LET YOUR OLD SCANNER FLY LIKE A NEW ONE!

MILITARY AIRCRAFT SCANVERTER

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

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

The all-new 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).

Order CVR4 Only

$89.95

$5 UPS $7.50 UPS 2nd Day Air
$6 US Priority Mail
$9 Canadian UPS
$9 Canadian APP

SPECIFICATIONS

Frequency Range: 216-406 MHz
Sensitivity: 1 microvolt
Oscillator Frequency: 18 MHz harmonics
Power Required: Alkaline battery; 9 volt @ 13 mA
Connectors: BNC
Dimensions: 4"H x 1-1/2"W x 2"D
Weight: 6 oz.
Bypass Loss: 2 dB @ 400 MHz, 6 dB @ 800 MHz
The devastating floods along the Mississippi have provided interesting listening for shortwave and scanner enthusiasts. U.S. Army Corps of Engineers, Red Cross, National Guard, public safety agencies and other relief and enforcement divisions use the airwaves to coordinate their efforts. Such communications are often receivable on shortwave radios as well as VHF/UHF scanners.

Several new products have hit the market during the last catalog period. The Uniden BC2500XLT handheld scanners go out as soon as they come in, but back orders are being filled quickly. Users are enjoying the wide frequency coverage, 400 channel memory, VFO tuning, and automatic search store and count features in this unique product.

The midpriced Yaesu FRG-100 general coverage receiver is now available with an excellent filter modification installed, making it an outstanding value for shortwave listeners who want to stay well below $1000.

For portable 12 volt power, the Innova PowerPack is a survivalist’s dream. And if you recharge AA cells, the new fast-charge Millenium system is a winner.

After many months of intensive software writing—and rewriting—the new Grove FCC database is the easiest to use, most comprehensive, and least expensive source of official FCC frequency records ever made available to the public!

And there’s more. Take a close look at your new Grove catalog; I think you will find an outstanding choice of products at equally outstanding savings.

Best wishes for good listening.

Bob
President

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-11:30am and 1pm-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)

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.

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.

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.

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 you for your future purchases, or we’ll issue you a refund—your choice!

Of course these returns must be authorized and the product must be received in new condition, otherwise we have to charge a restocking fee according to the invoice value: $0-$500 - $15; $501 -1000 - $25; $1000+ - $35.

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.

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.

For Technical Support CALL SUE
704-837-7081
If you're into radio monitoring... DON'T MISS THIS!

SCHEDULE
Friday, October 15
11:00 am to 5:00 pm
Registration Open
12:00 to 5:00 pm
Exhibits and Listening Post Open
7:00 to 9:15 pm
"Hobby Talk"

Saturday, October 16
8:00 to 11:30 am
Registration Open
9:00 am to 12:30 pm
Exhibits Open and Morning Seminars
12:30 to 3:00 pm
Exhibits Open/Lunch Break

Saturday cont'd
3:00 pm
Exhibits Close
3:00 to 5:15 pm
Afternoon Seminars
7:00 to 9:00 pm
Banquet—Served at table
9:00 pm
Transmitter Bug Hunt

Sunday, October 17
9:00 am to 12:30 pm
Morning Seminars
Convention Closes at 1:00 pm

This three day weekend is full of activities for the radio enthusiast:

- Dozens of exhibitors with the latest equipment and accessories for radio monitoring, including R.L. Drake, Grove Enterprises, ICOM America and Sony.
- Join your fellow monitors at a professional listening post featuring the Grove SDU-100.
- A two hour hobby talk starts the weekend off Friday evening and is hosted by moderator Bob Grove. A panel of experts will discuss the current developments in the hobby.
- Attend any of over 35 seminars covering shortwave and scanner monitoring for the beginner through the advanced listener.
- Saturday evening's banquet will feature guest speaker Carole J. Perry, noted author, teacher and promoter of amateur radio.
- Get your scanner charged and ready for the "Bug Hunt"—a highlight at each convention!
- A swap meet area available Sunday for those attendees with equipment to sell or trade.
- Over $8000 in door prizes!

Enjoy accommodations at the Atlanta Airport Hilton and receive the special nightly rate of only $69 (save over 50% off the regular $140 per night rate) which includes the following:
- Same rate single or double!
- Free parking!
- Complimentary airport shuttle!
- Baggage check-out for Delta!

Call 404-767-9000 or 800-HILTONS to make your room reservation now!
Be sure to mention Monitoring Times when making your reservation to receive the special room rate.

EXHIBIT AREA PASSES AVAILABLE AT THE DOOR FOR ONLY $5.00!

PRE-REGISTRATION FORM
Deadline 9/15/93

[ ] Enclosed is my $50 registration fee!
[ ] Enclosed is my $21.95 banquet fee!

Name: _______________________________________________________
Address: _____________________________________________________
City: _______________ State: ___ Zip: ______ Phone #: ____________

Method of Payment: [ ] Check/MO [ ] Visa/MC/Discover
Card# ____________________________
Exp Date: ________________________
Signature: ________________________

MONITORING TIMES CONVENTION
P.O. BOX 98
BRASSTOWN, NC 28902
1-800-438-8155
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.

Order Today!

Special Pricing when you order the SDU-100 Spectrum Display Unit and VID-100 9" CRT Monitor together, only: $599.95

Ordered separately:

SDU-100 Spectrum Display Unit $499.95

VID-100 9" CRT Monitor $149.95

Choosing a Shortwave Receiver

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-30 MHz 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.

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. An AC adaptor is included.

If you want pocket portability, forget high quality; the two 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 Yaesu FRG-100 is a pleasing 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.
**FULL SPECTRUM RECEIVER**

**THE R8 COMMUNICATIONS RECEIVER**

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 built-in microprocessor/controller offers RS232 computer control and multiple-function scanning.

Dual VOIs, 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.

**SPECIFICATIONS**

- Frequency range: 100 kHz-30 MHz (35-55/100-174 MHz with optional converter)
- Tuning steps: 100/100 Hz (10/100/1000 FM/AM)
- Dimmer: Yes
- Type of filtering recommended: International broadcast and utilities
- Receiving modes: AM, narrow FM, USB, LSB, RTTY, CW
- Synchronous AM
- Memory: 100 channels
- Banks: 16
- Search: No
- Squelch: Yes
- Audio output power: 2.5 W @ 4 ohms for 10 kHz
- Record audio output: Yes
- Recorder activation: No
- S meter: Analog
- Computer interface: RS232
- Conversion scheme: Double up-conversion

**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 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.

**OPTIONAL ACCESSORIES**

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

- ACC50 VC20 115-174 VHF conv. $199.95
- ACCC51 YK2BA 6 kHz AM filter $84.95
- ACCC52 YK88S 2.4 kHz SSB filter $84.95
- ACCC53 YK88SN 1.8 kHz narrow SSB $84.95
- ACCC54 YK88C 500 Hz CW filter $84.95
- ACCC55 YK88CN 270 Hz narrow CW $94.95
- ACCC56 DCK2 -12VDC mobile power cable $12.95
- ACCC57 VSI voice synthesizer $59.95
- ACCC59 IF232C transistor control $94.95
- ACCC60 IC-10 interface $34.95
- ACCC62 Headphones HS6 deluxe $64.95
- ACCC63 Headphones HS6 lightew $44.95
- ACCC65 SP23 external speaker (plus $7.50 UPS shipping) $65.95
- ACCC66 MB430 mobile mount bracket $34.95
- ACCC68 Service manual $25

Installation Fee (one or more accessories) $20 plus $5.0 drop ship fee.

**ACCESSORIES**

- ACCC43 VHF Converter $199.95
- ACCC49 External Speaker $48.95 plus $6 UPS
- ACCC77 Service Manual $39.95
- ACCC77 PC Software $58.95

Installation fee $20

**SPECIALS**

- **Order RCV1**
  - **Grove discount price only**
  - Retail $979
  - $14.50 UPS
  - $27.50 UPS 2nd Day Air
  - $26.50 US Priority Mail
  - $35.50 Canadian UPS

- **Order RCV7**
  - **Only**
  - Retail $1099
  - $15.50 UPS
  - $30.50 UPS 2nd Day Air
  - $32.50 US Priority Mail
  - $38.50 Canadian UPS

**SPECIFICATIONS**

- Frequency range: 100 kHz - 20 MHz
- Keypad frequency entry: Yes
- Audio output power: 1.5 watts
- Record output: Yes
- Audio output power: 1.5 watts
- Dimensions: 11.0’W x 13/8”H x 10”D
- Weight: 12.3 lbs
- Power requirement: 12 VDC (with optional adaptor), 120/240 VAC
- Warranty: One year

**ACCESSORIES**

- ACCC43 VHF Converter $199.95
- ACCC49 External Speaker $48.95 plus $6 UPS
- ACCC77 Service Manual $39.95
- ACCC77 PC Software $58.95

Installation fee $20

**FURTHER**

- Dimensions: 10.62’W x 3.78’H x 10.6’D
- Weight: 34.95 lbs
- Power requirement: 12 VDC (with optional adaptor), 120/240 VAC
- Warranty: One year

**ACCESSORIES**

- ACCC43 VHF Converter $199.95
- ACCC49 External Speaker $48.95 plus $6 UPS
- ACCC77 Service Manual $39.95
- ACCC77 PC Software $58.95

Installation fee $20

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- ACCC77 Service Manual $39.95
- ACCC77 PC Software $58.95

Installation fee $20
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.

From 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.

**SPECIFICATIONS**
- Frequency range: 90 kHz-30 MHz
- 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 µV @ 1.5-30 MHz (SSB)
Selectable preamplifier: No
Selectability: 100 dB
Selectivity: (40-80) dB AUX 12 kHz, WIDE 6/15 kHz, INTER 2/6 kHz, NARROW 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: 104 dB @ 800 Hz BW
Passband tuning: +/- 1 kHz
Noise blanker/limiter: Dual wide
Adjustable notch filter: 30 dB
Tone control: Yes
Antenna connector: SO-239 (UHF)
Dimensions: 13W x 5.5H x 11D
Weight: 20 lbs.
Power requirements: 120/240 VAC @ 50/60 Hz; 12 VDC 2A
Warranty: One year
Accessories included: None

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**Order RCV3 $1688.95**

$16.50 UPS
$35.50 UPS 2nd Day Air
$35.50 US Priority Mail
$30.50 Canadian UPS
$45.50 Canadian Air Parcel Post

**SHORTWAVE RECEIVER**

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**Order RCV17 $529.95**

$7.50 UPS
$14.50 UPS 2nd Day Air
$16.50 US Priority Mail
$18.50 Canadian APP
$13 Canadian UPS

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**JRC**

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**YAESU**

**FRG-100 COMMUNICATIONS RECEIVER**

The long-awaited FRG-100 has finally arrived! Simple to operate, high in performance and low in cost. Now that’s an unbeatable combination! This compact lightweight tunes continuously from 50 kHz through 30 MHz and offers USB, LSB, AM and CW modes.

Featuring dual conversion (47.21 MHz/455 kHz), three tuning rates, five-decimal place (10 Hz) readout, fast/slow AGC, 50 selectable memory channels with lockout, 0.25 microvolt sensitivity (SSB/CW), adjustable all-mode squelch, three selectivity bandwidths, noise, Yaesu CAD control capability and a powerful internal speaker, the new FRG-100 is an ideal way to get into serious shortwave listening at a budget price.

**ACCESSORIES:**
- Installation fee $20
- ACC103 500 Hz narrow CW filter $139
- ACC104 15 kHz FM mode adapter $45
- ACC105 High stability crystal oscillator $89
- Grove Super Filter Mod $179.95
- Includes installation of two high selectivity, 13-pole ladder filters. Narrow: 3 kHz @ -60 dB, 9 kHz @ -70 dB. Wide: 6 kHz @ -60 dB, 15 kHz @ -70 dB
- Computer Interface: Yaesu CAD program
- Conversion scheme: Dual up-conversion (47.21 MHz/455 kHz)
- Selectivity: 1 microvolt AM, 0.25 microvolt SSB/CW
- Selectable preamplifier: No
- Selectable attenuator: 0 or 12 dB
- IF selectivity: 2 kHz (SSB), 4 kHz (AM)
- Image rejection: 60 dB or better
- Frequency stability: +/-10 ppm with +50 degrees C
- Selectable AGC: Slow/fast
- Passband tuning: Yes
- Noise blanker or limiter: Noise blanket
- Adjustable notch filter: No
- Tone control: No
- Antenna connector: 50 ohm coax conn plus 500 ohm terminal
- Dimensions: 9-1/2"W x 3-1/2"H x 10"D
- Weight: 6.6 lbs.
- Power requirements: 12.5 VDC @ 1.2A; 120 VAC adapter inc.
- Warranty: One year
- Accessories included: AC wall adapter

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**YAESU**

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- IF selectivity: 2 kHz (SSB), 4 kHz (AM)
- Image rejection: 60 dB or better
- Frequency stability: +/-10 ppm with +50 degrees C
- Selectable AGC: Slow/fast
- Passband tuning: Yes
- Noise blanker or limiter: Noise blanket
- Adjustable notch filter: No
- Tone control: No
- Antenna connector: 50 ohm coax conn plus 500 ohm terminal
- Dimensions: 9-1/2"W x 3-1/2"H x 10"D
- Weight: 6.6 lbs.
- Power requirements: 12.5 VDC @ 1.2A; 120 VAC adapter inc.
- Warranty: One year
- Accessories included: AC wall adapter

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**SHORTWAVE RECEIVER**

**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, VFO).

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.

**SPECIFICATIONS**

- **Frequency range**: 100 kHz-30 MHz
- **Tuning steps**: 10 Hz
- **RIT (fine tuning)**: No
- **Search**: Yes, plus tuning knob
- **Dimmer**: Yes
- **Type of listening recommended**: Domestic and international broadcasting, two-way SSB/RTTY
- **Receiving modes**: AM, LSB, USB, CW
- **Memory**: 101 channels
- **Scan**: Yes, banks: Mode scan
- **Lockout**: No, priority: No
- **Squelch**: Yes, delay: Yes
- **Sensitivity**: 0.2 μV with preamplifier
- **Selectible attenuation**: 0.1/0.4 kHz
- **Selectivity**: 30/60 kHz
- **Image rejection**: 50 dB
- **Dynamic range**: 70 dB
- **Passband tuning**: No
- **Noise blanker limiter**: Dual, adjustable
- **Adjustable notch filter**: Yes
- **Audible sidebands**: AM, USB, LSB, CW
- **Backlit LCD**: Yes
- **Backlight LCD**: Yes
- **Clock**: Yes
- **Power requirements**: 120/240 VAC, 120V, 100VA
- **Weight**: 16.1 lbs.

**ACCESSORIES**

- **Optional Accessories**
  - **One or more accessories installed w/3600**
  - **Preamplifier**: $49.95
  - **SPD**: $75.00
  - **DC Power kit EX299**: $15.95
  - **NR64 high stability crystal**: $79.95
  - **UX4 Level converter**: $79.95
  - **CT-17 computer interface**: $95.95

**OPTIONAL ACCESSORIES**

- **Audio output power**: 2 watts
- **Squelch**: Yes, clock: Yes with timer
- **Search**: Yes
- **Audio output power**: 2 watts
- **Record output**: Yes
- **Color**: Optional
- **Computer interface**: Optional

**SPECIFICATIONS**

- **Frequency range**: 30 kHz-30 MHz
- **Keypad frequency entry**: Yes
- **Tuning steps**: 10 kHz
- **Display**: Backlit LCD, 10 Hz resolution
- **Dimmer**: Yes
- **Type of listening recommended**: Domestic and international broadcasting, two-way SSB/RTTY
- **Receiving modes**: AM, LSB, USB, CW
- **Memory**: 101 channels
- **Scan**: Yes, banks: Mode scan
- **Lockout**: No, priority: No
- **Squelch**: Yes, delay: Yes
- **Audio output power**: 2 watts
- **Record output**: Yes
- **Recorder activator**: Yes
- **S meter**: Analog
- **Computer interface**: Optional

**ICOM R-72**

For the serious shortwave enthusiast on a budget, the R-72 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 scanable 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**

- **Frequency range**: 30 kHz-30 MHz
- **Tuning steps**: 10 Hz
- **RIT (fine tuning)**: No
- **Search**: Yes, plus tuning knob
- **Dimmer**: Yes
- **Type of listening recommended**: Domestic and international broadcasting, two-way SSB/RTTY
- **Receiving modes**: AM, LSB, USB, CW
- **Memory**: 101 channels
- **Scan**: Yes, banks: Mode scan
- **Lockout**: No, priority: No
- **Squelch**: Yes, delay: Yes
- **Audio output power**: 2 watts
- **Record output**: Yes
- **Recorder activator**: Yes
- **S meter**: Analog
- **Computer interface**: Optional

**ORDER RCV6**

**Only $1037.95**

- **15 UPS**
- **$30 UPS 2nd Day**
- **$50 UPS Priority Mail**
- **$90 Canadian Shipping**
- **$26 Canadian UPS**

**ORDER RCV8**

**Only $919.95**

- **15 UPS**
- **$27 UPS 2nd Day**
- **$50 UPS Priority Mail**
- **$90 Canadian Shipping**
- **$26 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!

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!
**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.

**SPECIFICATIONS**

- **Frequency range:** 150 kHz-30 MHz, 76-108, 116-136 MHz
- **Keypad frequency entry:** Yes, plus tuning knob
- **Tuning steps:** 100 Hz
- **Display:** Backlit LCD
- **Conversion scheme:** Dual 55.845 MHz/45.5 kHz (10.7 MHz FM)
- **Sensitivity:** Unavailable
- **Selectable preamplifier:** No
- **Selectability:** 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" x 6-7/8" x 1-7/8"D
- **Weight:** 3-1/4 lbs with batteries
- **Power requirement:** 4 C cells, 6 VDC (AC adapter inc.)
- **Warranty:** One year

**SONY COMPARISON CHART**

<table>
<thead>
<tr>
<th>Received Band</th>
<th>ICF-SW55</th>
<th>ICF-SW77</th>
</tr>
</thead>
<tbody>
<tr>
<td>FM Stereo</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Air Band</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Station Name Tuning</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>AM Tuning Step</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Preset Memories</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Broadcasting Time Display</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Auto Program Select</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>AM Wide/Narrow filters</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>SSB Wide/Narrow filters</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>USB/LSB Select</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Synchronous Detection</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Clock</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Timer</td>
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<td>Rec Out Jack</td>
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<td>Yes</td>
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<tr>
<td>Ext Antenna Jack</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Sleep Mode (min)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Tone Control</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**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. Narrowwide 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.

**SPECIFICATIONS**

- **Frequency range:** 150 kHz-30 MHz, 76-108, 116-136 MHz
- **Keypad frequency entry:** Yes, plus tuning knob
- **Tuning steps:** 100 Hz
- **Display:** Backlit LCD
- **Conversion scheme:** Dual 55.845 MHz/45.5 kHz (10.7 MHz FM)
- **Sensitivity:** 0.2 μV SSB
- **Selectability:** 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:** 11-3/16" x 6-1/16" x 2-1/16"D
- **Weight:** 3-3/4 lbs
- **Power requirement:** 2 AA and 3 D cells or 120 VAC
- **Warranty:** One year
- **Accessories included:** AC adapter, earphone, shoulder strap, wrist strap, external antenna adapter, AC adapter, earphone, shoulder strap, wrist strap, external antenna adapter, SWL handbook.
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!

Manufacturers suggested retail $249.95
Order RCV11
$219.95
$7.50 UPS
$11.50 UPS 2nd Day Air
$13.50 US Priority Mail
$11.50 Canadian UPS
$15.50 Canadian APP

Specifications
Frequency range: 150 kHz-30 MHz AM/SSB, 87.5-108 MHz FM
Keypad frequency entry: Yes
Tuning steps: 0.1 kHz
Receiving modes: AM/SSB
Memory: 125 channels
Scan: Yes
Scan Banks: 25 (5 channels each)
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 activation: Yes
Signal strength indicator: LCD bargraph
Computer Interface: No
Accessories included: Carrying case, compact antenna, LCD Demmer:
Frequency range: 530-1710, 3170-21910 kHz AM; 87.5-108 MHz FM
Keypad frequency entry: Yes
Tuning steps: 1/10 kHz AM, 50 kHz FM
Tuning entry: No
Display: Backlit LCD
Sensitivity: Unavailable
Dimmer: No
Type of listening recommended: Broadcasting
Receiving modes: AM/FM
Memory: 20 shortwave presets
Scan: Yes
Search: Yes
Delay: Infinite
Squelch: No
Clock: Time program timers
Power requirements: AC/DC
Audio output power: 50 watts max.
Conversion scheme: Double conversion
Selecting preamplifier: No
Selecting attenuator: No
Tone control: Bass, treble, balance fader
Antenna connector: DIN
Accessories included: DIN mounting bracket

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 carrying case, soft pouch, world band guidebook, AC adaptor, AN-71 compact antenna, stereo earphones.

Order RCV15
Only
$369.95
$7.50 UPS
$14.50 UPS 2nd Day Air
$17.50 US Priority Mail
$20.50 Canadian APP
$13 Canadian UPS

SPECIFICATIONS
Frac Range: 530-1710, 3170-21910 kHz AM; 87.5-108 MHz FM
Keypad frequency entry: Yes
Tuning steps: 1/10 kHz AM, 50 kHz FM
Tuning entry: No
Display: Backlit LCD
Sensitivity: Unavailable
Dimmer: No
Type of listening recommended: Broadcasting
Receiving modes: AM/FM
Memory: 20 shortwave presets
Scan: Yes
Search: Yes
Delay: Infinite
Squelch: No
Clock: Time program timers
Power requirements: AC/DC
Audio output power: 50 watts max.
Conversion scheme: Double conversion
Selecting preamplifier: No
Selecting attenuator: No
Tone control: Bass, treble, balance fader
Antenna connector: DIN
Accessories included: DIN mounting bracket

PHILIPS DC-777 Mobile AM/FM/SHORTWAVE

For those mobile shortwave listeners who want it all—FM stereo, local AM medium wave and international broadcasting, the DC777 even includes a stereo cassette player so you can hear your favorite tapes when listening conditions aren't the best. Twenty memory channels with autosearch, a brilliantly-backlighted LCD frequency display, crisp stereo FM, compact in-dash mounting, digital frequency entry—just a few of the advanced features which are found on this high-quality, multiband auto radio. DIN mounting bracket included for imported vehicles.

Order RCV12
$349.95
$7.50 UPS
$12.50 UPS 2nd Day Air
$16 US Priority Mail
$12.50 Canadian UPS $18.50 Canadian Air PP
**MFJ-1278B**

**All-Mode Digital Decoder For Your Computer!**

If you have an IBM compatible computer (Mac and Commodore adaptors available) and a shortwave receiver or transceiver, you can now display radioteletype messages, bit inversion RTTY, packet communications (military, commercial and amateur), news and weather facsimile photos and maps, AMTOR and PACTOR messages, Morse code, Navtex alerts, ASCII text, even amateur slow-scan television! Top-rated demodulator in independent tests!

Multi-grey level gives sharp news-photo and SSTV imaging! LED all-mode tuning meter makes perfect signal adjustment a snap, and an automatic signal identification circuit selects the mode for you! If you are a licensed amateur, the MFJ-1278 can be used for transmitting as well! Let us know what model transceiver you have, and we'll provide the interface cable (see list below!)

Hams can use the personal mailbox soft-partitioned memory for electronic messages. Includes port for Epson or IBM compatible printer. Full-color SSTV is displayed on your color monitor with the optional MFJ-1289 terminal software.

The MFJ-1278 alone prints out SSTV and FAX, but requires the MFJ-1289 MultiCom enhancement package to display on screen. This powerful IBM-compatible software provides high-resolution FAX imaging, macro keys for instant mode changes without having to reset parameters, and an alarm for detecting key letters, words or phrases. For transmitting, many additional features are provided.

Comes with 32K RAM, host mode, KISS interface for TCP/IP/MSYS, independent transmit level for each port, random code generator, lithium battery backup, RS-232 and TTL serial ports, socketed ICs, tuneup command, peripheral I/O port, automatic serial number, programmable message memories, dual radio ports for HF and VHF, CW paddle jack, audio amplifier and monitor speaker for signals and sidetones, packet connect bell, full operation manual. As if this weren't enough, each 1278 is accompanied by a coupon entitling the owner to one free upgrade in the future!

Measures only 9-1/2"W x 1-1/2"H x 9-1/2"D. Powered directly from 120 VAC/60 Hz, or 12 VDC.

**New features for MFJ-1278B:**
- New PACTOR mode
- 32K bytes Enhanced Packet mailbox
- Allows separate callsign, auto forwarding and reverse mail forwarding. Remote Sysop access, Sysop paging, chat mode, mailbox C-text "Has-mail?" LED indicator.
- Mailbox is expandable to 128K or 512K
- New COLOR SSTV VHS tones. Allow other SSTV receiver to auto start picture
- 1 Megabit system EEPROM
- 64K bytes battery backup RAM
- European RTTY tones selectable
- External reset, optional scope tuning output
- Selectable 19,200 baud terminal operation

**SPECIFICATIONS**

**RECEPTION MODES:**
- Morse (8/12/16/24 baud)
- RTTY (4/50/60/75/100 baud and 20 324 baud non-standard)
- ASCII (7/3/6/8/10/12/15/16/20/24/30/36/40/48/50/60/75/100 baud)
- BITOR/AMTOR/AMTOR
- BARKOR/FECTOR

**PRODUCTS LISTED**

- 1278BT Turbo with 2400 baud modem! Only $369.95
- DEM6 Retail $1399.95 Groove price only $1298.95
- MFJ-1278Hi-res enhancer (5-1/4" disk) $59.95
- MFJ-12828 Commodore 64/128 adaptor $39.95
- ACC39 Icom 8 pin (MFJ-5084) $13.95
- ACC40 Kenwood Alino 6 pin (MFJ-5086) $13.95
- ACC41 Kenwood HT (MFJ-5026) $13.95
- ACC42 Yaesu 6 pin (MFJ-5080) $13.95
- ACC43 Kenwood Alino HT (MFJ-5026) $13.95
- ACC44 Icom, Yaesu HT, Alino DJ-560 (MFJ-5024) $13.95
- ACCESSORIES: $39.95
- MFJ-1289 Hi-res enhancer (5-1/4" disk) $59.95
- MFJ-1289 Hi-res enhancer (3-1/2" disk) $59.95
- MFJ-1289 Hi-res enhancer (3-1/2" disk) $49.95

Now, the most advanced data reader/decoder ever produced! Nothing could be simpler: plug the new M8000 into your receiver for scanner's speaker or earphone jack, connect a printer or VGA color monitor, and copy Morse code, RTTY, ASCII, TOR, 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 240 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.

**Optional 19-inch rack panel mounting kit $19.95**

**Order DEM6 Only $299.95**

**Order DEM4 Only $1399.95**

**$10.50 UPS $20.50 UPS 2nd Day Air $25.50 Canadian UPS $35.50 Canadian APP $45.00 Canadian UPS**
THE GROVE SKYWIRE ANTENNA

Now with improved waterproof feedline connector at no extra charge!

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.

Outdoor dipole for worldwide shortwave reception  HAMS! Ideal for transmitting when used with a transmatch. (1.8-30 MHz at up to 250 watts)

Build your own SW dipole! ACC101 CH239 SW Dipole Connector only $9.95 Wire not included!

GROVE’S INDOOR/OUTDOOR ANTENNA SYSTEM

Here’s the shortwave monitor’s dream—a high performance, amplifed 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!

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 (120V AC/12VDC) included.

WHAT YOU NEED TO ORDER:

ANT 2  Skywire Antenna  (above) $29.95
or
ANT 6  Hidden Antenna  (see pg. 26 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 $11.50 UPS 2nd Day Air $8.50 US Priority Mail $15.50 Canadian UPS $13.50 Canadian APP

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 appreciate the signal level 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.

The 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 L.A1 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.

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### The Top 100 SW Frequencies

**An introduction to shortwave listening from Grove Enterprises and Monitoring Times ©1993**

Nowhere in the radio spectrum is found as much intrigue as on shortwave. The following frequencies (in kHz) list voice utilities (two-way communications) using upper side-band (USB) and AM broadcasters best heard in the early evening hours.

#### UTILITIES

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<td>Mississippi River Barges</td>
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<td>4113</td>
<td>Ship calling channel</td>
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<td>4146</td>
<td>Mississippi River Barges</td>
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<tr>
<td>6673</td>
<td>NOAA hurricane hunters</td>
</tr>
<tr>
<td>6683</td>
<td>Andrews AFB, VIP</td>
</tr>
<tr>
<td>6697</td>
<td>U.S. Navy</td>
</tr>
<tr>
<td>6738</td>
<td>U.S. Air Force air/ground</td>
</tr>
<tr>
<td>6753</td>
<td>Canadian Air Force</td>
</tr>
<tr>
<td>6761</td>
<td>Strategic Air Command</td>
</tr>
<tr>
<td>6802</td>
<td>&quot;Spy numbers&quot; broadcasts</td>
</tr>
<tr>
<td>6812</td>
<td>Air Force diplomatic</td>
</tr>
<tr>
<td>6927</td>
<td>Andrews AFB, VIP</td>
</tr>
<tr>
<td>7416</td>
<td>Pirates</td>
</tr>
<tr>
<td>8294</td>
<td>Ship to shore, Pacific</td>
</tr>
<tr>
<td>8297</td>
<td>Mississippi River barges</td>
</tr>
<tr>
<td>8418</td>
<td>&quot;Spy numbers&quot; broadcasts</td>
</tr>
<tr>
<td>8740</td>
<td>Ship to shore</td>
</tr>
<tr>
<td>8778</td>
<td>U.S. Navy</td>
</tr>
<tr>
<td>8784</td>
<td>Ship to shore</td>
</tr>
<tr>
<td>8803</td>
<td>Ship to shore</td>
</tr>
<tr>
<td>8806</td>
<td>Ship to shore</td>
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#### INTERNATIONAL BROADCASTERS

<table>
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<th>Service</th>
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<td>5960</td>
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</tr>
<tr>
<td>6040</td>
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<tr>
<td>6165</td>
<td>Netherlands</td>
</tr>
<tr>
<td>6175</td>
<td>England</td>
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<td>7325</td>
<td>England</td>
</tr>
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<td>7355</td>
<td>USA</td>
</tr>
<tr>
<td>7375</td>
<td>Costa Rica</td>
</tr>
<tr>
<td>9530</td>
<td>Spain</td>
</tr>
<tr>
<td>9685</td>
<td>Sweden</td>
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**TIME SIGNALS**

<table>
<thead>
<tr>
<th>Station</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>WWV</td>
<td>10000 15000 20000</td>
</tr>
<tr>
<td>CHU</td>
<td>3330 7335 14670</td>
</tr>
</tbody>
</table>
**MFJ 752C SIGNAL ENHANCER II**

Reduce interference and enhance sound with the latest all-mode, dual, tunable filter. Connect between your receiver's or scanner's external speaker jack and an external speaker or headset, then tune the two filters to peak or notch audio signals.

Remove annoying whistles with the 70 dB notch filter. Set audio bandwidths from a sharp 40 Hz to full range sound. Suppress static crashes and impulse noise with the ANL clipper.

External speaker, headphones and AC power supply required.

**Order FTR1**

$94.95

**ACCESSORY:**

ACC20 AC Power Supply $9.95

**LIGHTNING/EMP PROTECTOR**

For Scanners/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. Set audio bandwidths from a sharp 40 Hz to full range sound. Suppress static crashes and impulse noise with the ANL clipper.

External speaker, headphones and AC power supply required.

**Order FTR1**

$94.95

**ACCESSORY:**

ACC20 AC Power Supply $9.95

**REALISTIC® AMPLIFIED SHORTWAVE ANTENNA**

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. The 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 - see accessories below.

One of six variety styles available - see list below.

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

**Order ANT 17**

$29.95

**ACCESSORIES:**

ACC20 AC wall adaptor $9.95

ACC105 RCA & PL-259 (UHF) adaptors, random wire antenna $9.95

**UNIVERSAL REEL ANTENNA**

For Shortwave Portables

Whether you have a Sony, Sangean, Realistic, Grundig or other whip- or 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**

$12.95

**ACCESSORIES:**

ACC20 AC wall adaptor $9.95

ACC105 RCA & PL-259 (UHF) adaptors, random wire antenna $9.95
**ICOM R7100**

**VHF/UHF Communications Receiver**

**SPECIFICATIONS**
- **Frequency range:** 25-2000 MHz
- **Display:** LCD
- **Dimmer:** Yes
- **Type of listening recommended:** Utility monitoring
- **Receiving modes:** AM, VAM, FM, WFM, NFM, USB, SSB
- **Memory:** 900 channels
- **Scan:** 5/12 ch/sec
- **Search:** Yes
- **Delay:** 0.25/5/10 seconds; infinite
- **Squelch:** Yes
- **Clock:** Yes with 2 event timer
- **Audio output power:** 2 W @ 10% T.H.D.
- **Record output:** Yes
- **Recorder activation:** Yes
- **S meter:** Analog
- **Computer interface:** Optional
- **Conversion scheme:** Triple up-conversion (7.187.7 MHz, 455 kHz)
- **Sensitivity:** 0.35 mV NFM
- **Selectability:** @-8 dB, 2.4 kHz SSB, 6 kHz AM/NFM, 15 kHz AM/FM, 150 kHz WFM
- **Image rejection:** 50 dB
- **Frequency stability:** +/- 1 ppm ppm 25-250 MHz, +/- 5 ppm 25-1000 MHz
- **Dynamic range:** Unknown
- **Noise blanker:** No
- **Antenna connector:** N female
- **Auxiliary connector:** 10.7 MHz IF Output
- **Dimensions:** 9.1/2" x 3.3/4" 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

**OPTIONAL ACCESSORIES**
- ACCS6 UT36 Voice Synthesizer: $35.95
- ACC71 SP20 Speaker: $144.95
- ACC72 TVRT7100 Video Adaptor: $209.95
- ACC74 CT17 Computer Interface: $95.95
- ACC78 Service Manual: $35
- MBM Mounting Bracket: $209.95
- ANTR646 Extendable Whip Antenna: $32.95
- Installation of one or more accessories: $20

**ICOM R7000**

**Continuous Coverage VHF/UHF Receiver**

Used by government and military agencies worldwide, the ICOM R7000 provides total spectrum 25-1000 (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-memory, and you have the most advanced scanner receiver ever designed for the serious VHF/UHF listener.

**Choosing a Scanner**

©Grove Enterprises, Inc. 1993

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 440-512 MHz (UHF). Most scanners now include the 406-420 MHz federal government mobile band 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.

**Programmable or Crystal?**

Stay away from crystal type scanners unless you won’t be changing frequencies. For the majority of listeners, keyboard programmable scanners are the way to go—no question about it.

**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 readily; 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. Average selectivity for a scanner would be about 30 kHz (sometimes stated as +/- 15 kHz) at -30 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.

**Intermodulation** ("intermod") is an internally-generated interference produced when two signals mix together, producing spurious signals. It is often recognizable because of its distorted contents from two or more signals. Intermod results from inadequate dynamic range.
ICOM R-100
MOBILE/DESKTOP SCANNER

For the full-spectrum listener, this compact scanner is hard to beat: continuous tuning range from 100 kHz through 1856 MHz 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.

ICOM R1 General Coverage Pocket Scanner

Imagine, a short-wave and VHF/UHF scanner with continuous 100 kHz-1300 MHz (no gaps!) 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 autoloads, 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:
ACC75 AC Adaptor $24.95

Order SCN14
Grove discount price only
$599.95
$5.50 UPS
$14.50 UPS 2nd Day Air
$16.50 US Priority Mail
$12.50 Canadian UPS
$19.50 Canadian App

ACCESSORIES:
ANT8 Range extending telescoping whip $16.95
ACC19 R1 Carrying case (no battery pack) $19.95
ACC30 BP-50 Replaceable AA battery case $18.95
ACC33 BP-90 Carrying case $19.95
ACC32 BP-84 Triple-life battery pack $79.95
ACC34 BP-84 Carrying case $19.95
ACC31 CP-12 Cigarette power cord $18.95
ACC48 BC-72A Desk Charger $99.95
ACC76 Service Manual $35
ACC81 Owner's Manual $9.95
ACC90 BA12 Battery Charger Adaptor $17
HDP1 Headphones $19.95

Order SCN13
Retail $599
Only $449.95
$5.50 UPS
$9.50 UPS 2nd Day Air
$11.50 US Priority Mail
$9.50 Canadian UPS
$12.50 Canadian App

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SCANNERS

UNIDEN BC-2500XLT

SUPER HANDHELD

This brand new, 400 channel powerhouse offers wide frequency coverage (25-550, 760-1300 MHz, less cellular), Turbo Scan (100 channels per second), instant NOAA weather access, high contrast LCD, rechargeable battery pack, continuous tuning dial, search store, channel activity counter, and much, much more!

ORDER SCN18

Only

$359.95

+$6.50 UPS
+$3.50 2nd Day Air
+$6.50 US Priority Mail
+$10.50 Canadian UPS
+$12.50 Canadian App

SPECIFICATIONS

Frequency range: 25-550, 760-1300 MHz (less cellular)
Keypad frequency entry: Yes
Tuning steps: 5, 12.5, 25, 50 kHz
RIT or Timed tuning: Continuous tuning dial
Display: Backlit LCD
Dimmer: No
Recommended use: Full-coverage scanning
Receiving modes: AM, NFM, WFM
Memory: 400 channels
Scan: 100/20 channels per second
Banks: 50
Lockout: Any channel
Priority: 10 channels
Search: Automatic memory store
Delay: 2 seconds, all channel
Squelch: Yes
Audio output power: 400 milliwatts
Record audio output: Speaker and earphone jacks
Sensitivity: 1 uV, 25-550 MHz; 3 uV, 550-1100 MHz; 3 uV, 1100-1300 MHz; 3 uV, WFM
Antenna connector: BNC
Dimensions: 2-3/4"W x 7-1/2"H x 1-1/4"D
Weight: 17 oz.
Power requirements: 12 VDC, attachable nicad battery pack
Warranty: One year
Accessories included: Flex whip, battery pack, AC adapter/charger, carrying case, manual

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

$269.95

+$7.50 UPS
+$14.50 2nd Day Air
+$17.50 US Priority Mail
+$11.50 Canadian UPS

SPECIFICATIONS

Frequency range: 29-54, 108-174, 216-512, 806-956 MHz (less cellular)
Keypad frequency entry: Yes
Tuning steps: 512/3125 kHz
RIT or Timed 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: 10-1/4"W x 3-1/2"H x 7-1/2"D
Weight: 3 lbs.
Power requirements: 12 VDC
Warranty: One year
Accessories included: AC adapter, telescoping whip, instructions

ACCESSORIES:

ACC96 CTCSS Squelch Decoder $59.95
Installation Fee $10.00

ACC109 DC Power Cord $9.95

ACC110 Mobile Mounting Bracket $9.95
UNIDEN BC-200XLT

Unlike its competitors, the BC200XLT comes equipped with a detachable nicad battery pack, leatherette holster, AC wall charger/adapter, and earplug.

Instant weather scan is pre-programmed. Audio has plenty of punch for noise locations. The rugged, rubberized keypad has excellent tactile feedback.

Order SCN9
NOW Only
$229.95

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!

Order SCN12
Retail $399.95
Only $269.95
**UNIDEN BC-800XLT**

**Top of the Line With Uninterrupted 800 MHz Coverage!**

The BC800XLT features low, high, air, UHF and 800 MHz band coverage with 40 channels of memory and instant weather reception.

Other features include search capability, 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, 55dB selectivity @ +/- 25 kHz, instant weather reception, brilliant fluorescent display, AC/DC operation, direct channel access, individual channel delay, priority channel one, fully synthesized keyboard entry.

**SPECIFICATIONS**

- **Frequency range:** 29-54, 108-174, 406-512, 806-912 MHz
- **Keypad frequency entry:** Yes
- **Tuning steps:** 5/12.5 kHz determined by frequency range
- **RIT (fine tuning):** No
- **Display:** Fluorescent
- **Dimmer:** No
- **Type of listening recommended:** VHF/UHF utilities
- **Receiving modes:** AM, narrow FM determined by frequency range
- **Memory:** 40 channels
- **Scan:** 15 channels/second
- **Banks:** 2
- **Lockout:** Yes
- **Priority:** Yes
- **Search by name:** Yes
- **Delay:** Individual channel
- **Squelch:** Yes
- **Audio output power:** 1.5 watts
- **Record audio output:** External speaker jack; no activator

**Accessories included:** Attachable whip(s)

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**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)
- **Keypad frequency entry:** Yes
- **Tuning steps:** 5/12.5 kHz determined by frequency range
- **RIT (fine tuning):** No
- **Display:** Edgilit 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

**Accessories included:** 120 VAC wall adaptor, whip

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**Order SCN8**

- **Retail** $299.95
- **Only** $189.95

**Order SCN11**

- **Retail** $499.95
- **Only** $239.95
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" 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!

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

REALISTIC® PRO-2006

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 $24.95!

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 $24.95

plus $4 UPS shipping if ordered separately

SPECIFICATIONS
- Frequency range: 30-50, 118-174, 220-512, 806-1000 MHz (less cellular)
- Keypad frequency entry: Yes
- Tuning steps: 5/6/12.5/25 kHz determined by frequency range
- RIT or fine tuning: No
- Display: Edgewall LCD
- Dimmer: On/off
- Recommended use: VHF/UHF utilities
- Receiving modes: AM, FM, narrow
- Memory: 500 channels
- Scan: 25 channels per second
- Banks: 10
- Lockout: Yes
- Search: 50 channels per second
- Delay: Individual channel, 2 seconds
- Squelch: Yes
- Audio output power: 250 milliwatts
- Record audio output: Earphone jack
- Recorder activator: No
- Computer interface: No
- 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 line: Belt clip, flex whip antenna

Order SCN 117
Retail $349
Grove price only $293.95

Order SCN 6
Retail $399
Grove price only $359

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

$7.50 UPS
$7.50 2nd Day Air
$7.50 US Priority Mail
$12.50 Canadian UPS
$15 Canadian APP

$15 2nd Day Air
$15 US Priority Mail
$21.50 Canadian UPS
$24.50 Canadian APP

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**REALISTIC® PRO-46 HANDHELD SCANNER**

Monitor low, band, high band, civilian aircraft, UHF and 800 MHz; enter up to 100 channels into fast-scan memory. Be ready for anything, any time with replaceable alkaline or nicad batteries (4 AA required).

Instant weather channel access; keyboard lock prevents accidental commands; memory erase command. Compact, sensitive, easy to operate. Comes with whip, sturdy belt clip and excellent instruction manual.

**Order SCN 20**  
Grove price only  
$193.95

- $6.50 UPS  
- $9.50 2nd Day Air  
- $9.50 US Priority Mail  
- $10.50 Canadian UPS  
- $12.50 Canadian APP

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**REALISTIC® PRO-2026 MOBILE SCANNER**

Made for Radio Shack by Uniden, the PRO-2026 has the major features of the popular BC760XL, 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 $189.95!

**Order SCN 16**  
Grove price only  
$189.95

- $6.50 UPS  
- $9.50 UPS 2nd Day Air  
- $9.50 US Priority Mail  
- $10.50 Canadian UPS  
- $12.50 Canadian APP

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**SPECIFICATIONS**

**REALISTIC® PRO-46 HANDHELD SCANNER**

- Frequency Range: 29-54, 108-174, 406-512, 806-956 MHz (less cellular)  
- Keypad frequency entry: Yes  
- Tuning steps: 5 kHz  
- RIT or fine tuning: No  
- Display: Backlit LCD  
- Dimmer: No  
- Recommended use: General purpose scanning  
- Receiving modes: NFM, AM (civilian air band only)  
- Memory: 100 channels plus 10 search-monitor channels  
- Scan: 20 channels per second, up or down  
- Banks: 10  
- Lockout: Individual channel  
- Priority: Any channel  
- Search: Yes, up or down  
- Delay: Any channel  
- Squelch: Yes  
- Audio output power: 220 milliwatts  
- Record audio output: Earphone jack (full power)  
- Recorder activator: No  
- Conversion scheme: Dual, 10.8 MHz and 450 kHz  
- Sensitivity: 0.8 microvolts nominal  
- Antenna connector: BNC  
- Dimensions: 2-3/4" W x 6" H x 3/8" D  
- Weight: Approx. 1 lb  
- Power requirement(s): 6 volts (4 replaceable AA cells)  
- Warranty: One year—unit must be returned to Grove.  

**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

**REALISTIC® PRO-2026 MOBILE SCANNER**

- Frequency Range: 29-54, 108-174, 406-512, 806-956 MHz (less cellular)  
- Keypad frequency entry: Yes  
- Tuning steps: 5 kHz  
- RIT or fine tuning: No  
- Display: Fluorescent  
- Dimmer: No  
- Recommended use: Mobile  
- Receiving modes: AM/NFM  
- Memory: 100 channels  
- Scan: 16 channels per second  
- Banks: 5 banks of 20 channels each  
- Lockout: Individual channel  
- Priority: Any channel  
- Search: 10 steps per second  
- Delay: Individual channel  
- Squelch: Yes  

**SPECIFICATIONS**

- 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.  

**ACCESSORIES:**

- Mobile mount kit  
- Mobile mount kit with instructions

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**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—IF) 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. Additionally, the Yaesu FRG-9600, Kenwood RZ-1, and ICOM R-1, R-100, R-7000, R-7100 and R-9000 offer shortwave, VHF/UHF coverage and scanable memories.

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-206 is more immune to interference from intermodulation and images, making it an excellent choice for strong or weak signal areas like large cities.

In comparison, while the Bearcat BC760XL and BC800XL have superb sensitivity, they are easily overloaded by strong signals; use them in rural or deep suburban locations, or with their own attachable whip antennas in the city.

The new BC800XL offers a tuning-knob, not available on other scanners in its price class.
The Best Scanner Antenna Money Can Buy!

Scanners 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, 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. 29). Approximate size 8' H x 5' L.

Only shipped in U.S. and Canada

SCANTENNA from Antennacraft

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. 29. Approximate size 7-1/2'H x 4-1/2'W.

Only shipped 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 omnidirectional 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 29.

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

Order Antenna Ant1

Only $59.95

$6.50 UPS
$10 UPS 2nd Day Air
$11.50 US Priority Mail
$13.50 Canadian APP
$10.50 Canadian UPS

Order Antenna Ant7

Only $39.95

$6.50 UPS
$10 UPS 2nd Day Air
$7.50 US Priority Mail
$11.50 Canadian APP
$10.50 Canadian UPS

Order Antenna Ant9

Only $79.95

$6.50 UPS
$10 UPS 2nd Day Air
$7.50 US Priority Mail
$10.50 Canadian APP
$9.50 Canadian UPS

SCANER ANTENNAS

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 (antuned) 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

One of the most common causes 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.

For Technical Support

Call Larry

704-837-7081

21
**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 sleeved).

Hand-held radios may also be connected to mobile and rooftop 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.

Amplified antennas like the Diamond D505 offer much greater range, but may overload and cause intermod in strong signal areas.

If an outside antenna is undesirable, 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 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 Scanendent sold by Grove, and the Channel Master 5094A MoniTenna 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/UHF reception in excess of 100 miles under favorable conditions are possible.

---

**GROVE EXCLUSIVE!**

**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 the first high-performance mobile antenna designed in our labs for new, wide-frequency-coverage scanners.

Utilizing Grove's exclusive bifilar helix construction, this sleek, black, 24" fiberglass whip, mounted on a strong magnetic base, assures premium signal 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.

**EXTEND THE RECEPTION OF YOUR HANDHELD RADIO**

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")** $16.95

**ANT-19 (4"-18")** $12.95

**ANT-8B** (wright-angle BNC adaptor) $21.95

**ANT-8N** (wright-angle N adaptor) $23.95

---

**WINDSHIELD MOUNT SCANNER ANTENNA**

No holes and no magnets, this 22" Valor Glaz-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 (cleaning 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**

Grove price only $39.95

---

**Order ANT 13**

**ANT4** $49.95

**ANT4W** $24.95

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

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

GROVE'S OUTDOOR SCANNER ANTENNA SYSTEM

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 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.

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.

WHAT YOU NEED TO ORDER:

**ANT 7 Scantenna (see page 23)** $39.95
**or**
**ANT 1 Scanner Beam (see page 23)** $59.95
**plus**
**PRE 4 Preamplifier** $59.95
**CK-SC Scanner Interconnect Kit** $12.95
(includes one 3' F/F cable with adaptors for most scanners)

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!

Hidden Antenna, as packaged, with Grove PRE4

WHAT YOU NEED TO ORDER:

**ANT 6 Hidden Antenna (see page 26)** $19.95
**PRE 4 Preamplifier** $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:
$7.50 UPS
$11.50 UPS 2nd Day Air
$8.50 US Priority Mail
$15.00 Canadian UPS
$13.50 Canadian APP
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 Austin "Condor" is guaranteed to improve weak signal scanner reception—on all frequency ranges—when compared to the original scanner antenna.

Order
ANT 14 $29.95
ANT 14B $34.95
(w/BNC right-angle conn)
ANT 14N $36.95
(w/N right-angle conn)

Order ANT 14
$4.50 UPS
$6.50 UPS 2nd Day Air
$4.50 US Priority Mail
$8.50 Canadian UPS
$8.50 Canadian APP

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 $19.95

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 $14.95
(Motorola)
Order CPL-63B $16.95
(BNC)

Order CPL-SC $29.95

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 $29.95

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

$4 UPS
$6.50 UPS 2nd Day Air
$4.50 US Priority Mail
$8 Canadian UPS
$8.50 Canadian Air
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 mAH charge capacity, twice that of the 131'200 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 $65.95
$4.50 UPS
$7.50 2nd Day Air
$8.50 US Priority Mail
$8.50 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 ACC70
Only $36.95
$4.50 UPS;
$7.50 2nd Day Air
$8.50 US Priority Mail
$8.50 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).

Order ACC20
A $15 dollar value for Only $9.95
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
$2.25/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 your Bearcat scanner or any other mobile accessory, including radar detectors and the Grove PR44 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 $9.95
INCLUDING FIRST CLASS MAIL SHIPPING
ACCESSORIES

M-400 UNIVERSAL DECODER

Featuring simple, pushbutton mode selection, this self-contained, compact, minu-driven decoder, when connected to your scanner's or VHF/UHF receiver's external speaker jack, will reveal CTCSS (PL) subaudible tones, DCS (DPL) squelch tones, POCASG and GOLAY digital paging messages, DTMF (Touch Tone*) telephone numbers, even air-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 adapter, full manual and pair of 1/8" (3.5 mm) plugs included.

SPECIFICATIONS

Modes: Baudot (45, 50, 57, 100 baud)
ASCI (75, 110, 150 baud)
SITOR, FEC-A & B (Automatically selected)
SWED-ARQ (144 baud)
FAX, DPL, POCSAG, SITOR
INPUTS: Speaker, 1/8" (3.5 mm) plugs included.
FILTER: Low tone (mark) 1215 Hz
Shifts: 171, 425, 850 Hz; plus 100-1000 Hz variable
INPUTS: Speaker, 1/8" (3.5 mm) plugs included.
Output, 1/8" (3.5 mm) plugs included.
DISPLAY: Two line, 20 characters each, 57 dot matrix LCD
Power required: 11-18 VDC @ 200 mA, AC adapter included
Weight: 2 lbs

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 your scanners.

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

HANDHELD RADIO MOUNT

How many times have you tried to set your hand-held scanner or handy-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.

CLIP-ON MINI SPEAKER For Handheld Radios

Brand new! 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.

ACCESSORIES:
ACC35 3/32" (2.5 mm) adaptor
(for BC200XLT, etc.) $1.50

$9.95
$4.50 UPS
$7.25 US Priority Mail
$7 Canadian APP
$1.50
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!

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!

Order SP10
(for mobile use) only
$39.95
Order SP10A
(for 120 VAC) only
$49.95
$5 UPS
$5.95 UPS 2nd Day Air
$5 Canadian UPS
$5 Canadian APP
$7 US Priority Mail
$9 Canadian UPS
$9 Canadian APP

SPECIFICATIONS

Dimensions: 4-1/2"H x 6"W (less bracket)
Weight: 23 ounces
Speaker size: 4" square
Impedance: 3-16 ohms nom
Input audio voltage: 1.8 V P-Pmax.
Audio power: 10 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: 6 ft., color-coded: in-line 2 A fuse

ACCESSORIES:

ACC2Cigarette lighter power adaptor $9.95
ACC20AC wall power supply $9.95
ACC47Nicad AA batteries (4 required) $1.95/each

Order SPK11
Only
$29.95
$5 UPS
$7.50 UPS 2nd Day Air
$9 Canadian UPS or APP
$5 Canadian UPS
$5 Canadian APP

PREMIUM LOW-LOSS RG6/U CABLE WITH ADAPTORs

CB50
(50 feet w/ adaptors)
$19.95

CB100
(100 feet w/ adaptors)
$29.95

No other lengths available

Cable loss per 100 ft:

1.6 dB @ 50 MHz
2.6 dB @ 170 MHz
4.6 dB @ 450 MHz

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
ADP11 UHF female to MOT 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.
OPTOELECTRONICS

FREQUENCY COUNTERS

We have added the necessary options and
discounted the total for your best value!

Ideal for calibrating signal generators,
transmitters, for countermeasures applica-
tions, and for determining the unknown
frequencies of transmitters, walkie-talkies,
mobile radios, base stations, cordless phones,
ham and CB radios, radio control units and
other signal emitters.

These tiny, precision instruments offer
outstanding sensitivity and TCXO (tempera-
ture compensated crystal oscillator) accuracy
of 1 part per million. All prices include
rechargeable battery pack and AC wall
charger/adaptor, but not antennas (available
from the list of accessories below). Units
operate for several hours on a fresh charge, or
continuously with the wall adaptor.

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

For casual applications such as reading
the frequencies of nearby transmitters, select
the new 2300. Measuring a scant 3-1/2" W x
3-3/4" H x 1" D and weighing about nine
ounces, it offers 1-2400 MHz frequency
range, 8 LED readout and VHF/UHF
sensitivity of 3 millivolts (3 mV).

ACCESSORIES:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC11</td>
<td>Zippered soft case (for 3000)</td>
<td>$15.95</td>
</tr>
<tr>
<td>ACC18</td>
<td>Zippered soft case with display window (for 2300)</td>
<td>$12.95</td>
</tr>
<tr>
<td>ANT19</td>
<td>4&quot;-18&quot; telescoping whip</td>
<td>$12.95</td>
</tr>
<tr>
<td>ANT8</td>
<td>7&quot;-45&quot; long-range telescoping whip</td>
<td>$16.95</td>
</tr>
<tr>
<td>ACC6</td>
<td>Test probe for circuit testing</td>
<td>$20.95</td>
</tr>
</tbody>
</table>

Optional backlite and sweep tone $64.95

By special arrangement with the manufacturer, Grove brings you this
sensitive, dependable ELF (extremely low frequency) exposure meter to
arm you against the hazards of electromagnetic radiation.

Not limited to just 60 Hz like competitive narrow-frequency units,
this meter measures from 30-300 Hz to detect harmonic radiation from
power lines and other sources.

Simply switch this pocket instrument on and read instantly the
radiation from computers, radios, home stereo and video systems,
appliances, power lines, electric blankets and more. Standard 9-volt
battery included.

Choose from low-level GSM2 (0.1-199.9 milligauss) or
standard GSM3 (1-1999 milligauss), only $99.95 each including
vinyl zipper pouch and informative instructions.

ACCESSORIES

Or, look at the advanced features of the
new, premium 3000: Ten-digit LCD readout,
optional backlite for clear high-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.

For surveillance applications ("sweeping" rooms for hidden bugs), an optional audible
tone alerts you to the presence of an unseen
transmitter, changing its pitch as you approach
its hidden location without having to see the
bargraph! A powerful pocket package at its
advertised $450, and an incredible value at
Grove’s price of only $349.95!
SCANNER FILTER

Years ago, our first scanner filter allowed the listener to reject any signal in the VHF high band which was causing overload problems. It was a step in the right direction.

But interference problems are far more severe now, with multiple sources disrupting listening. A simple notch filter is no longer the answer. Enter: The new Grove FTR5 Scanner Filter! Ideal for use with outside antennas and with signal boosters (preamplifiers)—anytime interference is troublesome.

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.

SPECIFICATIONS
- Pass: 30-35, 118-174, 225-1500 MHz
- Rejection: 0-9, 50-100, 174-225 MHz
- Frequency Range: 30-2900 MHz (nom.)
- Insertion Loss: less than 3dB
- Dimension: 8"L x 1-1/8"D
- Weight: 3 ounces

Order
FTR5 F connectors $39.95
FTR5B BNC adaptor $44.95
FTR5M Motorola adaptor $44.95
FTR5P PL259 adaptor $44.95
FTR5N N adaptor $44.95

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's for $69
Grove price only $54.95

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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 $79.95
ORDER CVR3 for desktop/mobile scanners: $84.95

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ACCEPTED!

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CALL LARRY
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ACCESSORIES

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.

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, the clock may be switched to show seconds as well. 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.

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.

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 such band allocation detail at a glance as this handsome, professional wall chart.

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!

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Order TOOL 1

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NEW! EXPANDED!
VERSION 3.0
1993 FCC DATABASE ON DISK!

NOW WITH:
- County, Latitude and Longitude fields added
- Numerical frequency field to ease the use of other database searches.
- Longer Licensee field for more accurate information.

Does not include Federal, military or amateur.

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First Data Disk and Program Additional Data Disks
CA, TX, FL $49.95 $39.95
All other states $39.95 $29.95
Plus $3.00 Priority Mail

Required hardware: IBM or compatible system, 640 K RAM, color or monochrome monitor, hard drive.
Recommended: Mouse, expanded memory

A Scanner Sampler © Grove Enterprises, Inc. 1993

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.

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Description</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>35.02</td>
<td>McDonald's order window</td>
<td>150.00</td>
</tr>
<tr>
<td>40.50</td>
<td>Army Search/Rescue</td>
<td>151.625</td>
</tr>
<tr>
<td>41.50</td>
<td>Army aircraft</td>
<td>154.37</td>
</tr>
<tr>
<td>46.61-46.97</td>
<td>Cordless phones</td>
<td>154.570</td>
</tr>
<tr>
<td>46.75</td>
<td>Pres. Helicopter</td>
<td>154.600</td>
</tr>
<tr>
<td>47.42</td>
<td>Red Cross</td>
<td>155.34</td>
</tr>
<tr>
<td>49.83-49.89</td>
<td>Wireless baby monitors</td>
<td>155.37</td>
</tr>
<tr>
<td>121.5</td>
<td>Air emerg/calling</td>
<td>156.8</td>
</tr>
<tr>
<td>122.0</td>
<td>Flight weather</td>
<td>157.05</td>
</tr>
<tr>
<td>122.2</td>
<td>Flight service</td>
<td>157.10</td>
</tr>
<tr>
<td>122.75</td>
<td>Gov't air to air</td>
<td>157.15</td>
</tr>
<tr>
<td>122.8</td>
<td>Small airport UNICOM</td>
<td>162.40</td>
</tr>
<tr>
<td>122.9</td>
<td>govt.aircraft</td>
<td>162.55</td>
</tr>
<tr>
<td>122.925</td>
<td>Natural resources air</td>
<td>163.200</td>
</tr>
<tr>
<td>123.1</td>
<td>Air search &amp; rescue</td>
<td>165.2875</td>
</tr>
<tr>
<td>123.45</td>
<td>Pilots air to air</td>
<td>165.375</td>
</tr>
<tr>
<td>126.2</td>
<td>Military air towers</td>
<td>165.950</td>
</tr>
<tr>
<td>135.575-135.625</td>
<td>ATS-3 satellite</td>
<td>167.050</td>
</tr>
<tr>
<td>143.625</td>
<td>Russian Mir cosmonauts</td>
<td>167.5625</td>
</tr>
<tr>
<td>148.15</td>
<td>Civil Air Patrol</td>
<td>170.875</td>
</tr>
</tbody>
</table>

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.
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.

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ACC115 AC inverter $79.95
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ACC118 Storage pouch for cables, accessories $9.95

ONE-HOUR RECHARGEABLE NICAD SYSTEM

You can't buy better, faster-charging NiCd batteries than the Gates Millenium. These 750 mAh 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 Millenium AA cells at a time in just one hour.

$5 UPS
$7.50 UPS 2nd Day Air
$8 US Priority Mail
$9 Canadian UPS
$8 Canadian APP

$24.95

NEW! 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.

ORDER TODAY:
ACC119 Rapidcharger $19.95
ACC120 AA cells (2) $5.95
(4) $9.95

ACCESSORIES:
ACC121 50 feet 3-conductor cable $5.95
ACC122 100 feet 3-conductor cable $8.95

Order ROT1 Only
$59.95

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 will make it unlawful to manufacture a cellular-receiving scanner after April 26, 1994, but it lawful to own one.
**FEDERAL FREQUENCY ASSIGNMENT MASTER FILE**

This new 3rd edition, now with 350 controversial pages, 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!

**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 "kiloertz"? 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!

**OFFICIAL AERONAUTICAL FREQUENCY DIRECTORY**

*By Robert A. Coburn*

This second edition features 430 pages of listings of IIF, 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.

**AIR SCAN**

*By Tom Kneitel*

This fifth edition of the exhaustive frequency directory for aircraft monitoring enthusiasts includes 2-30 MHz shortwave SSB such 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.

**TOP SECRET REGISTRY**

*By Tom Kneitel*

This new 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.

**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!

**SPORTS & ENTERTAINMENT FREQUENCY DIRECTORY**

*By Bob Grove*

This third edition helps you listen to drivers and pit crews at the auto races, boat races communications, air show stunt coordination, gambling casino management and security, Disney attractions, parade floats, amusement parks, wireless mikes, sports reporters, and much more. Over 2000 frequencies for sports events, tourist attractions, stadiums and arenas, and even fast food restaurant chains! Handy 4" x 5".

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*Books: Scanning*

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Just revised with over 10,000 VHF/UHF frequencies for nearly 400 military bases throughout the U.S., plus an extensive list of radio call signs and identifications, make this brand new publication a hot reference for the scanner listener!

Frequency listings for 30-50, 118-174, and 225-420 MHz are included for air tactical and refueling operations, military police, base security, paging, medical, disaster, fire/crash, command posts, commanders' nets, maintenance, and more.

NEW EDITION!

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By Frank Terranella

Attorney Frank Terranella, whose specialty is radio law, has collected all of the monitoring laws across America, state by state (as applicable), and includes a thorough discussion of the 1934 Communications Act, the 1986 Electronic Communications Privacy Act, and even the FCC proposal to remove all police, fire, and medical channels from radio!! 48 pages, 8-1/2" x 11".

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1993 Edition—Edited by Gene Hughes

This accurate directory has become the standard reference for the scanner listener, providing comprehensive frequency and location information as well as radio signals and codes for law enforcement, fire hospital, ambulance services, local government, federal agencies, forestry services, military bases, national parks, railroads, airlines, and maritime. All frequencies have been updated directly from licenses through 10/92. Order the volume for your region or the entire nationwide set!

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BOK22 DE, MD, NJ, PA
BOK23 MI, OH
BOK24 IL, IN, KY, WI
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BOK26 DC, FL, GA, NC, SC, VA, WV
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GUIDE TO THE AR1000

By Howard Bornstein

An extensive guide covering operations, applications, accessories and references for the AOR AR-1000 handheld scanner.

A handy, fold-out, quick-lookup chart is included. Also applies to the AR1000X, AR1000XC, AR1000XL, AR2000, AR2800, and Fairmate models HP100, HP200 and HP2000.

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DIRECTORY OF NA MILITARY AVIATION COMMUNICATIONS

By Jack Sullivan

Military aviation frequencies, modes, locations, agencies, callsigns, and uses for over 20,000 listings. Aerial maps, glossary, monitoring hints, and a table of abbreviations cross-referenced by frequency and state, and alphabetized by city.

BOK 31 NE (CT, DC, DE, MA, MD, ME, NH, NJ, NY, OH, PA, RI, VT, WV, Ontario, Quebec, Maritime Provinces)
BOK 32 SE (AL, AR, FL, GA, KY, LA, MS, NC, SC, TN, Puerto Rico, Caribbean, Central America)
BOK 33 CENTRAL (CO, IA, IL, IN, KS, MI, MN, MO, MT, NE, ND, OK, SC, TX, WI, WY, Alberta, Mexico, Manitoba, Ontario, Saskatchewan
BOK 34 WESTERN (AK, AZ, CA, HI, ID, NV, OR, UT, WA, British Columbia, Northwest Territories, Yukon)

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MONITOR AMERICA

This 2nd edition contains over 800 pages of frequencies for federal, state, county and city public safety agencies all across the United States! Includes channelization plans and usages, maps, ten codes and unit designators. Also lists many amusement, sport, railway, aircraft and national park frequencies.

BOK 70 Virginia/Metro DC

This massive, 3rd edition is a goldmine of information on that metro area. Public safety, federal and military communications is its specialty. 350 pages cross-referenced by frequency, agency and location.

BOK 71 Florida Guide

Edited by Robert Cheek, this is the scanner directory for monitoring Florida communications. Over 400 pages of documented data, cross-referenced by frequency and location, this massive missal has it all!

BOK 72 Illinois Guide

An enormous, comprehensive work with special sections on Chicago, Milwaukee and St. Louis metro regions. Complete updated!

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"BIG BOOK"

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BOK 71 Florida Guide

BOK 72 Illinois Guide

Shipping Code B
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The ultimate sourcebook for international broadcast monitoring remains the best seller in its field. It is a giant collection of frequencies, addresses, program schedules, beam headings, and other pertinent data concerning every major radio station in the world—longwave, mediumwave, and shortwave. Identify those elusive DX stations by their musical interval signals, slogans and languages as shown in the exhaustive listings within its 600 pages. Additional chapters provide expert guidance in selecting equipment and accessories for listening.

CONFIDENTIAL FREQUENCY LIST

This eighth edition is an excellent reference on 4-28 MHz communications. Listings by frequency include ship and shore stations, embassy communications, aeronautical radio, INTERPOL, spy numbers stations, military tactical communications and more. Thousands of utilities (two-way communications) frequencies, conveniently arranged in numeric order. If you hear it on the air, it is probably listed in this edition of the famous CFL.

LATEST INTELLIGENCE

By James E. Tunnell To quote the publisher's own description, "An international directory of codes used by government, law enforcement, military, and surveillance agencies." Thousands of terms and abbreviations, are explained for the first time in this giant 300 page book. Tables of frequencies used by DEA, ATF, FBI, cellular telephones, FAA, aircraft flight test, U.S. marshals, Border Patrol, medical networks, US Air Force Mystic Star, military air refueling, aerobatic teams, Secret Service and others are included.

SHORTWAVE DIRECTORY

By Bob Grove The 7th edition Shortwave Directory is the consummate DX'er's bible for the first 30 MHz of radio spectrum. Listings include U.S. and foreign military and government departments, scientific installations, aircraft and ships, NASA Space Shuttle tracking networks, English language broadcasting worldwide and more! Cross-referenced by agency and frequency. A glossary of commonly-heard radio communications terms, acronyms and abbreviations is included. 270 pages, 8-1/2" x 11".

RECEIVERS AND SCANNERS PRICING GUIDE

By Bob Grove If you are like the majority of listeners who enjoy a bargain, you won't want to be without this new pricing guide. Collected from many sources, this handy pocket reference lists lowest advertised retail price when new and typical used market value for hundreds of current and discontinued shortwave and scanning receivers. Don't go to a flea market without it!

1994 PASSPORT TO WORLD BAND RADIO

Approximately 400 easy-to-read pages this 1993 edition provides 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. Also includes Larry Magne's highly acclaimed, no-holds-barred, 1993 "Buyers Guide to World Band Radio".

WORLD PRESS SERVICES FREQUENCIES

By Thomas Harrington Previous editions of this popular news frequency directory sold out quickly. This all new 1992 edition is cross-referenced by time, frequency and location, and lists approximately 400 frequencies and dozens of agencies which may be heard on RTTY and other modes as well throughout the shortwave spectrum. Additional chapters list abbreviations and explain about equipment, accessories and tuning tips. This book is a must if you have a shortwave digital demodulator.

TUNE IN ON TELEPHONE CALLS

By Tom Kneitel No listener's book in recent history has caused so much consternation as Kneitel's recent expose' on where to listen to cellular, cordless, air to ground, ship to shore, military, satellite and wilderness radio phones—even pagers!

BOOKS: Shortwave
1993 PIRATE RADIO DIRECTORY

By George Zeller and Andrew Yoder Recognized as authorities on unlicensed broadcasters, George Zeller and Andrew Yoder have updated this popular directory of pirate broadcasters — dozens and dozens of stations from all over North America.

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By Gary L. Staun and Mark J. Landgraf Avid railfans have long awaited this new, revised 12th edition of our most popular railroad frequency directory! 200 pages offer comprehensive listings of all frequencies used by U.S. and Canadian railroads, arranged alphabetically by name. Maps are included to show route.

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INTERNATIONAL CALLSIGN DIRECTORY

By Gayle Van Horn The most exhaustive list of tactical callsigns and their identifications ever-assembled for shortwave and scanner listeners in a massive, 250 page directory!

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M STREET RADIO DIRECTORY

1992-1993 Edition Considered by experts as the most authoritative and comprehensive guide to AM and FM broadcasting stations in the US and Canada, this latest edition by the publishers of the prestigious M Street Journal is packed with program formats, frequencies, Arbitron (and other) ratings, market information and addresses of thousands of licensees.

BOK53
$29.95
Shipping Code B

CANADIAN MILITARY RADIO FREQUENCY GUIDE

By Robert S. Ing Previously, shortwave and scanner monitors have had to rely on occasional club bulletins or U.S. frequency directories for Canadian utilities information. This new book lists Canada's extensive worldwide military frequencies and locations of CFARS, Coast Guard, UN, NATO, NORAD, Snowbird, and many other military deployments.

BOK55
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SECRETS TO SUCCESSFUL QSLING

By Gerry Dexter The master of QSL collecting has updated his classic, bringing you 120 pages of new hints and insights for getting those rare verifications from shortwave broadcasters and utility stations alike! Chapters include recommendations from experts, amusing stories about QSL hunting experiences and how to display and preserve QSL cards.

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1993 WRTH EQUIPMENT BUYER'S GUIDE

From the publishers of the World Radio TV Handbook, this handy, 270 page volume lists receivers, antennas and accessories currently available to the shortwave monitoring enthusiast. Products are reviewed for prospective buyers, while additional chapters explain receiver specifications in easy-to-understand terms. An excellent reference for the active SWL.

BOK66
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US MARITIME FREQUENCY DIRECTORY

By Robert Gad and Robert A. Coburn Whether your maritime listening interests involve a scanner or a shortwave receiver, this is the book for you! A massive compilation from official lists of US Coast Guard, high seas radio telephone, coastal and ship stations, emergency distress, marine operator, weather service, inland waterways, and more!

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TRAVELER' S GUIDE TO WORLD RADIO

This handy pocket guide fits neatly in your suitcase or alongside your shortwave radio and provides instant access to English language programs from 55 major cities around the globe! Easy-to-read charts show time and frequency schedules for shortwave, medium wave and FM broadcasting as well. 200 information-packed pages relate time conversion, main languages, electric power type, currency and country telephone prefixes and area codes as well.

SHORTWAVE RADIO LISTENING FOR BEGINNERS

By Anita Louise McCormick This brand new publication provides excellent insight into shortwave radio—its history, its intrigue, its players. Broadcasters, pirates and clandestines, utility communicators, hams and even scanner topics are covered in this easy-to-read, liberally illustrated work by a veteran listener. Informative, fun reading with source lists for equipment, publications and clubs, all at an incredibly low price!

THE BASEBALL LISTENERS GUIDE

By Ken Reitz No matter where you are located, there is probably an AM or FM radio station nearby covering today’s game. All 28 major and 97 minor league teams are listed among over 1300 radio stations all over North America—English, French and Spanish languages! Sorted first by team, then by city, call letters and frequency, this 85 page directory is the sports fan’s dream!

SCANNER MODIFICATION HANDBOOK VOLUME 1

By Bill Cheek Although concentrating on mods for the Realistic® PRO2004 and 2005, excellent hints are included for scanners in general. Cellular/telephone frequency plans, adding S meters, squelch improvements, voltage protection, cellular restoration, increasing memory capacity (64,000 channels for the PRO2004/2005 and 3200 for the PRO341), portable power supplies, choosing antennas and coax, and more!!

SCANNER MODIFICATION HANDBOOK VOLUME 2

By Bill Cheek This second volume continues where the first leaves off. Detailed step-by-step instructions to add modifications to perk up your scanner. While concentrating on the Realistic® PRO-2004/56, PRO-34, PRO-2022, Uniden BC200/205XLT, BC100XLT, and BC7650; 950XLT, if you are a clever technician, many of the techniques may be applied to other scanners as well. Some references made to Volume 1.

RADIO TECH MODIFICATIONS

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