# 100 Years of Advancing the Art and Science of Radio

This 91st edition of *The ARRL Handbook for Radio Communications* marks a milestone: the 2014 ARRL Centennial. For 100 years, ARRL has been at the forefront of promoting technical advancement and improvements in radio operating practices. And since 1926, *The ARRL Handbook* has defined the latest technology innovations in the field of applied electronics and communications. *The Handbook* is written by radio amateurs...for radio amateurs, experimenters, engineers and students.

This commemorative ARRL Centennial Edition has been extensively updated and revised.

#### **New Projects**

- A one- or two-tube linear amp for beginning builders
- VHF and UHF signal sources
- QSK controllers for amplifiers (analog and digital)

## **New Information**

- MOSFET design for power amplifiers
- Telemetry and navigation data including GPS
- Oscillators and synthesizers

- Current battery technology
- The new *Codec2* software for HF digital voice
- New material on microwave techniques
- Annual transceiver model review

#### **ARRL Centennial Edition**

 Includes historical highlights from previous editions of The Handbook

ANTENNA BOOK

...and more!

**CD-ROM Inside**—includes all of the fully searchable text and illustrations in the printed book, as well as expanded supplemental content, software, PC board templates and other support files.

System Requirements: Windows® 7, Windows Vista® or Windows® XP, as well as Macintosh® systems, using Adobe® Acrobat® Reader® software. The Acrobat Reader is a free download at www.adobe.com. PDF files are Linux readable.

### **Companion Book Available:**

The ARRL Antenna Book for Radio Communications (sold separately)

#### **About the Amateur Radio Service**

Amateur (Ham) Radio provides the broadest and most powerful wireless communications capability available to any private citizen anywhere in the world. The principles of this federally licensed radio service include public service, radio experimentation, training and international goodwill.

ARRL is the national membership association for Amateur Radio operators. ARRL has books, software, online courses and other resources for licensing, operating and education.









## **Table of Contents**

#### INTRODUCTION

What is Amateur (Ham) Radio?

#### **FUNDAMENTAL THEORY**

Electrical Fundamentals Analog Basics Digital Basics

#### **PRACTICAL DESIGN AND PRINCIPLES**

RF Techniques
Computer-Aided Circuit Design
Power Supplies
Modulation
Oscillators and Synthesizers
Mixers, Modulators and Demodulators
RF and AF Filters
Receivers
Transmitters
Transceivers
DSP and Software Radio Design
Digital Modes
RF Power Amplifiers
Repeaters

# ANTENNA SYSTEMS AND RADIO PROPAGATION

Propagation of Radio Signals Transmission Lines Antennas

# **EQUIPMENT CONSTRUCTION AND MAINTENANCE**

Component Data and References
Construction Techniques
Station Accessories
Test Equipment and Measurements
Troubleshooting and Maintenance
RF Interference

#### STATION ASSEMBLY AND MANAGEMENT

Safety Assembling a Station

#### **OPERATING SUPPLEMENT—ON CD-ROM**

Space Communications Digital Communications Image Communications