

The American Radio Relay League

The American Radio Relay League, Inc., is a noncommercial association of radio amateurs, organized for the promotion of interest in Amateur Radio communication and experimentation, for the establishment of networks to provide communications in the event of disasters or other emergencies, for the advancement of the radio art and of the public welfare, for the representation of the radio amateur in legislative matters, and for the maintenance of fraternalism and a high standard of conduct.

ARRL is an incorporated association without capital stock chartered under the laws of the state of Connecticut, and is an exempt organization under Section 501(c)(3) of the Internal Revenue Code of 1986. Its affairs are governed by a Board of Directors, whose voting members are elected every three years by the general membership. The officers are elected or appointed by the Directors. The League is noncommercial, and no one who could gain financially from the shaping of its affairs is eligible for membership on its Board.

"Of, by, and for the radio amateur." ARRL numbers within its ranks the vast majority of active amateurs in the nation and has a proud history of achievement as the standard-bearer in amateur affairs.

A *bona fide* interest in Amateur Radio is the only essential qualification of membership; an Amateur Radio license is not a prerequisite, although full voting membership is granted only to licensed amateurs in the US.

Membership inquiries and general correspondence should be addressed to the administrative headquarters:

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The purpose of *QEX* is to:

- 1) provide a medium for the exchange of ideas and information among Amateur Radio experimenters,
- 2) document advanced technical work in the Amateur Radio field, and
- 3) support efforts to advance the state of the Amateur Radio art.

All correspondence concerning *QEX* should be addressed to the American Radio Relay League, 225 Main St., Newington, CT 06111 USA. Envelopes containing manuscripts and letters for publication in *QEX* should be marked Editor, *QEX*.

Both theoretical and practical technical articles are welcomed. Manuscripts should be submitted in word-processor format, if possible. We can redraw any figures as long as their content is clear. Photos should be glossy, color or black-and-white prints of at least the size they are to appear in *QEX* or high-resolution digital images (300 dots per inch or higher at the printed size). Further information for authors can be found on the Web at www.arrl.org/qex/ or by e-mail to qex@arrl.org.

Any opinions expressed in *QEX* are those of the authors, not necessarily those of the Editor or the League. While we strive to ensure all material is technically correct, authors are expected to defend their own assertions. Products mentioned are included for your information only; no endorsement is implied. Readers are cautioned to verify the availability of products before sending money to vendors.

Kazimierz "Kai" Siwiak, KE4PT

Perspectives

The Graying and Future of Amateur Radio

A generation or two ago amateur radio uniquely marked a leadership role in widespread communications that are accessible to young hobbyists. We've since ceded that leadership to the internet and to smartphones. Is there really a need for amateur radio among the younger generation when everyone has a global communications reach by their smartphones and by the internet? Due to that universal global reach we have all but lost the relevance to the young of amateur radio as a communications medium. Those who use amateur radio are graying.

There is more than communications *reach*. There is communications *technology*. School-based amateur radio clubs promote science, technology, engineering and math. These programs appear under the catchall STEM tag. One way of connecting young people with amateur radio is through our support of and participation in amateur radio school-based clubs.

QEX is a journal for communications experimenters. It disseminates knowledge of radio technologies and their advances. We adhere to the belief that radio amateurs, the gray and the young, like their historical predecessors, should carry on experimentation and report their technological findings to us all. We encourage all amateurs to promote STEM programs through amateur radio.

In This Issue:

- Gary Johnson, NA6O, describes a laboratory RF power meter.
- Mark R. Titchener, ZL4CDE, maps a binary code to Morse code, facilitating the efficient exchange of binary-coded messages.
- Richard Place, WB2JLR, adds networks to *4nec2* models.
- Greg Hebner, AG5FE, studies the vertical antenna with a spiral counterpoise.
- Steve Geers, KA8BUW, accurately predicts crystal filter performance.
- Eric P. Nichols, KL7AJ, in his Essay #21 discusses a self exam.

Writing for *QEX*

Please continue to send in full-length *QEX* articles, or share a **Technical Note** of several hundred words in length plus a figure or two. *QEX* is edited by Kazimierz "Kai" Siwiak, KE4PT, (ksiwia@arrl.org) and is published bimonthly. *QEX* is a forum for the free exchange of ideas among communications experimenters. All members can access digital editions of all four ARRL magazines: *QST*, *OTA*, *QEX*, and *NCJ* as a member benefit. The *QEX printed edition* is available at an annual subscription rate (6 issues per year) for members and non-members, see www.arrl.org/qex.

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Very kindest regards,
Kazimierz "Kai" Siwiak, KE4PT
QEX Editor