

Introduction to the CD-ROM Edition

The ARRL Antenna Book

“In recent years it has been borne home on us most forcibly that there is greater room for increased performance through superior antenna systems than in any other part of the equipment.”

—*from the Foreword to the First Edition,*
The ARRL Antenna Book, September 1939

Much has changed since 1939, including the possible ways of delivering information—this CD-ROM is evidence of that! One thing that hasn’t changed is that antennas and antenna systems are still the make-or-break component of any amateur station. We are pleased to bring you this 18th edition of the ARRL Antenna Book on CD-ROM. The CD-ROM book contains all of the text, drawings and photos contained in the printed 18th edition. And exclusive to the CD-ROM are over 70,000 pages of propagation tables that can help you determine what HF propagation to expect throughout the world, throughout the year and throughout the sunspot cycle.

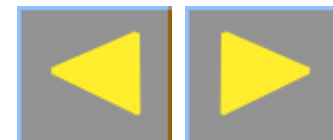


Using this CD-ROM

This CD-ROM is viewed using Adobe's *Acrobat Reader* software, version 3.0 or later. The software (both Windows and Macintosh versions) is included on the CD-ROM, and installation instructions are available in the booklet enclosed in the CD-ROM case.




The book and the companion files, such as the [propagation tables](#), include hyperlinks. These links will appear in green text. Clicking on the text of a hyperlink will cause *Acrobat Reader* to display another, related part of the book.

The version of *Acrobat Reader* used with this CD-ROM includes Acrobat Search capability, which allows rapid full-text search of the entire book. This functions as an instant index for every chapter and word in the book. If you have a version of *Acrobat Reader* installed on your system that does not include the Search plug-in—or a version older than Version 3.0—we strongly recommend that you replace it with the *Acrobat Reader* included on the CD-ROM. (You can determine the version of *Acrobat Reader* and find out which plug-ins are installed by running it, then checking the “About Acrobat Reader” and “About Plug-Ins” items on the Help [Windows] or Apple [Macintosh] menu.) We also strongly recommend that you take a few minutes to view the on-line documentation available from *Acrobat Reader*'s Help menu.

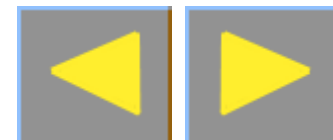


Full-Text Searching



The on-screen icons, or buttons, in the *Acrobat Reader* tool bar associated with full-text search are located at the right side of the tool bar. As an example, let's use this very powerful facility to find all instances of the word "reactance" throughout the book.

Click on the **Full-Text Search** icon . (Note that this is different from the nearby **Find** icon ). Under **Options**, make sure that the **Word Stemming** checkbox is unchecked. Now, type in the word "reactance" and then either press the **Enter** key or click on the **Search** button. The program will search for a while for all instances of the word "reactance" and will present you with a list box showing all chapters that contain this word. Select Chapter 2 by double clicking on it. The first occurrence of reactance (on page 2-3) will be highlighted. Click the search **Next** icon  to show the next occurrence of "reactance." The word appears in a number of places on page 2-4.

You can adjust the way that found text items are highlighted using the **File|Preferences|Search** menu item.



Now, click back on the Full-Text Search Continue icon, check the **Word Stemming** checkbox and redo the search. Again, select Chapter 2. Note that the program has gone to page 2-2, and the word “reactive” has been highlighted twice on this page. This is because **Word Stemming** was selected for the search, and variations on the root “react” have been found. Again, if you wish to limit the search to exact matches for “reactance,” uncheck the word-stemming checkbox and redo your search.

Other than not allowing word stemming, another way to limit a search is to specify more than one word. For example, if you specify “series reactance” for the full-text search, the number of occurrences will be much smaller than for just “reactance” alone. You can use the Search Results icon  to choose another chapter for viewing, and the Next and Previous search buttons  to navigate through the found items. The **Search** submenu on the **Tools** menu has additional search commands.

Now try “parallel reactance.” This word combination occurs once in the book, on page 25-8 in Chapter 25. Experiment with other words for yourself.

The full-text search capability gives you a very powerful tool for finding all sorts of information on the CD-ROM—much more powerful in fact than an Index at the back of a paper book. Enjoy!



THE ARRL ANTENNA BOOK



**SOFTWARE
INCLUDED**

MA (Boston), Feb., for SSN = High, Sigs in S-Units. By N6BV, ARRL

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N6BU-EU.PRO 98/ 60/ 38 ft 14.000 MHz

N6BU-EU.PRO 120 ft 14.000 MHz

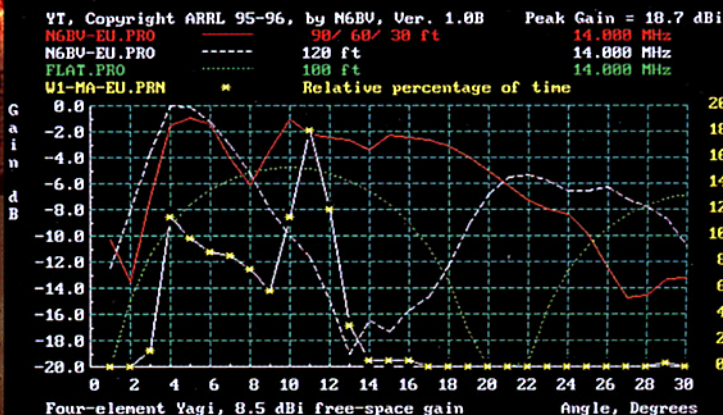
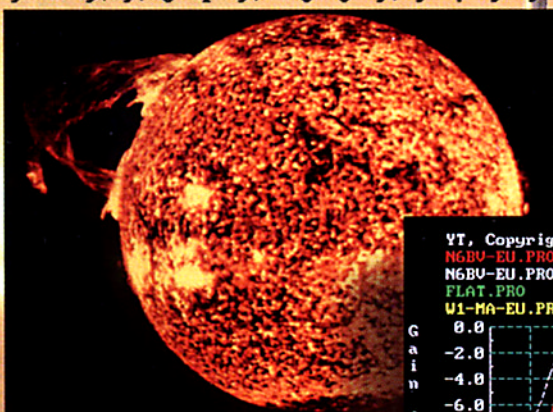
FLAT.PRO 100 ft 14.000 MHz

U1-MA-EU.PRM * Relative percentage of time

Gain dBi

Four-element Yagi, 8.5 dBi free-space gain

Angle, Degrees



THE ARRL ANTENNA BOOK

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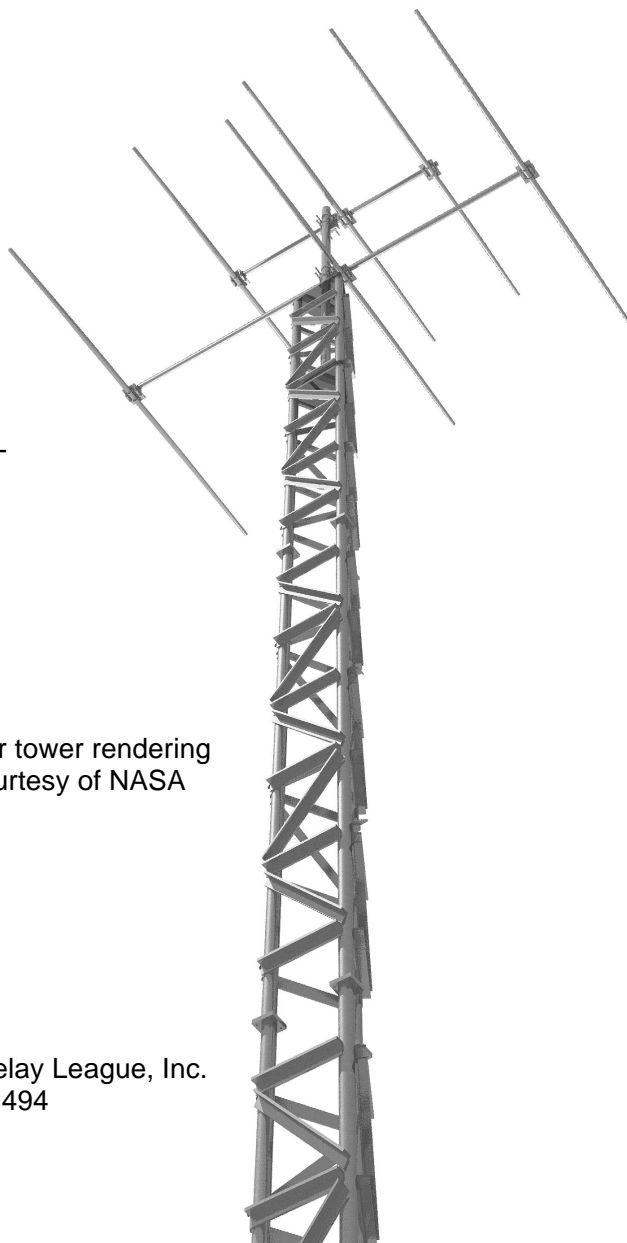
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Published by:
The American Radio Relay League, Inc.
Newington, CT 06111-1494



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Printed Version: 18th Edition
Electronic Edition: Version 1.0

ISBN: 0-87259-722-9

Foreword

We are very pleased to offer this 18th edition of *The ARRL Antenna Book*. Since the first edition in September 1939, each new volume has been dedicated to providing more and better information about the fascinating subject of radio antennas. The first edition contained 18 chapters and 142 pages and had a cover price of 50 cents. The limits of amateur UHF work in those days extended all the way up to 112 MHz (called “112 Mc” in 1939), and transmission lines were made of open wires spaced with wood boiled in paraffin. In 1997, this book contains more than 700 pages in 28 chapters, and frequency coverage now extends beyond 10 GHz.

Over the years, we have found that the combination of a printed book with interactive software programs can really “bring to life” equations and tough theoretical concepts for many amateurs. Readers had extremely positive comments about the software included for the first time in the last edition. So we are bundling another treasure of software for the PC in the 18th Edition. These programs give today’s amateur the ability to analyze and synthesize Yagi antennas, transmission lines and antenna-tuner networks in a manner that would make 1939’s amateur shake his or her head in wonder!

With these programs, you can analyze Yagi performance, or you can predict the statistical performance of your favorite HF propagation paths using the current level of solar activity. Have you ever wondered whether a particular site would make a “killer” QTH for HF DXing or contesting? We provide a program called *YT* (standing for Yagi Terrain analysis) that can predict the elevation response for a stack of up to four Yagis over uneven local terrain. You may be very surprised at the profound effects of local terrain.

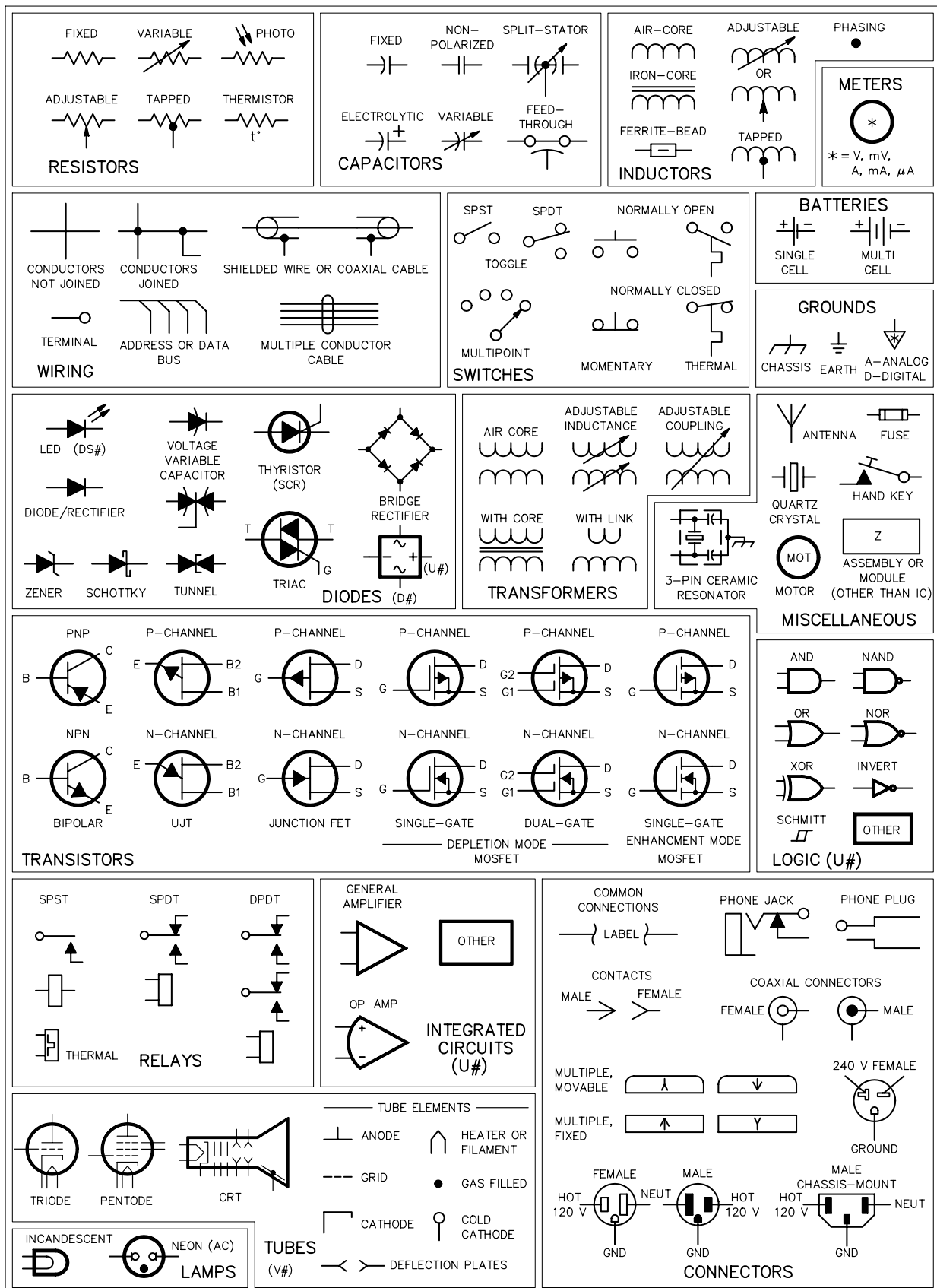
Before the 1994 edition, radio amateurs had little solid information about the kinds of elevation angles really needed for worldwide HF communications. This book includes even more of the detailed statistical analyses pioneered in the 17th Edition, not only for locations around North America to prime DX locations around the world, but also from other countries around the world with substantial amateur populations. You now have the information to design your own complete system properly—the angles to aim for from your part of the world, together with the effects of your own terrain.

As usual, in a publishing effort of this magnitude, errors creep into the process, despite our best efforts. We appreciate hearing from you, our readers, about errors or about suggestions on how future editions might be made even more useful to you. A form for mailing your comments is included at the back of the book.

David Sumner, K1ZZ
Executive Vice President
Newington, Connecticut
April 1997

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About the American Radio Relay League

The seed for Amateur Radio was planted in the 1890s, when Guglielmo Marconi began his experiments in wireless telegraphy. Soon he was joined by dozens, then hundreds, of others who were enthusiastic about sending and receiving messages through the air—some with a commercial interest, but others solely out of a love for this new communications medium. The United States government began licensing Amateur Radio operators in 1912.

By 1914, there were thousands of Amateur Radio operators—hams—in the United States. Hiram Percy Maxim, a leading Hartford, Connecticut, inventor and industrialist saw the need for an organization to band together this fledgling group of radio experimenters. In May 1914 he founded the American Radio Relay League (ARRL) to meet that need.

Today ARRL, with more than 170,000 members, is the largest organization of radio amateurs in the United States. The League is a not-for-profit organization that:

- promotes interest in Amateur Radio communications and experimentation
- represents US radio amateurs in legislative matters, and
- maintains fraternalism and a high standard of conduct among Amateur Radio operators.

At League headquarters in the Hartford suburb of Newington, the staff helps serve the needs of members. ARRL is also International Secretariat for the International Amateur Radio Union, which is made up of similar societies in more than 100 countries around the world.

ARRL publishes the monthly journal *QST*, as well as newsletters and many publications covering all aspects of Amateur Radio. Its headquarters station, W1AW, transmits bulletins of interest to radio amateurs and Morse code practice sessions. The League also coordinates an extensive field organization, which includes volunteers who provide technical information for radio amateurs and public-service activities. ARRL also represents US amateurs with the Federal Communications Commission and other government agencies in the US and abroad.

Membership in ARRL means much more than receiving *QST* each month. In addition to the services already described, ARRL offers membership services on a personal level, such as the ARRL Volunteer Examiner Coordinator Program and a QSL bureau.

Full ARRL membership (available only to licensed radio amateurs) gives you a voice in how the affairs of the organization are governed. League policy is set by a Board of Directors (one from each of 15 Divisions). Each year, half of the ARRL Board of Directors stands for election by the full members they represent. The day-to-day operation of ARRL HQ is managed by an Executive Vice President and a Chief Financial Officer.

No matter what aspect of Amateur Radio attracts you, ARRL membership is relevant and important. There would be no Amateur Radio as we know it today were it not for the ARRL. We would be happy to welcome you as a member! (An Amateur Radio license is not required for Associate Membership.) For more information about ARRL and answers to any questions you may have about Amateur Radio, write or call:

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