

## 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:

ARRL  
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### Officers

**President:** Rick Roderick, K5UR  
PO Box 1463, Little Rock, AR 72203

**Chief Executive Officer:** Tom Gallagher, NY2RF

**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 Street, 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/](http://www.arrl.org/qex/) or by e-mail to [qex@arrl.org](mailto: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

### 300 QEX Issues and Going Strong

*QEX* was first published in December 1981 as the "ARRL Experimenter's Exchange," with Founding Editor Paul Rinaldo, W4RI. We celebrate *QEX* issue #300 by reprinting the entire contents of *QEX* issue #1. Over the years, *QEX* has partnered with the *AMSAT Satellite Journal*, and later hosted *Gateway*, the ARRL packet radio newsletter. The conductors of these two publications, as well as several Contributing Editors, have sustained the quality of the magazine.

Jon Bloom, KE3Z, became Editor in 1992. His considerable expertise built *QEX* into one of the most respected technical publications in its field. This was a time when Amateur Radio, and radio technology in general, were undergoing rapid changes.

Zack Lau, W1VT, the award-winning ARRL Senior Laboratory Engineer, came aboard with his "RF" column, detailing advanced work across the RF spectrum. The "RF" column ran from August 1992 through January 2005.

Rudy Severns, N6LF, took over the editorial reins in 1997. On his watch, the magazine went from monthly to bimonthly publication. The number and depth of articles increased dramatically. *QEX* took on a new look as well, with full-color covers and enhanced content. Rudy's talent for soliciting top-quality articles from the leading technical authors in Amateur Radio took the magazine to a higher plateau.

Bob Schetgen, KU7G, known for his editorship of *The ARRL Handbook* and for his columns in *QST*, also began work on *QEX* in 1997. Bob served as Managing Editor until his sudden passing in December 2005.

In January 2000, ARRL purchased the Amateur Radio technical journal *Communications Quarterly* from CQ Communications and merged it with *QEX*, creating the combined *QEX/Communications Quarterly*. Published for the preceding nine years under the editorship of Terry Littlefield, KA1STC, *Communications Quarterly* billed itself as the philosophical successor to *ham radio* magazine, which was founded by "Skip" Tenney, W1NLB, and Jim Fisk, W1HR. Littlefield was Editor of *Ham Radio* when CQ Communications purchased it in 1990.

Ray Mack, W5IFS, joined as Contributing Editor with the January/February 2002 issue. Ray conducts his column "Out of the Box," about new product availability and also serves as our proofreader. With the January/February 2009 issue, Ray also began a new column, "SDR: Simplified," presenting hands-on experiments and investigations into the world of software defined radio (SDR) and digital signal processing (DSP).

L.B. Cebik, W4RNL, came aboard as Contributing Editor as of July/August 2004. His column "Antenna Options" covered antenna design, performance and construction until his passing in April 2008. The final "Antenna Options" column appeared in the July/August 2008 issue.

Doug Smith, KF6DX, became *QEX* Editor with the September/October 1998 issue. His enthusiasm and technical expertise continued to improve the magazine's technical content.

Larry Wolfgang, WR1B, began work on *QEX* in late 2005 and became Managing Editor for the March/April 2006 issue. Larry became the *QEX* Editor with the September/October 2007.

Kazimierz "Kai" Siwiak, KE4PT, stepped in as *QEX* Editor with the March/April 2016 issue. Kai also edits *QST* technical articles (since the July 2013 issue of *QST*), and serves on the ARRL RF Safety Committee.

### In this Issue

We've increased the cover thickness to 50# stock to help it better survive the postal mail. Our *QEX* authors describe propagation measurements and modes, filter characteristics, and tuning an L-network. Help determine the content of future *QEX* issues by putting your favorite topic or innovative measurement on paper. Share it on these pages with fellow readers. Just follow the details on the [www.arrl.org/qex-author-guide](http://www.arrl.org/qex-author-guide) web page, and contact us at [qex@arrl.org](mailto:qex@arrl.org). We value your feedback, comments and opinions about these pages.

In this issue, we've recreated the entire first issue of *QEX*. Flavio Egano, 1K3XTV, followed long term observations that suggest long path echoes might propagate with low attenuation by ionospheric ducts; Bill Kaune, W7IEQ, details the inductor losses in Pi-network; Tom C. McDermott, N5EG, describes hardware and software for ionospheric sounding; Scott Roieson, KC7CJ, repurposes an enclosure from obsolete equipment; and Robert J. Zavrel, W7SX, presents a different approach to a multi-band Yagi-Uda design.

Please continue to support *QEX*, and help it remain a strong technical publication. Submit articles via e-mail to [qex@arrl.org](mailto:qex@arrl.org) or via US Mail to *QEX*, ARRL HQ, 225 Main St, Newington, CT 06111.

73,

Kazimierz "Kai" Siwiak, KE4PT  
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