

KENWOOD

Listen to the Future

AIRWAVE SUPERIORITY

Never before has a compact HT offered as many features, and such high powered performance as the TH-F6A. Arm yourself with one today and gain your own airwave superiority.

- Triband (144/220/440 MHz)
- Receives 2 frequencies simultaneously even on the same band
- 0.1~1300MHz high-frequency range RX (B band)¹
- FM/FM-W/FM-N/AM plus SSB/CW receive
- Bar antenna for receiving AM broadcasts
- Special weather channel RX mode
- 435 memory channels, multiple scan functions
- 7.4V 1550mAh lithium-ion battery (std.) for high output² and extended operation
- 16-key pad plus multi-scroll key for easy operation
- Built-in charging circuitry for battery recharge while the unit operates from a DC supply
- Tough construction: meets MIL-STD 810 C/D/E standards for resistance to vibration, shock, humidity and light rain
- Large frequency display for single-band use
- Automatic simplex checker
- Wireless remote control function
- Battery indicator • Internal VOX • MCP software

¹Note that certain frequencies are unavailable. ²5W output

TH-F6A

TRIBANDER



KENWOOD U.S.A. CORPORATION

Communications Sector Headquarters

3970 Johns Creek Court, Suite 100, Suwanee, GA 30024

Customer Support/Distribution

P.O. Box 22745, 2201 East Dominguez St., Long Beach, CA 90801-5745

Customer Support: (310) 639-4200 Fax: (310) 537-8235



www.kenwoodusa.com

ADS#29808



QUALITY SYSTEM



QUALITY MANAGEMENT

JQA-1205

091-A

ISO9001 Registered
Communications Equipment Division
Kenwood Corporation
ISO9001 certification

KENWOOD

Listen to the Future

All-Terrain Performance

On or off the road, Kenwood's new TM-271A delivers powerful mobile performance with 60W maximum output and other welcome features such as multiple scan functions and memory names. Yet this tough, MIL-STD compliant transceiver goes easy on you, providing high-quality audio, illuminated keys and a large LCD with adjustable green backlighting for simple operation, day or night.



144MHz FM TRANSCEIVER

TM-271A

■ 200 memory channels (100 when used with memory names) ■ Frequency stability better than ± 2.5 ppm (-20°C to $+60^{\circ}\text{C}$) ■ Wide/Narrow deviation with switchable receive filters ■ DTMF microphone supplied ■ NOAA Weather Band reception with warning alert tone ■ CTCSS (42 subtone frequencies), DCS (104 codes) ■ 1750Hz tone burst ■ VFO scan, MHz scan, Program scan, Memory scan, Group scan, Call scan, Priority scan, Tone scan, CTCSS scan, DCS scan ■ Memory channel lockout ■ Scan resume (time-operated, carrier-operated, seek scan) ■ Automatic repeater offset ■ Automatic simplex checker ■ Power-on message ■ Key lock & key beep ■ Automatic power off ■ Compliant with MIL-STD 810 C/D/E/F standards for resistance to vibration and shock ■ Memory Control Program (available free for downloading from the Kenwood Website: www.kenwoodusa.com)

KENWOOD U.S.A. CORPORATION Communications Sector Headquarters

3970 Johns Creek Court, Suite 100, Suwanee, GA 30024

Customer Support/Distribution

P.O. Box 22745, 2201 East Dominguez St., Long Beach, CA 90801-5745

Customer Support: (310) 639-4200 Fax: (310) 537-8235



www.kenwoodusa.com
ADS#29708



ISO 9001 Registered
Kenwood Corporation
ISO 9001 certification



KENWOOD

Listen to the Future

Kenwood & AvMap The Ultimate APRS® Combination

TM-D710A



AvMap G5



Two Great Companies...Providing One Outstanding Solution!

KENWOOD U.S.A. CORPORATION
Communications Sector Headquarters

3970 Johns Creek Court, Suite 100, Suwanee, GA 30024

Customer Support/Distribution

P.O. Box 22745, 2201 East Dominguez St., Long Beach, CA 90801-5745

Customer Support: (310) 639-4200 Fax: (310) 537-8235



www.kenwoodusa.com
AD5#29608



ISO-9001
091-A
Communications Equipment Division
Kenwood Corporation
ISO9001 certification



AvMap
SATELLITE NAVIGATION



Tele Atlas Maps

www.avmap.us • e-mail: info@avmap.us
1.800.363.2627

Advertisers Index

Advertising Department Staff

Debra Jahnke, K1DAJ, *Sales Manager, Business Services*

Janet Rocco, W1JLR, *Account Executive*

Lisa Tardette, KB1MOI, *Account Executive*

Diane Szlachetka, KB1OKV, *Advertising Graphic Design*

800-243-7768

Direct Line: 860-594-0207 ■ Fax: 860-594-4285 ■ e-mail: ads@arrl.org ■ Web: www.arrl.org/ads

Alinco	A-7
ARRL	A-10, A-11, A-13, A-14, A17
CheapHam	A-14
Command Productions	A-14
Creative Services Software	A-14
Ham Radio Outlet	Cover 3
HamPROs	A-12
HamTestOnline	A-11
Hi-Q Antennas	A-4, A-6
High Sierra Antennas	A-2
ICOM America	A-3, A-5
Jun's Electronics/Hamcity	Cover 2
Kenwood Communications	A-i, A-ii, A-iii
MFJ Enterprises	A-8, A-9
Prosistel	A-13
Radio Daze	A-11
RF Parts Company/Diamond Antennas	A-11, A-13, A-15, A-17
Tarheel Antennas	A-16
Tigertronics	A-11
Universal Radio	A-15
Yaesu USA	A-18, A-19, A-20, A-21

If your company provides products or services of interest to our readers,
please contact the ARRL Advertising Department today for information on building your business.



www.cq73.com

High Sierra AntennAs

Professional Antennas for the Amateur Since 1993



Emergency Radio



Emergency
Water Bottle



High Sierra
Go Bag



Emergency
Flashlight, Radio
Cell Phone Charger

There's other neat
stuff on our website!

Emergency Trailblazer! HF, VHF & UHF with The New Trailblazer Antenna

With the New Trailblazer Antenna you can setup just about anywhere
It's also great for CC&R neighborhoods

There's the motorized HS-1800/Pro HF Antenna and a VHF/UHF Antenna
The HS-1800/Pro motor driven antenna remotely tunes 80 to 6 meters

The Traveler Tripod is 5 feet tall, can be easily moved and is very strong

The Trailblazer Antenna works with any transceiver; new or vintage

There's no hazardous Beryllium to worry about

Two 50 foot lengths of coax and radials are included

The cables and radials have connectors installed for fast setup



High Sierra AntennAs

530-273-3415 www.cq73.com

Professional Antennas for the Amateur Since 1993

D-STAR: CONNECT ACROSS MILES INSTEAD OF METERS!

ANALOG + DIGITAL
All in one!

D-STAR optional

IC-2820H & UT-123

**D-STAR UPGRADEABLE 2m & 70cm
& GPS MODULE AND ANTENNA**

- 50/15/5 Watt Output Power
- RX: 118-173.995, 375-549.995, 810-999.99MHz*
- Analog/Digital Voice with GPS (Optional UT-123)
- 500 Alphanumeric Memory Channels
- Diversity Receive Capable



DIGITAL

D-STAR ready

IC-92AD & HM-175GPS

MILITARY RUGGED AND SUBMERSIBLE

- 5/2.5/0.1 Watt Output Power
- RX: 0.495-999.990MHz*
- Shown with Optional GPS Speaker Mic (HM-175GPS)
- 1304 Alphanumeric Memory Channels
- IPX7 Submersible**



ANALOG + DIGITAL
All in one!



ID-RP2C REPEATER CONTROLLER

The cornerstone of the D-STAR system. Handles up to four RF modules. Basic in-band or cross-band operation. Linking capabilities through the internet and future 10GHz backbone products.



ID-RP2D 1.2GHZ DATA MODULE

Access point with a data rate of up to 128kbps. Depending on the system setup, set up an email and/or file server for EmComm support. Perfect for web applications or support via internet connection.



ID-RP2V 1.2GHZ DIGITAL VOICE MODULE

ID-RP2000V 2M DIGITAL VOICE MODULE

ID-RP4000V 70CM DIGITAL VOICE MODULE

Finally, commercially available crossband systems! Together, with proper call sign programming in any D-STAR compatible mobile or portable, the Icom D-STAR system will automatically route your signal to any other RF module connected to a common RP2C. With simple system commands, you can direct your communications through any of the RF modules or across the world via the gateway.



Visit your Icom dealer today!

Free literature: 425.450.6088

or www.icomamerica.com

*Frequency specs may vary. Refer to owner's manual for exact frequency specs.

**Tested to survive being submerged under 1 meter (approx. 3 ft.) of water for 30 minutes.

©2008 Icom America Inc. The Icom logo is a registered trademark of Icom Inc. All specifications are subject to change without notice or obligation. 30070

ICOM®

Hi-Q Antennas™

Mission Statement

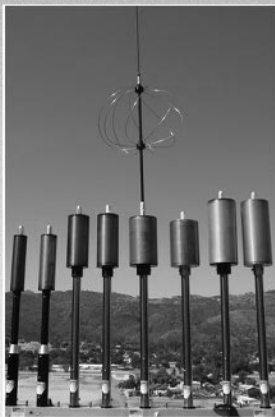
Force the Competitors to Produce a Better Quality and Better Performing Antenna by LEADING the WAY!

Military / Government / NVIS / Commercial

Hi-Q-Antennas Designs, Develops, Prototypes and Manufactures

HF Mobile and Compact Fixed-Base communication antennas.

Current Customers include Homeland Security, USAF, Air National Guards, US Marines and the US Navy with a highly classified project.



The NEW IMPROVED Hi-Q-Antennas™ Series HF Mobile antennas are the latest, 6th generation design by Charlie Gyenes W6HIQ / VE7BOC / VA7HIQ / HA5CMG.

Center loaded, remotely tunable in the HF band, using high-quality German Planetary Gear head, 12/24 VDC motors. One TEST is worth a thousand so-called expert OPINIONS!



Military versions are RUGGEDIZED, all Stainless Steel construction.
Commercial versions use combination of stainless steel (lower mast) and Type III anodized components (loading coil).

951-674-4862

<http://www.hiqantennas.com>

State-of-the-art, proven design, HF antennas for Short (NVIS) and Long Range communications.

Anyway You Look at the Hi-Q-HF Mobile Antenna Series,

IT IS the Best Performing SHORT Remotely Tunable Antenna Out There!

The pattern of perfection continues...

Built to last.
IC-7800 lineage.
High end performance.
Ideal for your contest station.
Top of the line. Ergonomically sound.
Quality construction. Dependability you
can count on. Durable for years of enjoyment.

IC-7700
Accept nothing less.

Hi-Q Antennas™

Mission Statement
*Force the Competitors to Produce a Better
Quality and Better Performing Antenna by
LEADING the WAY!*

Military / Government / NVIS / Commercial

Hi-Q-Antennas Designs, Develops, Prototypes and Manufactures
HF Mobile and Compact Fixed-Base communication antennas.
Current Customers include Homeland Security, USAF, Air National Guards,
US Marines and the US Navy with a highly classified project.



**Hi-Q-Antennas™ products are the
Highest Radiation Efficient and Best
Quality HF Mobile antenna EVER
designed and manufactured.**

Hi-Q, Hi-Radiation efficiency is provided by
computer design and Mil-Spec materials used
in manufacturing. We measure our HF Mobile
antenna performance with high-end test
equipment, to back up what we advertise!

Military versions are RUGGEDIZED, all Stainless Steel construction.
Commercial versions use combination of stainless steel (lower mast) and
Type III anodized components (loading coil).



951-674-4862
<http://www.hiqantennas.com>

State-of-the-art, proven design, HF antennas for Short (NVIS) and Long Range communications.
Anyway You Look at the Hi-Q-HF Mobile Antenna Series,
IT IS the Best Performing SHORT Remotely Tunable Antenna Out There!

Accessories For Your Shack From **ALINCO**



DM-330MVT Switching Power Supply

COMPACT, LIGHTWEIGHT COMMUNICATIONS GRADE POWER SUPPLY THAT IS PACKED WITH FEATURES:

- 5-15 VDC variable output delivering up to 30 amps continuous/32 amps peak current.
- Large illuminated Volt/Amp meter.
- Rear panel binding posts (32 A). Front Panel Cigar outlet (10 A) and 2 sets of (5 A) snap-in terminals.
- Front panel voltage adjust and customer-defined output "memory."
- Ripple less than 15 mV p-p. Triple circuit protection for short circuit/over temperature/current limiting.
- Patented Noise Offset Circuit™ lets you move any noise you might find in this remarkably quite robust power supply to another frequency.



DM-340MVT Power Supply

The DM340MVT delivers high quality steady DC. 30 Amps continuous (35A maximum) and features:

- Reliable short circuit/current limiting protection circuit.
- Highly visible class 2.5" (instrument-grade) V/A twin meters for real-time monitoring.
- Forced Air Cooling Fan.
- 16mm Main terminals to provide the most efficient transfer of regulated power output (30% larger than comparable models).
- 2 pairs of auxiliary snap-in and a cigar socket output terminals on the front-panel for additional convenience.
- Fuse socket on the front-panel for easy access.



EDX-2 Automatic Wire Antenna Tuner

- Tunes amateur 160-10 meter bands Automatically in seconds!
- Mates with Alinco DX-70 or DX-77 HF Transceivers and most other popular brands.
- Can be mounted outdoors and used for your fixed, mobile or marine stations.
- Designed for random length non-resonant wire antennas.



Alinco EMS-14 Desk Microphone

- Flexible Goose Neck.
- High Quality Condenser Microphone Element.
- Power Switch.
- Up / Down Frequency Controls.
- PTT Bar with Lock.
- Equalization Switch to tailor audio for SSB or FM.
- User accessible Mic gain.
- Wired for Alinco but can be used with most other major brands.



Distributed in North America by Ham Distributors, 1775 North Loop 336 East, Suite 8, Conroe, Texas 77301
Phone: 936-649-1497 • Fax: 936-649-1303 • email: USRep@Alinco.com
Specifications subject to changes without notice or obligation.

ALINCO
www.alinco.com

MFJ TUNERS

MFJ IntelliTuner™ Automatic Tuners

The MFJ-993B IntelliTuner™ lets you tune any antenna automatically -- ultra fast.

It's a comprehensive automatic antenna tuning center complete with SWR/Wattmeter, antenna switch for two antennas and 4:1 current balun for balanced lines.

MFJ's exclusive IntelliTuner™, Adaptive Search™ and Instant Recall™ algorithms give you ultra fast automatic tuning with over 20,000 VirtualAntenna™ Memories.

You get a highly efficient L-network, 6-1600 ohm matching at 300 Watts SSB/CW or extra-wide 6-3200 Ohm matching at 150 Watts SSB/CW, 1.8-30 MHz coverage, Cross-Needle and digital meters, audio SWR meter, backlit LCD, remote control port, radio interface, heavy-duty 16

amp/1000V relays.

The MFJ-993B automatically tunes for minimum SWR and remembers your frequency and tuner settings. The next time you operate on that frequency and antenna, these tuner settings are

\$259⁹⁵ instantly restored and you're ready to operate in milliseconds! 10W x2¼ Hx9D". Use 12-15 VDC/1 amp or 110 VAC with MFJ-1316, \$21.95. Radio interface cables, remote control available. See www.mfjenterprises.com



1500 Watt MFJ Automatic Tuner



Full 1500 Watt SSB/CW Legal Limit IntelliTuner™ **\$699⁹⁵**

extra-wide tuning range (12-1600 Ohms over 1.8-30 MHz). 20,000 memories, digital & analog displays, radio interfaces, antenna switch, automatic bypass protects your amp.

No Matter What™ Warranty

Every MFJ tuner is protected by MFJ's famous one year No Matter What™ limited warranty. We will repair or replace your MFJ tuner (at our option) for a full year.

More hams use MFJ tuners than all other tuners in the world!

MFJ-9982 2500 Watt Tuner



The MFJ-9982 ContinuousCarrier™ antenna tuner handles 2500 Watts continuous carrier output on all modes and all HF bands into most unbalanced antennas - even 160 Meters. 6-position antenna switch, 4-core balun, 1.5kW dummy load, true peak/average SWR/Wattmeter, 13¼Wx7Hx6¼D".

MFJ-9982 **\$699⁹⁵**

MFJ-989D Legal Limit Tuner



MFJ-989D **\$389⁹⁵**

New, improved MFJ-989D legal limit antenna

tuner gives you better efficiency, lower losses and a new true peak reading meter. Easily handles full 1500 Watts SSB/CW, 1.8-30 MHz, including MARS/WARC bands. Six position antenna switch, dummy load. New 500 pF air variable capacitors. New improved AirCore™ Roller Inductor. New high voltage current balun. New crank knob. 12¼Wx6Hx11¼D".

MFJ-962D compact kW Tuner



MFJ-962D **\$299⁹⁵**

A few more dollars steps you up to

a kW tuner for an amp later. Handles 1.5 KW PEP SSB amplifier input power (800W output). Ideal for Ameritron's AL-811H! AirCore™ roller inductor, gear-driven turns counter, pk/avg lighted Cross-Needle SWR/Wattmeter, antenna switch, balun, Lexan front, 1.8-30MHz. 10¼Wx4¼Hx10¼D in.

MFJ-969 300W Roller Inductor Tuner

Superb AirCore™ Roller Inductor tuning. Covers 6 Meters thru 160 Meters! 300 Watts PEP SSB. Active true

peak reading lighted Cross-Needle SWR Wattmeter, QRM-Free PreTune™, antenna switch, dummy load, 4:1 balun, Lexan front panel. 10¼Wx3¼Hx9¼D inches.

MFJ-949E deluxe 300 Watt Tuner

More hams use MFJ-949s than any other antenna tuner in the world!

Handles 300 Watts. Full 1.8 to 30 MHz coverage, custom inductor switch, 1000 Volt tuning capacitors, full size peak/average lighted Cross-Needle SWR/Wattmeter, 8 position antenna switch, dummy load, QRM-Free PreTune™, scratch proof Lexan front panel. 10¼Wx3¼Hx7D inches.

MFJ-948, \$139.95. Economy version of MFJ-949E, less dummy load, Lexan front panel.

MFJ-941E super value Tuner

The most for your money!

Handles 300 Watts PEP, covers 1.8-30 MHz, lighted Cross-Needle SWR/Wattmeter, 8 position antenna switch, 4:1 balun, 1000 volt capacitors, Lexan front panel. Sleek 10¼Wx2¼Hx7D".

MFJ-945E HF/6M mobile Tuner

Extends your mobile antenna bandwidth so you don't have to stop, go outside and adjust your antenna. Tiny 8Wx2Hx6D in. Lighted Cross-Needle SWR/Wattmeter. Lamp and bypass switches. Covers 1.8-30 MHz and 6 Meters. 300 Watts PEP. MFJ-20, \$6.95, mobile mount.



MFJ-969 **\$219⁹⁵**



MFJ-949E **\$179⁹⁵**



MFJ-941E **\$139⁹⁵**



MFJ-945E **\$129⁹⁵**

MFJ-974HB Balanced Line Tuner

The MFJ-974HB true fully balanced antenna tuner tunes any balanced lines. Matches 12-2000 Ohms. Covers 1.8-54

MHz continuously including all WARC bands. 300 Watts SSB/150 Watts CW. Lighted Cross-Needle SWR/Wattmeter. 7¼Wx6Hx8D in.

MFJ-976, \$499.95. 1500 Watt fully balanced antenna tuner. 1-30 MHz.

MFJ-971 portable/QRP Tuner

Tunes coax, balanced lines, random wire 1.8-30 MHz. Cross-Needle Meter. SWR, 30/300 or 6 Watt QRP ranges. Matches popular MFJ transceivers. 6Wx6¼Hx2¼D in.

MFJ-902 Tiny Travel Tuner

Tiny 4¼Wx2¼Hx3D", full 150 Watts, 80-10 Meters, has tuner bypass switch, for coax/random wire.

MFJ-904H, \$149.95. Same but adds Cross-needle SWR/Wattmeter and 4:1 balun for balanced lines. 7¼Wx2¼Hx2¼D in.

MFJ-16010 random wire Tuner

Operate all bands anywhere with MFJ's reversible L-network. Turns random wire into powerful transmitting antenna. 1.8-30 MHz. 200 Watts PEP. Tiny 2Wx3Hx4D inches.



MFJ-974HB **\$209⁹⁵**



MFJ-971 **\$119⁹⁵**



MFJ-902 **\$99⁹⁵**



MFJ-16010 **\$69⁹⁵**

Dealer/Catalog/Manuals

Visit: <http://www.mfjenterprises.com> or call toll-free 800-647-1800

• 1 Year No Matter What™ warranty • 30 day money back guarantee (less s/h) on orders direct from MFJ

MFJ MFJ ENTERPRISES, INC.
300 Industrial Pk Rd, Starkville,
MS 39759 PH: (662) 323-5869
Tech Help: (662) 323-0549

FAX: (662) 323-6551 8-4:30 CST, Mon-Fri. Add shipping.
Prices and specifications subject to change. (c) 2008 MFJ Enterprises, Inc.

MFJ 1.8-170 MHz SWR Analyzer

The world's most popular antenna analyzer gives you a complete picture of your antenna performance 1.8 to 170 MHz. Super easy-to-use -- makes tuning your antenna quick and easy. Read antenna SWR, complex impedance, return loss, reflection coefficient. Determine velocity factor, coax cable loss in dB, length of coax and distance to a short or open in feet. Read inductance in uH and capacitance in pF at RF frequencies. Large easy-to-read two line LCD screen and side-by-side meters clearly display your information. Built-in frequency counter, Ni-Cad charger circuit, battery saver, low battery warning

World's largest SWR/Wattmeter



MFJ-868
\$149⁹⁵

World's largest HF SWR/Wattmeter measures a giant 6 1/2 inches diagonally and covers 1.8-30 MHz!

This one you can SEE across your shack! Huge scale has ultra-fine resolution and large high-contrast numbers. 7Wx5 1/2 Hx5D inches.

TrueActive™ peak reading circuit captures true peak or average forward/reflected power readings. 20/200/2000 Watt ranges for QRP or QRO. Full SWR scale is much more accurate and easier to read. **Power Saver™** circuit. Use 9 volt battery or 12 VDC or 110 VAC with MFJ-1312D, \$15.95.

and smooth reduction drive tuning.

MFJ-99B, \$93.80.

Accessory Package for MFJ-259B. Includes MFJ-29C custom foam-filled carrying case, MFJ-66 dip meter adapters, MFJ-1312D 110VAC adapter and 10-pack high capacity Ni-MH MFJ SuperCell™ batteries. **Save \$7!**

MFJ-259B
\$289⁹⁵



1.8-170 MHz plus 415-470 MHz SWR Analyzer

All-in-one handheld antenna test lab lets you quickly check/tune HF, VHF, **UHF** antennas anywhere. Measures: SWR, Return Loss, Reflection Coefficient, R, X, Z, Phase Angle, Coax cable loss, Coax cable length, Distance to short/open in coax, Inductance, Capacitance, Resonant Frequency, Bandwidth, Q, Velocity Factor, Attenuation, more!



MFJ-269
\$389⁹⁵

MFJ Switching Power Supplies

Tiny 3.7 lb. switching power supply powers any transceiver! 25 Amps maximum or 22 Amps continuous. 5 1/2 Wx4 1/2 Hx6D in. **No RF Hash!** Has Over Voltage and Over Current protection circuits. Front-panel has easy access heavy duty 5-way binding posts and convenient cigarette lighter socket. Variable 9 to 15 Volts DC. Works anywhere in the world, 85 to 135 VAC or 170 to 260 VAC. Replaceable fuse. 35 mV peak-to-peak ripple under 25 amp full load. Load regulation is better than 1.5% under full load.



MFJ-4225MV
\$149⁹⁵

MFJ-4125, \$109.95. Super tiny 5 1/2 Wx2 1/2 Hx5 1/4 D inches. Like MFJ-4225MV. No meters or cigarette lighter socket.



MFJ 6-Band Vertical Antenna

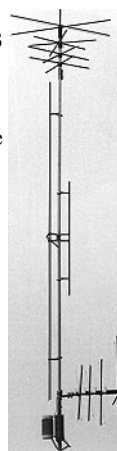
Work lots of DX on 6 bands: 40, 20, 15, 10, 6, 2 Meters. **Only 12 feet high, tiny 24 inch footprint!** Mount anywhere -- ground level to tower top -- apartments, small lots. Goes together in an afternoon.

No radials or ground needed!

Efficient end-loading, no lossy traps. Entire length is always radiating. Full size halfwave on 2/6 Meters.

Automatic bandwidthing, low radiation angle, omni-directional, handles 1500 Watts PEP.

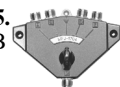
High power air-wound choke balun eliminates feedline radiation. No tuning interaction.



MFJ Antenna Problem Solvers

MFJ-1704, \$79.95.

4 positions. 50 dB isolation at 500 MHz. Center position is ground. Gas discharge lightning arrestor. 6 1/4 x 4 1/4 x 1 1/4". MFJ-1702C, \$39.95. 2-pos.



MFJ-260C, \$39.95.

Dry 300 Watt HF/VHF dummy load. SWR 1.1: 1 to 30 MHz; 1.5:1, 30-650 MHz. SO-239. 2 1/4 x 2 1/4 x 7 in.



MFJ-267, \$159.95. 1.5 kW, 50-Ohm Dummy Load has a built-in true peak reading Cross-Needle SWR/Wattmeter. Tune up xmttr, amp or tuner into dummy load at full power and instantly switch to antenna and monitor SWR, forward, reflected power, 1.8 to 54 MHz.



MFJ-802, \$49.95 Field Strength Meter. Huge 3-in. meter. Telescoping dipole. Sensitivity control. Remote sensor, MFJ-802R, \$24.95.



MFJ-1778, \$44.95. G5RV covers 1.8-30 MHz with antenna tuner. 102 feet. Full legal limit. Use as a Marconi on 160 Meters with tuner and ground.



MFJ-854, \$119.95. Clamp-On RF Ammeter snaps over cables up to 1/2 inch diameter. Measure RF currents in antenna elements, radials, ground wires, coax shield. Five calibrated ranges to 3 Amps. 1-30 MHz. 2 1/2 Wx5 1/2 Hx1 1/2 D in.

Ant. Center Insulator MFJ-16B01, \$19.95. Built-in SO-239 connector.



Ant. End Insulator MFJ-16C06, \$19.95. Six for \$4.56. Glazed ceramic.



MFJ ... For Your RF and Radio Parts ... www.mfjenterprises.com

High Voltage Air Variable Capacitors

From 125 to 1000 pF maximum; 1.5 to 6 kV; \$30-\$100.



AirCore™ Roller Inductors

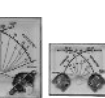


From 16 to 34 uH maximum; \$59-\$140.

Precision Cross-Needle Meters



From \$8 to \$22.



Precision Panel Meters

RF Rotary Switches, Knobs, Pointers, Ball Drives, much, much more ...



Turn Counter Set 780-3169K, \$14.95

Set includes counter module, two gears and mounting bracket. Driving gear fits 1/4" round shaft. Counter ratio is 3:1. Has 3-digits, counts up to 333 turns.



MFJ Air-Wound Coils

Constructed with a solid rigid round acrylic rod and tin-plated solid copper wires embedded into the acrylic rod.

Part No.	Price:	Inductance	Length	Diameter	Turns/Inch	Wire size
404-0811	\$22.95	70 uH	9 1/2 in.	1 1/4 in.	10	14
404-1610	\$37.95	92 uH	10 in.	1 1/4 in.	10	16
404-0600	\$37.95	44 uH	12 in.	2 in.	6	10
404-0669	\$37.95	79 uH	12 in.	2 in.	8	12
404-0700	\$37.95	77 uH	12 in.	2 in.	8	10
404-0008	\$22.95	159 uH	10 in.	2 1/2 in.	10	16
404-0024	\$37.95	35 uH	11 in.	3 in.	4	10
404-0009	\$22.95	230 uH	10.5 in.	3 in.	10	16

Free MFJ Catalog
and Nearest Dealer ... 800-647-1800

<http://www.mfjenterprises.com>

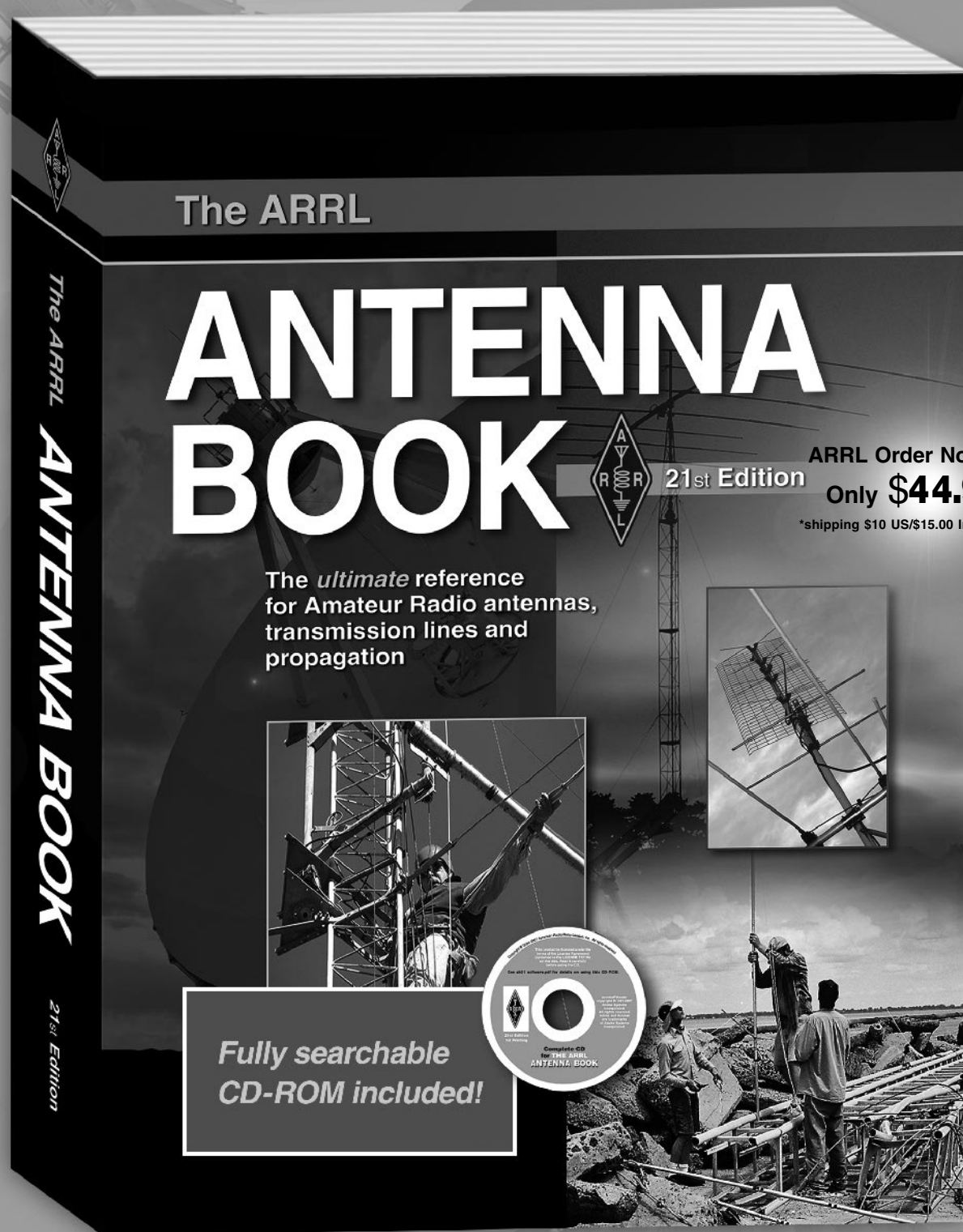
• 1 Year No Matter What™ warranty • 30 day money back guarantee (less s/h) on orders direct from MFJ

MFJ ENTERPRISES, INC.
300 Industrial Pk Rd, Starkville,
MS 39759 PH: (662) 323-5869
Tech Help: (662) 323-0549

FAX: (662) 323-6551 8-4:30 CST, Mon.-Fri. Add shipping.
Prices and specifications subject to change. (c) 2008 MFJ Enterprises, Inc.

FREE manuals: <http://www.mfjenterprises.com>

*All the information you need to design
your own complete antenna system.*



The ARRL

ANTENNA BOOK



21st Edition

ARRL Order No. 9876

Only **\$44.95***

*shipping \$10 US/\$15.00 International

The *ultimate* reference
for Amateur Radio antennas,
transmission lines and
propagation



Fully searchable
CD-ROM included!



ARRL The national association for
AMATEUR RADIO

SHOP DIRECT or call for a dealer near you.
ONLINE WWW.ARRL.ORG/SHOP
ORDER TOLL-FREE 888/277-5289 (US)

HB 10/2008



RADIO VINTAGE RADIO DAZE & ELECTRONICS



- Books • Capacitors Of All Kinds • Chassis-Aluminum/Steel
 - Chokes • Custom Cloth-Covered Solid/Stranded Wire
 - Decals • Dial Belts & Cord • Dial Lamps & Sockets
 - Diodes • Enclosures • Fuses & Fuseholders • Grillecloth
 - Hardware • Kits • Knobs • Potentiometers • Power Cord
 - Power Plugs • Refinishing & Restoration Supplies
 - Reproduction Dial Scales • Resistors Of All Kinds
 - Service Supplies • Sockets • Soldering Items • Speakers
 - Switches • Technical Data • Terminal Strips • Tools
 - Transformers - Classic Audio, Power, Filament, Isolation, etc.
 - Vacuum Tubes - One of the largest inventories of NOS tubes
- and much, much more !!

Contact Us For Our Free Full Line Catalog!!

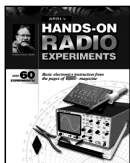


Radio Daze, LLC • 7620 Omnitech Place • Victor, New York USA 14564

Inquiries: 585-742-2020 • e-mail: info@radiodaze.com • Web: www.radiodaze.com

U.S. Orders Toll-Free: Phone 877-OLDTUBE (877-653-8823) Fax 800-456-6494

ARRL's Hands-On Radio Experiments



By H. Ward Silver, N0AX
Over 60 short electronics experiments from the pages of QST magazine. Includes a complete parts list!

ARRL Order No. 1255

Only \$19.95*

*shipping \$7 US (ground)/\$12.00 International



ARRL The national association for
AMATEUR RADIO

SHOP DIRECT or call for a dealer near you.

ONLINE WWW.ARRL.ORG/SHOP

ORDER TOLL-FREE 888/277-5289 (US)

HB 10/2008

HamTestOnline™

Web-based training for the
ham radio written exams

- ▶ Quick, easy way to learn.
- ▶ 100% guaranteed — you pass the exam or get your money back.
- ▶ Better than random practice tests.
- ▶ Presents concepts in logical order.
- ▶ Provides additional information.
- ▶ Better than books — question drill keeps you engaged.
- ▶ Uses the actual exam questions.
- ▶ Tracks your progress on each question.
- ▶ Focuses on your weak areas with "intelligent repetition".
- ▶ Encourages learning, not memorizing.

www.hamtestonline.com

Tigertronics *Signalink USB*



Built-in Sound Card!

Only \$99.95 + Shipping

Model SL-1+ still just \$69.95

www.tigertronics.com



Order Toll Free!
800-822-9722
541-474-6700

Tigertronics 154 Hillview Drive Grants Pass, Oregon 97527

Once again Tigertronics sets the pace in digital operating! The **Signalink™ USB** combines the legendary performance of our SL-1+ with a state of the art "built-in" **USB Sound Card**. This ground breaking innovation delivers top notch performance while eliminating the need to attach to your existing sound card. Front panel controls and simplified installation make this the ultimate interface! The **Signalink™ USB** supports *all* sound card digital and voice modes and works with *all* radios. It is fully assembled and comes complete with printed manual, software, and all cables. Visit our website for the exciting details!

**DIAMOND
ANTENNA**

*The Standard By Which All
Others Are Judged*

MAXIMUM PERFORMANCE WITHOUT COMPROMISE

X500HNA

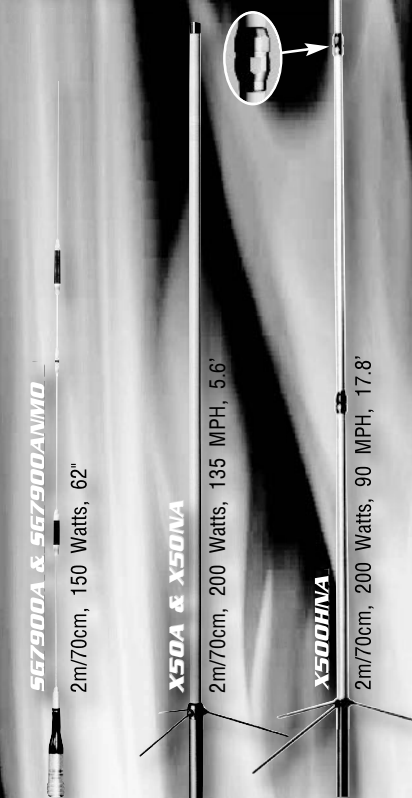
Diamond Antenna's best base/repeater antenna. Designed for strength and performance, the X500HNA is pretuned to achieve maximum gain in both the 12m and 70cm amateur bands.

X50NA

The X50NA is an excellent choice where ruggedness is required in a medium-gain, dual-band, base/repeater application.

567900A & 567900ANMO

One of Diamond Antenna's® Supergainer® "top of the line" mobile antennas.



For detailed specifications on Diamond's
Base & Mobile Antennas, please go to
www.diamondantenna.net

Available through selected quality dealers.

770-614-7443



Diamond Antenna
Division

We Have EVERYTHING and ANYTHING You Need!

Visit Your Local HamPROs.com

Visit our Web site www.hampros.com for group specials and links to your local dealer!
Whether it's over the counter or over the phone, we're your home town dealer!

Associated Radio 800-497-1457

Local (913) 381-5900
FAX (913) 648-3020
8012 Conser
Overland Park, KS 66204

www.associatedradio.com

Austin Amateur Radio Supply 800-423-2604

Local (512) 454-2994
FAX (512) 454-3069
5325 North I-35
Austin, Texas 78723

www.aaradio.com

Lentini Communications, Inc. 800-666-0908

Local (860) 666-6227
FAX (860) 667-3561
21 Garfield Street
Newington, CT 06111

www.lentinicomm.com

Radio City, Inc. 800-426-2891

Local (763) 786-4475
FAX (763) 786-6513
2663 County Road I
Mounds View, MN 55112

www.radioinc.com

Universal Radio, Inc. 800-431-3939

Local (614) 866-4267
FAX (614) 866-2339
6830 Americana Pkwy.,
Reynoldsburg, Ohio 43068

www.universal-radio.com

Prices, products and policies may vary between dealer locations. Not all dealers have all product lines. All prices and products subject to change. Not responsible for typographical errors.



We participate in all radio manufacturers' coupon, free accessory, and rebate programs, and stock a tremendous variety of radio and accessory products from essentially all of the major Amateur Radio manufacturers. If you don't see what you are looking for in this ad, give us a call!

YAESU Choice of the World's top DX'ers™



FT-950
Provides up to 100 Watts of power output on SSB, CW, and FM



VR-5000
2000 Memories 100 kHz to 2600 MHz (2.6 GHz) less cellular



VX-3R
Micro-miniature, extensive receive frequency coverage



FT-1802M
144-148 MHz
136-174 MHz RX



VX-6R
Triple band
2M, 222,
440, 5W
(1.5W
on 222)
Wideband RX



FTM-10R/10SR
2M, 440 mobile
50W 2M, 40W



FT-2800M
144-148
MHz (USA)



FT-60R
Dual band 2
meter, 440 MHz
5 watts
output on both
bands



FT-817ND
160-10 meter HF bands,
6 meter, 2 meter, and 70 cm



**VX-7R - Silver
VX-7RB - Black**
Triple band
(6M, 2M & 440 MHz)
HT with
extensive
receive
coverage

Super Value!

ICOM

Super Value!



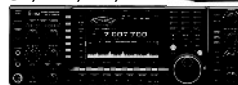
IC-7000
HF, 6M, 2M, 440



**RMK
7000**



**IC-746 Pro +
FREE PS-125**
HF/6m/2m
Transceiver, USB, LSB,
CW, RTTY, AM, FM



IC-7700
No compromise, RX performance



IC-756 Pro III
HF/50 MHz, All Band



IC-718
HF 100W on HF



IC-2820H
2M/440 dual bander



ID-800H
144-148, 440-450MHz



IC-92AD
2 Meter, 70 cm,
144-148 MHz,
440-450 MHz



ID-1
1.2 GHz transceiver,
vital part of a
D-STAR system



IC-91AD
D-Star
compatible.



IC-T90A
Tri-Band
Operation



IC-706MKIIG

KENWOOD



TH-F6A
Dual Channel
Receive,
H144/220/
440 MHz
with
5 WATTS
on all
3 bands



TH-K2AT
2m HT -
5watts
w/NOAA
warning,
VOX



TS-2000/TS-2000X
High performance



TS-480HX/TS-480SAT
HF/6M All-Mode Transceiver



TM-D710A
2M/70cm Mobile
50W/50W,
Optional Voice
Synthesizer,
Advanced
APRS Features



TM-V71A
1000 Alpha
Memories,
Dual Display



TM-271A
2M FM Transceiver,
136-174MHz RX
CTCSS (42 subtones),
DCS (104 codes) and
1750 Hz tone burst.

BIG BOY ROTATORS
The most powerful
antenna rotators
available anywhere
**Amateur,
Commercial,
Government and
Military purposes**



Model D digital solid state
controller, the ultimate in easy to set
up controller

- Built in RS232 and Preset
- Programmable soft start-stop
- Programmable North or South stop
- 500° rotation (- 70° + 70° overlap)
- 1° degree accuracy and more.....

PRO.SIS.TEL.

Produzione Sistemi Telecomunicazioni



The **ProSisTel** rotators were
designed to perform under
tremendous stress with
abnormally large antenna loads.

ProSisTel rotators give you:
incredible starting and rotating
torque, incredible braking
resistance.

The rotators utilizing worm wheel
technology far exceeds the
specifications on any other
amateur rotator made today.

Two years warranty

**C.da Conghia 298
I-70043 Monopoli BA Italy
Phone ++39 0808876607
www.prosistel.net
Email: prosistel@prosistel.it**

ARRL's Low Power Communication

– The Art and Science of QRP
By **Rich Arland, W3OSS**
Third Edition

Welcome to the world of QRP!

Now you can explore the excitement of
low-power radio operating:

- Equipment and Station Accessories
- Antennas
- Operating Strategies
- NEW! Emergency Communication
- NEW! Surplus Military Equipment

Plus QRP calling frequencies, manufacturers...and much more!

ARRL's Low Power Communication

ARRL Order No. 1042

Only **\$19.95***

*shipping \$7 US (ground)/\$12.00 International

**ARRL's Low Power Communication
with 40-meter CW Cub Transceiver Kit**

ARRL Order No. 1042K

Only **\$99.95***

*shipping \$12 US (ground)/\$17.00 International

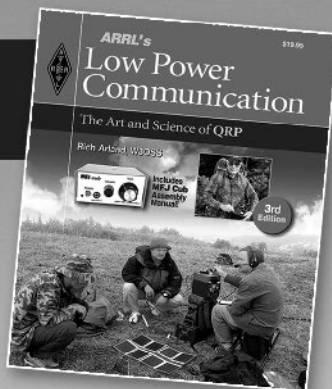


ARRL The national association for
AMATEUR RADIO

SHOP DIRECT or call for a dealer near you.

ONLINE WWW.ARRL.ORG/SHOP

ORDER TOLL-FREE 888/277-5289 (US)



BONUS

Includes the
complete
assembly
manual for
the **MFJ Cub**

Transceiver Kit.** You'll enjoy
countless hours operating this tiny
high performance radio. Build the kit
in just a few hours, and you'll be
working the world with low-power
fun!

**kit sold separately



HB 10/2008

from
MILLIWATTS to KILOWATTS™
More Watts per Dollar™



**Quality
Transmitting
& Audio Tubes**

**Taylor
TUBES**



- COMMUNICATIONS
- BROADCAST
- INDUSTRY
- AMATEUR



Immediate Shipment from Stock

3CPX800A7	3CX15000A7	4CX5000A	813
3CPX5000A7	3CX20000A7	4CX7500A	833A
3CW20000A7	4CX250B	4CX10000A	833C
3CX100A5	4CX250BC	4CX10000D	845
3CX400A7	4CX250BT	4CX15000A	866-SS
3CX400U7	4CX250FG	4X150A	872A-SS
3CX800A7	4CX250R	YC-130	5867A
3CX1200A7	4CX350A	YU-106	5868
3CX1200D7	4CX350F	YU-108	6146B
3CX1200Z7	4CX400A	YU-148	7092
3CX1500A7	4CX800A	YU-157	3-500ZG
3CX2500A3	4CX1000A	572B	4-400A
3CX2500F3	4CX1500A	807	M328/TH328
3CX3000A7	4CX1500B	810	M338/TH338
3CX6000A7	4CX3000A	811A	M347/TH347
3CX10000A7	4CX3500A	812A	M382

– TOO MANY TO LIST ALL –



ORDERS ONLY:

800-RF-PARTS • 800-737-2787

Se Habla Español • We Export

TECH HELP / ORDER / INFO: 760-744-0700

FAX: 760-744-1943 or 888-744-1943



An Address to Remember:

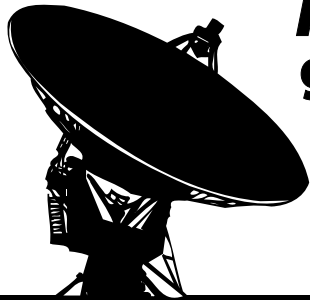
www.rfparts.com

E-mail:

info@rfparts.com



**RF PARTS™
COMPANY**



READY, SET, GO... get your dream job!

**Be an FCC Licensed
Wireless Technician!**

**Make \$100,000 a year
with NO college degree**

**Learn Wireless Communications and get your
"FCC Commercial License" with our
proven Home-Study Course!**

- No need to quit your job or go to school.
- This course is easy, fast and low cost.
- No previous experience needed!
- Learn at home in your spare time!



**Move to the front of the employment line in Radio-TV,
Communications, Avionics, Radar, Maritime and more...
even start your own business!**

Call now for FREE info:
1-800-932-4268
ext. 204

Or, email us: info@LicenseTraining.com
www.LicenseTraining.com

Send to: **COMMAND PRODUCTIONS**

Warren Weagant's FCC License Training
P.O. BOX 3000, DEPT. 204 • SAUSALITO, CA 94966

Please rush FREE details immediately!

NAME: _____

ADDRESS: _____

CITY/STATE/ZIP: _____

You may fax your request to: 415-332-1901

**Join or Renew
your ARRL Membership**
www.arrl.org/join

What Our Customers Say

"I have found CheapHam.com to have great prices as well as excellent service...GREAT COMPANY"

"I used them to order my LDG tuner as they had the lowest price... Great to work with a company that still knows what customer service is."

"...reputable business practices! I will continue to do business with CheapHam.com and recommend the site to others."

"I had a GREAT experience with Frank from CHEAPHAM.COM, He sold me what I needed and made sure I didn't order anything that was already included that I might not have been aware of (I know of a few companies that would be more than happy to sell you duplicate items). I have yet to find any company that could beat their prices or even come close. I purchased some Heil stuff and it cost me \$100 less than anywhere else. Again, A GREAT COMPANY...PERIOD!!!"

Amateur - CB - PRO Audio - Scanners - Worldwide Shipping
www.CheapHam.com

Tune Up to Advanced Radio Operations Center Software For Your Windows PC

**It's like remote control
for your radio.**



Only one radio control software combines the integration, automation and multi-tasking capabilities of Windows XP and Vista with the flexibility and control to operate in all the digital modes. It's **ROC Digital Desktop™** a part of the Radio Operations Center™ (ROC) software suite (formerly called PacTerm for Kantronics and PKTerm for Timewave/AEA).

ROC Digital Desktop gives amateur radio operators the power to command multimode TNCs and soundcard mode. Integrate call books. Use built-in macros (or create your own). Automatically log QSOs -- and so much more. All for only \$99.95, or upgrade from \$49.95.

New! EmComm Ops

It's easier for radio operators and traffic handlers to maintain a state of readiness with **EmComm Ops**. Add EmComm Ops software to your desktop or laptop and control your packet radio operations in TNC modes from your shack or vehicle. Tune hard-to-hear packet signals. Log contacts automatically and more. All for only \$29.95.

Download your free, 30-day trial of ROC Digital Desktop or EmComm Ops from our Website at www.cssincorp.com. And take control of your radio.

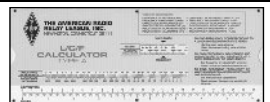
www.cssincorp.com
Call 256-381-6100



© Copyright 2008 CSS, Inc. All rights reserved.
Price, policies and specifications subject to change without notice.

L/C/F and Single-Layer Coil Winding Calculator

Use this handy slide rule when you're tinkering with filters, oscillators, impedance matching circuits or antenna coils and traps. Quick and easy circuit calculations.



ARRL Order

No. 9123—Only \$12.95*

*shipping \$7 US (ground)/\$12.00 International



ARRL The national association for
AMATEUR RADIO

SHOP DIRECT or call for a dealer near you.

ONLINE WWW.ARRL.ORG/SHOP

ORDER TOLL-FREE 888/277-5289 (US)

HB 10/2008

Quality Radio Equipment Since 1942

AMATEUR TRANSCEIVERS



Universal Radio is your authorized dealer for all major amateur radio equipment lines including: Alinco, Icom, Kenwood and Yaesu.



SHORTWAVE RECEIVERS



Whether your budget is \$50, \$500 or \$5000, Universal can recommend a shortwave receiver to meet your needs. Universal is the *only* North American authorized dealer for *all* major shortwave lines including: Icom, Yaesu, Microtelecom, Ten-Tec, Grundig, etón, Sony, Sangean, Palstar, RFspace and Kaito.



WIDEBAND RECEIVERS



Universal Radio carries a broad selection of wideband and scanner receivers. Alinco, AOR, Icom, Yaesu, GRE and Uniden models are offered at competitive prices. Portable and tabletop models are available.



ANTENNAS AND ACCESSORIES

Your antenna is just as important as your radio. Universal carries antennas for every need, space requirement and budget. Please visit our website or request our catalog to learn more about antennas.

BOOKS

Whether your interest is amateur, shortwave or collecting; Universal has the very best selection of radio books and study materials.

USED EQUIPMENT

Universal carries an extensive selection of used amateur and shortwave equipment. All items have been tested by our service department and carry a 60 day warranty unless stated otherwise. Request our monthly printed used list or visit our website:

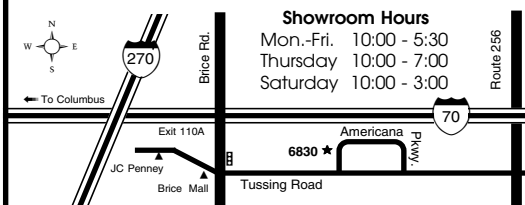
www.universal-radio.com

VISIT OUR WEBSITE

Guaranteed lowest prices on the web? Not always. But we *do* guarantee that you will find the Universal website to be the *most* informative.

www.universal-radio.com

VISIT OUR SHOWROOM



Showroom Hours

Mon.-Fri. 10:00 - 5:30
Thursday 10:00 - 7:00
Saturday 10:00 - 3:00



FREE 124 PAGE CATALOG

Our informative print catalog covers everything for the amateur, shortwave and scanner enthusiast. All items are also viewable at: www.universal-radio.com

Universal Radio, Inc.
6830 Americana Pkwy.
Reynoldsburg, OH 43068

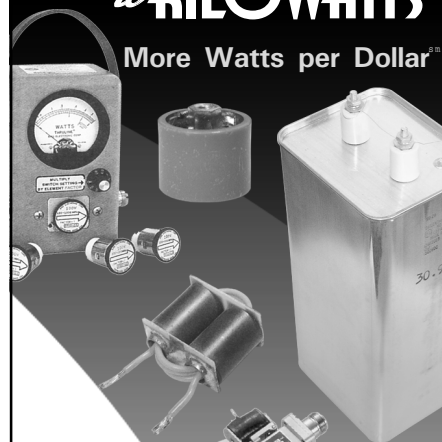
➤ 800 431-3939 Orders
➤ 614 866-4267 Information
➤ 614 866-2339 Fax
➤ dx@universal-radio.com

**universal
radio inc.**

- ✓ Established in 1942.
- ✓ We ship worldwide.
- ✓ Visa, Master and Discover cards.
- ✓ Used equipment list available.
- ✓ Returns subject to 15% restocking fee.

from MILLIWATTS to KILOWATTSSM

More Watts per DollarSM



- Wattmeters
- Transformers
- TMOS & GASFETS
- RF Power Transistors
- Doorknob Capacitors
- Electrolytic Capacitors
- Variable Capacitors
- RF Power Modules
- Tubes & Sockets
- HV Rectifiers



ORDERS ONLY:

800-RF-PARTS • 800-737-2787

Se Habla Español • We Export

TECH HELP / ORDER / INFO: 760-744-0700

FAX: 760-744-1943 or 888-744-1943



**An Address to Remember:
www.rfparts.com**

E-mail:
info@rfparts.com



**RF PARTSTM
COMPANY**

TARHEEL ANTENNAS

TA

877-671-9409

Model 300A
10 -160 Mtrs.
250 watts P.E.P.
\$389



Model 40
10-40 Mtrs.
1.5 Kw P.E.P.
\$389



Model 75
10-80 Mtrs.
250 watts P.E.P.
\$389

Little Tarheel II

200 Watts P.E.P.
3.5 Mhz - 54.0 Mhz
\$379



Little Tarheel II
Shown Mounted
on Diamond K400-3/8C

Model 400A
10 -160 Mtrs.
250 Watts P.E.P.
\$409



Model 100A-HP
10-80 Mtrs.
1.5 Kw P.E.P.
\$389

Buy the Package and Save!!

Package Deals Available for
M40, M75, M100, M200, M300, M400
Package includes:

Antenna	20' Control Cable
MT-1 Mount	21' RG-8X Coax
6' Whip	Fuse Holder w/Fuse
3/8x24 Stud	Dielectric Grease
Ferrite Core	Quick Disconnect for Whip
Coax Seal	Manual UP/DOWN Switch

TARHEEL ANTENNAS, INC.

816-671-9409 • Fax 816-364-2619
P.O. Box 8547, St. Joseph, MO 64508
WWW.TARHEELANTENNAS.COM
SALES@TARHEELANTENNAS.COM

All Prices Subject to Change without Notice

Colors Choices
Black, White,
Red, & Silver

Model 200A-HP
10-80 Mtrs.
1.5 Kw P.E.P.
\$409

New

The ARRL Digital Technology for Emergency Communications Course Version 1.0

In this course, we will introduce you to all the ways Amateur Radio operators are using digital technology as a valuable emergency communications tool. The topics discussed during the course include:

- Packet radio APRS
- Winlink 2000
- IRLP
- EchoLink and WIRES-II
- D-STAR
- APCO25
- HF sound card modes
- Automatic Link Establishment ("ALE")

We'll help you answer questions such as:

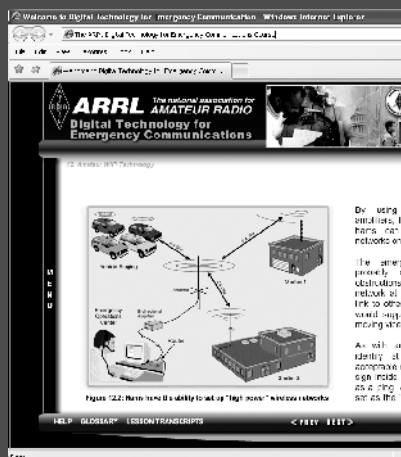
Can you transfer supply lists or personnel assignments between emergency operations sites?

Can you get critical e-mails to the Internet if a connection goes down?

Can you relay digital images of damage at specific locations?

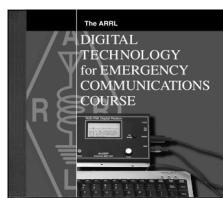
Can you track the locations of emergency personnel and display them on computer maps?

...and more!



"This course is a great starting point for anyone interested in the public service applications of digital communication technology."

Steve Ford, WB8IMY—Course Author and QST Editor/ARRL Publications Manager



By using consumer-grade courses, bidirectional satellites, low-cost cellular radio and antenna arrays, packet radio, digital, high-speed, wireless networks and 4- or 8-voice, and many more, we do so.

The emergency communications applications are presented through a series of lessons and illustrations. An amateur could set up a high-speed network at a central location, such as an ARES and link to other operators' packet radio nodes. Those links would support everything from urgent file transfers to moving data. See Figure 12.2.

As with any Amateur Radio mode, users must identify at least once every 10 minutes. One compromise without forcing users to transmit every 10 minutes is to use a 10-minute timer to transmit every 10 minutes. The 10-minute timer can be set as the 10-minute timer. The 10-minute timer can be set as the 10-minute timer. The 10-minute timer can be set as the 10-minute timer.

System Requirements (minimum)
— Microsoft Windows® Vista/XP/2000 /NT/98/95 or Apple OS X, 200 MHz processor, 32 MB RAM, sound card and speakers, 4-speed CD-ROM drive or higher.
Requires Web browser: Microsoft Internet Explorer™ 6.0, Mozilla Firefox 2.0, Apple Safari 3.0—or later versions. Some documents require Adobe® Reader®.

Illustrations, screenshots, Internet links and audio are used to demonstrate transmission modes and equipment configurations. Bite-sized learning units make learning interesting and fun!



The ARRL Digital Technology for Emergency Communications Course

CD-ROM, version 1.0

ARRL Order No. 1247

Only \$49.95*

*shipping \$6 US (ground)/\$11.00 International



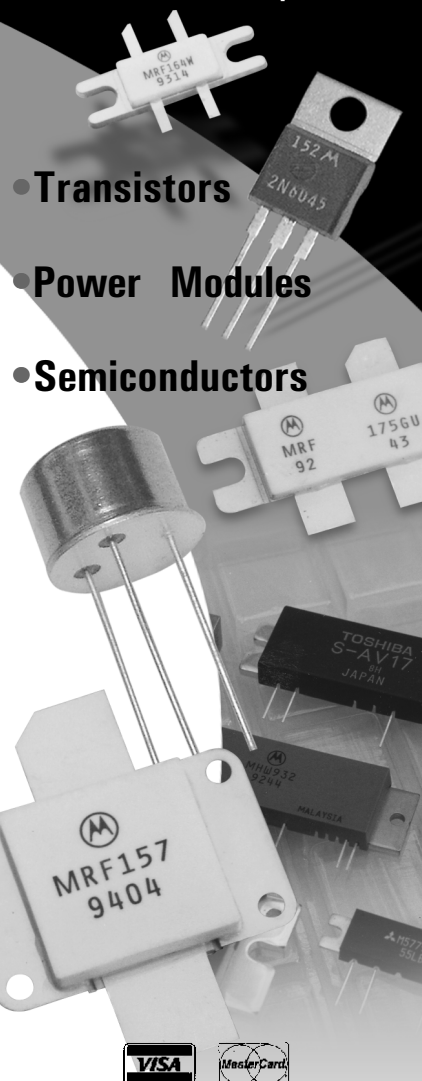
ARRL
The national association for
AMATEUR RADIO

SHOP DIRECT or call for a dealer near you.
ONLINE WWW.ARRL.ORG/SHOP
ORDER TOLL-FREE 888/277-5289 (US)

HB 10/2008

from MILLIWATTS to KILOWATTS

More Watts per Dollar



- Transistors
- Power Modules
- Semiconductors



ORDERS ONLY:

800-RF-PARTS • 800-737-2787

Se Habla Español • We Export

TECH HELP / ORDER / INFO: 760-744-0700

FAX: 760-744-1943 or 888-744-1943



An Address to Remember:
www.rfparts.com

E-mail:

info@rfparts.com



RF PARTS
COMPANY

A radio For Every Need - Yaesu VHF/UHF Mobiles and Handhelds

Imagine the Future of the Mobile Radio ...
It's Now All Yours ! ... **YAESU FTM-10SR**



IP57
Submersible
3 feet for 30 min
Body/Front panel

**DUAL BAND
DUAL RECEIVE**

10 W 2 m/70 cm*
Dual Band FM Mobile

FTM-10SR *70 cm 7 W

**Great New Features to Support
Outdoor Motor Sports Activities
Mobile Transceiver... Great Appearance ...
Easy to Operate**



IP57
Submersible
3 feet for 30 min
Front panel

**DUAL BAND
DUAL RECEIVE**

50 W 2 m/70 cm*
Dual Band FM Mobile

FTM-10R *70 cm 40 W

Get "Back to Basics" with YAESU's FM Dual Band Mobile
One-Touch Operation/Wide Receiver Coverage Included



DUAL BAND

50 W 2 m/70 cm* Dual Band FM Mobile
FT-7800R *70 cm 35 W



50 W 2 m Ultra Rugged VHF FM Mobile

FT-1802M 2 m Band



65 W 2 m Rugged FM Mobile

FT-2800M 2 m Band

**QUAD BAND
DUAL RECEIVE**



50 W 10 m/6 m/2 m/70 cm*
Quad Band FM Mobile

FT-8900R *70 cm 35 W

**DUAL BAND
DUAL RECEIVE**



50 W 2 m/70 cm*
Dual Band FM Mobile

FT-8800R *70 cm 35 W

NEW TECHNOLOGY

GPS/APRS® / Bluetooth® Available



APRS® is a registered trademark of Bob Bruninga WB4APR.

IPX7

Submersible
3 feet (1m) for 30 min.

6 m / 2 m / 70 cm
Tri-Band

5 W Ultra-Rugged, Submersible
6 m/2 m/70 cm Tri-Band FM Hand held
VX-8R

Conquer the Elements!



IPX7

Submersible
3 feet (1m) for 30 min.

2 m / 70 cm
Dual Band

5 W Heavy Duty Submersible
2 m/70 cm Dual Band FM Hand held (220 MHz: 1.5 W)
VX-6R

YAESU PRESENTS THE THIRD GENERATION ULTRA-COMPACT HAND-HELD FM TRANSCEIVER THE VX-3R !



2 m / 70 cm
Dual Band

1.5 W Ultra Compact
2 m/70 cm Dual Band FM Hand held
VX-3R



IPX7

Submersible
3 feet (1m) for 30 min.

5 W Ultra-Rugged, Submersible
6 m/2 m/70 cm Tri-Band FM Hand held
VX-7R/VX-7RB



2 m / 70 cm
Dual Band

5 W Heavy Duty
2 m/70 cm Dual Band FM Hand held
FT-60R



IPX7

Submersible
3 feet (1m) for 30 min.

2 m
Mono Band

70 cm
Mono Band

(8 key)

(16 key)

5 W Heavy Duty Submersible
2 m FM Mono Band Hand Helds
VX-120 VX-170 VX-127 VX-177
(8 key Version) (16 key Version) (8 key Version) (16 key Version)



Ultra-Rugged 5 W Full Featured

2 m FM Hand helds

VX-150/VX-110

2 m
Mono Band



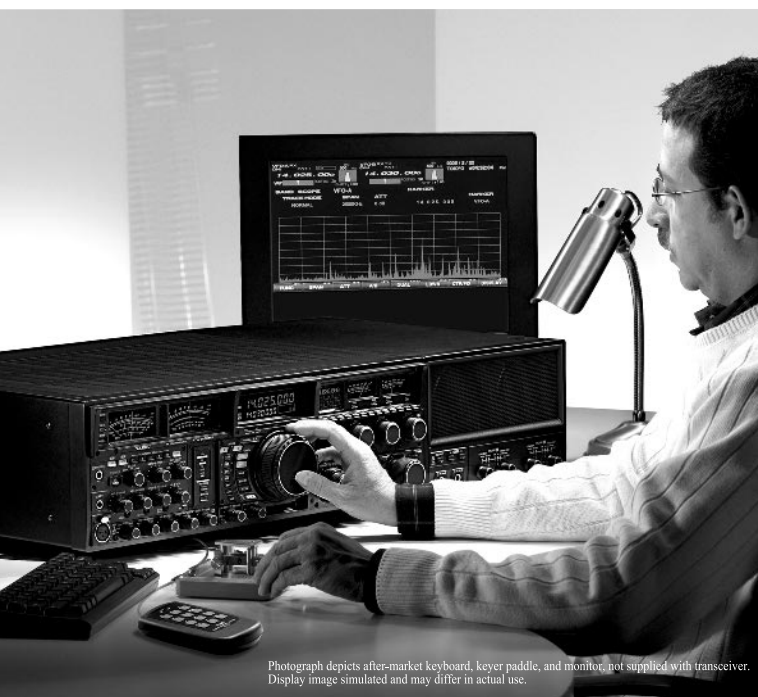
YAESU
Choice of the World's top DX'ers™

Vertex Standard
US Headquarters
10900 Walker Street
Cypress, CA 90630 (714)827-7600

For the latest Yaesu news, visit us on the Internet:
<http://www.vertexstandard.com>

Specifications subject to change without notice. Some accessories and/or options may be standard in certain areas. Frequency coverage may differ in some countries. Check with your local Yaesu Dealer for specific details.

Yaesu - offering the World's most complete line of home and field radios



Photograph depicts after-market keyboard, keyer paddle, and monitor, not supplied with transceiver. Display image simulated and may differ in actual use.

HF/50 MHz Transceiver FT DX 9000MP

Two Pairs of Meters, plus LCD Window; Data Management Unit and Flash Memory Slot Built In, Main/Sub Receiver VRF, plus Full Dual Receive Capability, External 50 V/24 A Switching Regulator Power Supply and Speaker with Audio Filters. Display color (Umbra or Light Blue) may be selected at the time of purchase, Modification from 400 to 200 W not possible.

We seek to combine the highest quality with the utmost in operating efficiency and technological advancement to enhance the final product that you will enjoy on the air.



HF/50 MHz Transceiver FT DX 9000D 200 W Version

Large TFT, Data Management Unit and Flash Memory Slot Built In, Main/Sub Receiver VRF, plus Full Dual Receive Capability, Three μ -Tuning Modules for 160 - 20 M, 50 V/12 A Internal Switching Regulator Power Supply



HF/50 MHz Transceiver FT DX 9000 Contest Custom-Configurable Version

Two Pairs of Meters, plus LCD Window, VRF Input Preselector Filter, Three Key Jacks, and Dual Headphone Jacks, 50 V/12 A Internal Switching Regulator Power Supply

Display color (Umbra or Light Blue) may be selected at the time of purchase, Modification from 200- to 400-Watt version not available.

Loaded with Leading-edge Performance Capabilities. . .
The First Triumph in the 2nd Generation of the FT DX 9000 Lineage:
The Powerful FT-2000!



Shown with after-market keyboard, and monitor (not supplied). Optional Data Management Unit (DMU-2000)

HF/50 MHz Transceiver FT-2000 100 W Version (Internal Power Supply)



HF/50 MHz Transceiver FT-2000D 200 W Version (External Power Supply)

Introducing the Yaesu FT-950 transceiver for DX enthusiasts Superb receiver performance
Direct lineage from the legendary FT DX 9000 and FT-2000

COMPACT HF TRANSCEIVER WITH IF DSP



Shown with after-market keyer paddle, keyboard, and monitor (not supplied). DMU-2000 Data Management Unit (option)



HF/50 MHz 100 W Transceiver FT-950



Compact size: 9" X 3.3" x 8.5" and Light weight: 7.9 lb

HF/50 MHz 100 W All Mode Transceiver FT-450

Automatic Antenna Tuner ATU-450 optional

■ FT-450AT

With Built-in ATU-450 Automatic Antenna Tuner



**HF/VHF/UHF Portable Operation
Just Got a Lot More Powerful!**

FT-897D **TCXO** **DSP** **60 m Band**

HF/50/144/430 MHz
100 W All Mode Transceiver
(144 MHz 50 W/430 MHz 20 W)



**HF/VHF/UHF Multimode Mobile Transceiver,
now Including Built-in DSP**

FT-857D **DSP** **60 m Band**

HF/50/144/430 MHz
100 W All Mode Transceiver
(144 MHz 50 W/430 MHz 20 W)



**Automatic Matching for
FT-897/857 Series Transceivers**



FC-40
Automatic-Matching
200-Memory
Antenna Tuner
(160 m ~ 6 m Band)

WATERPROOF

**Mobile Auto-Resonating 7~430 MHz for
FT-897/857 Series Transceivers**



ATAS-120A
Active Tuning Antenna System
(no separate tuner required)

VHF/UHF
Base RadialKit
ATBK-100 for
ATAS-120A.



**REAL PERFORMANCE,
REALLY PORTABLE**

FT-817ND
HF/50/144/430 MHz
5 W All Mode Transceiver
(AM 1.5 W)

60 m Band

ATAS-25
Manually-Tuned Portable Antenna



For the latest Yaesu news, visit us on the Internet:
<http://www.vertexstandard.com>

Specifications subject to change without notice. Some accessories and/or options may be standard in certain areas. Frequency coverage may differ in some countries. Check with your local Yaesu Dealer for specific details.

YAESU
Choice of the World's top DX'ersSM

Vertex Standard
US Headquarters
10900 Walker Street
Cypress, CA 90630 (714)827-7600

Index

Editor's Note: Except for commonly used phrases and abbreviations, topics are indexed by their noun names. Many topics are also cross-indexed, especially when noun modifiers appear (such as "Voltage, back" and "Back voltage"). Numerous terms and abbreviations pertaining to Amateur Radio but not contained in the index may be found in the glossaries indexed herein. The letters "ff" after a page number indicate coverage of the indexed topic on succeeding pages.

- 10-GHz converter: 10.43
 - 10-GHz Preamplifier: 14.40
 - 12 V dc boost regulator for mobile
 - operation: 17.28
 - 120-V ac chassis connector wiring: 3.6
 - 1200C modes: 9.34
 - 144-MHz 3CX1200Z7 amplifier: 18.40ff
 - 144-MHz amplifier example: 18.23ff
 - 16P4A (16PSM+ASM): 9.20
 - 16QAM: 9.10, 9.31, 9.55
 - 300-Ω TV ribbon line: 21.1
 - 3B9C: 2.2
 - 3CX1200Z7: 18.40
 - 3CX1500D7: 18.29
 - 3CX800A7: 18.16, 18.17, 18.26
 - 450-Ω ladder line: 21.1
 - 4CX1600B: 18.37
 - 4CX250: 18.23
 - 555 timer: 5.50, 5.51
 - 6-meter 4CX1600B amplifier: 18.37ff
 - 6061-T6 aluminum rods: 22.64
 - 6063-T832 aluminum tubing: 22.15, 22.64
 - 64QAM: 9.49
 - 802.11: 5.71, 24.4
 - 802.11b: 24.4
 - 802.11g: 24.4
 - 8877: 18.19ff, 18.26
 - 8P2A (8PSM+2-level Amplitude-Shift
 - Modulation): 9.20
 - 8PSM (8-level PSM): 9.20
 - 902 to 928 MHz receiver: 14.38ff
- A**
- A index: 20.11, 20.19
 - A Simple Serial Interface: 19.38
 - AA6JR: 9.54
 - AA8DX: 19.1, 19.3, 19.35
 - AAUSAT-II satellite: 23.5
 - AB5K: 24.12
 - Absorption: 20.2ff
 - Atmospheric: 20.20
 - D layer: 20.3, 20.11
 - Ionospheric: 20.24
 - AC (See Alternating Current)
 - Neutral: 17.2
 - Power: 17.2ff
 - Theory and reactive components: 4.12
 - AC Instruments: 25.8ff
 - Average vs peak-reading: 25.9
 - Bridges: 25.13
 - Calorimetric meters: 25.8
 - Directional wattmeters: 25.13
 - Measure inductance and capacitance with
 - DVM: 25.21ff
 - RF Power: 25.11
 - RF Voltage: 25.11
 - Scale linearity: 25.10
 - Academy of Model Aeronautics: 9.23
 - Access points: 9.49
 - Accuracy: 9.1
 - Acid-core solder: 8.3
 - Acoustic waves: 10.22
 - Active device
 - Modeling: 18.3
 - Active filter: 12.30
 - Active region: 5.21
 - AD4TB: 9.21
 - Adair, Robert, KAØCKS: 9.21
 - Adams, Chuck, K7QO: 8.1
 - Adaptive
 - Beamforming: 16.31
 - Filtering: 16.17
 - Interference canceler: 16.17, 16.18
 - Modeling system: 16.17
 - Predictor: 16.18, 16.19
 - Signal processing: 16.8
 - Adaptive networking: 9.16
 - ADC: 16.3, 16.4
 - Nonlinearity in: 16.3, 16.4
 - sigma-delta, over-sampling and: 16.3
 - Adcock antenna (RDF): 13.18
 - Adder
 - 4-bit schematic: 16.42
 - Admittance (Y): 4.11, 4.44
 - AE1X: 25.27
 - AFSK: 9.8, 9.13
 - Demodulator: 9.9, 9.14
 - AGC: 9.3, 9.8, 9.26, 10.5, 10.9, 10.14, 14.24ff, 15.3, 26.17
 - Audio-derived: 14.26
 - Circuits: 14.26
 - Digital system for: 16.26
 - Hang: 9.3
 - Loop: 14.24
 - Loop problems: 14.24ff
 - Time constants: 14.24
- AH7R: 9.54
 - Air drag: 10.2
 - Air-core
 - Inductor: 4.32
 - Transformer: 4.58
 - Airplane: 20.3
 - AK1A: 24.12
 - Albania: 2.2
 - ALC: 9.4, 15.5
 - AM: 16.16
 - In solid-state power amplifiers: 14.49
 - Loop: 10.26
 - Speech processing with ALC: 14.49
 - ALE
 - Bibliography: 9.21
 - Waveform: 9.21
 - Algonquin Radio Observatory: 20.10
 - Algorithms for radio (DSP): 16.5ff
 - Alignment: 26.12
 - Receiver: 26.17
 - Transceiver: 26.19
 - Alkaline battery: 17.21
 - Alpha Delta Communications: 3.8
 - Alta Vista: 24.1
 - Alternating current (ac) (Also see AC): 4.1
 - And Reactive Components: 4.12
 - In capacitance: 4.23
 - In inductance: 4.31
 - Line filter: 13.6
 - Measuring voltage, current, power: 4.15
 - Alternator: 4.13
 - ALU: 5.60
 - Aluminum
 - Finishing: 8.25
 - Grade 6061-T6: 22.37
 - Grade 6063-T832: 22.64
 - Tubing: 22.37
 - AM (Amplitude Modulation): 9.3, 9.8, 9.9, 9.26ff, 10.5
 - ALC: 16.16
 - AM-to-PM conversion: 10.6
 - Broadcasting: 9.2
 - Carrier: 11.5, 16.17
 - Demodulation of
 - (detection): 11.8, 14.29, 16.12ff
 - Equivalent (compatible AM, CAM): 11.7
 - Limiterless detector: 9.9
 - Many faces of: 11.7
 - Sidebands: 11.5

Transmitter, ideal:	11.6	Modulation (AM):	2.12, 5.4, 9.5ff, 9.26ff, 11.3	Pattern distortion:	21.15
AM demodulation:	11.8, 11.9	Sidebands:	11.5	Performance issues:	22.31
Direct conversion:	11.8	Modulation and demodulation:	5.4	Phased array for RDF:	13.18, 13.21
Envelope detection:	11.8	Operating:	10.3	Physically short vertical:	22.25
Product detection:	11.8, 11.9	Stable:	10.3	Plumbers delight construction:	22.37
Superheterodyne:	11.8	Variation:	10.6	Polarization:	22.1
AM signal types		Amplitude-Shift Keying (ASK):	9.7	Quad:	22.33ff
Double-sideband (DSB) full carrier:	11.7	AMPS:	24.5	Radiation efficiency:	22.31
Double-sideband, suppressed-carrier:	11.7	AMSAT:	9.25	Radiation patterns:	22.11, 22.12, 22.53
Independent sideband (ISB):	11.8	AMTOR:	9.12ff, 15.8	Radio direction finding (RDF):	13.17
Single-sideband, full carrier AM:	11.7	Bibliography:	9.12ff	Reflector:	22.33ff
Single-sideband, suppressed-carrier AM:	11.7	Analog		Sense for RDF:	13.18
Vestigial-sideband (VSB), full-carrier AM:	11.7	Approximation (of analog waveform):	5.38	Slant-wire feed:	22.25
Amateur Auxiliary:	2.4	Building blocks:	5.4ff	Sloper:	22.29
Amateur Extra license:	1.3	Devices:	5.6ff	Stacking Yagis:	22.55
Amateur Radio:	1.1ff, 2.1	AD834:	11.14	Standard:	22.3
ARISS program:	2.4	Signal:	5.38	Switched for RDF:	13.21
Bands, US:	1.4	Signal processing:	5.2ff	SWR and SWR bandwidth:	22.31ff
Building a station for:	1.8	Signals and components:	5.1ff	Three-element beams:	22.34
Computers in (Ham):	1.5	vs. Digital:	5.38	Three-wire unipole:	22.26
Education:	2.1, 2.4	Analog-to-Digital converter (see ADC)		Through the glass:	15.25
Glossary (in general):	1.16ff	Analytic		Time difference of arrival for RDF:	13.22
Governing Regulations:	1.11ff	Signals and modulation:	16.9ff	Top loading of tower:	22.25
Hams at the forefront:	1.6	AND gate:	5.42	Trap verticals:	22.26
Hams in Space:	1.7	Angle		Tuner:	21.10, 21.13
International:	1.9	Modulation:	9.5ff, 11.9	Two-element beams:	22.34
Operators:	1.2, 2.5	Oblique:	20.8	Vertical:	22.23ff
Resources:	1.15	Antenna:	21.1	Vertical ground plane:	22.24
School presentations:	2.4	Adcock:	13.18	Vertical, full-size:	22.24
Service:	1.11, 2.5	Azimuth patterns:	22.9	Vertical, top loading:	22.26
Study guides:	1.8	Balanced:	21.14	VHF/UHF:	22.53
US License:	1.3	Bandwidth:	22.1	Wire:	22.5, 22.6
Amateur television (ATV)		Boom material:	22.38	Wire antenna construction:	22.5ff
(see also FMATV):	2.5, 2.7, 9.38ff	Bridge (audible):	19.48	Wire pruning:	22.4
ATV repeater:	2.8	Center insulator:	22.7	Yagi:	21.10, 22.33
American National Standards Institute (ANSI):	3.15, 3.16	Center-fed Zepp:	22.5	Yagi and Quad directive antennas:	22.33ff
American Physical Society:	3.13	Conductor size:	22.2	Antenna construction	
American Radio Relay League (see ARRL)		Construction, Yagi:	22.37ff	6061-T6 preferred aluminum alloy:	22.38
American Red Cross:	2.5	Coupler:	15.1	Boom-to-element plate:	22.38
Ampere:	4.1	Couplers (see Tuner, antenna):	21.13	Boom-to-mast plate:	22.38
Amplification		Cubical quad:	22.33ff	Composite spreaders (quad):	22.41
Logarithmic:	5.4	Currents:	21.14	Gamma rod:	22.41
Amplifier:	26.13	Delta loop:	22.6, 22.39	Grounding guidelines:	3.7
144-MHz 3CX1200Z7:	18.40ff	Dipole:	22.4, 22.5	Stainless steel, importance of using:	22.38
240 V ac power:	3.6	Directivity:	22.2ff	Antenna matching:	22.36
3CX1500D7, HF:	18.29ff	Director:	22.33	Gamma match:	22.35ff
6-meter 4CX1600B:	18.37ff	Doppler for RDF:	13.23	Gamma match capacitor:	22.41
Brick:	9.28, 9.30	Driven elements:	22.33ff	Hairpin match:	22.60, 22.61
Broadband HF solid state:	18.24ff	Electronic rotation for RDF:	13.20	Q-section transformer:	22.39
Buffer:	10.18, 10.21	Element insulators:	22.40	T match:	22.35ff
Common emitter:	26.14	Elevation angle (vertical):	22.3	Tuning adjustments:	22.36, 22.42
Cooling:	18.15ff	Elevation patterns:	22.3, 22.9	Tweaking (fine tuning):	22.36
DC coupled:	26.14	Feed methods:	22.5	Antenna modeling by computer:	22.12, 22.13
Design with transistor:	5.26, 5.27	Ferrite rod for RDF:	13.18	“Correct ground”:	3.19
Differential:	5.35	Flat-top T vertical:	22.29	“Hot spots”:	3.19
Double-brick L-band:	23.13ff	Folded unipole:	22.25	Computer-optimized Yagis:	22.35
Efficiency:	18.2	Gain:	22.2ff	Coordinate system:	22.12
External RF power; standards:	1.14	Ground plane:	15.25, 22.24	Method of Moments algorithm:	22.12, 22.13
High-power vacuum tube, example:	18.19ff	Half-sloper:	22.29	MININEC:	3.19
Instability:	18.19	Half-wave resonant length:	22.4	Model:	22.12, 22.13
Linear:	9.28, 18.11	Half-wave vertical dipole:	22.9, 22.30	Numerical electromagnetics Code (NEC):	3.19, 22.12
Linearity:	18.2	Height gain:	22.53	Origin, coordinate system:	22.12
Loop compensation:	10.37	HF mobile:	22.45ff	Segments:	22.12, 22.13
Medium-Power 144-MHz example:	18.23ff	Insulators:	22.6	Wingspread:	22.12
Microphone, Omni VI Plus:	15.5	Inverted L:	22.29	Antenna pattern terminology	
Neutralization:	18.28	Inverted-V dipole:	22.6	Backlobe:	22.33
Operational:	5.33ff	Isotropic radiator:	22.3	Circular polarization:	22.56
RF power:	18.1ff	Loaded:	22.8	Front-to-rear ratio (F/R):	22.33
Single-brick L-band:	23.13	Marconi vertical:	22.24, 22.25	Main lobe:	22.33
Solid-state VHF/UHF oscillations:	18.27	Matching to the line:	21.10	Sidelobes:	22.33
Stabilization:	18.25ff	Mobile antenna tuning:	22.52	Antenna projects	
Summing:	5.3	Mobile, radiation patterns:	22.52	1.8-MHz Inverted L:	22.30
Summing operational:	5.35	Modeled data, 100 ft-dipole:	21.9	135-Ft Multiband Center-Fed Dipole:	22.11
Synthesizer loop compensation:	10.38, 10.41	Modeling by computer:	22.12, 22.13, 22.60	15-meter HVD:	22.30
Testing for VHF/UHF oscillations:	18.27	Optimized wide-band (OWA):	22.61	3 And 5-Element Yagis for 6 M:	22.60
Transistor configurations:	5.22	Parabolic dish:	23.34	40-M and 15-M Dual-Band Dipole:	22.11, 22.13
Types:	5.6	Parabolic dish, dual-band:	23.26ff	All Wire 30-M CVD:	22.33
Amplitude		Parasitic elements:	22.33	All-Copper 2-M J-Pole:	22.58, 22.59
Demodulation:	5.4	Parasitic excitation:	22.33	Compact Vertical Dipole (CVD):	22.31
Distortion:	26.10	Parasitic for RDF:	13.21	Dual-Band Antenna for 146/446 MHz:	22.57
		Patch:	23.27ff		

Five-Band, Two-Element HF Quad:	22.39ff	Asynchronous:	9.12	Backscatter:	20.16
Half-Wave Vertical Dipole (HVD):	22.30	AT-1 (Heathkit):	2.11	Backwards wave oscillator (BWO):	10.31
K8SYL 75 and 10-M Dipole:	22.14	Atmosphere		Balanced	
Medium Gain 2-M Yagi:	22.61	Attenuation:	20.2	Mixer:	5.36
Quick Antenna for 223 MHz:	22.58	Earth:	20.2	Modulator:	11.3, 11.7, 14.44, 15.5
Remotely Tuned Analog Antenna		Earth's structure:	20.6	Ball races:	10.15
Coupler:	22.48ff	Layers:	20.2	Ball, Bob, WB8WGA:	9.16
Simple Loop Antenna for 28 MHz:	22.45	Noise:	9.3	Baluns:	21.15, 22.5ff
Simple Quad for 40 Meters:	22.43ff	Scattering:	20.16	"Bead" choke:	21.17
Simple, Portable Groundplane Antenna:	22.56	Atom:	4.1	Bazooka:	21.15, 21.16
Top-Loaded Low-Band Vertical:	22.27	Attenuation:	20.2	Broadband:	21.15, 21.16
Two W8NX Multiband, Coax-Trap		Free space:	20.2	Choke balun:	22.31
Dipoles:	22.19ff	Rain:	20.20	Common-mode choke:	22.31
W4RNL Inverted-U Antenna:	22.14ff	Attenuator:	15.1, 25.51	Construction:	21.17
Antenna, VHF/UHF:	22.53ff	Frequency selective:	18.25	Current (choke):	21.15, 21.16
Circular polarization:	22.56	Shielding:	10.8	Ferrite-core:	21.17
Gain:	22.53	ATV:	9.1, 9.38ff	Quarter-wave:	21.14, 21.15
Height gain:	22.53	Amplifiers:	9.41	W2DU bead:	21.16
Physical size:	22.53	Communications distances:	9.38	Band-pass filter:	12.2
Polarization:	22.53	Digital:	9.43	Design:	12.6
Radiation pattern:	22.53	DSB & VSB transmission:	9.40	Design example:	12.14, 12.15
Transmission lines:	22.53	DX:	9.38	For 144 or 222 MHz:	12.37
Antheil, George:	9.43	FM:	9.43	Band-stop filter:	12.2
Anti-aliasing filter:	16.2	Frequencies:	9.40	Bands	
Anti-virus program:	9.53	Identification:	9.40	US Amateur:	1.4
Anticyclone:	20.22	Repeaters:	9.41	Bandwidth:	9.1, 9.11, 25.51
Antistatic products:	8.8ff	ATX and power systems:	5.72	Efficiency, SSB:	9.27
AO-16 (OSCAR 16):	23.5	Audio:	4.13	Front-to-back ratio:	22.1
AO-27 (OSCAR 27):	23.5	Compression:	16.16, 16.17	Gain:	22.1
AO-7 (OSCAR 7):	23.5	Filter:	12.1	Necessary:	9.2
Apparent power:	4.46	Frequency Shift Keying (AFSK):	9.8	Occupied:	9.1
Appleton, Edward:	20.6	Phase shifters:	14.19ff	Parallel resonant circuit:	4.53
Applications programming interface (API):	16.31	Sidetone oscillator:	10.28	Resolution:	16.20
APRS:	2.7ff, 9.22	Speech clipping:	14.43ff	Series resonant circuit:	4.48
AR Cluster:	24.12	Speech compression:	14.44	Synthesizer closed loop:	10.38
Architecture, Harvard:	16.32	Wide range audio oscillator:	25.20	Barkhausen:	10.3, 10.38
Arcing:	6.13, 26.12	Audio Interface for Field Day and		Barnes, Graeme, M0CSH:	2.10
Ares:	18.14	Contesting:	19.45	Bartholomew, Wayne S., K3MF:	22.57
ARES:	1.6, 2.5	Aurora		BASIC Stamp:	5.58
Argon:	20.3	Australis:	2.11, 20.12	Battery	
ARISS program:	1.7, 2.7	Borealis:	2.11, 20.12	Alkaline:	17.21
Arithmetic logic unit (ALU):	5.60	Auroral:	2.11, 20.6ff	Capacity:	6.4, 17.22, 17.23
Armstrong, Edwin:	9.30	Auroral E Propagation:	20.13, 20.14	Charging:	17.20ff
ARPH-10:	9.47	Propagation:	2.11	Charging/Discharging:	17.23
ARQ:	9.12	Zones:	9.1	Chemical hazards of types:	17.22
ARRL:	1.9	Autak RF-1 antenna analyzer:	22.44	Discharge curves:	6.4
Field Day:	2.3, 3.2, 22.11, 22.14	Autocorrelation:	16.17	Internal resistance:	17.22
Field Organization:	2.4	Automatic Gain Control (see AGC)		Lead acid:	17.21
Headquarters:	1.10	Automatic Level Control (see ALC)		Lithium:	17.21
Lab:	10.10	Automatic Link Establishment (ALE):	9.21, 22.48	Mercury:	17.21
Logbook of The World (LoTW):	2.2	Automatic Position Reporting System		Nickel Cadmium (NiCd):	17.21
Membership services:	1.10	(APRS):	2.7ff, 9.22	Nickel Metal Hydride (NiMH):	17.21, 17.22
National Contest Journal (NCJ):	2.2	Automatic Repeat reQuest (ARQ):	9.12	Primary:	17.21
National Traffic System (NTS):	2.3, 2.4	Automobile EMC:	13.14	Rechargeable or secondary:	17.21
Organization chart:	1.9	Autopatch:	2.7, 15.21, 15.27	Sensing:	17.43
Radio Designer software:	6.22	Autotransformer:	4.58	Shelf life:	17.21
RF Exposure and You:	3.19	Avalanche		Silver oxide:	17.21
RF Safety Committee:	3.12	Current:	10.19	Solar charging systems:	17.23
RF-exposure news page:	3.19	Diode:	10.16	Baud:	9.8, 9.12
Simple and Fun Antennas for Hams:	22.30	Average		Baudot:	9.7, 9.8, 9.9
Technical Information Service (TIS):	7.11	Current:	4.16	Code:	9.3
The ARRL Antenna Book:	3.1, 3.8, 20.18, 21.9ff, 22.3ff, 23.19, 23.26, 23.34	Value:	25.51	Baudot Radioteletype (RTTY):	9.8
The ARRL Antenna Compendium,		Voltage:	4.16	BayCom:	9.15
Vol 5:	22.42, 22.57	vs peak-reading:	25.9	BCD:	5.40
The ARRL Antenna Compendium, Vol. 4:	22.58	Averaging:	9.3	Beacon frequencies:	20.19
The ARRL Operating Manual:	2.2, 2.8, 15.25, 20.16, 20.19	Awards:	2.1	Beam tetrodes:	5.10
The ARRL Repeater Directory:	2.7, 2.8, 9.39, 15.22, 15.24, 15.27, 15.28	5BDXCC:	2.2	Belrose, John S., VE2CV:	22.29
The ARRL RFI Book:	19.14	And contests:	1.5	Bench equipment:	26.2
Volunteer Consulting Engineer (VCE):	3.1	DX Century Club (DXCC):	2.1ff	Bending metal:	8.25
Art of Electronics, 2nd ed.:	10.16	Endorsements:	2.2	Benson, Dave, K1SWL:	15.15
ASAPs program:	20.20	WAZ:	2.6	Bermuda high:	20.23
Asbrink, Leif, SM5BSZ:	16.30	Worked All Continents (WAC):	2.1	Bessel filter	
ASCII:	9.7, 9.9	Worked All States (WAS):	2.2, 2.6	Design normalized table:	12.11
Bibliography:	9.12	AX.25:	9.14, 9.15, 9.19	Response:	12.4
Data rates:	9.12	Az-El:	23.36ff	Bessel functions:	9.6ff, 11.10
Radioteletype:	9.9	Azimuth and Elevation:	23.36ff	Beyond the horizon:	20.1
Ask:	24.1	B		Bias	
Astronomical Almanac:	23.36	Back voltage:	4.27	Grid:	18.14
Asymmetrical wave forms:	25.9	Back-channel order-wire:	9.21	Transistor:	18.15
		Backlash:	10.14, 10.15	Biasing:	5.7
				Of transistors:	5.22, 5.23

Bibliography		Response: 12.3	Stages, gain: 14.10
ALE: 9.21	Buying parts: 8.24	Stages, noise factor: 14.11	
AMTOR: 9.12ff	BWO: 10.31	Stages, noise figure: 14.11	
ASCII: 9.12	Bypass	Stages, properties: 14.10	
Baudot RTTY: 9.9	Capacitor: 13.1, 13.6	Stages, selectivity: 14.10ff	
CLOVER: 9.21	RF: 8.20ff	Cascode	
DSP: 16.35	Byte register: 5.50	Buffer: 5.5	
Internetworking: 9.22		Pair: 5.5	
Packet: 9.16	C	Case Study: Amplifier Distortion: 6.22, 6.23	
PACTOR: 9.18	C-Rate: 17.1	Cathode: 5.8	
PSK31: 9.13	COG: 10.13, 10.15	Follower: 5.3, 5.10	
RDFT: 9.21	Cables, lacing: 8.23	Ray tube (<i>see</i> CRT)	
Satellite TT&C: 9.25	Calculus: 10.2	Cauer filter	
SCAMP: 9.21	Calibration — Philosophy and Practice: 25.5	Design normalized table: 12.14, 12.15, 12.16	
SSTV: 9.37	Call sign: 1.3	Response: 12.4	
Bifilar (coils, turns): 8.23, 8.24, 21.16	Calorimetric meters: 25.8	Cavity resonator: 10.30, 10.31	
Bilateral diode switch: 5.14	Cameron, Bruce, WA4UZM: 22.58	CCK: 9.46	
Binary: 5.39, 5.40	Cameron, Dave, VE7LTD: 2.10, 9.21	CCS (Continuous Commercial Service): 18.11	
Coded decimal (BCD): 5.40	Campbell, Rick, KK7B: 14.64, 14.75, 14.79	CD-ROM: 5.64	
States (Physical Representation of): 5.41, 5.42	CAN-X2 satellite: 23.5	CD4046: 10.46	
Binaural I-Q Receiver: 14.64ff	Capacitance: 4.11, 4.18	CDMA: 9.5, 9.45, 24.5	
Biphase-shift keying (BPSK): 11.25	Hats: 22.13	Cebik, L. B., W4RNL: 22.14, 22.61	
Bipolar Transistors: 5.13, 5.20ff	Inter-electrode: 6.11	Cellular: 24.5	
Bit rate: 9.3	Minimum: 18.6	Air interfaces: 24.8	
BITE: 10.45	Package: 6.11	AMPS: 24.8	
Bits: 5.39, 9.8	Parasitic: 6.10	Bands: 24.8	
Black-body radiator: 23.35	Stray: 6.11, 18.6	CDMA: 24.8	
Blackburn, Wally, AA8DX: 19.1, 19.35	Tube, output: 18.6	Fundamental technology: 24.7	
Bleeder resistor: 17.11	Capacitor: 4.18, 6.1	TDMA: 24.8	
Block diagram: 26.7	Air variable: 18.6	Technology: 24.6ff	
Blocking capacitor: 18.13	Blocking: 18.13	Ceramic	
BNC connector: 19.8, 25.51	Bypass: 13.1, 13.6	Band pass filter: 15.5	
Bobbin for winding toroids: 8.23	Construction: 4.19	Coil form: 10.15, 10.18	
Bodson, Dennis, W4PWF: 9.32, 9.37	Dielectric breakdown: 6.5	Resonator: 10.24	
Body fade for RDF: 13.27	Dielectric layer: 6.4	Cesium clock: 25.2	
Bonding conductors: 3.7	Dielectrics: 6.5	CFM: 18.15	
Boolean	Doorknob: 18.13	Champa, John, K8OCL: 2.1, 9.43,	
Algebra: 5.42	Effective series resistance (ESR): 6.5	9.47, 9.54, 24.1	
Theorems: 5.44	End effect: 6.4	Channelized repeater	
Boost regulator (12 V) for mobile	Failure: 26.22	operation: 15.20, 15.21, 15.23	
operation: 17.28	Feedthrough: 10.21	Chaotic system: 10.5	
Boothe, F. Barry, W9UCW: 22.26	Ideal: 6.4	Characteristic	
Botkin, Dale, NØXAS: 19.20, 19.22, 19.38, 19.39	Identification: 7.3	Curves: 5.6, 5.7	
BPSK (Binary Phase-Shift Keying): 11.25	Input filters: 17.11, 17.12	Impedance: 21.1ff	
BPSM (Binary Phase-Shift Modulation): 9.20	Leakage current: 6.5	Charge coupled devices: 5.36	
Brain, Charles, G4GUO: 9.21, 9.31	Loss: 4.49	Charging and discharging batteries: 17.23	
Bramwell, Denton, K7OWJ: 25.11	Loss angle: 6.5	Chassis	
Brick amplifier: 9.28, 9.30	Markings: 7.2	Construction: 8.25	
Bridge: 9.15, 25.51	Output tank ratings: 18.11ff	Pressurized: 18.17	
Broadband	Polystyrene: 10.15	Chat mode: 9.21, 9.47	
HF Amplifier example: 18.24ff	Reactance: 4.24	Chebyshev filter	
RF transformer: 4.59	Series and parallel: 4.21	Design normalized table: 12.11, 12.12	
Broadcast band	Silver mica: 10.15	Response: 12.3	
AM band: 11.7	Standard value filter design: 12.9	Chimneys, tube: 18.16	
Rejection filter: 12.32	Tank, plate spacings table: 18.12	Chinook wind: 20.24	
Wave trap: 12.33	Temperature coefficients: 6.5	Chip components: 8.11ff	
Brone, Jeff, WB2JNA: 9.22	Tolerances: 6.5	Capacitors: 7.4	
Brown, Jerry, K5OE: 23.6	Tuning: 10.15	Resistors: 7.4	
Bruninga, Bob, WB4APR: 9.22	Types and uses: 4.20	Choke	
Bryce, Mike, WB8VGE: 17.41, 19.47	Vacuum variable: 18.6	Common mode: 13.7	
Bucher, T. T. N.: 11.22	Voltage rating: 4.20	Resonance: 10.14	
Buffer: 5.3, 5.4, 5.43	Working voltage rating: 6.5	Resonances: 18.12ff	
Amplifier: 10.18, 10.21	Capacity, battery: 17.22, 17.23	RF: 18.12ff	
Buffering: 5.3, 5.4	CAPMan program: 20.20	Chordal hop: 20.16	
Cascode and cascaded: 5.5	Capture effect: 11.13, 15.23	Circuit	
Inverting: 5.42	Carcia, Joe, NJ1Q: 19.31	And Components: 4.8	
Noninverting: 5.43	Cardiopulmonary Resuscitation (CPR): 3.10		

C	
C-Rate:	17.1
C0G:	10.13, 10.15
Cables, lacing:	8.23
Calculus:	10.2
Calibration — Philosophy and Practice:	25.5
Call sign:	1.3
Calorimetric meters:	25.8
Cameron, Bruce, WA4UZM:	22.58
Cameron, Dave, VE7LTD:	2.10, 9.21
Campbell, Rick, KK7B:	14.64, 14.75, 14.79
CAN-X2 satellite:	23.5
Capacitance:	4.11, 4.18
Hats:	22.13
Inter-electrode:	6.11
Minimum:	18.6
Package:	6.11
Parasitic:	6.10
Stray:	6.11, 18.6
Tube, output:	18.6
Capacitor:	4.18, 6.1
Air variable:	18.6
Blocking:	18.13
Bypass:	13.1, 13.6
Construction:	4.19
Dielectric breakdown:	6.5
Dielectric layer:	6.4
Dielectrics:	6.5
Doorknob:	18.13
Effective series resistance (ESR):	6.5
End effect:	6.4
Failure:	26.22
Feedthrough:	10.21
Ideal:	6.4
Identification:	7.3
Input filters:	17.11, 17.12
Leakage current:	6.5
Loss:	4.49
Loss angle:	6.5
Markings:	7.2
Output tank ratings:	18.11ff
Polystyrene:	10.15
Reactance:	4.24
Series and parallel:	4.21
Silver mica:	10.15
Standard value filter design:	12.9
Tank, plate spacings table:	18.12
Temperature coefficients:	6.5
Tolerances:	6.5
Tuning:	10.15
Types and uses:	4.20
Vacuum variable:	18.6
Voltage rating:	4.20
Working voltage rating:	6.5
Capacity, battery:	17.22, 17.23
CAPMan program:	20.20
Capture effect:	11.13, 15.23
Carcia, Joe, NJ1Q:	19.31
Cardiopulmonary Resuscitation (CPR):	3.10
Training:	3.1
Carrier:	9.26
AM:	16.17
Exalted:	9.27
Main:	9.5
Operated relay (COR):	15.21
Shift, DSP prevention of:	16.16, 16.17
Suppression:	11.7
Carroll, R. W.:	11.24
Cascade-form IIR filter:	16.7
Cascaded	
Buffers:	5.5
Stages:	5.5
Stages, distortion:	14.12

Stages, gain:	14.10
Stages, noise factor:	14.11
Stages, noise figure:	14.11
Stages, properties:	14.10
Stages, selectivity:	14.10ff
Cascode	
Buffer:	5.5
Pair:	5.5
Case Study: Amplifier Distortion:	6.22, 6.23
Cathode:	5.8
Follower:	5.3, 5.10
Ray tube (<i>see</i> CRT)	
Cauer filter	
Design normalized table:	12.14, 12.15, 12.16
Response:	12.4
Cavity resonator:	10.30, 10.31
CCK:	9.46
CCS (Continuous Commercial Service):	18.11
CD-ROM:	5.64
CD4046:	10.46
CDMA:	9.5, 9.45, 24.5
Cebik, L. B., W4RNL:	22.14, 22.61
Cellular:	24.5
Air interfaces:	24.8
AMPS:	24.8
Bands:	24.8
CDMA:	24.8
Fundamental technology:	24.7
TDMA:	24.8
Technology:	24.6ff
Ceramic	
Band pass filter:	15.5
Coil form:	10.15, 10.18
Resonator:	10.24
Cesium clock:	25.2
CFM:	18.15
Champa, John, K8OCL:	2.1, 9.43,
	9.47, 9.54, 24.1
Channelized repeater	
operation:	15.20, 15.21, 15.23
Chaotic system:	10.5
Characteristic	
Curves:	5.6, 5.7
Impedance:	21.1ff
Charge coupled devices:	5.36
Charging and discharging batteries:	17.23
Chassis	
Construction:	8.25
Pressurized:	18.17
Chat mode:	9.21, 9.47
Chebyshev filter	
Design normalized table:	12.11, 12.12
Response:	12.3
Chimneys, tube:	18.16
Chinook wind:	20.24
Chip components:	8.11ff
Capacitors:	7.4
Resistors:	7.4
Choke	
Common mode:	13.7
Resonance:	10.14
Resonances:	18.12ff
RF:	18.12ff
Chordal hop:	20.16
Circuit	
And Components:	4.8
Breakers and fuses:	17.3
Control:	26.15
Design, CAD tools:	6.21
Digital:	26.16
Dissipated power:	6.16
Distributed elements:	6.1
Layout:	8.14, 8.18ff
Lumped elements:	6.1, 6.2
Modeling:	6.1
Norton-equivalent:	6.4
Parallel resonant:	4.49
Paths:	8.18
Resonant:	4.47
Series and Parallel:	4.8
Stray reactances:	18.8
Tank:	18.8

Tank Q:	18.5ff	Sequence:	9.46	Microprocessor:	26.15
Thermal considerations:	6.16	Component		Conventional current:	4.1
Thevenin-equivalent:	6.4	And Circuits:	4.8	Conversion	
Circular polarization:	20.24, 22.56, 23.17, 23.19, 23.34	Arrays:	5.32, 5.33	Loss:	11.15
Circulating		At RF:	6.10	Products:	11.4
Current:	18.21	Data:	7.1ff	Techniques of numbers:	5.40, 5.41
Tank current:	4.52	Failure:	26.19ff	Converter:	11.4
Class		Fuse:	4.9	Data:	16.33
A:	18.2	Ideal:	6.1	DC-DC:	17.1
AB:	18.2, 18.11	Markings:	7.1ff	Resonant:	17.1
AB1:	18.2	Models, low-frequency:	6.2	Convolutional encoder:	9.13
AB2:	18.19	Nonideal:	6.1	Cooling	
B:	18.2, 18.11	Nonlinear:	6.1	Fan:	10.31
C:	18.2	Parasitic:	6.1	Transistor:	18.18
D:	18.2	Potentiometer:	4.10	Tube amplifier:	18.15
of operation:	18.2ff	Protection:	8.7	Vacuum tubes:	18.2
Clicks, key:	9.1	Relay:	4.10	Coordination frequency:	15.20
Clip-on mount:	15.25	Switch:	4.8	Copperweld:	22.6
Clipping:	5.4, 10.4	Values:	7.1	Core	
Clock		Compression:	10.10, 11.21	Construction (of transformer):	4.57
Frequency:	5.46	1-dB compression point:	11.21	Identification:	7.4ff
Mechanism:	10.2	Second-order intercept point:	11.21	Inductor, properties:	4.26
Period:	5.46	Third-order intercept point:	11.21	Saturation:	4.26
Tick or pulse:	5.46	Computer		Corona:	20.10, 20.25
Closed loop gain, operational amplifier:	5.34	Aided-design:	6.11, 6.13	Discharge:	20.25
CLOVER		Antenna-modeling programs:	3.19	Noise:	20.25
2000:	9.20, 9.33	Architecture:	5.59	Coronal Mass Ejection (CME):	20.10
ARQ:	9.20	BIOS:	5.59	Cosmic	
Bibliography:	9.21	Connecting to amateur equipment:	19.11	Noise:	20.25
CLOVER-II:	9.19ff	Connectors:	19.10ff	Sources:	20.25
Data compression algorithms:	9.20	Control unit:	5.59, 5.60	Costas, John, W2CRR:	9.43
Diversity:	9.20	CSMA/CD bus:	19.11	Coulomb:	4.1
Efficiency choices:	9.19	Firmware:	5.59	Counter	
FEC:	9.19	Flash drive:	5.64	Divide-by-m:	5.49
Waveform:	9.19	Hardware:	5.58ff	Flip-flops forming a:	5.48, 5.49
Cluster:	9.14	Input devices:	5.65	Frequency:	25.19
CME:	20.10	Memory (Cache vs. Main):	5.62	Three-bit binary:	5.49
CMOS:	5.31, 5.55, 5.56, 25.51	Memory types:	5.61	Up/down:	5.49
Circuits:	5.55, 5.56	Modem:	5.65	Coupled	
Driving TTL:	5.58	Output devices:	5.66	Filter:	12.28
Inverter; internal structure of:	5.55	Parallel-port interfacing:	5.67, 19.11	Lightly:	10.3
Subfamilies:	5.55	Power supplies:	5.71	Networks:	10.3
To TTL interface:	5.57	Sound card:	5.66	Coupling	
CMRR:	5.34	Timing:	5.60	Coefficient of:	4.28
Coaxial		TNC connection:	19.12	Network:	10.4
Lines (cable):	21.1, 21.8	Uses with Amateur Radio:	1.5	Courtesy	
Semi-rigid:	10.30	Video displays:	5.66	Beep:	15.21
Transmission line:	21.4	Conductance (G):	4.2, 4.3, 4.11, 4.44	Tones:	15.24
Code Division Multiple Access (CDMA):	9.5	Conducted signal:	13.1	CP (Circularly Polarized):	23.17, 23.19
CODEC:	2.7	Conductive grease:	22.37	CPFSK:	9.9
Coded PPM (PCM):	9.24	Dow Corning Molykote 41:	22.38	CPR training:	3.1
Coefficient of coupling:	4.28, 4.54	Noalox:	22.38	CPU:	5.60
Cohen, Stu, N1SC:	2.1	Penetrox:	22.38	Cravey, Ed, KF4HPY:	2.5
Coil		Conductors		Critical frequency:	20.7, 20.8
Tank:	18.12	Center:	21.1	Cronkite, Walter, KB2GSD:	1.5
Transmitter conductor sizes:	18.12	Outer:	21.1	Crosstalk:	21.8
Cold		Perfect:	6.1	Crowbar:	17.1
Front:	20.23	Conjugate match:	21.10	Circuits:	17.16
Oven:	10.21	Connectors:	19.5	CRT:	5.11
Welding:	10.23	RF, assembly diagrams:	19.9ff	Crystal	
Collins Radio Company:	10.14	Construction:	8.1ff, 26.5	Aging:	10.23
Color SSTV history:	9.34	Ground-plane (PC board):	8.8	AT cut:	10.22
Colpitts:	10.13, 10.15	Hints:	8.20ff	Cold welding:	10.23
Combinational logic:	5.42ff	Microwave:	8.22	Equivalent series resistance (ESR):	10.25
Commander:	24.12	Notes:	8.26	Filter:	14.28
Common		Painting:	8.26	Evaluation:	12.18
Base/Collector/Emitter amplifiers:	5.22	Terminal-and-wire:	8.10	Multielement:	14.28
Emitter amplifier:	26.14	Contest:	2.1, 2.2	Gravity:	10.23
Emitter switch:	26.14	And awards:	1.5	Monolithic filter:	12.21
Mode choke:	13.7	ARRL Sweepstakes:	2.3	Motional capacitance:	10.24
Mode signals:	13.1	DX:	2.3	Motional inductance:	10.24
Communications		EME:	2.11	Oscillator circuits:	10.24ff
Circuits: Analysis and Design:	10.4	Field Day:	2.3	Overtone:	10.22, 10.22ff, 10.24, 10.25, 10.27
Receivers: Principles and Design:	11.22	Multioperator:	10.7	Quartz, filter:	12.17
Community events (Hams in):	1.6	QSO Parties:	2.3	Resonance:	10.22
Computer		RTTY:	2.3	Series mode:	10.25
Networking:	5.71	VHF, UHF and Microwave:	2.3	Set:	14.14
Comparator:	5.35	Continuous Phase FSK (CPFSK):	9.9	Spurious response:	10.24
COMPASS-ONE satellite:	23.5	Continuous wave (see also CW):	10.3	Standard load:	10.26
Complimentary		Control		Thickness shear:	10.22
Code Keying (CCK):	9.46	Circuitry:	26.15	Unwanted modes:	10.24
		Grid:	5.9	CSMA/CD:	24.5

CTCSS:	15.21, 15.21ff, 15.24, 15.27, 15.28
Current:	4.11
Baluns:	21.16
Circulating:	4.52
Conventional:	4.1
Eddy (in transformer):	4.57
Effective:	4.16
Inrush:	17.10
Instantaneous:	4.15
Loop:	22.1
Node:	22.1
Peak:	4.16
Peak-to-peak:	4.16
Ratio of transformer:	4.55
Root mean square (RMS):	4.16
Sources:	6.3
Curvature, Earth:	20.3
Cute 1.7 + APDII satellite:	23.5
Cutoff region:	5.21
Cutting metal:	8.25
CW:	9.1, 9.3, 9.7ff, 10.3, 11.6, 11.7
Falltime:	9.7
HiMite transceiver:	15.15
Mode at VHF/UHF:	14.47
Transmitter:	10.1
Waveshaping:	11.7
Cyclone	
High pressure:	20.23
Wave:	20.23

D

D layer, nighttime:	20.11
D'Arsonval:	25.3ff, 25.51
D-C (direct conversion):	14.16ff
Transceivers:	16.29ff
DAC:	10.23
Glitches:	10.47
Programmable multiplying:	10.38
Damn-Fast Fourier transforms (DFFT):	16.25
Damped waves:	10.3
Danzer, Paul, N1II:	5.38, 5.58, 15.20
Darlington	
Transistor:	17.1
Transistor pair:	5.5, 17.14
Data	
Converters:	16.33
Converters, quantization noise:	16.3
Modes:	9.13
Rate:	5.70
Sheets (Manufacturers):	5.7
Daughters, George, K6GT:	18.37
Davidoff, Martin, K2UBC:	9.25
Davies, Paul, M0ZPD:	2.10, 9.22
Dayside MUF:	20.17
dBc:	10.8
dBc/Hz:	10.8
dBm:	14.2
DBM (double-balanced diode mixer):	11.17ff
Amplitude modulation with:	11.24
Biphase-shift keying modulation with:	11.25
Conversion loss:	11.18
Dynamic range:	11.18, 11.19
First-order response:	11.19
Noise figure:	11.19
Phase detection with:	11.25
Second-order IMD:	11.19
Specifications:	11.18
Termination-insensitive:	11.23
Termination-sensitive:	11.23
Third-order IMD:	11.19
DBPSK:	9.46
DC	
Instruments:	25.3ff
Accuracy:	25.4
Basic meters:	25.3ff
Current ranges:	25.4
DC power:	25.6
Extending current range:	25.4
Resistance measurement:	25.6
Shunts:	25.5
Voltmeters:	25.5ff

Level shift:	11.5
Offset:	11.13
DC-DC converter:	17.1
DDC:	16.30, 16.31
Chips and coprocessors:	16.33
DDS (Direct Digital Synthesis):	10.32ff
Digital BFO generation and:	16.14
Project; High-performance:	16.41
Typical output spectrum of:	16.41
Dead bug construction:	8.8
Deburring tool:	8.5
Decibel (dB):	13.1
Decimal system:	5.39
Decimation:	16.4
Project:	16.36
Decision threshold:	9.3
Decoder	
Morse:	9.3
Viterbi:	9.13
Delay:	9.1
Group:	9.15
DeMaw, Doug, W1FB:	10.28
Demodulation:	11.1ff
AM:	11.8
FM and PM:	16.14
Demodulator:	9.30, 11.1ff
AFSK:	9.9
Digital AM and SSB:	16.11ff
Dual:	9.9
Phase:	9.6
Synchronous, exalted-carrier:	16.13
DeMorgan's theorem:	5.44
Desoldering:	8.4
Despreading:	9.44
Destructive interference:	20.9
Detection	
Quadrature:	11.12, 11.13
Slope:	11.12
Detector	
Digital quadrature:	16.13
Phase-frequency:	10.36ff, 10.39
PLL:	9.3
Taylor:	16.30
Deviation	
Frequency:	9.6
Level:	9.15
Meter:	9.7
DHCP:	24.5
Diagram, block:	26.7
Diana, Gary M, Sr, N2JGU:	19.17
Dibit:	9.12
Dielectric:	4.19
Breakdown:	6.13, 6.14
Capacitor:	6.5
Capacitor, air:	6.5
Capacitor, ceramic:	6.5
Capacitor, electrolytic:	6.5
Capacitor, mica:	6.5
Capacitor, paper:	6.5
Capacitor, plastic film:	6.5
Capacitor, vacuum:	6.5
Resonator oscillator (DRO):	10.31
Strength:	6.13
Dieterich, Mark, N2PGD:	2.5
Differential	
Amplifier:	5.35
Mode signal:	13.1
Diffraction:	20.2
Knife-edge:	20.3
Digipeater:	9.15, 15.21
Digital	
Circuit:	26.16
Communications:	2.1, 2.9
Filters:	16.5ff
Fundamentals:	5.38ff
ICs:	5.51ff
Meters (DVM):	25.3ff
Mode software:	24.12
Modem:	9.7
Modes:	1.5
Multimeter (DMM):	26.2

PLL Frequency Synthesizers—Theory and Design:	10.27
Quadrature detector:	16.13
Signal Processing (see DSP)	
Signals and components:	5.38ff
Speech processing:	16.16ff
Tristate device:	26.17
Voice Working Group:	9.10
vs. Analog:	5.38
Digital Radio Mondiale (DRM):	9.31
Digital Signal Processing (DSP):	9.29
Digital Voice	
Amateur radio:	9.31
Modes:	9.31ff
Working Group:	9.31
Digitally temperature compensated oscillator (DTCXO):	10.23
DIN plug:	19.6
Diode:	6.5ff
Avalanche:	10.16
Bilateral switch:	5.14
Circuits:	5.20
Common applications:	5.19
Depletion layer:	6.7
Diffusion capacitance:	6.7
Dynamic resistance:	6.7
Failure:	26.24
Fast-recovery:	17.5
Gate to ground:	10.18
Germanium:	17.5
Gunn:	10.30
Hot-carrier:	5.17, 11.16
Ideal:	6.5
In series and parallel:	17.9
Light emitting (LED):	5.28, 5.29
PIN:	5.17
PN junction:	6.7
PNPN:	5.14
Reference:	10.16
Replacement:	26.24
Response curve of photo:	5.28
Reverse breakdown:	6.7
Ring mixer:	10.35
Ring modulator:	10.6
Schottky:	5.17, 6.8, 11.16
Semiconductor variety:	5.17ff
Silicon:	17.5
Switching time:	6.7, 6.8
Temperature compensated:	10.16
The constant current:	5.19
Tube:	5.8
Tuning:	10.34
Tunnel:	10.30
Turn-on voltage:	6.6
Varactor:	5.18, 10.34
Zener:	5.18, 6.7, 10.16, 17.12
Dip meter:	18.12, 21.10, 22.27, 26.3
Grid dip meter:	21.10
Diplexer	
Bandpass:	11.24
Filter:	12.35
Filter design software:	12.36
High-pass/low-pass:	11.24
Dipole antenna:	22.4
Center insulator:	22.7
Construction:	22.7
Drooping:	22.8
Feed method:	22.5
Full sloper:	22.8
Inverted-V dipole:	22.8
Orientation:	22.8
Shortened:	22.8
Sloping dipole:	22.8
Trap:	22.10
Direct Conversion (D-C):	14.16ff
Transceivers:	16.29ff
Direct Current (dc):	4.1, 4.12
Pulsating:	4.12
Direct Digital Conversion (see DDC)	
Direct Digital Synthesis	
(Also see DDS):	10.32, 10.47ff
Direct synthesizer:	10.32

Direct-sequence spread spectrum:	9.44, 9.46	Duntemann, Jeff, K7JPD:	9.54	Elevation	
Direction finding (DF):	2.1, 2.6, 13.1ff, 13.17	Dupe sheet:	2.3	And Azimuth:	23.36ff
Directional wattmeter (see also Reflected power meter):	21.6, 25.12	Duplex		Control:	23.18
Disabilities:	1.2, 19.4	Full duplex:	15.21	Patterns:	22.15, 22.24, 22.44
Discrete (components or circuitry):	5.29	Duty cycle:	9.9	Elliptic function filter:	12.4
Discriminator:	9.9, 11.12	Satellite:	23.3	Elliptical orbit:	23.3
Displacement current:	6.10	DVD:	5.64	Elmer (Mentor):	1.8, 2.4
Display, video:	5.66	DVM (digital voltmeter):	25.3ff, 25.4, 25.51	ELNEC modeling program:	22.29
Dissipation		Measuring inductance and capacitance:	25.21ff	ELSIE filter design software:	12.10
Grid:	18.19	DX:	2.1	EMC	
Plate:	18.10	Awards:	2.1	Automobile:	13.14
Plate limit:	18.11	Century Club (DXCC) award:	1.5, 2.1ff	Fundamentals:	13.3
Transistor, power:	18.11	DXpeditions:	1.5, 2.2	Emcomm:	9.49
Distortion:	9.1	Nets:	2.2	EME:	23.32ff
Amplitude:	11.4, 26.10	PacketCluster:	2.2, 2.9, 9.14	Calculating capabilities:	23.36
Cascaded stages:	14.12	DXLab software:	24.12	Contests:	2.3, 2.11
Delay:	11.4	Dynamic		Earth-Moon-Earth:	2.10, 20.24, 20.25
Frequency:	11.4, 26.10	(edge-triggered) control:	5.46	Frequencies and Scheduling:	23.40
Harmonic:	11.4	RAM (DRAM):	5.62	Net information:	23.40
Intermodulation:	18.19	Range:	9.3, 14.8, 25.43	Operating techniques:	23.39
Intermodulation (IMD):	11.4	Resistance:	14.4	Operating times:	23.39
Measurement:	26.10	Dynamic plate resistance:	18.3	Polarization effects:	23.34
Nonlinear:	11.3, 11.4			Polarization misalignment:	23.35
Products:	11.3	E		Transmitter requirements:	23.35
Receiver:	26.17	E layer:	20.12ff	Emergency	
Second-harmonic:	11.4	Auroral:	20.13	Communications:	2.1, 2.5
Single stage:	14.7	Field aligned irregularities:	20.13	Coordinator (EC):	2.5
Square-wave:	26.11	E-mail:	24.5	Helping in an:	1.6
Dithering:	16.4, 16.30	E. F. Johnson:	22.49	Locator transmitter (ELT):	2.5
Diurnal pumping:	23.17	Earth		Operations:	15.23ff
Diversity reception:	9.9	Atmosphere:	20.2	EMI:	13.2
Divider:	25.51	Curvature:	20.3	Common mode:	13.3
Programmable:	10.32	Earth (ground)		Cure:	13.5
DL4KCK:	9.43	Average real:	22.2	Differential mode:	13.3
DL6WU:	23.33	Earth-Moon-Earth (EME):	2.10, 20.24, 20.25, 23.32ff	Direction Finding:	13.1ff
DMM (digital multimeter):	25.51	Contests:	2.3, 2.11	Source:	13.4
DO-64 (OSCAR 64):	23.5	Eastern Pacific High:	20.23	Emission:	13.1
Dogpile:	24.1	Ebers-Moll model, equation:	6.26, 6.27, 6.28	Characteristics:	9.2ff
Doig, Al, W6NBH:	22.39	Echo (OSCAR 51):	23.5	Classifications:	9.2
Dome, Robert, W2WAM:	9.29	Echolink:	2.10, 9.22, 24.2	Designators:	1.13
Dominion Radio Astrophysical Observatory:	20.9	Eddy currents:	4.57, 6.9	Radiated:	13.1
Doorknob capacitor:	18.13	Eddystone:	10.15	Secondary:	5.10
Doppler: 9.1, 20.12, 20.13, 20.24, 23.6, 23.8, 23.9		EEPROM:	5.62	Spurious:	1.13, 13.1, 13.4, 13.9
Ionospheric:	9.3	Effective		Standards:	1.13
Radar:	10.30, 20.13	Current:	4.16	Emitter follower:	5.3
RDF antenna:	13.23	Value calibration:	25.9	Encoder, convolutional:	9.13
Shift:	9.3	Voltage:	4.16	Encoding, luminance-chrominance:	9.34
Double		Efficiency:	4.7, 9.1	Encryption:	24.5
Balanced diode mixer (DBM):	11.16, 15.2	Amplifier:	18.2	End effect:	6.4, 22.1
Ball bearings:	10.18	Bandwidth, SSB:	9.27	Energy:	4.1, 4.6, 4.8
Sided PC boards:	8.16ff	Power:	9.27	Storage in capacitor:	4.18
Downlink:	23.2	Tank circuit:	18.5	Storage in inductor:	4.28
DQPSK:	9.46	Eggbeater antenna:	23.6	England, Tony, W0ORE:	1.7
DRAM:	5.62	Ehrhorn, Dick, W0ID:	18.1	Envelope:	11.5
Drift-Free VFO:	14.84	EIA-RS-232:	5.70, 19.10	RF shaping:	14.48
Drilling		Eimac Radio Club, W6HB:	2.11, 23.32	Environmental Protection Agency:	3.18
Bits:	8.5	Elecraft K2:	15.2	Epidemiology	
Techniques:	8.17, 8.26	Electric field:	10.2, 20.1	EMF exposure:	3.14
DRO:	10.31	Electrical		EPR0M:	5.62
Dry cells:	10.15	Noise:	13.11, 13.15	eQSO:	2.10, 9.22
DSP:	9.29, 10.52, 15.1, 16.1ff	Service entrance panel:	3.8	Equatorial	
Algorithms for radio:	16.5ff	Shock:	3.10	Belt:	20.12
At baseband:	16.26	Signals and components:	5.1ff	Region:	20.13
Bibliography:	16.35	Wavelength:	21.3	Equipment	
Coprocessors:	16.33, 16.34	Wiring around the shack:	3.3	Arranging:	19.3ff
Embedded, Hardware for:	16.32	Electromagnetic		Bench:	26.2
Filter-design software:	16.34	Compatibility (EMC):	13.1	Homebrewing:	1.6
IF:	23.17	Energy spectrum:	4.14	Interconnecting:	19.5ff
Noise reduction:	16.18	Field safety:	3.12	Stacking:	19.3
Notch filter:	16.18	Fields, athermal effects of:	3.13	Test:	26.1
Other design tools for:	16.35	Interference (EMI):	13.1	Equivalent series and parallel circuits:	4.45
Projects:	16.36ff	Radiation:	20.1	Error detection:	5.70
Radio architectures for:	16.26ff	Wave:	20.1	Escapement:	10.2
Software Radio Design and:	16.1ff	Electromotive force (EMF):	4.1	ESN:	24.5
System software:	16.34	Electron:	4.1, 20.2, 20.6, 20.7	Esneault, Dick, W4IJC:	2.6
DSSS:	24.4	Gun:	5.11	Etching techniques:	8.14
DTCXO:	10.23	Electronic Industries Alliance (EIA):	3.1, 7.1	Ethernet:	24.5
DTMF:	15.21, 15.23, 15.24	EIA-222 standard:	3.1	Euler identity:	16.19, 16.20
Dual modulus division:	10.32	Electrostatic field:	4.18	Evaporation inversion:	20.24
Ducting:	20.21			Exalted carrier:	9.27
Dummy load:	25.51			Exclusive-OR (XOR):	10.35
				Exosphere:	20.7

External Automatic Antenna Switch for Yaesu/ICOM:	19.31	Filter:	13.1	Firewall software:	9.53, 24.4
Extraterrestrial propagation:	20.24	AC line:	13.6	FireWire:	5.71
EZNEC modeling program:	22.44, 22.52	Active:	12.30	First carrier null:	9.6
F		Anti-aliasing:	16.2	First order product:	5.4
F layer:	20.7, 20.15	Audio (AF):	12.1	Fisher, Reed E., W2CQH:	12.1, 24.1, 24.6
F1 layer:	20.7, 20.14	Audio filter supplement:	14.26ff	Fixed point DSPs:	16.4, 16.5, 16.32
F2 layer:	20.7ff	Band-pass:	12.2	Flash drive:	5.64
Nighttime:	20.14	Band-pass design:	12.6	Flat line:	21.6
Propagation:	20.15ff	Band-stop:	12.2	Flat-topping:	9.28
Transequatorial spread F:	20.17	Bandpass, 144 or 222 MHz:	12.37	Fletcher, Rick, KG6IAL:	23.30
f/D:	23.21	Bessel:	12.4	Flip-flop:	5.46ff
Facsimile:	9.32ff	Bessel, design table:	12.11	D:	5.47
References:	9.34	Broadcast band rejection:	12.32	J-K:	5.48
Fading:	9.1, 9.31, 14.14, 20.9	Butterworth:	12.3	Master/Slave:	5.47
Fast flutter:	20.24	Butterworth, design table:	12.11	Triggering of a:	5.46
Flutter:	20.18	Capacitor-input:	17.11, 17.12	Unlocked S-R:	5.46
Frequency selective:	9.3	Cauer:	12.4	Floating point DSPs:	16.4, 16.5, 16.32, 16.33
Selective:	11.7	Cauer, design table:	12.14, 12.15, 12.16	Floppy disk drive:	5.64
Wave Polarization rotation:	9.3	Chebyshev:	12.3	Flux:	4.25, 8.3
Failure of component:	26.19ff	Chebyshev, design table:	12.11, 12.12	Density:	17.3
Fall time, CW:	9.7	Choke-input:	17.12	Density (B):	4.11, 17.3
Fanout:	7.9	Coupling:	12.28	Leakage of transformer:	4.56
Far-field ground losses:	22.23	Crystal:	14.28	Flywheel effect:	18.3, 18.4, 18.19
Faraday rotation:	20.24, 23.34, 23.38	Crystal, evaluation:	12.18	FM (Frequency Modulation):	9.3, 9.6ff, 9.26ff, 9.30ff, 10.5
Fast		Design examples:	12.11ff	And PM:	10.27
Diodes:	5.17	Design software, DSP:	16.34	And PM Demodulation:	16.14
Fourier Transform (FFT):	10.8	Digital:	16.5ff	Birds (satellites):	23.6ff
Fast-Scan Television (ATV):	9.38ff	Diplexer:	12.35	Data ports:	9.15
FAX:	9.9, 9.32ff	Effect of component Q:	12.9	Narrowband:	9.30
FAX480 program:	9.33	Elliptic-function:	12.4	Service Monitor:	9.7
References:	9.34	EMI cure:	13.5	True FM, the truth about:	11.10
FDM:	9.4	Families:	12.2	Wideband:	9.30
FDMA:	9.4, 24.5	FIR:	16.5, 16.6	Focal ratio (f/D):	23.21
FEC:	9.12	Frequency response:	12.2	Foehn wind:	20.24
Federal Communications Commission		Harmonic optimized:	12.34	Fog:	20.20
(FCC):	1.9, 2.5, 3.18	High-pass:	12.2, 13.1, 13.6	Foldback current limiting:	17.15
Bandwidth rules:	9.1	High-pass design:	12.5	Forced air cooling:	6.19
MPE regulations:	3.17	High-pass, design example:	12.13	Ford, Steve, WB8IMY:	9.12, 9.13, 9.14, 9.22, 9.54
Regulations and RFI:	13.2	IF:	14.26ff	Fordham, David, KD9LA:	9.54
RF-Exposure regulations:	3.16, 3.17	IIR:	16.6ff	Forecast, ionospheric	
Feedback:	5.3	Insertion loss:	12.28	Long range:	20.18
Desired:	14.3	Intermediate frequency (IF):	12.1	Propagation:	24.3
Loop oscillator:	10.1	LC (lumped element):	12.5	Short range:	20.18
Negative:	5.3	Low-pass:	11.11, 12.2, 13.1, 13.6	Forward	
Positive:	5.3	Low-pass design:	12.5	Direction (antenna pattern):	22.8
Potentiometer:	9.24	Low-pass, 1.8-50 MHz:	12.37	Error Correction (FEC):	9.12
Undesired:	14.32	Low-pass, design example:	12.12	Scatter:	20.11
Feedthrough capacitor:	10.21	Monolithic crystal:	12.21	Wave:	21.4
FEMA:	2.5	Narrow band-pass, design example:	12.15	Fourier transform:	16.5, 16.19ff
Ferrite		Normalized values:	12.11	Discrete (DFT):	16.19
Bead:	10.30	Notch:	13.1	Inverse:	16.6
Broadband RF transformer:	4.59	Order:	12.2	Fox hunting:	2.6, 13.24ff
Rod antenna for RDF:	13.18	Output:	18.10	Fox, Terry, WB4JFI:	9.16
Toroidal inductor:	4.36	Passband ripple:	12.4, 12.10	Fractal images:	10.5
FET:	5.15, 5.23ff, 6.28, 18.3	Passive CW:	12.41	Fractional N:	10.32
Biasing:	6.28, 6.29	Power supply:	17.11	Synthesis:	10.49ff
Biasing circuits:	5.25	Quartz crystal:	12.17	Franklin, Benjamin:	4.1
GaAs:	23.16	Radio (RF):	12.1	Free space:	20.2
Schematic symbols:	5.23	RC high-pass:	10.38	E-plane pattern:	22.15
Voltmeter:	25.51	RC low-pass:	10.38	Loss:	20.25
FFT:	10.8, 16.20ff	References:	12.44	Frequency (f):	4.11, 4.13, 25.1ff
Decimation-in-time:	16.23	Simple digital notch:	16.8	Accuracy:	26.15
FHSP:	24.4	Skirt:	10.10	Calibration:	25.2
Fiber optics:	5.29	Standard capacitor value design:	12.9	Coordinator:	15.21
Fidelity:	9.1	Standard value capacitor design		Counters:	25.19
Field		software:	12.34	Critical:	20.7, 20.8
Aligned, ionization:	20.18	Surface acoustic wave (SAW):	12.21	Deviation:	9.6
Aligned, irregularities:	20.13	Switched capacitor (SCF):	12.31	Difference:	11.3
Aligned, scattering:	20.2, 20.6	Switching:	14.28	Discrimination:	11.11
Day:	1.5, 2.3, 22.42, 22.64	Synthesizer loop:	10.33	Distortion:	26.10
Day safety:	3.2	Time delay:	12.4	Divider:	10.33, 10.39
Electric:	10.2, 20.1	Transient response:	12.4	Division Multiple Access:	9.4
Electromagnetic (EM):	3.13	Transmission line:	12.22	Division Multiplexing:	9.4
Electrostatic:	4.18	Transmission line, bandpass:	12.24	Marker:	25.51
Magnetic:	4.25, 10.2, 20.1	Transmission line, emulating LC:	12.25	Marker generators:	25.14ff
Organization, ARRL:	2.1, 2.4	Transmission line, quarter wave:	12.24	Measurement:	25.14
Field-Effect Transistor (see FET)		Wide band-pass, design example:	12.14	Meter:	26.5
FIGS code:	9.8	Filtering:	5.3, 12.1ff, 17.11, 17.12	Modulation (FM):	9.6ff, 9.30ff, 10.6, 11.9ff
Filament:	18.1, 18.13	Filtration (dc power supply):	17.11, 17.12	Multipliers:	11.10
File Transfer Protocol (FTP):	9.16	FIR filters:	16.5, 16.6	Multiply:	10.22
		Design variations:	16.36ff		
		Fire extinguisher:	3.10		

Hill:	10.16	Linearity and noise:	14.47	Input/Output (I/O) devices:	5.59
HiMite (simple CW transceiver):	15.15	Port:	11.4	Bidirectional:	5.63
Hinternet:	9.47	Rejection:	11.4	Inrush current:	17.10
Hints, construction:	8.20ff	Speech clipper:	14.46	Insertion loss:	12.28
Hitch-pin clip:	22.17, 22.64	IF-DSP		Instantaneous voltage and current:	4.15
Home, building techniques:	8.8ff	at a low IF:	16.27ff	Institute of Electrical and Electronic Engineers (IEEE):	3.13, 3.15
Homebrewing equipment:	1.6	Conversion scheme:	16.28	Insulators, Antenna:	22.6
Hood, Michael, KD8JB:	22.58	Receiver:	16.27ff	Integrated circuit (Also see IC):	7.6
Horizon, radio:	20.19	IIR filters:	16.6ff	Failure:	26.26
Horowitz:	10.16	Image		Monolithic microwave (MMICs):	6.2
Horrabin, Colin, G3SBI:	11.26, 11.27	Advanced Digital Video (ADV):	2.7	Integration:	9.3
Horsepower:	4.7	Communications:	2.1, 2.7	Integrator:	10.38, 10.39, 10.42
Horzapa, Stan, WA1LOU:	9.16, 9.22	Impedance:	18.7	Intelligibility:	9.1
Hot-carrier diode:	5.17	Modes:	9.32ff	Intercept point:	14.8
HP-3561A:	10.10	Pixels:	2.8	Interference (Also see EMI):	9.3, 9.31, 13.1
HP-8640B:	10.10, 10.12, 25.41	Rejection:	11.3, 11.7	Destructive:	20.9
HPBW (half-power beamwidth):	23.11	Response:	15.2	Intersymbol (ISI):	9.5
HSCW:	9.8	Response, D-C receiver:	14.19	Locating:	2.6
HSMR Radio:	9.47	Slow-scan TV (SSTV):	2.8	Pattern:	20.3
Antennas:	9.51	Imaginary number:	10.38	Reduction techniques with DSP:	16.17ff
Applications:	9.47ff	IMD ratio:	14.8	Wideband:	14.30
Basic station:	9.50	Immunity (to interference):	13.1	Interflex:	10.45
Circular polarization:	9.52	Immunity, noise:	9.1	Intermodulation Distortion (IMD):	9.28, 10.1, 10.3, 10.7, 13.1, 15.22, 18.19
Circularly polarized space diversity:	9.52	Impairments, transmission:	9.3	Products:	5.4
Emergency communications:	9.48ff	Impedance:	4.11, 4.42	Internal	
Frequencies:	9.54	Antenna:	21.1	Impedance:	6.4
High Speed Multimedia (HSMR):	2.1, 2.7	Characteristic:	21.3, 21.10	Resistance of batteries:	17.22
Higher power:	9.52	Discontinuity:	21.4	International	
Mobile:	9.50	Equivalent series and parallel circuit:	4.45	Amateur Radio:	1.9
References:	9.54	Image:	18.7	Amateur Radio Union:	2.1
Relay:	9.49	Internal:	6.4	Electrotechnical Commission (IEC):	7.1, 11.3
Repeaters:	9.50	Matching:	14.52, 22.54	Reply Coupon (IRC):	2.2
Space diversity:	9.52	Baluns:	22.55	Space Station (ISS):	1.7
Surveys:	9.51	Delta match:	22.54	Internet	
Working Group:	9.47	Folded dipole:	22.54	Interest groups:	24.3
Huffman coding:	9.18	Gamma and T matches:	22.54	Propagation forecast sites:	24.3
Huntington, Howard S., K9KM:	24.1	Normalized:	21.4	Useful sites:	24.2
Hurricane Katrina (2005):	2.5	Ohm's Law for:	4.46	World wide web:	24.1ff
Hutchinson, Chuck, K8CH:	22.1ff	Parallel circuit:	4.44	Internetworking:	9.21ff
Hutchinson, Sylvia, K8SYL:	22.14	Parallel equivalent:	18.5	Bibliography:	9.22
Hyatt, David, K1DAV:	2.5	Ratio of transformer:	4.56	Interpolation:	16.4, 16.15
Hybrid		Series circuit:	4.42	Interstage, load and Z matching:	5.5
Circuitry:	5.29	Series equivalent:	18.5	Intersymbol Interference (ISI):	9.5
Combiner:	25.51	Surge:	21.3	Introduction to RF Design:	6.23, 6.26, 11.21
Combiners:	25.34	Terminating:	21.4	Inverse Fourier transform:	16.6
Pi model:	6.24	Transformation:	4.53, 14.52ff	Inversion:	20.23
Hysteresis:	4.26, 4.57, 6.9	Transformation, cascaded circuits:	14.52	Evaporation:	20.24
Loop:	6.9	Transformation, matching networks:	18.33	Radiation:	20.22
		Transforming networks:	14.58	Temperature:	20.22
I		In-Band On-Channel (IBOC):	9.31	Inverted-V dipole:	22.8
IARU:	1.17	Index, Refractive:	20.7	Inverter (logic):	5.42
IC		Indirect synthesizer:	10.32	Inverting buffer:	5.42
Advantages and disadvantages:	5.31, 5.32	Induced voltage:	4.27	Ion:	4.1
Common linear types:	5.32ff	Inductance and inductors:	4.11, 4.25, 6.1ff	IONCAP program:	20.20
Digital:	5.51ff	Alternating current in:	4.31	Ionized column:	20.14
Header plugs:	8.11	Construction techniques:	6.15	Ionogram:	20.7
Hybrid:	5.29	Coupling:	6.13	Ionosonde:	20.7
Layout:	5.30	Direct current through:	4.27	Ionosphere:	9.3, 20.6, 20.7
Linear:	5.29	Hysteresis:	6.9	Disturbance:	20.8
Master:	7.7	Magnetic core, construction:	6.9	Earth:	20.9
MMIC:	5.32	Markings:	7.4	Layers:	20.9
Monolithic:	5.29ff	Mutual:	4.28	Propagation:	1.6, 20.6
Substrate:	5.29	Of straight wire:	4.34	Refraction:	20.7
ICAS (Intermittent Commercial & Amateur Service):	18.11	Self:	4.27	Storm:	20.10
ICOM		Series and Parallel:	4.29	IP Videoconferencing (IPVC):	9.47
IC-706MKIIG:	15.2	Winding:	8.23ff	IrDA (Infrared Data Access):	5.71
IC-745:	10.11	Induction:	13.1	IRLP:	2.10, 9.21ff, 24.2
IC-765:	10.49, 10.52, 11.26	Inductive reactance:	4.31	Iron-core	
ICs		Inductor:	4.25	Inductor:	4.35
Header plugs:	8.11	Air-core:	4.32	Transformer:	4.55
ID-O-Matic:	19.20	Calculating practical:	4.32	Iron-on resist:	8.16
Ideal (component):	6.1	Failure:	26.23	Isolation:	10.21
IEEE:	24.4	Ferrite toroidal:	4.36	Port-to-port:	10.8, 11.4
1394 (FireWire):	5.71	Iron-core:	4.35	Reverse:	10.21
802.11 WLAN:	2.7, 5.71	Powdered-iron toroidal:	4.35	Isotropic radiator:	22.3
IF		RF circuits:	4.28	ITA2:	9.8
Choosing the first IF:	14.31	Slug-tuned:	4.35	ITU:	1.9
Filter:	12.1, 14.26ff, 14.45	Industrial Communications Engineers (ICE):	3.8	Radio Regulations:	9.3
Ultimate attenuation:	14.26	Information Receiving Station (IRS):	9.12	Region 1:	10.7
		Information Sending Station (ISS):	9.12		
		Infrared:	20.1		

J		Keplerian elements: 23.6	Limit switches: 22.49
Jackscrew drive: 23.18		Kesteloot, André, N4ICK: 9.43, 9.45	Limiter: 10.6, 10.27, 15.5
Jackson Bros: 10.15		Key clicks: 9.1, 9.7	Linden, Louis, KI5TO: 9.22
Jansson, Dick, KD1K: 6.17, 23.26		Keying	Line of sight: 15.23, 20.3, 20.19, 22.1
Jarvis, Tony, G6TTL: 17.46		Rate: 9.7	Linear
JE3HHT: 9.36		Speed: 9.3	Amplifier: 9.28, 18.11
Jennings vacuum relays: 22.48		Transmitter: 9.8, 26.18	Frequency shifter: 11.4
Jessup, G.R., G6JP: 10.30		KF4HPY: 2.5	Regulators: 17.12ff
JFET: 5.15, 11.25		KF6DX: 16.1	Transponder: 23.1ff
Biasing: 6.28		KF6OQO: 9.42	Linearity: 5.2
Large-signal operation: 6.29		KG5OG: 2.9	Amplifier: 18.2
Jitter: 10.34		KG0GN: 5.38	Lithium
Jones, Bill, K8CU: 12.37		KH6UK: 23.32	Battery: 17.21
Jones, H. E.: 11.14		KI5PG: 17.44	Ion (Li-ion) cell: 17.22
Josephson Junction: 25.5		KI5TO: 9.22	Tantalate: 10.24
Joule: 4.1, 4.6		KI6WX: 10.11, 10.52, 19.25	LNB: 10.44
Junction Field-Effect Transistor (see JFET)		KI6YN: 2.3	Load resistance: 18.3
JVFAX program: 9.33		Kinetic energy: 10.2	Loading: 22.24
		Kirchhoff	Local area network (LAN) card: 5.63
		First (Current) Law: 4.4	Local Hour Angle (LHA): 23.36
		Second (Voltage) Law: 4.4	Local oscillator (LO): 10.1
K		KISS capability: 9.16	Feedthrough: 11.3
K index: 20.11, 20.18		KK7B: 14.64, 14.75, 14.79	Leakage: 10.8
K1DAV: 2.5		KL7IBA: 19.29	Port: 11.4
K1DJW: 2.5		Klystron: 5.12, 10.31	Suppression: 11.7
K1JT: 2.9, 2.11		KN6KB: 9.21	Locating sources for parts: 8.24
K1OF: 9.16		Knife-edge diffraction: 20.3	Lock acquisition: 10.37
K1RFD: 2.10, 9.22, 24.2		KO4NR: 19.51	Log book: 2.3
K1RO: 17.36		Kollar, Larry: 2.1	Paper and computer logs: 2.3
K1STO: 1.2		K0OV: 13.17	Logarithmic amplification: 5.4
K1SWL: 15.15		K0RZ: 23.21	Logbook of the World (LoTW): 2.2, 24.12
K2UBC: 9.25		Kp: 20.11	Logging software: 2.3, 24.12
K3BC: 9.38		KP4BPZ: 23.32	Logic
K4ERO: 9.26, 9.27		Kramer, Klaus, DL4KCK: 9.43	Bipolar families of: 5.52
K5GNA: 23.21, 23.26, 23.27, 23.30		Kreuter, Rod, WA3ENK: 19.48	Combinational: 5.42ff
K5KVH: 24.1		Krome, Ed, K9EK: 23.21	Comparing families of: 5.51ff
K5OE: 23.6, 23.21		Krugh, Paul, N2NS: 3.1	Gate: 26.17
K6GT: 18.37		KU7G: 8.16	Gate crystal oscillator: 10.28
K6JEY: 25.1		Kuecken, Jack, KE2QJ: 22.45ff	Gates (common): 5.42, 5.43
K6LVM: 2.7			Interfacing families of: 5.57
K6USW: 9.47			Inverter: 5.42
K6XX: 5.58			Levels: 26.16
K7HFD: 10.18			Positive and Negative: 5.44, 5.45
K7JPD: 9.54			Sequential: 5.45ff
K7QO: 8.1		L	Logical operators: 5.42
K8CU: 12.37		Lambert, Simone, KA1YVF: 2.5	Long path: 20.16
K8OCL: 2.1, 9.43, 9.47, 9.54, 24.1		Lamp dimmer: 20.25	Long range forecast: 20.18
K8RA: 18.29		LAN: 24.5	Look Smart: 24.1
K9EK: 23.11, 23.13, 23.19, 23.21		Land breeze: 20.24	Loop: 10.3
K9GWT: 9.19		Langner, J. WB2OSZ: 9.37	Amplifier: 10.41
K9KM: 24.1		Lapin, Greg, N9GL: 3.12, 5.2	Antenna for RDF: 13.17
K9LA: 20.1		Laplace: 10.38	Closed loop bandwidth: 10.46
KA1YVF: 2.5		Larkin, Bob, W7PUA: 19.59	Closed loop response: 10.45
KA2PYJ: 9.38		Larson, Elaine, KD6DUT: 2.3	Compensation amplifier: 10.37
KA2WEU: 10.14, 10.14ff, 10.20, 10.26, 10.27, 10.28		Latch: 5.46	Damping factor: 10.44
KA3JJJ: 9.54		Lattice structures: 16.8	Excessive gain: 10.4
KA7EXM: 10.19, 10.20, 19.53		Lau, Zack, W1VT: 10.11, 19.29	Gain: 10.4, 10.40
KA9FOX: 19.2		Laws of motion: 10.2	Natural frequency: 10.44
KA9Q: 9.16		Lawson, John, K5IRK: 11.24	Phase characteristics: 10.40
Kansas City Tracker (KCT): 23.18		Layout, circuit: 8.14, 8.18	Phased lock: 10.33
Kantronics: 9.22		LC filter: 12.5	PLL instability: 10.33
KA0CKS: 9.21		LCD (Liquid Crystal Display): 25.51	Summing: 10.51
Karlquist, Rick, N6RK: 11.1		Lead acid battery: 17.21	Loss
Karn, Phil, KA9Q: 9.16		Leakage current: 6.4	Free space: 20.24
Karty, Steven, N5SK: 9.32, 9.37		Least significant bit (LSB): 5.39	Transformer: 4.56
Kay, Leonard, K1NU: 6.1		LED (Light Emitting Diode): 5.28, 25.52	Low tones: 9.9
KB1MW: 8.1, 8.24		LEO (low Earth orbit): 23.3, 23.6	Low-Cost Remote Antenna Switch: 19.51
KB2GSD: 1.5		LHA: 23.36	Low-Earth orbiting (LEO): 23.3ff, 23.4
KB2UAN: 24.1, 24.6		Libration fading: 23.33, 23.34	Operation: 2.1, 2.6
KB9VAK: 9.21		License	OSCAR: 1.7, 2.6
KC6T: 22.39		Amateur Extra: 1.3	Packet (Digital): 2.7
KC7NHZ: 1.7		General: 1.3	PACSATs: 2.6
KD1K: 23.10, 23.11, 23.18, 23.22, 23.26		Operator: 1.3	Voice/CW (Analog): 2.7
KD4HQV: 19.1		Station: 1.3	Low-frequency parasitics: 18.27
KD6DUT: 2.3		Technician: 1.3	Low-pass filter: 12.2, 13.1, 13.6
KD6OZH: 9.54		US Amateur Radio: 1.3	1.8-50 MHz, high-power: 12.37
KD9LA: 9.54		Light emitting diode (see LED)	Design: 12.5
KE7QF: 8.16		Lightning: 20.25	Design example: 12.12
Kemppainen, Daniel, N8XJK: 17.28		Arrestors: 3.8	Harmonic-optimized: 12.34
Kennelly, Arthur E: 20.6		Coaxial cable arrestors: 3.8	Lower Sideband (LSB): 9.9, 9.27
Kenwood TS-870S: 15.3		Protection: 3.4	Lowest Usable Frequency (LUF): 20.8
		Protection equipment, suppliers of: 3.8	LSB: 9.27
		Protection, construction guidelines: 3.7	
		Transient protection: 3.7	

LSI:	5.51	Metal-oxide semiconductor (see MOS)		RDF system:	13.23
LTRS code:	9.8	Meteor		MØCSH:	2.10
Luetzelschwab, Carl, K9LA:	20.1	Scatter:	2.1, 2.11, 20.6, 20.14	Mode A (ARQ):	9.12
Luminance-chrominance encoding:	9.34	Shower:	20.14	Model	
M		Trail:	20.14	Aircraft:	9.23
M-factor:	20.8	Meteorology:	10.5	Boats:	9.22
M57762:	23.12ff	Meter		Cars:	9.23
Magnet wire:	22.6	Deviation:	9.6	Helicopters:	9.23
Magnetic		Digital-multi (DMM):	26.2	Modem:	5.65
Antenna mount:	15.22, 15.25	Dip:	26.3	Digital:	9.7
Field:	4.25, 10.2, 20.1	Frequency:	26.5	Disconnect header:	9.15
Materials:	6.8	Internal resistance:	25.4	Modes	
Materials, core hysteresis:	6.9	Multi-meter:	26.2	And Systems:	9.1ff
Materials, core saturation:	6.8	RF power:	26.2	Chat:	9.21
Materials, eddy currents:	6.9	SWR:	26.3	Data:	9.13ff
Mount:	15.22, 15.25	Vacuum-tube-volt (VTVM):	26.2	Digital:	1.5
Poles:	4.25	Volt-Ohm (VOM):	26.2	Digital voice:	9.31ff
Magnetometers:	20.11	METER software:	18.36	Image:	9.32ff
Magnetomotive force (Gilberts):	4.25	MFJ:	9.22, 9.23, 22.49	Multi carrier:	9.3
Magnetosphere:	20.6, 20.7	MFJ-259 SWR Analyzer:	18.40, 22.44	Of propagation, waveguide:	21.18
Magnetron:	5.12, 10.31	Micrometals:	10.15	Operating:	9.7ff
Main carrier:	9.5	Toroid core color code:	7.6	Satellite:	23.2ff
Maintained resonance:	10.2	Microphone:	14.43	SSTV 1200C:	9.34
Makhinson, Jacob, N6NWP:	11.26, 14.84	Amplifier:	14.43, 15.5	Telegraphy:	9.7ff
Mallozzi, Dom, N1DM:	25.22	Ceramic:	14.43	Voice:	9.26ff
Man-made noise:	20.25	Connector:	19.6	Wideband:	9.1
Manhattan style:	8.12, 8.13	Dynamic:	14.43	Modulation:	11.3
Marconi, Guglielmo:	20.6	Electret:	14.43	100%:	11.5
Marine boundary layer:	20.24	Microphonics:	10.38, 10.42	8P2A:	9.20
Martin, Fred, K16YN:	2.3	Microprocessor control:	26.15	8PSM:	9.20
Martin, Peter, G3PDM:	10.17	Microsats:	23.4	Amplitude (AM):	9.5ff
Martinez, Peter, G3PLX:	9.13	Microsim Corp.:	6.22	Angle:	9.5ff, 11.7ff
Master Station (MS):	9.12	Microstrip lines:	6.11	BPSM:	9.20
Matched		Microwave		Characteristics:	9.2ff
Condition:	21.6	Cavity:	10.1	Dibit:	9.12
Lines:	21.3ff	Construction techniques:	8.22	Down:	9.24
Matched-line loss		Dielectric resonator:	10.1	Factor:	11.5
(see also Transmission line):	21.6, 21.8	Oscillators:	10.30ff	Frequency:	9.30ff
Matching		Projects:	15.19	Index:	9.6, 9.7, 11.9, 11.10
Interstage load and Z:	5.5	Rain scatter propagation:	20.21	Linearity:	11.6
Networks:	10.3, 18.3ff	Surface acoustic wave (SAW):	10.1	Major Systems:	9.5ff
Matching (antenna to feed line)		YIG sphere:	10.1	Multilevel phase:	9.4
Gamma-Match:	21.11	Milione, Ronnie P., KB2UAN:	24.1, 24.6	Orthogonal Frequency Division:	9.46ff
Hairpin match (aka Beta match):	21.12	Military Affiliate Radio Service (MARS):	2.5	Over:	11.5, 11.6
Quarter-wave:	21.12	Millar, Doug, K6JEY:	25.1	Percentage:	11.5
T-Match:	21.11, 21.13	Millen:	10.15	Phase:	9.6ff, 9.30
Matching (transmitter to feed line)		Miller, James, G3RUH:	23.21	Pulse-position:	9.24
L network:	21.14	Miller, Russ, N7ART:	18.40	QPSM:	9.20
Materials, shop:	8.5	Millihertz:	10.47	R/C RF:	9.24
Mathematics, complex signals:	16.9	Mini-Circuits SBL-1:	11.23	Modulator:	11.1ff
Maxim, Hiram Percy:	1.9	Miniductor:	10.15	Angle:	11.10
Maximum		Minimum Discernible Signal		Balanced:	11.24
Permissible exposure (MPE):	3.12, 3.13, 3.16	(MDS):	10.9, 25.42	Digital SSB and ISB:	16.10
Usable Frequency (MUF):	20.8	Mitchell, Bradley S, WB8YGG:	19.17	PLL frequency:	11.11
Usable frequency factor (M-factor):	20.8	MITRE Corp:	9.21	Power-law:	5.4
Maxwell's equations:	6.10, 6.14	Mixer:	11.1ff	Reactance:	11.10
Maxwell, M. Walter, W2DU:	21.17	After the mixer:	14.31	Square-law:	5.4
McCaa, Bill, KØRZ:	23.21	And amplitude modulation:	11.5	SSB; Hilbert transformers and:	16.9ff
McMasters-Carr:	22.15, 22.64	As a multiplier:	11.1, 11.2	Switching:	5.4
MCPs:	9.8, 9.9	Balance:	11.3	Moell, Joe, KØOV:	13.17
MDS:	10.9	Balanced:	5.36, 11.7	Monolithic	
Measuring		Double-balanced diode (DBM):	11.16, 15.2	Crystal filter:	12.21
AC Power:	4.15	Microphone:	11.1	IC:	5.29ff
AC voltage:	4.15	Multiplier:	11.15	Montalbano, J., KA2PYJ:	9.38
Alternating current:	4.15	Reversing-switch:	11.14, 11.15	Monte Carlo analysis:	6.22
Bearing and maps for RDF:	13.25	Spurious responses:	14.20ff	Montgomery, Christine, KGØGN:	5.38
Distortion:	26.10	Terminating the mixer:	14.31	Moon:	20.24
Inductance and capacitance with DVM:	25.21ff	Mixing:	9.26	Locating:	23.36
Mechanical		As combiners, summers or adders:	11.1	Moonbounce (see EME):	2.10
Construction:	8.25	As multiplication:	11.1	Morse (CW):	9.3, 11.6
Filter:	14.28	Non-linear:	9.5	Decoder:	9.3
Oscillator:	10.2	Products:	11.4	Telegraphy (CW):	9.7ff
Medium frequencies:	20.3ff	Reciprocal:	10.7, 10.8, 16.14	MOS:	5.55, 5.56
Memory:	5.61	Versus adding:	11.1	MOSFET:	5.15, 5.16, 11.25
Computer; addresses/chip size:	5.61	MMIC:	5.32, 5.36, 14.32ff	Dual gate:	10.15
Computer; cache vs. main:	5.62	MMSSTV program:	9.36	Gate protection:	5.25ff
Menold, Ronald, AD4TB:	9.21	Mobile		In power supply designs:	17.14ff
Mentor (Elmer):	1.8	And Portable:	19.13ff	Level converters:	19.12
Mercury battery:	17.21	Antennas (HF):	22.45ff	Power transistor protector:	6.20, 6.21
Mercury vapor rectifier:	17.4	Computing:	24.9	Most significant bit (see MSB)	
		Interference:	19.14	Motional	
		IP security:	24.9	Capacitance:	10.24

Inductance:	10.24	National Cancer Institute:	3.18	Electrical:	13.11, 13.15
Motor, permanent magnet:	22.49	National Contest Journal (NCJ):	2.2	Factor:	14.3
Motorboating:	10.15	National Council for Radiation Protection and Measurement:	3.13, 3.15	Passive device:	14.7
Motorola		National Electrical Code (NEC):	3.4ff, 22.6	Figure:	14.3, 25.52
MC1495 multiplier:	11.14	About the:	3.4	Cascaded stages:	14.11
MC1496:	11.14	Antenna conductors:	3.5	Distribution:	14.23
MC3359 FM subsystem IC:	11.13	Ground conductors:	3.5	Figure measurement:	25.30
MØZPD:	2.10, 9.22	Ground-fault circuit interrupters (GCFI):	3.5	Galactic:	9.3, 14.13
Mraz, Kris, N5KM:	9.43, 9.54	Lead-ins:	3.5	IC-765 phase noise:	10.52
MRF646:	18.25	Lightning arrestors:	3.5	Immunity:	9.1
MSB:	5.39	National Institute of Standards and Testing (NIST):	25.1	Man-made:	9.1, 20.25
MSI, LSI, VLSI circuits:	5.58	National Radio Co:	10.15	Narrow band filtered:	10.5
Mu-metal can:	10.31	National Traffic System (see ARRL)		Phase:	9.3, 10.1
Muehling, Rick, KN6KB:	9.21	NBDP:	9.12	Phase, transmitter:	10.10
MUF:	9.3, 20.8ff	NBFM ICs:	14.36	PLL:	10.42ff
Dayside:	20.17	Near vertical incidence skywave (NVIS):	20.9, 20.15	PM:	10.5
Forecast:	20.18	Neben:	25.21	Quantization, data converter:	16.3
Prediction:	20.17, 20.20	NEC-2 (Numerical Electromagnetic Code):	21.8	Random AM:	10.5
Multi		NEC-4 program:	22.62	Random FM:	10.5
level phase modulation:	9.4	Necessary bandwidth:	9.2	Random noise sidebands:	10.47
loop synthesizer:	10.47	Negative		Receiver thermal:	9.3
operator contest:	10.7	Feedback:	5.3, 14.4	Sidebands:	10.7
Multimedia Systems:	9.47ff	Feedback, topologies:	14.6	Sky:	23.35
Multimeter:	26.2	Resistance:	10.15, 10.30, 10.31	Sources in ham shack:	13.15
Multimode Communications Processors (MCPs):	9.8, 9.15	Neon sign:	20.25	SSB phase:	10.10
Multipath:	9.3, 9.52, 20.11	Net gain:	10.3	Statistical terms:	10.6
Propagation:	9.31	Nets:	1.5, 2.1, 2.3	Synthesizer:	10.38
Multiple access:	9.4	HF and Repeater:	2.3	Synthesizer divider:	10.44
Multiple-hop sky wave:	9.3	Public service:	2.3	Synthesizer phase detector:	10.44
Multiplexing:	9.3, 9.4	Traffic:	2.3	Synthesizer reference:	10.44
Multiplier:	10.28, 25.52	Network		Thermal:	10.34
Multistage systems:	14.9ff	3CX1500D7 amplifier input:	18.35	Thermal (Johnson):	5.6
Multivibrator:	5.33, 5.50, 5.51	Audio phasing, SSB:	9.29	Transmitter:	14.13
Astable (free-running):	5.50	Low-pass L:	18.6	VCO:	10.43, 10.44
Monostable:	5.50	Low-pass T:	18.6	Wideband:	14.48ff
Multiwire windings:	8.23	Mismatch in lossless networks:	14.53	Nonlinear:	13.1
Murray code:	9.8	Output:	18.3, 18.4	Devices:	18.3
Murray, Conrad, WS4S:	19.1	Pi:	18.6ff	Distortion:	11.3
Mutual inductance:	4.28, 4.54	Pi output:	18.19	Operators:	5.4
		Pi, values table:	18.7	Nonlinearity:	10.3, 10.7
N		Pi-L output:	18.19	Nonresonant RF transformer:	4.58
N connector:	19.9	Pi-L values table:	18.9	NØNSV:	23.22, 23.24
N-channel MOS (see NMOS)		Tuned (resonant) networks:	14.56ff	Nonvolatile RAM (NVRAM):	5.62
N1DG:	24.1, 24.10	Network Stumbler:	9.51	NOR gate:	5.43
N1DM:	25.22	Networking		NORCAL Sierra transceiver:	15.9ff
N1HOQ:	2.1, 2.6	Adaptive:	9.16	Normalized	
N1II:	5.38, 5.58, 15.20	Packet:	9.15	Impedance:	21.4, 21.5
N1NAS:	2.6	Neutral of an AC circuit:	17.2	Reactance:	21.4, 21.5
N1SC:	2.1	Neutralization:	18.28	Resistance:	21.4
N2APB:	8.13	Neutron:	4.1	North pole:	4.25
N2IRZ:	9.54	New England Journal of Medicine:	3.18	Northern California DX Foundation (NCDXF):	20.19
N2JGU:	19.17	Newell, Dick, AK1A:	24.11	Norton's Theorem:	4.6
N2PGD:	2.5	Newkirk, David, AB2WH:	11.1	NOSNET:	9.16
N4ICK:	9.43, 9.45	Newton:	10.2	NOT gate:	5.43
N4QQ:	2.9	Nibble:	5.40	Notch	
N5KM:	9.43, 9.54	Nibbling tool:	8.5	Filter:	13.1, 15.5
N5SK:	9.32, 9.37	Nichrome:	18.26	Filter, simple digital:	16.8
N6BV:	21.1	Nickel Cadmium (NiCd) battery:	15.22, 17.21	Nova for Windows program:	23.5, 23.17
N6KR:	15.10	Nickel Metal Hydride (NiMH) battery:	17.21, 17.22	NØXAS:	19.20, 19.22, 19.38, 19.39
N6NWP:	14.84	NIST:	25.1, 25.5	NPO:	10.13, 10.15
N750:	10.15	Nitrogen:	20.3	Null (nulling):	25.52
N7ART:	18.40	N1IQ:	19.31	Null modem:	19.11
N7VE:	16.30	NMEA 0183:	9.51	Number	
N8XJK:	17.28	NMOS:	5.55	Conversion techniques:	5.40, 5.41
N9GL:	3.12, 5.2	NO-44 (OSCAR 44):	23.5	Representation of (in DSP):	16.4, 16.5
NAND gate:	5.43	Node, Current:	22.1	Systems:	5.39
Narrow-Band FM		Noise:	5.5, 5.6, 13.1, 13.4, 26.7	NVIS propagation:	20.9, 20.15
Downconversion:	14.34	AM:	9.3, 10.6	NVRAM:	5.62
FM:	9.30	AM sidebands:	10.6	NW3Z:	22.61
FM Detection:	14.34	And Propagation:	20.25	Nyquist:	10.3, 10.38
Front end:	14.34	Aperture jitter:	16.3	Nyquist sampling theorem:	16.3
IF Filters:	14.34	Atmospheric:	9.3		
Limiting:	14.34	Band of:	10.7	O	
LO phase noise:	14.34ff	Bandwidth:	10.9	O'Hara, Tom, W6ORG:	9.38
Receivers:	14.34	Blanker:	15.2	Oblique angle:	20.8
Weak-signal performance:	14.34	Composite phase:	10.11	Scattering:	20.13
Narrowband Direct Printing (NBDP):	9.12	Density:	10.12	Occupied bandwidth:	9.1
NASA:	1.7	DSB phase:	10.12	Oersted (Oe):	4.25
National Academy of Sciences:	3.18			OFDM:	9.5, 9.31, 9.46ff, 24.4
National Research Council:	3.18			Official Observers (OO):	2.4

Offset:	15.28	Quartz crystal:	10.1, 10.22	Reactance:	4.37
OH1NL:	23.32	RC:	10.28	Resonant circuit:	4.49
Ohm (Ω):	4.1	Reference, tuning sensitivity:	10.46	Parasitic	
Ohm's Law:	4.2, 4.6	RF for alignment:	25.20	Inductance:	6.10
And Power Circle:	4.7	Series mode crystal:	10.25	Oscillation, VHF/UHF:	18.25ff
For impedance:	4.46	Series tuned Colpitts, crystal:	10.26	Oscillations, low-frequency:	18.27
For reactance:	4.37	Start up:	10.4	Remedies for:	6.14
Ohmmeter:	25.6, 25.52	Stripline:	10.1	Suppressor:	18.26
Olexa, Ron, KA3JJJ:	9.54	Temperature compensation:	10.21	VHF:	10.17
On-Off-Keying (OOK):	9.3, 9.7	VHF/UHF:	10.28ff	VHF/UHF testing:	18.27
ON6UG:	23.22	Voltage controlled (VCO):	10.34	Parity:	9.9
Open		Voltage tuned (VTO):	10.34	Check:	5.70
Loop response:	10.39	YIG:	10.32, 10.44	Part 15 equipment:	9.45
Wire transmission lines:	21.1ff, 22.53	Oscilloscope:	11.2, 25.22ff, 26.3	Part 97:	1.12
Operating		Analog:	25.22	Parts, Finding:	8.24
Courteous SSTV:	9.34	Buying used:	25.26	Pass transistor:	17.13ff
Modes:	9.7ff	Digital:	25.24	Passband:	13.1
Table:	19.2	Dual-trace:	25.23	Transponder:	23.1
Operation		Probes:	25.25	Tuning:	15.2
Classes of:	18.2ff	Outlet strips, safety:	3.5	Patch antenna:	23.27ff
Grounded-grid:	18.19	Output		Patterson, Dave, WB8ISZ:	2.9
Operational amplifier:	5.33ff	Devices:	5.64	PBBS:	9.14
Operator license:	1.3	Filtering:	18.10	PC	
Optical		Network:	18.3, 18.4	Software:	24.11ff
Encoder:	15.7	Network, class AB, B and C:	18.3ff	Technology:	24.1ff, 24.10ff
Semiconductor:	5.28, 5.29	Oven:	10.23	PC board	
Storage:	5.64	Cold:	10.21	Cabinets:	8.26
Optimized Wideband antenna		Controlled crystal oscillator (OCXO):	10.23	Drilling:	8.17
(OWA):	22.61, 22.62	Over the horizon:	20.2	Layout:	8.18
Optimum load resistance:	18.3	Paths:	20.22	Materials:	8.16
Optoisolator:	5.29	Over-sampling:	16.30	Stock:	8.11
Solid state relay:	5.29	Overcurrent protection:	17.15	Techniques:	8.11ff
OR gate:	5.42	Overload:	10.10	PCA:	20.10
Orbit		Fundamental:	13.1, 13.9	PCI-X:	5.62
Amateur satellite:	23.3ff	Overmodulation:	9.1, 9.26, 11.5, 11.6	PCM:	9.24, 9.25
Elliptical:	23.3	Overtone:	10.22, 10.24, 10.27	PCMCIA (PC-Card):	5.71
Low Earth:	23.3	Oxley "Tempatrimmer":	10.18	PCS bands:	24.8
Orthogonal Frequency Division Modulation		Oxygen:	20.2ff	Peak	
(OFDM):	9.46ff	Ozone:	20.6	And average:	25.8
OSCAR satellites:	2.6, 23.4ff	Ozonosphere:	20.6	Envelope power (PEP):	4.17
OSCAR 11 (UO-11):	23.5	P		Envelope voltage (PEV):	4.17
OSCAR 16 (AO-16):	23.5	P-channel MOS (see PMOS)		Value:	25.52
OSCAR 27 (AO-27):	23.5	PacComm:	9.22	Voltage or current:	4.11, 4.16
OSCAR 44 (NO-44):	23.5	Packet:	9.9, 9.20	Peak-to-peak (voltage or current):	4.11, 4.16
OSCAR 50 (SO-50):	23.5	Bibliography:	9.16	Pedersen ray:	20.15
OSCAR 51 (Echo):	23.5	Bulletin-board systems (PBBSs):	9.14	Pendulum analogy:	10.2
OSCAR 52 (VUSat):	23.5, 23.8	Cluster:	9.14, 24.11	Pentode:	5.10, 18.3
OSCAR 64 (DO-64):	23.5	<i>DX Cluster (see DX PacketCluster):</i>	2.9	Percent ripple and regulation:	17.11
OSCAR 7 (AO-7):	23.5	Networking:	9.15ff, 9.22	Period:	4.11, 4.13
Oscillation:	5.3, 26.10	Radio:	2.2, 2.9, 9.14ff	Peripherals:	5.62
Parasitic VHF/UHF:	18.25ff	Radio network:	2.3	Permeability (μ):	4.11, 4.26
Spurious:	10.14	Radio terminal node controller:	2.9	Permeability tuning:	10.14
Oscillator:	10.1, 26.14	Store-and-forward:	23.1	Personal protective equipment:	3.10
Audio frequency:	25.20	PACSATS:	23.4	Petit, Ray, W7GHH:	9.19
Audio sidetone:	10.28	PACTOR:	9.16ff	Phase:	4.14
Backwards wave (BWO):	10.31	Bibliography:	9.18	Bump:	10.42
Beat-frequency (BFO):	11.7	Change of direction:	9.17	Detectors:	10.33, 10.33ff, 10.36ff
Butler:	10.25, 10.25ff, 10.26, 10.27, 10.53	Contact flow:	9.17	Error, SSB:	9.29
Cavity:	10.30, 10.44	PACTOR-I:	9.16	Frequency detector:	10.36ff, 10.39
Circuits:	10.1, 10.12	PACTOR-II:	9.16, 9.17	Jitter:	10.6
Colpitts:	10.15	PACTOR-III:	9.16, 9.17	Locked:	

NE602A: 11.13, 11.26, 11.27

NE602A relatives: 11.28

NE602A usage notes: 11.27

NE604A: 11.14

Phone plug: 19.6

Phono plug: 19.6

Photoconductors: 5.28

Photodiodes: 5.28

Photographic PC boards: 8.15

Phototransistors: 5.28

Photovoltaic (PV)

Charge controller: 17.41

Effect: 5.28

Pi network: 18.6ff, 18.19

Values table: 18.7

Pi-L network: 18.7, 18.19

3CX1500D7: 18.31, 18.35

Values table: 18.9

PIC-Based HF/VHF Power Meter: 19.53

Pierce oscillator: 10.28

Piezoelectric: 10.1, 10.22, 10.23

PIN diode: 5.17

Pingree, Dave, NINAS: 2.6

Pittenger, Jerry, K8RA: 18.29

PL-259 connector: 19.7, 22.6, 22.44, 25.52

Plages: 20.9

Planetary k: 20.11

Plasma frequency: 20.7

Plate: 5.8

Dissipation: 18.10ff

Dissipation limit: 18.11

Load resistance, optimum: 18.19

Resistance: 5.9

Resistance, dynamic: 18.3

Voltage: 18.14

Plated-through holes: 8.15

Pliers: 8.4

PLL (phase-locked loop): 9.3, 9.9, 10.40, 10.40ff, 10.45, 10.46, 10.51, 11.11

Plohr, H. Warren, W8IAH: 9.22

PM (Phase Modulation): 9.30

PMOS: 5.55

PNPN diode: 5.14

Pocock, Emil, W3EP: 20.1

Point-to-point links: 9.50

Point-to-point wiring: 8.8

Polar Cap Absorption (PCA): 20.10

Polar region: 20.13

Polarization: 22.1

Circular: 20.24, 23.34

Cross: 22.1

Effects: 23.34

Spatial: 23.34

Wave rotation fading: 9.3

Pole-zero constellation: 10.39

Poles: 10.38ff

PolyPhaser Corporation: 3.8

Pontius: 10.12

Port-to-port isolation: 10.8, 11.4

Portable

AC power sources: 19.14

Antennas: 19.15ff

Positive

Feedback: 5.3

Potential energy: 10.2

Potentiometer: 4.10

Powdered iron: 10.15

Core dimensions: 7.6

Toroidal inductor: 4.35

Power: 4.1, 4.11

AC (Alternating current): 17.2ff

And Energy: 4.6

Apparent: 4.46

Available power: 14.1

Conditioning (electrical): 17.3

Cords, 3-wire, 120-V: 3.6

Density: 10.8

Efficiency: 9.27

Factor: 4.46

Lines, dangers of: 3.2

Peak envelope (PEP): 4.17

Quality for computers: 5.71

Ratio of transformer: 4.56

Reactive: 4.41, 4.46

Real: 4.46

Remote Controller: 19.47

RF wattmeter: 26.3

Strips: 3.3

Systems and ATX: 5.72

Transformers: 17.3

Power supply: 17.1ff

Emergency operation: 17.24

Filters: 17.11, 17.12

High-voltage: 17.40

High-voltage (techniques): 17.20

HV, 3CX1500D7: 18.35

Load resistance: 17.11

Projects: 17.24ff

Switching: 26.13

Troubleshooting: 26.5, 26.12

Uninterruptible (UPS): 17.44

Voltage regulation: 17.11

PPM: 9.24

Preamplifiers: 9.39, 15.2, 23.15ff

10 GHz: 14.39ff

430 MHz: 14.34ff

Mast mounted: 23.17

Television: 13.12

Precipitation static: 20.25

Prescaler: 10.34, 25.52

Dual modulus: 10.34, 10.35

Variable modulus: 10.34

Preselection: 10.7, 15.3

Tracking: 10.7

Pressurized chassis: 18.17

Primary winding (transformer): 4.54

PrimeStar dish: 23.21, 23.22

Printer: 5.66

Product detector: 15.3ff, 15.6

Programmable divider: 10.32, 10.34, 10.35

Programmable ROM (PROM): 5.62

Project OSCAR (see also OSCAR): 23.4ff

Projects

10-GHz Preamplifier: 14.39ff

12 V dc boost regulator for mobile

operation: 17.28ff

28-V, high-current power supply: 17.36ff

40 dB Tap for Higher Power

Measurements: 19.59

A Simple Serial Interface: 19.38

Active Attenuator for RDF: 13.30ff

Amplifier, 144-MHz 3CX1200Z7: 18.40ff

Amplifier, 6-meter, 4CX1600B: 18.37ff

Amplifier, HF, 3CX1500D7: 18.29ff

Analytic filter pair generation: 16.39

Audible Antenna Bridge: 19.48

Audio Break-Out Box: 19.21ff

Audio Interface for Field Day and

Contesting: 19.45

BC-Band Rejection Filter: 12.32

Binaural I-Q Receiver: 14.64ff

Calibrated Noise Source: 25.27ff

Compensated, Modular RF Voltmeter: 25.35ff

Construction hints: 8.20ff

Decimation: 16.36

Deluxe soldering station: 8.6

Dip meter with digital display: 25.17ff

Double-brick L-band: 23.13ff

Drift-Free VFO: 14.84ff

DSP: 16.36ff

External Automatic Antenna Switch for Yaesu/

ICOM: 19.31ff

Fast binary multiplier: 16.42

Fast square-root algorithm: 16.39

Filter, low-pass, 1.8-50 MHz: 12.37

FIR filter design variations: 16.36

GaAs FET Preamp for 430 MHz: 14.36, 14.37

Harmonic Optimized Filter: 12.34

HF Adaptor for Narrow-Bandwidth

Oscilloscopes: 25.27

High-performance DDS: 16.41

High-voltage power supply: 17.40, 17.41

Hybrid Combiners for Signal Generators: 25.34

ID-O-Matic: 19.20

Low-Cost Remote Antenna Switch: 19.51ff

Marker generator with selectable output: 25.15

Micro M+ PV charge controller: 17.41ff

MicroR2 SSB or CW Receiver: 14.75ff

MicroT2 SSB Transmitter: 14.79ff

Microwatter: 25.11ff

MKII Universal QRP Transmitter: 14.70ff

Newton's method for square roots: 16.39

NORCAL Sierra (transceiver): 15.9ff

Passive CW Filter: 12.41ff

PIC-Based HF/VHF Power Meter: 19.53ff

Portable power supply: 17.46

Power supply: 17.24

QRP T-Match ATU: 19.43, 19.44

Remote Power Controller: 19.47

Rock-Bending Receiver for 7 MHz: 14.61ff

RockMite (simple CW transceiver): 15.15ff

Series-regulated 4.5- to 25-V supply: 17.25ff

Signal Generator for Receiver Testing: 25.31ff

Simple Seeker for RDF: 13.28ff

Single-brick L-band: 23.13

Soldering temperature controller: 8.7

Switched Attenuator: 19.44

Tandem Match—an Accurate Directional

Wattmeter: 19.25ff

TICK-4—a Tiny CMOS Keyer: 19.17ff

Trio of Transceiver/Computer

Interfaces: 19.35ff

Universal Keying Adapter: 19.22

Universal power supply: 17.44

USB Interfaces for Your Ham Gear: 19.39ff

Wave Trap for BC Stations: 12.33

Wide range audio oscillator: 25.20

PROM: 5.62

Propagation: 20.1ff

And noise: 20.25

D layer: 20.11

Delay: 5.41, 5.42, 10.34

E layer: 20.12ff

Extraterrestrial: 20.24

Forecasting: 24.3

Ionospheric: 1.6, 20.6, 22.1

Long distance: 20.2

Medium: 20.1, 20.2

Multipath: 9.31

NVIS: 20.9, 20.15

Sky wave: 20.3ff, 22.1

Summary by band: 20.3ff

Properties, cascaded circuits: 14.10

PropLab Pro program: 20.21

Protection, tube: 18.35

Protocols: 9.1

Radio link: 24.9

Proton: 4.1, 20.10

Prototype boards: 8.10

Pseudo-noise generator (PN): 9.44

Pseudo-random number generator: 5.50

PSK (Phase-Shift Keying): 9.31

PSK31: 2.9, 9.1, 9.3, 9.13

Bibliography: 9.16

Pulling range: 10.27

Pulse-Code Modulation (PCM): 9.25

Pulse-Position Modulation (PPM): 9.24

Pulses

Effects of HF path: 9.3ff

Feedback servo: 9.24

Smearing: 9.3

Punches, socket: 8.5

Q

Q (Quality factor): 4.11, 4.32, 4.48, 25.52

Effects on: 6.13

Loaded: 18.5

Loaded circuit: 4.52

Parallel resonant circuit: 4.50

Unloaded: 18.5

Q Signals: 9.8

Q-section (see Quarter-wave matching section)

QPSK (quadrature phase-shift keying): 9.13, 11.25

QPSM (Quadrature PSM): 9.20

QRP: 1.5, 9.9

T-Match ATU:	19.43	Rate multiplier synthesis:	10.33	Rectification:	5.4
QSL		Ray path:	20.7	Rectifier	
Bureau:	2.2	Raydo, John, KØIZ:	19.45	Circuits:	17.5ff
Cards:	2.1, 2.2, 2.8	RC		Fast recovery:	17.1, 17.5
Green stamps (dollar bills):	2.2	High-pass filter:	10.38	Full wave:	10.29
Logbook of the World (LoTW):	2.2	Low-pass filter:	10.38	Full-wave center-tap:	17.6
Manager:	2.2	Low-pass pole:	10.42	Half-wave:	17.5, 17.6
QSLing:	2.8	Oscillator:	10.28	Heat and the:	17.10
QST:	2.2, 3.19, 6.22, 8.24, 22.39	Time constant (τ):	4.22	Instruments:	25.8
Product reviews:	11.26	RDF		Protection:	17.9
Quad antenna		Active attenuator project:	13.30	Ratings vs. operating stress:	17.9
Composite spreaders:	22.41	Adcock antenna:	13.18	Selenium:	17.4, 17.5
Driven element feeding:	22.41	Antenna:	13.17	Strings or stacks:	17.9
Element-to-spreader attachment:	22.40	Body fade:	13.27	Types:	17.4, 17.5
Fiberglass spreaders:	22.38	Doppler antenna:	13.23	Recursion formula:	16.24
Guy wires:	22.43, 22.44	Ferrite rod antenna:	13.18	Reduction drive:	10.15
Tag-line stay ropes:	22.43	Loop antenna:	13.18	Redundant Digital File Transfer (RDFT):	9.21
Wingspread:	22.42	Loop vs. phased array:	13.20	Reed relay:	10.8
Quadrature:	9.28, 10.35	Map and bearing measurement:	13.25	Reed, Dana G., W1LC:	17.40, 24.1
Detection:	11.12, 11.13	Mobile system:	13.23	Reed, Shawn, N1HOQ:	2.1, 2.6
Detector:	15.5	Parasitic array:	13.21	Reed-Solomon forward error correction	
Phase-shift keying:	11.25	Phased array:	13.18	(FEC):	9.19
Quadrifilar		Sense antenna:	13.18	Reference:	7.1ff
Antenna:	23.7	Simple seeker project:	13.28	Diode:	10.16
Coils:	8.24	Skywave bearings:	13.27	Facsimile (FAX):	9.34
Quality:	9.1	Skywave considerations:	13.20	Filters:	12.44
Of power for computers:	5.71	Switched antenna:	13.21	Frequency sidebands:	10.33, 10.45
Quality factor (Q):	18.5	Time difference of arrival antenna:	13.22	Frequency suppression:	10.38
Quantization		Triangulation technique:	13.26	HSMM Radio:	9.54
Error:	16.3	VHF/UHF:	13.20	Oscillator tuning sensitivity:	10.46
Noise:	16.3	RDFFT & SCAMP:	9.21	Satellite:	23.31
Quarter-wave		Reactance:	4.11	Spread spectrum:	9.47
Matching section:	21.12, 22.55	And complex waveforms:	4.41	Reference Data for Radio Engineers:	6.13
Stub:	21.10	Capacitive:	4.24	Reflected power meter:	2.16
Quartz crystal filter:	12.17	In series and parallel:	4.37	Reflection:	20.2, 20.7
		Inductive:	4.31	Coefficient:	21.4, 21.5, 21.10
R		Leakage of transformer:	4.56	Equivalent:	20.7
R/C (radio control):	9.22ff	Unlike in series and parallel:	4.39	Reflectometer:	2.16
Models:	9.23	Reactive power:	4.41, 4.46	Refraction:	20.2, 20.22, 20.24
RF Modulation:	9.24	Read-only memory (ROM):	5.62	Gradual:	20.7
Race hazard:	10.37	Real power:	4.46	Ionospheric:	20.7
RACES:	2.5	Receive		Tropospheric:	20.22
RadCom:	9.13	Converters:	23.15ff	Refractive index:	20.2, 20.7
Radiated emission:	13.1	Preamplifiers:	23.15ff	Regeneration:	5.3
Radiation		Receivers		Regenerative receiver:	9.30, 14.15
Electromagnetic:	20.1	10 GHz, block diagram:	14.40	Register:	5.49, 5.50, 5.60
Inversion:	20.22	50 kHz IF:	14.33	Byte:	5.50
Ionizing:	3.12	Alignment:	26.17	Eight-bit storage:	5.49
Nonionizing:	3.12	And Transmitters:	14.1ff	Shift:	5.50
Resistance:	22.1, 22.24	Antenna directivity:	14.12	Storage:	5.50
Radiative losses:	6.14	Design techniques:	14.14ff	Universal shift:	5.50
Radio		Direct conversion:	14.16ff	Word:	5.50
Architectures for DSP:	16.26ff	Dynamic range:	10.1, 25.42	Regulation	
Control (R/C):	9.22ff	Effective selectivity:	10.1	Of power-supply voltage:	17.11ff
Direction finding (RDF):	13.17	Front end:	15.1	Voltage, of power supplies:	17.12ff
Direction finding antenna:	13.17	Gain:	14.13	Regulations governing Amateur Radio:	1.11ff
Entrance panel:	3.7	Image rejection, D-C receiver:	14.19	Regulator	
Horizon:	20.19	Intercept point:	11.19	IC voltage:	17.16ff
ITU Regulations:	9.3	Intermodulation:	10.1	Linear power-supply:	17.12ff
Propagation:	20.1	Intermodulation distortion, ...		Precision series loop design:	17.18ff
Teletype:	9.3	calculating:	11.20, 11.21	Series and shunt linear:	17.12ff
Waves:	20.1	Intermodulation distortion, testing:	11.20, 11.21	Specifications of a voltage:	17.16, 17.17
Radio Communication Handbook:	10.17	MicroR2 SSB or CW Receiver Project:	14.75	Three-terminal:	17.16
Radio Frequency (see RF)		Narrowband FM:	14.34	Regulatory	
Interference (RFI):	13.1	Noise levels:	14.12	Power Limit:	9.1
Spectrum:	4.14	Performance tests:	25.41ff	Restrictions:	9.1
Radio Society of Great Britain		Regenerative:	9.30, 14.15	Reinhardt, Jeff, AA6JR:	9.54
(Also see RSGB):	10.17	Requirements:	23.34ff	Relaxation oscillation:	10.15
Radioteletype (RTTY):	9.8	Sensitivity:	25.42	Relay:	4.10
Radioteletype, ASCII:	9.9	Subsystems:	5.36	Failure:	26.24
Ragchewing:	2.1	Super-regenerative:	9.30	Reliability:	9.1
Rain		Superheterodyne:	9.30, 14.20ff	Reluctance:	4.25, 4.26
Attenuation:	20.20	Superregenerative:	14.16	Remote Power Controller:	19.47
Scatter:	20.21	Third-order intercept:	25.43	Repair and Troubleshooting:	26.1ff
Rainbow:	20.2	TRF:	14.14	After repair:	26.27
Ramp waveform:	4.12	Triple conversion:	14.33	Component:	26.19ff
Random noise FM:	10.5	Two-tone IMD test:	25.43	Professional repair:	26.28
Random-access memory (RAM):	5.62	VHF/UHF:	14.34ff	Receiver:	26.17
Rate		VLF IF:	14.28ff	Transceiver:	26.19
Bit:	9.3	Reception, diversity:	9.9	Transmitter:	26.18
Symbol:	9.3	Reciprocal mixing:	10.7, 10.8, 16.14	Repeaters:	2.1, 2.7, 9.30, 15.1ff, 15.20ff, 23.2
		Recombination:	20.6, 20.12	Access code:	15.21

Autopatch:	2.7, 15.21, 15.27	RF transformer:	4.59	Sabin, William E., WØIYH:	6.20, 6.21, 11.25, 11.26, 14.1, 14.48, 17.18, 25.27
Carrier operated relay (COR):	15.21	Self:	6.12	Safe exposure levels (EMF):	3.14
Channelized:	15.20	Resonator		Controlled environment:	3.14
Closed:	2.7, 15.21, 15.24	Cavity:	10.1, 10.1ff, 10.29, 10.30, 10.31	Uncontrolled environment:	3.14
Closed repeaters:	15.21, 15.24	Helical:	12.27	Safety:	3.1ff, 26.1
Control operator:	15.21	Resources for Amateur Radio:	1.15	Antenna and tower:	3.1ff
Coordinated:	15.20	Return loss:	21.6	Cardiac pacemakers and RF:	3.16
Courtesy beep:	15.21	Bridges:	25.32	Ground (of an AC circuit):	17.2
Courtesy tones:	15.24	Reverse isolation:	10.21	Outlet strips:	3.5
Coverage:	15.21	Reynolds, Dave, KE7QF:	8.16	RF radiation:	3.12ff
CTCSS:	15.21	RF		Safe homebrewing:	3.9
Digipeater:	15.21	Ammeters:	25.8	Shop:	8.1
DTMF:	15.21	Ammeters, copper-top testers:	25.10	Soldering:	3.9
Duplex:	15.21	Ammeters, sources:	25.10	SAM:	5.61
Emergency transmissions:	15.24	Ammeters, substitutes:	25.10	Sampling:	16.1ff
FCC rules:	15.24	Burns:	3.12	Frequency:	16.1
FM voice:	15.20	Chokes:	6.14, 7.5	Function spectrum:	16.3
Frequency coordinator:	15.21, 15.28	Compression, Digital:	16.16	Harmonic:	16.2
Full quieting:	15.21	Energy, thermal effects of:	3.13	Theorem, Nyquist:	16.3
Hang time:	15.22	Filter:	12.1	Sanderson, Barry, KB9VAK:	9.21
Input frequency:	15.22	Heating:	6.21	SAREX:	1.7
Key up:	15.22	Interference (RFI):	13.1	Sarratt, Greg, W4OZK:	2.5
Offset:	15.28	Port:	11.4	Satellite	
Open:	2.7	Probe:	26.4	G6LVB tracker:	23.18
Open repeater:	2.7, 15.22	Radiation safety:	3.12	Satellite (Also see OSCAR)	
Operating techniques:	15.24	Reed relay:	22.48	Amateur:	23.1ff
Output frequency:	15.22	Safety standards:	3.15	AO (AMSAT OSCAR):	2.6
Separation (split):	15.20, 15.22	Small-signal design:	6.26	Easy Sats:	2.7
Telephone link:	15.20	Transformer:	4.58	Finding:	23.3
Time out:	15.22	RF power amplifier:	18.1ff	FM repeater:	2.7, 23.3
Timer:	15.23, 15.24	External: Certification and Standards:	1.14	FO (Fuji OSCARs):	2.6
Tones:	15.27	Stability:	8.20ff	Frequencies and Modes:	23.7
VHF/UHF link:	15.20	RF-Exposure Regulations (FCC):	3.16, 3.17	Ground stations:	23.10ff
Research		Determining RF power density:	3.18	Modes:	23.3
Biological effects of EMF exposure:	3.13	Environments - controlled and		Phase 3E:	23.10
Epidemiological:	3.13	uncontrolled:	3.14, 3.16	Phase I:	23.4
Resist		Low-frequency fields:	3.17	Phase II:	23.4
Etchant:	8.14ff	Maximum permissible exposure		Phase III:	23.4
Pens:	8.14	(MPE):	3.13, 3.16	Propagation:	20.25
Resistance:	4.2, 4.11	MPE limits, Table:	3.16	Store-and-forward:	23.4
Bridge circuits:	25.7	Power threshold table:	3.17	Telemetry and command:	9.25ff
Distributed:	6.2	RF Exposure and You:	3.17	Satellites (Specific, also see OSCAR)	
Dynamic plate:	18.3	Station evaluations:	3.17	AMSAT EAGLE:	2.6
Four-wire resistance measurement:	25.7	RFI (Also see EMI):	13.1ff	AMSAT-ECHO:	2.7
Internal:	6.4	Rhododendron Swamp VHF Society,		AO-27:	2.7
Lumped:	6.2	ex WIBU:	2.10, 23.32	AO-7:	2.6
Negative:	10.15	RIC (Radio Interface Card):	9.51	OSCAR 1:	2.6
Ohmic loss:	22.1	Rinaldo, Paul, W4RI:	9.1, 9.54	OSCAR 40:	2.6
Ohmmeter:	25.6	Ripple (or ripple-carry):	5.49	PHASE 3-E:	2.6
Optimum load:	18.3	Ripple frequency and voltage:	17.11	SO-50:	2.7
Optimum plate load:	18.19	Rise time, CW:	9.7	Saturation	
Parallel:	4.3	RIT:	15.7, 15.10	Point:	5.8
Plate:	5.9	RL time constant (τ):	4.30	Region:	5.21
Radiation:	22.1	RMS (voltage or current):	4.11, 25.52	SAUDISAT-1C (SO-50):	23.5
Series:	4.3	Robustness:	9.1	SAW:	10.1
Resistivity:	4.2	Rock-Bending Receiver for 7 MHz:	14.61	SCAMP (Sound Card Amateur Message	
Resistor:	6.3	Rodriguez Island (3B9C):	2.2	Protocol):	9.21
Bleeder:	17.11	Rohde, Ulrich, KA2WEU:	10.14, 10.27, 10.28, 11.21, 11.22, 11.25	Scan converter:	9.35
Carbon composition:	6.3	Rohre, Stuart, K5KVH:	24.1	Scatter	
Carbon film:	6.3	ROM:	5.62	Atmospheric:	20.15
Failure:	26.20	Root mean square (RMS),		Aurora:	20.13
Markings:	7.1ff	voltage and current:	4.16	Backscatter:	20.16
Metal film:	6.3	Rotolo, Don, N2IRZ:	9.54	D layer forward:	20.11
Parallel:	4.4	Roznoy, Rich, K1OF:	9.16	Field aligned:	20.2, 20.7
Power ratings:	7.2	RS-422:	5.71	Meteor:	20.6, 20.14
Series:	4.4	RSGB:	10.17, 22.61	Oblique angle:	20.12
Series-parallel:	4.5	<i>The VHF/UHF DX Book</i> :	22.61	Rain:	20.21
Standoff:	8.9	RTTY (Radioteletype):	2.9, 9.3, 9.8, 9.30	Sidescatter:	20.16
Wire-wound:	6.3	Contests:	2.3	Tropospheric:	20.19
Resolution bandwidth:	16.20	Software:	24.12	Schetgen, Bob, KU7G:	8.16
Resonance:	4.11, 4.40	Rub-on transfer:	8.14	Schottky	
Choke:	10.14	Rubber ducky:	15.25, 23.6	Diode:	5.17, 11.17
Dipole, in free space:	22.4	Rubidium clock:	25.2	Quad rings:	11.16, 11.17
Self:	6.11	Run-length coding:	9.18	Scope:	25.52
Resonant		S		SCR:	5.14
Antenna:	21.1	S meter:	10.9	Screen grid:	5.9, 18.3
Circuit:	4.40, 4.47	S-parameters:	25.48	Stabilization:	18.28
Circuit, parallel:	4.49	S-plane:	10.39	Voltage:	18.14
Circuit, series:	4.47			Screwdriver antenna:	22.47
Circuit, VHF:	18.26			Screwdrivers:	8.4
Converter:	17.1			SCSI:	5.71
Frequency:	18.4				

Secondary	Sidescatter:	20.16	Cycle:	20.9
Emission:	Sidetone:	15.5	Cycle, maximum:	20.13
Winding (transformer):	Siemens (S):	4.3	Flare:	20.10
Section	Signal		Flux:	20.9
Manager (SM):	Analogue:	5.38	Ionospheric disturbance:	20.10
Manager, Assistant (ASM):	Common mode:	13.1	Maxima:	20.9
Technical Coordinator (TC):	Conducted:	13.1	UV:	20.8
Technical Specialist (TS):	Differential mode:	13.1	Wind:	20.6
SEEDS satellite:	Effect of HF path on analog:	9.4	Soldering:	8.3
Seiler, Thomas, HB9JNX/AE4WA:	Generator:	10.1, 10.8, 21.1, 25.31ff, 26.4	Bridges:	26.12
Selective fading:	Injection:	26.7	Iron, temperature controller:	8.7
Selectivity:	Scaling:	5.2	PC boards:	8.18
Cascaded stages:	Superposition:	5.2	Silver-bearing:	8.3
Selenium rectifier:	Tracer:	26.4	Station project:	8.6
Self inductance:	Tracing:	26.7	Solderless construction:	8.10
Semi-rigid cable:	Signaling		<i>Solid State Design for the Radio Amateur</i> :	10.18, 10.19, 10.28
Semiconductors:	Parallel vs. serial:	5.67ff	Solid state relay:	5.29
Bipolar transistor failure:	R/C techniques:	9.24	Solid state vs vacuum tubes:	18.1ff
CMOS:	Rate:	9.8, 9.12	Sound card:	5.66, 9.9, 9.21, 9.28, 9.31, 10.46
Diodes:	Speed:	9.7	Source	
Diodes, failure:	Silicon Controlled Rectifier (see SCR)		Follower:	5.3
Doped:	Silicon diode:	17.5	For Tools:	8.1
Failure:	Siliconix SD5000 DMOS FET		Ideal:	6.4
Integrated circuit failure:	quad switch IC:	11.27	Of EMI:	13.4
JFET failure:	Silver		Tool:	8.1
Markings:	Mica capacitor:	10.15	Voltage and frequency:	17.3
MOSFET failure:	Oxide battery:	17.21	Space communications:	23.1ff
Multiple junctions:	Solder:	8.3	Space, hams in:	1.7
Optical:	Simplex:	15.20, 15.22	Spark:	20.25
Physical electronics of the:	Simulated Emergency Test (SET):	2.5	Transmitter:	10.3
PN junction:	SINAD:	25.42	Special	
Practical:	Sine wave:	4.12, 10.5	Tools:	8.5
Solid state relay:	Multiplication:	11.2	Specific absorption rate (SAR):	3.13
Substitution:	Single Sideband (SSB):	9.26ff	Spectral leakage:	16.20
Temperature effects:	Sinusoidal waveform:	4.13, 25.52	Spectrum:	25.52
Sense antenna for RDF:	Sirocco:	20.24	Analogue sine wave:	16.2
Sensitivity:	SITOR:	9.12	Analyzer:	9.6, 9.40, 10.8, 10.10, 11.2, 15.14
Sequential logic:	Skin effect:	4.32, 6.12, 21.1, 22.6	Analyzer applications:	25.46
Sequential-access memory (SAM):	Skip zone:	20.8, 20.16	Analyzer performance specs:	25.45
Serial I/O interfacing:	Sky noise:	23.35	Analyzers:	25.44ff
Series	Sky wave:	9.3, 22.1	OFDM:	9.5
And parallel equivalent circuit:	Bearing for RDF:	13.27	Sampling function:	16.3
And parallel resistance:	Propagation:	20.3ff	Spread:	9.43ff
Capacitor wired in:	SKYWARN:	9.22	Speech processing, digital:	16.16ff
Circuit impedance:	Slave Station (SS):	9.12	Speed	
Impedance, equivalent:	Slew rate:	5.3	Keying:	9.3
Inductors:	Sloping dipole:	22.8	Of light:	4.14
Pass transistor:	Slow motion drives:	10.15	Signaling:	9.7
Reactance:	Slow-Scan Television (SSTV):	9.33, 9.34ff	Signaling Rate:	9.8
Resonant circuit:	Slug-tuned inductor:	4.35	SPICE:	6.13ff
Servocontrol:	SM5BSZ:	16.30	<i>HSPICE</i> :	6.22
Servos:	Small signal models:	6.25	Input files, case study:	6.25
Settling time:	Smith Chart:	21.4, 21.5, 21.9, 25.48	<i>PSPICE</i> :	6.22
Sevick, Jerry, W2FMI:	Smith, Bill, KO4NR:	19.51	Spikes:	17.2
Seydler, Bob, K5GNA:	Smith, Douglas, KF6DX:	16.1	Voltage:	17.10
SFDR:	Smith, Philip H.:	21.5	Spinnler, Sharon, KF6OQO:	9.42
Shadow zone:	SMT protocol:	9.16	Splatter:	9.1, 9.28
Shannon, Claude:	Sniffer utility:	9.51	Split frequency:	15.20
Shannon-Hartley theorem:	SO-239 connector:	22.6, 22.44	Sporadic E:	20.6, 20.12
Sharpening tools:	SO-50 (OSCAR 50):	23.5	Spot (also see DX PacketCluster):	9.14
Shelf life (battery):	SOAR (Safe Operating ARea):	17.2	Spread spectrum:	9.1, 9.5, 9.43ff
Shew, John, N4QQ:	Socket		Amateur radio:	9.45
Shielding:	Punches:	8.5	Direct-sequence:	9.44, 9.46
Attenuator:	Tube:	18.16	Frequency-hopping:	9.44, 9.45ff
Compartment:	Software		References:	9.47
Transformer:	Circuit analysis:	10.3	Spurious	
Shields:	Defined radio:	9.53	Discrete:	10.10
Shift register:	Digital modes:	24.12	Emissions:	1.13, 13.1, 13.4, 13.7, 13.9, 25.52
Shop	<i>DiplexerDesigner</i> :	12.36	Free dynamic range (SFDR):	15.15, 16.4
Materials:	DSP filter-design:	16.34	Oscillation:	10.14, 10.16
Safety:	<i>ELNEC</i> :	22.29	Response (spur):	15.2
Short skip:	<i>ELSIE</i> filter design:	12.10	Responses in mixers:	14.20ff
Short-wave listener (SWL):	<i>Helical</i> filter design:	12.27	Signals:	18.1
Shorting stick:	Logging:	24.12	Signals (spurs):	11.4
Shultz:	<i>METER</i> :	18.33	Square wave:	4.12
Shunt:	Mode-specific:	24.12	Distortion:	26.11
SID (Sudden Ionospheric Disturbance):	<i>Pi-El Design</i> :	18.10	Signals:	11.13
Side lobes:	Radio control:	24.12	Switching:	10.6
Sidebands:	Radios:	16.31	Squegging:	10.15
FM/PM:	<i>SVC Filter Designer</i> :	12.34	Squelch:	9.30, 15.5
Lower (LSB):	Solar		Squint angle:	23.1
Reference frequency:	Charging of batteries:	17.23		
Upper (USB):				

SRAM:	5.62	Sun:	20.25	PLL ICs:	10.46
SSB:	9.26ff, 11.7	11-year cycle:	20.9	Rate multiplier:	10.33
Demodulation of:	16.12	27-day rotation:	20.10	Settling time:	10.34
Filter method:	9.28	Sunrise:	20.9, 20.16	Stable reference:	10.33
Lower sideband (LSB):	11.7	Sunset:	20.9ff	Switching speed:	10.38
Modulator: Hilbert transformers:	16.9ff	Sunspot:	20.9	System, chaotic:	10.5
Phasing Method:	9.28	Superheterodyne receiver:	9.30, 14.20ff		
Sideband rejection:	11.7	Multiple conversions:	14.29ff		
Unwanted sideband:	11.7	Up conversion:	14.30		
Upper sideband (USB):	11.7	Superregenerative:	10.15		
SSI:	5.51	Receiver:	9.30, 14.16		
SSID:	24.4	Suppressor			
SSTV:	9.9, 9.33, 9.34ff	Grid:	5.10		
1200C modes:	9.34	Parasitic:	18.26		
Bibliography:	9.37	Surface acoustic wave (SAW) filter:	12.21		
Courteous operating:	9.34	Surface mount technology (SMT):	8.12		
Digital:	9.37	Assembling SMT parts:	8.12, 8.13		
Glossary:	9.37	Component markings:	7.4		
History, color:	9.34	Construction:	8.11ff		
Interface:	9.36	Construction techniques:	8.12, 8.13		
Scan converter:	9.35	DDS Daughtercard:	8.12, 8.13		
Transmission characteristics:	9.35	K8IQY Audio Amp:	8.13		
With a computer:	9.35	SMT components:	8.12, 8.13		
Stability:	9.1	SOIC package:	8.12		
Channel:	9.1	Surge:	17.2		
Receiver:	26.17	Impedance:	21.3		
RF:	8.20	Protection:	19.2		
Stabilization, amplifier:	18.25ff	Susceptance (B):	4.11, 4.24, 4.44		
Stacking equipment:	19.3	Susceptibility (to RFI):	13.1		
Standard capacitor value filter design:	12.9	Switch:	4.8		
Standard frequency stations:	25.1	Common emitter:	26.14		
Standards		LO, using PIN diodes:	16.29		
And traceability history:	25.1ff	Switched			
Emission:	1.13	Attenuator:	19.44		
RF safety:	3.15	Capacitor filter (SCF):	12.31		
Station operation:	1.12	Capacitor notch filter:	15.5		
Technical:	1.12	Switching			
Transmitter power:	1.14	Boost regulator, 12 V:	17.28ff		
Standing wave ratio (SWR):	21.4ff, 21.6	Power supplies:	26.13		
Standoffs:	8.9	Speed:	10.38		
Resistors:	8.8	SWL (Short-wave listener):	1.18		
Stanley, John, K4ERO:	9.26, 22.23	SWR (Also see VSWR):	21.4ff, 22.4ff		
Static:	20.25	Bandwidth:	22.1		
Precipitation:	20.25	Curves:	22.18		
RAM (SRAM):	5.62	Indicator:	21.10		
Station		Meter:	26.3		
Accessories:	19.1ff	Myths:	21.14		
Building a ham radio:	1.8	Symbol rate:	9.3		
Ground:	19.2	Synchronicity and sequential logic:	5.45, 5.46		
Layout:	19.2	Synchronous:	9.12		
Layout and accessories:	19.1ff	Synergy Microwave			
License:	1.3	CLP-4A3 DBM:	11.17		
Operation standards:	1.12	S-1:	11.23		
Power:	3.6, 19.2	Synthesized speech:	9.13		
Selecting a location:	19.1	Synthesizer:	10.11ff, 10.16, 10.29, 10.38, 10.52		
Statistical terms:	10.6	Closed loop bandwidth:	10.33, 10.38		
Stein, William A., KC6T:	22.39	Closed loop characteristics:	10.38		
Stephensen, John, KD6OZH:	9.54, 10.44	Closed loop performance:	10.34		
Stevens, Dick, W1QWJ:	18.37	Closed loop response:	10.33		
Stockton, David, GM4ZNX:	10.1	Critically damped loop:	10.45		
Storm		Damping factor:	10.44		
Geomagnetic:	20.10, 20.13	DDS:	10.47ff		
Ionospheric:	20.10	DDS/PLL hybrid:	16.14		
Tropical:	20.25	Direct:	10.32		
Stratosphere:	20.6, 20.7	Fractional N:	10.32, 10.32ff, 10.49ff		
Straw, Dean, N6BV:	21.1, 22.3ff	Frequency:	10.32		
Streaming audio:	9.47	IC-765:	10.49		
Street lighting:	20.25	Indirect:	10.32		
Stringham, Kenneth Jr, AE1X:	25.27	Instability:	10.33		
Stripline:	10.30, 18.8, 18.23	LO:	15.1		
Stroud, Dick, W9SR:	22.27	Loop compensation amplifier:	10.38		
Stuart, Ken, W3VVN:	17.2	Loop gain:	10.40		
Stubs:	21.10	Loop phase:	10.40		
Study guides for Amateur Radio:	1.8	Loop, natural frequency:	10.44		
Subaudible:	15.24, 15.27	Modulation:	10.38		
Subharmonic:	10.22	Multiloop:	10.47		
Subsidence:	20.22	Noise:	10.38, 10.38ff, 10.42ff		
Substrate of an IC:	5.29	Noise, divider:	10.44		
Sudden Ionospheric Disturbance (SID):	20.10	Noise, phase detector:	10.44		
Summing		Noise, reference:	10.44		
Amplifier:	5.3	Open loop response:	10.39		
Loop:	10.51	Phase shift:	10.38		

Inductance factor, large coils:	7.45	Transistors, general purpose:	7.22	Television
Inductance factor, small coils:	7.45	Transistors, low-noise:	7.20	Cable TVI:
Inductance, #12 windings:	7.46	Transistors, RF power:	7.25, 7.26	Interference (TVI):
International call sign allocations:	7.53, 7.54	Transistors, silicon power:	7.24	Preamplifier:
Inverted-U Drooping Wire Lengths:	22.17	Transmission line characteristics:	21.2, 21.3	Telwski, Frederick J., WA7TZY:
ITU recommended phonetics:	7.59	Transmission line parameters:	7.48	Telnet:
ITU regions:	7.53	Transmitter Problems:	26.21	Temperature
KC6T/W6NBH 5-band quads:	22.40	Trap Loss Analysis: 80, 40, 17, 12-Meter		Coefficient:
Logic IC families:	7.28	Antenna:	22.22	Compensated crystal oscillator
Matched line loss:	21.8	Trap Loss Analysis: 80, 40, 20, 15, 10-Meter		(TCXO):
Measured Front-to-Rear Ratios:	22.42	Antenna:	22.22	Compensation:
Message checking:	7.66	Trap Q:	22.22	Effects on resistance:
Message form:	7.63	TTL and CMOS Subfamily:	5.52	Inversion:
Metric units:	7.38	Tube, base diagrams:	7.35	Soldering:
MicroR2 Receiver Performance:	14.79	Tube, tetrode and pentode:	7.33	Stability:
MicroT2 Parts List:	14.83	Tube, triode:	7.32	Ten-Tec:
Miniature lamp guide:	7.12, 7.13, 7.14	Tube, TV deflection:	7.34	Omni VI Plus:
MKII QRP Transmitter Component		Typical 60-Hz Magnetic Fields Near		Orion (Model 565):
Values:	14.70	Amateur Radio Equipment & AC-Powered		Terminal node controller (TNC):
MKII QRP Transmitter Spectral Output:	14.71	Appliances:	3.18	Terminal program:
Mode abbreviations:	7.60	Typical RF Field Strengths Near Amateur		Terminal Units (TUs):
Morse code characters:	7.50	Radio Antennas:	3.18	Terminate:
Morse cut numbers:	7.51	Typical Temperature Coefficients and Leakage		Test
MOV transient suppressors:	7.14	Conductances for Various Capacitors:	6.6	Equipment:
Node-to-Node Resistance for CW Filter:	12.43	US customary units:	7.39	Lead:
Noise figure/temp:	7.46	US/Canada map:	7.61	Procedures:
Noise Readings near household items:	13.16	Values for Optimized Harmonic Filters:	12.34	Procedures, Glossary:
NTS formal message:	7.64	Values of L and C for base-matched mobile		Tester
Number System Conversions:	5.41	whip:	22.47	Transistor:
Op amp ICs:	7.30, 7.31	VCO Coils:	12.19	Vacuum tube:
Optimized 6-m Yagi Designs:	22.60	VHF+ calling frequencies:	7.52	Tetrode:
Optimum Elevation Angles to Europe:	22.2	Voltage regulators:	7.29	Beam:
Optimum Elevation Angles to Far East:	22.2	Voltage-power conversion:	7.44	Texas Potato Masher:
Optimum Elevation Angles to		Voltage-variable capacitance diodes:	7.15	Texas Towers:
South America:	22.2	W1AW schedule:	7.56	<i>The Radio Amateur's Satellite Handbook</i> :
Optimum Ground-System		Waveguide formulas:	21.18	The Wireman:
Configurations:	22.23	Wire, standard vs AWG:	7.47	Theory of gravity:
Parameter for AT-Cut Quartz Resonator:	12.17	Zener diodes:	7.15, 7.16, 7.17	Thermal
Parts List for the 2-Meter OWA Yagi:	22.62	Taggart, Ralph, WB8DQT:	9.32, 9.43	Conductivity:
Parts List for the Inverted-U:	22.15	Talbot, Andy, G4JNT:	9.31	Effects of RF:
Passband Ripple, VSWR and Return Loss		Tandem Match—An Accurate Directional		Greases:
(filters):	12.10	Wattmeter:	19.25	Noise:
Performance of Parallel Resonant Circuit:	4.52	Tank circuit:	10.2, 18.4ff	Resistance:
Pi-Network attenuators:	7.47	Coils:	18.12	Runaway:
Powdered iron core properties:	7.5	Efficiency:	18.5	Time constant:
Power FETs:	7.28	Harmonic suppression:	18.5	Thermalloy:
Power transformer wiring codes:	7.7	Losses:	10.2	Thermionic theory:
Properties of Some High-Permeability		Output:	18.5ff	Thermistor:
Materials:	4.26	Output capacitor plate spacings:	18.12	Thermocoupler meters:
Q signals:	7.57, 7.58	Output capacitor ratings:	18.11ff	Thevenin's Theorem:
R and C color codes:	7.2	Q:	18.5ff	Thompson, Darwin, K6USW:
R and C values:	7.1	Tap for Higher Power Measurements		Three-wire power circuits:
Radio Frequency Spectrum:	4.14	(40 dB):	19.59	Through the glass antenna:
Receiver Problems:	26.22	Tape etchant resists:	8.14	Throughput:
Recommended tools & materials:	8.2	Tape memory-storage:	5.65	Thunderstorm:
Relative Dielectric Constants:	4.19	TAPR:	9.21, 9.45, 23.18	TiCK-4 — a Tiny CMOS Keyer:
Relative Resistivity of Metals:	4.2	Taylor detector:	16.30	Tie points:
RF Awareness Guidelines:	3.19	Taylor, Dan, N7VE:	16.30	Tilt, Earth:
RST system:	7.58	Taylor, Joe, K1JT:	2.9, 2.11, 23.37	Time:
Safety Rules:	26.2	Taylor, Jonathan, K1RFD:	2.10, 9.22	Calibration:
Satellite Equipment Suppliers:	23.12	Taylor, Roger, K9ALD:	4.1	Constant (τ):
Satellite Operating Modes:	23.2	TCP/IP:	9.16	Constant (τ), RL circuits:
Selectivity of Resonant Circuit:	4.49	TCXO:	10.19, 10.19ff, 10.23, 10.51, 10.52	Distributed processing:
Semiconductor diodes:	7.18	TDM:	9.5	Division Multiple Access (TDMA):
Shop tools and materials:	8.2	TDMA:	9.5, 24.6	Division Multiplex (TDM):
Small-signal FETs:	7.19	Technical		Domain:
SMT capacitor multipliers:	7.4	Coordinator (TC):	26.1	Timer, 555:
SMT capacitor significant figures:	7.4	Specialist (TS):	26.1	Timing
SMT resistor tolerance:	7.4	Standards:	1.12	Jitter:
Standard Flip-Flops:	5.48	Technician license:	1.3	Of a computer:
Standard Sizes of Aluminum Tubing:	22.37	Technology Task Force (TTF):	9.47	Tin plating:
Symptoms and Causes for Electronic		Telecommand:	1.18	Tips
Equipment:	26.21	Telemetry:	1.18, 9.5	Toroids and coils:
T-Network attenuators:	7.47	Telemetry, Tracking & Command (TT&C)		TLA.EXE (Transmission Line,
Temperature Coefficients for Various Resistor		Amateur satellite:	9.25ff	program):
Compositions:	6.3	Telemetry, Tracking & Telecommand		TNC:
Thermal Conductivities of Various		(TT&T):	9.22	Card:
Materials:	6.17	Telnet protocol:	9.16	Toggle:
Thermoplastics properties:	7.36	Telephone		Tolerance:
Tips, NTS packet radio:	7.67	Accessories:	13.12	Tone pad:
Transceiver Problems:	26.22	Cordless:	13.13	Tones (AFSK):
Transistors for new designs:	7.27	Interference:	13.12	Tonne, Jim, WB6BLD:

Tools:	8.1ff	Amplifier design:	5.26, 5.27	Tests in the time domain:	25.49
Toroid:	4.11	Basic common-emitter model:	6.23, 6.24	Troubleshooting and repair:	26.18
Toroidal inductors		Biasing:	5.22, 5.23, 18.15	Two-tone IMD:	25.49
Winding:	8.23ff	Bipolar:	5.13, 6.23	Transpolar:	20.11
Towers:	3.2	Bipolar failure:	26.25	Transponder	
Cables and control wires on:	22.26	Bipolar, biasing:	6.26	Linear:	23.1ff, 23.2
Grounding, construction guidelines:	3.7	Cooling:	18.18	Passband:	23.1
Selection factors:	3.2	Darlington:	17.1	Transverters, VHF/UHF/microwave:	15.19
Tips for selection, installation and use:	3.2	Darlington-connected pair:	17.14	TransZorbs:	5.19
Tracking preselector:	10.7	Derating:	6.19	Traps:	22.26
Transceiver description:	15.1	JFET failure:	26.26	Losses:	22.22
ALC:	15.5	Large-signal operation:	6.27	Resonance:	22.26
AMTOR FSK:	15.8	Maximum ratings:	18.11	Traveling-wave tube:	5.12
Audio notch filter:	15.5	Models, low frequency:	6.23	Tri-State gate:	5.43
Balanced modulator:	15.5	MOSFET:	17.14ff	Triac:	5.14
Band pass filters:	15.2, 15.5	MOSFET failure:	26.26	Triangulation for RDF:	13.26
CW break in:	15.7	Pass:	17.13ff	Skywave:	13.27
CW hang time adjustment:	15.8	Power dissipation:	18.11	Trifilar coil windings:	8.24, 11.17
First IF:	15.2	Ratings:	17.14	Trifilar coils:	8.24
FSK and AFSK:	15.9	Response curve:	5.21	Triggered Control (logic):	5.46
Iambic keyer:	15.9	Series pass:	17.2	Trio of Transceiver/Computer Interfaces:	19.35
IF filter:	15.2	Small signal:	6.23	Triode:	5.8, 5.9
LO frequency management:	15.5	Tester:	26.5	High-mu:	18.19
Microphone amplifier:	15.5	Transistor-transistor logic (see TTL)		Tropical storm:	20.25
NBFM:	15.2	Transition time:	5.41	Troposcatter:	20.19, 20.20
NBFM reception:	15.5	Transmatch:	22.4ff	Troposphere:	20.6, 20.7, 20.19
Noise blanker:	15.2	Transmission characteristics:	9.2ff	Ducting:	20.22
Optical encoder:	15.7	Transmission Control Protocol/Internet Protocol		Refraction:	20.22
Output mixer:	15.5	(TCP/IP):	9.16	Scatter:	20.19
PA:	15.5	Transmission line:	21.1ff	Troubleshooting and Repair:	26.1ff
Passband tuning:	15.2	300-Ω TV line:	21.3	After repair:	26.27
PIN diode AGC:	15.3	As impedance transformers:	21.9	EMI:	13.5
Product detector:	15.3, 15.6	Attenuation, dB/100 ft chart:	21.7	Professional repair:	26.28
RIT:	15.7	Bandpass filter:	12.24	Receiver:	26.17
Second mixer:	15.3	Bargain coax, risks:	22.54	Systematic approaches:	26.7
Speech processor:	15.5	Choosing a:	21.8	Transceiver:	26.19
VOX:	15.8	Coaxial cable:	22.5, 22.53	Transmitter:	26.18
VOX hang time adjustment:	15.8	Common-mode currents:	21.15	TVI flow chart:	13.8
XIT:	15.7	Connectors, home-brewed:	22.53	True RMS:	10.8
Transceivers:	15.1ff	Decouple:	21.14	Trunk lid mount:	15.25
Alignment:	26.19	Filter:	12.22	Truth table:	5.45
D-C (Direct Conversion):	16.29ff	Filter emulating LC filter:	12.25	TRX-Manager software:	24.12
Switching:	26.19	Hardline (coax):	22.53	TTL:	5.52ff, 25.52
Troubleshooting and repair:	26.19	Hardline, end runs:	22.53	Circuits:	5.53, 5.54
VOX:	26.19	Imbalances:	21.14	Driving CMOS:	5.57
Transducer:	4.11, 4.13	Ladder line:	22.5, 22.7	Subfamilies:	5.52
Transsequatorial		Loss:	21.6	Tube	
Field aligned irregularities:	20.18	Lossless:	21.3	Cooling:	18.15
Path:	20.15	Matched-line loss:	21.6	Filament:	18.13
Spread F:	20.17	Mismatched:	21.4	Heater:	18.13
Transfer		Open-wire line:	21.2ff, 22.5	High-power amplifier example:	18.19ff
Function:	10.38	Quarter-wave filter:	12.24	Output capacitance:	18.6
I/O:	5.62	Table of Characteristics:	21.2, 21.3	Plate voltage:	18.14
Transformation, impedance:	18.3ff	Transformers:	4.61	Protection circuit:	18.35
Transformer:	4.11, 4.54, 6.9, 7.6, 18.10ff	Twin lead:	22.5, 22.53	Screen voltage:	18.14
Auto:	4.58	Waveguide:	21.1	Screen-grid stabilization:	18.28
Broadband:	14.53ff	Transmit Gain Control (TGC):	14.49ff, 16.29	Sockets & Chimneys:	18.16
Broadband RF:	4.59	Transmitter		Tester:	26.5
Calculations for boost regulator:	17.30	AM, ideal:	11.6	Tuned	
Conventional:	18.10	Automatic level control (ALC):	14.49	Circuit:	4.47, 10.2
Core construction:	4.57	Carrier and unwanted sideband		Radio frequency (TRF):	14.14
Current ratio:	4.55	suppression:	25.49	RF (TRF):	10.1
Failure:	26.23	Coil conductor sizes:	18.12	Tuner, antenna:	21.10
Hilbert:	16.9ff	Design:	14.42ff	Tuning capacitors:	10.15
Impedance ratio:	4.56	Doorknob capacitor:	18.13	Tunnel diode:	10.1, 10.30
Iron core:	4.55	Frequency multipliers:	14.51	Turn-around time:	25.1
Leakage reactance:	6.9	Keying:	26.18	Turn-over:	25.9
Line transformers:	14.55ff	Low output power:	26.18	Turns	
Loss:	4.56	MicroT2 SSB Transmitter:	14.75	Counting:	8.23
Nonresonant:	4.58	Mixer spurious signals:	14.49	Ratio of transformer:	4.55
Power:	17.3	MKII Universal QRP Transmitter:	14.70	TVI:	13.1, 13.8, 21.14
Power ratio:	4.56	NBFM:	14.57f	Cable TV:	13.11
Resonant RF:	4.59	Noise:	14.13	TVRO:	23.21, 23.22, 23.34
RF:	4.58	Output load and impedance:	14.51f	Twilight region:	20.15
Shielding:	4.58	Performance tests:	25.49ff	Two-tone IMD:	25.43, 25.49
Transmission-line:	4.61, 18.10, 18.25	Phase noise:	25.49	Type N connector:	19.9
Turns ratio:	4.55	Power requirements:	14.13		
Voltage ratio:	4.55	Power standards:	1.14		
Transient:	17.2	RF chokes:	18.12ff		
Protection:	3.7	RF envelope shaping:	14.48		
Transistor:	5.12	Spurious emissions:	25.49		
Amplifier configurations:	5.22	Subsystems:	5.36		

U

U-bolts:	22.38
Ugly construction:	8.8
Ultraviolet:	20.1

Under-sampling:	16.30	Visible light:	20.1	W2EWL:	9.27
Underwriters Laboratory (UL):	3.3	Viterbi decoder:	9.13	W2FNA:	23.38
Listing, what it means:	3.3	VLF		W2WAM:	9.29
Uninterruptible power supply:	17.44	IF receiver:	14.28ff	W3DZZ antenna:	22.19
Unit circle:	21.5	Phase comparator:	25.2	W3EP:	20.1
Universal Keying Adapter:	19.22	VLSI:	5.51	W3GKP:	23.32
Universal power supply:	17.44	VOACAP program:	20.19, 20.20	W3KH:	23.7
Universal Serial Bus (USB):	5.71	Voice		W3PM:	23.24
University of Hawaii:	9.14	Digital modes:	9.31ff	W3VVN:	17.2
UO-11 (OSCAR 11):	23.5	Digital, amateur radio:	9.31	W4AO:	23.32
Up conversion superhet:	14.30	Modes:	9.26ff	W4IJC:	2.6
Uplink antennas:	23.19	Voice over Internet Protocol (VoIP):	2.10, 9.21, 9.47, 9.48, 24.2	W4OZK:	2.5
Upper sideband (USB):	9.9	Echolink:	2.10	W4PWF:	9.32, 9.37
USB (Universal Serial Bus):	5.71	eQSO:	2.10	W4RI:	9.1, 9.54
Interfaces for Your Ham Gear:	19.39	iLink:	2.10	W4RNL:	22.14
Utility PC boards:	8.17	Internet Radio Linking Project (IRLP):	2.10	W4WSR:	23.21
UV:	20.6ff	WIRES-II:	2.10	W5FG:	18.6
Short:	20.11	Volt:	4.1	W5LFL:	1.7
V		Volt Ohm milliammeter (VOM):	26.2	W6DNG:	23.32
Vackar VFO, G3PDM:	10.17	Volt-Ampere rating:	17.3	W6ELProp program:	20.20
Vacuum:	10.23	Volt-Ampere reactive (VAR):	4.46	W6HB:	2.10, 23.32
Vacuum tube:	5.8ff, 10.14	Voltage:	4.11	W6KVC:	9.42
Components:	5.8ff	Back:	4.27	W6NBH:	22.39
Dynamic characteristic curve:	5.9	Breakdown rating of capacitor:	4.20	W6ORG:	9.38
Failure:	26.27	Comparator:	5.35	W7EL:	10.16, 10.20
Mercury vapor rectifier:	17.4	Controlled oscillator (VCO):	10.20	W7GHM:	9.19
Other types:	5.11, 5.12	Doubler (Full-wave):	17.7, 17.8	W7PUA:	19.59
Tester:	26.5	Doubler (Half-wave):	17.7	W7ZOI:	8.8, 10.16, 10.16ff, 10.19, 10.20, 10.28, 14.70, 15.11, 19.59, 21.4
Voltmeter (VTVM):	26.2	Effective:	4.16	W8IAH:	9.22
vs solid state:	18.1ff	Follower:	5.3, 5.35	W8NX:	22.19ff
Vacuum variable capacitor:	18.6	IC regulators:	17.16ff	W8NX coaxial-cable trap:	22.19ff
Van Allen belts:	20.6	Induced:	4.27	W9SR:	22.27
Van Zant, Frank, KL7IBA:	19.29	Instantaneous:	4.15	WA1LOU:	9.16, 9.22
Varactor:	10.19, 10.34	Multipliers:	17.7	WA3FET:	22.61
Diode:	5.18	Peak:	4.16	WA7LYI:	19.16
Variable crystal oscillator (VXO):	10.27	Peak-to-peak:	4.16	WA7TZY:	10.1
Variable frequency oscillator (VFO):	10.12	Ratio of transformer:	4.55	Wakefield Thermal Solutions, Inc.:	6.18, 6.30
Varistor:	17.2	Reflection coefficient:	21.4	Model 441 heat sink:	6.19
VCO:	10.20, 10.20ff, 10.34, 10.40, 10.52	Regulation:	17.12ff	WAN:	24.6
Gain:	10.44, 10.45	Regulation of power supplies:	17.11	Warm front:	20.23
Low noise:	10.53	Regulator, tube:	10.15	Warship operation:	10.7
Noise performance:	10.43	Regulator, Zener diode:	10.16	WAS (Worked All States):	1.5
Nonlinear tuning curve:	10.38	Root mean square (RMS):	4.16	Water	
Switched:	10.34	Sources:	6.3	Droplets:	20.2
Tuning diode:	10.42	Spikes:	17.10	Vapor:	20.2, 20.3, 20.19
Voltage-to-frequency gain:	10.40	Standing Wave Ratio (VSWR):	21.6	Vapor, absorption:	20.24
VCR:	13.12	Tripler and quadrupler:	17.8	Vapor, content:	20.24
VCXO:	10.53	Voltmeter:	25.5	Watson-Watt, Robert:	20.6
Pulling:	10.24	Compensated, modular RF:	25.35ff	Watt:	4.1, 4.6
VE3ONT:	2.9	Current measurement:	25.5	Waveform:	4.12
VE5FP:	23.18	DC voltage standards:	25.5	Complex:	4.17
VE6AFO:	19.2	Impedance:	25.9	Ramp:	4.12, 4.13
VE7LTD:	2.10	Multipliers:	25.5	Reactance, and complex:	4.41
Velocity:	20.1ff	RF probe:	25.36	Sine:	4.12, 4.13
Factor (VF):	21.1, 21.3, 21.10	RF probe multipliers:	25.37ff	Square:	4.12, 4.13
Vernier dial:	25.52	Sensitivity:	25.5	Triangle:	4.12, 4.13
Vertical antennas:	22.23ff	Volunteer Examiners (VEs):	1.8, 2.4	Waveguide:	21.1, 21.17
Optimum ground systems for:	22.23	VE Coordinators (VECs):	2.4	Coupling to:	21.18, 21.19
Vertical incidence:	20.7, 20.8	VOM (volt-ohm-meter):	25.1, 25.52	Cutoff frequency:	21.18
Ionogram:	20.7	Von Neumann model:	16.34	Dimensions:	21.18
Vester, Ben, K3BC:	9.38	VOX:	15.8	Dominant mode:	21.18
VFO:	10.6, 10.13, 10.52	VPN:	24.6	Field distribution in:	21.18
Components and construction:	10.15	VSWR (see also SWR):	21.6	Modes of propagation:	21.18
Low drift:	10.13	VTVM (vacuum tube voltmeter):	25.52	TE (transverse electric) mode:	21.18
VHF AFSK:	9.9	VUSat (OSCAR 52):	23.5, 23.8	TM (transverse magnetic) mode:	21.18
VHF parasitic:	10.17	VXO:	10.27	Wavelength formulas for:	21.18
VHF/UHF link, repeater:	15.20	W		Wavelength:	20.1, 20.2
Video		W1AW:	1.9	Waves	
Displays:	5.66	W1BU:	2.10, 23.32	Acoustic:	10.22
Vidicon:	5.11	W1FB:	10.28	Cyclone:	20.23
Vincent, James, G1PVZ:	9.45	W1GHZ:	23.21, 23.24	Electromagnetic:	20.1
Vintage radio:	2.1, 2.11	W1LC:	17.40, 24.1	Forward (incident):	21.4
AM:	2.12	W1QWJ:	18.37	Ground:	9.3
Commercial equipment:	2.12	W1RFL:	8.1, 13.1, 26.1	Light:	20.1
Heathkit AT-1:	2.11	W1VT:	10.11, 19.29	Multi-hop sky:	9.3
Johnson Ranger II:	2.12	W1ZR:	9.31	Radio:	20.1
Kits:	2.11	W2CQH:	12.1, 24.1, 24.6	Reflected:	21.4
Military equipment:	2.12	W2CRR:	9.43	Sky:	9.3
Virtual height:	20.7, 20.14	W2DU:	21.17, 22.62	Standing:	21.4
Virtual private network (VPN):	24.9			Trap for BC stations:	12.33
				WB2JNA:	9.22

WB2OSZ:	9.37	Solar:	20.6	WWV:	14.41, 20.10, 20.19, 25.1, 25.14
WB4APR:	9.22	Winding coils:	8.23ff	WWVH:	20.10, 20.19, 25.1
WB4JFI:	9.14	Bobbins with toroids:	8.23	WXSat:	9.33
WB6BLD:	12.1	Window function:	16.20		
WB8DQT:	9.32, 9.38, 9.43	Windowing:	16.20	X	
WB8IMY:	9.13, 9.14, 9.22, 9.54	Wingfield, Elmer, W5FG:	18.6	X-ray:	20.1ff
WB8ISZ:	2.9	Winlink 2000:	9.21	Long:	20.11
WB8VGE:	17.41	Wire		Short:	20.11
WB8WGA:	9.16	Cutters:	8.4	XIT:	15.7
WB8YGG:	19.17	Wrap:	8.11	XOR:	10.35
WE7LTD:	9.21	Wired Equivalent Protection (WEP):	9.53	Gate:	5.43
Weak signal operating:	2.1, 2.10	Wired-trace construction:	8.9		
Weather, high pressure system:	20.22	Wireless:	24.1ff	Y	
Weatherfax:	9.32	Glossary:	24.5	Yaesu FT-1000MP Mark V Field:	15.3
Weatherman:	9.33	Keeping current:	24.10	Yagi (Yagi-Uda)	
Weatherproofing:	22.26	LAN (WLAN):	9.45	Antenna:	21.8ff, 22.28
Polystyrene Q Dope:	22.26	Network, 802.11:	5.71	Antenna, tuning and construction	
Web:	24.1ff	Technology:	24.6ff	techniques:	22.37ff
Search engines:	24.1ff	Wiring techniques:	8.8, 8.21	Crossed:	23.17
Weinreich, Richard, KØUVU:	11.24	WK8H:	19.3	Stacked Yagis:	21.11
WEP:	9.53, 24.4	WLAN:	9.45	Yahoo:	24.1
Wheatstone bridge:	25.7, 25.52	New generation:	24.4	Yankee Network:	9.30
Whitaker, Robert, K15PG:	17.44	Security:	24.5	YIG:	10.31
White, Ian, G3SEK:	8.1, 22.61	WØID:	18.1	Oscillator:	10.32
White, Rosalie, K1STO:	1.2	WØIYH:	14.1, 14.48, 17.18, 25.27	Sphere:	10.31, 10.32
Wi-Fi:	24.1ff	Wolbert, Bob, K6XX:	5.58	Youngblood, Gerald, AC5OG:	16.30
Computer connections by radio:	24.4	WØLMD:	23.21, 23.22, 23.27	Yttrium-iron garnet (YIG):	10.31
Glossary:	24.4	Woods, James N., W7PUP:	3.1		
W15W:	14.61	WØORE:	1.7	Z	
Wideband		Word register:	5.50	Zener diode:	5.18, 6.7, 17.12
FM:	9.30	Worked All States (WAS) award:	1.5	Avalanche:	6.7
Modes:	9.1	Worked All VE award:	1.5	Breakdown:	6.7
Transmitter noise:	14.48ff	Workstation:	8.8	Zener voltage:	6.7
Wilcox, David, K1DJW:	2.5	World Radio TV Handbook:	20.19	Zero Surge Inc.:	3.8
Wilson, Mark, K1RO:	17.36	Wrist strap, ESD:	8.7	Zeroes:	10.38ff
WinCAP Wizard program:	20.20	WS4S:	19.1		
Wind		WSJT software package:	2.11, 23.37		
Chinook:	20.24	FSK441:	2.11		
Foehn:	20.24	JT6M:	2.11		

Notes

Notes

Notes

Notes

Notes

Notes

FEEDBACK

Please use this form to give us your comments on this book and what you'd like to see in future editions, or e-mail us at **pubsfdbk@arrl.org** (publications feedback). If you use e-mail, please include your name, call, e-mail address and the book title, edition and printing in the body of your message. Also indicate whether or not you are an ARRL member.

Where did you purchase this book?

☐ From ARRL directly ☐ From an ARRL dealer

Is there a dealer who carries ARRL publications within:

☐ 5 miles ☐ 15 miles ☐ 30 miles of your location? ☐ Not sure.

License class:

☐ Novice ☐ Technician ☐ Technician with code ☐ General ☐ Advanced ☐ Amateur Extra

Name _____ ARRL member? ☐ Yes ☐ No
_____ Call Sign _____

Daytime Phone () _____ Age _____

Address _____

City, State/Province, ZIP/Postal Code _____

If licensed, how long? _____ e-mail address: _____

Other hobbies _____

Occupation _____

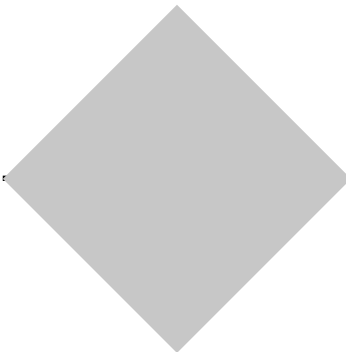
For ARRL use only	2009 HBK
Edition	86 87 88 89 90
Printing	1 2 3 4 5 6 7 8 9 10 11 12

From _____

Please affix
postage. Post
Office will not
deliver without
postage.

EDITOR, ARRL HANDBOOK
ARRL—THE NATIONAL ASSOCIATION FOR AMATEUR RADIO
225 MAIN STREET
NEWINGTON CT 06111-1494

----- please fold and tape -----



About the ARRL

The national association for Amateur Radio

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 approximately 150,000 members, is the largest organization of radio amateurs in the United States. The ARRL 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 ARRL 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 150 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 ARRL also coordinates an extensive field organization, which includes volunteers who provide technical information and other support services for radio amateurs as well as communications for public-service activities. In addition, ARRL 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. ARRL policy is set by a Board of Directors (one from each of 15 Divisions) elected by the membership. The day-to-day operation of ARRL HQ is managed by a Chief Executive 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:



ARRL—The national association for Amateur Radio
225 Main Street
Newington CT 06111-1494
Voice: 860-594-0200
Fax: 860-594-0259
E-mail: hq@arrl.org
Internet: www.arrl.org/

Prospective new amateurs call (toll-free):

800-32-NEW HAM (800-326-3942)

You can also contact us via e-mail at newham@arrl.org

or check out *ARRLWeb* at <http://www.arrl.org/>

About the Included CD-ROM

On the included CD-ROM you'll find this entire *Handbook*, including text, drawings, tables, illustrations and photographs—many in color. Using the industry-standard Adobe *Reader* (included), you can view and print the text of the book, zoom in and out on pages, and copy selected parts of pages to the clipboard. A powerful search engine—Acrobat Search—helps you find topics of interest. Also included are Template Packages for many of the projects in this book and the companion software mentioned throughout.

INSTALLING YOUR ARRL HANDBOOK CD

Windows

1. Close any open applications and insert the CD-ROM into your CD-ROM drive. (Note: If your system supports "CD-ROM Insert Notification," the *ARRL Handbook CD* may automatically run the installation program when inserted.)
2. Select **Run** from the *Windows Start* menu.
3. Type **d:\setup** (where d: is the drive letter of your CD-ROM drive; if the CDROM is a different drive on your system, type the appropriate letter) and press **Enter**.
4. Follow the instructions to install the CD-Rom files on your system. After the files have been copied the Adobe Reader program will also be installed.

Macintosh

To install the CD files on the Mac, open the CD-Rom (ARRL 2009 Handbook) icon then click to go into the "Program Files" folder. Drag the "ARRL 2009 Handbook" folder icon to your hard drive.

To use the search capability in the Handbook CD you will need to have Adobe Reader installed. Mac Preview can not access all of the features of the PDF files. If you need to install the Adobe Reader 7 program, it is located in the top level folder of the CD. Double click on the file "Adobe_Reader_MAC_807.dmg" to open up the disk image. Then double click on the Adobe Reader Installer icon to launch the installer. After this is installed you will be able to open then Handbook files in the Reader to view them.

USING YOUR ARRL HANDBOOK CD

Windows

Click on START, ALL PROGRAMS, then click ARRL SOFTWARE, and ARRL 2009 HANDBOOK CD to start the Handbook CD viewer. The ARRL SOFTWARE menu also has additional options for accessing the included Templates and Software Files on the CD.

If you chose not to install the Handbook files on your hard drive, you will need to load the CD in the drive first, then go to MY COMPUTER, select your CD Drive, then click down into PROGRAM FILES, then ARRL 2009 HANDBOOK, and then click to start "intro.pdf".

Macintosh

Go to where you copied the ARRL 2009 Handbook folder onto your hard disk, then look for the "intro" file. Click to start this file in Adobe Reader.

If you chose not to install the Handbook files on your hard drive, you will need to load the CD in the drive first, then go to CD Drive icon (ARRL 2009 Handbook) on your desktop, then click down into PROGRAM FILES, then ARRL 2009 HANDBOOK, and then click to start "intro.pdf".

TEMPLATES AND SOFTWARE

See the **Templates and Support Files** and **Handbook CD Companion Software** sections in the *Handbook* CD-ROM Table of Contents for information about accessing the template packages.