

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.

Bill Liles, NQ6Z, and Ward Silver, NØAX

Perspectives

QEX continues to explore a number of interesting topics across a wide spectrum of amateur radio technologies. Originally envisioned as a journal for very focused and experimental projects (and project designers), *QEX* has expanded into a variety of articles that go beyond—and sometimes supplement—material in *QST* and *NCJ*. If you search the ARRL’s database of articles (www.arrl.org/arrl-periodicals-archive-search), many of our authors appear in multiple ARRL publications. We appreciate their contributions and know that you do, too!

One article, in particular, is quintessential amateur radio: “A Single Stage 1500 Watt 65 Volt LDMOS Amplifier for the 6 Meter Band,” by Larry Crumrine, NØKC, shows how he adapted the high-power, high-gain LDMOS FETs to work in a full-power linear amplifier. His design information applies not only to VHF/UHF amplifiers but provides guidance for HF designs as well. The ARRL’s Clean Signal Initiative (www.arrl.org/arrl-clean-signal-initiative) is focused on using and operating amplifiers using these powerful, but hard to tame, devices that are rapidly replacing vacuum tubes in amateur high-power equipment.

Complementing articles on high-power operation by N5DF discuss Class E SSB modulation and a diode RF sensor. The amateur workbench is supported by WB3JOB’s article describing a 40 MHz signal source. K3LC wraps up his series on 4-square antenna array design and KL7AJ continues to explore the vacuum tube. Quite a range of interests and all intended to help amateurs in the best of traditions, getting on the air!

In This Issue:

- John Stensby, N5DF, shows how to build a low-cost, simple-design, temperature-compensated power sensor.
- Ken Pollock, WB3JOB, designs a signal generator for developing circuits of troubleshooting equipment on the workshop or test bench.
- Al Christman, K3LC, examines the use of “gull-wing” elevated radials in combination with vertical monopoles whose feed points are located at or near ground level.
- Ralph Crumrine, NØKC, discussed the most important details for using high-gain LDMOS devices in a low-VHF amplifier.
- James A.R. Koehler, VE5FP, uses a low-cost Raspberry PI Pico for necessary digital processing, including the trigonometric function.
- In his essay series, Eric Nichols, KL7AJ, reflects on “unintended consequences” in the development of the vacuum tube.

Writing for *QEX*

QEX is a forum for the free exchange of ideas among communications experimenters. *QEX* is published bimonthly and is edited by Kazimierz “Kai” Siwiak, KE4PT, who is currently on sabbatical.

Please continue to send full-length *QEX* manuscripts, or share a Technical Note of several hundred words in length plus a figure or two, to qex@arrl.org. We pay \$50 per published page for full articles and *QEX* Technical Notes. Get more information and an Author Guide at www.arrl.org/qex-author-guide. If you prefer postal mail, send a business-size self-addressed, stamped (US postage) envelope to: *QEX* Author Guide, c/o Maty Weinberg, ARRL, 225 Main St., Newington, CT 06111.

All members can access digital editions of all four ARRL magazines: *QST*, *On the Air*, *QEX*, and *NCJ* as a member benefit. A *print edition* of *QEX* is available at an annual subscription rate (6 issues per year) for members and non-members; see www.arrl.org/qex.