily related to test site standardization. Subcommittee 5 deals with immunity and immunity measurement issues. Subcommittee 8 deals with various types of medical equipment. The ARRL EMC-Committee representation on C63 watches immunity and testing developments.

ARRL also continues its participation in the Society of Automotive Engineers EMC and EMR Committees. Mr. Hare is the ARRL representative on those committees. Mr. Steffka also serves on the committees, representing his employment in the automotive industry.

The Future of EMC and Amateur Radio: Interference to hams appears to be the present major work of the committee. Although immunity problems still do occur, this is being addressed at the national and international standards level. RFI from unlicensed devices poses a major real threat to Amateur Radio at this time. This will continue to require significant Committee and ARRL staff attention. To the extent possible with existing staff, or with additional resources, the ARRL

should increase its contact with standards organization, industry groups and individual companies, and continue to work on all aspects of RFI problems and solutions.

ARRL's information about RFI can be read at <http://www.arrl.org/tis/info/rfigen.html>.

[1] <http://www.homeplug.org/>