



QEX (ISSN: 0886-8093) is published bimonthly in January, March, May, July, September, and November by the American Radio Relay League, 225 Main Street, Newington, CT 06111-1494. Periodicals postage paid at Hartford, CT and at additional mailing offices.

POSTMASTER: Send address changes to: QEX, 225 Main St, Newington, CT 06111-1494 Issue No 264

Harold Kramer, WJ1B
Publisher

Larry Wolfgang, WR1B
Editor

Lori Weinberg, KB1EIB
Assistant Editor

Zack Lau, W1VT
Ray Mack, W5IFS
Contributing Editors

Production Department

Steve Ford, WB8IMY
Publications Manager

Michelle Bloom, WB1ENT
Production Supervisor

Sue Fagan, KB1OKW
Graphic Design Supervisor

David Pingree, N1NAS
Senior Technical Illustrator

Advertising Information Contact:

Janet L. Rocco, W1JLR
Business Services
860-594-0203 – Direct
800-243-7768 – ARRL
860-594-4285 – Fax

Circulation Department

Cathy Stepina, QEX Circulation

Offices

225 Main St, Newington, CT 06111-1494 USA
Telephone: 860-594-0200
Fax: 860-594-0259 (24 hour direct line)
e-mail: qex@arrl.org

Subscription rate for 6 issues:

In the US: ARRL Member \$24, nonmember \$36;

US by First Class Mail: ARRL member \$37, nonmember \$49;

International and Canada by Airmail: ARRL member \$31, nonmember \$43;

Members are asked to include their membership control number or a label from their QST when applying.

In order to ensure prompt delivery, we ask that you periodically check the address information on your mailing label. If you find any inaccuracies, please contact the Circulation Department immediately. Thank you for your assistance.



Copyright © 2010 by the American Radio Relay League Inc. For permission to quote or reprint material from QEX or any ARRL publication, send a written request including the issue date (or book title), article, page numbers and a description of where you intend to use the reprinted material. Send the request to the office of the Publications Manager (permission@arrl.org).

About the Cover

This month's QEX cover showcases the HF digital transceiver designed by James Ahlstrom, N2ADR. See his article "An All-Digital Transceiver for HF." The actual circuit board and enclosure appear in the cover foreground. A screenshot of the author's Quisk control software is displayed in the background.



In This Issue

Features

3 An All-Digital Transceiver for HF
By James Ahlstrom N2ADR

9 A Two Diode Frequency Doubler
By John Pivnichny, N2DCH

12 A Driverless Ethernet Sound Card
By Sivan Toledo, 4X6IZ

18 Simulating Tapped Coupler Inductors
By Oleg Sergin, DL2IPU

29 Seventh-Order Unequal-Ripple SVC Low-Pass Filters with Improved Second Harmonic Attenuation
By Dave Gordon-Smith, G3UUR

35 Loop Antennas—The Factor "N"
By Virgil Leenerts, W0INK

39 An All Purpose High Gain Antenna for 2400 MHz
By Roger Paskavan, WA0IUJ

46 2010 QEX Index

48 Upcoming Conferences

Index of Advertisers

American Radio Relay League:.....	Cover III,	Kenwood Communications:.....	Cover II
	Cover IV	National RF, Inc:	48
ATRIA Technologies, Inc:.....	38	Nemal Electronics International, Inc:.....	8
Down East Microwave Inc:.....	47	RF Parts	44, 47
JWM Engineering Group, Inc:.....	47	Tucson Amateur Packet Radio:	11