

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 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/ 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

It's a Digital World: Continued

We quote and paraphrase the comments by Joe Kornowski, KB6IGK, Editor of the *AMSAT Journal*, from his July / August 2018 *AMSAT Journal* editorial.

"The use of digital modes in Amateur Radio has grown dramatically in recent years. One of the newest modes, FT8, developed by Joe Taylor, K1JT, and Steven Franke, K9AN, and incorporated in WSJT-X, has gained phenomenally rapid adoption within the Amateur Radio community. As of March 2018, Taylor reported that FT8 usage globally hovered around 15,000 users per week. Club Log reported that, by the end of 2017, FT8 represented more than half of the QSOs uploaded to Club Log. For the full year, of the 32 million QSOs uploaded, 5 million were FT8.

According to the ARRL, "For newcomers, data emissions are far more popular than teleggraphy" (Petition to FCC for Rule Making, February 2018). Inevitably, computer generated data 'bits' have now overtaken 'dahs' and 'dits'.

This trend may be reflected in anecdotal data from the 2017 AMSAT journal readers' survey in which a couple of young aerospace engineers characterized the notion of real-time, two-way voice communication as passé, explaining that young engineers expect current technology to be digital and delay-tolerant. For them, working satellites in real-time simply requires too much planning and time commitment for their busy schedules. Having a digital station setup to remotely and automatically exchange data via satellites makes more sense to them."

We agree with Kornowski's editorial. Creating innovative ways to develop and operate digital communications might help inspire the next generation of Amateur Radio enthusiasts. We'd like to hear from you (qex@arrl.org), and we solicit your articles on Amateur Radio digital communication.

In This Issue

We feature a range of topics in this issue of *QEX*.

David Birnbaum, K2LYV, calculates the losses in reversible L network antenna tuners.

Dave Leeson, W6NL, shows how a dipole can be broadbanded by a number of techniques including by matching with resonant sections of transmission feed lines.

Jim Satterwhite, K4HJU, designs a test set to measure the competency of ground installations.

Dr. George R. Steber, WB9LVI, explores the capabilities of low-cost scalar network analyzers.

Andrzej (Andy) Przedpelski, KØABP, comments on high stability crystal oscillators.

Scott Roleson, KC7CJ, comments on handheld transceiver earpiece accessories.

Keep the full-length *QEX* articles flowing in, or share a **Technical Note** of several hundred words in length plus a figure or two. Let us know that your submission is intended as a **Note**. *QEX* is edited by Kazimierz "Kai" Siwiak, KE4PT, (ksiwiake@arrl.org) and is published bimonthly. *QEX* is a forum for the free exchange of ideas among communications experimenters. The content is driven by you, the reader and prospective author. The subscription rate (6 issues per year) in the United States is \$29. First Class delivery in the US is available at an annual rate of \$40. For international subscribers, including those in Canada and Mexico, *QEX* can be delivered by airmail for \$35 annually. Subscribe today at www.arrl.org/qex.

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Very best regards,

Kazimierz "Kai" Siwiak, KE4PT