

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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Officers

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P.O. Box 1463, Little Rock, AR 72203

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 present a wide-angle snapshot of ham radio interests in this issue, ranging from analog preselectors to vector network analyzers. LeCren’s article also highlights a growing aspect of amateur radio — facilitating and conducting scientific research. In this article, students verify the ideal gas law in real-life, with ham radio providing the live photographs of a balloon-borne experiment. In recent years, the “value proposition” of ham radio has become apparent to the scientific research community, particularly for geomagnetic and ionospheric phenomena. Coordinated through the **hamsci.org** community, all manner of research experiments are being conducted by amateurs with an interest in supporting science. You can, too!

The process of interviewing and qualifying the applicants for the editorship of *QEX* has begun. A new *QEX* Editor is expected to come aboard later this year.

In This Issue:

- John Stanley, K4ERO, gives examples of NVIS antennas with descriptions and gain figures.
- Anthony LeCren, F4GOH/KF4GOH, explains how Computer Science and Networks high school students programmed an HF SSTV transmitter to send images from a high-altitude balloon.
- George R. Steber, WB9LVI, describes a new version of the classic RF preselector that improves the front-end selectivity of your shortwave receiver.
- Mario Lechasseur, VE2KEC, presents an Arduino-based control unit that simplifies band and mode changes on the FT-0891.
- In his essay series, Eric Nichols, KL7AJ, discusses measuring components with a VNA.

Writing for *QEX*

QEX is a forum for the free exchange of ideas among communications experimenters. *QEX* is published bimonthly.

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.