



In This Issue

April 2015

Volume 99 Number 4

Harold Kramer, WJ1B
Publisher

Steve Ford, WB8IMY
Editor

Becky R. Schoenfeld, W1BXY
Managing Editor

Larry D. Wolfgang, WR1B
Senior Assistant Technical Editor

Steve Sant Andrea, AG1YK
Assistant Editor

Rick Lindquist, WW1ME
Happenings

Bob Allison, WB1GCM
Product Review Lab Testing

Paul L. Rinaldo, W4RI
Mark J. Wilson, K1RO
Al Brogdon, W1AB
Bernie McClenny, W3UR
H. Ward Silver, N0AX
Paul Wade, W1GHZ
Jon Jones, N0JK
Rick Palm, K1CE
Joel R. Hallas, W1ZR
Barry Shackelford, W6YE
Kai Siwiak, KE4PT
Contributing Editors

Michelle Bloom, WB1ENT
Production Supervisor

Jodi Morin, KA1JPA
Asst Production Supervisor

Maty Weinberg, KB1EIB
Production Coordinator

Sue Fagan, KB1OKW
Graphic Design Supervisor

David Pingree, N1NAS
Senior Technical Illustrator

Jennifer Glifort
Copy Editor

Debra Jahnke, K1DAJ
Business Services Manager
QST Advertising

Bob Inderbitzen, NQ1R
Marketing Manager

Yvette Vinci, KC1AIM
Circulation Manager

Diane Szlachetka, KB1OKV
Advertising Graphics Designer

Steve Ewald, WV1X
Field Organization Supervisor

Gail Iannone
Convention Program Manager

Technical

Untangling Digital Voice Above 50 MHz 30

Bob DeMattia, K1IW
D-STAR, DMR, C4FM, P25...it's an alphabet soup of choices in the VHF+ world.

Mini-CT: A Curve Tracer for the Ham Shack 34

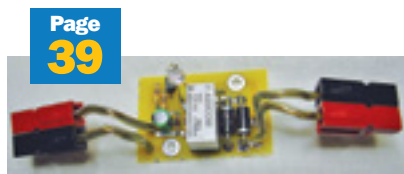
Veikko Kanto, N7VK
A microcontroller processing module and PC-based software enable standalone or in-circuit component analysis.

Measuring Frequencies at VE3GSO 37

Dave McCarter, VE3GSO
Here's a virtually zero-cost method of participating in the ARRL Frequency Measuring Test.

Voltage Reducer for Lithium-ion Polymer Four-Cell Batteries 39

Phil Salas, AD5X
Power your rig with LiPo batteries!



Ameritron ALS-600 Band Switch Modification 42

Monty Shultes, K2DLJ
Update this popular solid state amplifier for automatic band switching.

A Radical Approach to Single Sideband 45

Larson E. Rapp, W1OU
Our series of articles reprinted from vintage issues of *QST* continues, this time with an April Fool's Day selection from the April 1955 issue.

Product Review 47

Mark Wilson, K1RO
FlexRadio Systems FLEX-6300 Transceiver, FLEX-6700 Transceiver, and *SmartSDR for Windows* Software.



News and Features

It Seems to Us 9

David Sumner, K1ZZ
Remote Operating

Inside HQ 13

Harold Kramer, WJ1B
The ARRL VEC Part 2 — Special Call Signs

Member Input Sought on Draft HF Band Plan Proposals 69

David Sumner, K1ZZ
Last year the ARRL HF Band Planning Committee sought suggestions on how the growing variety of HF data modes could coexist more compatibly. Review of some 400 comments resulted in a set of "strawman" proposals for updates to the ARRL HF band plans. Here they are, for another round of input from our membership.

W1AW/p — The Year in Review 72

The historic W1AW portable operations from every US state and territory have come to an end, but we'll always have the memories. Here are just a few remembrances from the operators who made history.

The 500 Milliwatt Man 76

Steve Ford, WB8IMY
Here's how "one of the weakest DXers in the world" manages to get stations into his log.

Happenings 77

Rick Lindquist, WW1ME
The FCC's "paperless" Amateur Radio license policy is now in effect, the ARRL Library is live and accepting submissions, FCC enforcement actions; more.

World Amateur Radio Day is April 18 88

Our Cover

The latest winning photograph in the *QST* Centennial Photo Contest shows 13-year-old twins Joe Johnson, KC3CSI, and James Johnson, KC3CSH, along with Chuck Mills, W3YNI, as they operate W1AW/3 from the Skyview Radio Society clubhouse, K3MJW, in New Kensington, Pennsylvania. The entire W1AW/3 Pennsylvania operation netted 61,888 QSOs. You can read more about the ARRL Centennial W1AW/p operations in this issue. [Bob Bastone, WC3O, photo]



Radiosport

Contest Corral 83

H. Ward Silver, NØAX

2014 ARRL September VHF Contest Results 84

Jeff Klein, K1TEO

2014 will go down as a good year — conditions were interesting and activity continues to head in the right direction.

2015 ARRL Straight Key Night Results 87

Sean Kutzko, KX9X

Whether you used vintage equipment or a cutting-edge key, SKN offered an enjoyable evening of hand-sent code.

The 2015 ARRL April Rookie Roundup — Phone 88



Page 84



Page 72

Columns

Amateur Radio World.....	95
Correspondence	24
The Doctor is In	59
Eclectic Technology.....	61
Hands-On Radio	64
Hints & Kinks.....	66
How's DX?	89
Microwavelengths	62
Public Service.....	81
Up Front	20
Vintage Radio.....	96
The World Above 50 MHz	91
75/50/25 Years Ago.....	100

Digital and Mobile Editions

ARRL members can access the digital edition via a link at www.arrl.org/qst, download our *iOS* app from the iTunes Store, and download our *Android* app from the Google Play Store.

Departments

ARRL Member Services	14
ARRL Section Managers.....	16
Convention and Hamfest Calendar	98
Feedback.....	63
Field Organization Reports.....	100
Ham Ads.....	154, 155
Index of Advertisers.....	156, 157
New Books	44
Officers, Division Directors, and Staff	15
QuickStats.....	138
Silent Keys	101
Special Event Stations.....	94
Strays	99
W1AW Qualifying Runs	99

Interested in Writing for *QST*?

www.arrl.org/qst-author-guide
e-mail: qst@arrl.org

April 2015

Volume 99 Number 4

QST (ISSN:0033-4812) is published monthly as its official journal by the American Radio Relay League, Inc., 225 Main Street, Newington, CT 06111-1494, USA. Periodicals postage paid at Hartford, CT, USA and at additional mailing offices.

POSTMASTER: Send address changes to: *QST*, 225 Main St, Newington, CT 06111-1494, USA. Canada Post: Publications Mail Agreement #90-0901437. Canada returns to be sent to IMEX Global Solutions, 1501 Morse Ave, Elk Grove Village, IL 60007.

US & Possessions: Membership in the ARRL, including a 1-year subscription to *QST*, is available to individuals at \$39. Licensed radio amateurs age 21 and under and the eldest licensee in the household may qualify for the rate of \$20. Life Membership, including a subscription to *QST* is available at \$975.* Membership includes \$15 per year for subscription to *QST*. Membership and *QST* cannot be separated. Libraries and institutions, \$39 per year. Single copies \$4.99.

International

To compensate for additional postage for mailing outside the US, the following rates apply:

Canada: Membership in the ARRL, including a 1-year subscription to *QST*, \$49, payable in US funds. Life Membership, including a subscription to *QST* is available at \$1225.* Libraries and institutions, \$49 per year.

All Other Countries: Membership in the ARRL, including a 1-year subscription to *QST*, \$62, payable in US funds. Life Membership, including a subscription to *QST*, is available at \$1550.* Libraries and institutions, \$62 per year.

Membership without *QST* is available to the immediate family of a member living at the same address, and to anyone who is legally blind, for \$8 per year.

Foreign remittances should be by international postal or express money order or bank draft negotiable in the US and for an equivalent amount in US funds.

Copyright © 2015 by the American Radio Relay League Inc. Title registered at the US Patent Office. International copyright secured. All rights reserved. Quedan reservados todos los derechos. Printed in the USA.

QST®, DXCC®, VUCC®, DX Century Club®, ARES®, Amateur Radio Emergency Service®, and ARRL, the national association for Amateur Radio® are registered trademarks of the American Radio Relay League, Inc.

The ARRL and *QST* in no way warrant the products described or reviewed herein.

QST is available to blind and physically handicapped individuals from the Library of Congress, National Library Service for the Blind and Physically Handicapped. Call 1-800-424-8567 or go to www.loc.gov/nls/.

Indexed by Applied Science and Technology Index, Library of Congress Catalog Card No: 21-9421.

*Payment arrangements available. Please write for details.

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 at circulation@arrl.org or 860-594-0200 immediately. Thank you for your assistance.

Reprints and permissions: permission@arrl.org

Details of our Online Privacy Policy can be found at www.arrl.org/online-privacy-policy. Telephone: 860-594-0200 Fax: 860-594-0259