

GROVE ENTERPRISES

HOT Summer Specials!



(800) 438-8155

A KEYNOTE SPEAKER from Grove!

NEW!



Why pay over \$400 for these separate accessories:

- Speaker
- Adjustable Filter
- Recorder Activator
- Audio Amplifier
- Audio Activated Squelch
- Noise Limiter

When you can have it all in the new Grove

SP-200 SOUND ENHANCER

The Grove engineering team has created the most revolutionary audio accessory on the communication market: the **SP200 Sound Enhancer**.

Housed in a stylish, solid oak cabinet hand crafted in the mountains of North Carolina, the **SP200** is sure to enhance any room and radio receiver. The control panel, constructed of sturdy, black aluminum, has been designed for optimum ease and convenience when tuning and refining signals.

The **SP200** combines a powerful audio amplifier, top-of-the-line speaker, and an adjustable filter system in one to create the most versatile and precise listening environment ever available to radio enthusiasts. The keen peak/notch filter system and advanced noise limiter allow the listener to

pull clear and distinct signals out of the haze of interference and background noise, while the adjustable bass and treble provide the flexibility to create just the sound you want. FSK, RTTY, packet, FAX, CW and all other data systems are enhanced while interference and electrical noise are reduced or even eliminated by the analog audio processor.

The **SP200** also comes equipped with a stereo/mono headphone jack, for private listening, and an automatic tape activator so that you never have to miss anything.

Try the new Grove **SP200** Sound Enhancer with your receiver, scanner, or transceiver and enjoy the latest in speaker sophistication; you'll agree this is truly a keynote speaker!

CALL NOW! (800) 438-8155
(704) 837-9200

Introductory price.

Order SPK13
\$ 199^{95*}

Price goes up on September 1, 1994.

 **GROVE
ENTERPRISES**
*Changing the way you
hear the world*

SPECIFICATIONS:

Power Required: 12 to 14 VDC @500 mA; 120 VAC adaptor incl.
Audio Power Output: 2.5 W @ 10% THD (8 ohms)
Audio Selectivity: Peak/notch 30 dB or greater, 0.3-6 kHz
Squelch Hold: 0-10 seconds
Noise Limiter: Adjustable-threshold pulse noise clamp
Tape Activator: Audio activated (VOX), 3 second hold
Tape Output: 500 mV P-P @ 600 ohms (nom.)
Headphone Jack: Universal mono-wired stereo jack
Dimensions: 10-7/8"W x 6-7/8"H x 7-1/4"D

* Plus \$7⁵⁰ UPS Ground Shipping



Growing pains. It's hard to believe that we just moved into our spacious, new facility a scant nine months ago, and we're already bursting at the seams!

Several new staff members have been added to share the load of increased business, and more yet are coming! We choose our staffers very carefully since we all take on multiple responsibilities.

Melody helps in shipping, taking telephone orders, and creative advertising. Rob is doing his best balancing customer telephone support, checking in merchandise, and finishing his college degree. John is learning computer layout for catalogs, books and both magazines. And we are about to hire three more staffers!

Congratulations are due Sue and Rachel who just successfully passed their amateur radio exams and are eagerly awaiting their licenses. We're proud of them and look forward to working them on the air. I don't know whether being around us all day long, then having to talk to us during their recreational time is a blessing or a blight!

The Dayton Hamvention was fun, as always, and wet, as always. Kelly and I were perpetually in the flea market while Larry and Chuck were dutifully watching the booth. We introduced the new SP-200 Sound Enhancer to a throng of admiring attendees; the demonstration was a challenge--have you ever tried to receive shortwave signals inside a steel building while surrounded by computers?

The biggest blockbuster of all for us was the announcement of our new magazine, Satellite Times. That drew considerable attention from exhibitors and attendees alike. The first September/October premier issue is due for an August release and we are very busy taking introductory-priced charter subscriptions (See page 44).

But even though satellites are playing a larger and larger role in informational exchange, we aren't abandoning terrestrial communications. Shortwave and scanner listeners will continue to be served by us in the same courteous and knowledgeable manner that has made Grove Enterprises the leader in our field.

Thank you again for allowing us to be part of your lives.

Bob and Judy Grove

ORDER WITH ABSOLUTE CONFIDENCE

Grove Enterprise prides itself on offering quality products at reasonable prices AND outstanding technical support. In the rare event you should experience some kind of problem with any of the products we manufacture or sell, or should you have a complaint, please call us first at 1-800-438-8155 and we'll do everything we can to keep you as a satisfied customer. **ALL PRICES ARE SUBJECT TO CHANGE!**

Occasionally a customer will order a product that turns out not to be what he wanted or, perhaps, expected. Simply call our toll-free number, 1-800-438-8155 within thirty (30) days of shipping and we will gladly credit your future purchases, or we'll issue you a refund—your choice!

ALL RETURNED ITEMS MUST HAVE A RETURN AUTHORIZATION NUMBER OR THE RETURN IS SUBJECT TO A RESTOCKING FEE BASED ON THE INVOICE VALUE:
\$0-\$500 - \$15; \$501-1000 - \$25; \$1000+ - \$35.
BE SURE TO REQUEST A RETURN AUTHORIZATION NUMBER FROM A CUSTOMER SERVICE REPRESENTATIVE!

Any product returned in not-as-new condition will be assessed a fair refurbishing charge. Be sure to include the authorization number as a restocking fee must be assessed (see above) for products returned without authorization. Special order items cannot be returned.

SHIPPING DAMAGES:

Should you receive a damaged shipping carton, ask the UPS driver to wait while you inspect the contents. **IF** there is damage, refuse the package and immediately call us at 1-800-438-8155.

CANADIAN SHIPMENTS:

All Canadian shipments are subject to duties and GST tax. These charges are the responsibility of the purchaser and not Grove Enterprises.

LIMITED WARRANTY:

All equipment manufactured or modified by Grove Enterprises is warranted to the original purchaser to be free from defects in materials and workmanship for a period of one (1) year from the date of purchase as shown on the purchaser's receipt. Grove Enterprises may, under this warranty, either repair or replace (at our option) any part which proves defective in material or workmanship, provided the unit has not been modified in any manner or field repairs attempted. Please call us at 1-800-438-8155 for a return authorization number and shipping instructions before returning any item for warranty repair.

Grove Enterprises assumes no responsibility for damages or penalties incurred resulting from the use of this product in a manner or location other than that for which it is intended.

REALISTIC® EQUIPMENT:

Should any equipment manufactured by Realistic® and sold to you through Grove Enterprises fail within a period of one year from the shipping date, the unit must be returned to Grove Enterprises for warranty repair. Please call us at 1-800-438-8155 for return instructions.

OTHER WARRANTIES:

On items not manufactured by Grove Enterprises or Realistic®, (ICOM, Uniden, Kenwood, etc.), please check your service manual for instructions or call us at 1-800-438-8155 for the name, address or telephone number for the repair center nearest you.

GROVE PHONE LINE SERVICES:

ORDER LINE ONLY:

800-438-8155 (M-F, 8am-5:30pm Eastern)

TECHNICAL HELP LINE

704-837-7081 (M-F, 8:30am-4:30pm Eastern)

BUSINESS OFFICE

704-837-9200 (M-F, 9am-5:00pm Eastern)

DATA LINE/FAX SERVICE

704-837-2216 (24 hours/day, 7 days/week)

BULLETIN BOARD SYSTEM

Grove Enterprises has an advanced computer bulletin board system available Monday-Friday from 5:30pm-8am (non-business hours), and 24 hours/day on weekends. The BBS is free and is available to all people. All phone numbers operate at 300-14,400 BPS:
704-837-9200 704-837-5957 704-837-7081
704-837-5183



See The Signals You're Missing With The...

GROVE SDU 100 SPECTRUM DISPLAY UNIT

Turn your ICOM R7000, R7100, or R9000 into a powerful spectrum analyzer! Plugs into any receiver or transceiver that has an IF output jack!

Enjoy the high-tech advantage of counter-surveillance professionals who depend upon spectrum analyzers to find eavesdropping transmitters ("bugs").

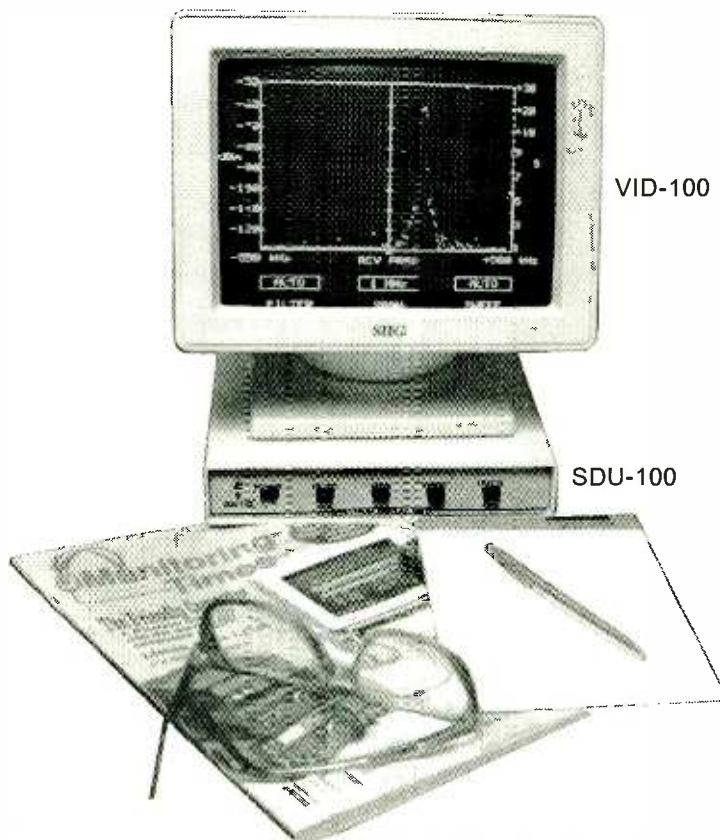
As the "spikes" appear on the screen you can tune them in quickly; no need to wait for the slow, hit-and-miss search of a scanner. A "freeze" function allows you to hold and examine all of the signals present at any moment in time!


Your receiver's tuned signal is the center of the screen, with up to 10 MHz (or as narrow as 100 kHz) of spectrum displayed simultaneously! Nail those unknowns as soon as they transmit!

Ideal for locating jammers, identifying sources of radio interference, studying signal propagation, testing antennas, aligning receivers and transmitters, and much more!

Connect the SDU-100 to any TTL monochrome monitor, or order the matching VID-100 9" CRT monitor. 12 VDC powered for mobile or field environment; AC adaptor included (the VID-100 is AC powered).

The SDU-100 is configured to operate with a variety of receiver intermediate frequencies (IFs), including 8.8, 10.7, 21.4, 45 and 70 MHz. The IF or receiver model must be specified at the time of order.



 **Designed and manufactured by Grove in the USA!**

"I received my SDU-100, and I must say the performance far exceeds my expectations! I thought the peaks would be represented by occasional sweeps of only a few pixels. Instead the station is clearly visible. I applaud your product and its bargain price for the performance!"

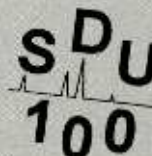
Bruce Lindner
Milwaukie, Oregon

SPECIFICATIONS

SPAN: 10, 5, 2, 1 MHz; 500, 200, 100, 0 (Time) kHz
DISPLAY ACCURACY: +/-3% or +/-3 dB, whichever is larger
RESOLUTION BANDWIDTH: 5, 30 kHz
SWEEP TIME: 0.1, 0.5, 2, 6 seconds
IF: 10.7 (others available by special order)
VIDEO OUTPUT: TTL to optional monochrome monitor
MINIMUM DETECTABLE SIGNAL (MDS): -130 dBm nom.
DISPLAY DYNAMIC RANGE: 80 dB

The SDU-100 is compatible with the following receivers:

ICOM R7000
ICOM R7100
ICOM R9000
Yaesu FT1000
Yaesu FRG-100*
Kenwood R5000*
Drake R8*
Drake TR-7*
JRC NRD 535D*
Mason A2
Uniden BC-890XLT*
Uniden BC-8500XLT*
Watkins-Johnson HF1000*
*Requires receiver modification



Look for the SDU icon in this catalog for compatible receivers

Order Today!

SDU-100	Spectrum Display Unit	\$499 ⁹⁵
VID-100	9" CRT Monitor	\$149 ⁹⁵

Shipping charges for SDU-100 and monitor ordered together:

\$8.50 UPS
\$18 2nd Day Air
\$17.50 US Priority Mail
\$18 Canadian UPS
\$21.50 Canadian APP



Choosing a Shortwave Receiver

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Choosing a shortwave receiver for your personal use is a lot like choosing a car. You must first decide what basic service you need, then shop for the best buy.

Looking for a good portable? The Sony ICF2010 is the best choice. Featuring keyboard entry of frequencies as well as a tuning dial, the radio offers sensitivity and a choice of wide or narrow selectivity. In addition to 150 kHz-30MHz continuous coverage, the 2010 also offers 118-136 MHz aircraft and 88-108 MHz FM broadcast reception.

The 2010's synchronous detection enhances shortwave reception; single sideband signals are also quite satisfactory. Battery life is much improved over its predecessors and it comes with an AC adaptor. Additional features are found on the new upgraded model SW77, listed in this catalog.

The Sony SW-100 is a hot performer—literally a shirt-pocket version of the popular ICF2010!

For tote-along, casual shortwave broadcast listening only, the new Sony SW-30 is the best under-\$100 portable we've ever seen! And the new SW8 combines Drake's reputation for high quality with low cost.

The Grundig Satellit 700 probably has the best single-sideband reception of any portable, and its AM/FM audio is rich and full; the Yacht Boy 400 was rated by *Monitoring Times* "The best compact shortwave portable we have tested." Need we say more?

For low cost at reasonable performance, try the Sangean ATS-803A. Continuous 150 kHz-30 MHz AM and SSB reception are offered along with FM broadcast and wide or narrow selectivity.

Low cost and high quality don't mix. The characteristics of greatest importance to listeners are those which are most commonly compromised in low-cost radios; frequency stability, dial accuracy, selectivity and overload immunity.

The Grove TUN4 preselector will reduce or eliminate overload interference on low cost receivers which suffer from poor dynamic range, and is equipped with connectors for external antennas.

The Drake SW-8 is an excellent performer at a pleasing price between the low-cost portables and more expensive tabletops. For the serious listener the Drake R8, ICOM R71A, Kenwood R5000 and JRC NRD535 head the list.

Shortwave Antennas and Accessories

While it is true that any length of wire will pick up signals, a well planned antenna installation will pick them up better. The greatest efficiency of an antenna occurs when its electrical length matches that of the incoming radio wave (resonance). For a given length this only occurs at one frequency and related multiples. It is the job of the antenna designer to

come up with the best combination of characteristics for wide frequency coverage.

The "bigger the better" concept has its limitations. Once an antenna is large enough to hear signals above the noise generated by the receiver's own circuitry, further strength is unnecessary. For most applications 20-75 feet is plenty long enough; in fact, doubling the length of a matched antenna will improve signals by only 3 decibels—half an S unit and barely discernible.

Impedance matching (standing wave ratio—SWR) may be important for transmitting, but is of virtually no concern in receiving. While a perfect match between an antenna and receiver will deliver the greatest signal strength, the background atmospheric noise (hiss and static) will increase proportionately. The net result will be a high S-meter reading, but no better signal readability above the noise.

A wire antenna may be thick or thin, made of any metal, insulated or uninsulated, stranded or solid; it will hear all signals the same. Choose your wire for strength, solderability and corrosion resistance.

An antenna should be as high as possible and away from large metal surfaces and electrical power lines to avoid electrical noise pickup and shock hazard. Indoor antennas often pick up noise from household appliances, although loop antennas may be rotated for minimum interference.

Recommended Antennas

For shortwave reception, it's hard to beat an elevated dipole. In actual field tests the low-cost Grove Skywire (ANT-2) repeatedly equalled or outperformed any other receiving antenna on the market including expensive trap dipoles.

Trap dipoles are designed to work best on certain ranges like the broadcast or ham bands, often compromising the remaining frequency ranges. Why buy a general coverage receiver, then reduce its capability with a frequency-restricting antenna?

For medium and longwave reception, the operator may wish to disconnect the ground side of the feedline, thus allowing the feedline to become part of the antenna for added length and improved low frequency signal strengths.

Directional antennas concentrate incoming signals ("gain") from one direction while rejecting interfering signals from other directions.

The large capture area (aperture) of a big antenna overcomes poor sensitivity in old receivers by providing stronger signals, but modern receivers have excellent sensitivity and require smaller antennas.

Active antennas are nothing more than short vertical elements attached to an amplifier to approximate the signal levels delivered by a full-size antenna. Untuned amplifiers are vulnerable to strong signal overload because of limited dynamic range. This produces gain compression (apparent lack of sensitivity) and intermodulation ("intermod"—the mixing of signal frequencies heard as spurious signals throughout the listening range).

Some active antennas, including the Grove

Hidden Antenna system, overcome this shortcoming by including a preselector which selects the desired frequency and attenuates all others.

Because of their indoor location, complexity, vulnerabilities and cost, active antennas should be chosen only when adequate outdoor antennas are not possible.

If an antenna intercepts enough signal voltage to overcome losses and noise in the receiver, no amount of amplification will make the signal easier to copy, just louder—along with louder background noise.

Feedline

A wire run from your receiver to a nearby tree may produce excellent reception, but it is susceptible to electrical noise pickup from nearby appliances; use coaxial cable for your antenna lead-in. For reception below 30 MHz, virtually any well-shielded coax like RG-58/U, RG-59/U, RG-6/U or RG-8/U is satisfactory for runs up to at least 100 feet.

Preselectors

A preselector can be thought of as a frequency-adjustable gate for radio signals; its purpose is to pass desired signal frequencies while rejecting all others. Installed between the antenna line and receiver, it eliminates intermodulation, image interference and desensitization caused by strong signals in economy receivers. It is not an impedance matching device.

An amplified preselector like the Grove TUN4 not only passes those desired signals, but amplifies them as well, often improving reception when the antenna is small or indoors.

Grounding

A connection to an earth ground rarely makes signals stronger, but will lessen the hazard of electrical shock and may reduce electrical line noise interference or AC hum on received signals.

An effective ground consists of a short length of heavy gauge wire (or coax cable shield) connected to a single metal pipe or rod driven at least eight feet into moist soil. Dry soil or sand is worthless as a ground. A metal (not PVC) cold water pipe may work, but hot water pipes are usually caulked at the water heater, electrically insulating them. As a last resort, connect your ground wire to the screw holding on the wall plate over the AC outlet.

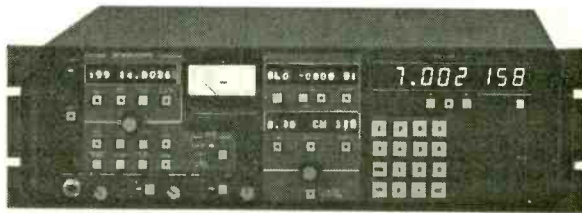
Equipment chassis should be commonly tied together by a single ground wire to reduce common mode hum. Experiment with different grounding combinations for best results.

The old-fashioned gap-type lightning arrestors so common during the vacuum tube era are no longer adequate; transistors burn out at voltages much lower than an air gap can protect. Offering much better protection are the new gas-charge types such as the Grove LA1 and Alpha Delta TransiTrap.

While nothing can guarantee protection from a direct lightning strike (always disconnect your antenna from your equipment during storm season), these devices will harmlessly short-circuit any voltages induced on the antenna by close strikes.



WATKINS-JOHNSON HF1000 LUXURY RECEIVER



For the first time in recent history, a leading manufacturer of equipment for the federal government has made available the most advanced receiver on the consumer market.

Designed for a super-secret monitoring agency, the HF1000

offers unsurpassed features and performance, like 1 hertz tuning and display readout, +30 dBm third-order intercept, DSP filtering with 58 bandwidths, RS232 and CSMA control ports, built-in self test, 5 kHz-30 MHz continuous tuning, ten step noise blanker, excellent filter

shape factor, low-distortion AM synchronous detection, internal speaker and much, much more.

This is a receiver for the discriminating listener, the consummate DXer, the true professional who wants the best there is.

Order RCV18 Today!
Only
\$3799

\$22.50 UPS
\$38 2nd Day Air
\$25 US Priority Mail
\$35 Canadian APP
\$35 Canadian UPS

ACCESSORIES:

ACC85 Preselector

\$589.95

SPECIFICATIONS

Frequency range: 5 kHz-30 MHz
Tuning steps: 1 Hz
RIT or fine tuning: BFO +/-8 kHz, 10 Hz resolution
Display: 4 separate LED panels
Recommended use: Serious monitoring
Receiving modes: Synchronous AM, FM, CW, USB, LSB, ISB
Memory: 100 channels, 100 lockouts
Scan: 3 modes
Banks: Programmable
Search: Multiple banks
Delay: Adjustable 0.5-20 seconds, and Infinite
Squelch: Adjustable 0 to -135 dBm
Clock: No

SDU
100

Audio output power: 1 watt, 8 ohms, 3% THD max.
Record audio output: 0 dBm, 600 ohms
Recorder activator: No
Signal strength indicator: Analog meter, calibrated dBm
Computer interface: RS232 and carrier sense multiple access
Conversion scheme: Triple up-conversion; 40.455 MHz, 455, 5 kHz
Sensitivity: 0.56 microvolts SSB, 0.5-30 MHz
Selectable preamplifier: 15 dB
Selectable attenuator: 10 dB
IF selectivity: DSP; 58 settings from 56 to 8000 Hz
Image rejection: 90 dB min.

Selectable AGC: 100 dB, 15 ms attack, 4 s / 25 ms decay
Dynamic range: 110 dB or better; +30 dBm 3rd order intercept point
Passband tuning: CW only
Noise blanker: 10 step
Notch filter: Tunable IF notch
Tone control: No
Antenna connector: BNC
Dimensions: 19"W x 5-1/4"H x 20"D, rack panel mount
Weight: 15 lbs
Power requirement(s): 97-235 VAC, 47-440 Hz, 35 W
Warranty: One year

Professional quality at a low consumer price!

AOR 3030 GENERAL COVERAGE COMMUNICATIONS RECEIVER



High sensitivity, 10 Hz DDS tuning, 50 kHz-30 MHz continuous frequency coverage, 100 dB dynamic range, multimode reception including synchronous AM detection, dual

VFOs, RS232 interface, compact size, recorder activator, direct keyboard entry, 100 programmable memories, and much, much more!

SPECIFICATIONS

Frequency range: 50 kHz-30 MHz
Tuning Steps: 10 Hz (DDS); dual VFOs
Receiving modes: AM, AM synch., LSB, USB, CW, FAX, FMN
Memory: 100 channels
Scan: Yes
Record audio output: Yes
Recorder activator: Yes

Signal strength indicator: Analog S-meter
Computers interface: RS232C
Image rejection: 70 dB or better
Dynamic range: 100 dB or better
Dimensions: 10"W x 3.5"H x 9.5"D
Weight: 4.8 lbs.
Power requirements: 12VDC or 8 optional AA cells
Warranty: One year

Order RCV20 Today!

Only

\$799⁹⁵

\$9.50 UPS
\$17 2nd Day Air
\$17 US Priority Mail
\$13 Canadian APP
\$20 Canadian UPS



R.L. Drake Company presents the...

R8 COMMUNICATIONS RECEIVER

Best Buy



SDU
100

SPECIFICATIONS

Frequency range: 100 kHz-30 MHz (35-55/108-174 MHz with optional converter)
Tuning steps: 10/100 Hz (10/100/1000 FM/AM)
Display: Backlit LCD
Dimmer: Yes
Type of listening recommended: International broadcast and utilities
Receiving modes: AM, narrow FM, USB, LSB, RTTY, CW, synchronous AM
Memory: 100 channels
Banks: 10
Search: No
Squelch: Yes
Audio output power: 2.5 W @ 4 ohms for 10 % THD
Recorder audio output: Yes
Recorder activator: No
S meter: Analog
Computer interface: RS232
Conversion scheme: Double up-conversion
Sensitivity: 0.5 uV 1.5-30 MHz (0.25 uV 5-30 MHz with preamp), 1 uV 100 kHz-1.5 MHz
Selectable preamplifier: Yes
Selectable attenuator: Yes
Selectivity: (-6/-60 dB, 2:1 shape factor) 6/4/2.3/1.8 kHz; 500 Hz (3:1)

Scan: Yes
Delay: Yes
Clock: Dual time zone

It has been nearly a decade since this respected American company withdrew from manufacturing communications equipment; now they have returned better than ever!

The exciting new R8 general coverage communications receiver offers outstanding 100 kHz-30 MHz performance at a competitive cost. Four voice-bandwidth filters combined with excellent audio design make international broadcast listening as well as utilities monitoring a pleasure.

Synchronous detection reduces fading and distortion while passband tuning rejects adjacent frequency interference. Ideal for AM, SSB, RTTY, CW reception.

Optional converter allows AM/FM reception 35-55, 108-174 MHz, while a builtin microprocessor/controller offers RS232 computer control and multiple-function scanning.

Dual VFOs, switchable preamp/attenuator, dual-time-zone clock timer, switchable antenna inputs, universal power supply and more combine to make this new receiver an outstanding value.

Image rejection: greater than 800B 1.5-30 MHz, greater than 60 dB 100 kHz-1.5 MHz
Frequency stability: +/- 10 ppm - 10° to 50° C
Selectable AGC: Off/slow/fast
Dynamic range: 90 dB @ 20 kHz spacing
Passband tuning: +/- 3 kHz
Noise blanker/limiter: Dual
Adjustable notch filter: 500-5000 Hz, 40 dB
Tone control: Yes
Antenna connector: Dual, switched
Dimensions: 13-1/2"W x 5-1/4"H x 13"D
Weight: 13 lbs.
Power requirements: 100/120/200/240 VAC, 50/60 Hz; 11:16 VDC @ 2A
Warranty: 1 year

Order RCV1
Grove discount price only

\$968⁹⁵

Retail ~~\$979~~

\$15 UPS
 \$29 UPS 2nd Day Air
 \$28.50 US Priority Mail
 \$26 Canadian UPS
 \$35.50 Canadian APP

ACCESSORIES:

ACC43 VHF Converter \$209.95
 ACC49 External Speaker \$48.95
 plus \$6 UPS
 ACC67 Service Manual \$39.95
 ACC77 PC Software \$58.95
 WP05 RDI White Paper® \$5.95
 Installation fee \$20

New from R.L. Drake Company

SW8 WORLD BAND RECEIVER

Not only continuous coverage 500 kHz-30 MHz, but 87-108 MHz FM broadcast (stereo at headphone jack) and 116-136 MHz aircraft as well! Standard and synchronous detection AM, upper and lower sideband on medium and short wave, direct frequency entry keypad, 0.5 microvolt sensitivity, dual 6/4 kHz selectivity on AM, sharp 2.3 kHz selectivity on SSB. Up-conversion eliminates images while +10 dB intercept point suppresses intermod.

A compact 11" wide by 5-1/4" high and weighing a scant 10 pounds, the SW8 runs on optional internal batteries or its supplied AC adaptor. High-contrast, backlit LCD display provides 100 Hz tuning accuracy. Dual-mode clock timer and 70 scannable memories round out the key features of this welcome receiver!



Order RCV19
Grove discount price only

\$595⁹⁵

\$10 UPS
 \$26 UPS 2nd Day Air
 \$23 US Priority Mail
 \$21 Canadian UPS
 \$28 Canadian APP

ACCESSORIES:

WP10 RDI White Paper® \$5.95

SPECIFICATIONS

Frequency range: 500 kHz-30, 87-108, 116-136 MHz
Tuning steps: Not specified
RIT or fine tuning: No
Display: Backlit LCD
Dimmer: On/off
Recommended use: General purpose AM/SSB, aircraft, FM broadcast
Receiving modes: AM, AM Synchronous, LSB, USB, WFM
Memory: 70 channels
Banks: 7 (10 channels each)
Delay: 5 seconds per step
Clock: Dual mode 24 hour with timer

Scan: Yes
Search: No
Squelch: No

Audio output power: 2 W @ 5% THD into 4 ohms
Recorder audio output: 300 mV into 4700 ohms
Recorder activator: No
Signal strength indicator: Analog S meter
Computer interface: No
Conversion scheme: Double up-conversion; 55.845 MHz/455 kHz
Sensitivity: 0.5 uV or better (SSB)
Selectable preamplifier: No
Selectable attenuator: 20 dB
IF selectivity (-6/-50 dB): AM Wide 6/15 kHz; AM Narrow 4/10 kHz; SSB 2.3/4.5 kHz
Image rejection: 70 dB or better
Selectable AGC: Yes

Dynamic range: 95 dB or better
Passband tuning: No
Noise blanker or limiter: No
Adjustable notch filter: No
Tone control: Yes
Antenna connector: SO-239 (UHF), push terminals, integral whip
Dimensions: 11-1/2"W x 5-1/4"H x 13"D
Weight: 10 lbs.
Power requirement(s): 6-9 VDC (AC adaptor included), 6 D cells
Warranty: One year
Accessories included: Telescoping whip, AC adaptor



JRC NRD-535D



This top-of-the-line communication receiver Offers continuous frequency coverage of 90 kHz through 30 MHz and reception modes for AM, USB, LSB, CW, RTTY, FAX and narrowband FM.

JRC's continuously-variable passband filter allows the user to custom-select exact filter bandwidth from 0.5-5.8 kHz, to reduce or eliminate adjacent channel interference with minimum impact on the fidelity of the desired signal. Exalted carrier selectable sideband (ECSS) permits additional clarity of reception on AM international broadcasters who are plagued by adjacent-frequency interference.

Four filter bandwidths may be selected for any mode (except NBFM which is 12 kHz). The dual noise blanker is extremely effective in reducing or eliminating aggravating impulse noise like ignition noise and the woodpecker.

Front panel controls include squelch, AF and RF gain controls, tone control, and AGC timing. A 24-hour clock-timer can be pre-adjusted for frequency, mode and on/off time, and includes a record activator. A built-in RS232 interface allows your computer to control virtually every function of this remarkable receiver for even greater listening power.

Order RCV3
\$1688⁹⁵
 \$17 UPS
 \$38 UPS 2nd Day
 \$35.50 US Priority Mail
 \$33 Canadian UPS
 \$45.50 Canadian APP

SPECIFICATIONS

Frequency range: 90 kHz-30 MHz
 Keypad frequency entry: Yes
 Tuning steps: 1 Hz minimum
 Display: Fluorescent
 Dimmer: 4 levels
 Type of listening recommended: Utility and foreign broadcasting
 Receiving modes: AM, CW, RTTY, FAX, NBFM, USB, LSB
 Memory: 200 channels
 Scan: Yes Banks: No
 Delay: Yes Search: Yes
 Squelch: Yes
 Clock: 24 hour clock/timer
 Audio output power: 1 watt @ 4 ohms
 Record audio output: 1 mW @ 600 ohms (mini phone plug)
 Recorder activator: yes
 S meter: Analog-emulation fluorescent
 Computer interface: RS232 built-in
 Conversion scheme: Triple up-conversion (70.45 MHz/455/97 kHz)

Sensitivity: 0.5 uV 1.5-30 MHz (SSB)
 Selectable preamplifier: No
 Selectable attenuator: 20 dB
 Selectivity: (-6/-60 dB) AUX 12/24 kHz, WIDE 6/15 kHz, INTER 2/6 kHz, NARR 1/3 kHz, FM 12 kHz continuously adjustable 0.5-5.8 kHz
 Image rejection: -70 dB
 Frequency stability: +/- 2 PPM after one-hour warmup
 Selectable AGC: Fast/slow/off
 Dynamic range: 106 dB @ 300 Hz BW
 Passband tuning: +/- 1 kHz
 Noise blanker/limiter: Dual width
 Adjustable notch filter: - 30 dB
 Tone control: Yes
 Antenna connector: SO-239 (UHF)
 Dimensions: 13"W x 5"H x 11"D
 Weight: 20 lbs.
 Power requirements: 120/240 VAC @ 50/60 Hz; 12 VDC 2 2A
 Warranty: One year
 Accessories included: None

OPTIONAL ACCESSORIES

ACC5 Upgrade Kit (0.5-5 kHz tunable filter for early models)	\$169.95
ACC24 6ZCJD00 serial cable for computer	\$59.95
ACC25 NVA-319 matching speaker with pushbutton audio filters	\$179.95
ACC26 CFL-218A 1.8 kHz extra sharp SSB/RTTY filter	\$139.95
ACC27 CFL-232 500 Hz sharp CW filter	\$139.95
ACC28 CFL-251 2.4 kHz sharp SSB/fax	\$139.95
ACC29 CGD-135 High stability (+/-0.5 PPM) crystal oscillator	\$79.95
ACC107 RTTY Demodulator	\$109.95

Upgrade and filter installation fee: \$20

KENWOOD R-5000

This extraordinary communications receiver has built-in modes for AM, FM, USB, LSB, CW, FM and FSK (RTTY). 100 memory channels store frequency, mode, and antenna selection (two inputs); 10 Hz tuning accuracy. Non-volatile memory retains functions even if long-life lithium battery fails.

Filters are provided for 6 kHz AM, 2.5 kHz SSB; you can add up to two more (one each: CW, SSB or AM). Excellent audio quality for broadcast monitoring.

Order RCV7
 Only
\$1049⁹⁵
 Retail ~~\$1099⁹⁵~~
 \$16 UPS
 \$30.50 UPS 2nd Day Air
 \$32.50 US Priority Mail
 \$26 Canadian UPS
 \$38.50 Canadian APP



OPTIONAL ACCESSORIES

If only accessories are ordered, add \$10 to total order.

ACC50 VC20 118-174 VHF conv.	\$207.95
ACC51 YK88A 6 kHz AM filter	\$84.95
ACC52 YK88S 2.4 kHz SSB filter	\$84.95
ACC53 YK88SN 1.8 kHz narrow SSB	\$94.95
ACC54 YK88C 500 Hz CW filter	\$84.95
ACC55 YK88CN 270 Hz narrow CW	\$94.95
ACC56 DCK2 12VDC mobile power cable	\$12.95
ACC57 VS1 voice synthesizer	\$67.95
ACC59 IF232C translator control	\$120.95
ACC69 IC-10 interface	\$34.95
ACC62 Headphones HS5 deluxe	\$64.95
ACC63 Headphones HS6 lightwt	\$52.95
ACC65 SP23 external speaker (plus \$7.50 UPS shipping)	\$75.95
ACC66 MB430 mobile mount bracket	\$34.95
ACC68 Service manual	\$25
WP03 RDI White Paper®	\$5.95

Installation Fee (one or more accessories) \$20 plus \$10 drop ship fee.

SPECIFICATIONS

Frequency range: 100 kHz - 30 MHz
 Keypad frequency entry: Yes
 Tuning steps: 10/100 Hz/1/2.5/5/10/20/50 kHz set by mode
 RIT (fine tuning): Yes
 Display: Fluorescent
 Dimmer: Yes
 Type of listening recommended: Domestic and international broadcasting; two-way SSB/CW/RTTY
 Receiving modes: AM, USB, LSB, narrow FM, RTTY, CW
 Memory: 100 channels
 Scan: Yes, programmable Banks: 10
 Lockout: Yes Search: Yes
 Clock: 24 hour, dual function with timer
 Audio output power: 1.5 watts
 Record output: Yes; no activator
 S meter: Analog
 Computer interface: Optional
 Conversion scheme: Dual up-conversion; 50.1125/8.83 MHz

Sensitivity: SSB 1.6-30 .25 uV (5) 00-1600 kHz 4 uV; 150-500 kHz 1uV
 Selectable preamplifier: No
 Selectable attenuator: 10/20/30 dB
 Selectivity: (-6/-60dB) AM 6/24 kHz; SSB 2.5/4.9 kHz
 Image rejection: 80 dB
 Frequency stability: +/- 300 Hz after 30 minutes warmup
 Selectable AGC: fast/slow/off
 Dynamic range: 102 dB
 Passband tuning: Yes
 Noise blanker/limiter: Dual
 Adjustable notch filter: Yes
 Antenna connector: SO-239 (UHF); random wire terminal
 Dimensions: 10.62"W x 3.78"H x 10.6"D
 Weight: 12.3 lbs.
 Power requirements: 12 VDC (with optional adaptor), 120/240 VAC
 Warranty: One year
 Accessories included: None



ICOM R-71A

This receiver is as professional as it looks. The brilliant fluorescent display provides frequency information down to tenths of a kilohertz and alerts the listener to other dial settings (mode, memory, channel, VRO).

Signal resolution of 10 Hz eliminates the need for RIT, even on SSB or RTTY mode and may be scanned or searched. An effective noise blanker has adjustable controls for optimum reduction of a wide variety of impulse noises, from power line hash to the Russian woodpecker.

Filter selectivities of 6, 2.3 and 0.5 kHz are provided; you may add one more for use in any mode. This latest version also reintroduces passband tuning.

Of interest to the visually impaired is the optional EX-310 speech synthesizer which announces the displayed frequency in English.

OPTIONAL ACCESSORIES

One or more accessories installed w/radio -- \$20

ACC1	EX257 FM mode detector	\$55.95
ACC2	SP3 speaker (plus \$7.50 UPS)	\$77.95
ACC3	DC Power kit EX299	\$19.95
ACC4	CR64 high stability crystal	\$79.95
ACC73*	UX14 Level converter	\$70.95
ACC74*	CT-17 computer interface	\$109.95
*Must use ACC73 & ACC74 together		
ACC7	EX310 voice synthesizer	\$69.95
ACC8	FL32A CW narrow filter	\$76.95
ACC9*	FL44A SSB filter	\$178.95
ACC10*	FL63A CW narrow filter	\$59.95
*Use only one filter		
ACC12	RC11 remote control	\$82.50
ACC13	MB12 mobile mount bracket	\$25.95
ACC14	Service manual	\$41.00
WP01	RDI White Paper®	\$5.95

Order RCV6
Only
\$1037⁹⁵

\$15.50 UPS
\$32 UPS 2nd Day
\$30.50 US Priority Mail
\$39.50 Canadian APP
\$30 Canadian UPS



SPECIFICATIONS

Frequency range: 100 kHz-30MHz
Keypad frequency entry: Yes, plus tuning knob
Tuning steps: 10 Hz
RIT (fine tuning): No
Display: Fluorescent
Dimmer: Yes
Type of listening recommended: Domestic and international broadcasting, two-way communications
Receiving modes: AM, USB, LSB, RTTY, CW, narrowband FM
Memory: 32 channels plus 2 temporary VFO memories
Scan: yes
Lockout: No
Search: Yes
Squelch: Yes
Audio output power: 2 watts
Record output: Yes
S meter: Analog
Conversion scheme: Quadruple up-conversion
Sensitivity: 0.2 uV with preamplifier on

Selectable preamplifier: Yes
Selectable attenuator: Yes
Selectivity: (-6/60 dB) wide 6/15 kHz; narrow 2.3/4.2 kHz; optional FM 15/25 kHz
image rejection: 60 dB
Frequency stability: 50 Hz
Selectable AGC: Yes
Dynamic range: 86 dB
Passband tuning: Yes
Noise blanker/limiter: Dual, adjustable
Adjustable notch filter: Yes
Antenna connector: SO-239 (UHF)
Auxiliary connector: 70 MHz IF output
Dimensions: 11-1/4"W x 4-3/8"H x 10-7/8"D
Weight: 16-1/2 lbs.
Power requirements: 120/240 VAC; 12 VDC with optional EX299
Warranty: One year
Accessories included: None

FINAL QUANTITIES!

ICOM R-72 only \$695⁹⁵

Retail \$1145 Old Grove Price \$919⁹⁵
plus \$15.50 UPS Ground Shipping

Order RCV8

The ICOM R72 offers full 100 kHz-30 MHz frequency coverage and direct keypad entry with advanced features. A backlit LCD shows the receiver's 10 Hz frequency resolution, while 101 scannable memory channels store frequencies in AM, LSB, USB, RTTY and CW. Dual-range search is included as well as an analog S meter and a recorder activator coupled to a 24 hour clock timer



SPECIFICATIONS

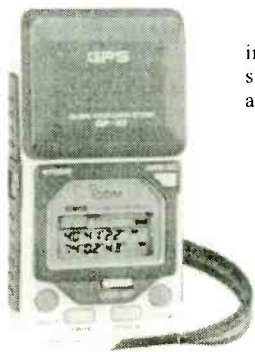
Freq Range: 100 kHz-30 MHz
Tuning steps: 10Hz/1kHz/10kHz
RIT (fine tuning): Unnecessary
Display Backlit LCD: 10 Hz resolution
Type of listening recommended: Domestic and international broadcasting; two-way SSB/CW/RTTY
Receiving modes: AM, SSB, CW; FM optional

Keypad freq entry: Yes

Memory: 101 channels
Banks: No
Priority: No
Delay: Yes
Clock: Yes with timer
Record output: Yes
S meter: Yes; analog
Conversion scheme: Trip-up conversion; 70.4515 MHz, 9.0115 MHz, 455 kHz
Sensitivity: 100 kHz-1.8 MHz 2uV SSB/12.6uV AM; 1.8-30 MHz (preamp on) 0.16 SSB/2uV AM; optional FM 0.5uV
Selectable preamplifier: Yes
Selectable attenuator: 10/20/30 dB

Scan: Yes
Lockout: Yes
Search: Dual range
Squelch: Yes
Audio output power: 2 watts
Recorder activator: Yes
Computer interface: optional
Selectivity: (-6/-60dB): AM wide 6/20 kHz; AM narrow/SSB 2.3/8 kHz; optional FM 15/30 kHz
Image rejection: 70 dB
Frequency stability: +/- 30 Hz after 1 hour warmup
Selectable AGC: fast/slow
Dynamic range: 100 dB
Passband tuning: No
Antenna connector: SO-239 (UHF) and push clip
Auxiliary connector: No
Dimensions: 9.5"W x 3.7"H x 9"D
Weight: 10.6 lbs.
Power requirements: 120/240 VAC; opt. 13.8 VDC mobile kit
Warranty: One year
Accessories included: None

ON SALE NOW! ICOM GP-22 SATELLITE POSITION LOCATOR



Use the same precision satellites that helped us win the Gulf War. This tiny (2-1/2" x 5-1/4", 11 oz) earth station fits in the palm of your hand! The easy-to-read digital display reveals bearing information from up to five earth-orbiting satellites, providing your latitude and longitude to within 300 feet (limited by the Department of Defense)—even your altitude!

Easy to use. Track your direction or return to a precise location. Create a route. Confirm your waypoints. Compute estimated time of arrival (ETA). Display heading, speed, bearing and range. Compute world and local time.

Powered by rechargeable battery pack or optional AA cells. Includes carrying case, cigarette lighter power cord, AC wall adaptor/charger, illustrated instruction book.

Order GP22
Sale price only
\$499⁹⁵

\$8 UPS
\$11.50 2nd Day Air
\$12.50 Priority Mail
\$15 Canadian UPS
\$16.50 Canadian APP



NOW FROM GROVE!

GRUNDIG

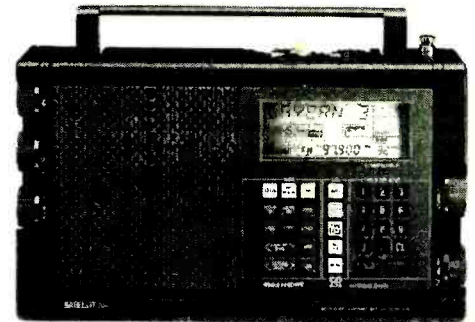
SHORTWAVE PORTABLES

SPECIFICATIONS

Frequency range: 150-353 kHz/528-30,000 kHz/87.5-108 MHz
 Tuning steps: 1 kHz AM/100 Hz SSB
 RIT or fine tuning: Yes
 Display: Backlit LCD
 Dimmer: on/off
 Recommended use: Broadcast reception
 Receiving modes: AM/AM synch/USB/LSB/FM broadcast
 Memory: 120 factory presets/ 64 programmable alphanumeric channels
 Scan: Yes
 Search: Yes
 Delay: 1 second
 Clock: 12/24 hour/timer/sleep switch/programmable record
 Audio output power: 3 watts
 Record audio output: Stereo and mono
 Recorder activator: Yes
 Signal strength indicator: LCD bargraph
 Computer interface: No
 Conversion scheme: Double up-conversion, 54.5 MHz/450 kHz
 Sensitivity: Unavailable
 Selectable preamplifier: No
 Selectable attenuator: DX/local switch
 IF selectivity: 3.8/6.8 kHz
 Image rejection: Unavailable
 Selectable AGC: Yes, with RF gain control
 Dynamic range: Unavailable
 Passband tuning: No
 Noise blanker or limiter: No
 Adjustable notch filter: No
 Tone control: Separate bass/treble controls
 Antenna connector: DIN (supplied)
 Dimensions: 12"W x 7"H x 2-1/2"D
 Weight: 4 lbs 2 oz
 Power requirement(s): 120/240 VAC (adaptor Included) 4 D cells (alkaline or NiCd; charger included)
 Warranty: 1 year
 Accessories included: Manuals, coax connector, AC adaptor

**GRUNDIG
 SATELLIT 700
 LUXURY PORTABLE**

Grundig's decades of quality radio manufacturing culminate in the Satellit 700, a high performance portable at an affordable price!
 Separate bass and treble controls coupled with the large internal speaker produce the best audio we've heard in any contemporary shortwave portable!
 Continuous frequency coverage 150-353 kHz longwave, 528-30,000 kHz medium and shortwave, 87.5-108 MHz FM broadcast. USB/LSB selection on utilities, with 100 Hz tuning steps and infinite-resolution RIT (clarifier) for fine tuning. Straightforward keyboard entry makes frequency selection a snap!
 Wide and narrow filters provide excellent audio quality and adjacent channel interference rejection, while synchronous detection with automatic USB/LSB tracking improves single-signal response.
 120 factory preset frequencies with station names on the giant LCD display allows instant selection of favorite stations. Automatic bandscanning searches for active frequencies.



Order RCV23
 Retail ~~\$499⁹⁵~~
\$399⁹⁵
 \$8 UFS
 \$16 2nd Day Air
 \$15.50 US Priority Mail
 \$18 Canadian APP
 \$11.50 Canadian UPS

"The best compact shortwave portable we have tested"... "The best sounding audio we have come across in a compact portable." (Monitoring Times, August 1993)

**GRUNDIG
 YACHT BOY 400
 PORTABLE**



It's always a pleasure to introduce a really good, low-cost product—and that's just what Grundig's newest entry is. With AM/FM stereo and continuous shortwave frequency coverage from 1.7-30 MHz in 5 or 1 kHz tuning increments, SSB, infinite fine tuning, FM broadcast reception, and battery or AC power convenience, the 400 also offers 40 scannable memories and simple pushbutton tuning.

A giant, backlit LCD shows frequency, dual-zone 24 hour clock, battery condition, even a bargraph for received signal strength! Dual bandwidth selectivity allows sharp rejection of adjacent frequency interference, while high sensitivity assures weak signal reception, even with the convenient telescoping whip.

This compact marvel is ideal for dependable backup during power outages and as a suitcase companion during that next trip.

ACCESSORIES:
 ACC137 AC Adaptor \$7.99

SPECIFICATIONS

Frequency range: 150-30,000 kHz, 87.5-108 MHz
 Tuning steps: 1/5 kHz
 RIT or fine tuning: Yes
 Display: Backlit LCD
 Dimmer: On/off
 Recommended use: Casual shortwave and FM monitoring
 Receiving modes: AM/SSB; FM broadcast
 Memory: 40 channels
 Scan: Yes
 Clock: Dual 12/24 hour, sleep switch
 Record audio output: No
 Recorder activator: No
 Signal strength indicator: LCD bargraph
 Computer interface: No
 Conversion scheme: Dual conversion
 Sensitivity: Unavailable
 Selectable attenuator: No
 IF selectivity: Unavailable
 Dynamic range: Unavailable
 Tone control: Yes
 Warranty: One year
 Accessories included: Batteries, reel antenna, carrying case, Shortwave guidebook

Order RCV22
 Retail ~~\$279⁹⁵~~
\$219⁹⁵
 \$8 UPS
 \$16 2nd Day Air
 \$15.50 US Priority Mail
 \$18 Canadian APP
 \$11.50 Canadian UPS



SANGEAN ATS-803A



Whether you are a beginner looking for a high performance portable at low cost, or a seasoned SWL planning on a second receiver, this is clearly the most feature-packed, high performance portable under \$200!

Order RCV4
\$169⁹⁵

\$8 UPS
\$16 2nd Day Air
\$15.50 US Priority Mail
\$18 Canadian APP
\$11.50 Canadian UPS

SPECIFICATIONS

Frequency range: 150 kHz-30 MHz, 87.5-108 MHz
 Keypad frequency entry: Yes
 Tuning steps: 1 kHz
 RIT (fine tuning): Tuning knob and BFO
 Display: Illuminated LCD
 Dimmer: No
 Type of listening recommended: Domestic & Int'l broadcast, casual
 Receiving modes: AM, SSB, wideband FM
 Memory: 9 channels Scan: Yes
 Banks: No Lockout: No
 Priority: No Search: Yes
 Delay: Yes Squelch: No
 Clock: With alarm/sleep functions
 Audio output power: 900 milliwatts
 Record output: 5 pin DIN connector; 1 mV @ 1000 ohms
 S meter: LED light bar
 Computer interface: No
 Conversion scheme: Dual up-conversion; 55.845 MHz, 10.7 MHz, 450 kHz
 Sensitivity: Not available

Selectable preamplifier: No
 Selectable attenuator: RF gain control
 Selectivity: Wide/narrow AM/SSB (6.5 kHz AM)
 Image rejection: AM 50 dB; FM 60 dB
 Frequency stability: Quartz PLL
 Selectable AGC: No
 Dynamic range: Not available
 Passband tuning: No
 Noise blanker/limiter: No
 Adjustable notch filter: No
 Tone control: Separate bass & treble
 Antenna connector: RCA phono plug
 Auxiliary connector: No
 Dimensions: 11-1/2"W x 6-1/4"H x 2-1/2"D
 Weight: 4 lbs.
 Power requirements: 2 AA and 6 D cells or 120 VAC
 Warranty: 1 year
 Accessories included: AC adaptor, stereo headphones, shoulder strap, SW handbook, external antenna adaptor.

Top-of-the-line With Built-In Cassette Recorder

SANGEAN ATS-818CS

Imagine—record your favorite programs automatically with the dual-zone clock timer on any frequency from 150 kHz through 30 MHz, 87.5-108 MHz FM as well! This impressive portable has SSB and CW reception, 45 memory channels, wide/narrow filter selectivity, signal strength indicator, AC wall adaptor and more!



Order RCV9
Retail ~~\$399~~
Only

\$219⁹⁵

\$8 UPS
\$16 2nd Day Air
\$16 US Priority Mail
\$20.50 Canadian APP
\$18 Canadian UPS

SPECIFICATIONS

Frequency range: 150 kHz-30 MHz AM/SSB, 87.5-108 MHz FM
 Keypad frequency entry: Yes
 Display: Backlit LCD
 Dimmer: Yes
 Recommended use: Casual SW listening
 Receiving modes: AM, SSB, FM
 Memory: 45 presets Scan: Yes
 Banks: No Lockout: No
 Priority: No Search: Yes
 Delay: Yes Squelch: No
 Clock: Dual time display with record timer
 Audio output power: 800 mW
 Record audio output: No
 Recorder activator: Internal programmable cassette recorder/player
 Signal strength indicator: Yes
 Computer interface: No

Conversion scheme: Double conversion
 Sensitivity: Not available
 Selectable preamplifier: RF gain control
 Selectable attenuator: No
 IF selectivity: Wide/narrow switch
 Image rejection: Not available
 Frequency stability: Not available
 Selectable AGC: No Dynamic range: Not available
 Passband tuning: No Noise blanker/limiter: No
 Adjustable notch filter: No Tone control: Yes
 Antenna connector: Yes Auxiliary connector: No
 Dimensions: 11-1/4"W x 7-3/8"H x 2-3/4"D
 Weight: 3 lbs. 13 oz.
 Power requirements: AC, internal batteries
 Warranty: One year
 Accessories included: AC adaptor, external antenna adaptor, shortwave handbook

NEW! SONY ICF-SW100

SHIRT-POCKET SHORTWAVE RADIO!

Incredible! Imagine compressing the popular functions of the mighty Sony ICF2010 into a shirt-pocket radio! This tiny titan offers continuous 150 kHz-30 MHz and 76-108 MHz FM frequency ranges, Sony's famous synchronous detection, USB/LSB reception, 100 Hz tuning steps, 50 memory presets, 24 hour clock/timer, world time computer, stations name display, illuminated LCD, and much, much more.

AC adaptor, stereo earphones, active antenna, soft carrying case, station directory, and full instruction manual included at no extra charge!



SPECIFICATIONS

Frequency Range: 150 kHz-30 MHz, 76-108 MHz
 Tuning steps: 100 Hz/1/5 kHz; 9/10 kHz MW, 50 kHz FM
 Display: Backlit LCD Dimmer: On/Off
 Recommended use: Casual shortwave
 Receiving modes: AM/AM Synchronous, USB, LSB/CW, FM (76-108 MHz)
 Memory: 50 channels
 Scan: Yes Banks: 10
 Search: Yes Delay: Yes
 Clock: 24 hour, local and daylight savings time, sleep timer
 Audio output power: 250 mW into 8 ohms (1-5/8" speaker)
 Record audio output: 245 mV @ 10K ohms

Recorder activator: No
 Signal strength indicator: No
 Conversion scheme: Dual up-conversion, 55.845 MHz/455 kHz (10.7 MHz FM)
 Selectable attenuator: Yes
 Tone Control: Yes
 Antenna connector: 1/8" (3.5mm) mini
 Dimensions: 4-3/8"W x 2-7/8"H x 15/16"D Weight: 8 ounces
 Power requirement(s): 2 AA cells or 120 VAC
 Warranty: One year
 Accessories included: AC wall adaptor, active antenna, stereo earphones, soft case, listener's guide, operating manual

Order RCV 24
Grove's new low price only
\$349⁹⁵

\$8 UPS
\$20 UPS 2nd Day Air
\$16.50 US Priority Mail
\$18.50 Canadian APP
\$21 Canadian UPS



SONY COMPARISON CHART

	ICF-SW55	ICF-SW77	ICF-2010	ICF-SW7600	ICF-SW30	ICF-SW100
Received Band	• FM Stereo Yes	Yes	No	Yes	Yes	Yes
Way of Tuning	• Air Band No	No	Yes	No	No	No
	• Station Name Tuning Yes	Max 100	No	No	No	Yes
	• AM Tuning Step 100 Hz	50 Hz	100Hz	5kHz	1 kHz	100 Hz
	• Preset Memories 125	162	32	10	15	50
Tuning Mode	• Broadcasting Time Display No	Yes	No	No	No	No
	• Auto Program Select No	Yes	No	No	No	No
	• AM Wide/Narrow filters Yes	Yes	Yes	No	No	No
	• SSB Wide/Narrow filters Yes	Yes	No	No	No	No
Others	• USB/LSB Select Yes	Yes	Yes	Yes	No	Yes
	• Synchronous Detection No	Yes	Yes	No	No	Yes
	• Clock Yes	Yes	Yes	Yes	Yes	Yes
	• Timer Yes	Yes	Yes	Yes	Yes	Yes
	• Rec Out Jack Yes	Yes	Yes	Yes	No	Yes
	• Ext Antenna Jack Yes	Yes	Yes	Yes	No	Yes
	• Sleep Mode (min) Yes	Yes	Yes	Yes	Yes	Yes
• Tone Control Yes	Yes	Yes	Yes	No	Yes	

"Clearly the best in its price class!"

Larry Magne
Monitoring Times

SONY ICF-SW30

Best Buy ✓



Looking for an uncomplicated, high-performance, low cost portable? It's the new Sony ICF-SW30! Replacing the popular ICF-SW7601, this broadcast-only (no SSB) radio features double conversion, high selectivity and excellent sensitivity to bring in stations more expensive radios miss!

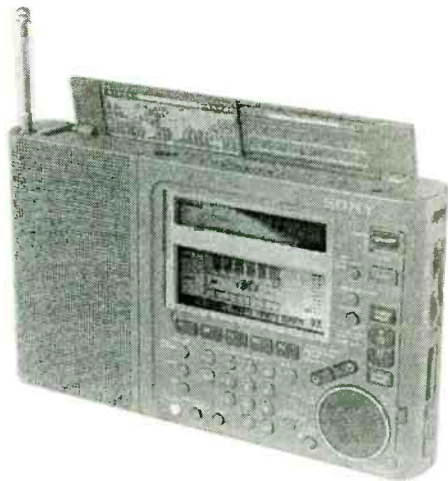
Battery powered with level indicator, dual-zone 24-hour clock, temporary memory during battery change, 15 memory channels (5 for each band), signal seeking (autosearch in 1 kHz steps), and pushbutton tuning. Travel power lock prevents accidental turn-on. Offers FM stereo with optional earphones.

Covers standard AM and FM broadcast, and the most popular shortwave ranges: 3700-4200, 4650-5150, 5800-6300, 6950-7450, 9375-1000, 11525-12150, 13375-14000, 14975-15600, 17475-18100 and 21320-21950 kHz.

Measuring only 4-1/2"H x 6-1/2"W x 1-1/2"D and weighing a mere 1 pound 2 ounces, the SW30 includes an integral tilt bracket for desktop viewing, sleep control, radio alarm clock, swivel telescopic antenna, and carrying strap.

ACCESSORIES
ACC136 AC Adaptor \$19.95

Order RCV21
Retail ~~\$129.95~~
Grove Discount Price Only
\$99.95
\$5.50 UPS
\$8.50 UPS 2nd Day
\$5 US Priority Mail
\$8.50 Canadian APP
\$12 Canadian UPS



SONY
ICF-SW77

For those who have been looking for the next step up, it's here! The new Sony ICF-SW77 has all of the features of the popular ICF-2010 (except air band), plus: front panel tuning dial, separate bass and treble controls, 162 non-volatile memory channels, stereo FM (headphones), station name display, 50 Hz fine tuning steps, broadcasting time display, 24 hour/local time clock, and 5-event timer.

Order RCV10
Retail ~~\$548.95~~
Only
\$469.95

\$8 UPS
\$16 UPS 2nd Day
\$17.50 US Priority Mail
\$20.50 Canadian APP
\$18 Canadian UPS

SPECIFICATIONS

Frequency range: 150 kHz-29.9999 MHz AM/SSB, 87.5-108 MHz FM
Keypad frequency entry: yes
Tuning steps: 1 kHz/50 Hz
Display: LCD
Dimmer: No
Recommended use: General Purpose
Receiving modes: AM/SSB; FM 87.5-108 MHz
Memory: 162 channels, alphanumeric display
Scan: yes Banks: 20
Lockout: No Priority: No
Search: Yes Delay: Yes
Squelch: No Clock: 12/24/hour
Audio output power: 400 milliwatts @ 10% THD
Record audio output: 38 millivolts @ 10 K ohms
Recorder activator: Yes
Signal strength indicator: LCD bargraph
Computer interface: No
Conversion scheme: Dual 55.845 MHz/455 kHz (10.7 MHz FM)
Sensitivity: Unavailable
Selectable preamplifier: No
Selectable attenuator: Yes
Selectable AGC: No
Passband tuning: No
Noise blanker or limiter: No
Adjustable notch filter: No
Tone control: Bass and treble
Antenna connector: 1/8" miniplug
Auxiliary connector: None
Dimensions: 10-7/8"W x 6-7/8"H x 1-7/8"D
Weight: 3-1/4 lbs with batteries
Power requirement(s): 4 C cells, 6 VDC (AC adaptor inc.)
Warranty: One year
Accessories included: AC adaptor, stereo earphones, ear pads, carrying belt, compact antenna, external antenna adaptor, manual.



SHORTWAVE RECEIVER

SONY ICF-SW7600

It was inevitable. The early models ICF 2002 and 2003 have been replaced by a tiny marvel with AM, SSB, and even FM stereo coverage! Measuring just over 7 inches wide and weighing 22 ounces, the SW7600 is loaded with features! DX/local switch reduces "pumping" on strong SSB signals; power switch lock prevents accidental battery depletion during transport.

Continuous 150 kHz-29.995 MHz frequency coverage plus 87.6-108 MHz FM headphone stereo (headphones included!), pushbutton tuning, tone control, external antenna jack, clock timer with sleep function, tilt bracket, keyboard lock, direct-entry keypad and ten scannable memory channels keynote the high-tech features of this potent portable!



Order RCV11

Retail ~~\$249⁹⁵~~ \$8 UPS
\$219⁹⁵ \$12 UPS 2nd Day Air
 \$13.50 US Priority Mail
 \$16 Canadian UPS
 \$15.50 Canadian APP

SPECIFICATIONS

Frequency range: 150-29995 kHz, 87.6 - 108 MHz
 Keypad frequency entry: Yes
 Tuning steps: 5 kHz, fast/slow button
 RIT (fine tuning): +/- 10 kHz AM and SSB
 Display: Backlit LCD Dimmer: No
 Type of listening recommended: Domestic & international broadcasting, casual SSB
 Receiving modes: AM, wide FM, SSB
 Memory: 10 channels Scan: Yes
 Banks: No Lockout: No
 Priority: No
 Search: Yes, with times delay
 Delay: No Squelch: No
 Clock: With timer & sleep function
 Record audio output: yes Recorder activator: yes
 S meter: Single "tune" LED Computer interface: No
 Conversion scheme: Dual conversion
 Selectable preamplifier: No
 Selectable attenuator: DX/local switch
 Tone control: Music/news switch
 Antenna connector: No
 Dimensions: 7-9/32"W x 4-11/16"H x 1-1/4"D
 Weight: 1-1/4 lbs.
 Power requirements: 4 AA cells or AC adaptor
 Warranty: One year.
 Accessories included: Stereo earplugs, carrying case, reel antenna, AC wall adaptor.

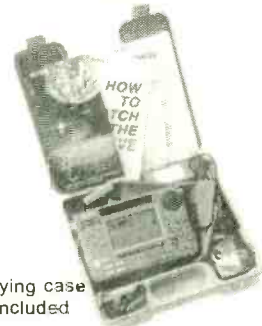
SPECIFICATIONS

Freq range: 150 kHz-30 MHz AM/SSB, 87.5-108 MHz FM
 Keypad frequency entry: yes
 Tuning steps: 0.1/1 kHz
 RIT or fine tuning: yes
 Display: LCD Dimmer: No
 Recommended use: Casual international broadcast listening
 Receiving modes: AM/SSB Memory: 125 channels
 Scan: Yes
 Banks: 25 (5 channels each)
 Lockout: No Priority: No
 Search: Yes Delay: Yes
 Squelch: No Clock: 12/24 hour
 Audio output power: 400 milliwatts at 10% THD
 Record audio output: 245 millivolts @ 10 K ohms
 Recorder activator: Yes
 Signal strength indicator: LCD bargraph
 Computer Interface: No
 Conversion scheme: Dual 55.845 MHz/455 kHz (10.7 MHz FM)
 Selectable preamplifier: No
 Selectable attenuator: Yes Tone control: Yes
 Antenna connector: 1/8" miniplug
 Auxiliary connector: No
 Dimensions: 7-3/4"W x 5"H x 1-1/2"D
 Weight: Approx. 2 lbs
 Power requirement(s): 4 AA batteries; 6VDC (AC adaptor inc.)
 Warranty: One year
 Accessories included: Stereo earphones, AC adaptor, earpads, compact antenna, external antenna adaptor, books and manual

SONY ICF-SW55

For the traveler on the go, reliable shortwave coverage — AM and SSB — are at your fingertips with the popular SW55. Just check all the features found in this compact powerhouse:

- Frequency range and modes: 150 kHz-30 MHz AM/SSB, 76-108 MHz FM
- Station Name tuning with LCD display
- 125 Frequency Memory
- .1/1 kHz Tuning Steps
- EEP ROM Memory (no battery backup required)
- FM Stereo (earphones only)
- World Time Clock
- Includes soft pouch, world band guidebook, AC adaptor, AN-71 compact antenna, stereo earphones.



Carrying case not included

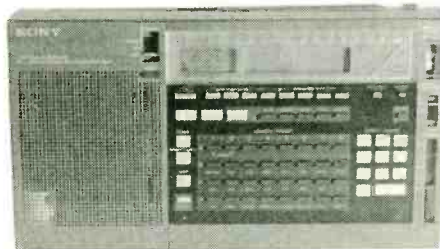
Order RCV15

Retail ~~\$449⁹⁵~~
\$349⁹⁵ \$8 UPS
 \$14.50 UPS 2nd Day Air
 \$17.50 US Priority Mail
 \$20.50 Canadian APP
 \$16 Canadian UPS

The World's Most Popular Radio!

SONY ICF-2010

This is the full-featured portable for the serious shortwave listener. Synchronous detection allows interference-free reception on many stations difficult to hear on other radios. Narrow/wide selectivity switching; clock/timer allows up to 4 automatic on/off cycles per day for frequencies and times of your choice; 10-step LED signal strength meter, audio tone selection for speech or music; and 10 station direct-access keyboard combine to make this Sony product a remarkable value for beginners or seasoned SWL's.



Order RCV2

Retail ~~\$459⁹⁵~~
\$349⁹⁵ Only
 \$8 UPS
 \$16 UPS 2nd Day
 \$16.50 US Priority Mail
 \$18.50 Canadian APP
 \$18 Canadian UPS

Best Buy ✓

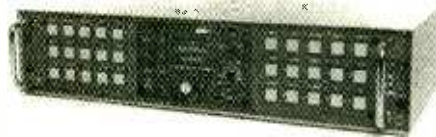
SPECIFICATIONS

Frequency range: 150 kHz-30MHz, 76-108, 116-136 MHz
 Keypad frequency entry: Yes, plus tuning knob
 Tuning steps: 100 Hz RIT (fine tuning): No
 Display: Backlit LCD Dimmer: No
 Type of listening recommended: Domestic & international broadcasting, casual two-way SSB and aircraft
 Receiving modes: AM, USB, LSB, wideband FM; synchronous detection
 Memory: 32 channels
 Scan: Yes Banks: No
 Lockout: No Priority: No
 Search: Yes Delay: Yes
 Squelch: No Clock: 12/24 hour w/alarm and sleep timer
 Audio output power: .380 milliwatts
 Record output: Miniplug; 775 millivolts @ 1000 ohms; no activator
 S meter: LED bargraph Computer interface: No
 Conversion scheme: Dual up-conversion
 Sensitivity: 0.2 uV SSB Selectable preamplifier: No
 Selectable attenuator: DX/local switch
 Selectivity: Wide 18 kHz @ -50 dB; narrow 10 kHz @ -50 dB
 Image rejection: Not available
 Frequency stability: Quartz PLL Tone control: Yes
 Antenna connector: 1/8" mini phone plug
 Auxiliary connector: No
 Dimensions: 11-3/8"W x 8-1/4"H x 2-1/16"D
 Weight: 3-3/4 lbs.
 Power requirements: 2 AA and 3 D cells or 120 VAC
 Warranty: One year
 Accessories included: AC adaptor, earphone, shoulder strap, wire antenna, external antenna adaptor, plug, SW handbook.



UNIVERSAL M8000 MULTIMODE DECODER

New Version 5 now includes three new modes: PACTOR, ARQ6-90 and ACARS. Nothing could be simpler: plug the new M8000 into your receiver's or scanner's speaker or earphone jack, connect a printer or VGA color monitor, and copy Morse code, RTTY, ASCII, TOR (FEC and ARQ), packet, FDM, Russian Cyrillic, bit inversion, facsimile and even piccolo—all off the air! The M8000 will even automatically tune its filters!



Ideal for testing data transmissions—reads digital pager transmissions (GOLAY and POCSAG) when connected to any scanner (unlawful for unauthorized listening!). Print squelch prevents noise from generating garbled messages, while internal displays alert you to baud rates, control characters, tuning graphs and other information, all in 16 vibrant colors!

Operates on 120 or 240 VAC, 50/60 Hz, and measures 16-3/8" W x 3-1/2" H x 12-3/4" D. Truly a remarkable monitoring accessory for the serious utilities enthusiast.

SPECIFICATIONS

RECEPTION MODES:

- Morse (5-120 WPM)
- RTTY (45/50/57/75/100 baud and 20-250 baud non-standard)
- ASCII (75/110/150/300/600/1050/1200/1800 baud)
- SITOR (A/B/AMTOR A/AMTOR B/ARQTOR/FECTOR)
- FDM/VFT (8/12/16/24 channel)
- Piccolo
- TDM/ARQ (M2/M4/E/E3/S/SWED)
- FEC (A/S)
- Packet (300/1200 baud)
- Pager (Golay/POCSAG)
- Facsimile (60/90/120/240 LPM, AM/FM)
- Cyrillic (Russian third shift)
- NEW VERSION 5 NOW INCLUDES PACTOR, ARQ6-90 AND ACARS!



ACCESSORIES:

ACC140 19" rack panel mount kit \$19.95

Order DEM6
Retail price ~~\$1399.95~~

Grove price only **\$1349**

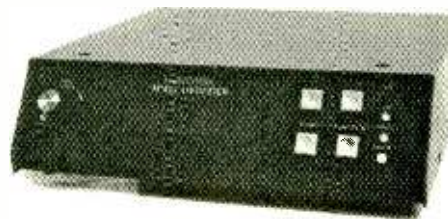
\$10.50 UPS
\$20.50 UPS 2nd Day
\$20.50 US Priority Mail
\$35.50 Canadian APP
\$25.50 Canadian UPS

M-400 UNIVERSAL DECODER

NEW VERSION 2! Now with Super POCSAG, 1200 baud, simple, pushbutton mode selection, this self-contained, compact, mini-driven decoder, when connected to your scanner's or VHF/UHF receiver's external speaker jack, will reveal CTCSS (PL) sub audible tones, DCS (DPL) squelch tones, POCSAG and GOLAY digital paging messages, DTMF (Touch Tone*) telephone numbers, even air-go-ground ACARS digital aircraft messages!

Connected to your shortwave receiver (SSB mode), you can read RTTY, SITOR, FEC-A, SWED-ARQ, and even FAX pictures when used with a printer! There is no Morse code or packet capability. A jack is included to attach an external speaker so that you can still listen if your internal speaker is disconnected when using the M-400.

Input jacks provided for either audio or discriminator interconnect. AC wall adaptor, full manual and pair of 1/8" (3.5 mm) plugs included. *Printer required.*



SPECIFICATIONS

- MODES:** Baudot (45, 50, 57, 100 baud)
ASCII (75, 110, 150 baud)
SITOR A & B (Automatically selected)
FEC-A (96 & 144 baud)
SWED-ARQ (S, M and L lengths)
FAX (120 LPM; 576 IOC, to parallel printer port)
Paging (GOLAY, POCSAG)
ACARS
Encoded squelch (CTCSS, all 41 frequencies;
DCS, all 104 codes)
Tone dialing (DTMF, all 16 digits)
- FILTER:** Low tone (mark) 1275 Hz
Shifts: 170, 425, 850 Hz; plus 100-1000 Hz variable
- INPUTS:** Speaker, 4-16 ohms @ 100 mW max.
Discriminator, 10K ohms @ 0.25 V max.
- OUTPUT:** ASCII 8 bit Centronics standard, DB25 connector
- DISPLAY:** Two-line, 20 characters each, 5/7 dot matrix LCD
- POWER REQUIRED:** 11-16 VDC @ 200 mA, AC adaptor included
- SIZE:** 8-3/4" W x 2-1/2" D x 8" D
- WEIGHT:** 2 lbs

Order DEM 9
Only **\$399⁹⁵**

\$8 UPS
\$23 UPS 2nd Day Air
\$17.50 US Priority Mail
\$20.50 Canadian APP
\$22 Canadian UPS

Shortwave Sampler

©Grove Enterprises, Inc. 1994
(Frequencies in kilohertz, upper sideband):

- 4066 Mississippi River barges
- 4080 Mississippi River barges
- 4146 Ship calling channel
- 4149 Mississippi River barges
- 4417 Ship working channel
- 4426 U.S. Coast Guard ships
- 4469 Civil Air Patrol
- 4517 U.S. Air Force MARS
- 4593.5 U.S. Air Force MARS
- 4637.5 Offshore petroleum platforms
- 4725 U.S. Air Force air to ground
- 5598 International airlines
- 5616 International airlines
- 5696 U.S. Coast Guard aircraft
- 5812 Spy numbers transmissions
- 6501 U.S. Coast Guard ships
- 6577 International airlines
- 6604 Flight weather broadcasts
- 6673 NOAA hurricane hunters
- 6697 U.S. Navy
- 6738 U.S. Air Force
- 6753 Canadian Air Force
- 8294 Ship to shore
- 8297 Mississippi River barges
- 8740 Ship to shore
- 8776 U.S. Navy Pacific
- 8803 Ship to shore
- 8806 Ship to shore
- 8825 International airlines
- 8846 International airlines
- 8876 NOAA hurricane hunters
- 8891 International airlines
- 8967 U.S. Air Force
- 8972 U.S. Navy, Atlantic
- 8984 U.S. Coast Guard air/ground
- 8993 U.S. Air Force
- 9023 U.S. Air Force
- 10780 NASA Cape Kennedy
- 11176 U.S. Air Force
- 11200 Royal Air Force flight weather
- 11233 Canadian Air Force
- 11234 Royal Air Force
- 11243 USAF STRATCOM
- 11282 International airlines
- 13201 U.S. Air Force
- 13270 Flying weather
- 13282 Flight weather
- 13306 International airlines
- 13354 NOAA Hurricane Hunters

INTERNATIONAL BROADCASTERS (Frequencies kilohertz, AM mode)

5960	Canada	9685	Sweden
5975	England	9755	Canada
6010	Cuba	9745	Ecuador
6040	Germany	12095	England
6165	Netherlands	13760	USA
6175	England	15155	Ecuador
7325	England	17795	Australia
7375	Costa Rica	21740	Australia
9540	Spain		

TIME SIGNALS

WWV:	2500	5000	10000	15000
	20000			
CHU:	3330	7335	14670	



Outdoor dipole for worldwide shortwave reception



THE GROVE SKYWIRE ANTENNA

Highest performance and lowest cost—an unbeatable combination! Why restrict your frequency coverage with the gaps found in expensive trap dipoles or unpredictable random wire when you can get unsurpassed full-frequency reception with the Grove Skywire?

Comes assembled with SO-239 UHF female connector ready for your PL-259 (UHF male) equipped coaxial cable (50 or 75 ohm) see page 26; includes two professional porcelain end insulators and complete instructions. Now with improved waterproof feedline connector at no extra charge!



Best Buy

SPECIFICATIONS

Length: 66 feet
Feedpoint impedance: 50 or 75 ohm (nominal)
Feedpoint location: 22 feet from end
Elements: 18 AWG (18 x 30) bare stranded copper
Connector housing: Heavy duty black phenolic
HAMS! Ideal for transmitting when used with a transmatch. (1.8-30 MHz at up to 250 watts)

ATTENTION HOME EXPERIMENTERS
Build your own SW dipole!
Order ACC101 (CH239 SW Dipole Connector) for only \$12.95 and add your own wire to construct a SW dipole!

Order ANT 2
Only
\$39⁹⁵
\$5.50 UPS
\$8.50 UPS 2nd Day
\$5 US Priority Mail
\$7 Canadian APP
\$10 Canadian UPS



GROVE'S INDOOR/OUTDOOR ANTENNA SYSTEM

Here's the shortwave monitor's dream—a high performance, amplified antenna system for general coverage shortwave and medium wave monitoring. For indoor use, the ANT-6 Hidden Antenna—a thin profile, flexible wire antenna—can be inconspicuously run along molding, out a window to a tree, even under a rug. For outdoor use, the ANT-2 Skywire Antenna—a 66-foot, off-center fed antenna—includes pre-measured stranded copper antenna wire, porcelain end insulators and custom center insulator for your PL-259 coax connection. And when connected to the powerful TUN-4 signal booster, you have instant coverage from 100 kHz to 30 MHz!

Yes, global short wave reception will be at your fingertips, and you can operate two radios at one time!

TUN-4 MiniTuner Plus

The powerful TUN-4 MiniTuner Plus can be used with any indoor or outdoor antenna to improve received signal strengths enormously. Just a few feet of wire or your present indoor shortwave antenna will give exciting new depth to your listening pleasure!

Easy to use and extremely flexible, the TUN-4 has a built-in, solid-state booster amplifier to give additional strength to all received signals from 100 kHz through 30 MHz, broadcasters and utilities stations. Wall adaptor (120VAC/12VDC) and 3' PL-259 interconnect cable included.



TUN-4 MiniTuner Plus

SPECIFICATIONS

Gain: Approximately 20 dB
Freq Range: 100 kHz-30MHz in 4 bands
Preselector Type: Series-tuned L-section filter
Power Required: 8 to 18 volts DC (12 VDC nom.)
@ 30 mA.

Connectors: SO239 (4) signal line, 2.1 mm DIN power
Cabinet: Custom formed aluminum, baked enamel finish
Dimensions: 9-1/4"W x 3"H x 4"D
Weight: 1-1/2 lbs.

WHAT YOU NEED TO ORDER:

- ANT 2 Skywire Antenna (above) **\$39.95**
- or
- ANT6 Hidden Antenna (see pg. 27 for specs) **\$19.95**
- TUN-4 MiniTuner Plus **\$99.95**
- CKSW Accessory kit **\$12.95**

includes 20' antenna wire, banana plug plus 3 adaptors for all portable and tabletop multiband radios equipped for external antenna connections.

Shipping charges for system ordered together:

- \$7.50 UPS
- \$12.50 UPS 2nd Day Air
- \$8.50 US Priority Mail
- \$15.50 Canadian UPS
- \$13.50 Canadian APP



NEW!

GROVE INTERFERENCE ELIMINATORS



For scanners and shortwave receivers



Reduce or even eliminate strong signal overload from your scanner or general coverage receiver. Increase reception range with these new wavetraps, notch filters and bandpass filters designed exclusively by Grove Enterprises! Attach directly to your antenna cable, no modification required!

Ideal for suppressing overload interference from AM and shortwave broadcasters, CB, aircraft and more. Reject unwanted signals by 40 dB or more; reduce intermod interference by at least 120 dB! Filters can be combined for deeper rejection or multiple frequencies. Simply choose your filter(s) from the list below and specify your antenna connectors. For other types of scanner interference, see the Grove Scanner Filter FTR5 on page 35!

FTR6	30-2000 MHz Bandpass Filter Removes AM broadcast, CB and shortwave interference from scanners	\$19⁹⁵
FTR7	540-1700 kHz Band Reject Filter Removes AM broadcast interference from shortwave/longer wave receivers	\$29⁹⁵
FTR8	118-137 MHz Band Reject Filter Removes aircraft interference from scanners	\$19⁹⁵

Plus \$5.50 UPS Shipping

Adaptor Kits:

ACC124 PL-259 (UHF)	\$9.95	ACC127 Motorola	\$12.95
ACC125 1/8" Miniplug	\$9.95	ACC128 RCA	\$9.95
ACC126 BNC	\$9.95	ACC135 N	\$12.95

NOW FROM GROVE!

SELECT-A-TENNA MEDIUM WAVE ANTENNA BOOSTER



Apartment dwellers and mobile home owners, boost your 530-1700 kHz AM broadcast reception up to 30 dB with the famous Select-A-Tenna! Improves adjacent channel rejection, reduces signal fading. Tuning knob selects your listening frequency.

No batteries or power required; simply set the Select-A-Tenna next to your radio, peak the tuning knob, and listen to AM broadcast signals soar out of the background noise!

This 11", high-Q loop antenna directs its captive signals to your radio's internal ferrite loop without any physical connection! If your receiver requires an external antenna, a convenient 3.5 mm (1/8") jack and plug are provided. Connect an outside wire to the Select-A-Tenna and receive medium wave signals like you've never heard before!

Order ANT 21

\$65⁹⁵

- \$6 UPS
- \$10.50 UPS 2nd Day
- \$8 US Priority Mail
- \$11.50 Canadian APP
- \$15 Canadian UPS

REALISTIC® AMPLIFIED SHORTWAVE ANTENNA

Best Buy ✓



It's an active antenna and amplified preselector all in one! Operated by an internal nine-volt battery (not supplied) or an optional AC wall adaptor, this new signal booster is ideal for virtually any 3-30 MHz shortwave receive, desktop or portable.

Offering a variable attenuator/gain control from 0-20 dB and razor-sharp tuning, the Realistic booster has its own 29" telescoping whip, or will accept an external antenna through its RCA phono-type antenna connector. Receiver antenna interconnect cable with 1/8" (3.5 mm) plug included for Sony and similar receivers (other adaptors available; see accessories below).

Take heart, apartment dwellers and suitcase travellers, strong signals can come in small packages!

Order ANT 17
Only
\$29⁹⁵

- \$5 UPS
- \$7.50 UPS 2nd Day Air
- \$4 US Priority Mail
- \$6.50 Canadian APP
- \$10 Canadian UPS

ACCESSORIES

ACC20	AC wall adaptor	\$9.95
ACC108	RCA & PL-259 (UHF) adaptors, random wire antenna	\$9.95

UNIVERSAL REEL ANTENNA For Shortwave Portables

Best Buy ✓



Whether you have a Sony, Sangean, Realistic®, Grundig or other whip-portable shortwave radio, this new, 23-foot, reel-out antenna can be firmly attached for better reception. When not in use it can be conveniently stored in a pouch or even your pocket!

Comes with whip clip and 1/8" (3.5 mm) standard antenna adaptor.

Order ANT 16
Only
\$12⁹⁵

- \$5 UPS
- \$7.50 UPS 2nd Day Air
- \$4 US Priority Mail
- \$6.50 Canadian APP
- \$10 Canadian UPS



Caveat: ECPA '86

The Electronic Communications Privacy Act of 1986 forbids the monitoring of certain services receivable on scanners. Although there is no evidence at present that the new law is being enforced, violations are punishable by fine and/or imprisonment. The following list is included as a guide only and Grove Enterprises assumes no liability for its accuracy or interpretation.

The law forbids monitoring: 1. Encrypted or scrambled signals; 2. Paid subsidiary carrier authorization (SCA); 3. Mobile telephones or voice paging; 4. Remote broadcast or studio/transmitter links.

You may monitor any other transmission "readily accessible to the public" including public safety, federal and military, aircraft and maritime, amateur and CB, business and industrial, private land mobile, cordless telephones, and any interference-causing protected transmission long enough to identify its source.

A new law makes it unlawful to manufacture or import a cellular-receiving scanner or converter but it is lawful to own one.

Choosing a Scanner

©Grove Enterprises, Inc. 1994

The consumer electronics marketplace bulges with products competing for your dollar. By following a few simple rules you will make the right choice in buying that new scanner.

Frequency Range

The most common frequency ranges monitored by scanner enthusiasts are: 30-50 MHz (VHF low band), 144-174 MHz (VHF high band) and 450-512 MHz (UHF). Most scanners now include the 406-420 MHz federal government land mobile and 420-450 MHz amateur band as well. These bands all utilize narrow band FM for communications.

The civilian VHF aircraft band (118-136 MHz, AM mode) provides another interesting target for monitoring as does the emerging 806-960 MHz band, sometimes called the cellular band or microwave mobile (806-960 MHz), now in use in all major metropolitan areas. Very few receivers include the military UHF aircraft band (225-400 MHz, AM mode).

The prospective scanner buyer should decide which of these aspects of listening are of greatest interest before purchasing a radio.

Mobile, Base, or Handheld?

Scanners come in a variety of models to meet the particular needs of the listener. Do a lot of driving? Install a mobile unit. Constantly in and out of the car, office or home? You may prefer a hand-held. Do most of your listening in the office or home? A base unit would be more practical.

Many models are capable of more than one application, accepting power from AC mains as well as mobile battery supply. AC wall adaptors charge batteries in hand-helds and power the scanner when plugged in.

Most hand-held scanners have small speakers which do not compete well in a noisy environment; an earphone or external speaker will solve that problem.

Technical Specifications

The terminology used to rate a scanner's performance may be explained simply.

Sensitivity refers to the weakest signal voltage that the radio will respond to readably; the lower the number, the better. Good sensitivity is about 0.5 microvolts.

Selectivity is the radio's ability to reject adjacent frequency interference; the sharper, the better, especially in urban areas. A average selectivity for a scanner would be about 30 kHz (sometimes stated as +/- 15 kHz) at -50 dB.

Dynamic range is the ability of a scanner to handle extremely strong as well as extremely weak signals. Since none of them does it very well, this specification is never given.

If you have further questions regarding selecting a scanner, call our Technical office at 704-837-7081.

Intermodulation ("intermod") is an internally-generated interference produced when strong signals mix together, producing spurious signals. It is often recognizable because of its distorted contents from two or more signals and its appearance at numerous frequencies. Intermod results from inadequate dynamic range.

Images are produced in every receiver. They are recognizable as a duplicate of the legitimate signal, offset by 21.4, 21.6 or 21.7 MHz (twice the intermediate frequency—I.F.) from the actual frequency, depending upon the scanner. With up-conversion design, image frequencies fall outside the tuning range and aren't a problem.

Which Scanner is the Best?

Like answering "Which car is the best?", we must list qualifications. At the present time, programmable scanners are available from Uniden, ICOM, AOR, and Radio Shack.

Most popular scanners have excellent sensitivity and reasonable selectivity (reject adjacent channel interference), but suffer from intermodulation and image interference from strong signal overload, especially when used with an outdoor antenna.

The PRO-2006 is more immune to interference from intermodulation and images, making it an excellent choice for strong or weak signal areas like large cities.



A Scanner Sampler

© Grove Enterprises, Inc. 1994

The spectrum above 30 MHz is saturated with two-way intrigue—air to ground, ship to shore, military and federal government, public safety, hams, businesses, trains—if you know where to look.

By convention, the VHF and UHF portion of the bands are divided into discrete segments (bands), names as follows: 30-50 MHz, VHF low band; 72-76 MHz, VHF mid band; 108-174 MHz, VHF high band; 225-512 MHz, UHF; and 806-960 MHz, microwave mobile or cellular band.

- 35.02 McDonald's order window
- 40.50 Army Search/Rescue
- 41.50 Army aircraft
- 46.61-46.97 Cordless phones
- 46.75 Pres. Helicopter
- 47.42 Red Cross
- 49.83-49.89 Wireless baby monitors
- 121.5 Air emerg/calling
- 122.0 Flight weather
- 122.2 Flight service
- 122.75 Gov't air to air
- 122.8 Small airport UNICOM
- 122.9 Gov't aircraft
- 122.925 Natural resources air
- 123.1 Air search & rescue
- 123.45 Pilots air to air
- 126.2 Military air towers
- 135.575 AT-3 satellite
- 135.625
- 143.625 Russian Mir cosmonauts
- 148.15 Civil Air Patrol
- 150.00 Russian satellite
- 151.625 Itinerant walkie talkies
- 154.37 Fire mutual aid
- 154.570 McDonald's order window
- 154.600 McDonald's order window
- 155.34 Hospital/ambulance
- 155.37 Police/mutual aid
- 156.8 Boats call/distress
- 157.05 Coast Guard
- 157.10 Coast Guard
- 157.15 Coast Guard
- 162.40 Weather service
- 162.55
- 163.200 U.S. Marshall
- 165.2875 ATF
- 165.375 Secret Service
- 165.950 IRS
- 167.050 FCC
- 167.5625 FBI
- 170.875 Federal Prisons
- 170.925 Federal Prisons
- 236.6 Air Force Towers
- 241.0 National Guard
- 243.0 Military aircraft calling/distress
- 255.4 Mil flight weather
- 257.8 Mil tower calling
- 259.7 Space Shuttle
- 311.0 SAC primary
- 321.0 SAC secondary
- 344.6 Mil flight weather
- 349.4 MAC primary
- 381.8 CG aircraft
- 415.200 Fed protection service
- 415.700 Air Force One
- 417.200 Fed Protection Service
- 462.675 GMRS
- 462.95 Paramedics
- 463.175
- 464.500 PGA tournament
- 469.500 NASCAR racing



Best Buy ✓

ICOM R7100-2

VHF/UHF Communications Receiver

With the most popular features of the legend R7000, plus a few features that listeners wanted, the R7100 is ICOM's best compact receiver.

The R7100 offers **25-800 and 900-2000 MHz frequency coverage** on a brilliant LCD readout, selectable tuning steps, USB/LSB/AM/FM modes with wide and narrow selectivity switching.

900 scannable memory locations store frequency, channel number, mode and search steps; ten search banks with memory channel lockout, 5 or 12 channel-per-second scan speed and scan-resume delay are also found on this model.

High sensitivity and stable SSB reception are additional perks, as are sensitive, all-mode squelch and easy pushbutton function selection.



Order SCN15
\$1349⁹⁵
\$15.50 UPS
\$30 UPS 2nd Day Air
\$35.50 US Priority Mail
\$27.50 Canadian UPS;
\$43.50 Canadian APP

ACCESSORIES

- ACC36 UT36 Voice Synthesizer \$55.95
- ACC71 SP20 Speaker \$164.95
- ACC72 TVR7100 Video Adaptor \$218.95
- ACC74 CT17 Computer Interface \$109.95
- ACC78 Service Manual \$40.95
- ACC83 MB5 Mounting Bracket \$39.95
- ACC138 MB23 Carrying Handle \$11.95
- ANT8N 46" Extendable Whip Antenna \$23.95
- Installation of one or more accessories \$20

SPECIFICATIONS

Frequency range: 25-800, 900-2000 MHz
Keypad frequency entry: Yes
Tuning steps: 100 Hz; 1.5/10/12.5/20/25/100 kHz; 1 MHz
RIT (fine tuning): No
Display: LCD
Dimmer: yes
Type of listening recommended: Utility monitoring
Receiving modes: AM, WAM, FM, WFM, NFM, USB, SSB
Memory: 900 channels
Scan: 5/12 ch/sec Banks: 9
Lockout: Yes Priority: Yes
Search: Yes
Delay: 0.2/5/10 seconds; infinite
Squelch: Yes
Clock: Yes with 2 event timer
Audio output power: 2 W @ 10% THD
Record output: Yes
Recorder activator: Yes
S meter: Analog
Computer interface: Optional
Conversion scheme: Triple up-conversion under (776.7 or 266.7, 10.7 MHz, 455 kHz)
Sensitivity: 0.35 uV NFM
Selectable preamplifier: No
Selectable attenuator: Yes
Selectivity: @-6dB: 2.4 kHz SSB, 6 kHz AM/NFM, 15 kHz AM/FM, 150 kHz WFM
Image rejection: 50 dB
Frequency stability: +/- 1.5 ppm 25-250 MHz, +/-5 ppm 25-1000, +/- 10 ppm 1300 MHz
Dynamic range: Unknown
Noise blanker/limiter: ANL
Antenna connector: N female
Auxiliary connector: 10.7 MHz IF Output
Dimensions: 9-1/2"W x 3-3/4"H x 9-1/2"D
Weight: 13 lbs.
Power requirements: 13.8 VDC, 117/240 VAC
Warranty: One year
Accessories included: Plugs, fuses, DC cord, spare screws



NOTE: Cellular-capable, full-frequency-coverage models R7100-1 and R7000 available only to federal, state, county, city and local government agencies who submit an official purchase order.

R7000-1: \$1269 (plus shipping)
R7100-1: \$1349⁹⁵ (plus shipping)

ICOM R7000



Continuous Coverage VHF/UHF Receiver

Used by government and military agencies worldwide, the ICOM R7000 provides total spectrum 25-1000 (triple conversion) and 1025-2000 (quadruple conversion) MHz frequency coverage with 100 Hz fluorescent readout accuracy! Add to this enormous tuning range 99 memory channels with priority function, keyboard entry or dial tuning, FM/AM/SSB modes, five



tuning speeds, S-meter/center tuning meter, 2.8/9/15/150 kHz filter selection, noise blanker, internal speaker with 2.5 watts of audio power, spurious signal suppression greater than 60 dB, high sensitivity, and programmable scanning with auto-write memory, and you have the most advanced scanner receiver ever designed for the serious VHF/UHF listener.

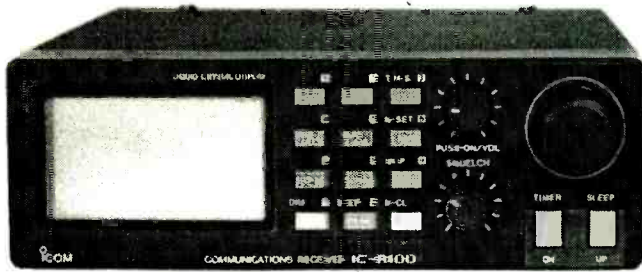
Order SCN4
\$1269
\$15 UPS; \$35 UPS 2nd Day Air
\$35.50 US Priority Mail
\$30 Canadian UPS
\$43.50 Canadian APP

BUY BY BBS!

Follow these simple steps to place your **Grove Catalog** order or **Monitoring Times** subscription through the Grove BBS:



1. Go to Section 4 in conferences called: GROVE AND MT ORDERS.
2. Address a message to LARRY VAN HORN or SYSOP.
3. Include your name, complete shipping and billing address, daytime phone number, what items you want to order, shipping method and Visa Mastercard/Discover Card number and expiration date.
4. Messages are checked daily and your order (stock items) will be shipped within 24 hours. You will be notified of any backorders.



ICOM R100 MOBILE/DESKTOP SCANNER

For the full-spectrum listener, this compact scanner is hard to beat: tuning range from 100 kHz with direct keypad entry or knob tuning, 100 channel memory, switchable preamp and attenuator, programmable 24-hour clock timer, 10 search ranges, LCD bargraph S meter, AM and wide/narrow FM mode detection (no SSB) just begin the list of features.

SPECIFICATIONS

Frequency range: 100 kHz-800MHz, 900-1856 MHz

Keypad frequency entry: Yes
Tuning steps: 1/5/8/9/10/12.5/20/25 kHz

RIT (fine tuning): Tuning knob

Display: Backlit LCD

Dimmer: On/Off

Type of listening recommended: Domestic and international broadcasting, including FM and TV audio; VHF/UHF scanning

Receiving modes: AM, narrow FM, wide FM

Memory: 100 channels

Scan: Three modes/20 channels per second

Banks: More with programmable characteristics

Lockout: Yes Priority: Yes

Search: 10 ranges

Delay: 3 programmable functions

Squelch: All modes

Clock: 24 hour with timer and sleep switch

Audio output power: 2.5 watts

S meter: LCD bargraph

Computer interface: No

Conversion scheme: Triple conversion

Sensitivity: 500 kHz-1.6 MHz 10 uV AM; 1.6-50 MHz 5.6 uV narrow FM/3.3 uV AM; 50-905 MHz 0.4 uV narrow FM/1. uV AM

Selectable preamplifier: 15 dB

Selectable attenuator: 20 dB

Selectivity: (-6 dB) narrow FM 15 kHz; 180 kHz wide FM; AM 6 kHz

Image rejection: Unknown

Frequency stability: Unknown

Dynamic range: Unknown

Noise blanker/limiter: Yes

Antenna connector: PL259/N

Auxiliary connector: No

Dimensions: 5.8"W x 2"H x 7.1"D

Weight: 3.1 lbs.

Power requirements: 12 VDC

Warranty: One year

Accessories included: VHF/UHF telescoping antenna, HF wire antenna, DC power cable, mounting bracket, fuses, speaker plug, cable tie and screws.

Order SCN14
Grove discount price

\$657⁹⁵

\$9 UPS
\$15.50 UPS 2nd Day Air
\$16.50 US Priority Mail
\$18 Canadian UPS
\$19.50 Canadian APP

ACCESSORIES:
ACC75 AC Adaptor \$24.95

ICOM R1 GENERAL COVERAGE POCKET SCANNER

SPECIFICATIONS

Frequency range: 100 kHz-800MHz, 900-1300 MHz

Keypad frequency entry: Yes

Tuning steps: 0.5/5/8/9/10/12.5/15/20/25/30/50 kHz

RIT (fine tuning): Tuning knob

Display: Edge-lit LCD

Dimmer: On/Off

Type of listening recommended: Domestic & international broadcasting, including FM and TV audio; VHF/UHF scanning

Receiving modes: AM, narrowband FM, wideband FM

Memory: 100 channels

Scan: 20 channels/second

Banks: No

Lockout: Yes

Priority: Yes

Search: 10 ranges with autoloop

Delay: 2 second, 10 second timed

Squelch: All modes

Clock: With on/off timer

Audio output power: 150 milliwatts @ 8 ohms

Record audio output: Earphone jack

S meter: LCD bargraph

Conversion scheme: Trip conversion 266.7/10.

7 MHz/455 kHz

Sensitivity: NFM, 0.4 uV; AM, 0.79 uV, WFM 3.2 uV

Selectable attenuator: No

Selectivity: (-6dB) AM 15 kHz; narrow FM 15 kHz; wide FM 150 kHz

Noise blanker/limiter: No

Antenna connector: BNC

Dimensions: 1-7/8"W x 4"H x 1-1/2"D

Weight: 9.9 ounces

Power requirements: Internal nicads; 120 VAC wall charger/adaptor included; 6-16 VDC external

Warranty: One year

Accessories included: Flex antenna, AC wall adaptor/charger, belt clip

Imagine, a shortwave and VHF/UHF scanner with 100 kHz-800MHz and 900-1300 MHz frequency coverage that fits in your shirt pocket! You select the mode—AM, FM wide or narrow—and install up to 100 of your favorite shortwave and scanner frequencies into memory. An edge-lit LCD shows frequency, memory channel, and other settings as well.

Less than 2" wide, the R1 scans, searches and autoloops, has knob tuning, a signal strength indicator, and even a 24-hour clock timer! This high-sensitivity scanner comes with flex whip, rechargeable battery, AC wall charger/adaptor and belt clip.



ACCESSORIES:

ANT8	Range extending telescoping whip	\$16.95
ACC19	R1 Carrying case (no battery pack)	\$21.95
ACC30	BP-90 Replaceable AA battery case	\$18.95
ACC33	BP-90 Carrying case	\$33.95
ACC32	BP-84 Triple-life battery pack	\$79.95
ACC34	BP-84 Carrying case	\$23.95
ACC31	CP-12 Cigarette power cord	\$20.95
ACC48	BC-72A Desk Charger	\$99.95
ACC76	Service Manual	\$36.50
ACC81	Owner's Manual	\$21.95
ACC90	BA12 Battery Charger Adaptor	\$21

Order SCN13
Retail \$599
Only

\$479⁹⁵

\$7 UPS
\$10 UPS 2nd Day Air
\$11.50 US Priority Mail
\$13 Canadian UPS
\$12.50 Canadian APP



NOW FROM GROVE!



SCANNERS

AR-3000A PROFESSIONAL DESKTOP SCANNER

Imagine: A quality, general coverage shortwave communications-quality receiver and continuous, wide-frequency-coverage scanner, all in one compact instrument--and at a cost savings besides!

Arguably the best desktop scanner ever designed, the AOR AR3000A offers 100 kHz-869MHz and 894-2036MHz frequency coverage, continuous tuning dial, all mode reception (AM, NFM, WFM, USB, LSB, CW), 400 memory channels and fast 50 channel per second scan/search rate.

Unexcelled sensitivity and selectivity let you hear signals lesser scanners and shortwave receivers miss. 15 bandpass filters and low noise, wide dynamic range GaAsFET RF amplifiers combine to reject intermodulation and overload suffered by other scanners and receivers.

Operates on 13.6 VDC for compact mobile installations; 120 VAC adaptor included.



Order SCN26
\$1028⁹⁵

\$10 UPS
\$18 UPS 2nd Day Air
\$18 US Priority Mail
\$19.50 Canadian UPS;
\$21.50 Canadian APP

SPECIFICATIONS

Frequency range: 100 kHz-869MHz, 894-2036 MHz
Tuning steps: Programmable 50 Hz-999.95 kHz; speed buttons
RIT or fine tuning: Tuning dial
Display: Backlit LCD
Dimmer: On/off
Recommended use: Serious wide-spectrum monitoring
Receiving modes: AM/NFM/WFM/LSB/USB/CW
Memory: 400 channels; internal lithium backup
Scan: 50 channels per second
Lockout: Yes, scan and search channels
Priority: 4 channels
Banks: 4
Search: 50 channels per second
Delay: Yes; variable
Clock: Yes
Audio output power: 1.2 watts @ 4 ohms (10% THD)
Record audio output: Yes
Recorder activator: Yes
Signal strength indicator: Yes
Computer interface: RS232
Conversion scheme: Triple conversion
Sensitivity: 0.25 microvolts SSB, 0.35 microvolts NFM (12 dB SINAD)
Selectable attenuator: Yes
IF selectivity: SSB (-6/-60 dB) 2.4/4.5 kHz; AM/NFM (-6/-70 dB) 12/25 kHz
Antenna connector: BNC
Auxiliary connector: 3.5 mm speaker jack
Dimensions: 5-1/2"W x 3"H x 7-7/8"D
Weight: 2-1/2 lbs.
Power requirement(s): 13.8 VDC @ 500 mA; AC adaptor included
Warranty: One year
Accessories included: Telescoping whip, AC adaptor, DC adaptor, operating manual

AR1500 HANDHELD SCANNER

All-Mode, Wide Frequency Coverage

Imagine: all-mode (AM/SSB/NFM/WFM), 500 kHz-869 MHz and 894-1300 MHz coverage in a hand-sized package! Then add 1000 memory channels in 10 banks, rechargeable or replaceable battery option, tuning dial, and you have the new AOR AR1500!

Features continue with selectable priority channel, triple conversion design, search lockout, sharp selectivity, BNC antenna connector, overload attenuator, impact-resistant case, programmable tuning steps, and much more.

Then add the accessories: rechargeable battery pack, AC and mobile chargers, replaceable battery pack (requires 4 AA cells), 15' shortwave antenna, flex whip, earphone, belt clip, vinyl case, and easy-to-read manual—all included at no extra charge!



Order SCN25
\$458⁹⁵

\$8 UPS
\$10 UPS 2nd Day Air
\$9.50 US Priority Mail
\$14 Canadian UPS;
\$12.50 Canadian APP

SPECIFICATIONS

Frequency range: 500 kHz-869 MHz, 894-1300 MHz
Tuning steps: 5-995 kHz in 5/12.5 kHz multiples
RIT (fine tuning): BFO for SSB
Display: Backlit LCD
Dimmer: On/off
Recommended use: Casual all-band monitoring
Receiving modes: AM/NFM/WFM/SSB
Memory: 1000 channels
Scan: 20 channels per second
Banks: 10
Lockout: Individual channel(s)
Priority: Any one channel
Search: 20 channels per second
Delay: All channel, 2 seconds
Audio output power: 100 milliwatts @ 4 ohms (10% THD)
Signal strength indicator: No
Conversion scheme: Triple conversion (561.225/58.075 MHz/455 kHz)
Sensitivity: 1 microvolt AM shortwave, 0.35 microvolts NFM VHF/UHF
Selectable attenuator: Yes
IF selectivity: AM/NFM (-6/-70 dB) 12/25 kHz
Antenna connector: BNC
Auxiliary connector: 2.5 mm earphone
Dimensions: 5-7/8"H x 2"W x 1-1/2"D
Weight: 14 oz.
Power requirement(s): 12 VDC; rechargeable NiCd, charger supplied
Warranty: One year
Accessories included: Flex whip, earphone, mobile charger, replaceable battery holder, belt clip, vinyl case, indoor shortwave antenna, manual



NEW!

UNIDEN SC150B

"SPORTCAT"!

Designed especially for the racing fan, the new "SportCat" has not only full land mobile and civilian aircraft coverage, but has 10 one-touch, direct-access keys for instant callup of active sports channels! Follow the exciting radio action at motor racing, air shows and special events!

Imagine: the SportCat's red-hot TurboScan zips along at 100 channels per second, allowing virtually instant access to up to 100 memorized frequencies in the 29-54, 108-174, 406-512 and 806-956 MHz bands (less cellular); or press any of the ten preprogrammed TurboSearch keys to allow band-edge-to-band-edge frequency hunting at a blurring 300 channels per second!

Unique data-skip function allows scanner to reject annoying data transmissions, stopping only on valid communications. One-step weather key selects autosearch of local NOAA channels for latest weather.

Supplied with rechargeable battery pack, AC wall adaptor/charger, flex antenna, belt clip, earphone and manual. Black model only.



SPECIFICATIONS

Frequency range: 29-54, 108-174, 406-512, 806-956 MHz (less cellular)
 Tuning steps: 5/12.5 kHz
 Display: Backlit LCD
 Dimmer: On/off
 Receiving modes: NFM/AM (aero)
 Memory: 100 channels
 Scan: 100 channels per second
 Banks: 10
 Lockout: Individual channel
 Priority: First channel of each bank
 Search: Preprogrammed in 10 banks
 Delay: Individual channel, 2 seconds
 Squelch: Yes
 Audio output power: 180 milliwatts @ 8 ohms
 Conversion scheme: Double conversion
 Sensitivity: 0.5 microvolt nom. (NFM)
 Selectable attenuator: No
 IF selectivity: Unavailable
 Image rejection: Unavailable
 Antenna connector: BNC
 Auxiliary connector: 3.5 mm stereo earphone jack (mono Audio)
 Dimensions: 6"H x 2-1/2"W x 1.7"D
 Weight: 13 oz.
 Power requirement(s): 120 VAC AC adaptor/charger (provided)
 Warranty: One year
 Accessories included: AC adaptor, flex antenna, belt clip, earphone, manual

Order **SCN23**
 Grove Discount Price Only

\$199⁹⁵

\$7 UPS
 \$10 UPS 2nd Day Air
 \$9.50 US Priority Mail
 \$14 Canadian UPS;
 \$12.50 Canadian APP

NEW!

UNIDEN BC220XLT

HANDHELD SCANNER!

SPECIFICATIONS

Frequency range: 29-54, 108-174, 406-512, 806-956 MHz (less cellular)

Tuning steps: 5/12.5 kHz

Display: Backlit LCD

Dimmer: On/off

Receiving modes: NFM/AM (aero)

Memory: 200 channels

Scan: 100 channels per second

Banks: 10 banks

Lockout: Individual channel

Priority: 10 channels

Search: 300 channels per second

Delay: 2 second, any channel

Squelch: Yes

Audio output power: 180 milliwatts @ 8 ohms

Conversion scheme: Double conversion

Sensitivity: 0.5 microvolts nom. (NFM)

Selectable attenuator: No

IF selectivity: Unavailable

Image rejection: Unavailable

Auxiliary connector: 3.5 mm stereo earphone jack (mono audio)

Dimensions: 6"H x 2-1/2"W x 1.7"D

Weight: 13 oz.

Power requirement(s): 120 VAC AC adaptor/charger (provided)

Warranty: One year

Accessories included: AC adaptor, flex antenna, belt clip, manual, earphone

Now Uniden has replaced their revered BC200XLT scanner with this new, compact entry. Frequency coverage 29-54, 108-174, 406-512, and 806-956 MHz (less cellular). 200 memory channels in 10 banks include 10 priority channels for instant access to important transmissions.

TurboScan and TurboSearch provide 100 channel per second scanning and 300 channel per second searching! Preprogrammed service search affords single-key access to police, fire, emergency, aircraft, marine and weather frequencies! Data skip avoids noisy data transmissions, stopping only on valid communications!

Up to 10 priority channels switch you instantly to important transmissions regardless of monitoring status.

Order **SCN24**
 Grove Discount Price Only

\$269⁹⁵

\$7 UPS
 \$10 UPS 2nd Day Air
 \$9.50 US Priority Mail
 \$14 Canadian UPS;
 \$12.50 Canadian APP



SCANNERS



**Wide coverage, high performance,
desktop/mobile scanner!**

UNIDEN BC-890XLT

Uniden stuns the market with this low cost scanner which features wide frequency coverage (29-54, 108-174, 216-512, 806-956 MHz), 200 memory channels, 100-channel-per-second TurboScan, weather alert, CTCSS (optional), channel activity counter, 10 channel priority, search autostore, tape recorder output, memory channel transfer, and much, much more!



Order **SCN19**

Only

\$269⁹⁵

\$8 UPS
\$14.50 2nd Day Air
\$15.50 US Priority Mail
\$17.50 Canadian APP
\$16.50 Canadian UPS

SPECIFICATIONS

Frequency range: 29-54, 108-174, 216-512, 806-956 MHz
(less cellular, restorable)
Keypad frequency entry: Yes
Tuning steps: 5/12.5/25 kHz
RIT or fine tuning: Continuous tuning dial
Display: Backlit LCD
Dimmer: No
Recommended use: Wide coverage mobile
Receiving modes: AM, NFM
Memory: 200 channels
Scan: 100/20 channels per second
Banks: 10
Lockout: Any channel
Priority: 10 channels
Search: With memory autostore

Delay: 2 seconds, any channel
Squelch: Yes
Clock: No
Audio output power: 2.7 watts
Record audio output: Tape output
Sensitivity (12 dB SINAD): 0.75 uV NFM, 1.1 uV AM (nom.)
Antenna connector: BNC
Auxiliary connector: RCA jack
Dimensions: 10-1/2"W x 3-1/2"H x 7-1/2"D
Weight: 3 lbs. 14 oz.
Power requirement(s): 12 VDC
Warranty: One year
Accessories inc: AC adaptor, telescoping whipl, instructions

SDU
100

ACCESSORIES:

ACC96	CTCSS Squelch Decoder	\$59.95
	Installation Fee	\$10.00
ACC23	Mobile Cig Lighter Adaptor	\$9.95
ACC109	DC Power Cord	\$9.95
ACC110	Mobile Mounting Bracket	\$9.50

UNIDEN BC-760XLT

Measuring a tiny 2" high by 7" wide and deep, this scanner is ideal for mobile installations. Many agencies use CTCSS ("PL") sub-audible encoding to separate groups of users. With the optional ACC96 decoder and ACC97 switch installed in your BC760XLT, you can choose which channels you want to hear with normal squelch, and which will respond only to the proper tones all at the same time!

The 760 also has pre-programmed service search capability, just push a button to find active police, fire, aircraft, maritime, emergency, and weather channels!



SPECIFICATIONS

Frequency range: 29-54, 118-174, 406-512, 806-956 MHz (less cellular, restorable)
Keypad frequency entry: yes
Tuning steps: 5/12.5 kHz determined by frequency range
RIT (fine tuning): No
Display: Backlit LCD
Dimmer: No
Type of listening recommended: VHF/UHF utilities
Receiving modes: AM, narrow FM determined by frequency range
Memory: 100 channels plus pre-programmed police, fire, aircraft, maritime, emergency, weather frequencies
Scan: 15 channels per second
Banks: 5
Priority: Channel one
Delay: yes
Audio output power: 3 watts

Record audio output: External speaker jack; no activator
S meter: No
Computer interface: No
Conversion scheme: Dual conversion
Sensitivity: 0.4 uV 29054/136-174 MHz, 0.5 uV 406-512 MHz, 0.8 uV 118-136 MHz, 1uV 806-956 MHz
Selectable preamplifier: Optional accessory
Selectable attenuator: No
Selectivity: (-55 dB) 50 kHz
Noise blanker/limiter: No
Tone control: No
Antenna connector: BNC
Dimensions: 6-5/16"W x 1-5/8"H x 7-3/8"D
Weight: 1-1/4 lbs.
Power requirements: 12 VDC, 120 VAC wall adaptor included
Warranty: 1 year
Accessories inc: Mobile mount kit, DC cord, attachable whipl

Order **SCN12**

Retail ~~\$399⁹⁵~~
Only

\$269⁹⁵

\$8 UPS
\$14.50 UPS 2nd Day Air
\$15.50 US Priority Mail
\$16.50 Canadian UPS
\$20.50 Canadian APP

OPTIONAL ACCESSORIES

ACC96	CTCSS Squelch Decoder	\$59.95
ACC97	ON/OFF plug-in switch	\$10.95
	(must use ACC96 and ACC97 together)	
ACC98	Preamplifier (plug-in)	\$29.95
	Installation of ACC96 and 97	\$10.00

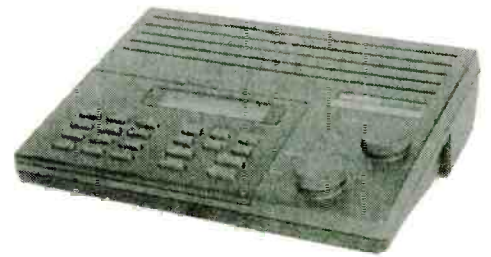


UNIDEN BC-855XLT

Don't be fooled by its low price. The BC855XLT is a low-profile, desktop scanner with outstanding performance. Offering a frequency range of 29-54, 108-174, 406-512 and 806-956 MHz (less cellular, restorable), this sleekly-designed scanner includes 50 memory channels, individual channel lockout and delay, automatic squelch, priority, a non-

volatile memory and powerful, crisp 1.3 watt audio!

All land mobile public service bands, civilian aircraft band, instant weather channel access are yours, and its BNC jack accommodates a snap-on whip (provided) or your external antenna. A 12-volt AC wall adaptor is included.



SPECIFICATIONS

Frequency range: 29-54, 108-174, 406-512, 806-956 MHz (less cellular, restorable)
Keypad frequency entry: Yes
Tuning steps: 5/12.5 kHz determined by frequency range
RIT (fine tuning): No
Display: Edgelit LCD
Dimmer: No
Type of listening recommended: VHF/UHF utilities
Receiving modes: AM/narrow FM determined by frequency range
Memory: 50 channels
Scan: 5/15 channels per second (selectable)
Banks: 5 **Lockout:** Yes
Priority: Channel one Search: Yes
Delay: Individual channel **Squelch:** Yes
Audio output power: 1.3 watts

Record audio output: Earphone jack
Recorder activator: No
S meter: No
Computer interface: No
Conversion scheme: Double conversion
Sensitivity: 0.5 uV or better 29-512 MHz FM, 0.8 uV 108-136 MHz, 1 uV 806-956 MHz
Selectable attenuator: No
Selectivity: (-55 dB) 50 kHz
Noise blanker/limiter: No
Tone control: No
Antenna connector: BNC
Dimensions: 9"W x 6-1/2"D x 2-1/4"H
Weight: 1 lb. 6 oz.
Power requirements: 12 VDC
Warranty: One year
Accessories Included: 120 VAC wall adaptor, whip

Order SCN8
Retail ~~\$299⁹⁵~~
Only
\$169⁹⁵
\$7 UPS
\$9.50 2nd Day Air \$3 Canadian UPS
\$9.50 Priority Mail \$13 Canadian APP

REALISTIC® PRO-2027 DESKTOP SCANNER!

This new, sleek, low profile desktop scanner offers high quality performance at a very affordable price. With frequency coverage 30-54, 108-174, 406-512 and 806-960 MHz (less cellular), the new 2027's "Hyperscan" clips along at 25-50 channels per second, assuring rapid access to brief transmissions!

100 memory channels store your favorite frequencies in 10 banks, while automatic search allows you to store newly-discovered frequencies in up to 10 monitor channels. a powerful (1.2 watts) audio amplifier supplies excellent, room-filling sound from the 3" internal speaker, or an optional external speaker.



Order SCN 22
Grove price only
\$209⁹⁵
\$7 UPS
\$11.50 UPS 2nd Day Air
\$9.50 US Priority Mail
\$15 Canadian UPS
\$12.50 Canadian APP

SPECIFICATIONS

Frequency range: 30-54, 108-174, 380-512, 806-960 MHz (less cellular, restorable)
Tuning steps: 5 kHz VHF/12.5 kHz UHF/25 kHz aircraft
Display: Backlit LCD
Dimmer: On/off
Receiving modes: NFM, AM (aircraft)
Memory: 100 channels
Scan: 8/25-50 channels per second
Banks: 10
Lockout: Individual channel
Priority: ANY one channel
Search: 25-50 channels per second
Delay: Any channel(s)
Audio output power: 1.2 watts @ 8 chms
Record audio output: No
Recorder activator: No
Conversion scheme: Double conversion (10.7 MHz/455 kHz)
Sensitivity: 0.7 microvolts nom.
IF selectivity: -6/-50 dB @ 20/40 kHz
Antenna connector: BNC
Dimensions: 10"W x 2-1/2"H x 7"D
Weight: 2-1/2 lbs.
Power requirement(s): 120 VAC/60 Hz
Warranty: One year
Accessories included: Whip, manual

REALISTIC® PRO-2026 MOBILE SCANNER

Now with non-volatile memory!



Made for Radio Shack by Uniden, the PRO-2026 has the major features of the popular BC760XLT, but is designed for mobile operation only (the Bearcat accessories will not work with the PRO-2026).

Frequency range is 29-54, 108-174, 406-512 and 806-956 MHz (less cellular). Any channel may be selected for priority, sampled every few seconds for activity. Factory-preset police, fire, ambulance, aircraft, marine and weather channels may be scanned by pressing the appropriate button when driving in new locations.

A great mobile scanner (mounting bracket included) at a great price, only \$219.95!

Order SCN 16
Grove price only
\$219⁹⁵
\$7 UPS
\$11.50 UPS 2nd Day
\$9.50 US Priority Mail
\$15 Canadian UPS
\$12.50 Canadian APP

SPECIFICATIONS

Frequency Range: 29-54, 108-174, 406-512, 806-956 (less cellular, restorable)
Keypad frequency entry: Yes
Tuning steps: 5/12.5 kHz
RIT or fine tuning: No
Display: Fluorescent **Dimmer:** No
Recommended use: Mobile
Receiving modes: AM/NFM
Memory: 100 channels
Scan: 14 channels per second
Banks: 5 banks of 20 channels each
Lockout: Individual channel
Priority: Any one channel
Search: 19 steps per second
Delay: Individual channel **Squelch:** Yes
Audio output power: 1.1 watts
Record audio output: No
Recorder activator: No
Conversion scheme: Dual conversion, 10.8 MHz/450 kHz
Sensitivity: 0.7 microvolts average
Selectable attenuator: No
IF selectivity: (-50 dB) 30 kHz
Selectable AGC: No
Antenna connector: BNC
Dimensions: 6-5/8"W x 1-5/8"H x 7-3/8"D
Weight: 2 lbs. 3 oz.
Warranty: One year—unit must be returned to Grove Ent. within first year for warranty repair—see page 1.
Accessories included: Mobile mount kit



Best Buy ✓

REALISTIC® PRO-43 HANDHELD SCANNER

Yes, Realistic® is now leading the market with their new 200 channel, programmable, handheld scanner with increased frequency range: 30-50, 118-174, 220-512 and 806-1000 MHz (less cellular).

Military and civilian aircraft, public safety, amateur, government, maritime, business—all VHF/UHF communications services in a compact 2-1/4"W x 5-3/4"H x 1-1/2"D handheld weighing only 14-1/2 ounces, sturdy belt clip and BNC flex whip included.

Runs off 6 AA alkaline or nicad batteries (not included). With its fast 25 per second scan rate, this triple-conversion scanner is a winning companion!

SPECIFICATIONS

Frequency range: 30-50, 118-174, 220-512, 806-999.9875 MHz (less cellular, restorable)
Keypad frequency entry: Yes
Tuning steps: 5/12.5/25 kHz determined by frequency range
RIT or fine tuning: No Display: Edgelit LCD
Dimmer: On/off
Recommended use: VHF/UHF utilities
Receiving modes: AM/FM narrow
Memory: 200 channels
Scan: 25 channels per second
Banks: 10 Lockout: Yes
Priority: Channel one Search: 50 channels per second
Delay: Individual channel, 2 seconds
Squelch: Yes
Audio output power: 250 milliwatts
Record audio output: Earphone Jack
Conversion scheme: Triple conversion: 608/48.5 MHz/455 kHz
Sensitivity: 1 microvolt or better
Selectable attenuator: No
IF selectivity: (-50 dB) 40 kHz
Antenna connector: BNC
Dimensions: 2-1/4" W x 5-3/4"H x 1-1/2"D
Weight: 14.5 ounces
Power requirements: 9 VDC (6 AA cells)
Warranty: One year—unit must be returned to Grove Enterprises within first year for warranty repair—see page 1.
Accessories Inc: Belt clip, flex whip antenna

Order SCN 17
Retail ~~\$349~~
Grove price only
\$293⁹⁵
\$7 UPS
\$9.50 2nd Day Air
\$9.50 US Priority Mail
\$13 Canadian UPS
\$13 Canadian APP

ACCESSORIES:

ANT 8	Range extending antenna	\$16.95
ACC38	DC Adaptor	\$12.95
ACC47	Nicad batteries (6 required)	\$2.25/each
ACC100	AC Wall Adaptor/Charger	\$6.95

Last Chance For Cellular Restorable Capability!

REALISTIC® PRO-2006



Best Buy ✓

SPECIFICATIONS

Frequency range: 25-520, 760-1300 MHz (less cellular, restorable)
Keypad frequency entry: Yes
Tuning steps: 5, 12.5, 30 (if cellular restored), 50 kHz
RIT (fine tuning): No Display: Backlit LCD
Dimmer: Yes
Type of listening recommended: VHF/UHF communications; casual FM broadcast
Receiving modes: AM, wide & narrow FM
Memory: 400 channels; frequency and mode
Scan: 26 channels per second
Banks: 10 Lockout: Individual channel
Priority: Any channel
Search: 26 channels per second
Delay: 2 seconds, individual channels
Squelch: Yes
Audio output power: 1.3 watts @ 8 ohms
Record audio output: 600 mV @ 10K ohms
Recorder activator: No
Smeter: No Computer Interface: No
Conversion scheme: Triple up-conversion
Sensitivity: 0.5 uV NFM 25-1100 MHz; 2 uV AM; 3 uV WFM
Selectable attenuator: Yes, 10 dB
Selectivity: (-6/-50 dB) 18/30 kHz NFM/AM; 300/600 kHz WFM
Noise blanker/limiter: No Tone control: No
Antenna connector: BNC
Dimensions: 8-1/2"W x 4"H x 8"D
Weight: 4-3/4 lbs.
Power requirements: 120 VAC @ 60 Hz; 13.8 VDC (10 watts)
Warranty: One year—unit must be returned to Grove Enterprises within first year for warranty repair—see page 1.
Accessories Included: Telescoping whip, manual

Order SCN 6
Retail ~~\$399~~
Grove price only
\$359
\$8 UPS
\$16 2nd Day Air
\$16 US Priority Mail
\$17.50 Canadian UPS
\$19.50 APP

With no crystals needed, this exceptional unit delivers a wide range of frequencies not found on most scanners—including public service, broadcast FM, military bands and CB! Resists strong signal overload interference.

Rapid 26-channel-per second scan and search complements this scanner's excellent interference immunity for metropolitan monitoring. Built-in speaker and telescoping antenna are included. Jacks provide for external speaker, tape recorder, and DC adaptor.

Mobile Mounting Bracket for PRO-2006

Turn this desktop into a mobile unit for only \$27.95!

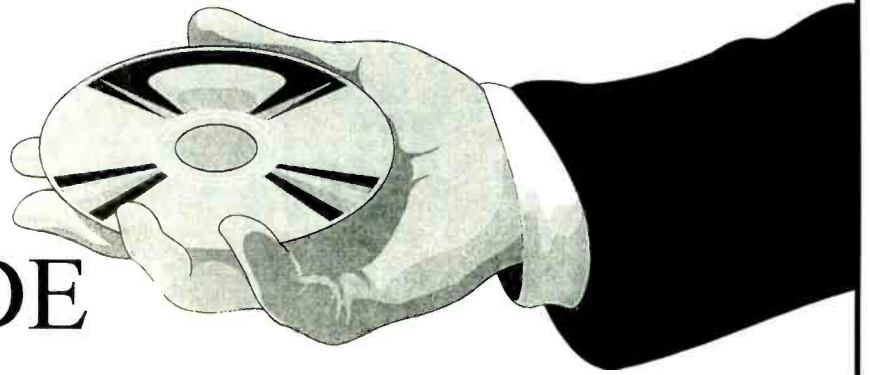
The heavy, rubberized steel clasps hug tightly around the PRO-2006 while the adjustable mounting bracket can be fastened firmly with hand-tightened thumbscrews. Take the best scanner on the road with you!

Order ACC102 \$27.95

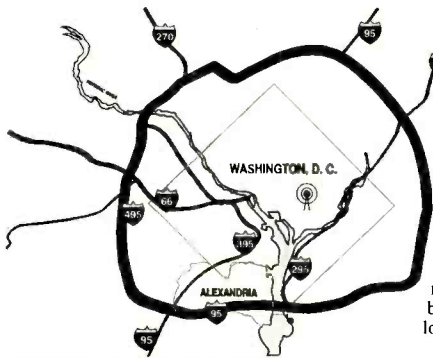
plus \$4.50 UPS shipping if ordered separately

COMING SOON!

The **GROVE** NATIONWIDE FCC Database



on *CD-ROM with MAPPING!*



Actual program may differ in appearance.

Through cooperation of a leading computer programming company, Grove has now incorporated a mapping program into the CD-ROM. What this means for you is that when you are looking for a station, and you have found it listed, but you can't picture where it is, the Grove FCC Database on CD-ROM *SHOWS* you where it is, by bringing up an advanced mapping system and plotting where your requested station is! Complete with major roadways, cities, state and county borders, you can *SEE* what you're looking for!

- *FAST* accessing
- Full-function map program
- 11 choice fields
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- Add your own data

Imagine possessing EVERY LICENSEE on the FCC Master File, all on ONE DISK! You can sort through fields like: CITY, SERVICE, STATE, CALLSIGN, DOING BUSINESS AS, ANTENNA HEIGHT, OUTPUT POWER, COUNTY and MORE! Not only can you browse through all that data, but you can ask for specific searches, fitting YOUR needs. And the searches are FAST! Using a specialized cross-index, the program already knows where the information you are asking for is, so it just pulls it out and shows it to you in a matter of seconds!*

*To take a step into the future of radio,
call Grove TODAY.*

CD-ROM with mapping: **\$169.95****

CD-ROM w/o mapping: **\$99.95****

CALL NOW! **(800) 438-8155**

GROVE ENTERPRISES, INC.

PO Box 98

Brasstown, NC 28902

(704) 837-9200 (Outside Canada and US)

* Speed depends on computer, hard drive and RAM
** Plus shipping

 **GROVE
ENTERPRISES**



Monitoring Times

Bringing you the very best in radio... every month.

Every month *Monitoring Times* brings everything you need to know to make world band listening even more rewarding: the latest information on international broadcasting schedules, frequency listings, stations profiles, program commentary, personality interviews, international DX reports, propagation charts, reviews of world band radio products, and tips on how to hear the rare stations.

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waves between the international broadcasting bands: information on government, military, police and fire networks; action on the ham bands; and tips on monitoring everything from air-to-ground and ship-to-shore signals to radioteletype, facsimile and space communications.

Jammed with up-to-date information and concisely written by the top writers in the field, *Monitoring Times* belongs next to your receiver.



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The Best Scanner Antenna Money Can Buy!



6-9 dB gain over other scanner antennas!



THE GROVE SCANNER BEAM

Our world-renowned Scanner Beam has been improved to provide unexcelled 30-50 MHz low band reception, 108-136 MHz aircraft, 136-174 MHz high band, 225-400 MHz military aircraft and satellites, 406-512 MHz UHF, and 806-960 MHz microwave mobile.

HAMS NOTE—can be used for transmitting up to 25 watts on 144, 220, and 420 MHz bands. 50/75 ohms nominal impedance.

May be used with inexpensive TV antenna rotator for boresight accuracy, or fixed in one direction as required for those elusive, distant stations. Local signals still come in loud and clear from all directions.

Balun transformer, offset pipe and all mounting hardware included (requires TV type F connector on your coax—available on pg. 32). Approximate size 8'H x 5'L.

Order ANT1
 Only **\$59⁹⁵**
 \$7 UPS
 \$16 UPS 2nd Day Air
 \$11.50 US Priority Mail
 \$13.50 Canadian APP
 \$18 Canadian UPS
 Shipped only in U.S. and Canada

Which Scanner Antenna?

HAND-HELD - The whip antenna included with your scanner is fine for local reception of strong signals, but if you are interested in reaching out further, a larger external antenna is necessary. The Grove ANT-8 adjustable whip and ANT-14 Austin Condor Flex Antenna will increase range on any hand-held scanner or transceiver equipped with a BNC connector (not screwthread).

Hand-held radios may also be connected to mobile and rooftop base antennas as well, provided they are equipped with BNC connectors.

MOBILE - Inside a vehicle, a scanner's attachable whip is shielded by the vehicle body and an external antenna is recommended. A rooftop location is ideal, providing uniform response in all directions. Mounted elsewhere (fender, trunk, bumper), the pattern will favor the direction of the car body.

The short length and low height of mobile antennas limit their distance, and loading coils restrict their frequency range. 800 MHz coverage is more by accident than design. The mobile scanning enthusiast must be content with local listening.

Mobile scanner antennas like the popular Grove ANT4 come equipped with a Motorola plug or BNC connector and have strong magnetic bases which will not come loose at normal road speeds.

You don't want a visible antenna on your car? Order the Grove ANT-20 "No-Tenna." It provides excellent, full-frequency-coverage reception by connecting internally to the car body.

The car's existing AM/FM antenna may be used with a multicoupler like the Grove ANT-63 with some compromise in signal strengths. In weak signal areas, a preamplifier like the Grove PRE-4 or GRE Super Amplifier will boost reception range.

BASE - Many discones advertise 25-1300 (or higher) MHz response. While it is true that any antenna will get some signals at virtually any frequency, most discones have poor response below 100 MHz and erratic response above that.

Several discones are extremely well constructed including the Diamond D-130. It is an excellent, omnidirectional, VHF/UHF transmitting antenna and performs well for local reception.

Most low-cost base antennas work well for local coverage (25-50 miles distance). Remember, the smaller the dimensions of the antenna, the poorer it will perform on low band (30-50 MHz).

The best nondirectional, all-band scanner antennas on the market are the Antennacraft ANT-7 Scantenna, sold by Grove, and the Channel Master 5094A Moni-Tenna available from Channel Master dealers.

An "omnidirectional" antenna mounted within a couple of feet of a metal mast or another antenna becomes directional due to signal reflection. In this case, turn the mast or antenna while listening to signals of interest to determine the best overall position, then tighten it down.

For extended range, a directional antenna like the new Grove Scanner Beam, used with an inexpensive TV rotator, offers gain in its forward direction while receiving local signals all around. VHF and UHF reception in excess of 100 miles under favorable conditions are possible.

THE SCANTENNA FROM ANTENNA-CRAFT

Best Buy

This new, full-frequency, omnidirectional scanner antenna will equal or outperform any competitor on the market. Its dipole-cluster design utilizes broadband techniques to provide continuous frequency coverage from 25-1300 MHz, offering superb reception of public safety, civilian and military aircraft, hams, personal communication devices, maritime, CB — anything in its frequency range! Requires TV type F connector on your coax—available on pg. 32. Approximate size 7-1/2'H x 4-1/2'W.



Order ANT 7
 Only **\$39⁹⁵**
 \$7 UPS
 \$16 UPS 2nd Day Air
 \$7.50 US Priority Mail
 \$11.50 Canadian APP
 \$18 Canadian UPS
 Shipped only in U.S. and Canada

Best Discone on the Market for VHF/UHF Receivers



PROFESSIONAL WIDEBAND DISCONE

The discone antenna is used by government and military agencies worldwide because of its recognized high performance, wide bandwidth characteristics. Now Diamond offers a professional grade discone at a popular price.

Designed for use with wide-frequency coverage VHF/UHF scanners and receivers, the Diamond D130J discone consists of 16 rugged, stainless steel elements and is capable of transmitting up to 200 watts in the amateur 50, 144, 220, 432, 900, and 1200 MHz bands.

As a receiving antenna, the D130J is omni-directional for continuous 25-1000 MHz (and above) coverage. A base-loaded, vertical top element is used as a low band (30-50 MHz) frequency extender.

The elements are arranged on a 24-inch support pipe equipped with two strong mounting brackets to accommodate any standard mast-pipe (1" to 2-1/8" diameter).

Choose 50 or 100 feet of coax from page 32.

Order ANT 9
 Only **\$83⁹⁵**
 \$7 UPS
 \$11.50 UPS 2nd Day Air
 \$7.50 US Priority Mail
 \$10.50 Canadian APP
 \$15 Canadian UPS

SPECIFICATIONS

Frequency coverage	25-1300 MHz
Impedance	50 ohms nominal
Power rating	200 watts
Connector	UHF
Antenna style	Discone
Vertical length	66 inches
Weight	2.2 pounds

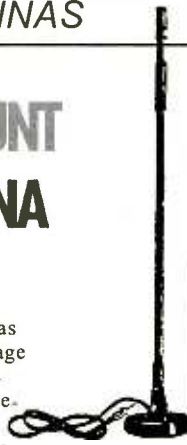
SCANNER ANTENNAS



MAGNETIC MOUNT MOBILE ANTENNA

For years, mobile scanning enthusiasts have had to settle for compromised reception from antennas designed long ago for limited coverage scanners. Now, Grove offers a high-performance mobile antenna for wide-frequency-coverage scanners.

This sleek, black, 24" fiberglass whip, mounted on a strong magnetic base, assures reception on 30-50 MHz low band, 88-108 MHz FM broadcast, 118-136 MHz aircraft, 136-174 MHz high band, 225-400 MHz military aircraft, 406-512 MHz UHF land mobile and 806-960 MHz microwave mobile.



Tested to withstand interstate highway speed and equipped with 12 feet of coaxial cable with Motorola and BNC connector, the ANT-4 will perform where others fail.

Order ANT4 **\$49⁹⁵**

\$6.50 UPS \$10 Canadian APP
\$11.50 UPS 2nd Day Air \$15 Canadian UPS
\$6.50 US Priority Mail

Order ANT4W **\$24⁹⁵**

(Whip antenna alone for your 3/8" x 24 TPI threaded mount)

\$5.50 UPS \$6.50 Canadian APP
\$9 UPS 2nd Day Air \$14 Canadian UPS
\$5 US Priority Mail

WINDSHIELD MOUNT SCANNER ANTENNA



No holes and no magnets, this 22" Valor Glas-Master is designed for today's wide-frequency-coverage mobile scanners, 30-1200 MHz (not for transmitting). Simply clean an area on your rear window (cleansing pad included) and stick the antenna base to the glass. A companion coupler on the inside of the window does the rest!

15' of cable with BNC and Motorola connectors included—no assembly required.

Order ANT 13

Retail ~~\$49⁹⁵~~

\$29⁹⁵

\$5.50 UPS
\$11.50 UPS 2nd Day Air
\$5.50 US Priority Mail
\$14 Canadian UPS
\$8 Canadian APP

ACCESSORY:
ACC94 Adhesive re-mount kit \$4.95

Extend the reception of your handheld radio!

UNIVERSAL WHIP ANTENNA

Today's hand-held VHF/UHF scanners and handie-talkies from Bearcat, Regency, Cobra, Radio Shack, ICOM, Yaesu, and Kenwood have excellent sensitivity and talk power, but their range is reduced by their short "rubber ducky" antennas. Grove has the solution!

Just replace that inefficient flex antenna with our universal full-length whip—and stand back! Extendable from 7 to 46 inches, the ANT-8 is made of chrome-plated brass and equipped with a standard BNC base. Transmits on 45-960 MHz; receives 25-1300 MHz.

If your interest doesn't include 30-50 MHz low band,



choose our new ANT-19 with its full adjustability from 4"-18" (transmits and receives from 144-960 MHz).

Order
ANT-8 (7"-46") **\$16⁹⁵**

ANT-19 (4"-18") **\$14⁹⁵**

ANT-8B **\$21⁹⁵**

(w/right-angle BNC adaptor)
ANT-8N **\$23⁹⁵**

(w/right-angle N adaptor)
\$4.50 UPS \$4.50 Canadian APP
\$7 UPS 2nd Day Air \$10 Canadian UPS
\$4.50 First Class Mail

Best Buy ✓

Coaxial Cable

At VHF/UHF frequencies, common CB-type RG-58/U coax will actually absorb signals. We recommend low-loss RG-6/U like the Grove CB-50 and CB-100 cables with custom connectors. It offers 100% shielding, small diameter, flexibility and low cost.

For the lowest possible losses, especially in runs in excess of 100 feet, use Belden 9913 or RG-11/U mini. These cables and connectors are available from some electronics distributors and TV and video accessory outlets.

Don't be concerned with impedance; although your scanner is designed to work with 50 ohm cable, no antenna made maintains a constant impedance over the wide frequency range of modern scanners. You want low loss and 100% (or close to it) shielding.

Preamplifiers

One of the most misunderstood accessories is the preamplifier. Its purpose is to boost weak signals which would remain unheard on a receiver without it. To do this it needs to have a very low noise figure, but very little gain.

Antenna-mounted preamplifiers are especially helpful in overcoming losses in long coaxial cables (over 100 feet and above 400 MHz).

Wideband (untuned) preamplifiers like the Grove PRE-4 and GRE Super Amplifier work well in low-signal-strength environments, but when used with outside antennas in a metropolitan area they saturate easily, causing desensitization (signals are weaker than before) and generate intermodulation (spurious signals) as well.

Filters and Attenuators

The most common cause of interference is strong signal overload. An attenuator reduces all signals, regardless of frequency, by the same amount; band-reject (stop-band) filters and wave traps remove a specific swath of spectrum; low-pass filters cut off all signals above a certain frequency; high-pass filters cut off all frequencies below a certain frequency; and notch filters attempt to remove one specific frequency.

The Grove FTR-5 is a combination filter designed to reduce interference from shortwave, AM, TV and FM broadcast stations, a common problem, as well as any one user-selected signal in the 100-174 MHz range.

Is your scanner plagued by AM broadcast, CB or shortwave stations? Try the FTR-6. Do local AM broadcasters disrupt your shortwave or longwave reception? The FTR-7 will take care of that. Are aircraft signals interfering with VHF of public safety monitoring? Eliminate them with the FTR-8.



Best Buy



AUSTIN CONDOR HIGH PERFORMANCE FLEX ANTENNA



For years we have been looking for a replacement "rubber duckie" that really makes a difference on handheld scanners. It's here! The 12" Austin "Condor" is guaranteed to improve weak signal scanner reception—on all frequency ranges—when compared to the original scanner antenna.

Order	
ANT 14	\$29⁹⁵
ANT 14B	\$34⁹⁵
(w/BNC right-angle conn)	
ANT 14N	\$36⁹⁵
(w/N right-angle conn)	
\$5.50 UPS	\$10 Canadian UPS
\$7.50 UPS 2nd Day Air	\$6.50 Canadian APP
\$4.50 US Priority Mail	

GROVE HIDDEN ANTENNA



The Hidden Antenna may be used alone with your scanner for improved signal reception, over your attachable whip or may be connected to the powerful Grove PRE4 or TUN4 for considerably increase signal strength on scanners and shortwave receivers.

This five-foot, thin-profile, flexible wire antenna can be hung in a corner, behind a drape—just about anywhere out of sight. Comes fully assembled with 20 feet of coax and F male connector, with 3 adaptors for PL259 (UHF), Motorola and BNC connections.

Order **ANT 6**
Only
\$19⁹⁵

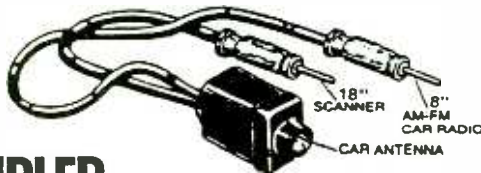
\$5.75 UPS
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\$4 US Parcel Post
\$6.50 Canadian APP
\$10 Canadian UPS

For Technical Support
CALL SUE
704-837-7081



Convert Your Car Antenna Into a Scanner Antenna!

MOBILE ANTENNA MULTICOUPLER



How would you like to enjoy excellent 30-960 MHz mobile scanner reception using your existing AM/FM auto antenna? That's right; no holes, no magnets, no scratched paint or clumsy cables going through doors and windows. Ideal for low-profile monitoring installations where a separate scanner antenna is desirable.

The Para Dynamics PDC 63 Mobile Multicoupler takes only seconds to install and allows simultaneous use of your AM/FM car radio as well as your mobile scanner. Comes equipped with your choice of Motorola or BNC connector.

Order CPL-63M (Motorola)	\$14⁹⁵
Order CPL-63B (BNC)	\$16⁹⁵

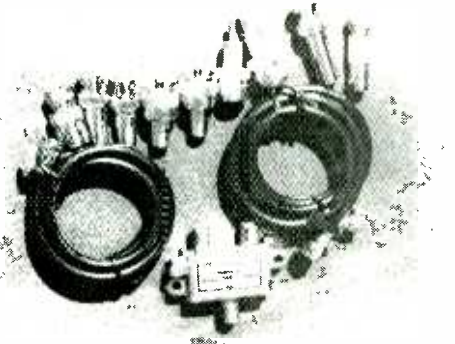
\$4.50 UPS
\$7.50 2nd Day Air
\$4.50 US Priority Mail

\$10 Canadian UPS
\$6.50 Canadian APP

DUAL SCANNER MULTICOUPLER

Would you like to connect two scanners (or one scanner with separate antenna jacks) to one antenna cable? The new Grove CPL-SC universal multicoupler is the answer! Insertion loss only 3 dB maximum; port isolation typically 25 dB; impedance 50-75 ohms.

Consisting of a wide-frequency-coverage splitter (25-1300 MHz or more) and two 3' output cables with adaptors for UHF (PL-259), Motorola, F, and BNC connectors (input and output), you'll be set for any combination.

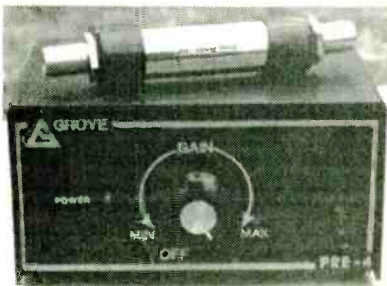


Order CPL-SC	\$29⁹⁵
---------------------	--------------------------

\$4.50 UPS
\$7.50 UPS 2nd Day Air
\$4.50 US Priority Mail
\$10 Canadian UPS
\$6.50 Canadian Air PP

ADP 15 adaptor for ICOM
AH-7000 discone, \$5.95

SCANNER ANTENNA SYSTEMS



**Not recommended for metropolitan use*

The PRE 4 Power Ant has taken all the best from its successful predecessors and combined them into one powerful signal booster for scanners, even TV and FM stereos!

Equipped with a high gain, low noise, solid state amplifier stage, the PRE-4's front panel control allows custom selection of up to 20 dB of amplification! The weatherproof remote

Start with our Scantenna or Scanner Beam then add our PRE-4 Wideband Preamp



GROVE'S OUTDOOR SCANNER ANTENNA SYSTEM

WHAT YOU NEED TO ORDER:

ANT 7 Scantenna (see page 25) \$39.95

or

ANT 1 Scanner Beam (see page 25) \$59.95

plus

PRE 4 Preamp \$59.95

CK-SC Scanner Interconnect Kit \$12.95

(includes one 3' F/F cable with adaptors for most scanners)

Shipping charges for system ordered together:

\$14 UPS

\$24 UPS 2nd Day Air

\$16 US Priority Mail

\$22 Canadian UPS

\$20.50 Canadian Air Parcel Post

booster module may be attached at the antenna for maximum effectiveness to overcome coax cable losses, or may be mounted on the back of the control box for convenience. Power is supplied to the remote module through your coax.

Two output connectors are provided allowing you to use two scanners on one antenna at the same time! All connectors are type F for maximum signal transfer. 120VAC/12VDC wall adaptor included.

SPECIFICATIONS

GAIN: 20 dB max.

CONNECTORS: Type F for signal line; 2.1 mm. DIN for power

CABINET: Custom formed aluminum, baked enamel finish

DIMENSIONS: 4"W x 2"H x 3"D

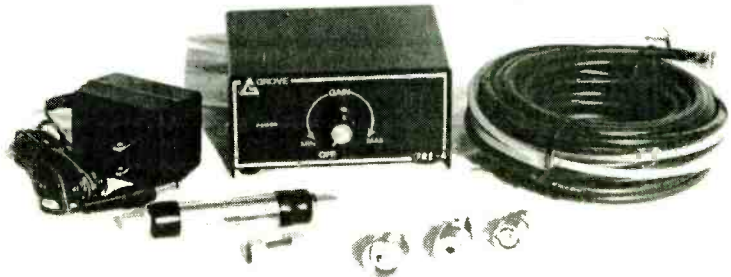
WEIGHT: 10 oz.

Connects to any scanner equipped with an external antenna jack

GROVE'S INDOOR SCANNER ANTENNA SYSTEM

The Apartment Dweller's Dream

The Grove Hidden Antenna System is a high performance, amplified indoor antenna for scanner monitoring. The 66-inch flexible ANT6 can be tucked in a corner, hung behind a drape—just about anywhere out of sight. And when connected to the powerful PRE4 signal booster, you have instant



coverage from 30 to over 1000 MHz.

Yes, wide area scanner coverage will be at your fingertips, and you can operate two scanners at one time!

WHAT YOU NEED TO ORDER:

ANT 6 Hidden Antenna (see page 27) \$19.95

PRE 4 Preamp \$59.95

CK-SC Scanner Interconnect Kit \$12.95

(includes one 3' F/F cable with adaptors for most scanners)

Shipping charges for system ordered together:

\$8 UPS

\$11.50 UPS 2nd Day Air

\$8.50 US Priority Mail

\$15.50 Canadian UPS

\$13.50 Canadian APP

GROVE NO-TENNA



Imagine: strong, clear, continuous frequency coverage of shortwave and scanner signals without having to mount an antenna anywhere on your car! No invitation to theft, suspicion, breakage, low overhangs, hole drilling, scraped paint, or cables through doors or windows. **No visible antenna whatsoever!** The 8' antenna mounts in seconds, using your entire car body as a giant, efficient, 1-1000 MHz all-band antenna!

The unique No-Tenna was developed exclusively in Grove's laboratory and extensively road tested under all signal conditions. Ideal for city dwellers, travelers, reporters, investigators—anyone who doesn't want a visible receiving antenna on his vehicle.

Connected to a single upholstery screw already in the vehicle; use either the upper, right-hand moulding screw or the adjacent sun visor screw. Spring clip provided for temporary connections to motel or

apartment metal window frames, curtain rods and other emergency, makeshift antennas. Full instructions and universal connectors for RCA, BNC and 1/8" (3.5mm) miniplug included. If you own an ICOM R-100 be sure to specify a PL-259 adaptor.

Order ANT 20
Only \$19⁹⁵

Plus \$4 UPS
Ground
Shipping

ACCESSORIES:

ACC134 Motorola Adaptor Kit \$5.95



METRO WEST LONG LIFE BATTERY PACK

For BC200XLT, BC205XLT, and BC100XLT

Over the years, MetroWest has introduced a number of innovative accessories for hand-held scanners, but none is more welcome than their new, double-life battery pack for the popular Uniden BC200XLT hand-held scanner.

The "Pro-Pack 1200" is numbered for its 1200 mA charge capacity, twice that of the BP200 which comes with the BC200XLT from Uniden. The replacement look-alike slips right on the scanner to replace the original.

About 1/4" taller and slightly fatter than the Uniden pack, the Pro-Pack 1200 does not allow

the top strap of the Uniden case to button over the top as it did before, but is still may wrap around the front or back securely.

Because the charger jack on the battery pack had to be relocated due to battery density, the scanner must be removed from its holster before it can be recharged. The user may wish to punch a second hole at the new location for plug-in convenience. An AC wall adaptor/charger is included.



Order ACC16

Only **\$65⁹⁵**

\$5 UPS
\$8 2nd Day Air
\$6.50 US Priority Mail
\$10 Canadian UPS
\$8.50 Canadian APP

METRO WEST PRO-CHARGE 7

Drop-In Charger for the Metrowest Battery!



Charge your high-capacity Metrowest battery like the pros with this drop-in charger (not for original Bearcat battery pack). Automatic circuit provides a full charge in just seven hours, yet prevents overcharging! Powered by your 12 VDC wall adaptor or from the Grove ACC23 cigarette lighter cord.

Lightweight (8 oz.) and compact (3-1/4" x 4-1/2" x 1-3/4"); two-color LED indicator shows charge status.

Order ACC 70

Only **\$36⁹⁵**

\$5 UPS;
\$8 2nd Day Air
\$6.50 US Priority Mail
\$10 Canadian UPS
\$8.50 Canadian APP

UNIVERSAL POWER SUPPLY/CHARGER

Our universal AC adaptor is especially rugged, capable of switching to your choice of 3, 4.5, 6, 7.5, 9 or 12 volts DC at a current of 500 milliamps (1/2 amp)! Another switch lets you choose + or - polarity.

An array of plugs on its interconnect cord assures proper mating to any electronic accessory. Plugs into standard house current (120 VAC, 60 Hz).

Best Buy

Order ACC20

A \$15 dollar value for Only **\$9⁹⁵**

plus \$4.50 UPS or Priority Mail



RECHARGEABLE AA NICAD BATTERIES

650 Milliamp High capacity AA Nicads for use with the PRO-43 as well as other handheld scanners.

Order ACC 47

\$2⁷⁵/ea plus \$2 shipping any quantity

MOBILE CIGARETTE LIGHTER POWER ADAPTOR

For Bearcat Scanners!

Simply plug the Grove ACC23 into your vehicle's cigarette lighter to charge the batteries and/or operate the Bearcat scanners listed in this catalog (except BC2500XLT) or any other mobile accessory, including radar detectors and the Grove PRE4 Power Ant, which use a 12 volts DC, center pin positive, 2.1 mm barrel connector.

This power adaptor has an internal, replaceable 3A fuse.



Order ACC23

Only **\$9⁹⁵**

INCLUDING FIRST CLASS MAIL SHIPPING



LIFETIME GUARANTEE!

ONE-HOUR RECHARGEABLE NICAD SYSTEM

You can't buy better, faster-charging NiCd batteries than the Gates Millennium. These 750 mA/HR AA cells will provide noticeably longer operation for scanners, portable radios, recorders, and accessories, and they come with a lifetime manufacturer's warranty! The Rapidcharger will recharge 2 or 4 Millennium AA cells at a time in just one hour.

ORDER TODAY:

- ACC119 Rapidcharger \$19⁹⁵
- ACC120 AA cells (2) \$5⁹⁵
- (4) \$9⁹⁵

\$\$ ORDER BOTH AND SAVE \$\$

- Rapidcharger plus 4 AA cells \$24⁹⁵
- \$5.50 UPS
- \$8 UPS 2nd Day Air
- \$6 US Priority Mail
- \$10 Canadian UPS
- \$8 Canadian APP

THE INNOVA POWERPAK

This rechargeable battery pack provides 12 volt DC at up to 10 amps maximum (fused) from its sealed, 6.5 ampere-hour, lead-acid battery. LED indicators signal recharge, low battery and system ready status. Handy grip and carrying strap included.

Ideal for campers, field day, cellular telephones, DC power tools, emergency lighting, boating, camcorders, scanner and shortwave receivers, ham and CB emergency power—anywhere battery operated equipment must be used for extended periods.

Includes cigarette lighter plug for recharging from a vehicle. Equipped with cigarette lighter socket for standard accessories.



Fast recharge—as little as one hour from a running vehicle, or 8-10 hours from the optional AC adaptor. Measures 7-1/4"W x 3-1/4"D x 10"H; weight 6.8 lbs.

Order PWR2

- Only \$49⁹⁵
- \$6.50 UPS
- \$15.50 UPS 2nd Day Air
- \$11 US Priority Mail
- \$18 Canadian UPS
- \$17 Canadian APP

ACCESSORIES

- ACC113 AC wall charger \$12⁹⁵
- ACC114 6.8 W solar charger panel (special order) \$129⁹⁵
- ACC115 AC inverter \$79⁹⁵
- ACC116 3-12 VDC @ 500 mA universal cigarette lighter adaptor \$11⁹⁵
- ACC118 Storage pouch for cables, accessories \$9⁹⁵

ONLY \$16.95 and FREE SHIPPING!

1995 PASSPORT TO WORLD BAND RADIO

Special Pre-Publication Offer!

ORDER NOW - SAVE OVER 25%!

If you order now, you will receive in mid-September the 1995 edition of the Passport To World Band Radio, recognized as the leading guide to shortwave listening -- the "bible" of SWLs worldwide -- at a discount.

Why is Passport the leader? Approximately 464 easy-to-read pages provide up-to-date frequencies, schedules and languages of worldwide broadcasters; interviews with and articles by the best known names in shortwave listening; in-depth, authoritative reviews of receiving equipment and accessories.

Passport is the ultimate radio roadmap to exotic lands -- who's on what frequencies at what times, while computer-generated graphics make it easy to use. Larry Magne's highly acclaimed 1995 "Buyers' Guide to World Band Radio" is included.

Get the most from your shortwave receiver by using the foremost guide to world band listening. Reserve your copy at a special pre-publication discount -- only \$16.95 (regular price \$23.45 with shipping) and we will prepay shipping in the U.S.!

PAYMENT WILL BE PROCESSED AT TIME OF ORDER. For foreign surface mail add \$5 (Canada) or \$10 (Europe); foreign air mail add \$5.50 (Canada) or \$20 (Europe).

* Free UPS ground shipping in the United States only.



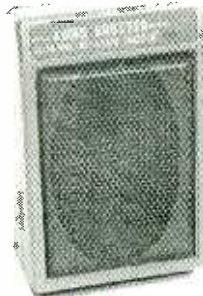
NAVAL HTS-2 COMPACT AMPLIFIED SPEAKER

Includes Tape Recorder Activator!

Designed for handheld walkie talkies and scanners, this amplified speaker puts out a resounding one watt of audio in noisy locations!

Powered by AA nicads or alkalines, battery saver automatically shuts off power when no sound is present. It activates a tape recorder whenever sound is present (1/8", 3/32" cables included)!

Compact (2-3/4" W x 4-1/2" H x 2-1/4" D) and lightweight (10 ounces), this amplified speaker can be snugly placed on your radio desk or stuck by Velcro to your vehicle's dashboard. LED signal light, audio level adjustment and amplifier bypass switch are included!



ACCESSORIES:

- ACC23 Cigarette lighter power adaptor \$9.95
ACC20 AC wall power supply \$9.95
ACC47 Nicad AA batteries \$1.95/each (4 required)

Order SPK11

Only

\$29⁹⁵

\$5.50 UPS
\$8 UPS 2nd Day Air
\$6.50 US Priority Mail
\$10 Canadian UPS or APP

AMPLIFIED EXTENSION SPEAKER

The new Grove SP10 amplified extension speaker turns your scanner's mousy squeak into a lion's roar! Your radio's volume control automatically sets the SP10's output power. Ideal for emergency vehicles—or your own car (rugged metal tilt bracket included). Fills noisy locations with clear, room-expanding sound.

Capable of delivering a powerful 10 watts when connected to your radio's external speaker or earphone jack, yet small enough for under-dash mounting. Connect the SP10 to your vehicle's 12 volt system for mobile applications, or order the SP10A for AC operation.

Imagine—crisp, room-filling sound from your Realistic, Bearcat, or other compact receiver. Sleek, black communications styling and no more small-speaker blues!



SPECIFICATIONS

Dimensions: 4-1/2"H x 5"W (less bracket)
Weight: 26 ounces
Speaker size: 4" square
Impedance: 3-16 ohms nom.
Input audio voltage: 1.5 V P-Pmax.
Audio power: 18 watts peak
Operational power: 12 VDC @ less than 200 mA typ.
Audio cable: 10 ft.; 3.5 mm (1/8") mini phone plug
DC cable: 5 ft., color-coded; in-line 2 A. fuse

Retail \$79.95

Order SP10 (for mobile use) only **\$39⁹⁵**

Order SP10A (for 120 VAC) only **\$49⁹⁵**

\$5.50 UPS
\$10 UPS 2nd Day Air
\$6.50 US Priority Mail

\$13 Canadian UPS
\$10 Canadian APP

CLIP-ON MINI SPEAKER

For Handheld Radios



Best Buy ✓

This tiny (2" square), lightweight (2-3/4 oz.) speaker plugs into any standard 1/8" (3.5 mm) earphone jack and provides excellent, concentrated sound when clipped to a lapel or collar. Ideal for crowded or noisy locations where you don't want your scanner blaring and don't want the confinement of an earphone.

Order SPK 9 **Only \$9⁹⁵**
\$4.50 UPS
\$7 UPS 2nd Day Air
\$4 US Priority Mail
\$9 Canadian UPS
\$5.50 Canadian APP

ACCESSORIES:

- ACC35 3/32" (2.5 mm) adaptor \$1.50 (for BC200XL, etc).

Check out the inside cover of the catalog for the **ULTIMATE** speaker!

NOW AVAILABLE FROM GROVE!

OPTIMUS 7 SPEAKER

For more than a decade this design has been the audiophile's choice in a compact speaker. Housed in a handsome black, rugged, die-cast aluminum enclosure, two high-compliance speakers and a tuned port provide rich, full sound from below 100 to above 20,000 Hz. Power capacity of 50 watts and nominal impedance of 8 ohms.

Ideal for shortwave and scanning receivers alike, this hefty (4.6 lbs.), yet tiny (7-1/8"H x 4-1/2"W x 4-1/2"D), powerhouse of sound is guaranteed to provide substantially better music and voice reproduction than any communications speaker on the market!

Equipped with spring terminals and hanging bracket.

ACC133 Adaptor Kit \$5.95
Includes cable, 1/4" and 1/8" adaptors



Order SPK 12

Only

\$59⁹⁵

\$6.50 UPS
\$15.50 UPS 2nd Day Air
\$11 US Priority Mail
\$18 Canadian UPS
\$17 Canadian APP



PREMIUM LOW-LOSS RG6/U CABLE WITH ADAPTORS

Have you had trouble finding the right coaxial adaptors for linking your antenna and receiver? We can help! Simply tell us what adaptors you need, or what antenna and radio you will be using. We will provide you with a cable which is ready to attach between your antenna and receiver!



ADAPTORS AVAILABLE

- ADP1 UHF Female to F male
- ADP2 F Female to PL259 Male
- ADP3 F Female to N Male
- ADP4 F Female to Male Mini-Plug
- ADP5 N Female to BNC Male
- ADP6 UHF Female to Male Mini-Plug
- ADP7 UHF Female to N Male
- ADP9 F Female to BNC Male
- ADP10 UHF/BNC
- ADP11 UHF female to RCA male
- ADP13 BNC/BNC (right angle elbow)
- ADP14 F Female to RCA male
- ADP15 N female to F male
- ADP17 BNC female to F male
- ADP18 F/2 wires
- ADP19 UHF/2 wires
- ADP22 MOT/BNC
- ADP24 BNC female to PL259 male
- ADP25 F female to Motorola male
- ADP26 F/F Barrel
- ADP27 Banana Plug

Adaptors may be ordered separately for \$5.95 each. Free shipping if ordered with other products; \$1.50 for one or more shipped alone.

If you are unsure which adaptor is needed, call Larry or Sue at 704-837-7081 for assistance.

Cable loss per 100 ft:
1.6 dB @ 50 MHz
2.6 dB @ 170 MHz
4.6 dB @ 450 MHz

CB50	CB100
(50 feet w/ adaptors)	(100 feet w/ adaptors)
\$19⁹⁵	\$29⁹⁵
\$5.50 UPS \$9 UPS 2nd Day Air \$6 US Priority Mail \$8 Canadian APP \$13 Canadian UPS	\$6 UPS \$10 UPS 2nd Day Air \$7 US Priority Mail \$9 Canadian APP \$17 Canadian UPS
No other lengths available	

COMMUNICATIONS HEADPHONES

Imagine—an ear-cushioned headset with adjustable volume controls for each earpiece and a stereo/mono switch built in! These new phones have a power handling capacity of 0.5 watts, frequency response of 20-18,000 Hz, sensitivity of 105 dB and 32 ohm impedance to match all external speaker/earphone jacks.

Perfect for any audio application—stereo systems, communications receivers and scanners. Coil cord with 1/4" plug and 1/8" adaptor included.



Order HDP 1
Only
\$19⁹⁵

\$5.50 UPS
\$8 UPS 2nd Day Air
\$6 US Priority Mail
\$10 Canadian UPS
\$8 Canadian APP

- ACCESSORIES:**
- ACC80 Universal Adaptor \$12.95
 - One or two 1/4" headphone jacks to 3/32" (2.5 mm) or 1/8" (3.5 mm) plug — fits all model scanners
 - ACC35 3/32" Adaptor (fits BC200XLT) \$1.50

HEAVY DUTY ANTENNA ROTATOR

Ideal for the Grove Scanner Beam, amateur VHF/UHF antennas, TV and FM antennas, this new rotator features a heavy-duty motor with high torque (tested through 70 MPH winds) with brake pads to protect the drive train.

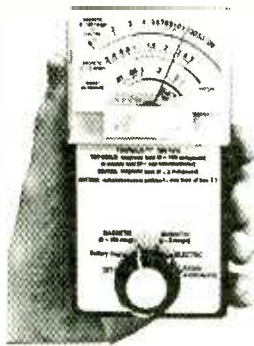
Two synchronized motors give precise station location; extra-strength machine gears break through ice loads without binding. Mounts on masts up to 2" diameter. Requires 3 conductor cable (optional). Fast and easy installation.



- ACCESSORIES:**
- ACC121 50 feet 3-conductor cable \$5⁹⁵
 - ACC122 100 feet 3-conductor cable \$8⁹⁵

Order ROT1
Only
\$59⁹⁵

\$6.50 UPS
\$15.50 UPS 2nd Day Air
\$11 US Priority Mail
\$18 Canadian UPS
\$14.50 Canadian APP



TRIFIELD ENVIRONMENTAL MONITOR

Concerned about electromagnetic radiation and its effect on your body? The TriField Environmental Monitor takes readings of home appliances, computers, microwave ovens, TV sets, electric blankets, fluorescent lights, power

transformers, power lines, residential and industrial wiring, cellular and cordless telephones, VHF and UHF transceivers, and other sources of electromagnetic energy.

Operating for 10 or more hours from a standard 9-volt battery (supplied), the TriField meter will read up to 100 milligauss of magnetic field intensity from 60-100,000 Hz, up to 100 kilovolts per meter electric field intensity, and up to 1 milliwatt per square centimeter (as high as 3 GHz) radio/microwave power density.

An excellent explanatory guide and full instructions are included.

Order
GSM4

\$119⁹⁵

\$6.50 UPS
\$9.50 UPS 2nd Day Air
\$6.50 US Priority Mail
\$10 Canadian UPS
\$7.50 Canadian APP

LIGHTNING/EMP PROTECTOR

For Scanners and Shortwave Receivers

While nothing can withstand a direct lightning hit, the new Grove LA-1 connects between your antenna cable and radio to prevent induced voltages from nearby lightning strokes, high-powered transmitters, and other massive energy surges from burning out your equipment*

Not a flimsy spark gap or simple diode shunt, the Grove LA-1 uses state-of-the-art gas discharge technology, proven in government tests to be the best deterrent against lightning and electromagnetic pulse (EMP) surges.

Responds in one ten-millionth of a second to short-circuit bursts of 250,000 volts at currents of 5000 amps, while allowing normal signal voltages (and even control voltages up to 50 volts AC or DC) to pass undisturbed! Extremely low signal loss—0.2 dB at 1500 MHz! Ideal for protecting scanners, shortwave receivers, CB and ham equipment, VCRs, TVs, satellite receivers, FM stereo systems and more. May be used with transmitters up to 100 watts.

The tiny protector measures only 3/4" x 1-1/2" L and comes equipped with standard F connectors for home entertainment equipment and Grove accessories. Adaptors are available as shown below.

LA1F (with F conn)	\$19.95	\$4 UPS
LA1B (with BNC conn)	\$24.95	\$7 UPS 2nd Day
LA1P (with PL-259 UHF conn)	\$24.95	\$4 US Priority Mail
LA1M (with Motorola conn)	\$29.95	\$6.50 Canadian APP
		\$9.50 Canadian UPS

*Will not prevent AC power line surges; such protectors are available from Radio Shack, computer stores, and most department stores.



Appearance may vary

POCKET FREQUENCY COUNTERS

phones, ham and CB radios, radio control units and other signal emitters.

This tiny, precision instrument offers outstanding sensitivity and TCXO (temperature compensated crystal oscillator) accuracy of 1 part per million. Price includes rechargeable battery pack and AC wall charger/adaptor, but not antenna (available from the list of accessories below). Operates for several hours on a fresh charge, or continuously with the wall adaptor.

The effective range varies from about one foot (cordless phones) up to 75 feet or more for more powerful transmitters.

From
Realistic®!

Handsomely housed in a rugged wrap-around metal case with ergonomic side grips, this pocketable counter is ideal for measuring frequencies between 1 and 1300 MHz (2-20 mV sensitivity) from nearby transmitters and sports a large, 8-digit, edgelit LCD readout with a resolution of 100 hertz.

Powered by four (optional) AA alkaline rechargeable NiCd cells, or a 9-volt wall adaptor/recharger; 1.28 and 0.128 second sampling rates; 1 PPM accuracy; 19" telescopic whip included.



Order CTR 5

Only
\$99⁹⁵

\$6.50 UPS
\$10 UPS 2nd Day Air
\$8.50 US Priority Mail
\$12 Canadian UPS
\$10.50 Canadian APP

From
Optoelectronics!

Just look at the advanced features of the premium 3000A:

Digital filtering and auto capture, ten-digit LCD readout, backlite for clear night-time viewing; total-spectrum 10 Hz-3000 MHz frequency range—from sub-audible through microwave! 1 mV typical sensitivity; 16-segment LCD signal-strength bargraph for tuning nearby transmitters or tracking hidden transmitters; even lab measurement capability of period, time interval and ratio are included at no extra cost.



Order CTR 6L

Only
\$319⁹⁵

\$6.50 UPS
\$11 UPS 2nd Day Air
\$8.50 US Priority Mail
\$13 Canadian UPS
\$10.50 Canadian APP

NEW! From
Optoelectronics!

The 3300 Minicounter: pre-eminently portable!

If you are looking for a low cost, high performance, pocket frequency counter, look no further. OptoElectronics' new 300 is for you. Built-in rechargeable battery and AC adaptor

ded. Wide frequency coverage to 2.8 GHz, high sensitivity, precision frequency readout to 10 Hz on LCD display. Fast/slow gate sampling times for increased accuracy. Hold button preserves readings from brief transmissions. Great for catching those unknowns inconspicuously!



Order CTR 7

Only
\$129⁹⁵

\$6.50 UPS
\$10 UPS 2nd Day Air
\$8.50 US Priority Mail
\$12 Canadian UPS
\$10.50 Canadian APP

ACCESSORIES:

ANT08 7-46" long-range telescoping whip \$16.95

ACCESSORIES:

ACC11 Zippered soft case \$17.95
ANT19 4"-18" telescoping whip \$14.95
ANT8 7"-46" long-range telescoping whip \$16.95
ACCE Test probe for circuit testing \$20.95

ACCESSORIES:

ANT19 4"-18" telescoping whip \$14.95
ANT8 7"-46" long-range telescoping whip \$16.95



UNIDEN SPREAD-SPECTRUM CORDLESS PHONE

channel autoscan selects the best frequency for clearest communications. Recharge assures operation during power outages, and includes fixture to charge optional backup battery.

Additional features include 20 number memory, tone/pulse dialing option, illuminated keypad, 3 one-touch memory buttons for frequent calls, handset and base ringer volume controls, AutoStandby (TM), AutoTalk (TM), programmable flash key with call waiting capability, three-way mounting, last-number redial, privacy mute.

New CT-2 (900 MHz) spread-spectrum technology brings you unprecedented clarity, range and privacy. Reaches up to five times the distance of conventional 46/49 MHz cordless phones. Works as a wireless room monitor or hands-free intercom. Digital processing assures voice security while providing crisp, noise-free sound. Multi-

ACCESSORIES: ACC139 Battery Pack \$19.95

Order PHN3
Only
\$299⁹⁵
\$8 UPS
\$16 2nd Day Air
\$17.50 US Priority Mail
\$15 Canadian UPS
\$20.50 Canadian APP

THE LEATHERMAN® TOOL



You've seen the legendary Swiss Army knife, but you've never seen a quality, multipurpose pocket tool like the Leatherman®.

Full-size needlenose/regular pliers, wire cutters, knife blade, ruler, can/bottle opener, large and small screwdrivers, Phillips screwdriver, metal/wood file/saw, awl/punch—all in a sturdy, 4", stainless steel frame!

Comes with leather belt case and 25 year warranty! An incredible, American-made value.



Made in the U.S.A.

Order TOOL 1
Only
\$39⁹⁵
\$5 UPS
\$7.50 2nd Day Air
\$4.50 US Priority Mail
\$10 Canadian UPS;
\$7 Canadian APP

UNIVERSAL BELT CLIP



A quick press firmly attaches this strong, plastic belt clip to your frequency counter, handie-talkie, cellular or cordless phone, camera, pager, test equipment, portable radio, or virtually any other flat surface! The polymer adhesive remains pliant so that years later the clip may be removed without destroying the surface!

Order ACC129
Only
\$4⁹⁵
Plus \$2 First Class Mail

LASER PEN POINTER



Now you can highlight your talk with a brilliant, red beam of laser light, the same beam used on

night-viewing weapons! This tiny (5.8") pocket penlight projects a tight spot of light for 200 yards, yet measures only 5.8" in length. Ideal for lectures, educators, sales presentations and more!

All-aluminum, black matte construction, GaAlAs solid-state laser with acrylic collimating lens, 3 milliwatts power at 670 nm wavelength! Requires only two AAA cells for long-life power! Attractive presentation case included at no additional cost. Registered with FDA for approved uses.

Special purchase! Lowest price in the country!
Only \$69.95

Order LP1
Only
\$69⁹⁵
\$5 UPS
\$7 2nd Day Air
\$4.50 US Priority Mail
\$7 Canadian APP
\$10 Canadian UPS
Accessories:
ACC131 AAA Batteries \$1.00/each

HANDHELD RADIO MOUNT

How many times have you tried to set your hand-held scanner or handie-talkie on a table, ledge or car seat, just to have it fall over? That problem is solved with this handy holder.



Its sturdy jaws do an excellent job of supporting your radio — even with cables and antennas connected — on a desk or table top or even the bumpy environment of a vehicle, plane or boat.

Cushion pads are provided for an even better grip, especially on small handhelds like the ICOM R-1 and Realistic® PRO-43.

Order ACC106
Only
\$9⁹⁵
\$5 UPS
\$7 2nd Day Air
\$4.50 US Priority Mail
\$7 Canadian APP
\$10 Canadian UPS



SCANNER FILTER

Eliminate those aggravating FM and TV broadcasters from interfering with your favorite scanner frequencies!



Select any one additional source of interference in the 100-220 MHz range and reject it as well! Ideal for use with preamplifiers and outdoor scanner antennas!

An adjustable 100-220 MHz 30 dB notch filter allows you to reduce or eliminate single-frequency interference from aircraft, mobile telephone repeaters, paging signals, NOAA weather stations, nearby amateur or other repeaters.

High-Q microstripline circuitry features custom-wound inductors for deep interference rejection. A rugged weatherproof enclosure allows masthead mounting. Standard F connectors are provided for convenient interconnection with other adaptors or accessories. Additional adaptor kits available below.

A diode shunt array protects your scanner from nearby lightning strokes and high-powered transmitters. A high-pass filter removes shortwave feedthrough, while band-reject filters remove FM and TV broadcast interference automatically.

Nothing has been overlooked in this state-of-the-art interference filter. Full instructions included.

SPECIFICATIONS

Passes: 30-50, 118-174, 225-1500 MHz
Rejects: 0-30, 50-118, 174-225 MHz
Frequency Range: 30-2000 MHz (nom.)
Insertion Loss: less than 3dB
Dimensions: 6"L x 1-1/8"D
Weight: 3 ounces

ADAPTOR KITS:

ACC124	PL-259 (UHF)	\$9.95
ACC125	1/8" Miniplug	\$9.95
ACC126	BNC	\$9.95
ACC127	Motorola	\$12.95
ACC128	RCA	\$9.95
ACC135	N	\$12.95

Order FTR5
Only
\$44⁹⁵

\$4.50 UPS
\$7 UPS 2nd Day Air
\$4.50 US Priority Mail
\$8 Canadian UPS
\$6.50 Canadian APP

RECEIVE CONTINUOUS 810-912 MHz ON YOUR PROGRAMMABLE SCANNER

GRE SUPER CONVERTERS

Looking for the best way to get uninterrupted 810-912 MHz coverage on your hand-held or desktop scanner? Whether your scanner doesn't have that range now, or is one of the models with certain 800 MHz frequencies

factory-censored, these high-sensitivity converters from GRE will fill in the gap!

Simply install a nine-volt battery (not supplied); BNC connectors are provided to interconnect with your scanner. Use an 800 MHz-capable external antenna or attach a whip adjusted to about 4" (or 12" for gain) like the Grove ANT-19 (\$12.95) or ANT-8 (\$16.95).

When you tune 410-512 MHz on your scanner, you will be receiving 810-912 MHz! Just add 400 to the frequency displayed on your scanner, and you'll know your receive frequency when the scanner is

switched on. A handy bypass switch allows you to restore normal operation of your scanner without having to remove the converter.



Factory price \$94

ORDER CVR2 for handheld scanners **\$79⁹⁵**

ORDER CVR3 for desktop/mobile scanners **\$84⁹⁵**

\$5 UPS
\$8 UPS 2nd Day
\$6.50 US Priority Mail

\$8.50 Canadian APP
\$10 Canadian UPS

GRE SUPER AMPLIFIER

Would you like more range out of your hand-held scanner? Try the new GRE Super Amplifier with built-in battery and 20 dB (adjustable) gain from 100-1000 MHz!

BNC connectors allow the Super Amplifier to be mounted between the scanner and rubber ducky antenna; a bypass switch permits the unit to be disabled without having to remove it.

A 9-volt alkaline battery (not supplied) will provide up to 24 hours of continuous operation; a convenient external power jack permits the unit to be used continuously from a 9 VDC wall adaptor (not supplied).



Order PRE1
Retail for \$69
Only
\$49⁹⁵

\$5.50 UPS
\$7.50 UPS 2nd Day Air
\$5.50 US Priority Mail
\$10 Canadian UPS
\$7.50 Canadian APP

GROVE MILITARY AIRCRAFT SCANVERTER

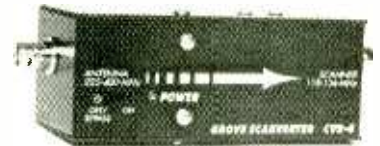
Now, hear 225-400 MHz military aircraft communications on your scanner's 118-136 MHz band! Listen in on 216-225 MHz land mobile and hams as well!

Ideal for monitoring Thunderbirds and Blue Angels air show stunt coordination, military flight training, strategic communications, air-to-ground flight service stations, air-to-air comms, midair refueling and more!

The Grove CVR-4 Scanverter uses a proprietary technique called "bandstacking" to reduce the 175-MHz-wide military aircraft band into an 18 MHz swath to be heard on any scanner with standard aircraft reception.

Assembled with surface mount devices and all-metal case, the CVR-4 offers excellent sensitivity (1 microvolt nom.) and out-of-band interference rejection. The on/off switch bypass function allows the unit to be left in line when not in use.

The CVR-4 Scanverter comes with a universal adaptor kit so that it can be connected directly to a handheld scanner for portability, or to the rear of a base or mobile scanner (BNC and Motorola adaptors included). Operates from standard 9-volt alkaline battery (not included).



SPECIFICATIONS

Frequency Range: 216-406 MHz
Sensitivity: 1 microvolt
Power Required: Alkaline battery, 9 volt @ 13 mA
Connectors: BNC
Dimensions: 4"H x 1-1/2"W x 2"D
Weight: 8 oz.
Bypass Loss: 2 dB @ 400 MHz, 6 dB @ 800 MHz

Order CVR4
Only
\$99⁹⁵

\$5.50 UPS
\$9.50 UPS 2nd Day Air
\$6 US Priority Mail
\$12.50 Canadian UPS
\$8 Canadian APP



24-HOUR STUDIO CLOCK



Nothing lends an air of authority in a radio station like the clock on the studio wall. It is traditional, recognizable, functional, and now, with a modern precision quartz movement, accurate to 1/2 second per day.

This studio clock from Grove Enterprises is a professional 13" Seth Thomas, featuring a 24-hour

movement with bold, black numerals and a red sweep-second hand.

A convenient set knob allows precise set-up at installation; add an inexpensive alkaline AA cell (not included) and you have at least a year of unattended, accurate time—even during power outages.

Order CLK1

Only
\$24⁹⁵

\$6.50 UPS
\$16.50 UPS 2nd Day Air
\$6.50 US Priority Mail
\$10.50 Canadian APP
\$15 Canadian UPS

MFJ DUAL DIGITAL CLOCK

This compact digital timepiece features two large, accurate, LCD quartz movements, one to provide accurate 24 hour UTC radio time, the other for 12 hour local time. Mounted in a rugged extruded aluminum frame with a handsome brushed accent, the clock features high-contrast, 5/8 inch numerals,

easy to see anywhere in your radio room.

Powered by a long-life battery and measuring a scant 4-1/2"W x 2"H, the MFJ108B dual time clock can easily fit on any radio desk and provide valuable time information instantly.



Order CLK2

Only
\$19⁹⁵

\$4.50 UPS
\$7 2nd Day Air
\$4.50 US Priority Mail
\$10 Canadian UPS
\$7.50 Canadian APP

MFJ WORLD MAP CLOCK



This new desk digital world map/clock adds a touch of golden elegance to your radio room. Time zones are available at the touch of a button, and the day of the week, date, and local 12 or 24 hour time with one second per day accuracy are also displayed in large LCD characters.

Key cities across the globe are highlighted to make identification easier and an alarm tone can be set to alert you to any particular time. The MFJ-112 measures 4" H x 3-1/2" W and battery is included.

Order CLK4

Only
\$24⁹⁵

\$5 UPS
\$7 2nd Day Air
\$4.50 US Priority Mail
\$10 Canadian UPS
\$7.50 Canadian APP

COLOR WALL CHART OF THE RADIO SPECTRUM

Now Grove offers this incredible 50" x 32", full color, fold-out wall chart of the United States radio spectrum!

Printed on heavy gloss paper, the chart of the spectrum shows both government and non-government frequency allocations from 3 kHz through 300,000 MHz (300 GHz)—the entire radio spectrum!

28 services are shown in separate colors: land mobile, aeronautical, maritime, space, fixed, amateur, radio and TV broadcasting and more. No other low-cost publication provides so much band allocation detail at a glance as this handsome, professional wall chart.

Order CHT 1

Only
\$9⁹⁵

\$5 UPS
\$6.50 2nd Day Air
\$2 Bookrate/\$5 Priority Mail
\$8.50 Canadian UPS
\$6 Canadian APP

WORLD TIME CONVERSION WHEEL

This colorful and accurate accessory reveals 24 hour time anywhere in the world at a glance. Polar projection features colored land masses with accurate 24 hour time zones on a glossy, durable, global map with metal axis hub. Select your time, and it's ready to use!



Order CHT 2

Only
\$8⁹⁵

INCLUDES FIRST CLASS MAIL SHIPPING



FEDERAL FREQUENCY ASSIGNMENT MASTER FILE

This new 3rd edition, now with 350 controversial pages, it provides the most comprehensive look at federal government frequencies in print.

Over 100 agencies, from the Central Intelligence

Agency to the National Security Agency are listed; scanner and shortwave as well.

No matter where you're located, you'll hear many of these frequencies in use.

Alphabetized by department and agency and their

locations, then listed in frequency order, this compendium is the most authoritative reference for armchair monitoring of "forbidden" frequencies we've ever seen!

BOK1

\$24⁹⁵

Shipping Code B

SCANNER AND SHORTWAVE ANSWER BOOK

By Bob Grove What is the best antenna for your requirements? When do you need a preselector rather than a preamp? What is the difference between "meter band," megahertz" and "kilohertz"? How can you determine the source of

electrical interference and cure it?

These are samples of the hundreds of questions expertly answered by Bob Grove's guide to monitoring. If you have questions about listening and equipment, chances are you'll find the

answers here!

Liberally illustrated and professionally printed. Affordably priced for hobbyists, new and experienced. Take advantage of this limited reference edition while supplies last!

BOK5

\$12⁹⁵

Shipping Code A

OFFICIAL AERONAUTICAL FREQUENCY DIRECTORY

By Robert A. Coburn This second edition features 430 pages of listings of HF, VHF and UHF air-to-air, air-to-ground and ground utilities frequencies used by civilian, government and

military agencies across the country. FAA, CAP, military, aeronautical telephone, flight support, airport communications—they're all here!

Arranged alphabetically by state, lists include service,

name, location, call sign, frequency and use. Tables include allocations, voice designators and more.

BOK6

\$24⁹⁵

Shipping Code B

AIR SCAN

By Tom Kneitel This fifth edition of the exhaustive frequency directory for aircraft monitoring enthusiasts includes 2-30 MHz shortwave SSB as well as VHF-AM/FM and UHF-FM

for all 50 states and Canada.

Military and federal tactical frequencies, flight service stations, NASA support frequencies, conservation agencies, even air show frequencies!

Public safety agencies employing air-to-air and air-to-ground communications are provided as well throughout the VHF low, high, and UHF bands.

BOK7

\$14⁹⁵

Shipping Code B

TOP SECRET REGISTRY

By Tom Kneitel This 8th edition continues the tradition of having the largest amount of federal frequency data ever compiled into a single volume.

Concentrating on VHF and UHF scanner frequency ranges, agencies include Secret Service, Customs, DEA, CIA, NSA, White House, Border Patrol, ATF, and dozens of other

government bureaus who would prefer not to have their communications frequencies published.

BOK8

\$21⁹⁵

Shipping Code B

CITIZEN'S GUIDE TO SCANNING

By Laura Quarantiello Are you new to scanning? Would you like to know more about the hobby and how to get the most out of your scanner? Try this new guide to expanding your

radio horizons. Frequency lists for finding public safety, aircraft, boats, federal and military agencies, business communications, railroads, telephones, sports and entertainment, spacecraft,

emergency/disaster communications and more!

BOK9

\$19⁹⁵

Shipping Code B

SPORTS & ENTERTAINMENT FREQUENCY DIRECTORY

By Bob Grove This new fourth edition helps you listen to drivers and pit crews at the auto races, boat race

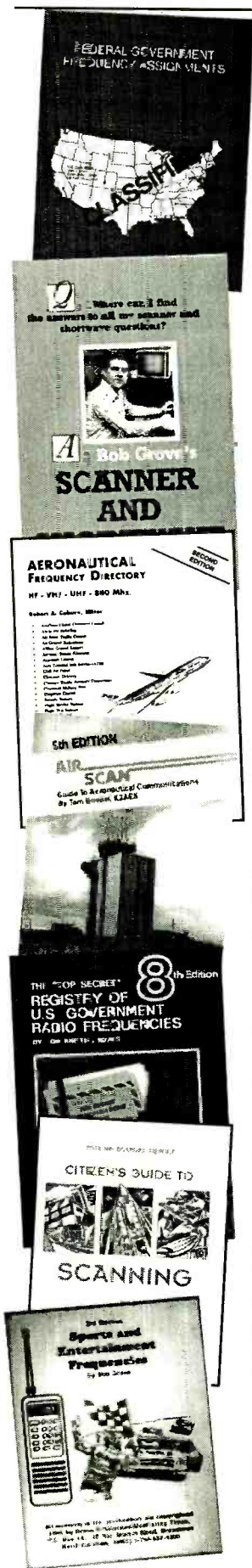
communications, air show stunt coordination, gambling casino management and security, Disney attractions,

parade floats, amusement parks, wireless mikes, sports

BOK12

\$9⁹⁵

\$2.50 UPS or Bookrate





MONITORING THE MILITARY

Second Edition by Darryl Symington Over 130,000 frequencies plus a tactical callsign index highlight this updated

military scanning guide. Hundreds of Air Force, Navy and Army bases as well as munitions and supply depots nationwide are listed

alphabetically, covering fire/crash, security, medical, command posts, military police, tactical, maintenance and security communications.

BOK15
\$16⁹⁵

Shipping Code B

LISTENERS LAWBOOK

By Frank Terranella Attorney Frank Terranella, whose specialty is radio law, has collected all of the monitoring laws across

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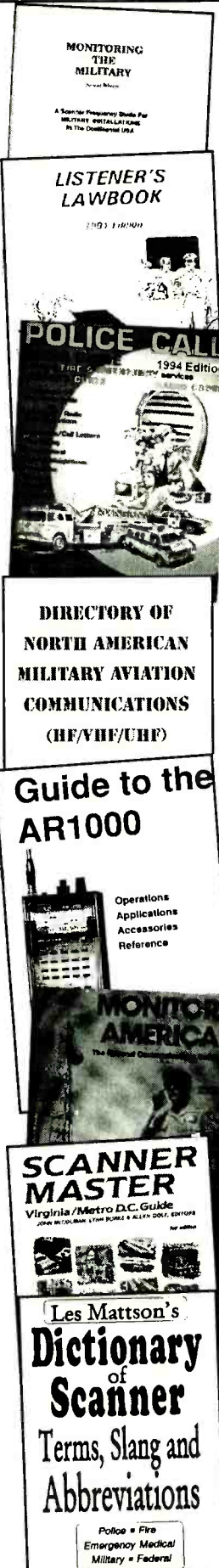
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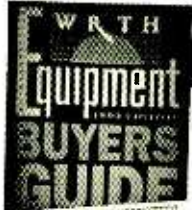
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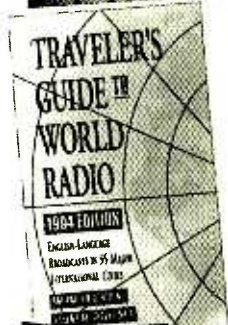
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URCV8	ICOM R-72A	\$690.95	UCVR2	GRE Superconverter II	\$75.00
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USCN09S	BC200XLT	\$210.95	UDEM02	Microdec MD200 Decoder <i>Decodes Morse, RTTY, ASCII, AMTOR/SITOR A and B; no interface for monitor or printer</i>	\$229.95
USPK11	HTS-2 Amplified Speaker	\$24.95	UDEM4	MFJ-1278-T Turbo Decoder	\$360.95
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UBOK45	Now You're Talking	\$15.95			
UBOK77	Scanners and Secret Frequencies	\$16.95			
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UCTR06	Optoelectronics Model 3000	\$339.95			

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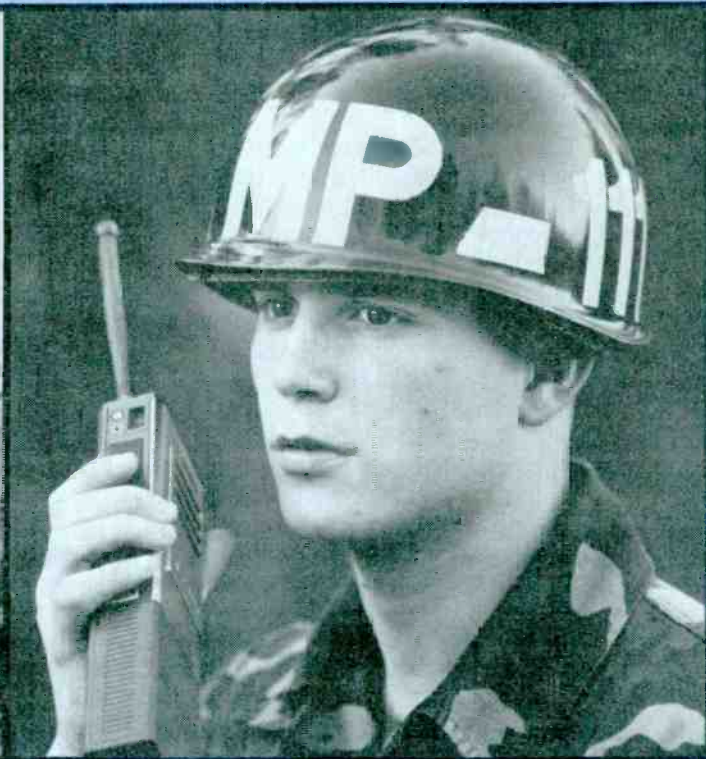
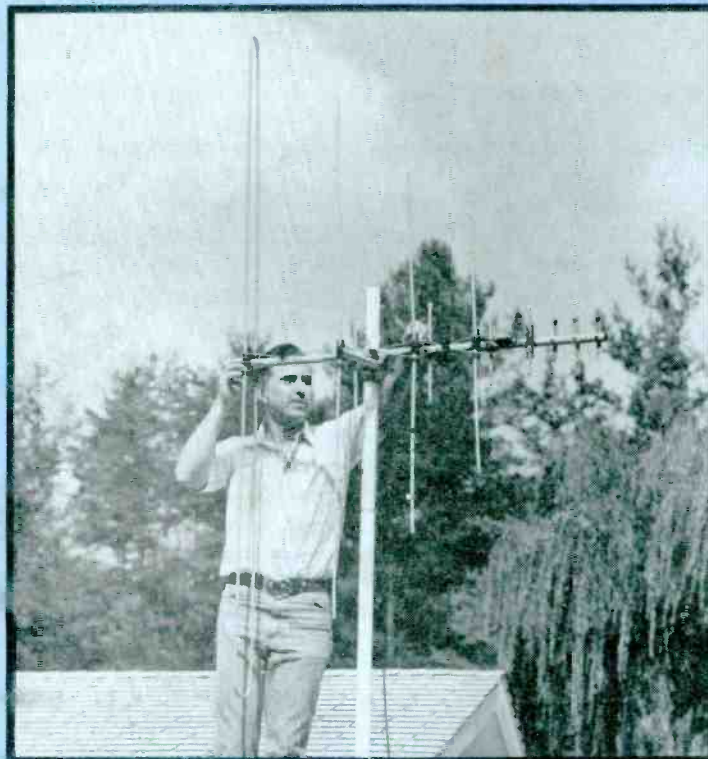
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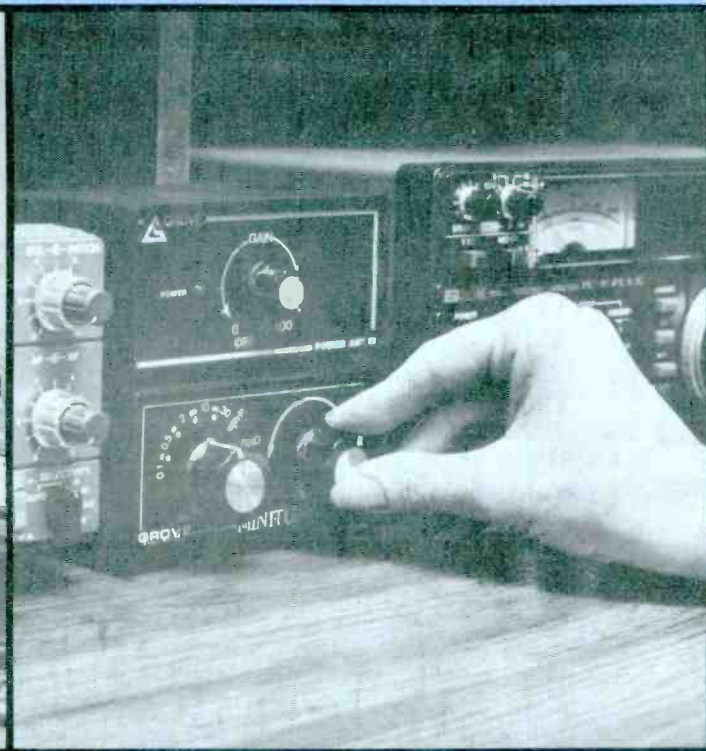
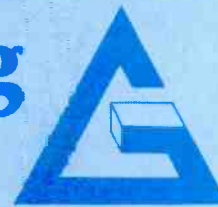


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The 1988 Grove Catalog

And Buyer's Guide to Monitoring



THE BUYER'S GUIDE TO SHORTWAVE LISTENING

Copyright 1987 by Grove Enterprises, Inc., P.O. Box 98, Brasstown, NC 28902

Choosing a Shortwave Receiver

Choosing a shortwave receiver is a lot like choosing a car--you must first decide what basic functions you need, then select the appropriate product.

Looking for a good portable? The Sony ICF2010 is probably the best choice. Featuring keyboard entry of frequencies as well as a tuning dial, the radio offers sensitivity, wide or narrow selectivity, and aircraft band reception as well as mediumwave, shortwave and FM broadcast bands. Synchronous detection enhances shortwave signals and single sideband reception is quite good. Battery life is much improved over the former ICF2001 and 2002 and the unit comes with an AC adaptor.

For low cost and very good performance, try the Sangean ATS-803. Continuous 150 kHz-30 MHz AM and SSB reception are offered along with FM broadcast. Wide/narrow selectivity may be switched and an AC adaptor is included.

The Sony PRO-80 is an interesting combination shortwave radio/VHF scanner in a handheld package. Its use is recommended when wide frequency coverage and compactness are of paramount importance.

If you want pocket portability, forget high quality; the two don't mix. The characteristics of greatest importance to listeners are compromised in low-cost radios: frequency stability, frequency readout accuracy, single-signal selectivity, and overload immunity. In general, you get what you pay for.

Among the more professional radios, names like Kenwood, Yaesu, JRC, and ICOM top the popularity polls and the ICOM R71A, Kenwood R5000, and JRC NRD525 head the list. Their strong signal handling capability makes the use of preselectors generally unnecessary, even with large outside antennas.

The Yaesu FRG-8800 and Kenwood R-2000 are very good general purpose receivers although they suffer from strong signal overload (intermodulation) when used with good outdoor antennas like the Grove Skywire. The Grove TUN-3 MiniTuner is strongly recommended for use with these two receivers and with the Sony ICF2010 and Sangean ATS803 (as well as other low and medium cost receivers) when connected to outside antennas.

Shortwave Antennas & Accessories

While it is true that any length of wire will pick up signals, a well-planned antenna installation will pick them up better.

IMPEDANCE AND SWR

While "impedance mismatch" and resultant "standing wave ratio (SWR)" are important considerations for transmitting, they are of virtually no concern to receiving installations. Of paramount importance is "capture" or "aperture"-- the actual size of the signal gathering portion of the antenna, and the efficiency (low attenuation) of the feedline.

But the "bigger the better" concept has its limitations. While a mile-long antenna can intercept a sizable amount of radio energy, other considerations such as height above ground and frequency band to be covered are equally important.

The greatest efficiency of an antenna is reached when the antenna is "resonant"; that is, its electrical length matches that of the incoming radio wave. Since wavelength varies with frequency this magical match to your antenna can only occur at one frequency (and harmonically-related multiples). It is the job of the designer to come up with an antenna that provides the best combination of features for the radio listener who wants wide frequency coverage.

A wire antenna may be thick or thin, copper or aluminum, insulated or uninsulated, stranded or solid...it will hear signals just the same.

There are many tricks of the trade which have been learned from trial and error; while antenna design is not really a "black art," it would appear so to many hobbyists and engineers alike due to the many interdependent considerations.

IS BIGGER ALWAYS BETTER?

A receiving antenna serves only one purpose: to intercept enough electrical energy to overcome losses and noises in the receiving system. Once that minimum has been reached, no amount of amplification will make the signal easier to copy, just louder... right along with louder background noise.

Directional antennas can concentrate the incoming energy (called "gain"), rejecting noise from other directions for better signal-to-noise ratio. A large capture area ("aperture") can also compensate for poor receiver sensitivity (higher internal noise) by providing greater signal levels to begin with.

An antenna should be as high as possible and away from large metal surfaces and electrical power lines. Never run an antenna wire or transmission line over a power line and preferably not under one, either. Not only will it pick up electrical noise, but it is dangerous as well. Indoor antennas are susceptible to electrical noise pickup from household appliances, although loop antennas may be rotated for minimum noise.

RECOMMENDED ANTENNAS

For shortwave reception, nothing beats an elevated outdoor dipole 50-150 feet in length. In actual field tests, the Grove ANT-2 Skywire equalled or outperformed any other antenna with which it was compared, including much more expensive trap dipoles. The Skywire is approximately 66 feet long and is fed at a point 1/3 of the way from one end (Windom feedpoint) for more uniform matching across the 2-30 MHz spectrum.

For medium and longwave reception the operator may wish to disconnect the shield of the coax cable at the radio, allowing the feedline to become an extension of the antenna, thus increasing signal strengths at the lower frequencies.

A WORD ABOUT TRAP DIPOLES

Trap dipoles are designed to respond to certain frequency ranges (typically, international broadcast or ham bands) while reducing signal strengths at other frequencies. Why buy a general coverage receiver, then erect an antenna designed to reject most of that receiver's frequency ranges?

TRANSMISSION LINE

While the practice of running a wire from the antenna terminal on the receiver to a nearby tree is very popular and may produce excellent reception, it is susceptible to household electrical noise pickup. The use of coaxial lead-in from any outdoor antenna is recommended due to its inherent shielding from electrical noise pickup. For reception below 30 MHz, virtually any type of coax, including RG-58/U, RG-59/U, RG-6/U, and RG-8/U is acceptable for runs of up to at least 100 feet.

PREAMPLIFIERS

Modern receivers have excellent sensitivity when used with outdoor antennas of sufficient design. Since wideband preamps like the Grove PRE-3 amplify all signals (including the strong), use them only in low-signal-strength environments like rural or far-suburban areas, or with small, indoor antennas like the Grove ANT-6 Hidden Antenna.

The use of wideband preamps with outdoor antennas in metropolitan areas is discouraged unless the antenna is so small, poorly designed or badly located that all signals are low in strength. High-level signals from nearby transmitters will overload your receiver and preamplifier, producing interference and desensitization.

Preamplifier overload and its attendant problems on long, medium and short wave receivers may be reduced or eliminated entirely by the use of an effective preselector like the Grove TUN-3 MiniTuner between the antenna and the preamp. There are no preselectors available for scanners.

FILTERS AND ATTENUATORS

If the strength of those overpowering signals could be reduced, interference products can be similarly reduced or even eliminated. The following devices are placed between the antenna and the receiver.

Band-reject (stop-band) filters and wavetraps remove a swath of undesired spectrum; low-pass filters cut off signals above certain frequencies; high-pass filters cut off signals below a certain frequency; notch filters slice out a particular piece of spectrum in an effort to remove one frequency; and attenuators reduce all signals equally.

TUNERS

A "transmatch" or "matchbox" is a transmission-line impedance-matching device used with transmitters to prevent damage from high voltage generated by mismatch. No such conditions exist in receivers and, although a slightly higher S-meter reading may result by adjusting for better impedance match, the background noise level will also rise, netting no improvement in signal to noise ratio. Impedance tuning devices are generally unnecessary with receivers.

PRESELECTORS

Passive (unamplified) preselectors like the Grove TUN-3 MiniTuner installed between the antenna line and the shortwave receiver are tunable to specific frequencies, attenuating the rest of the spectrum. They remove intermod and image interference produced by strong signals in economy receivers.

GROUNDING

A connection to earth ground rarely makes signals stronger, but will reduce electrical shock hazard and may also reduce electrical noise interference and AC hum heard through the speaker.

An effective ground consists of a short length of heavy gauge wire connected to a single metal pipe or rod driven eight feet into moist soil. Dry sand is worthless as a ground. Alternatively, a metal cold water pipe may be called into service; avoid hot water pipes which are usually insulated by their numerous caulked joints at the water heater.

As a last resort, the metal screw holding the electrical wall plate in place may serve as a ground connection if the electrician was conscientious enough to ground the outlet box. Similarly, the round ground hole of a three-wire receptacle may serve as a worst-case ground reference.

Equipment chassis should be commonly strapped together by a single ground wire to reduce common mode hum. Braided copper shielding from an old piece of coaxial cable makes excellent ground wire. Experiment with various grounding combinations to find out what works best for you.

ACTIVE ANTENNAS

An active antenna consists of a short element connected to an amplifier. Their singular advantage is that they are compact and may be installed where larger antennas are impractical or disallowed. Active antennas come in two types: remote units which may be mounted at a convenient distance and controlled from the operating position, and self-contained desktop units which do all of their business next to the radio.

All wideband active antennas have one common fault: Their high-gain amplifiers are vulnerable to overload from strong signals (poor dynamic range). This may produce gain compression (apparent lack of sensitivity) and intermodulation ("intermod"--the mixing of signal frequencies producing spurious signals heard throughout the listening range).

Some active antennas improve this shortcoming significantly by providing a tunable preselector like the Grove TUN-3 which allows the user to narrow the spectrum to those frequencies to which he is listening. Examples include the Grove Hidden Antenna System, MFJ 1020A, Yaesu FRA7700, Palomar loop antenna, and AMECO active antenna.

While the tunable variety is less susceptible to signal overload, its indoor location invites interference from close-by electrical appliances such as TV sets, brush-type motors, computers, and other notorious sources of electrical interference.

Because of their limitations, the active antenna should be chosen only when an efficient outdoor antenna is not practical.

THE TOP 100 SHORTWAVE FREQUENCIES

An introduction to shortwave listening from Grove Enterprises and Monitoring Times.

Nowhere in the radio spectrum is there as much intrigue and fascination to be found as in the 2-30 MHz spectrum. The following list of recent loggings includes some of the most active frequencies (in kHz). The voice utilities (two-way communicators) are virtually all upper sideband (USB), while the broadcasters run full carrier amplitude modulation (AM). Since most listening is done in the evening hours, this representative sampling reflects that time.

UTILITIES

2670	U.S. Coast Guard	8291.1	Ship to shore, Pacific
4063	Mississippi River barges	8418	"Spy numbers" broadcast
4069.2	Ship working channel	8740.6	Ship to shore
4087.8	Mississippi River barges	8778	U.S. Navy
4112.6	Ship calling channel	8784	Ship to shore, Pacific
4125	Ship calling channel	8805.7	Ship to shore
4143.6	Mississippi River barges	8808.8	Ship to shore
4413.4	Ship working channel	8825	International airlines
4419.4	Ship working channel	8846	International airlines
4467.5	Civil Air Patrol	8879	International airlines
4517	Air Force MARS	8891	International airlines
4593.5	Air Force MARS	8921	International airlines
4637.5	Offshore petroleum	8972	U.S. Navy, Atlantic
4670	"Spy numbers" broadcasts	8984	U.S. Coast Guard, air/ground
4742	"Spy numbers" broadcasts	8989	U.S. Air Force, air/ground
5015	Army Corp of Engineers	8993	U.S. Air Force, air/ground
5320	U.S. Coast Guard	9014	U.S. Air Force, air/ground
5598	International airlines	9027	U.S. Air Force, air/ground
5616	International airlines	10493	FEMA, emergency net
5680	U.S. Coast Guard	10780	NASA air/ground
5692	U.S. Coast Guard air/ground	11176	U.S. Air Force, air/ground
5696	U.S. Coast Guard air/ground	11182	Scott Air Force Base, air/gnd
5703	Tactical Air Command	11200	RAF, flight weather
5812	"Spy numbers" broadcasts	11233	Canadian Air Force air/ground
6506.4	U.S. Coast Guard ships	11234	RAF, air ground
6518.8	Inland waterways	11243	Strategic Air Command
6521.9	Mississippi River barges	11246	U.S. Air Force, air/ground
6577	International airlines	11282	International airlines
6586	International airlines	11538	U.S. Navy, Mars
6604	Flight weather	12429.2	Ship to shore
6673	NOAA hurricane hunters	13113.2	U.S. Coast Guard marine weather
6683	Andrews AFB, VIP	13181	U.S. Navy
6697	U.S. Navy	13201	U.S. Air Force air/ground
6705	U.S. Air Force air/ground	13215	U.S. Air Force air/ground
6723	U.S. Navy	13241	U.S. Air Force air/ground
6738	U.S. Air Force air/ground	13270	Flying weather
6753	Canadian Air Force	13282	Flight weather
6761	Strategic Air Command	13306	International airlines
6802	"Spy numbers" broadcast	13354	NOAA, hurricane hunters
6927	Andrews AFB, VIP		

**International Broadcasters
(Schedules subject to change)**

4765	Cuba
5960	Canada
6025	Romania
6085	Germany
6125	Spain
6030	American Forces Radio/TV
6175	England
7115	Bulgaria
7165	USSR
7300	Albania
7325	England
7355	USA
9360	Spain
9630	Spain
9755	Canada
11790	American Forces Radio/TV

Time Signals

<u>WWV</u>	<u>CHU</u>
5000	3330
10000	7335
15000	14670



JRC NRD525

The Ultimate Receiver



Whether you are into utilities DX'ing or broadcast band monitoring, the new Japan Radio Company NRD525 is THE ultimate receiver. Crisp, clean, undistorted audio from an internal speaker is complemented by an array of custom controls to assure single-signal reception.

Two hundred memory channels will store your choice of frequencies from the continuous 90 kHz-34 MHz tuning range, in any mode—AM, FM, USB, LSB, RTTY, CW, and FAX. Memory channels may be scanned or searched, each channel storing such information as frequency, mode, bandwidth, AGC timing, and attenuation setting.

Frequencies may be keyboard entered and dial selected. Filters are provided for selectivities of 12, 4, and 2 kHz. A double super-heterodyne circuit (70.45 MHz/455 kHz) features up-conversion for minimum image response, and wide dynamic range (greater than 100 dB) assures excellent intermod immunity. IF and image rejection are typically 70 dB or more. High sensitivity (0.5 uv SSB) catches the weakest signals.

Passband tuning and a notch filter allow precise targeting of signal interference while an effective noise blanker permits rejection of pulse noise. Tone control, BFO, RIT, squelch, RF gain, step tuning, 24 hour clock timer with record activator, computer compatibility, . . . even an optional converter (34-60, 114-174, 423-456 MHz) to extend the receiver's range into VHF and UHF make this a most remarkable receiver. One year warranty from JRC.

Powered by 120/240
VAC or 12 VDC.

"I have never had such service from any supplier in my life. I have been dealing with your company for a few years now, and have always received the royal treatment (even when it's a not-so-pricey item). My hat is off to you all. Other companies should take notice of this because their service is sometimes less than it should be.

—T. Lemaire
Rutherford, NJ

"You could have knocked me over with a feather. This sort of speedy, friendly service is darned rare these days. Count me as a fan!"

—K. Kuzenski
Jackson, LA.

Order RCV1
Retail ~~\$1285⁰⁰~~

You pay only
\$1169⁰⁰

\$10 UPS Shipping
\$20 U.S. Parcel Post
Canadians \$25 Air P.P.

Options available:

(If ordering options only, add \$7 to total order)

VHF/UHF converter, CMK165	.....	\$389 ⁰⁰
RTTY demodulator, CMH530	.....	139 ⁰⁰
Cable for CMH530	.....	69 ⁹⁵
Cable for CMH532	.....	69 ⁹⁵
RS232C interface, CMH532	.....	129 ⁹⁵
300 Hz CW filter, CFL231	Use only	129 ⁰⁰
500 Hz CW filter, CFL232	one	129 ⁰⁰
1.0 kHz RTTY filter, CFL233	.....	129 ⁰⁰
1.8 kHz SSB filter, CFL218	.....	129 ⁰⁰
Service Manual	.....	30 ⁰⁰
External speaker, NVA88	.....	59 ⁰⁰
Headphones (see Kenwood ad, page 7)	plus \$5 UPS	
Installation of one or two filters is \$20 at time of NRD 525 purchase		



ICOM R-71A

The Standard of Comparison Worldwide

This receiver looks as impressive as it sounds, professionally and thoughtfully laid out with easy-to-read panel legends. The brilliant fluorescent display provides frequency information down to tenths of a kilohertz and alerts the listener to other dial settings (mode, memory channel, VFO).

Continuous tuning (100 kHz-30 MHz) with signal resolution of 10 Hz eliminates the need for RIT, even on SSB or RTTY.

A 32-channel memory (plus 2 independent VFO's) stores both frequency and mode and may be scanned or searched. Additionally, the squelch works on the scan mode (as well as normal reception), stopping automatically on a busy channel for monitoring! A real bonus for use with add-on frequency converters.

An effective noise blanker has adjustable controls for optimum reduction of a wide variety of impulse noises, from power line hash to the Russian woodpecker.

An internal speaker produces good audio and tone control adjusts sound to comfort.

Filter selectivity may be further enhanced by the use of the independent notch filter and passband tuning controls.

OPTIONS—Remote operation of the R71-A is possible using the hand-held RC-11 frequency control. It is possible to computer-control the ICOM with an external interface.

Of enormous interest to the visually impaired is the low cost EX-310 speech synthesizer which announces the displayed frequency in English. One year warranty from ICOM.

Order RCV6

Retail
~~\$949~~

ONLY
\$799⁰⁰

\$10 UPS; \$20 U.S. Mail P.P.
\$30 Canada Air P.P.

SPECIFICATIONS

Dimensions 11 $\frac{1}{4}$ "Wx4 $\frac{3}{8}$ "Hx10 $\frac{1}{8}$ "D
 Frequency Stability 50 Hz after 1 hour warmup (10 Hz with optional CR-64 crystal oven)
 Power Required 117/235 VAC, 50/60 Hz (12 VDC with optional IC-CK 70)
 Audio Output 2W min at 8 ohms
 Selectivity (6 and 60 dB points):
 SSB/CW and RTTY—2.3/4.2 kHz (Adjustable to 500 Hz); CW/RTTY narrow 500 Hz/1.5 kHz; AM 6/15 kHz (adjustable to 2.7 kHz); FM 15/25 kHz (with optional EXT-257)
 Sensitivity (internal preamp ON):
 1.6-30 MHz, all modes: 0.15-0.5 microvolts
 Spurious signal rejection 60 dB min.
 Circuit: Quadruple conversion superheterodyne.

ONE OR MORE ACCESSORIES INSTALLED AT TIME OF ORDER—\$20 FLAT FEE

ACCESSORIES

EX 257 FM Mode Detector \$42.50
 SP-3 speaker \$61.00
 (plus \$5 UPS)
 EX299 DC power kit \$12.25
 CR-64 high stability crystal \$63.00
 EX-309 computer interface \$41.50
 EX-310 voice synthesizer \$46.00
 FL-32 CW narrow filter (500 Hz) } Use only \$66.50
 FL-63A CW narrow filter (250 Hz) } one \$54.50
 FL-44A high grade SSB filter, 2.4 kHz . . \$178.00
 RC-11 infrared remote controller \$67.25
 MB-12 mobile monitoring bracket \$24.50
 Service manual \$25.00
 Headphones (see Kenwood ad, page 7).



Kenwood R5000

Kenwood has taken the user-friendly package of their popular R2000 general coverage receiver and upgraded the circuitry with the advanced receiver section of their high quality amateur transceiver, producing a communications receiver of extraordinary performance.

Built-in modes include AM, FM, USB, LSB, CW, FM, and FSK (RTTY). With continuous frequency coverage from 100 kHz to 30 MHz, the R5000 boasts: 100 memory channels which store frequency, mode and antenna selection (two inputs); keypad frequency entry as well as tuning dial; digital frequency display to 10 hertz accuracy; selectable AGC; variable IF shift and notch filter; squelch control; RF attenuator and gain control; dual noise blankers for effective interference rejection; programmable scanning and searching with center-frequency stop; non-volatile memory retains functions even if long-life lithium backup battery fails; dual 24-hour clock timer and muting terminals for recording; and dual 120/240 VAC power supply.

The R5000 receiver features a professional 102 dB dynamic range front end for superior rejection of strong signal interference and a high stability dual VFO is accurate to within 10 ppm over wide temperature excursions. 90-day warranty from Kenwood.

Order RCV-7

And look at these options! (If ordering options only, add \$7.00)

- 108-174 MHz VHF converter, VC20 \$199⁹⁵
- 6 kHz AM filter, YK88A 59⁹⁵
- 2.4 kHz SSB filter, YK88S 79⁹⁵
- 1.8 kHz narrow SSB filter, YK88SN 79⁹⁵
- 500 Hz CW filter, YK88C 79⁹⁵
- 270 Hz narrow CW filter, YK88CN 79⁹⁵
- 12 VDC mobile power cable, DCK2 10⁹⁵
- Voice synthesizer, VS1 54⁹⁵
- IF-232C translator controller 89⁹⁵
- IC-10 interface 29⁹⁵
- Headphones
 - HS5 deluxe black 59⁹⁵
 - HS6 lightweight 39⁹⁵
 - HS7 micro headphones 25⁹⁵
- External speaker, SP430 59⁹⁵
- Mobile mounting bracket 29⁹⁵
- Service manual 20⁰⁰
- Installation of one or more accessories 20⁰⁰

Retail ~~\$849~~ **ONLY \$769⁹⁵**

\$10 UPS Shipping
\$15 U.S. Mail P.P.; \$20 Canada Air P.P.

"I'd like to thank you for your help in selecting a shortwave receiver and antenna. For a beginner, making the right choices can be difficult and may lead to costly mistakes. I find it very gratifying that the head of Grove Enterprises would take the time to deal with customers. Your personal interest and attention are appreciated."

—R. Barber
Silverwood, MI

"I have never been treated so kindly or had items shipped so quickly by any other company."

—R. Baron
Bayonne, NJ

Kenwood R-2000

Outstanding frequency stability makes the R-2000 a natural for SSB, CW and RTTY reception. Digital readout with 100 Hz resolution for pinpoint accuracy. 10 memory channels (frequency and mode!) may be automatically scanned or searched! 100 kHz-30 MHz continuous coverage.

24-hour clock timer, AM/FM/USB/-LSB/CW, squelch on all modes, center-carrier readout, 6/2.7 kHz selectivity (15 kHz FM), noise blanker, four-step attenuator (0-30 dB), 500/50 ohm antenna input all ranges, variable tuning speeds. AC or 12 VDC operation... and much, much more!



VC 10-108-174 MHz converter \$189⁹⁵
(plus \$3 UPS; add \$10 for installation at time of purchase)

Grove TUN-3 (recommended for use with outside antenna) \$49⁰⁰
plus \$1⁵⁰ UPS

Order RVC8

Retail ~~\$649~~

ONLY \$549⁹⁵

\$10 UPS Shipping
\$15 U.S. Mail P.P.; \$20 Canada Air P.P.



Yaesu FRG8800

General Coverage Communications Receiver

Presented by popular demand! The FRG8800 has earned an excellent reputation for high performance at modest cost. Featuring continuous frequency coverage from 150 kHz to 30 MHz, VHF coverage (118-174 MHz) can be added with the optional FRV-8800 converter.

This full-featured receiver offers direct keypad frequency entry and wide or narrow bandwidth AM, SSB, CW, and FM. Modes are stored with frequencies in the 12 channel memory bank.

Additional features include fast/slow AGC, bar graph S meter, wide/narrow noise blanker, fast/slow tuning dial selection, dual 24-hour clocks for local and universal time, large LCD frequency display to 100 hertz readout, selectable memory scan and search, squelch, tone, and attenuator controls.

A high quality internal speaker is included along with a recorder activator jack. An optional interface (FIF CAT) allows computer control of the FRG8800, permitting unlimited additional memories, automatic tuning, custom scanning programs, and even signal voting for best reception.

~~RETAIL~~
~~\$699⁹⁵~~

ONLY
\$599⁰⁰

Order RCV5

\$10 UPS Shipping
\$15 U.S. Mail P.P.; \$20 Canada Air P.P.

ACCESSORIES

Add \$7 to total order if only accessories are ordered

FRV8800 VHF converter \$129⁹⁵
plus \$3 UPS

FIF CAT computer interface \$79⁹⁵
plus \$3 UPS

SPECIFICATIONS:

Sensitivity:

150-1600 kHz: 30 uV AM; 3 uV SSB (10 dB S+N/N)
1.6-30 MHz: 4 uV AM; 0.4 uV SSB (10 dB S+N/N)
1.6-30 MHz, 1 uV FM narrow (20 dB S+N/N)

Selectivity kHz (-6/-50 dB)

AM wide: 6/15
AM narrow/SSB: 2.7/8
FM narrow: 12.5/40

Power requirements:

100/120/220/240 VAC @ 35 VA, 50/60 Hz;
12 VDC optional

Dimensions: 13"W x 4½"H x 9"D

Weight: 13½ lbs.

The Sangean ATS-803

Just look at these features:

AM/SSB/CW reception from 150 kHz to 30 MHz

FM from 87.5-108 MHz

Keypad frequency entry as well as tuning dial

Illuminated LCD frequency readout

Scanning with 14 memory channels

Wide/narrow selectivity switch

Separate bass and treble controls

Direct selection of twelve shortwave broadcast bands

Clock with preset frequency alarm and sleep function

Battery or AC power

Headphone jack for stereo FM listening

Five-step LED signal strength indicator

BFO and RF gain controls

External antenna jack for long distance reception

180-day warranty from Sangean.

Identical to Radio Shack DX440 and EEB Ambassador 2020.



Whether you are a beginner looking for a high performance portable at low cost, or a seasoned SWL planning on a second receiver, the Sangean ATS-803 offers surprising performance at such a budget price.

This receiver is clearly **the most feature-packed, high performance portable under \$200!**

Order RCV4

Former nationally advertised price:

~~\$199~~

Grove price:

\$179

Plus \$5 UPS,
\$10 U.S. Mail Parcel Post
\$15 Canadian Air Parcel Post

Recommended accessories: AA cells for microprocessor (2 required); D cells for portable power (6 required).



SONY ICF-2010

Yes, this is a full-featured portable for the serious shortwave listener. With a frequency coverage from 150-30,000 kHz (AM/SSB), 76-108 MHz (FM) and 116-136 MHz (AM aircraft), the 2010 has both direct-frequency keyboard entry as well as a tuning dial. A 32-channel memory may be scanned and frequency readout is on a crisp liquid crystal display.

Synchronous detection allows interference-free reception on many stations difficult to hear on other radios.

Separate RF gain control and attenuator switch accommodate a wide range of signal strengths.

Narrow/wide selectivity switching, 12/24 hour clock/timer allows up to 4 automatic on/off cycles per day for



frequencies and times of your choice, 10-step LED signal strength meter, audio tone selection for speech or music, and 10 station direct-access keyboard combine to make this Sony product a remarkable value for beginners or seasoned SWL's.

Accessories supplied include AC adaptor, earphone, shoulder strap, wire antenna, external antenna connector, and shortwave handbook. All this and a one-year warranty from Sony besides!

Order RCV2

Manufacturer's
Suggested Retail

~~\$429~~⁹⁵

Grove discount price:

\$310⁰⁰

⁵ UPS Shipping

¹⁰ U.S. Mail P.P.; ¹⁵ Canada Air P.P.

"Sony's ICF-2010 represents a qualitative advance over conventional radios. It's the first widely-distributed receiver to operate in the synchronous exalted-carrier selectable sideband (ECSS-s) mode. . .to reduce interference and distortion far more effectively than can a conventional shortwave radio."

—Larry Magne, 1986 World Radio TV Handbook

CALL FOR AVAILABILITY

Sony ICF-PRO80

Imagine—150 KHz-216 MHz continuous coverage in a hand-held, digital receiver! Drift-free, quartz-synthesis tuning with professional features like squelch, up/down step tuning, priority scan, search, 40 memory channels, direct channel access, and accurate, illuminated LCD frequency readout.

Worldwide shortwave reception at your fingertips—AM and SSB—as well as VHF aircraft and police/fire communications, all on one 40-channel scanner! Extend the telescopic antenna and tune in those in-between frequencies as well—low frequency beacons, medium wave broadcast, hams, government, military, FM and TV broadcast, 72-76 MHz midband communications, VOR navigation, and more!

True to the professional design of the PRO80, wide and narrow selectivity (6.0 and 3.8 kHz @ -50 dB) assures excellent inter-

ference rejection. A 2¼" internal speaker is driven by a powerful 400 milliwatt audio amplifier. The radio's basic 150 kHz-108 MHz tuning range is extended to 216 MHz by a tiny, quick-connect converter.

Compact (3½" x 7" x 2") and lightweight (1½ lbs.), the handsome gray PRO80 may be secured discretely in a small attache case or may be carried by its shoulder strap and case. Operates from four AA flashlight cells (not included) or from optional rechargeable batteries and/or AC wall charger/adaptor.

Order RCV3

Suggested retail:

~~\$499~~

Grove price only

\$329

⁵ UPS Shipping

¹⁰ U.S. Mail P.P.; ¹⁵ Canada Air P.P.

Recommended accessories: ACC 20 wall adaptor (\$9.95)





The INFOTECH M6000 (V.5)

Automatic Data Reader

*The Most Advanced
Multimode Demodulator Ever!*

Imagine a stand-alone decoder that plugs into your receiver's speaker or earphone jack—no computer or interface required—which provides on your video monitor or printer the text of messages sent in Morse Code (5-120 wpm), Moore code, teletype, bit inversion, TOR (ARQ and FEC), packet (300/1200 baud), ASCII (75-1800 baud), and even time division multiplex (86-200 baud) . . . and you have the M6000!

But this multimode capability is just the beginning. Your new M6000 allows copy of any RTTY speed (37-251 baud) at any shift (85-1200 Hz), as well as TOR—and it can tune them automatically! Surveillance mode provides simultaneous monitoring and automatic display of active TDM channels!

And how about this feature: Programmable sel-cal allows you to select up to three key words which, when copied by the microprocessor, will automatically start the printer! External computer control is also provided for full automation of this powerful demodulator. Ten user-programmable format memories allow instant selection of popular modes and shifts.

An on-screen status line alerts you to the settings of the instrument at all times and may be dumped to the printer.



Additional LED status lights assist proper adjustment, as well as displaying accurate band readout.

And, as a bonus, parallel (Centronics) and serial printer outputs are both included at no additional cost!

Operates from 120/240 VAC, 50-60 Hz (internally filtered for reduced interference).

This quick look at this new miracle machine is just the icing on the cake—send now for an information-packed specification sheet. You will be astounded at the number of features built in at such a low price! 180-day warranty.

Dimensions: 16 $\frac{3}{8}$ "W x 3 $\frac{1}{2}$ " H x 12 $\frac{3}{4}$ "D. **Weight:** 8 lbs. (Shipping Weight, 12 lbs.)

Order DEM 1

Retail ~~\$947⁰⁰~~

ONLY

\$840

\$5 UPS Shipping

\$15 U.S. Mail Parcel Post

\$22 Canadian Air P.P.



Infotech M800 (V.2) Facsimile Demodulator

AFFORDABLE FAX—that's the best description for this high quality facsimile demodulator which attaches between your receiver's external speaker jack and your Epson FX85, FX86, LQ800, or LQ1000 printer using plain paper, not expensive photochemical or thermal paper.

Print weather maps, news photos, graphs, and charts off the air with superb 16-level contrast definition. Automatically selects synchronization, IOC and speed, faithfully recreating high quality images as you watch!

Serial input allows your M800 to be shared with the M6000 (or M600) multimode demodulator or even your home computer for printed copies of text.

Order DEM2

ONLY
\$499⁰⁰

\$5 UPS Shipping

\$15 U.S. Mail P.P.; \$22 Canada Air P.P.

6' shielded parallel printer cable \$29 (free shipping with M800)

SPECIFICATIONS

Printer output: Centronics parallel

Controls: On/off, start/stop, frame, speed, format, direction, polarity, AM/FM

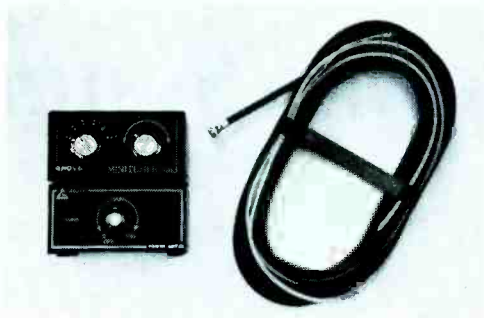
Auxiliary input: 300/600 baud from RTTY demodulator or computer

Speeds: 60/90/120/240 LPM

Index of cooperation: 288/576

Power required: 120 VAC, 60 Hz or 12 VDC (plug included)

Dimensions: 10 $\frac{1}{2}$ "W x 2 $\frac{1}{2}$ "H x 7"D



Grove's Indoor SWL Antenna System

Connects to any receiver equipped with an external antenna jack

Left: Hidden Antenna, shown coiled, with optional Power Ant III and Minituner. Drawing depicts antenna in extended position, ready for use.

Our "Hidden Antenna System" is your key to exciting short wave reception without an outside antenna!

Here's the apartment dweller's dream—a high performance, amplified indoor antenna system for general coverage shortwave, medium wave and even scanner monitoring.

This 66-inch, thin profile, flexible wire antenna can be tucked in a corner, hung behind a drape—just about anywhere out of sight. And when connected to the powerful PRE-3 signal booster, you have instant total spectrum coverage from 100 kHz to over 1000 MHz!

Yes, global short wave reception will be at your fingertips, and you can operate two radios at one time!

Designed for use with the Grove Power Ant III

The Grove PRE-3 Power Ant has taken all the best from its successful predecessors and combined them into one powerful signal booster for scanners, short wave and medium wave receivers, even TV and FM stereos!

Equipped with a high gain, low noise, solid state amplifier stage, the PRE-3's front panel control allows custom selection of up to 30 dB of amplification!

What you need to order:

ANT-6 Hidden Antenna	\$8.95 (free shipping)
PRE-3 Power Ant III	\$39 (plus \$1 ⁵⁰ UPS, \$3 U.S. Parcel Post, \$4 Canada)
ACC-20 AC adaptor	\$9.95 (free shipping with PRE-3)
ACC-60 receiver cable	\$7.50 (you specify connector or receiver model; one for each receiver)

100 kHz-1000 MHz



Add the Grove Minituner for Incredible Reception!

The addition of the Grove Minituner to the ANT 6/PRE-3 combo will allow signal peaking to perfection as well as eliminate intermodulation and image interference on your general coverage receiver.

Here's what you will need in addition to the combo above:

TUN-3 Minituner	\$49.00 (plus \$1 ⁵⁰ UPS, \$3 U.S. Parcel Post, \$4 Canada)
ADP-1 UHF/F adaptor	\$5.00 (free shipping)
ADP-2 F/PL-259 adaptor	\$5.00 (free shipping)

150 kHz-30 MHz





Grove's Outdoor SWL Antenna System

Connects to any receiver equipped with an external antenna jack

1. Start with . . .



High performance, low cost shortwave/longwave dipole antenna designed for total 100 kHz-30 MHz coverage without the gaps found in more expensive trap antennas.

Modeled after the famous Grove all-band transmitting dipole, the 66-foot SKYWIRE is off-center fed, designed specifically for serious SWLs . . . Includes pre-measured stranded copper antenna wire, porcelain end insulators, custom center insulator for your PL-259 coax connection, and full instructions.

ANT-2 Only **\$19** (plus \$1.50 UPS; \$3 U.S. Mail Parcel Post; \$4 Canada Air P.P.)

2. Add the Acclaimed Minituner

The addition of the Grove Minituner to your outdoor shortwave antenna will allow signal peaking to perfection as well as eliminate intermodulation on your general coverage receiver. Comes equipped with standard UHF (PL-259) connectors. Special 1/8" miniplug adaptor for Sony and similar portables, add \$5.00.



Plus \$1⁵⁰ UPS
\$3 U.S. Parcel Post
\$4 Canada Air P.P.

Order TUN-3 **\$49**

For blockbuster reception, even with a smaller antenna connected to your Minituner . . .

3. Add the Amazing Power Ant III

The Grove PRE-3 Power Ant has taken all the best from its successful predecessors and combined them into one powerful signal booster for short wave and medium wave receivers.

Equipped with a high gain, low noise, solid state amplifier stage, the PRE-3's front panel control allows custom selection of up to 30 dB of amplification!



Two output connectors are provided allowing you to use two receivers on one antenna at the same time! All connectors are type F for maximum signal transfer.

What you need to order:

PRE-3 Power Ant III **\$39** (plus \$1⁵⁰ UPS, \$3 U.S. Parcel Post, \$4 Canada)
ACC-20 AC adaptor **\$9.95** (free shipping with PRE-3)
ACC-60 receiver cable **\$7.50** (specify connector or receiver model; one for each receiver)
ADP-1 UHF/F adaptor **\$5.00** (free shipping with PRE-3)

"I hooked up the Skywire to my Panasonic RF-3100 and it sounded like a new receiver. I've heard things in the past couple of days I didn't even know was out there. With the Minituner III hooked up I heard even more! I don't know why I went as long as I did without buying either one of them. Now I'm using them on my Sony ICF-2010 and again I can't believe the difference."

Mike Day, OH.

"Considering that Botswana is the farthest place on earth from Hawaii, getting fair to good reception from a 50 kW station is not bad—thanks to the PRE-3 and TUN-3."

—R. Jones
Kailua, HI

Power Ant III Specifications

Gain	30 dB ± 1 MHz
	29 dB ± 10 MHz
	27 dB ± 50 MHz
	21 dB ± 150 MHz
	13 dB ± 450 MHz
	10 dB ± 900 MHz
Noise figure	2 dB nominal
Usable frequency range	10 kHz-1300 MHz
Input/output impedance	50-75 ohms nominal
Power required	12 VDC ± 40 ma
Connectors	F type
Dimensions	4"W x 2"H x 3"D
Weight	.6 ounces
Power Requirement	DC cord supplied

A Buyer's Guide to Scanner Listening

CAVEAT: ECPA '86

The Electronic Communications Privacy Act of 1986 prohibits the monitoring of certain services receivable on scanners. Although there is no evidence at present that the new law is being enforced, violations are punishable by fine and/or imprisonment. The following list is presented as a guide and Grove Enterprises assumes no liability for its accuracy or interpretation.

The law forbids monitoring:

- | | |
|--|--|
| 1. Encrypted or scrambled signals | 3. Mobile telephones and voice paging |
| 2. Paid Subsidiary Carrier Authorization (SCA) | 4. Remote broadcast and studio/transmitter links |

You may monitor any other transmission "readily accessible to the public" including public safety, federal and military, aircraft and maritime, amateur and CB, business and industrial, private land mobile, cordless phones, and any interference-causing protected transmission only long enough as necessary to identify its source.

CHOOSING A SCANNER

The consumer electronics marketplace bulges with products competing for your dollar. By following a few simple rules you will make the right choice in buying that new scanner.

FREQUENCY RANGE:

There are three conventional frequency bands which have been monitored for years by scanner buffs: 30-50 MHz (VHF low band), 144-174 MHz (VHF high band) and 450-512 MHz (UHF). Some scanners include 138-144 and 148-150 MHz (military operations), 406-420 MHz (federal government), and 420-450 MHz (amateur) bands as well.

The addition of the civilian VHF aircraft band (118-136 MHz) provides another interesting target for monitoring, as does the emerging 806-960 MHz band, now in use in all metropolitan areas. A few receivers include the military UHF aircraft band (225-400 MHz).

The prospective scanner buyer should decide which of these aspects of listening are of greatest interest to him before purchasing his new scanner.

PROGRAMMABLE OR CRYSTAL?

Generally, stay away from crystal type scanners unless you know you will not be changing frequencies in the near future. For the majority of listeners, keyboard- programmable scanners are the way to go--no two ways about it.

MOBILE, BASE OR HAND HELD?

Scanners come in a variety of models to meet the particular needs of the listener. Do a lot of driving? Install a mobile unit. Constantly in and out of the car, office or home? You may prefer a handheld. Do most of your listening in the office or home? A base unit would be more practical.

Many models are capable of more than one application, accepting power from AC mains as well as the mobile battery supply. Special adaptors like the Grove ACC19, ACC20 and ACC23 are available for handheld scanners for external power as well, thus conserving the built-in battery charge.

Most hand-held scanners have small speakers which do not compete well in a noisy environment; an earphone or external speaker can usually solve that problem.

WHICH SCANNER IS THE BEST?

Like answering "Which car is the best?", we must list qualifications. At the present time, programmable scanners are available from eight manufacturers: Uniden (Bearcat), Regency, J.I.L., Radio Shack, Cobra, and Fox. The Yaesu FRG-9600 and ICOM R-7000 are VHF/UHF general coverage receivers with scannable memories.

While there are individual variations among units as they leave the assembly line, most of the popular models have excellent sensitivity and reasonable selectivity (reject adjacent channel interference), but are vulnerable to intermodulation and image interference from strong signal overload.

Generally speaking, you get what you pay for.

Programmable Scanners Presently Manufactured (Recommended models)

<u>ICOM</u>	<u>RADIO SHACK</u>	<u>REGENCY</u>	<u>BEARCAT</u>
R7000	PRO-2004	TS2	BC 600XLT
	PRO-38	HX1500	BC 800XLT
		Z60	BC 210XLT
			BC 200XLT
			BC 100XLT

Scanner Antennas and Accessories

HANDHELD

The whip antenna included with your scanner is fine for local reception of strong signals, but if you are interested in reaching out further, a larger external antenna is necessary. Hand held scanners need all the help they can get.

For handheld scanners, the Grove ANT-8 full-length whip will provide some increase in range and capture of weak signals; it is equipped with a BNC base, attachable to the Bearcat 100 (late model), 100XL, 50XL, 70XL, 75XL, 200XL, Regency HX1000, HX1200, HX1500, Radio Shack PRO-30, PRO-31, PRO-32, PRO-38, and hand-held transceivers which are equipped with a BNC connector.

MOBILE

In mobile installations, a scanner's built-on whip is partially shielded from receiving by the metal vehicle body; an external antenna is required for adequate pulling power. Rooftop mounting is ideal since the wide metal surface below provides an excellent ground plane with uniform response in all directions.

The AM/FM car radio antenna which came with your car is not designed to operate on scanner frequencies; however, it can produce surprisingly good reception when used with a quality adaptor like the Grove ANT-63 multicoupler. If you don't want to add another antenna to your vehicle and are content with local monitoring, go the multicoupler route.

Still, no antenna works better than one designed for the job and there are a multitude from which to choose for mobile scanner reception. They can be mounted on a fender, bumper, trunk, or, best of all, the car roof.

If mounted on a fender cowl or trunk lid, the pattern favors the direction of the car body. Modern magnetic-base antennas like the multiband Grove ANT-10 have strong holding power capable of withstanding road speeds well in excess of the legal limit. Additionally, the ANT-10 is available with either a Motorola or BNC connector to fit all mobile scanners.

Mobile scanner antennas are admittedly compromised by their short lengths (poor low-band reception) and decoupling coils (narrow frequency ranges). The mobile scanner enthusiast must be content with shorter distances than he would enjoy with his base antenna.

BASE

Although government discone antennas are very efficient for broadband use, many low-cost scanner discones fall far short of their potential. Usually advertised for 30-900 MHz or more, they are poor performers under 80 MHz, thus compromising low band reception, and are variable in reception throughout the rest of the range. The ICOM AH-7000, and Diamond D130 are high performance exceptions.

The Grove ANT-5B OMNI is recommended for basic scanner installations where listeners are concerned primarily with communications within a 50-mile radius. Extended omnidirectional reception is possible with the Channel Master 5094 Monitenna, Avanti 801 and the discones listed above.

The Grove ANT-1B SCANNER BEAM is the highest performance scanner antenna ever manufactured. It is directional, offering up to 8 dB gain over other antennas in its forward direction. It may be turned by any lightweight TV antenna rotator.

The SCANNER BEAM is nearly omnidirectional at low band (30-50 MHz), becoming increasingly directional with increasing frequency. Because of their higher strengths, local signals will still be clearly receivable no matter in which direction the antenna is pointed.

COAXIAL CABLE

At these higher frequencies, common coax like RG-58/U will actually absorb signals. We recommend common RG-6/U cable TV coax which has exceptionally low loss and 100% shielding characteristics combined with small diameter, high flexibility and low cost.

For the lowest possible losses use premium cable like Belden 9913 or RG-11/U mini. Connectors are readily available from hobby radio outlets, TV and video accessory stores.

Do not be concerned with impedance matching; although cables may be rated 50 or 75 ohms, no antenna male maintains a constant impedance over the wide frequency ranges required by a scanner.

REMEMBER: THERE IS NO SUBSTITUTE FOR A GOOD ANTENNA AND COAX

TOP 100 SCANNER FREQUENCIES

The spectrum above 30 MHz is saturated with two-way intrigue--if you know where to look. Land mobile, air to ground, ship to shore, military and federal government, public safety, hams, businesses, trains--these and other services are found from 30 to 512 and 806 to 960 MHz.

34.71	Fish & Wildlife	143.46	Air Force MARS	167.5625	FBI
34.83	Fish & Wildlife	143.99	Army MARS	170.200	Fed'l disaster net
35.02	McDonald's order window	146.52	Ham walkie talkie	170.875	Federal Prisons
35.22	Paging	148.15	Civil Air Patrol	170.925	Federal Prisons
35.58	Paging	150.00	Russian satellite	236.6	Air Force Towers
35.62	Paging	151.625	Itinerant walkie talkie	241.0	National Guard
35.64	Medical paging	152.0075	Medical paging	243.0	Military aircraft calling/distress
40.07	Nat'l Park buses	152.03-			Mil. flight weather
40.21	Nat'l Park buses	152.21	Paging	255.4	Mil. tower calling
40.45	VA paging	152.51-		257.8	Space Shuttle
40.50	Army Search/Rescue	152.81	Mobile phone	259.7	NORAD secondary
40.68	Industrial devices	154.60	Bus. paging/comm.	264.9	SAC refueling
41.50	Army aircraft	155.16	Hospital/ambulance	266.5	Mil. flight weather
43.22	Paging	155.28	Hospital/ambulance	272.7	Space Shuttle
43.58	Paging	155.34	Hospital/ambulance	296.8	SAC primary
46.75	Pres. helicopter	155.37	Police mutual aid	311.0	SAC secondary
47.42	Red Cross	155.475	Police intersystem	321.0	Navy towers
49.67-		156.8	Boast call/distress	340.2	Mil. flight weather
49.97	Cordless phone handsets/ walkie talkies	157.05	Coast Guard	342.5	NORAD primary
75.00	Airport marker beacon	157.10	Coast Guard	364.2	CG aircraft
121.5	Air emerg/calling	157.15	Coast Guard	381.8	Fed. gov't (shared)
121.75	Russian cosmonauts	159.495	Brinks trucks	408.400	Fed protection service
122.75	Gov't air to air	159.600	Wells Fargo trucks	415.200	Air Force One
122.8	Small airport UNICOM	161.640	Goodyear blimp	415.700	Fed Protection service
122.9	Gov't aircraft	162.40-		417.200	Fed gov't portable
122.925	Natural resources air	162.55	Weather service	418.050	Fed gov't shared
123.05	Helicopter	163.100	Fed gov't portable	418.075	Fed gov't portable
123.1	Air search & rescue	163.200	U.S. Marshal	418.575	Tone paging
123.45	Pilots air to air	163.250	Medical paging	459.675	Wells Fargo trucks
126.2	Military air towers	163.4125	Army Corps of Eng.	460.975	
132.0	Goodyear blimp	163.4375	Army Corps of Eng.	462.95-	
135.575	ATS-3 satellite	165.2875	ATF	463.175	Paramedics
135.600	ATS-3 satellite	165.375	Secret Service	464.550	PGA tournament
135.625	ATS-3 satellite	165.950	IRS	469.500	NASCAR racing
		167.050	FCC	469.9125	Goodyear blimp security
				1090	Aircraft VORTAC



ICOM R7000

Continuous Coverage VHF/UHF Receiver!

Now used by government and military agencies worldwide, the ICOM R7000 provides total spectrum 25-1000 (triple conversion) and 1025-2000 (quadruple conversion) MHz frequency coverage with 100 Hz fluorescent read-out accuracy!

Add to this enormous tuning range 99 memory channels with priority function, keyboard entry or dial tuning (± 5 ppm stability, -10 to 60°C), FM/AM/SSB modes, five tuning speeds (0.1/1/5/10/12.5/25 kHz), S-meter/center tuning meter, 2.8/9/15/150 kHz filter selection, noise blanker, internal speaker with 2.5 watts of audio power, spurious signal suppression greater than 60 dB, high sensitivity (0.5 uv @ 12 dB SINAD FM), and programmable scanning with auto-write memory, and

you have the most advanced scanning receiver ever designed for the serious VHF/UHF listener.

But the features don't stop here. Optional accessories include the RC-12 remote controller, a voice synthesizer to announce frequency settings, and even a serial interface for external computer control!

Order SCN 4

DIMENSIONS: 11 $\frac{1}{4}$ "W x 4 $\frac{3}{8}$ "H x 10 $\frac{7}{8}$ "D; **WEIGHT:** 16 lbs.; **POWER:** 117/240 VAC, 1.5 A

RETAIL

~~\$1099~~

YOU PAY
ONLY
\$950



\$10 UPS Shipping
\$20 U.S. Mail P.P.; \$30 Canada Air P.P.

ACC 67 ONLY \$19⁹⁵

MODIFICATIONS/ACCESSORIES:

High speed scan modification	\$20 ⁰⁰
ACC 67 6"-46" extendable whip antenna (shown)	
*RC 12 remote controller	\$67 ²⁵
*EX310 voice synthesizer	\$46 ⁰⁰
*EX-299 12 VDC power kit	\$12 ²⁵
<i>Installation charge: \$20 for one or more accessories</i>	
TV R7000 video adaptor	\$131 ⁹⁵
Computer interface instructions	\$10 ⁰⁰
Service manual	\$25 ⁰⁰
SP3 speaker	\$61 plus \$5 UPS
MB12 mobile mounting bracket	\$24 ⁵⁰
ADP-3 F to N antenna adaptor	\$5 ⁰⁰
Headphones (see Kenwood ad, page 7)	

See page 23 for antenna for R7000!



Realistic® PRO-2004



Wide Coverage Scanner!

At a Grove Discount Price!

You can walk into your chain retail store and pay \$420 for this new luxury scanner, or you can order it from Grove for only \$389.

The PRO-2004 provides continuous frequency coverage between 25-520 and 760-1300 MHz in your choice of mode—AM, narrowband FM or wideband FM. With no crystals needed, this exceptional unit delivers a wide range of frequencies not found on most scanners—including public service, broadcast FM, military bands and CB!

Search mode finds new channels, with an incredible 300 channels available for storing the ones you like. Rapid 16-channel-per-second scan and search complements this scanner's high sensitivity and excellent selectivity, providing for maximum distance reception, even in crowded band conditions. BNC antenna connector for efficient signal transfer. Built-in speaker and telescoping antenna are included. Jacks provided for external antenna, headphone, external speaker, tape recorder and DC adaptor.

Features include:

- Up-conversion (610 MHz) for best image rejection
- Two-second scan delay
- High-impedance (10 K ohm) recorder output
- Ten memory banks or sequentially scan all 300
- Individual channel lockout and delete
- Stores up to ten search ranges in memory
- Priority on any channel
- Giant, brilliantly backlit LCD shows frequency, channel and function
- Fast/slow scan and search speeds
- Selectable search steps—5, 12.5, 50 kHz (30 kHz on cellular when restored)
- Zeromatic search stop for accurate frequency readout
- Dimmer for night viewing
- Sound squelch skips dead carriers
- Dual 120 VAC/12 VDC power supply

Order SCN 5

ONLY
\$389

Retail ~~\$419~~⁹⁵

Plus \$5 UPS
\$10 U.S. Parcel Post
Canadians: \$15 Air P.P.



Bearcat BC600XLT



New!

Order SCN8

*Compact and Programmable,
the BC600XLT is Suitable
for Mobile or Base Installation*

Measuring a tiny 2" high by 7" wide and deep, this upgraded version of the new BC580XLT programmable scanner is ideal for compact mobile or base installations. Features include user-programmable search ranges, channel one priority, individual channel lockout and delay, direct channel access, and optional CTCSS tone-squelch decoder. Mobile mounting kit, DC cord, AC wall adaptor, plug-in whip, and operating manual are all included at no extra charge!

In addition to normal 29-54, 118-174 and 406-512 MHz coverage, the new 600 also has pre-programmed service search capability like its bigger predecessor, the all-time favorite BC300. Just push a button and the 600 will find active police, fire, aircraft, maritime, emergency, and weather channels!

One hundred memory channels may be scanned sequentially or in five 20-channel banks. Controls are backlit for night use. And look at these switch-activated, plug-in options never before available for a scanner:

"Clearly an exciting new generation of scanners is emerging from Uniden. The BC600XLT is the pacesetter."

—Bob Grove

OPTIONS:

(Installation fee at time of purchase - \$10)

SIGNAL BOOSTING PREAMPLIFIER for weak signal locations. May be switched in or out of circuit.

Order **ACC95** \$25⁰⁰

CTCSS TONE SQUELCH DECODER for selective paging of your unit—ideal for volunteer firefighters, emergency medical teams. All 38 tones may be programmed into your choice of channels. May be switched on or off.

Order **ACC96** \$60⁰⁰

ON/OFF SWITCH which must be used with either or both above options.

Order **ACC97** \$8⁹⁵

Recommended Retail

~~\$389⁹⁵~~

GROVE Discount Price

\$224⁹⁵

\$5 UPS Shipping

\$10 U.S. Mail P.P.; \$15 Canada Air P.P.

**FEATURES:**

- 12 bands:** Including 800 MHz, aircraft, military, "Ham," public safety and Federal Government.
- 40 Channels:** Two bands of 20 channels.
- Instant Weather:** Automatically finds the National Weather Service broadcast in your area.
- Priority:** Channel one checked every three seconds to prevent missing important calls.
- Synthesized:** Enter frequency of your choice.
- Track Tuning:** Patented feature allows scanner to peak on each transmission.
- Scan Delay:** Patented feature adds three-second delay on desired channels to prevent missed transmissions.
- Automatic Search:** Find new frequencies automatically.
- Direct Channel Access:** Go directly to any channel without stepping through other channels.
- Automatic Squelch:** Factory set for easier operation. Use manual for closer adjustment.
- Channel Lockout:** Allows you to skip channels you don't want to hear.

SPECIFICATIONS:

Band Coverage: 10 Bands-Weather Channel

Frequency Range:

10 Meter "Ham" Band (29-29.7 MHz)

Low Band (29.7-50 MHz)

6 Meter "Ham" Band (50-54 MHz)

Aircraft (118-136 MHz)

Military Land Mobile (136-144 MHz)

2 Meter "Ham" Band (144-148 MHz)

High Band (148-174 MHz)

Federal Government:

Land Mobile (406-420 MHz)

70 cm "Ham" Band (420-450 MHz)

UHF Band (450-470 MHz)

"T" Band (470-512 MHz)

800 Band (806-912 MHz)

Channels: 40 Channels (Two 20 Channel Banks)

Scanning Speed: 15 Channels per Second

Display: Vacuum Fluorescent Decimal Display

Controls/Switches: Volume Control; Squelch Control with Auto Squelch

Power Requirement: 117 VAC or 13.8 VDC; 2 AA size Memory Backup Batteries (not included)

Sensitivity:

29-54 & 136-174 MHz (0.6 microvolts)

118-136 MHz (0.8 microvolts), 60% (1 kHz modulation 10 dB SINAD)

406-512 MHz (0.8 microvolts)

840-912 MHz (1.0 microvolts \pm 3 kHz deviation 12 dB SINAD)

Selectivity: -55 dB @ \pm 25 kHz

Audio Output: 1.5 W at 10% T.H.D.

Antenna: Two Telescoping Antenna Included (one for 800 MHz)

Connectors: External Antenna Jacks; External Speaker Jacks; AC Power Jack; DC Power Jack.

Options: External Antenna Plug

Bearcat BC800XLT



*Top of the Line—
With 800 MHz!*

Yes, the BC800XLT features wide frequency coverage: 29-54, 118-136 (AM), 136-174, 406-512, and 806-912 MHz with 40 channels of memory in two banks.

Other features include rapid scan (15 channels per second), powerful 1.5 watt audio amplifier, two telescoping antennas (one for 800 MHz range), better than 1 microvolt sensitivity, 55 dB selectivity @ \pm 25 kHz, instant weather reception, brilliant fluorescent display, AC/DC operation, direct channel access, individual channel delay, priority channel one, fully synthesized keyboard entry.

Dimensions: 10½"W x 3⅝"H x 8"D; *Weight:* 7 lbs., 2 oz.

Order SCN-11

RETAIL
~~\$499~~⁹⁵

Now **ONLY**

\$289⁰⁰

⁹⁵ UPS Shipping

⁹⁵10 U.S. Mail P.P.; ⁹⁵15 Canada Air P.P.



Bearcat BC210XLT



Following in the footsteps of the immensely popular BC210XW and BC20/20, this new Bearcat programmable scanner combines the capabilities of both. Two 20-channel memory banks provide a total of 40 memory channels, and instant weather coverage is available at the press of a button.

SPECIFICATIONS:

Channels: 40 Channels (2-20 Channel Banks)
Scan Speed: 15 Channels per Second
Display: Vacuum Fluorescent
Power Requirement: 120 VAC 60 Hz or 13.8 VDC;
 2 week Interval Capacitor Memory Back-up
Sensitivity:
 29-54 & 146-174 MHz (0.3 microvolts)
 118-136 MHz (0.8 microvolts), 60% (1 kHz modulation
 10 dB SINAD)
 406-512 MHz (0.5 microvolts)
Selectivity:
 -55 dB @ ± 25 kHz
Audio Output: 1.8 Watt at 10% T.H.D.
Antenna: Telescopic Antenna included.
Connectors: External Antenna, External Speaker, AC, DC
Options: External Antenna, DC Power Cord, Mobile Bracket
Size: 10 $\frac{1}{2}$ "W x 3 $\frac{1}{2}$ "H x 8"D
Weight: 5 lbs.

Frequency coverage is 29-54, 118-174 and 406-512 MHz to provide instant access to all major land mobile, maritime and aircraft bands—low, high and UHF. A whip antenna is included for indoor use and an external antenna jack allows use of an outdoor antenna as well.

Excellent sensitivity (average 0.5 microvolts) and selectivity (-55 dB at ± 25 kHz); powerful audio (1.8 watts at 10% THD); and a brilliant fluorescent display combine with internal memory backup, direct channel access, selectable scan delay, individual channel lockout, search with hold, priority, fast speed (15 channels per second), and automatic squelch.

The BC210 XLT can be operated from 120 VAC or from a 12 volt source.

Order SCN-3

ONLY
\$199

Plus \$5 UPS
 \$10 U.S. Parcel Post
 Canadians: \$15 Air P.P.

From Regency:

Turboscan 800!



Order SCN2

List Price
\$499

Grove Price Only

\$319⁹⁵

\$5 UPS Shipping

\$10 U.S. Mail P.P.; \$15 Canada Air P.P.

CALL FOR AVAILABILITY

The Regency TS-2 boasts the fastest scan and search rates in the industry—50 channels per second—more than three times faster than the next closest competitor. Six memory banks store up to 75 separate frequencies, selectable by groups or in a continuous sequence.

Frequency coverage is wide: 29-54 MHz FM (ten meter amateur, low band and six meter amateur), 118-174 MHz (AM aircraft and FM high band), 406-512 MHz FM (UHF federal government and land mobile), and 806-950 MHz (microwave mobile).

Other features include instant weather channel, priority, direct channel access, and scan delay. The full-stroke, rubberized keypad is backlit for high visibility.

Accessories included are telescopic antenna, AC power supply, DC mobile cord, and mobile mounting bracket.



Bearcat BC200XLT

Finally, a high performance handheld programmable scanner which includes aircraft and all land mobile bands, including 800 MHz!

Frequency coverage is 29-54, 118-174, 406-512, and 806-960 MHz! 200 memory channels may be stored in 10 banks of 20 channels each or scanned sequentially.

This feature-packed handful offers ten priority channels, search, lockout, and delay and comes equipped with detachable Nicad battery pack, AC charger, leather holster, and BNC flex whip.

The BC200XLT is the most powerful hand-held scanner ever released to the public and is now available from Grove Enterprises at a super discount price!

Order SCN9

Grove Discount Price

CALL FOR AVAILABILITY

Retail
\$449⁹⁵

\$264⁹⁵

^{\$5} UPS Shipping
^{\$10} U.S. Mail P.P.; ^{\$15} Canada Air P.P.



The 'Best Buy' Bearcat

The **BC-100XL**, with aircraft! Yes, the all-time popular Bearcat 100 hand-held programmable scanner has aircraft reception as well as 16 channel memory, illuminated LCD display for night viewing, search, rapid scan (15 channels per second), direct channel access, lockout, delay, low battery indicator, priority, and keyboard lock.

Frequency coverage is 30-50, 118-174, 406-512 MHz. Accessories included: Rubber ducky antenna (with BNC base), AC adaptor/charger, Nicad batteries, earphone, and carrying case.

Handsome black case with white chrome accents.
Dimensions: 7½"H x 2⅞"W x 1⅜"D; Weight: 2 lbs., 10 oz.

See optional accessories on pages 24 and 28

Order SCN16

Now Only

Retail \$349⁹⁵

\$199⁰⁰

^{\$3} UPS Shipping
^{\$5} U.S. Mail P.P.; ^{\$8} Canada Air P.P.





Realistic® PRO-38

Now—a programmable handheld scanner at an incredibly low price! Ten memory channels cover 29-54, 136-174 and 406-512 MHz land mobile services. LCD channel display can be reviewed for frequency as well.

Additional features include three-second scan delay, keypad lock switch, individual channel lockout, audible low-battery indicator, and direct channel access.

Comes equipped with belt clip, built-in speaker and earphone jack, flex antenna. Requires six AA cells (standard or Nicad) or 12 VDC adaptor.

(See page 28 for ACC20)

ACCESSORIES

ACC20 universal power supply/charger
 \$9.95
 (Free Shipping with PRO-38)

ACC 23 mobile cigarette lighter adaptor
 \$9.95
 (Free Shipping with PRO-38)

Order SCN 1

Retail Price
~~\$139⁹⁵~~

Grove Price Only

\$124⁹⁵

\$3 UPS; \$5 U.S. Mail P.P.
 \$8 Canada Air P.P.

Regency HX-1500

Order SCN 6

Regency steps ahead once again. Just look at these features:

- 55 memory channels
- Direct channel access
- Rapid scan and search
- 25-60 MHz FM, 136-176 MHz FM, 406-420 MHz FM, 440-520 MHz FM, and 118-136 MHz AM frequency range
- Channel one priority
- 0.7 uV average sensitivity
- ±7.5 kHz selectivity
- 2 second scan delay, 4 second search delay
- Individual channel lockout

Four banks of channels may be scanned jointly or separately with channel overlap. Features a top-mounted scan button for easy control when worn on belt.

This fine unit's non-volatile memory never needs battery backup. Unit requires eight standard AA cells or Nicad rechargeables.

Accessories include belt clip, earphone and flexible antenna. Options available: Drop-in charger, wall mounted charger, carrying case and batteries. Attach an extendable whip antenna for increased range (see page 24).

Grove's new low price

ONLY **\$219⁹⁵**

\$3 UPS Shipping;
 \$5 US Mail P.P.; \$8 Canadian Air P.P.



Manufacturer's Suggested Retail
~~\$369⁹⁵~~



ORDER ANT1B



Only
\$49⁰⁰

³ UPS
⁶ U.S. Mail P.P.
⁹ Canadian Air P.P.

SCANNER BEAM

High Performance Antenna

Our world-renowned Scanner Beam provides unexcelled 30-50 MHz low band reception, 108-136 MHz aircraft, 136-174 MHz high band, 225-400 MHz military aircraft and satellites, 406-512 MHz UHF, and 806-960 MHz microwave mobile.

HAMS NOTE—can be used for transmitting up to 25 watts on 144, 220 and 420 MHz bands.

May be used with inexpensive TV antenna rotator for boresight accuracy, or fixed in one direction as required for those elusive, distant stations. Local signals still come in loud and clear from all directions.

Balun transformer, offset pipe and all mounting hardware included (requires TV type F connector on your coax). Approximate size 6'H x 4'L.

"I hear 800 MHz signals 40 miles away and aircraft up to 200 miles with my Grove Scanner Beam.

—L. Reeves, Wagoner. OK

OMNI



The exciting OMNI, developed by Bob Grove, is a non-directional vertical dipole with continuous 30-960 MHz coverage. A single 66-inch element works on the harmonic principle to provide in- and out-of-band scanner reception throughout the VHF/UHF spectrum

Listen to low band, high band, UHF, military and civilian aircraft bands, even cellular radiotelephone, all on one low cost antenna.

All mounting hardware included.

Requires TV Type F connector on your coax.

PREMIUM LOW-LOSS RG-6/U CABLE WITH CONNECTORS

Simply tell us what connectors you want installed, or what antenna and radio you will be using. We will provide you with a cable which is ready to attach between your antenna and receiver! Connectors/adaptors available: F, PL-259 (UHF), BNC, N, Motorola.

CB50 (50 feet w/ connectors) \$19.95 plus \$1⁵⁰ Shipping
CB100 (100 feet w/ connectors) \$29.95 plus \$2⁵⁰ Shpg.

ANT-5B only

\$19⁰⁰

\$2 UPS Shipping;
\$4 US Mail P.P.; \$6 Canadian Air P.P.



Professional Wideband Discone

Best Discone on the Market for VHF/UHF Receivers

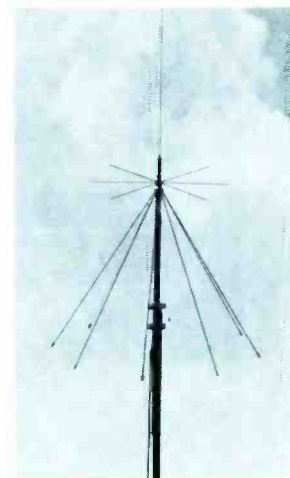
The discone antenna is used by government and military agencies worldwide because of its recognized high performance, wide bandwidth characteristics. Now ICOM offers a professional grade discone at a popular price.

Designed for use with the ICOM R7000 receiver (25-2000 MHz continuous coverage), the AH7000 discone consists of 16 rugged, stainless steel elements and is capable of transmitting

up to 200 watts in the amateur 50, 144, 220, 432, 900, and 1200 MHz bands.

As a receiving antenna the AH7000 is superb, outperforming any omnidirectional antenna we have ever used for continuous 25-1000 MHz (and above) coverage. A base-loaded, vertical top element is used as a low band (30-50 MHz) frequency extender.

The elements are arranged on a 24-inch support pipe equipped with two strong mounting brackets to accommodate any standard mast-pipe (1" to 2½" diameter). Included is approximately 50 feet of low loss 50 ohm coaxial cable with N connectors factory installed. Receiver adaptors available at additional cost at time of order).



ONLY
\$89⁹⁵

plus \$3 UPS
\$5 U.S. Mail Parcel Post
Canadians: \$10 Air Parcel Post

SPECIFICATIONS:

Frequency coverage 25-1300 MHz
Impedance 50 ohms nominal
Power rating 200 watts
Connector Type N
Antenna style Discone
Vertical length 66 inches
Weight 2.2 pounds

Order ANT-3



Low-Profile Powerhouse!

Mobile Scanner Antenna

Only 20" in height and with a professional black appearance, this strong, fiberglass helical antenna is a natural for all mobile scanners.

The Grove mobile antenna operates as a helical quarter wave on low band (30-50 MHz), full length 1/4 wave on high band (118-174 MHz) and a 2 dB collinear gain antenna on UHF (406-512 MHz).

A strong, chrome-finished 3 1/2" magnetic base assures fast holding power at high road speeds. Twelve feet of low loss coaxial cable, terminated with standard Motorola plug, provides 50 ohm matching for optimum signal reception.

Order ANT-10

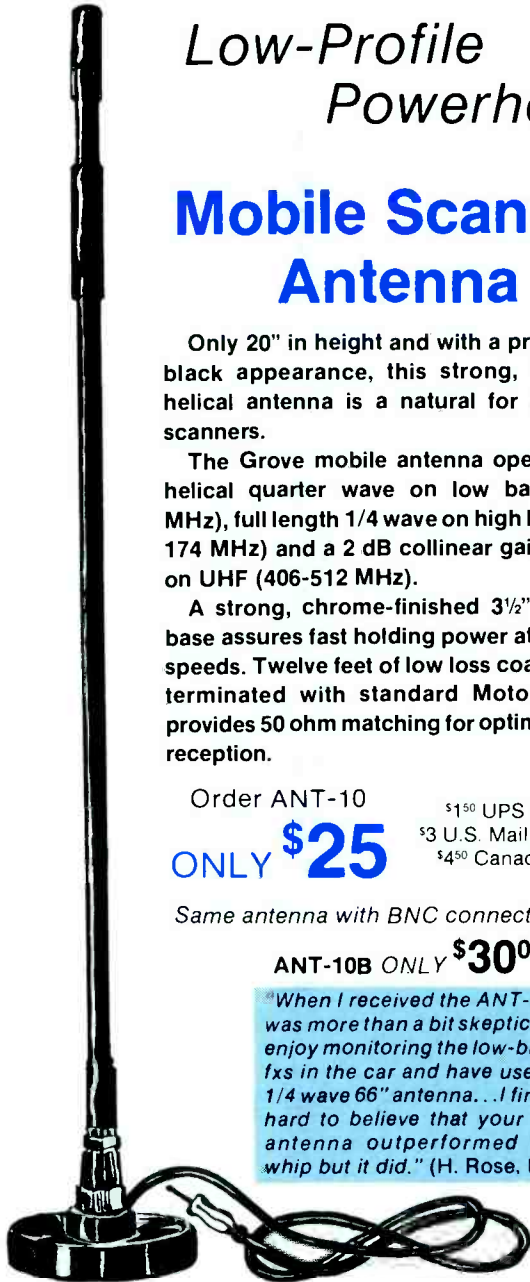
ONLY **\$25**

\$1⁵⁰ UPS Shipping
\$3 U.S. Mail Parcel Post
\$4⁵⁰ Canada Air P.P.

Same antenna with BNC connector, order

ANT-10B ONLY **\$30⁰⁰**

"When I received the ANT-10 I was more than a bit skeptical. I enjoy monitoring the low-band fxs in the car and have used a 1/4 wave 66" antenna... I find it hard to believe that your 20" antenna outperformed the whip but it did." (H. Rose, NY)



Extend the Reception Range on Your Handheld Scanner!

Universal full-length antenna for handheld scanners and transceivers! Standard BNC base allows custom length extension from 7 to 46 inches! Great for amateur hand-helds and scanners like the Bearcat 50XL, 70XL, 75XL, 100XL, and 200XL, Regency HX-1000, -1200, and -1500, Radio Shack PRO-31, -32, and -38, and Cobra SR10, SR12, and SR15. Replace that range-limited rubber ducky with a full-sized whip and stand back. Guaranteed to increase range.

"The Grove ANT-8 full-length antenna is fantastic. It's increased range for scanner enthusiasts makes its price about one-fourth its real value! I've retired my rubber ducky."

George Finger
Watkinsville, GA

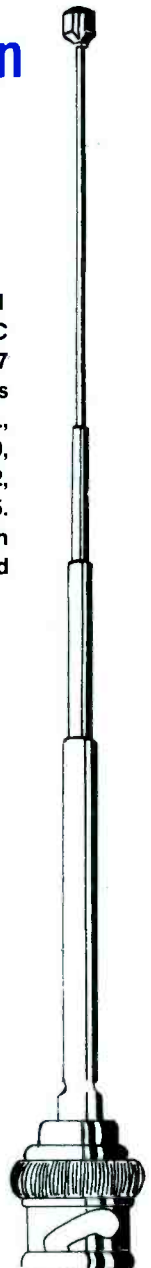
Order ANT-8

Universal Full-Length Antenna

ONLY
\$12⁹⁵

plus \$1⁵⁰ UPS
\$2⁵⁰ First Class
U.S. or Canada

(Adaptors for threaded connectors on early BC-100 and Regency HX-2000 available from Centurion International, P.O. Box 82846, Lincoln, NE 68501-2846. Phone: 402-467-4491.)



Convert Your Car Antenna into a Scanner Antenna!

Mobile Antenna Multicoupler

How would you like excellent mobile scanner reception using your existing AM/FM auto antenna? That's right; no holes, no magnets, no scratched paint or clumsy cables going through doors and windows. Ideal for low-profile monitoring installations where a separate scanner antenna is undesirable.

The new Grove ANT-63 Mobile Multicoupler takes only seconds to install and allows simultaneous use of your AM/FM car radio as well as your mobile scanner. Equipped with standard Motorola connectors for your car radio and most scanner models.



Order ANT-63

ONLY
\$14⁹⁵

\$1.50 UPS or
U.S./Canadian Parcel Post



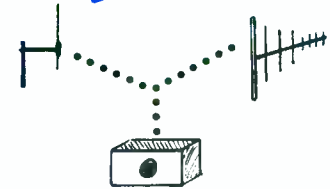
Grove's

Outdoor Scanner Antenna System

... connects to any receiver equipped with an external antenna jack

1. Start with our OMNI or SCANNER BEAM antenna

See descriptions on page 23.



2. Then add our Wideband Preamplifier, Power Ant III *

The Grove PRE-3 Power Ant has taken all the best from its successful predecessors and combined them into one powerful signal booster for scanners, short wave and medium wave receivers, even TV and FM stereos!

Equipped with a high gain, low noise, solid state amplifier stage, the PRE-3's front panel control allows custom selection of up to 30 dB of amplification!

Two output connectors are provided allowing you to use two scanners on one antenna at the same time! All connectors are type F for maximum signal transfer.



What you need to order:

OMNI (Ant-5B)

OR SCANNER BEAM (Ant-1B)

PRE-3 Power Ant III

ACC-20 AC adaptor

ACC-60 receiver cable (approx. 36")

*Not recommended for metropolitan use

\$19 (plus \$2⁰⁰ UPS, \$4⁰⁰ U.S. Parcel Post, \$6 Canada Air P.P.)

\$49 (plus \$3⁰⁰ UPS, \$6⁰⁰ U.S. Parcel Post, \$9 Canada Air P.P.)

\$39 (plus \$1⁵⁰ UPS, \$3 U.S. Parcel Post, \$4 Canada)

\$9.95 (free shipping with PRE-3)

\$7.50 (you specify connector or receiver model; one for each receiver)



Grove's

Indoor Scanner Antenna System

... connects to any receiver equipped with an external antenna jack

The Apartment Dweller's Dream

The Grove Hidden Antenna is a high performance, amplified indoor antenna system for scanner monitoring and general coverage shortwave and medium wave reception.

This 66-inch, thin profile, flexible wire antenna can be tucked in a corner, hung behind a drape—just about anywhere out of sight. And when connected to the powerful PRE-3 signal booster, you have instant total spectrum coverage from 100 kHz to over 1000 MHz!

Yes, wide area scanner coverage and even global short wave reception will be at your fingertips, and you can operate two radios at one time!

What you need to order:

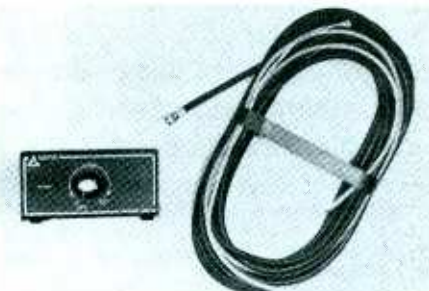
ANT-6 Hidden Antenna **\$8.95** (free shipping)

PRE-3 Power Ant III **\$39** (plus \$1⁵⁰ UPS, \$3 U.S. Parcel Post, \$4 Canada)

ACC-20 AC adaptor **\$9.95** (free shipping with PRE-3)

ACC-60 receiver cable **\$7.50**
(approx. 36")

(you specify connector or receiver model; one for each receiver)



Hidden Antenna, as packaged, with Grove PRE-3





The Famous Grove MINITUNER

A tunable signal filter for improved short wave, medium wave and long wave reception.

You can eliminate those phantom images and intermod signals that plague your radio when using an outdoor antenna. Simply connect the MiniTuner between the antenna cable and your receiver and adjust the dial for peak reception of your favorite station!

A bypass function allows the MiniTuner to be switched out of the circuit without having to remove it from the antenna line. An antenna grounding selector protects your receiver from nearby (not direct) lightning strikes and transmitters.

Order TUN-3

ONLY
\$49⁰⁰



\$1.50 UPS Shipping;
*3 US Mail P.P.; *4 Canada P.P.

SPECIFICATIONS:

Frequency Range: 100 kHz-30 MHz in 4 bands
Circuit: Series-tuned L-section filter
Tuner: 365 pF air-variable capacitor, ball bearing drive
Input connector: SO-238 (UHF) with random-wire provision
Output connector: PL-259 (UHF) on 24" coax cable
Enclosure: Custom formed aluminum
Dimensions: 4"W x 2"H x 3"D
Weight: 12 ounces



Outdoor dipole for worldwide shortwave reception

Highest performance and lowest cost—an unbeatable combination! Why restrict your frequency coverage with the gaps found in expensive trap dipoles or unpredictable random wire when you can get unsurpassed full-frequency reception with the Grove Skywire?

Comes assembled with SO-239 connector ready for your PL-259 (UHF)-equipped coaxial cable (50 or 75 ohm); includes two professional porcelain end insulators and complete instructions.

ONLY
\$19⁰⁰

\$1.50 UPS Shipping;
*3 US Mail P.P.; *4 Canadian Air P.P.

The Grove



"Signals are much stronger now that I have replaced my more expensive trap dipole with the Grove Skywire."

—C. Kisser
Kingsport, TN.

SPECIFICATIONS:

Length: 66 feet
Feedpoint impedance: 50 or 75 ohm (nominal)
Feedpoint location: 22 feet from end
Elements: 18 AWG (16 x 30) bare stranded copper
Connector housing: Heavy duty black phenolic



Boost those weak signals with the Grove...

Power Ant III

Wideband Preamplifier for all Frequency Ranges



RECOMMENDED ACCESSORIES:

- TUN-3 MiniTuner (for shortwave only)(page 26)
- ACC20 Universal AC power adaptor (page 28)
- ANT-5B OMNI (page 23) or ANT-6 Hidden Antenna (below)
- ACC-60 receiver cable—you specify connector or receiver model, one for each receiver—\$7.50 each)
- ACC-23 Cigarette lighter cord (page 28)
- ACC 90 Mobile DC cord (page 28)

Specifications

Gain	30 dB @ 1 MHz
	29 dB @ 10 MHz
	27 dB @ 50 MHz
	21 dB @ 150 MHz
	13 dB @ 450 MHz
	10 dB @ 900 MHz
Noise figure	2 dB nominal
Usable frequency range	10 kHz-1300 MHz
input/output impedance	50-75 ohms nominal
Power required	12 VDC @ 40 ma.
Connectors	F type
Dimensions	4"W x 2"H x 3"D
Weight	6 ounces
Power Requirement	DC cord supplied

The Grove PRE-3 Power Ant is a powerful signal booster for scanners, shortwave and longwave receivers, even TV and FM radios!

Equipped with a high gain, low noise, solid state amplifier stage, the PRE-3's front panel control allows custom selection of up to 30 dB amplification!

The PRE-3 is also easy to install. If you have adequate length on your scanner antenna coax, measure back 2-3 feet from the connector and cut it. Install two F connectors on the cut ends (available from Radio Shack) and attach them to the PRE-3.

Two output connections allow you to use two receivers on one antenna at the same time! All connectors are type F for maximum signal transfer.

USE WITH OUR FAMOUS TUN-3 MINTUNER (See p. 26) FOR INCREDIBLE SHORTWAVE/LONGWAVE RECEPTION!

If you have an outside antenna, connect it to the PowerAnt/MiniTuner combo and stand back as signals pin your S-meter! Don't forget to order the accessories you will need to power the PRE-III and connect it to your antenna and receiver.

Order PRE-3



ONLY
\$39⁰⁰

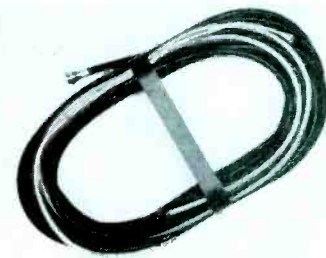
\$1⁵⁰ UPS; \$3 U.S. Mail P.P.
\$4 Canada Air P.P.

The Grove

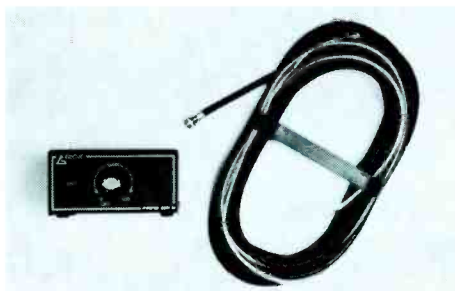
Hidden Antenna



Although designed to attach to the powerful Grove PRE-3 signal booster, the Hidden Antenna may be used alone with your scanner, replacing the plug-in whip, for improved signal reception.



Hidden Antenna, as packaged



Hidden Antenna with optional PRE—3 (See pp. 10 & 25).

This five-foot, thin-profile, flexible wire antenna can be hung in a corner, behind a drape—just about anywhere out of sight. Comes fully assembled with 20 feet of coax and F connector. (NOTE: we will substitute the connector of your choice for \$5.00.)

Order ANT-6

ONLY
\$8⁹⁵

Free UPS; \$2⁵⁰ U.S. Mail P.P.
\$3 Canada 1st Class



MOBILE SCANNER POWER ADAPTOR

No messy wiring connections to your car's battery system; just plug into your cigarette lighter accessory and power your scanner (as well as charge NICAD batteries in your portable) while you drive! Choose the appropriate cable below:



ACC23 for 12 VDC (center pin positive): Bearcat BC50XL, BC100, BC100XL, BC800XLT, BC145XL, BC140XL, BC175XL, BC170XL, BC210XLT. Radio Shack PRO2004, PRO38, and Grove PRE-3 preamp. **\$995***



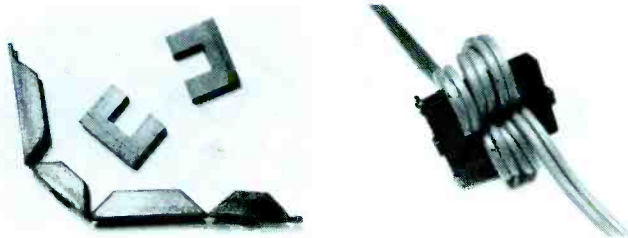
ACC90 cord and connector, less cigarette lighter plug (bare wire ends for connecting to 12 VDC auto electric system). **\$295***



ACC19 for 9VDC (center pin negative): Regency HX1000, HX2000, HX1500. Radio Shack PRO-30-31. **\$995***

*Free shipping U.S. and Canada

Snap-on Interference Chokes



Reduce or eliminate RFI—radio frequency interference—from computers, TV sets, home appliances, fluorescent lights, microwave ovens, electric motors, and other electronic equipment right at the source.

Install inexpensive snap-on chokes on power cords, audio lines and control cables to prevent troublesome electrical interference from being radiated or entering sensitive equipment.

Use them on test equipment cables to eliminate false readings from stray pickup; antenna cables to stop unbalanced currents and common mode interference; paging and PA systems; ham and CB equipment to eliminate transmitter interference. Install in seconds.

Order **ACC-91** **ONLY \$3** each (minimum order 3) plus ^{\$1.50} shipping any quantity

Heavy-duty Universal Power Supply/Charger

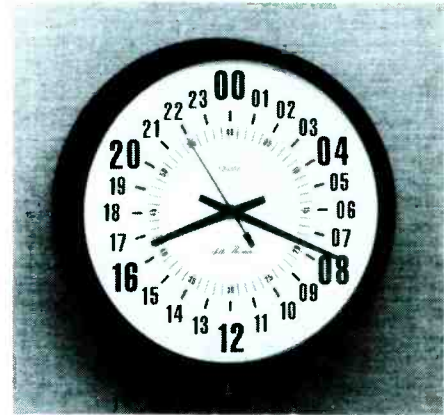


A \$15 Value for Only **\$995** \$1.50 UPS shipping; \$3 U.S. Mail Parcel Post
Canadians: \$4 Air Parcel Post

Our universal AC Adaptor is especially rugged, capable of switching to your choice of 3, 4.5, 6, 7.5, 9, or 12 volts DC at a current of 500 milliamps (1/2 amp)! Another switch lets you choose + or - polarity.

An array of plugs on its interconnect cord assures proper mating to any electronic accessory. Plugs into standard house current (120 VAC, 60 Hz).

Order **ACC 20**



Seth Thomas 24-Hour Studio Clock for the 'Professional Touch'

Nothing lends an air of authority in a radio station like the clock on the studio wall. It is traditional, recognizable, functional, and now, with a modern precision quartz movement, accurate to 1/2 second per day.

This studio clock from Grove Enterprises is a professional 13" Seth Thomas, featuring a 24-hour movement with bold, black numerals and a red sweep-second hand.

A convenient set knob allows precise set-up at installation; add an inexpensive alkaline AA cell (not included) and you have at least a year of unattended, accurate time—even during power outages.

Order **CLK 1** **ONLY \$2995** plus \$3 UPS, \$6 U.S. Mail Parcel Post



Shortwave Directory

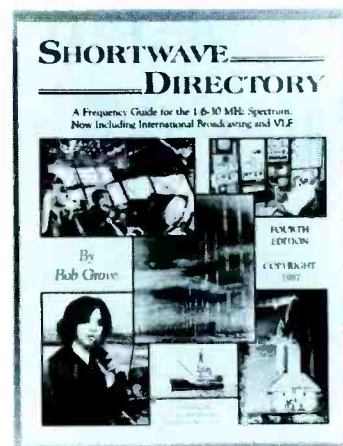
By Bob Grove

Greatly expanded and revised fourth edition—now includes international broadcasting and VLF!

Now recognized as the standard of reference for American shortwave listeners, this DX'ers bible is crammed with up-to-date, accurate frequency listings from 1.6-30 MHz, including U.S. and foreign Air Force, Navy, Coast Guard, Army, Energy and State Department, FBI networks, scientific installations, spies and smugglers, pirates and clandestines, aircraft and ships, space support, RTTY and FAX, INTERPOL—even English language broadcasters worldwide—and more.

Most stations are cross-referenced by agency and frequency for rapid identifications of those unknowns! This new edition contains an exhaustive glossary of terms, acronyms and abbreviations commonly encountered on shortwave radio networks.

AVAILABLE FEB. 1!



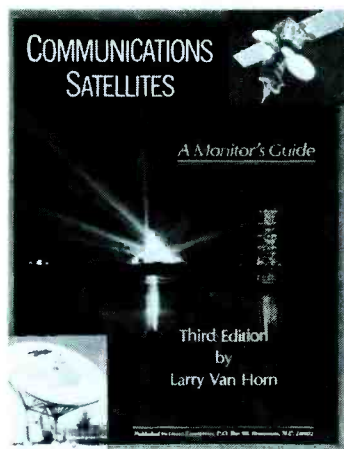
Order BOK-14
8½" x 11", softbound

\$12⁹⁵



\$1⁵⁰ UPS or Bookrate;
\$5 Canada Air P.P.

AVAILABLE NOV. 15!



Order BOK-15

ONLY
\$14⁹⁵

\$1⁵⁰ UPS or Bookrate;
\$5 Canada Air P.P.

8½" x 11"

Our best selling book . . . as reviewed in *Scientific American*

Communications Satellites

by Larry Van Horn

GREATLY EXPANDED THIRD EDITION!

Communications Satellites has rocketed to an international reputation as THE source of information regarding orbiting active satellites. A new introductory section provides valuable information on setting up a successful satellite listening post—the equipment and the techniques used by the professionals.

Chapters cover spy and surveillance satellites, U.S. and Russian manned space missions, military tactical and scientific satellites, oceanographic and weather satellites, navigational and communications satellites, private and direct broadcast satellites—if it is in orbit, COMMUNICATIONS SATELLITES tells you all about it!

This ultimate directory of space communications includes chapters on channelization band plans, transponder identification, international satellites, even a history of earth satellite development.

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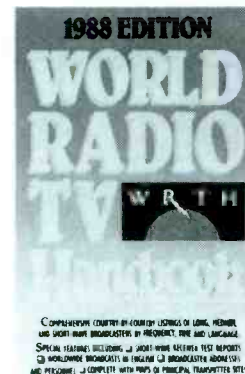
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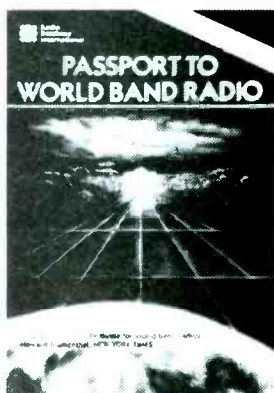
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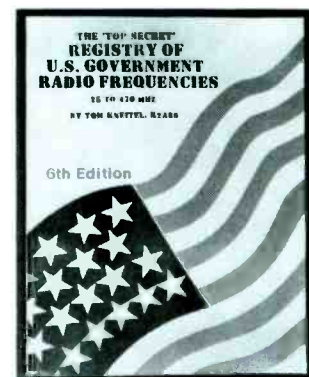
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