

Index

Editor's Note: Except for commonly used phrases and abbreviations, topics are indexed by their noun names. Many topics are also cross-indexed.

The letters “ff” after a page number indicate coverage of the indexed topic on succeeding pages.

A separate Project index and Author index follow the main index.

10 meter Yagis:	11-12
12 meter Yagis:	11-14
15 meter Yagis:	11-14
17 meter Yagis:	11-18
20 meter Yagis:	11-20
30 meter Yagis:	11-22
40 meter Yagis:	11-23

A

A index:	4-42
AAT:	24-8ff
AB-577 mast:	26-8
ACE-HF:	4-41
Active antennas:	22-15
Adcock antenna:	22-20
Aluminum tubing:	25-7
Characteristics:	25-7
Construction techniques:	25-8
Sizes:	25-8
AMSAT:	17-2
Anchors, guy:	26-10
Antenna Construction	
On tower:	26-41
Raising and lowering:	26-39
Rotator:	26-19
Wind load:	26-51
Antenna Field and gain measurement:	27-35ff
Antenna Resonance:	24-25
Antenna analysis	
Ground parameters:	3-29
Measuring ground conditions:	3-31
Antenna analyzer:	27-20ff
Antenna comparison:	14-7
Antenna Model:	8-2
Antenna modeling:	8-1ff
Accuracy test:	8-14
Basics:	8-3
Dipole antennas:	2-6
Frequency scaling:	8-12
Ground:	8-10
Limitations:	8-6, 8-15
Load:	8-13
Near field:	8-17
Program inputs:	8-4
Segmentation:	8-5
Source:	8-12
Antenna system design:	14-1ff
Antenna testing:	27-35ff
Antenna tuner:	24-2
Adjusting T network:	24-7
Balanced:	24-11
Balun:	24-12
Hairpin:	24-12

High-power ARRL tuner:	24-13
Location in system:	24-19
Maritime HF antennas:	21-23
Anti-resonance:	2-6
Anti-oxidation compound:	26-47
AO:	7-6
Array	
4-element driven:	12-23
8-element driven:	12-23
Bi-square:	12-18
Bidirectional:	6-2
Binomial:	6-27
Bobtail curtain:	12-13
Broadside:	6-2, 12-1ff
Bruce array:	12-14
Collinear:	6-2, 12-1, 12-22, 15-9
Curtain, VHF and UHF:	15-11
Direction-finding:	22-20
Directional switching:	6-35
Directive:	6-2
Driven:	6-2, 6-7ff
End-fire:	6-2, 12-19ff
Extended double Zepp (EDZ):	12-4
Franklin:	15-9
Half-square:	12-9
Lazy H:	12-17
Multielement:	6-1ff
Parallel:	6-2
Parasitic:	6-2
Phased:	6-10ff
Phasing arrows:	12-24
Receiving:	6-21
Sterba curtain:	12-6
W8JK beam antenna:	12-21
Yagis, space communication:	17-14ff
Arrayfeed1:	6-18ff
ARRL log coordinate system:	1-13
Artificial ground:	10-2
ASAPS:	4-41
Attenuation measurement:	27-23
Attenuator:	27-15
Aurora:	4-11
Auroral propagation:	4-11
Axial ratio:	17-12
Azimuth angle:	1-9
Azimuth pattern:	1-10
Azimuth-elevation position control:	17-31
Azimuthal diversity:	14-41

B

Backscatter:	4-29
Backstay vertical:	21-22

Balanced tuner:	24-11	Cable grip:	26-21
Balun		Cable ties:	26-46
Antenna tuner:	24-12	Cage dipole:	9-7, 9-9
At VHF and UHF:	15-5	Capacitance hat:	9-22
Choke:	24-26, 24-41ff	Mobile HF antenna:	21-16
Coiled-coax:	24-42	CapMAN:	4-37
Detuning sleeve:	24-49	Carabiner:	26-23
Impedance step-up/step-down:	24-51	Carolina Windom:	10-7
Matching stub:	24-50	Cassegrain antenna:	17-16
Phased array:	6-21	Cavity resonator:	18-9
Quarter/Three-quarter wave:	24-50	Center-fed (off-center fed) dish:	17-17
Transmission line:	24-49ff	Center-fed dipole:	2-5
Bandwidth:	1-16	Characteristic impedance (Z_0):	23-4
Barbeque-grill dish antenna:	17-18	Measurement:	27-22
Base loaded vertical:	9-21	Choke balun:	6-21, 9-16, 11-5, 15-5, 24-26, 24-41ff
Basic Wind Speed:	26-16	Coiled-coax:	24-42
Beacon, NCDXF/IARU system:	4-24	Ferrite:	24-43
Beamwidth:	1-14	Ferrite bead:	24-47
Bending radius (cable):	26-44	Measuring impedance:	24-48
Beta match:	11-11, 24-30	Self-resonance:	24-43
Beverage antennas:	22-1	SWR:	27-9
Construction techniques:	22-6	Christmas-tree stack	
Cross-fire feed:	22-8	HF Yagi antenna:	11-26
Echelon:	22-7	VHF/UHF antennas:	15-15
Feed point transformer:	22-5	Circular polarization (CP):	1-4, 1-15, 17-5, 17-6ff
Two wire:	22-7	Climbing technique	
Bi-square antenna:	12-18	Boots, climbing:	26-5
Bibliography:	26-50	Safety:	26-1ff
Antenna and transmission line measurements:	27-42	Tower:	26-3
Antenna fundamentals:	1-25	Tree:	26-8
Antenna materials and construction:	25-15	Coaxial cable:	23-2, 23-20
Broadside and end-fire arrays:	12-25	Attenuation:	23-21, 23-31
Dipoles and monopoles:	2-15	Bend radius:	26-44
Direction finding:	22-32	Burying:	26-44
Effects of ground:	3-33	Characteristics:	23-22
HF Yagi and quad antennas:	11-40	Deterioration:	23-23
Log-periodic dipole array (LPDA):	7-12	Equations:	23-24
Long-wire and traveling-wave antennas:	13-17	Installing:	23-32
Loop antennas:	5-23	RG-8, RG-213 and type cables:	23-22
Maritime HF antennas:	21-27	Specifications:	23-20
Mobile HF antennas:	21-20	Cold galvanizing:	26-47
Multiband antenna:	10-36	Collinear array:	12-1, 15-9
Multielement arrays:	6-39	2-element broadside:	12-2
Portable antennas:	19-14	3- and 4-element broadside:	12-2
Propagation:	4-43	4-element end-fire:	12-22
Receiving antennas:	22-15	Adjustment:	12-4
Repeater antenna systems:	18-16	Come-along:	26-21
Single-band MF and HF antennas:	9-36	Common-mode current:	24-36ff
Space communications antenna systems:	17-33	Asymmetric feed line:	24-38
Stealth and limited-space antennas:	20-14	Effect on SWR:	24-38, 27-9
Transmission line coupling and impedance matching:	24-53	Feed line:	24-26
Transmission lines:	23-35	Pattern distortion:	24-37ff
Bidirectional array:	6-2	Conduction current:	1-2
Big wheel antenna:	16-3, 16-9	Connectors	
Big-Grips:	26-31	BNC:	23-27
Binomial array:	6-27	F:	23-27
BIP/BOP	14-41	Hardline:	23-30
BNC connectors:	23-27	N:	23-27
Bobtail curtain:	12-13	SMA:	23-30
Boom construction:	25-9	UHF:	23-25
Boom length, Yagi antenna:	11-6	Weatherproofing:	26-45
Boots, climbing:	26-5	Control cable:	26-44
Broadband arrays:	6-21	Coordinate scale:	1-12
Broadband dipole:	9-7	ARRL logarithmic:	1-13
Broadband transformer:	24-35	Linear:	1-12
Broadside array:	6-2, 12-1ff	Logarithmic:	1-12
4-element:	12-17	Rectangular:	1-13
Parallel:	12-7	Coplanar pair:	17-7
Bruce array:	12-14	Copperweld:	25-2
Burying cable:	26-44	Corner reflector:	15-51ff
		Ground-plane:	15-53
C		Corona ball:	21-15
C-pole antenna:	9-11	Coronal hole:	4-25
Cable clamps:	26-31	Coronal mass ejection (CME):	4-11
		Corrosion:	26-46ff

Counterpoise:	2-13
Coupled-resonator (C-R) dipole:	10-24
30/17/12 meter:	10-28
Coupling	
Mutual:	6-4
Transmission line:	24-1ff
Crank-up tower:	26-4, 26-13, 26-48
Critical angle:	4-21
Critical frequency:	4-18, 14-35
Cross-band coupler:	18-12
Cross-polarization:	17-4
Crossfire	
Feed system:	6-16, 6-22, 22-8
Receiving array:	6-32
Current balun (<i>see</i> choke balun)	
Current distribution:	6-7
Current forcing with quarter-wave lines:	6-17
Current measurement:	6-34
Curtain array:	15-11
Cushcraft XM240:	11-29

D

D layer (D region):	4-17
dBi:	6-12
Decibel:	1-10
Delay lines:	6-14ff
Electrical length:	6-38
Delta loop:	5-5
Feed point:	5-9
Polarization:	5-6
Delta match:	15-4, 24-26
Detuning sleeve:	24-49
Diffraction:	4-1, 14-20
Geometric Theory of Diffraction:	14-21
Incident-Shadow Boundary:	14-21
Reflection-Shadow Boundary:	14-21
Dipole:	2-1ff, 9-2ff
135 foot, 80-10 meter:	10-4
30/17/12 meter, coupled-resonator:	10-28
40-15 meter dual band:	9-3
Broadband:	9-7
C-pole:	9-11
Cage:	9-7
Cage, 80 meter:	9-9
Center-fed:	2-5
Conductor diameter:	2-3
Coupled-resonator (C-R):	10-24
Fan (multiple dipole antennas):	9-8, 10-9
Feed point:	9-3
Feed point impedance:	2-5
Folded:	2-11, 9-4
Height above ground:	2-3, 2-8
Inverted-V:	9-5
Multiband:	10-3
Off-center-fed (OCF):	2-6, 10-8
Over real ground:	3-25
Portable inverted V:	19-3
Portable whip:	19-4
Radiation pattern:	2-1, 2-9
Shortened:	9-2, 9-25
Sloping:	9-6
Terminated folded (TFD):	10-11
Twinlead, folded:	19-3
Vertical:	2-11, 9-6, 9-10
Zip cord:	19-2
Direct feed:	11-5
Direct wave:	4-2
Direction-finding:	22-17ff
80 meter system:	22-27
Adcock antenna:	22-20
Array:	22-20
Double-ducky VHF direction finder:	22-27
Ferrite core loop:	22-25
Frame loop:	22-23

Goniometer:	22-22
Interferometer:	22-27
Loops:	22-18
Sensing antenna:	22-19
Tape measure Yagi:	22-30
Time difference of arrival (TDOA):	22-27
Triangulation:	22-17
Wullenweber antenna:	22-22
Yagi antennas:	22-30
Directional wattmeter:	27-11
Directivity:	1-7, 1-11, 6-1ff
Director:	11-1
Discone antenna	
20-10 meter, A-frame:	10-33
40-10 meter:	10-34
HF:	10-33
VHF and UHF:	15-48ff
Dish antenna:	15-58ff, 17-5ff
Feed system:	15-61
Polaplexer:	15-61
Safety:	15-61
Displacement current:	1-2
Diversity, repeater antennas:	18-13
Double-ducky VHF direction finder:	22-27
Double-L antenna:	10-10
Doublet:	9-2
Downtilt:	18-4
Driven array:	6-2, 6-7ff
Driven element:	11-1
Dual polarization:	17-5
Duplex:	18-10
Repeaters:	18-7

E

E field:	1-2
E layer (E region):	4-17
E-plane:	1-11
Earth-Moon-Earth (EME)	
Antenna systems:	17-1ff
Power requirements:	17-4
SHF challenges:	17-21
Side lobes:	17-5
Yagi arrays:	17-15
Effective isotropic radiated power (EIRP):	1-17
Worksheet:	18-14
Effective projected area (EPA):	26-16
Effective radiated power (ERP):	1-17
Effects of terrain:	14-17ff
Ray tracing:	14-19
Simulation:	14-22
Stacking Yagis:	14-36
Terrain files:	14-25
Efficiency, radiation:	6-11
EFFLEN.FOR:	1-17
Eggbeater antenna:	17-2, 17-8
EIRP (<i>see</i> Effective isotropic radiated power)	
Electrical length	
Feed line:	6-38
Measurement:	27-20
Electrical tape:	26-46
Electromagnetic field:	1-1ff
Coupled:	1-3
E field:	1-2
H field:	1-1
Safety:	1-18ff
Electromagnetic wave:	1-2ff
Attenuation:	1-5
Electrostatic field:	1-2
Field intensity:	1-4
Phase:	1-4
Polarization:	1-4
Velocity factor (VF):	1-3
Velocity of propagation:	1-3
Wavefront:	1-3

Electronic beam forming:	22-22
Element	
Array:	6-2
Construction techniques:	25-10
Length correction:	1-17
Taper:	1-17
Elevated ground system:	3-13ff
Elevated radials:	3-13ff
Elevation angle:	1-9, 4-32
HF propagation:	14-7ff
Elevation pattern:	1-10
Elliptical polarization:	1-4
End effect:	1-5, 2-3, 21-5
End loading, Yagi antenna:	11-28
End-fed Zepp:	9-5, 10-3
End-fire array:	6-2, 12-19ff
Equalizer plate:	26-34
Erection fixture (<i>see</i> Gin pole)	
ERP (<i>see</i> Effective radiated power)	
EWE receiving antenna:	22-9
Extended double Zepp (EDZ):	12-4
Extraordinary wave:	4-4
EZNEC:	6-10ff, 10-26, 11-2ff, 11-33, 14-19, 17-15, 27-35
EZNEC -Pro/2:	8-2
EZNEC 5.0:	8-2
EZNEC Pro:	7-6
EZNEC-ARRL:	8-3, 11-2ff, 13-16, 14-19, 21-27, 23-15
F	
F connectors:	23-27
F layer (F region):	4-17
Fading:	4-28
Stacked Yagis:	14-40
Fall-arrest harness (FAH):	26-2
Fan dipole:	9-8, 10-9
Far field:	1-8
Effects of ground:	3-20ff
Reflections:	3-21
Faraday rotation:	1-4, 17-4, 17-11
FCC RF exposure regulations:	1-20
Feed point impedance:	1-6
Height above ground:	3-5
Mutual impedance:	1-6
Self impedance:	1-6
Yagi antenna:	11-4
Ferrite choke balun:	24-43
Ferrite core loop antenna:	5-17, 22-25
Fiberglass	
Antenna materials:	25-14
Pole:	26-9
Field cancellation and reinforcement:	6-1ff
Field strength:	1-4
Field strength gain (FSG):	6-11
Field strength meter (FSM):	27-17
Flag receiving antenna:	22-13
Flat projected area (FPA):	26-16
Flyswatter antenna:	15-66
Focal length (dish):	15-59, 17-17
Focal ratio (dish):	17-17
Folded dipole:	2-11, 9-4, 15-4, 24-27
Folded monopole:	2-14, 9-16
Force 12 C-3 triband Yagi:	11-27
Forward stagger, Yagi antenna:	11-26
Four-square array:	6-20, 6-27
Franklin array:	15-9
Frequency coordination:	18-15
Frequency scaling:	1-16
Front-to-back ratio (F/B):	1-14
Yagi antenna:	11-4
Front-to-rear ratio (F/R):	1-14, 11-4
Front-to-side ratio:	1-14

G

G5RV multiband antenna:	10-6
Gain:	1-7, 1-11
At VHF and UHF:	15-1
Boom length:	6-6, 15-27
Broadside array:	6-6
Calculated from beamwidth:	6-3
dBi:	6-12
Dish antenna:	15-59
Measurement:	27-39
Power:	6-1ff
Relative to single element:	6-12
Stacking:	6-6
Yagi antenna:	11-3, 11-6
Galvanic series:	26-46
GAMMA:	24-29
Gamma match:	6-21, 15-4, 24-27
Geoclock:	4-40
Geomagnetic storm:	4-26
Geometric optics (GO):	14-20
Gin pole:	26-22, 26-24
Glass-mount VHF/UHF antenna:	16-5
Gloves:	26-5
GNEC:	7-6, 8-2
Goggles:	26-5
Goniometer:	22-22
Gray-line propagation:	4-27
Great circle path:	4-26
Gregorian antenna:	17-16
Ground	
Antenna modeling:	8-10
Conductivity map:	3-2
Effects of:	3-1ff
Electrical characteristics:	3-2
Loss:	6-10, 6-23ff
Power loss:	3-8
Soil types:	3-3
Ground plane:	2-13
Ground property measurement:	3-31
Ground reflections	
Horizontal antennas:	3-24
Vertical antennas:	3-21
Ground screen:	3-10
Ground system:	26-19
Elevated:	3-13ff
Maritime HF antennas:	21-25
Multiband:	3-19
Radials:	3-10
Vertical antennas:	3-6
Wire:	3-9
Ground wave:	4-2
Ground-plane antenna:	9-14, 15-5
Corner reflector:	15-53
Elevated radials:	9-19
Guy wire	
Cutting:	26-32
Phillystran:	26-32
Preforms:	26-31
Resonance:	26-33
Swaged fittings:	26-31
Tension:	26-34
Types and grades:	26-30
Guyed tower:	26-13ff
Guying:	26-30ff
Anchors:	26-10
Design:	26-16
Material:	26-10
Tension:	26-10
Gyrofrequency (electron):	4-19

H

H field:	1-1
H-plane:	1-11

Hairpin match:	15-4, 24-30
Hairpin tuner:	24-12
Half-power points:	6-2
Half-sloper antenna:	9-29
1.8 MHz:	9-31
Half-square antenna:	12-9
Halo antenna:	16-3, 16-12
Hard hat:	26-5
Hardline:	15-3, 23-20ff
Connectors:	23-30
Hardware for antenna construction:	25-14
Harmonic suppression by tuners:	24-3
<i>HDL_ANT</i> :	17-17
Height above average terrain (HAAT):	18-3
Helical antenna:	17-10ff
Helical-wound mobile HF antenna:	21-14
<i>HFTA</i> :	3-1, 3-21, 8-1, 14-1ff, 14-22ff, 15-18, 18-2
High-altitude Elliptical Orbit (HEO) satellites:	17-2
Hog horn antenna:	17-16
Horizontal polarization:	1-15
Horn antenna:	15-58ff
Safety:	15-61
Hose clamps:	25-8
House bracket:	26-14
Hy-Gain Yagi:	11-24
Hybrid coupler:	6-16

I	
Impedance:	1-5ff
Measurement:	27-23
Impedance matching:	24-2ff
At the antenna:	24-25ff
At VHF and UHF:	15-3
Beta match:	24-30
Broadband matching:	24-35
Delta match:	15-4, 24-26
Folded dipole:	15-4
Frequency range:	24-25
Gamma match:	15-4, 24-27
Hairpin match:	15-4, 24-30
Mobile HF antenna:	21-11
Omega match:	24-30
Resonant circuit:	24-35
Stubs:	24-32
T match:	15-4, 15-30, 24-27
Universal stub:	15-3
Indoor antennas:	20-4
Instantaneous polarization:	1-15
Insulators:	25-4
Feed point:	25-5
Parallel-wire line:	25-6
Insurance:	26-6, 26-49
Interaction, antenna modeling:	14-3
Interference of waves:	14-20
Interferometer:	22-27
Interlaced elements, Yagi:	11-26
Inverted-L:	9-26, 9-28
Inverted-V dipole:	9-5
<i>IONCAP/VOACAP</i> :	4-26, 4-33ff, 14-7ff
Ionizing radiation:	1-18
Ionosonde:	4-18
Ionosphere:	4-16
D layer (D region):	4-17
E layer (E region):	4-17
F layer (F region):	4-17
Ionospheric propagation	
Bending:	4-17
Disturbed conditions:	4-25
Geomagnetic storm:	4-26
Lowest usable frequency (LUF):	4-24
Maximum usable frequency (MUF):	4-23
Multi-hop:	4-22
Scatter:	4-5
Skip zone:	4-21

Ionospheric sounding:	4-18
Isolation, repeater antennas:	18-7
Isotropic radiator:	1-7, 6-12

J

J-pole antenna:	15-5
-----------------	------

K

K index:	4-42
K6STI loop:	22-8
K9AY loop:	22-9
<i>Kansas City Tracker (KCT)</i> :	17-31
Knife-edge diffraction:	4-11
Knots:	26-26

L

L network:	24-2, 24-4
Array feed:	6-19
Lanyard:	26-2
Lazy H antenna:	12-17
Length-to-diameter ratio (l/d):	2-5
Lightning protection:	26-20
Limited space antennas (<i>see</i> Stealth antennas)	
Lindenblad antenna:	17-9
Line launcher:	26-6
Linear actuator:	17-27
Linear coordinate system:	1-12
Linear loading:	9-24
Yagi antenna:	11-28
Linear polarization:	1-4
Litz wire:	5-15
Loading coil, mobile HF antenna:	21-6
Lobes, major and minor:	6-2
Log-periodic dipole array (LPDA):	7-1ff
3.5 or 7 MHz:	10-29
5-band, 13-30 MHz:	10-32
Construction:	7-8
Design:	7-1, 7-9, 7-11
Feeding:	7-8
Software:	7-4
VHF and UHF:	15-48ff
Wideband performance:	7-6
Logarithmic coordinate system:	1-12
Long path propagation:	4-26
Long-wire antennas:	13-1ff
Characteristics:	13-1
Directivity:	13-3
Feed methods:	13-5
Length:	13-5
Parallel:	13-6
Radiation patterns:	13-2
Terminated:	13-10
V-beam:	13-6
Loop antennas:	5-1ff
1.8 MHz receiving loop:	22-13
14 MHz, vertically polarized:	9-34
7 MHz, full size:	9-32
Arrays:	5-19
Compact 40 meter loop for recreational vehicle:	19-7
Construction, small loops:	20-12
Delta:	5-5
Direction-finding:	22-18
Ferrite core:	5-17
Ferrite core for direction finding:	22-25
Frame loop for direction finding:	22-23
Half-wave:	5-10
Horizontal:	5-10
Indoor:	20-4
K6STI receiving loop:	22-8
K9AY receiving loop:	22-9
Large:	5-1

Loop Skywire:	10-11
One wavelength:	9-32
Q:	5-15
Quad:	5-1
Rectangular, horizontally polarized:	9-33
Shielded:	5-14
Small:	5-12
Transmitting, small loops:	5-21, 20-10
Tuned:	5-12
Loop Yagi:	15-42
Loopquad:	15-42
Loss	
Matching networks:	24-4
Transmission line:	24-20
Loss resistance:	6-10
Low Earth Orbit (LEO) satellites:	17-2
Lowest usable frequency (LUF):	4-24
LPCAD:	7-4
LVB Tracker:	17-31
LXC Prime Directive:	26-28

M

Magnetic (mag) mount	
Mobile HF antenna:	21-18
VHF/UHF antenna:	16-6
Magnetosphere:	4-11
Main lobe:	1-9
Major and minor lobes:	6-2
MARC:	26-19
Maritime HF antennas:	21-20ff
Backstay vertical:	21-22
Grounding system:	21-25
Modeling:	21-21
Power boats:	21-26
Tuners:	21-23
Mast	
AB-577:	26-8
Design:	26-18, 26-53
Fiberglass:	26-9
Guying:	26-9
Material strength:	26-18
Portable:	19-12
Push-up:	26-8
TV:	26-8
Wind load:	26-51
Matchbox:	24-2
Matched transmission lines:	23-4
Loss:	23-6
Matching	
Impedance:	24-2ff
Networks:	24-2
Maximum Permissible Exposure (MPE):	1-18, 1-20
Antenna modeling:	8-17
Maximum usable frequency (MUF):	4-23
Measurement	
Element current:	6-34
Feed line electrical length:	6-38
Self and mutual impedance:	6-39
Mechanical beamtilt:	18-5
Meteor scatter:	15-21
Method of moments:	8-1
MicroDEM:	14-26ff, 18-2, 18-2ff
Microsmith:	8-12
Microwave antennas:	15-55ff
Patch:	15-65
Periscope:	15-66
Vivaldi:	15-64
MININEC:	1-15, 1-24, 6-21ff, 7-6, 8-1, 10-27, 14-19, 21-21, 22-10
MININEC ground:	8-10
MMDS dish antenna:	17-18
MOBILE:	9-21, 21-6
Mobile flutter:	4-3
Mobile HF antennas:	21-1ff
Base loading:	21-3

Center loading:	21-3
Controller:	21-18
Efficiency:	21-8
Equivalent circuit:	21-2
Helical wound:	21-14
Impedance matching:	21-11
Indoor use:	20-6
Linear loading:	21-14
Loading coil:	21-6
Mounting:	21-16
Radiation resistance:	21-5
Screwdriver:	21-14
Mobile VHF/UHF antennas:	16-1ff
1/4 wavelength whip:	16-7
5/8 wavelength whip for 2 meters:	16-7
5/8 wavelength whip for 222 MHz:	16-8
6 meter FM:	16-4
Angle bracket:	16-4
Big wheel for 2 meters:	16-9
Glass mount:	16-5
Halo for 6 meters:	16-12
Hand-held transceiver:	16-1
Horizontally polarized for SSB/CW:	16-3
Lip mount:	16-5
Magnetic (mag) mount:	16-6
Mounts for whip antennas:	16-4
Rubber ducky:	16-1
SO-239 mount:	16-4
Stud mount:	16-4
Mode, waveguide:	15-56
Monopole	
Characteristics:	2-13
Folded:	2-14, 9-16
Moonbounce:	17-1ff
Moxon rectangle:	11-29
40 meter:	11-29
Portable 15 meter beam:	19-11
Multicoupler, transmitter:	18-12
Mutual coupling:	6-4
Mutual impedance:	1-6, 6-4ff
Measurement:	6-39

N

N connectors:	23-27
National Electrical Code (NEC):	25-1, 26-5
Conductor sizes:	25-3
NCDXF/IARU beacon system:	4-24
Near field:	1-8
Antenna modeling:	8-17
Near Vertical Incidence Skywave (NVIS):	14-9ff
Antenna height:	14-14
Frequency selection:	14-14
NEC:	1-15, 1-24, 7-5, 8-1, 10-27, 14-19, 15-23, 21-21, 22-10
NEC-2:	11-3, 11-33
NEC-4:	15-22
NEC-BSC:	14-20
NEC-Win Plus:	7-6, 8-2, 14-19
NEC-Win Pro:	8-2
NEC/Wires:	10-34
NEMA 4 enclosure:	17-30
Network	
Impedance matching:	24-4ff
L, T, Pi:	24-2
Matching:	24-2
New Motorola Mount (NMO):	16-4
Noise bridge:	27-20
Noise temperature:	17-5
Nonionizing radiation:	1-18
Null:	1-9, 6-12

O

Off-center-fed (OCF) dipole:	2-6, 10-8
Ohmic loss:	6-10
Omega match:	24-30

Omnidirectional:	1-14
Open sleeve antenna:	10-22
Open-wire transmission line:	23-2, 23-19
Ordinary wave:	4-4
OSHA:	26-2

P

Parabolic reflector (dish):	15-59ff, 17-5, 17-16ff
Feed systems:	17-21ff
Kit:	17-18
Use with satellites:	17-24
Parallel-wire transmission line:	23-2, 23-19
Installing:	23-33
Parasitic array:	6-2
Parasitic element:	11-1
Patch antenna:	15-65, 17-21ff
Pattern (see Radiation pattern)	
Pedersen ray:	4-21
Pennant receiving antenna:	22-13
Periscope antenna:	15-66
Phase	
Element current:	6-3
Versus polarity:	1-4, 6-4
Phased array:	6-10ff
Adjustment:	6-34
Effect of load reactance:	6-15
Feeding and feed systems:	6-14
Measurement:	27-30
Use of baluns:	6-21
Use of delay lines:	6-14ff
Phasing lines:	6-14
Electrical length:	6-38
Phillystran:	26-32
Pi network:	24-2, 24-5
Pier-pin tower base:	26-18
Plane reflector:	15-27
Plane wave:	4-1
Plastic antenna materials:	25-14
Plumber's delight:	24-28
Polaplexer:	15-61
Polar cap absorption (PCA):	4-25
Polar mount:	17-27
Polarity:	1-4, 6-4
Polarization:	1-15ff, 4-4
At VHF and UHF:	15-2
Circular:	1-4, 1-15, 17-6ff
Elliptical:	1-4, 17-8
Horizontal:	1-15
Instantaneous:	1-15
Linear:	1-4
Repeater antennas:	18-1
Sense:	17-6
Switching:	17-7
Vertical:	1-15
VHF/UHF antennas:	4-5
Portable antennas:	19-1ff
2-element 20/15/10 meter Yagi:	19-10
2-element 6 meter quad:	19-9
Compact 40 meter loop for recreational vehicle:	19-7
HF vertical travel antenna:	19-6
Inverted V:	19-3
Masts and antenna supports:	19-12
Portable 15 meter beam:	19-11
Tree mounted HF ground plane:	19-6
Twinlead folded dipole:	19-3
Whip dipole:	19-4
Zip cord:	19-3
Power absorber:	27-8
Power density:	1-11, 1-23
Prop-pitch rotator:	26-19
Propagation:	4-1ff
Antenna elevation patterns:	4-36
Antenna polarization:	4-4
Auroral:	4-11

Elevation angles:	4-32
Gray-line:	4-27
Ground wave:	4-2
HF:	4-12ff
HF scatter modes:	4-29
Ionospheric scatter:	4-5
Knife-edge diffraction:	4-11
Long path:	4-26
One way:	4-26
Prediction:	4-30ff
Short path:	4-26
Skip:	4-21
Sky-wave:	4-12ff
Software:	4-40
Solar activity data:	4-41
Sporadic E (E _s):	4-28, 15-18
Tables:	4-37
Transequatorial:	4-5
Tropospheric bending:	4-2
Tropospheric propagation:	4-7
Tropospheric scatter:	4-5
VHF/UHF:	4-3
Weather effects:	4-6
<i>Proplab Pro</i> :	4-20, 4-41
Pseudo-Brewster Angle (PBA):	3-22
Pulley:	26-7, 26-27
PVRC mount:	26-43

Q

Q-section:	15-15, 24-21
Quad antennas:	11-30ff
2-element for 20/17/15/12/10 meters:	11-38
5-element for 20/15/10 meters:	11-35
Construction:	11-33
Cubical versus concentric:	11-32
Diamond versus square:	11-34
Feed point:	11-33
Multiband:	11-32
Performance parameters:	11-30
Portable 2-element 6 meter:	19-9
Versus Yagis:	11-30
VHF and UHF:	15-13ff, 15-45
Quad loop:	5-1
Feed point:	5-5
Polarization:	5-2
Quadrifilar Helix (QFH) antenna:	17-10
Quagi antenna:	15-39, 17-16
Quarter-wave impedance transformer:	23-16
Quarter-wave section:	24-21, 24-24

R

Radial:	2-13, 3-10
Elevated:	3-13ff
Elevated ground plane:	9-19
Multiband:	3-19
Optimized length:	3-12
Spacing:	9-14
Radiation	
Ionizing:	1-18
Nonionizing:	1-18
Radiation efficiency:	6-11
Radiation pattern:	1-7
At VHF and UHF:	15-2
Azimuth:	1-10
Beamwidth:	1-14
Coordinate scale:	1-12
Dipole antennas:	2-1, 2-9
E-plane:	1-11
Elevation:	1-10
Front-to-back ratio (F/B):	1-14
Front-to-rear ratio (F/R):	1-14
Front-to-side ratio:	1-14

H-plane:	1-11	Station evaluation:	1-21
Long-wire antennas:	13-2	RF sampler:	27-13
Main lobe:	1-9	RF step attenuator:	27-15
Measurement:	1-14, 27-40	RF voltmeter:	27-1
Null:	1-9	RF wattmeter:	27-11
Omnidirectional:	1-14	Rhombic:	13-9
Over real ground:	3-25	Feed methods:	13-15
Repeater antennas:	18-3	Multi-wire:	13-15
Side lobe:	1-9	Multiband design:	13-13
Terminated long-wire:	13-11	Terminated:	13-11
V-beam:	13-6	Termination:	13-13
Yagi antenna:	11-3	Right/left-hand polarization (RH/LHCP):	17-6
Radiation resistance:	1-5, 3-8	Ring rotator:	26-19
Mobile HF antenna:	21-5	Rope	
Radio horizon:	4-3	Care:	26-25
<i>Radio Mobile for Windows</i> :	18-2	Knots:	26-26
Random-wire antenna:	10-2	Selection:	26-7, 26-25
Ray:	4-1	Rotation loop:	26-38
Ray tracing:	14-19	Rotator:	26-19
Receiving antennas:	22-1ff	Control cable:	26-44
1.8 MHz loop:	22-13	Maintenance:	26-49
Active antennas:	22-15	Thrust bearing:	26-19
Arrays:	6-21	Rubber ducky antenna:	16-1
Beverage:	22-1		
EWE:	22-9	S	
Flag:	22-13	S-parameter:	27-29
K6STI loop:	22-8	Safety	
K9AY loop:	22-9	After a failure:	26-49
Pennant:	22-13	Electrical:	26-4
Reciprocity:	1-16	Electrical lines near antennas:	20-1
Rectangular grid:	1-13	Ground system:	26-19
Reflection:	4-1	RF exposure:	20-2
Reflection coefficient:	23-7	Climbing and tower:	26-1ff
Reflectometer:	27-10	Safety equipment:	26-2ff
Reflector:	11-1	Belt:	26-2
Reflector antenna:	15-51ff	Fall-arrest harness (FAH):	26-2
Refraction:	4-1	Suppliers:	26-5
Refurbishing aluminum antennas:	28-12	Satellite band designations:	17-3
Reinforcing bar (rebar):	26-17, 26-29	Satellite antenna systems:	17-1ff
Relative permittivity (ϵ_r):	3-2	SCALE:	1-17, 8-8
Repeater antennas:	18-1ff	Scatter	
Cavity resonator:	18-9	HF propagation modes:	4-29
Couplers:	18-12	VHF propagation modes:	4-5
Coverage area:	18-2	Screwdriver antenna:	21-14
Duplexer:	18-10	Self impedance:	1-6, 6-4ff, 11-10
Horizontal versus vertical polarization:	18-1	Measurement:	6-39
Isolation:	18-7	Self-resonance:	6-5
Mounting:	18-6	Sensing antenna:	22-19
Radiation pattern:	18-3	Sensing element:	5-19
System planning:	18-15	Series-section transformer:	24-22
Transmission lines:	18-1	Shadow area:	4-2
Resistance (ohmic), loss:	6-10	Shielded loop antenna:	5-14
Resonance:	1-6, 23-9	Short path propagation:	4-26
Antenna:	24-25	Short skip:	4-28
Choke balun:	24-43	Shortened Yagi antenna:	11-28
Impedance matching:	24-35	Shunt-feed:	6-21
RF ammeter:	27-3	Side lobe:	1-9
RF connectors (see Connectors)		Sidescatter:	4-29
RF current		Silicone sealant:	26-46
Measurement:	27-34	Site planning:	14-2, 26-15
Meter:	27-2	Skin depth in soil:	3-4
Probe:	27-3	Skip zone:	4-21
RF interference from stealth antennas:	20-3	Sky-wave propagation:	4-12ff
RF phase measurement:	27-34	Sling:	26-23
RF power measurement:	27-11	Slinky antenna:	20-5
RF safety:	1-18ff	Sloper:	9-6
ANSI standard:	1-22	Half-sloper:	9-29
Awareness guidelines:	1-24	Sloping dipole:	9-6
Dish and horn antennas:	15-61	SMA connectors:	23-30
FCC regulations:	1-20	Smith chart:	24-33, 27-31
IEEE standard:	1-22	Smoothed sunspot number (SSN):	4-14
Maximum permissible exposure (MPE):	1-18, 1-20	Snatch-block:	26-27
Power density:	1-23	Snell's law:	14-20
Safe exposure levels:	1-19		
Specific absorption rate (SAR):	1-18		

Software

<i>ACE-HF</i> :	4-41
<i>Antenna Model</i> :	8-2
Antenna modeling:	8-1
<i>EFFLEN.FOR</i> :	1-17
<i>EZNEC</i> :	6-10ff, 11-2ff, 14-19
<i>EZNEC -Pro/2</i> :	8-2
<i>EZNEC 5.0</i> :	8-2
<i>GNEC</i> :	8-2
<i>HDL_ANT</i> :	17-17
<i>HFTA</i> :	8-1, 18-2
<i>Kansas City Tracker (KCT)</i> :	17-31
<i>LVB Tracker</i> :	17-31
<i>MicroDEM</i> :	14-26ff, 18-2
<i>MININEC</i> :	6-21ff, 8-1, 14-19
<i>NEC</i> :	8-1, 14-19
<i>NEC-BSC</i> :	14-20
<i>NEC-Win Plus</i> :	8-2, 14-19
<i>NEC-Win Pro</i> :	8-2
Propagation prediction:	4-40
<i>SCALE</i> :	1-17
<i>StackMatch</i> :	14-39
<i>VOACAP</i> :	14-11
<i>WSJT</i> :	17-2
<i>YO</i> :	14-19

Software from ARRL

<i>AAT</i> :	24-8ff
<i>Arrayfeed1</i> :	6-18ff
<i>EZNEC-ARRL</i> :	8-3, 11-2ff, 13-16, 14-19, 21-27, 23-15
<i>GAMMA</i> :	24-29
<i>HFTA</i> :	3-1, 3-21, 8-1, 14-1ff, 14-22ff, 15-18, 18-2
<i>MOBILE</i> :	9-21, 21-6
<i>SCALE</i> :	8-8
<i>TLW</i> :	6-24, 14-39, 23-13, 24-7ff, 27-24
<i>YW</i> :	8-8, 11-2ff, 11-33, 14-19, 15-15

Soil

Conductivity (σ):	3-2
Skin depth:	3-4
Types:	3-3
Solar activity data:	4-41
Solar flare:	4-25
Solar flux:	4-15
Solar wind:	4-12
Sommerfeld-Norton ground:	6-24, 8-10
Space wave:	4-2
Spatial polarization offset:	17-4
Specific absorption rate (SAR):	1-18
Sporadic E (E_s) propagation:	4-28, 15-18
Squalo antenna:	16-3

Stacking antennas:	14-28ff
Azimuthal diversity:	14-41
BIP/BOP:	14-41
Cross-polarization:	17-4
Distance between antennas:	14-32
Effect of nulls:	14-31
Effect of terrain:	14-36
Elevation coverage:	14-29
Fading:	14-40
Gain:	14-29
Higher elevation angles:	14-35
Multiband Yagis:	14-35, 14-38
Precipitation static:	14-41
Space communications:	17-4ff
Triband Yagis:	14-38
VHF and UHF:	15-13ff

<i>StackMatch</i> :	14-39
Standing waves:	23-8
Standing-wave ratio (<i>see</i> SWR)	

Stealth antennas:	20-1ff
Disguised:	20-8
Indoor loop:	20-4
Invisible:	20-8
Mobile HF antennas:	20-6
Outdoor:	20-8
RF interference:	20-3

Safety:	20-1
Slinky:	20-5
Small loops:	20-10
VHF/UHF:	20-7
Sterba curtain:	12-6
Stub, transmission line:	24-3, 24-32
Sudden disappearing filament (SDF):	4-25
Sunspot:	4-13
Sunspot cycle:	4-14
Sunspot number:	4-13
International (ISN):	4-13
Smoothed (SSN):	4-14
Switching systems	
BIP/BOP:	14-41
Yagi stacks:	14-28ff
SWR:	23-9
Antenna analyzer:	27-20ff
Bridge circuits:	27-4
Choke balun:	27-9
Common-mode current:	24-38, 27-9
Determination at antenna:	24-21
Measurement:	27-4
Myths about:	24-4
Nomograph:	23-14
Power loss:	23-11
Protection of transmitter:	24-1

T

T match:	15-4, 15-30, 24-27
T network:	24-2, 24-6
Adjusting tuner:	24-7
Tape measure Yagi, direction-finding:	22-30
Tapered element:	1-17
Tapered line:	24-23
Terminated folded dipole (TFD):	10-11
Terminator:	4-27
Texas Potato Masher antenna:	17-2
Thrust bearing:	26-19
TIA-222 standard:	26-16
Tilt angle:	13-12
Tilt-over tower:	26-13
Time difference of arrival (TDOA):	22-27
Time-domain reflectometer (TDR):	27-24
<i>TLW</i> :	6-24, 14-39, 23-13, 24-7ff, 27-24
Top loaded vertical:	9-21
Torque compensator:	11-11

Tower

Assembly:	26-38
Base:	26-16, 26-28
Crank-up:	26-4, 26-13, 26-48
Engineering:	26-15ff
Ground and tower crew:	26-36
Guyed:	26-13ff
House bracket:	26-14
Inspection:	26-47
Maintenance:	26-47
Mistakes:	26-28
Pier-pin base:	26-18
Preparation:	26-37
Removing and refurbishing:	26-48
Roof-mounted:	26-11
Safety:	26-1ff
Selection:	26-15
Self-supporting:	26-11
Tilt-over:	26-13
Tools:	26-21ff
Tram system:	26-39
Transequatorial propagation:	4-5
Transformer	
Broadband matching:	24-35
Series-section:	24-22
Transmatch:	24-2
Transmission lines:	23-1ff
Air insulated:	23-17

At VHF and UHF:	15-2
Attenuation:	23-6
Balun:	24-49ff
Baluns:	15-5
Characteristic impedance (Z_0):	23-4
Coaxial cable:	23-2, 23-20
Current and voltage:	27-1
Half-wavelength:	23-16
Hardline:	15-3, 23-20ff
Impedance matching:	24-21ff
Input impedance:	23-13
Loss, effect on system:	24-20
Matched:	23-4
Matched line loss:	23-6
Mismatched:	23-5
Open-wire:	23-2, 23-19
Parallel-wire:	23-2, 23-19
Power loss due to SWR:	23-11
Quarter-wave impedance transformer:	23-16
Reactive load:	23-15
Reflection coefficient:	23-7
Repeater antennas:	18-1
Standing waves:	23-8
Standing-wave ratio (SWR):	23-9
System design:	24-18ff
Tapered line:	24-23
Testing:	23-34
Twinlead:	23-19
Velocity factor (VF):	23-3
Velocity of propagation:	23-3
Voltage and current:	23-12, 23-17
Zip cord:	19-2
Transmitter power output (TPO):	1-17
Transverse electric (TE), mode:	15-57
Transverse magnetic (TM), mode:	15-57
Trap antennas:	10-13
Losses:	10-15
Vertical:	10-21
W3DZZ:	10-15
W8NX multiband dipole:	10-16
Yagi:	11-26
Trees:	26-6ff
Triangulation:	22-17
Troposphere:	4-2
Tropospheric propagation	
Bending:	4-2
Ducting:	4-7
Scatter:	4-5
Troubleshooting:	28-1ff
Feed system:	28-7, 28-9
Measurements:	28-5
Mechanical:	28-6
Records:	28-9
SWR:	28-8, 28-10
Test steps:	28-2
Yagi antennas:	28-10
Trough reflector:	15-54
Tuner:	24-2
Turnbuckle:	26-34
Turnstile antenna:	17-8
TV antenna conversion:	15-49
TVRO dish antennas:	17-16, 17-25ff
Twelfth-wave section:	24-22
Twilight zone:	4-27
Twinlead:	23-19

U

UHF connectors:	23-25
Universal stub:	15-3
US Geologic Survey (USGS):	14-25
Utility locator service:	26-29
Utility pole:	26-9

V

V-beam antenna:	13-6
Steerable, 10-40 meters:	13-16
Vapor wrap:	26-45
Vector Network Analyzer (VNA):	27-28
Velocity factor (VF):	1-3, 23-3
Measurement:	27-22
Velocity of propagation:	1-3
Transmission lines:	23-3
Vertical antennas	
1.8 to 3.5 MHz using tower:	9-18
43 foot, multiband:	10-20
Base loading:	9-21
Dipole:	2-11, 9-10
Elevated radials:	9-19
Examples:	9-16
Far field ground reflections:	3-21
Folded monopole:	2-14, 9-16
Ground plane radials:	9-12
Ground system:	3-6
HF travel antenna:	19-6
Loading techniques:	9-21
Maritime HF antennas:	21-22
Monopoles:	2-13
Multiband:	10-20
Over real ground:	3-28
Shortened:	9-21, 10-20
Top loading:	9-21
Trap:	10-21
Tree mounted HF ground plane:	19-6
Vertical dipole:	9-6
Vertical polarization:	1-15
Vertical-beam downtilt:	18-4
VHF/UHF	
Antenna polarization:	4-5
Propagation:	4-3, 4-5ff
Reliable coverage distances:	4-8
Station gain:	4-9
VHF/UHF antennas:	15-1ff
Indoor:	20-7
Mobile:	16-1ff
Vivaldi antenna:	15-64
VOAAREA:	4-22, 14-11
VOACAP:	4-23, 4-41, 14-11
Voltage balun:	24-52
Vortex shedding:	26-9

W

W1AW 80 meter cage dipole:	9-9
W3DZZ antenna:	10-15
W6ELProp:	4-41
W8JK beam antenna:	12-21
W8NX multiband dipole:	10-16
Waveguide:	15-55
Circular:	15-61
Coupling:	15-57
Mode:	15-56
Weatherproofing	
Connectors:	26-45
NEMA 4 enclosure:	17-30
Relays and preamplifiers:	17-29
Whip antenna, VHF/UHF:	16-7
Wig-wag system of antenna mounting:	26-39
Wilkinson divider:	6-16
Wind load:	26-51
Windom:	10-7
Wire	
Antenna:	25-1ff
Copperweld:	25-2
Hard drawn:	25-2
Sag:	25-3
Soft drawn:	25-2

Specifications:	25-2
Splice:	25-4
Tension:	25-3
Wood antenna materials:	25-13
WSJT:	17-2
Wullenweber antenna:	22-22

Y

<i>Yagi Analyzer</i> :	15-23
Yagi antennas:	11-1ff
10 meter Yagis:	11-12
12 meter Yagis:	11-14
15 meter Yagis:	11-14
17 meter Yagis:	11-18
20 meter Yagis:	11-20
30 meter Yagis:	11-22
40 meter Yagis:	11-23
50 MHz:	15-19ff
At VHF and UHF:	15-13ff
Beta match:	11-11
Boom construction:	25-9
Boom length:	11-6
Cheap Yagis for VHF and UHF:	15-25ff
Christmas tree stack:	11-26
Construction at VHF and UHF:	15-28
Correction for boom diameter:	15-28
Direct-feed:	11-5, 24-26
Direction-finding:	22-30
Director:	11-1
Driven element:	11-1
Element construction:	25-10
Element spacing:	11-9
Element tuning:	11-10
End loading:	11-28
Feed point impedance:	11-4
Force 12 C-3 tribander:	11-27

Forward stagger:	11-26
Front-to-back ratio:	11-4
Front-to-rear ratio:	11-4
Gain:	11-3, 11-6
High-performance at VHF and UHF:	15-27ff
Impedance matching:	24-22
Interlaced elements:	11-26
Linear loading:	11-28
Loop:	15-42
Modeling:	11-2
Monoband designs:	11-10ff
Moxon rectangle:	11-29
Multiband:	11-26
Optimization:	11-5
Parasitic element:	11-1
Plane reflector:	15-27
Portable 15 meter beam:	19-11
Portable 2-element 20/15/10 meter:	19-10
Radiation pattern:	11-3
Reflector:	11-1
Torque compensator:	11-11
Trap antenna:	11-26
Troubleshooting:	28-10
Utility, 144 and 432 MHz:	15-20
Versus quads:	11-30
<i>YagiMax</i> :	14-19, 15-23
<i>YagiStress</i> :	25-8
Yield strength:	26-19
YO:	14-19
YW:	8-8, 11-2, 11-2ff, 11-33, 14-19, 15-15

Z

Zepp:	12-4
End-fed:	9-5
Zip cord antenna:	19-2

Project Index

Direction-finding antennas		
Double-Ducky VHF Direction Finder:	22-27	
Ferrite-core Loop for 160 Meters:	22-25	
Frame Loop:	22-23	
Simple Direction-Finding System for 80 Meters:	22-27	
Tape-Measure Element Yagi for 2 Meters:	22-30	
Discone		
VHF/UHF Discone:	15-50	
Filters		
144 MHz Duplexer Cavities:	18-11	
Indoor antennas		
Attic Screwdriver Antenna:	20-7	
Indoor Stealth Loop:	20-4	
Slinky Antenna:	20-5	
Log-periodic		
Log-periodic for 144, 222, and 432 MHz:	15-49	
TV-to-ham LPDA Conversion:	15-49	
Loop antenna		
QRP Transmitting Loop:	20-12	
Microwave miscellaneous antennas		
12-Foot Stressed Parabolic Dish:	17-28	
Helix Feed for an Offset-Dish Antenna:	17-21	
Horn Antenna for 10 GHz:	15-62	
Patch Antenna for 23 cm:	15-66	
Periscope Antenna:	15-67	
TVRO Dish Positioning Controller:	17-25	
Vivaldi Antenna for 1 to 10 GHz:	15-64	
Mobile antennas		
1/4-wavelength Whips for VHF and UHF:	16-7	
5/8-wavelength Whip for 2 Meters:	16-7	
5/8-wavelength Whip for 222 MHz:	16-8	
Big Wheel for Two Meters:	16-9	
Halo for Six Meters:	16-12	
Screwdriver Antenna for HF:	21-14	
Portable antennas		
Black Widow 15 Meter Beam:	19-11	
Compact 40 Meter Loop for Recreational Vehicles:	19-7	
HF Vertical Travel Antenna:	19-6	
Portable Inverted V Antenna:	19-3	
Portable Mast Tripod:	19-12	
Portable Two-Element Six Meter Quad:	19-9	
Portable Whip Dipole:	19-4	
Tree-mounted HF Ground-Plane Antenna:	19-6	
Twinlead Folded Dipole:	19-3	
Two-element 20/15/10 Meter Triband Yagi:	19-10	
Quad		
144-MHz 4-Element Quad:	15-45	
Quagi		
Quagi antennas for 144 through 1296 MHz:	15-39	
Receiving antennas		
K6STI Loop:	22-9	
K9AY Loop:	22-9	
Receiving Loop for 1.8 MHz:	22-13	
Reflector antennas		
Corner reflectors for VHF and UHF:	15-52	
Trough reflectors for 432 and 1296 MHz:	15-54	
Stealth antennas		
Clothesline antenna:	20-9	
Flagpole antenna:	20-9	
Test Instruments		
Calibration Loads:	27-21	
Clamp-on RF Current Probe:	27-3	
Directional Power/SWR Meter:	27-11	
High-Power RF Samplers:	27-13	
Inexpensive VHF Directional Coupler:	27-14	
Portable Field Strength Meter:	27-17	
Power absorber:	27-8	
Reflectometer:	27-10	
RF Current Meter:	27-2	
RF Step Attenuator:	27-15	
RF Voltmeter:	27-2	
Standard Gain Antenna:	27-39	
SWR Resistance Bridge:	27-7	
Time-Domain Reflectometer:	27-24	
Transmission lines		
4:1 Voltage Baluns:	24-52	
Broadband Matching Transformers:	24-35	
Coiled Coax Choke Baluns:	24-42	
Detuning Sleeves:	24-49	
High-Power ARRL Antenna Tuner:	24-13	
Hybrid Coiled-Coax and Bead Choke Balun:	24-48	
Quarter/Three-Quarter-Wave Balun:	24-50	
Transmitting Ferrite-Core Choke Baluns:	24-43	
VHF/UHF miscellaneous antennas		
144-MHz, 222-MHz, and 440-MHz Ground-planes:	15-6	
50-MHz, 144-MHz, 222-MHz, and 440-MHz J-poles:	15-7	
Collinear array for 23 cm by F5JIO:	15-12	
Portable Helix for 435 MHz:	17-13	
Yagi		
50 MHz:	15-19	
Cheap Yagis for VHF and UHF:	15-23	
High-performance Yagis for 144, 222, and 432 MHz:	15-27	
Loop Yagi for 1296 MHz:	15-42	
Utility Yagis for 144 and 432 MHz:	15-20	

Author Index

The following authors contributed material new to or referenced by this edition of the *ARRL Antenna Book* or material from previous editions that is included here. Note that in some cases the authors have become Silent Keys and their call signs have been reassigned.

Author	Call Sign	Page Ref	Author	Call Sign	Page Ref
Adler, Dick	K3CXZ	14-20	Gentges, Frank	K0BRA	22-15
Angle, Chip	N6CA	15-42	Gilbert, Ed	K2SQ	24-43
Applegate, Alan	K0BG	16-1ff, 21-1ff	Gillette, R. F.	W9PE	22-30
Atchley, Dana	W1CF	9-31	Gold, Robert	WB0KIZ	1-18
Atkins, Bob	KA1GT	15-62, 15-67	Gordon, Lew	K4VX	11-28
Badger, George	W6TC	27-22	Grebenkemper, John	KI6WX	27-12
Baker, Allen	KG4JJH	19-11, 20-8	Greene, Clarke	K1JX	14-17
Barrett, Lee	K7NM	18-4	Grover, F. W.		5-14
Beazley, Brian	K6STI	9-33, 22-8	Guth, Peter		14-26, 18-2
Belcher, D	WA4JVE	5-1	Hagn, George		3-4
Belrose, Jack	VE2CV	9-32	Haigwood, Jerry	W5JH	12-4
Beverage, Harold	W2BML	22-3ff	Haines, Geoff	N1GY	20-9
Bolljahn, J. T.		10-22	Hall, Jerry	K1TD	19-2ff
Boyer, Joseph	W6UYH	10-33	Hallas, Joel	W1ZR	9-7, 21-24, 24-3ff
Bramwell, Denton	K7OWJ	27-15	Halliday, Dave	K2DH	17-1ff
Bray, D. W.	K2LMG	4-8	Hansen, Markus	VE7CA	19-9ff
Breakall, Jim	WA3FET	14-20	Harbach, Allen	WA4DRU	9-9
Breed, Gary	K9AY	10-24, 22-9	Hart, Ted	W5QJM	5-21, 20-10ff
Britain, Kent	WA5VJB	15-23, 15-66	Hauff, Frederick	W3NZ	27-22
Brown, Bruce	W6TWW	21-2	Haviland, R. P.	W4MB	3-29, 8-1, 11-30
Brown, Fred	W6PH	20-3	Healy, Rus	K2UA	22-1ff
Brown, Gerald	K5OE	17-2ff	Herring, Ron	W7HD	19-4
Brown, Jim	K9YC	20-3, 24-42	Heslin, Robert	K7RTY	15-49
Buchanan, Chester	W3DZZ	10-15, 11-26	Hoch, Gunter	DL6WU	15-27
Butler, Don	N4UJW	10-10	Hollister, Robert	N7INK	19-4
Buxton, Al	W8NX	10-16	Hood, Michael	KD8JB	15-8
Cadwallader, Joe	K6ZMW	17-12	Hopengarten, Fred	K1VR	14-40, 26-15
Cain, Jim	K1TN	12-7	Hunkeler, Noel	F5JIO	15-13
Cake, Brian	KF2YN	9-11, 20-12	Hunt, Dale	WB6BYU	22-27
Capon, Robert	WA3ULH	20-12	Hutchinson, Chuck	K8CH	14-2, 19-6
Carcia, Joe	NJ1Q	9-9	Jansson, Dick	KD1K	17-1ff
Caspar, P	K4HKX	5-1	Jenkinson, Garth	VK3BBK	23-30
Cebik, L. B.	W4RNL	5-10, 7-1ff, 8-3, 11-29, 11-33, 15-20ff, 15-49, 16-9	Johnson, Don	W6AAQ	21-14
			Johnston, W.	K5ZI	4-26
Cerreto, Bob	WA1FXT	16-9	Jones, Bill	K8CU	10-29
Collings, Cole	W0YNF	11-28	Karl, Ed	K0KL	18-1ff
Connelly, Mark	WA1ION	22-13	Kaune, Bill	W7IEQ	27-11
Cooper, Clarke	K8BP	19-5	Keller, J. B.		14-21
Coudé, Roger	VE2DBE	18-2	Kennedy, Hal	N4GG	12-14
Cox, Roger	WB0DGF	7-4, 10-22	King, Tom	KD5HM	27-24
Cunningham, Earl	K6SE	5-10, 9-18, 22-13	Kirby, Tom	W1EJ	15-29
Cutsogeorge, George	W2VJN	24-4	Knadle, Dick	K2RIW	17-28
D'Agostino, Philip	W1KSC	15-45	Koontz, Floyd	WA2WVL	22-9
Danzer, Paul	N1II	16-12	Kouyoumjian, R. G.		14-22
Daso, Don	K4ZA	26-1	Kraus, John	W8JK	12-21, 17-10
Demaw, Doug	W1FB	5-10, 9-28, 22-23ff, 27-10	Krome, Ed	K9EK	15-25, 17-3
			Krupp, Daniel	W8NWF	10-33
Dietrich, James	WA0RDX	5-1	Lahlum, Robye	W1MK	6-20, 22-1ff
Dixon, Bob	W8ERD	19-12	Lambert, Edgar	WA4LVB	10-7
Donovan, Frank	W3LPL	23-30	Lattin, William	W4JRW	10-15
Duffy, Tim	K3LR	9-7	Lau, Zack	W1VT	15-22
Ehrenfried, Martin	G8JNJ	20-10	Lawson, Jim	W2PV	6-6, 11-2ff
Ehrhart, Rod	WN8R	9-14	Lee, Paul		6-16
Elengo, John	W1DQ	25-3	Leeson, Dave	W6NL	8-16, 11-10ff, 11-29, 24-29, 25-8
Emery, Geoff	VK4ZPP	28-1ff			
Evans, Paul	VP9KF	20-2	Leggio, Joe	WB2HOL	22-30
Fenwick, Richard	K5RR	11-26	Leutzelschwab, Carl	K9LA	4-1ff
Ford, Steve	WB8IMY	20-1	Lewallen, Roy	W7EL	6-7, 6-10ff, 11-2
Geiser, David	WA2ANU	22-27	Littlepage, Joseph	WE5Y	19-3

Author	Call Sign	Page Ref
Loukides, Mike	W1JQ	12- 7
Lux, Jim	W6RMK	26-19
Malette, Malcolm	WA9BVS	22-23
Mallozzi, Dominic	N1DM	5-1ff, 18-1ff, 20-10ff
Malowanchuk, Barry	VE4MA	17-28
Marshall, Joe	WA4EPY	4-5
Mata, Jose	EA3VY	22-13
Maxwell, Walt	W2DU	3-32
McClain, David	N7AIG	23-13
McCoy, Lew	W1ICP	5-21, 27-18
McEneaney, Joe	KG6PCI	21-17
McKim, Jim	W0CY	17-13
Meister, Robert	WA1MIK	27-11
Messenger, George	K6CT	4-5
Michaels, Charles	W7XC	3-22
Miller, Dennis	KM9O	7-4
Miller, James		17-3
Mitchell, Bob	N5RM	14-38
Moore, Clarence	W9LZX	11-30
Moore, Sam	NX5Z	13-16
Morris, Steve	K7LXC	26-1ff
Moss, TJ	G3RUH	17-17
Moxon, Les	G6XN	11-29
Muggli, Ken	K0HL	21-16
Myers, Bob	W1XT	11-26
Neece, Bob	K0KR	24-4
Nelson, R. A.	WB0IKN	24-29
Nichols, Steve	G0YKA	20--1ff
Ordy, Greg	W8WWV	8-3
Orr, Bill	W6SAI	11-30
Overbeck, Wayne	N6NB	15-39
Parker, Albert	N4AQ	20-9
Parmley, William	KR8L	19-2
Pathak, P. H.		14-22
Patterson, Bob	K5DZE	15-50
Peterson, Arthur	W7CZB	20-5
Phelps, Ted	W8TP	20-4
Pietraszewski, David	K1WA	9-7
Pittard, Ross	VK3CE	28-1ff
Portune, John	W6NBC	17-10, 19-7
Powlishen, Steve	K1FO	15-27
Rauch, Tom	W8JI	6-16, 6-22, 6-35, 22-8, 27-2
Regier, Frank	OD5CG	24-22
Rhea, Randy		24-24
Richard, Louis	ON4UF	10-10
Richardson, Don	K6MHE	16-3
Rockwell, Paul	W3AFM	14-17
Rohde, Ulrich	N1UL	22-15
Romander, Hugo	W2NB	12-4
Ruperto, Eugene	W3KH	17-10

Author	Call Sign	Page Ref
Rusgrove, Jay	W1VD	19-3
Russell, Thomas	N4KG	9-19
Salas, Phil	AD5X	19-6, 24-11
Schiller, Tom	N6BT	26-39, 28-1ff
Schmidt, Kevin	W9CF	6-16
Schuch, Peter	WB2UAQ	27-22
Schulz, Walter	K3OQF	9-23
Severns, Rudy	N6LF	3-1ff, 9-8, 10-24, 12-1ff, 21-1ff, 27-30
Sevick, Jerry	W2FMI	3-31, 10-20
Seybold, Mack	W2RYI	10-33
Seydler, Bob	K5GNA	17-18
Shulman, Ivan	WC2S	1-24
Silver, Ward	N0AX	22-7
Smith, Woodrow	W6BCX	12-13
Stanford, John	NN0F	9-25
Stanley, John	K4ERO	7-1ff, 15-48, 24-11
Stockton, Stan	K5GO	25-10
Straw, Dean	N6BV	3-21, 4-29, 8-1, 11-2ff, 14-7ff, 24-13
Stroud, Dick	W9SR	16-13
Suding, Robert	W0LMD	17-21
Sykes, B.	G2HCG	4-5
Tabor, Jim	KU5S	4-37
Taylor, Joe	K1JT	15-21, 17-1ff
Terleski, Jay	WX0B	14-39
Thompson, Tom	W0IVJ	27-13
Thrift, Ted	VK2ARA	28-1ff
Tilton, Ed	W1HDQ	16-13
Tolles, H. F.	W7ITB	24-29
Toman, Don	K2LQ	10-10
Trask, Chris	N7ZWY	5-16, 5-22
Turrin, Dick	W2IMU	27-35
Uda, Shintaro		11-1
Uhl, John	KV5E	10-29
Varney, Louis	G5RV	10-6
Wade, Paul	W1GHZ	17-17
Walters, Mike	G3JVL	15-42
Waltz, M. C.	W2FMQ	3-31
Wilkie, Jim	WY4R	10-7
Williams, Tom	WA1MBA	23-30
Wilson, Paul	W4HHK	15-51, 15-59
Wilson, Robert	AL7KK	10-24
Windom, Loren	W8GZ	10-7
Witt, Frank	AI1H	24-35, 24-41
Wolff, Ken	K1EA	14-30
Wright, Joe	W4UEB	10-7
Yagi, Hidetsugu		11-1
Yang, Richard		27-39
Young, Joel		14-20

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 _____

Address _____

City, State/Province, ZIP/Postal Code _____

Daytime Phone () _____ Age _____

If licensed, how long? _____

Other hobbies _____ E-mail _____

Occupation _____

For ARRL use only	2012 ANT
Edition	22 23 24 25 26 27 28 29
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, THE ARRL ANTENNA BOOK — 22ND EDITION
ARRL—THE NATIONAL ASSOCIATION FOR AMATEUR RADIO
225 MAIN STREET
NEWINGTON CT 06111-1494

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

