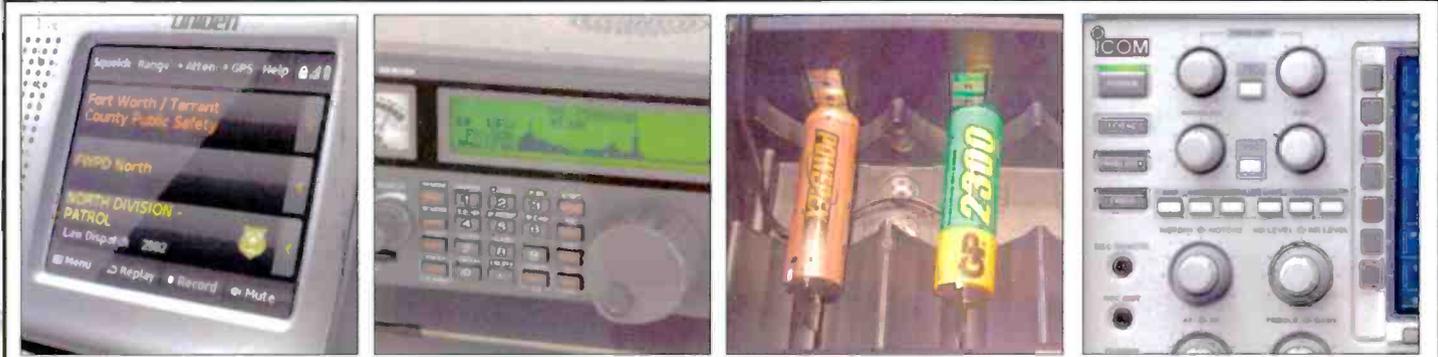


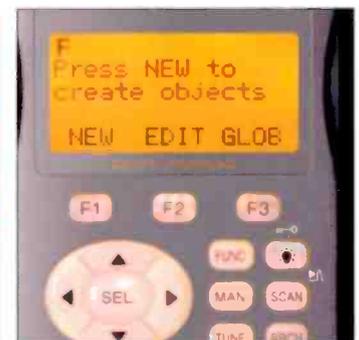
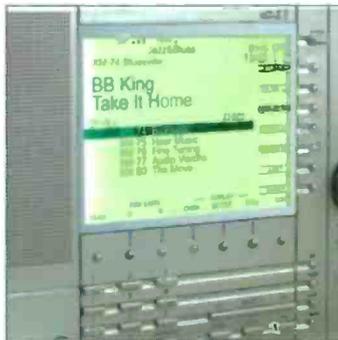
# POPULAR COMMUNICATIONS

DECEMBER 2010

Shortwave Listening • Scanning • AM & FM • Radio History



## The Year In Gear (And Then Some)



\*\*\*\*\*AUTO\*\*5-DIGIT 66061  
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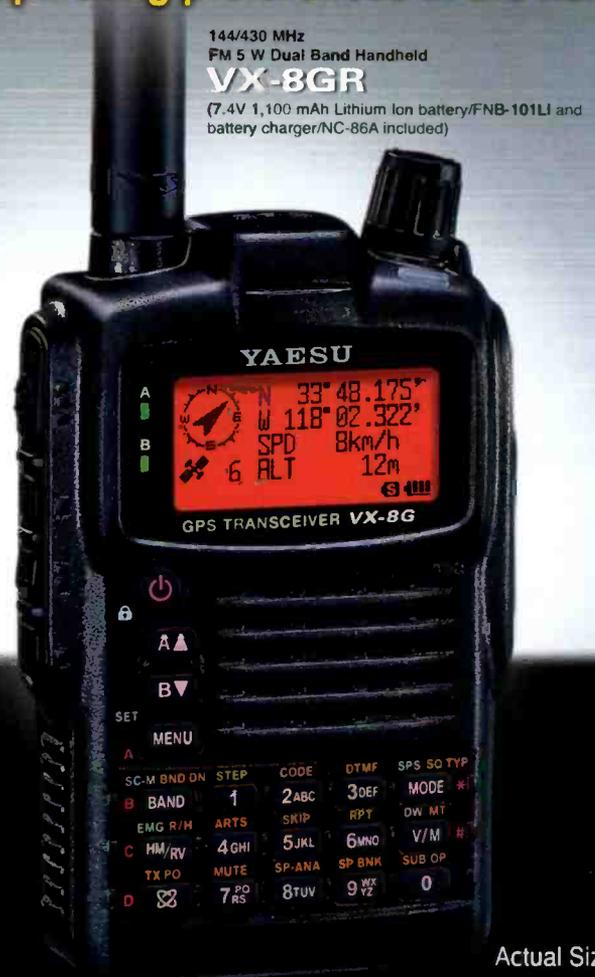
# A TECHNOLOGY BREAKTHROUGH

New Advanced VX-8 Series GPS/APRS® Handheld Transceivers  
Choose the Yaesu that meets your APRS® operating preferences in the field



50/144/(222)\*430 MHz  
FM 5 W/AM 1W (50 MHz) Triple Band Handheld  
**VX-8DR** \* 222 MHz/1.5 W (USA version)  
(7.4V 1,100 mAh Lithium Ion battery/FNB-101LI and battery charger/NC-86A included)

Actual Size



144/430 MHz  
FM 5 W Dual Band Handheld  
**VX-8GR**  
(7.4V 1,100 mAh Lithium Ion battery/FNB-101LI and battery charger/NC-86A included)

Actual Size

## VX-8DR NEW

All-in-one Prestigious Tri-band Transceiver  
Bluetooth® for hands-free Operation with optional accessories  
Waterproof/Submersible IPX 7 rated - 3 ft for 30 minutes

## VX-8GR NEW

144/430 MHz Dual Band Transceiver with GPS unit included  
Built-in GPS Antenna - Waterproof  
Wide Band Receive for 108-999 MHz (Cellular blocked - US Version)



Optional GPS and antenna unit for GPS/APRS® operation



The optional GPS Antenna Unit FGPS-2 attached to the optional speaker Microphone MH-74A7A



Bluetooth®

Attached to the radio (microphone input) using the optional GPS Antenna Adapter CT-136



### Supports APRS® communication by the Built-in Worldwide Standard AX.25 Data TNC

The VX-8 series radios are compatible with the world wide standard APRS® (Automatic Packet reporting System) using the GPS system to locate and exchange position information.

- SmartBeaconing™ Function
- Memories to list 50 stations
- Memories to store 30 APRS® messages
- DIGI-PATH routing indication function
- 8 DIGI-PATH routing settings

- GPS Compass Display - "Heading Up" or "North Up"
- APRS® Symbol Icon pre-set function
- Clearly displayed APRS® Beacon Messages
- Selective Message Received Indicated by Flashing LED

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

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# Universal Radio — Quality equipment since 1942.

## GRUNDIG

### Satellit 750

✓ Receive a **FREE Grundig G6** with your Satellit 750 purchase. A \$99.95 value!

### G6



The Grundig G6 *Buzz Aldrin Edition* provides great listening options. Tune in to longwave, AM, FM, the VHF aircraft band or continuous coverage shortwave. This advanced dual conversion circuit features *Single Side Band* reception. This radio has keypad entry, manual tuning knob, 700 alphanumeric memories, backlit display with signal strength indicator, clock-timer, and mega-bass switch. There are jacks for earphones and external antenna. Operates from two regular or NiCad AA cells (not supplied). With AC adapter and earbuds. 5 x 3 x 1.2" 9 oz. The Grundig G6 will be included **FREE** with your Satellit 750 purchase through 12/31/10. This radio may also be purchased separately for \$99.95.

The Grundig Satellit 750 is an exciting portable that brings you the world of long wave, AM and shortwave reception as well as FM and the VHF aeronautical band. Your complete shortwave coverage includes the S.S.B. mode allowing the reception of ham radio operators, maritime and shortwave aeronautical stations. Tune your favorite stations by the conventional tuning knob, quick keypad entry or via the 1000 memories. Enjoy the fidelity you have come to expect from Grundig enhanced by separate bass and treble controls. Other features include: backlit LCD, wide/narrow selectivity, signal strength meter, rotatable AM ferrite antenna, earphone jack, external antenna jack, line output jack plus a 24 hour clock with dual alarm and sleep feature. 14.65 x 7.24 x 5.75". **Grundig Satellit 750** Order #0750 List Price \$400.00 **\$299.95**

### G3

✓ Receive a **FREE Grundig M400** with your Grundig G3 purchase. A \$29.95 value!

### M400



The Grundig G3 *Globe Traveler* is an innovative portable radio covering long wave, AM, FM (stereo to earphone jack), continuous shortwave plus the VHF aircraft band. It features dual conversion AM/SW circuitry for exceptional sensitivity and image rejection. It offers S.S.B. - Single sideband reception. It has a large 700 channel alpha memory system with memory scan and auto tuning storage. Unlike other portables in its class, the *Globe Traveler* offers Synchronous Detection. This special feature addresses the issue of selective fading and adjacent channel interference on shortwave. Other enhancements include: Wide/Narrow selectivity, auto search, RDS, signal indicator, Local/DX switch, direct frequency entry and 24 hour clock with four alarm timers. It has an external antenna jack and a Line In/Out jack. Requires four AA cells (not supplied). If four NiMH AAs are inserted, they may be recharged inside the radio. Supplied with manual, protective pouch and AC adapter/charger. 6.62 x 4.13 x 1.1". 13 oz.

**G3 Globe Traveler** Order #4033 \$149.95

The Grundig M400 is an ultra compact portable radio that covers the AM, FM and shortwave in two bands: 5.9-10 and 11.65-18 MHz. The frequency display is to the nearest 1 kHz on AM and to 5 kHz on shortwave. There is a built-in clock-alarm. The left side of the radio has the tuning knob, an earphone jack and a lock button to prevent accidental frequency changes. An amazingly thin radio - under 1/2 inch! This radio operates from two AAA cells (not supplied). Supplied with a soft case that permits the radio to be played even while inserted. 2.75 x 4.33 x 0.472" 3.2 ounces. The Grundig M400 will be included **FREE** with your G3 purchase through 12/31/10. This radio may also be purchased separately for \$29.95

### S450DLX

**NEW!**



The Grundig S450DLX *Field Radio* receives AM, FM and shortwave continuous from 1.7 to 30 MHz. A wide/narrow bandwidth switch reduces adjacent channel interference. The main tuning knob may be set to fast tuning, slow tuning or lock. Features include: Bass and Treble tone controls, RF Gain, 50 memories, 12/24 hour dual alarm clock, Quick-Tune button, sleep timer, 9/10 kHz MW step, battery level icon, DX/Local switch, FM mono or stereo (to earphone jack only) switch, F type antenna jack for external SW/FM antenna and terminals for MW antenna and Ground. There is an AM IF Output jack (F type) for future accessory devices such as DRM or SSB decoders. Jacks also for line level output and line level input, plus an earphone jack. The display is backlit and there is a switch to even illuminate the push button keys on the front panel. Includes 9VDC AC adapter or operates from six D cells (not supplied). 12.2 x 8.5 x 3.8". The S450DLX offers outstanding features *plus* that "great audio" you expect from Grundig! **S450DLX** Order #5450 \$99.99

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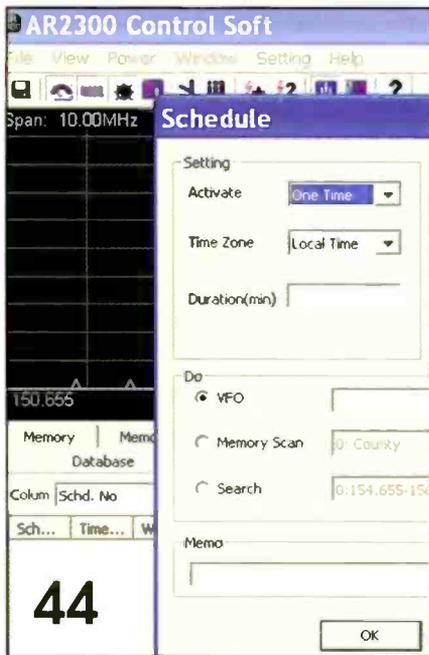
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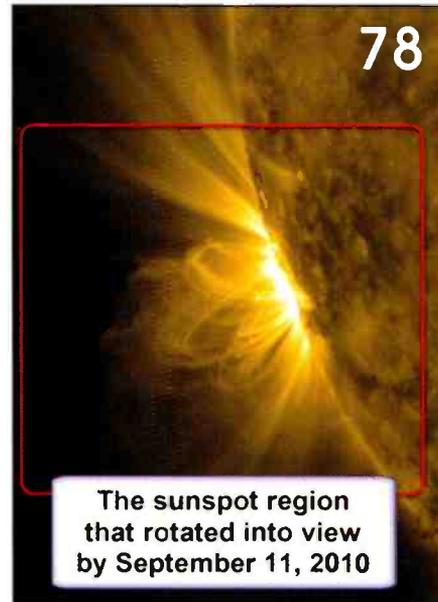
DECEMBER 2010  
VOLUME 29, NUMBER 4



44



72



78

The sunspot region that rotated into view by September 11, 2010

## ON THE COVER

Whew! What a year for hobbyists. 2010 brought so many exciting and breakthrough products that we're still a little out of breath. Plus other great recent releases—as well as the teeming used market—means there's a ton of mouth-watering gear to sort through. To help you do just that, this month's features provide a starting point (and beautiful cover images). (Cover design by Liz Ryan)

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# Tap into secret Shortwave Signals

Turn mysterious signals into exciting text messages with the MFJ MultiReader™!



MFJ-462B  
\$199<sup>95</sup>

Plug this self-contained MFJ Multi-Reader™ into your shortwave receiver's earphone jack.

Then watch mysterious chirps, whistles and buzzing sounds of RTTY, ASCII, CW and AMTOR (FEC) turn into exciting text messages as they scroll across an easy-to-read LCD display.

You'll read interesting commercial, military, diplomatic, weather, aeronautical, maritime and amateur traffic . . .

## Eavesdrop on the World

Eavesdrop on the world's press agencies transmitting unedited late breaking news in English -- China News in Taiwan, Tanjug Press in Serbia, Iraqi News in Iraq -- all on RTTY.

Copy RTTY weather stations from Antarctica, Mali, Congo and many others. Listen to military RTTY passing traffic from Panama, Cyprus, Peru, Capetown, London and others. Listen to hams, diplomatic, research, commercial and maritime RTTY.

## Super Active Antenna

"World Radio TV Handbook" says MFJ-1024 is a

"first-rate easy-to-operate active antenna... quiet... excellent dynamic range... good gain... low noise... broad frequency coverage." Mount it outdoors away from electrical noise for maximum signal, minimum noise. Covers 50 KHz-30 MHz. Receives strong, clear signals from all over the world. 20 dB attenuator, gain control, ON LED. Switch two receivers and auxiliary or active antenna. 6x3x5 in. Remote has 54" whip, 50 foot coax. 3x2x4 inches. 12 VDC or 110 VAC with MFJ-1312, \$15.95.



MFJ-1024  
\$159<sup>95</sup>

## Indoor Active Antenna Rival outside

long wires with this tuned indoor active antenna. "World Radio TV Handbook" says MFJ-1020C is a "fine value... fair price... best offering to date... performs very well indeed."

Tuned circuitry minimizes intermod, improves selectivity, reduces noise outside tuned band. Use as a preselector with external antenna. Covers 0.3-30 MHz. Tune, Band, Gain, On/Off/Bypass Controls. Detachable telescoping whip. 5x2x6 in. Use 9 volt battery, 9-18 VDC or 110 VAC with MFJ-1312, \$15.95.



MFJ-1020C  
\$99<sup>95</sup>

## Compact Active Antenna

Plug this compact MFJ all band active antenna into your receiver and you'll hear strong, clear signals from all over the world, 300 KHz to 200 MHz including low, medium, shortwave and VHF bands. Detachable 20" telescoping antenna. 9V battery or 110 VAC MFJ-1312B, \$15.95. 3/8x1 1/4x4 in.



MFJ-1022  
\$69<sup>95</sup>

## Eliminate power line noise!

MFJ-1026  
\$199<sup>95</sup>

Completely eliminate power line noise, lightning crashes and interference before they get into your receiver! Works on all modes -- SSB, AM, CW, FM, data -- and on all shortwave bands. Plugs between main external antenna and receiver. Built-in active antenna picks up power line noise and cancels undesirable noise from main antenna. Also makes excellent active antenna.

## MFJ Antenna Matcher

Matches your antenna to your receiver so you get maximum signal and minimum loss. MFJ-959C Preamp with gain control boosts weak stations 10 times. 20 dB attenuator prevents overload. Select 2 antennas and 2 receivers. 1.6-30 MHz. 9x2x6 in. Use 9-18 VDC or 110 VAC with MFJ-1312, \$15.95.

## High-Gain Preselector

High-gain, high-Q receiver preselector covers 1.8-54 MHz. Boost weak signals 10 times with low noise dual gate MOSFET. Reject out-of-band signals and images with high-Q tuned circuits. Push buttons let you select 2 antennas and 2 receivers. Dual coax and phono connectors. Use 9-18 VDC or 110 VAC with MFJ-1312, \$15.95.

## Dual Tunable Audio Filter

Two separately tunable filters let you peak desired signals and notch out interference at the same time. You can peak, notch, low or high pass signals to eliminate heterodynes and interference. Plugs between radio and speaker or phones. 10x2x6 inches.



MFJ-959C  
\$119<sup>95</sup>



MFJ-1045C  
\$89<sup>95</sup>



MFJ-752C  
\$119<sup>95</sup>

Listen to maritime users, diplomats and amateurs send and receive error-free messages using various forms of TOR (Telex-Over-Radio).

Monitor Morse code from hams, military, commercial, aeronautical, diplomatic, maritime -- all over the world -- Australia, Russia, Japan, etc.

Monitor any station 24 hours a day by printing transmissions. Printer cable, MFJ-5412, \$11.95.

Save several pages of text in memory for later reading or review.

## High Performance Modem

MFJ's high performance PhaseLockLoop™ modem consistently gives you solid copy -- even with weak signals buried in noise. New threshold control minimizes noise interference -- greatly improves copy on CW and other modes.

## Easy to use, tune and read

It's easy to use -- just push a button to select modes and features from a menu.

It's easy to tune -- a precision tuning indicator makes tuning your receiver easy for best copy.

It's easy to read -- front-mounted 2 line 16 character LCD display has contrast adjustment.

Copies most standard shifts and speeds. Has

MFJ AutoTrak™ Morse code speed tracking.

Use 12 VDC or use 110 VAC with MFJ-1312D AC adapter, \$15.95. 5 1/4Wx2 1/2Hx5 1/4D inches.

## WiFi Yagi Antenna -- 15 dBi 16-elements extends range



MFJ-1800  
\$29<sup>95</sup>

16-element, 15 dBi WiFi Yagi antenna greatly extends range of 802.11b/g, 2.4 GHz WiFi signals. 32 times stronger than isotropic radiator. Turns slow/no connection WiFi into fast, solid connection. Highly directional -- minimizes interference.

N-female connector. Tripod screw-mount. Wall and desk/shelf mounts. Use vertically/horizontally. 18Wx2 1/4Hx1 1/4D inches. 2.9 ounces.

MFJ-5606SR, \$24.95. Cable connects

MFJ-1800/WiFi antennas to computer.

Reverse-SMA male to N-male, 6 ft. RG-174.

MFJ-5606TR, \$24.95. Same as MFJ-5606SR but Reverse-TNC male to N-male.



## MFJ Shortwave Headphones



MFJ-392B  
\$24<sup>95</sup>

Perfect for shortwave radio listening for all modes -- SSB, FM, AM, data and CW. Superb padded headband and ear cushioned design makes listening extremely comfortable as you listen to stations all over the world! High-performance driver unit reproduces enhanced communication sound. Weighs 8 ounces, 9 ft. cord. Handles 450 mW. Frequency response is 100-24,000 Hz.

## High-Q Passive Preselector

High-Q passive LC preselector boosts your favorite stations while rejecting images, intermod and phantom signals. 1.5-30 MHz. Preselector bypass and receiver grounded positions. Tiny 2x3x4 in.

## Super Passive Preselector

Improves any receiver! Suppresses strong out-of-band signals that cause intermod, blocking, cross modulation and phantom signals. Unique Hi-Q series tuned circuit adds super sharp front-end selectivity with excellent stopband attenuation and very low passband attenuation and very low passband loss. Air variable capacitor with vernier. 1.6-33 MHz.



MFJ-956  
\$69<sup>95</sup>



MFJ-1046  
\$119<sup>95</sup>

## MFJ Shortwave Speaker



MFJ-281  
\$12<sup>95</sup>

This MFJ ClearTone™ restores the broadcast quality sound of shortwave listening. Makes copying easier, enhances speech, improves intelligibility, reduces noise, static, hum. 3 in. speaker handles 8 Watts. 8 Ohm impedance. 6 foot cord.

## MFJ All Band Doublet

102 ft. all band doublet covers .5 to 60 MHz. Super strong custom fiberglass center insulator provides stress relief for ladder line (100 ft.). Authentic glazed ceramic end insulators and heavy duty 14 gauge 7-strand copper wire.



MFJ-1777  
\$59<sup>95</sup>

## MFJ Antenna Switches

MFJ-1704 \$79<sup>95</sup> MFJ-1702C \$39<sup>95</sup>



MFJ-1704 heavy duty antenna switch lets you select 4 antennas or ground them for static and lightning protection. Unused antennas automatically grounded. Replaceable lightning surge protection. Good to 500 MHz. 60 dB isolation at 30 MHz. MFJ-1702C for 2 antennas.

## Morse Code Reader

Place this MFJ-461 pocket-sized MFJ Morse Code Reader near your receiver's speaker. Then watch CW turn into solid text messages on LCD. Eavesdrop on Morse Code QSOs from hams all over the world!



MFJ-461  
\$89<sup>95</sup>

## MFJ 24/12 Hour Station Clock

MFJ-108B, \$21.95. Dual 24/12 hour clock. Read UTC/local time at-a-glance. High-contrast 5/8" LCD, brushed aluminum frame. Batteries included. 4 1/2Wx1Dx2H inches.



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## EDITORIAL

### Tuning In

# Did You Hear Something?

by Edith Lennon, N2ZRW  
editor@popular-communications.com

'Twas the month of the Geminids  
O'er-soaring the house  
The radio bands crackled warmly  
Who could possibly grouse?

Yet my tummy was grumbling  
And I remembered the snack  
My kids left on the table  
To lure Santa back.

So to the kitchen snuck I  
Santa's plate from to steal—  
'Twas Wheat Thins and Cheese Whiz  
(And beer—hey, I'd planned the meal).

Then, "Hark! A noise from the parlor!"  
Quoth I in words kinda kooky—  
I mean, since when are the Holidays  
Supposed to be spooky?

But I gathered my courage  
And peered into the gloom  
'Til I seemed to see someone  
Sneaking into the room.

He'd slipped out the fireplace,  
Tiptoe lightly did he,  
Till tripping o'er my old dog  
He fell into the tree.

"St. Nick!" cried I, wide-eyed,  
"Can it really be you?  
Last year 'twas two robbers  
Came down through the flue."

"Yes, of course" (*he was grouching,*  
Whilst picking off pine),  
"Who else dresses in suit red  
And smells vaguely of wine?"

Quoth I, "Great Uncle Kenny  
Each year at this time  
Dresses up just as you do  
And smells *greatly* of wine."

As he stood up his sack spilled  
Precious contents galore—  
O! Such radios for world bands,  
Scanners, accessories, and more!

I spied ICOM and Kenwood  
Uniden and Yaesu,  
Plus Etón and C. Crane  
And lots from MFJ, too.

AOR, Heil Sound, Grundig  
bhi 'cross the sea,  
I spied GRE and Alinco  
And asked, "Is this all for *me*?"

"Yup, and lots more,"  
Quoth Santa, "Just keep looking inside."  
Quoth I, "That sounds like my magazine—  
You ought to subscribe."

"Let's talk o'er a brewski,"  
Said I (grabbing a pen)  
"We've Cheese Whiz and Wheat Thins,  
Let's hang in the den."

Ah, long talked we of great scanning,  
Police chases and fires  
Of restoring old radios  
With some tubes and some wires.

Long reminisced we fondly  
Of CB in the Eighties,  
Of shortwave and longwave,  
Of pirates and mateys.

But the night and the beer  
Now both were nigh gone  
So Santa stood up  
And asked for the john.

He emerged (aft what seemed like a long time)  
Saying "Thanks for the brew,"  
And ambled back into the parlor  
Stopping just 'fore the flue.

"I'll catch you next Christmas  
Or perhaps in between,  
Listen for me at drive time  
On CB 19."

Then he was gone with a dash  
(Or was it a dash dot dot dot?),  
But I was left with the knowledge  
That we sure have a lot.

So Merry Christmas, fellow hobbyists,  
And Happy New Year as well  
For we are blessed indeed,  
While our voices in thanks still can swell.

Happy Holidays from all of us at  
*Popular Communications*. May your rea-  
sons for thanks stretch into the next year,  
and far beyond.

# KENWOOD

Listen to the Future



## The Kenwood Family

Home for Christmas

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# The Weirder Side Of Wireless

by Staff

## Man Tattoos Face After Radio Station Joke

According to a WLS-TV Chicago News report, David Winkelman had the call letters and logo for KORB-FM in Bettendorf, Iowa, tattooed onto his forehead. The 48-year-old reportedly heard the station offer a six-figure cash prize to listeners who did just that. Unfortunately, for Winkelman the broadcaster's offer was a prank. He sued, claiming the station was trying to mark some of its listeners so they'd "be publicly scorned and ridiculed for their greed and lack of common good sense." Winkelman's stepson also got the same tattoo on his forehead. Both lawsuits were dismissed. Although these events began back in 2000, Winkelman was recently arrested for unauthorized use of a motor vehicle and his mug shot went viral on the Internet—unleashing the feared public scorn and ridicule. To add insult to injury, KORB-FM subsequently changed its call letters and format from hard rock to "hot adult contemporary." Now *that's* embarrassing!



## Guards Find Cell Phone Inside Inmate's Rectum

The *Raleigh News & Observer* reported that North Carolina prison authorities alleged a prisoner attempted to smuggle a Samsung mobile phone into a State prison inside his rear body orifice. Court documents state Eric Chambers, 25, was charged with "unauthorized use of a telephone" and other offenses after setting off metal detectors at Central Prison. Investigators claimed he was using the phone as part of a drug-dealing operation. It is unclear what particular ring tone or vibrate mode Chambers was using.

## Doh! Montana Teen Accidentally Texts Sheriff To Buy Pot

The *Independent Record* newspaper in Helena, Montana, reported that a teenager sent a mobile text message, asking to buy marijuana, to a wrong number—the one that belonged to County Sheriff Leo Dutton. The message allegedly said "Hey Dawg, do you have a \$20 I can buy right now?" Dutton, who is running for another term, enlisted a county detective to act as a pot dealer and organize a drug buy at a local

store. When the detective saw two teenage boys and one of the boy's fathers (who was apparently unaware of the deal) he reportedly called the teen's mobile number to verify he had the right person. Sheriff Dutton said that when the detective showed his badge to the teens, one of them fainted. The boys' parents got involved and no citations were issued. Montana allows marijuana use for medicinal purposes and has an active hemp industry. It is unclear if the teens are SWLs and listen to Captain Ganja's Radio Free Euphoria.

## Norwegian Newscaster Quits During Live Radio Broadcast

The Associated Press reported that Norwegian radio journalist Pia Beathe Pedersen quit on the air after complaining she couldn't read that day's news because "nothing important has happened." Pedersen accused her employers on the air of putting too much pressure on staffers, and announced she was "quitting and walking away" because she "wanted to be able to eat properly again and be able to breathe." The reporter worked at the Oslo outlet of public broadcaster NRK for a year and a half, and has reportedly not found another job in broadcasting since.

## BP's ARCO Radio Ad Spot Trips Emergency Alert System (EAS)

The Society of Broadcast Engineers (SBE) reported that a "simulated EAS header" tone in a radio advertisement for BP's ARCO Petroleum Company contains a fake emergency alert that triggered some automated EAS alarm systems across the country. The SBE said it is concerned that radio broadcasts of "the simulated EAS header" and tones may constitute a violation of FCC regulation 11.45, which states, "No person may transmit or cause to transmit the EAS codes or Attention Signal, or a recording or simulation thereof, in any circumstance other than in an actual National, State or Local Area emergency or authorized test of the EAS."

The SBE continued, "The commercial starts with shortened EAS headers, then the spoken phrase, 'The following alert is from ARCO [ad material].' The EAS headers are partial, but contain enough information to mimic the start of an EAS header, using the proper frequencies and data rate. When this commercial is played by a station that is being monitored it may cause some EAS equipment to un-mute and print a partial message."

Some observers offered that BP should clean up real emergencies before creating fake ones. The full BP ARCO radio ad spot can be heard online [http://sbe.org/pub\\_sc.php#BPCommercial](http://sbe.org/pub_sc.php#BPCommercial).

# News, Trends, And Short Takes

by D. Prabakaran

## HCJB Plans To Build New SW Site In Ecuador

At the recent High Frequency Co-ordination Conference meeting in Switzerland, Stephan Schaa of VozAndes Media in Germany explained that after HCJB dismantled its shortwave transmitter site in Pifo, Ecuador, the equipment was donated to HCJB's German branch. This included a 100 kW HC-100 HF transmitter, two 33 kW Siemens linear transmitters which have been tested by HCJB with 4 kW in DRM mode, and two 10 kW regional shortwave transmitters, one of which is operating on 6050 kHz. The donation also included antennas and transmission lines. VozAndes Media plans to build a new shortwave transmitter site somewhere else in Ecuador within six to 12 months, although a site has not yet been located. The plan is to broadcast in German, Spanish and Portuguese, as well as some regional South American languages such as Quichua. Broadcasts will be targeted primarily at Latin America, although there would also likely be broadcasts to Europe in German with the 100 kW transmitter. Some DRM transmissions are planned.

(Source: National Association of Shortwave Broadcasters Newsletter)

## Small-scale DRM Shortwave Video Service Announced

Fraunhofer IIS announced the worldwide launch of Diveemo, a new small-scale video service for Digital Radio Mondiale (DRM) at IBC 2010. Initiated as a joint effort between Fraunhofer IIS, Thomson Broadcast & Multimedia and Chengdu NewStar Electronics, Diveemo delivers cost efficient large-area distribution of education and information video programs via DRM. Developed by Fraunhofer IIS, Diveemo's IBC launch featured a transmission of a live video broadcast with BBC content displayed on a NewStar DRM receiver. DRM transmissions over shortwave have coverage possibilities ranging from shortwave transmission can reach from 100 to well over 5 million square kilometers depending on conditions and broadcast parameters. The service opens the door to a large range of unprecedented information and education services via DRM transmitters or DRM single-frequency network. Diveemo offers free-of-charge reception and is independent of gatekeeper and third party providers like satellite and cable networks.

(Source: Thomson/Fraunhofer)

## Voice Of America Expands Sudan Programming

The Voice of America announced the expansion of its radio programming dedicated to Sudan. Its *Sudan in Focus* program airs Monday-Friday from 1630 to

1700 UTC on 9675, 12015 and 13825 kHz. Joan Mower, senior officer in VOA's Office of Business Development, says VOA's expansion of its Sudan programming reflects growing U.S. interest in southern Sudan. The program has up to now been aired at 1645 and 1845 UTC on Mon-Thurs and 1630-1700 on Fridays as part of *Africa News Tonight*.

(Source: VOA)

## RFE's Pakistan Broadcasts Boosted To Nine Hours A Day

RFE's broadcasts to the Pashtun regions of Pakistan and Afghanistan have expanded from six to nine hours a day. Amid the growing number of extremist-controlled radio stations in the region, Radio Mashaal ("Torch" in Pashto) covers local and international news with independent reports on terrorism, politics, women's issues, and health care. Broadcasts on 621 kHz are now at 0400-1300 UTC. The expanded schedule on shortwave is as follows:

0400-1300 UTC on 12130 kHz  
0400-0900 UTC on 15175 kHz  
0400-0900 UTC on 15740 kHz  
0900-1300 UTC on 12030 kHz  
0900-1300 UTC on 15360 kHz

(Source: RFE/RL)

## MP3-enabled Radio Launched For Developing World

Lifeline Energy has launched a solar- and self-powered digital MP3-enabled radio called the Lifeplayer. The Lifeplayer bridges Internet, cellular, media player, and radio technologies and can deliver on-demand educational programming for the poor. The non-profit, formerly known as the Freeplay Foundation, designed and engineered the product in South Africa after years of research undertaken in sub-Saharan Africa. The Lifeplayer, created for humanitarian sector use only, can be pre-loaded to hold years of educational content (up to 64GB); can update programming with a microSD card, including downloaded audio Internet content; can play downloaded cellular content sent across 3G networks; and can record live voice onto the device that can later be uploaded to the Internet. Powered by solar or a hand-crank as a secondary energy source, the Lifeplayer is completely power independent, critical given the paucity of electricity in rural areas. Its wireless solar panel can charge a cell phone through a USB lead, an essential feature since people often walk miles to charge their phones.

(Source: Lifeline Energy)

# Capitol Hill And FCC Actions Affecting Communications

## by Richard Fisher, KI6SN **Bill Calls For Spectrum Auction Proceeds To Be Used To Fund Elections**

The ranking member of the U.S. House Energy and Commerce Committee has called for thorough scrutiny of a bill that would use funds collected through frequency spectrum auctions to “help finance the political campaigns of House members,” according to a report on *Broadcasting & Cable’s* Internet site ([www.broadcastingcable.com](http://www.broadcastingcable.com)). Rep. Joe Barton (R-Texas) asked committee Chairman Henry Waxman (D-California) “to hold a hearing on...HR 6116 (the Fair Elections Now Act) before it gets any consideration on the House floor,” wrote *B&C’s* John Eggerton. The legislation was introduced by Rep. John Larson (D-Conn.), who is not a member of the committee. Under provisions of the proposal, government matches for contributions by small-dollar contributors—through a Fair Elections Fund—would be underwritten in part by monies collected from spectrum auctions. Alleging HR 6116 would use auction funds “to bail out failing congressional candidates,” Rep. Barton said to Rep. Waxman in a letter opposing the bill that “over the last two decades, spectrum auctions have raised billions of dollars for the American people. They have been a source of substantial deficit reduction and have helped fund important telecommunications initiatives for the good of all Americans.”

## **FCC Adopts Rules Opening Door To Amped-Up Wi-Fi In TV “White Spaces”**

With the release of the largest amount of unlicensed spectrum in a quarter century, the FCC in September freed-up television band “white spaces,” opening the door to billions of dollars of economic action. According to a report in the *Los Angeles Times*, federal regulators approved new rules for the unused frequencies that had been set aside to prevent adjacent channel interference. “The spectrum space is especially valuable because it could be used to create stronger wireless Internet signals that easily pass through walls and travel a longer distance than other unlicensed bands,” the report said. The Commission voted 5 to 0 in favor of the new guidelines. “Supporters of opening up ‘white spaces’... say the spectrum could be used to provide a host of new services over wireless broadband connections,” the *Times*

reported. “‘White spaces,’ for example, could supplant weaker Wi-Fi technology to build superior wireless networks on college campuses, in hospitals and in other large complexes.” The nation’s broadcasters, however, have cautioned that opening up “white spaces” could allow interference during their programming, “particularly the use of wireless microphones by announcers and producers,” the report said.

## **More Public Safety Waivers Being Considered For 700 MHz**

Requests from about two dozen jurisdictions seeking to build their own public safety wireless broadband network in the portion of 700 MHz controlled by the Public Safety Spectrum Trust are being reviewed by the FCC, according to a report on *Emergency Management* magazine’s website ([www.emergencymgmt.com](http://www.emergencymgmt.com)). “In May,” the report noted, “the FCC granted waivers for 21 groups of jurisdictions to build such networks ahead of a national network. However, the commission’s approval was conditional on the jurisdictions adhering to several requirements intended to ensure interoperability.” The Public Safety and Homeland Security Bureau in September sought public comment “for waiver filed by various [petitioners] seeking authority to deploy public safety broadband systems on a local or regional basis in the 10 megahertz of 700 MHz public safety broadband spectrum currently licensed to the Public Safety Spectrum Trust (PSST) – 763-768/793-798 MHz,” according to the FCC Public Notice. The full text of the notice can be accessed on the Internet at [www.fcc.gov/Daily\\_Releases/Daily\\_Business/2010/db0915/DA-10-1748A1.pdf](http://www.fcc.gov/Daily_Releases/Daily_Business/2010/db0915/DA-10-1748A1.pdf).

## **FCC Announces “Open Source Redesign” Of FCC.gov On Web**

The start of a “major overhaul of FCC.gov” has been announced by the FCC “aiming to seize a ‘special opportunity to become an expert technology agency in the federal government,’” according to a posting by Dave Cole, Senior New Media Technology Advisor for the Executive Office of the President on the White House Blog ([www.whitehouse.gov/blog/2010/09/22/fccgov-announces-open-source-redesign](http://www.whitehouse.gov/blog/2010/09/22/fccgov-announces-open-source-redesign)). “The redesign focuses on making the FCC’s Web content more relevant and discoverable to the public,” the item noted.

## What Is Easy To Use?

by Rob de Santos  
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Last month I talked a bit about user interfaces, or UIs, in general terms. This month I want to talk about where they might be heading for our hobby. There are trends, some easily discernible, others not so much. If you want to get some communications hobbyists going, start a discussion about their favorite radio or electronic device and how they use it. You'll get some typical responses.

One is that they use it but they haven't figured how to do "X" or "Y" with it, usually because it's not being obvious how to use that feature. Another is that they picked the device because of a preference for a certain manufacturer's UI from past experience. For example, your friend may have used Kenwood radios but hasn't had much experience with Yaesu. Reluctant to go through the learning curve all over again, she'll stick with what she knows. Another example that comes to mind involves JRC products. The NRD series receivers are legendary for their fine performance, but to get maximum performance out of the radios required a learning curve, as JRC didn't do things the way all the other manufacturers did. Was their way better, or worse? That's probably personal opinion.

Radio interfaces are changing, though. A few months back, I wrote a review in this magazine of a new DRM-capable receiver. The interface for this radio was predominately software on a small screen with a few simple directional buttons. New scanners on the market use a touch interface. And everywhere you see fruit of the revolution in software-defined radios. What these developments have in common is the move away from a front panel with dozens of knobs, buttons, and dials. While a lot of high-end equipment is still button-bedecked, more and more low- and medium-end devices are not. Why spend money on expensive hardware when you can do it in software with the addition of just a display screen?

The impact of successful consumer products like the iPod and the relatively low cost of LCD displays make it attractive for manufacturers to make the changeover. However, cost is probably not the only driver for us. Think about it: If you were new to the radio hobby now, which would be easier to work with—a radio with a complex set of buttons and switches or one with the touch screen menu and visual display that changes with the function you want?

I can hear some of you now: "But if I can't twiddle the dial, it's not a radio!" I'm not entirely unsympathetic to that point of view. I love my

*"Want to sell a scanner to a larger market than the hardcore radio crowd? Step 1: Make the UI something average consumers will understand without reading the manual."*

radios and the ease of operating them in the dark by feel alone. However, if I go back to my very beginnings as a DXer, listening to mediumwave stations at night with the radio under my pillow, there's a powerful analogy here. My childhood "transistor radio" was the consumer device that served the same purpose the iPod does for my daughter today. It was an essential tool for me to follow my favorite music. Yes, it also led me to discover faraway stations and nurture my growth into the communications hobby. The latter though was simply accidental. The radio was simple to use; it had a combination power/volume control and a crude sliding frequency dial. That was a UI that worked. It didn't require that I learn anything else to utilize it effectively.

As hobbyists then, we should anticipate that our radios will follow the same path. Want to sell a scanner to a larger market than the hardcore radio crowd? Step 1: Make the UI something average consumers will understand without reading the manual. Step 2: Make it possible for them to listen without knowing the intricacies of trunktracking, digital modes, etc. Step 3: Keep support costs reasonable by making it possible to upgrade the model or fix a problem through easy updating of the software by the factory and the end user. Do that and maybe Mom will want one on her counter so she can follow the police calls when the local elementary school goes into "lockdown."

As hobbyists, we take pride in mastering the newest and most sophisticated listening devices. High-end transceivers, scanners, and other devices will go on having sophisticated interfaces. The manufacturers know we'll make the effort to figure them out and get help from our fellow hobbyists if we need to. However, for the lower-end devices, modern technology and state-of-the-art UIs are likely the "face" of communications devices in the future.

What do you want in the UI of your next radio? Let me know what you think makes your radio easy or hard to use. Until next month, good listening.

# The World Band Radio Scene: It's A BIG World Out There, And It Takes A Lot Of Radios To Fill It

*The Latest World Band Receivers Offer State-Of-The-Art Features You Can Use Right Away, Plus Time-Tested Favorites Offer Great Bargains We Can All Use*

by Edward J. Insinger, WDX2RVO



The market is filled with many exciting options for the listener this Holiday Season. Whether you're a newcomer to the hobby or a seasoned DXer interested in upgrading to a receiver with the latest offerings, you've got plenty to choose from.

If you're thinking about investing, we suggest you make these pages your first stop for browsing. Here you'll find kilobuck professional communications equipment, moderately priced receivers that pack a powerful punch, and a wide array of portables, from field size to handheld, with all sorts of features. The text will give you a basic overview of much of what's out there, offering some major features and specifications, but it would require a book to cover the topic thoroughly. Use this as a springboard for continued research. The accompanying chart, which lists more individual products than we have room for in the text, will serve as a handy at-a-glance reference for you. It includes brief descriptions, prices, and websites for further information.

In compiling this article, every reasonable effort was made to list the most pertinent offerings by the major manufacturers, and to do so with the greatest accuracy. It's possible, however, that one

Edward J. Insinger, WDX2RVO, has been a shortwave radio enthusiast since 1968 and is a frequent contributor to hobby publications.



Display from WinRadio's WR-G31DDC Excalibur software-defined radio.

of your favorite radios slipped through the cracks or that an error may have seeped in. Feedback is therefore most welcome in order to correct any oversights or inaccuracies. But we have a lot of ground to cover, so let's get right down to it.

## Newer Releases

The state-of-the-art is software-defined radios (SDRs), and we have exciting entries that have come out this year and still others that are due for release shortly. Interesting debuts in traditional tabletop receivers have come from many familiar names. And there's a

dizzying array of portable receivers for listening in on pretty much everything—longwave, mediumwave, and shortwave (including SSB and CW), plus higher VHF and UHF frequencies (less cellular channels, with perhaps some other minor gaps). Let's start with the new technology that's making a big impact.

## Software-Defined Radios

There's a lot of excitement about the SDR scene's new releases. One new product is the RFspace SDR-IP plug-and-play receiver, which covers 10 kHz to 32 MHz using FPGA (field-programmable gate array) and analog-to-digital tech-

nology. It offers an 80 MHz 16-bit analog-to-digital converter (ADC) with dithering and randomization; output I/Q bandwidth configured via software; and uses straight TCP/IP and Ethernet for all communications. The new WiNRADiO WR-G31DDC Excalibur is a direct-sampling, digitally down-converting SDR that's causing quite a stir. It covers 9 kHz to 49.995 MHz, tunes AM/AMS/LSB/USB/CW/FMN/FSK/UDM (user-defined mode) in 1-kHz steps, and offers a real-time 50-MHz-wide spectrum analyzer. It boasts a 16-bit 100 MSPS ADC and 2 MHz digitally down-converted bandwidth for recording and demodulation. (See also the "Broadcast Technology" column elsewhere in this issue.—editor)

There are plenty of SDRs that have already established themselves in the marketplace. ICOM's IC-R1500 wideband receiver covers 10 kHz to 3300 MHz in AM/FM wide/FM narrow/SSB/CW modes (SSB and CW coverage 0.5 to 1300 MHz only). Features include up to 26,000 memory channels per file and CTCSS and DTCSS decoding support. It's supplied with a Windows 98SE/ME/2000/XP/Vista PCR1500 software CD. Another ICOM offering, the IC-R2500 wideband receiver, covers 10 kHz to 3300 MHz in AM/FM wide/FM narrow/SSB/CW modes. It connects externally to a PC via USB port and can tune two signals simultaneously with two antennas. It's supplied with a Windows 98SE/ME/2000/XP/Vista PCR2500 software CD.

The Microtelecom Perseus multi-mode SDR covers 10 kHz to 30 MHz in VLF/LF/MF/HF ranges and offers a 14-bit 80 MS/s ADC and high-speed 480 Mbit/s USB 2.0 PC interface. Specs include 0–30 dB attenuator, 10-band preselection filter bank, and high dynamic preamplifier. The Perseus can also be used as a 10 kHz–40 MHz spectrum analyzer. It requires MS Windows 2000/XP/Vista; PC with 2.0 GHz Pentium IV CPU and 512 MB RAM or 2.5 GHz Dual Core CPU with 512 MB RAM for 1 MS/s operation; PC sound card for audio. (Again, see also "Broadcast Technology" for more on the Microtelecom Perseus as well as the RFspace SDR-IQ described below.—editor)

RFspace also offers the SDR-IQ SDR, covering 500 Hz to 30 MHz in AM/WFM/USB/LSB/N-FM/DSB/CW in 1-kHz steps. Supplied with SpectraVue software CD (requires Windows 2000/XP/Vista), it offers fully adjustable DSP filter bandwidths; high-performance Analog Devices 14-bit ADC that sends 16 bits of I/Q data to your PC via USB; and a high-resolution spectrum display. Another product from RFspace, the SDR-14, also offers a 14-bit ADC and covers 0 to 30 MHz in USB/LSB/AM/FM/WFM/CW/CW<sub>r</sub>/DSB modes. Digital data is processed using a direct digital converter and is sent to the PC via a USB 1.1 interface. Features include continuously adjustable filter bandwidths; spectral display; and ability to record band segments of any band to the hard drive in real time. It's supplied with Windows 2000/XP/Vista software.

Ten-Tec's computer-based DSP receiver, the RX-320D, covers 100 kHz to 30,000 kHz. It connects to an open serial port or the supplied serial port-to-USB adapter to plug into an open USB port. Features include the ability to select any five digital filters from 34 built into the receiver; spectrum display function support; continuous display of local and world time (UTC) clock. It's supplied with Windows 3.1/95/98/XP/Vista software.

WiNRADiO's earlier WR-G303e covers 9 kHz to 30 MHz with USB interface and on-board DSP. It features 20-kHz-wide real-time spectrum analyzer and integrated recorder and comes with low-noise linear power supply. It requires PC with 500 MHz Pentium CPU and runs on Windows98/ME/2000/

XP/Vista/7; installation is via USB interface. WiNRADiO's WR-G303i is a third-generation dedicated shortwave SDR on a PC card (PCI bus) that also covers 9 kHz to 30 MHz. It offers demodulation and last IF processing done entirely in software, utilizing a PC sound card. Also check out the G-313i with an on-board DSP design that does not rely on a PC sound card, as well as the WR-G313e, an external version of the WR-G313i.

Also be on the lookout for new SDRs still on the horizon. One, the Alinco DX-R8 tabletop shortwave receiver, was introduced earlier this year though as of press time it was not yet available in the U.S. market. It offers advanced SDR features unique in its expected price range (approximately \$500), including 150 kHz–35 MHz AM/SSB/CW/FM coverage with an IQ output that allows AM synchronous detection (ECSS) and DRM digital shortwave reception on a Windows PC (software included). In the next few months, RFspace will be releasing its NetSDR high-performance SDR with 1.3 MHz of useful real-time bandwidth. This will be followed in 2011 by the SDR-X2, a dual-channel receiver with adaptive direction and adaptive polarity.

### Traditional Receivers

Interesting new or recent releases and updates of traditional receivers and crossover radios (here I mean with the ability to run on AC and DC power) are also on the market. In the tabletop professional/government category, high-end receivers incorporate microprocessor technology to provide advanced operating modes, spectrum scopes, and digital signal processing, affording the listener awesome receiving capabilities.

AOR serves up the AR-Alpha, a powerful professional/government receiver (with a predictably high price tag) that covers 10 kHz to 3.3 GHz with dual DSP in WFM (stereo selectable de-emphasis), NFM/AM (synchronous AM and diversity synchronous AM), ISB/RZ-SSB/USB/LSB/CW/P25/TV (FM/AM/NTSC/PAL). It features nine IF filters from 200 Hz to 300 kHz; 6-inch TFT color display that supports spectral display and TV reception (NTSC); spectrum display shows up to 1 GHz bandwidth; AGC settings for Fast/Medium/Slow/Off; two antenna inputs.

ICOM's IC-R9500, which has been out for a few years now, is an even pricier professional/government receiver and covers 5 kHz to 3335 MHz in SSB/AM/FM/WFM/CW/FSK. It offers a 7-inch-wide TFT color display with multi-function high-performance spectrum scope and auto tuning function in SSB/CW/AM modes. Other features include dual DSPs for receiver functions and spectrum scope; digital IF filter lets user adjust filter shape, bandwidth, and center frequency characteristics; digital twin PBT narrows and shifts IF passband; five independent roofing filters (240/50/15/6/3 kHz) for improved selectivity; two-point manual notch filter; 10 VFOs; 1220 memory channels; dual digital voice recorder.

In the crossover category, Palstar offers a successor model to its R30 receiver, the R30A. This AM/SSB/CW radio features a new digital display module, larger front panel, and covers 100 kHz to 30 MHz via tuning dial and up/down buttons with increased tuning rate. It has 100-channel memory presets, an analog S-meter, top mounted speaker, and a 5-watt full-fidelity audio amp.

Also in this category is the Grundig Satellit 750 receiver. It covers 1711 kHz to 30 MHz and gives you AM/SSB plus FM/FM stereo and the civilian aviation band (118 to 137 MHz). Its features include tuning via knob, keypad, up/down buttons

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Grundig Product Line by:





The ICOM IC-R9500 is a high-end wideband professional/government receiver. It has a price tag to match its advanced features.

and memory recall; 1,000 station memories; 360-degree rotating MW antenna; wide/narrow selectivity switch; metal knobs and front mounted carry handles for field transport.

### Older Models: Tried And True World Band Performers

These receivers have been around for a while, but still possess all the essentials to capably receive stations in several modes of operation. Their performance speaks for itself and they remain desirable choices for the serious listener and DX aficionado.

#### Tabletop

From ICOM we have the IC-R75 receiver covering LW/MW/SW frequencies from 30 kHz to 60 MHz in AM/FM/

USB/LSB/CW and RTTY modes. It gives you 99 alphanumeric memories, twin passband tuning, noise blanker, clock timer, squelch, and attenuator. Features include 2.1-kHz SSB filter with two optional filter slots; triple conversion; external power supply built into AC cord; built-in front speaker; three tuning methods: dial, keypad and up/down buttons.

Ten-Tec's RX-340 professional receiver, covering synchronous FM/AM/Synchronous AM/CW/USB/LSB/ISB, incorporates DSP microprocessors and software code. It features 57 selectable bandwidths from 100 Hz to 16 kHz; four AGC modes; adjustable BFO; notch filter, preselector, preamp, attenuator; separate volume controls for speaker and headphones; built-in self-test circuitry identifies faults to the board level; 100

memory channels retain frequency/mode/IF bandwidth/BFO setting.

Yaesu's VR-5000 all-mode wideband receiver covers LSB/USB/CW/AM-N/AM/WAM/FM-N/WFM modes from 0.1 to 2599 MHz. Its backlit LCD displays frequency, world map (showing station location), and real-time spectrum scope. Features include preset shortwave memory bank with band sweep displaying signals graphically; 2,000-channel memory capacity and scanning capabilities via VFO; programmable memory; and SmartSearch that automatically loads up to 100 channels where activity is found. Optional DSP unit.

#### Handheld/Portable Wideband Receivers

New among the handhelds is the Alinco DJ-X11T wideband receiver covering 50 kHz to 1299.995 MHz in AM/FM wide/FM narrow/SSB/CW modes. The LCD displays frequency, mode, memory channel, battery strength, signal strength, and other user-selected parameters. It provides 200 memory channels and three scan speeds.

Also a recent addition to the market is the ICOM IC-R6 wideband receiver covering 100 kHz to 1309.995 MHz in AM/FM narrow/FM wide modes. Triple conversion with 1,300 alphanumeric memories storing frequency, mode, step size, duplex direction, and offset.

Highlights from time-tested radios include other Alinco products: the DJ-X3T, the DJ-X30T, and DJ-X7T. From ICOM, look for the IC-R20, the IC-RX7, and the IC-R5 Sport.



The Palstar R30A crossover receiver, a successor to the company's R30, has a small footprint, but big performance. (Photo courtesy Universal Radio)



Ten-Tec's RX340 is a top notch DSP receiver.

World band portables run the gamut in price and performance features, and one will surely fit your needs and budget. Prices begin at around \$20 and climb toward the \$400 mark.

New entries in the market come from County Comm, Degen, Etón, Grundig, and Kaito.

County Comm's Marathon ETFR MW/FM/SW radio (shortwave coverage from 5200 to 10450 kHz and 11100 to 18300 kHz) is smaller than a pack of cigarettes, is rugged for cold weather operation, and has an LED flashlight. Degen's DE15 MW/FM/SW digital radio covers 2300 to 23000 kHz and has 225 memories total for all modes.

Etón offers the FR600 Solarlink MW/FM/SW/WB radio (shortwave coverage 5800 to 12200 kHz) with features including backlit digital tuner, flashlight, emergency beacon and siren; powered by hand crank (built-in Ni-MH battery), solar panels.

From Grundig comes the G3 Globe Traveler LW/MW/FM/SW/VHF Aircraft receiver, offering dual conversion with SSB capabilities and synchronous detection, 700-channel memory system, direct frequency entry, and 24-hour clock with four alarm timers.

Kaito had a couple of recent introductions. The KA500 Voyager MW/FM/SW/WB radio (two segmented shortwave bands covering 3200 to 8000 and 9000 to 22000 kHz) features weather band that tunes seven frequencies and has an alert feature. It's powered by dynamo crank, solar panel. The KA801 covers MW/FM/SW radio (shortwave coverage from 2300 to 23000 kHz).

The market is brimming with older receivers and we can only cover it with the broadest of brush strokes here. The following receivers provide some highlights of what's been around for a while, are all good performers, and offer features to enhance listening pleasure.



The RL Drake R8A is a real classic among shortwave receivers.

They're portable enough carry with you, and most offer excellent reception with their built-in antenna(s). Many more models are provided in the accompanying chart, however, so be sure to refer to that if you don't see what you're looking for here. Here's a very brief sampling with some pertinent specs:

C. Crane's CSW MW/FM/SW receiver covering 1711 to 30000 kHz continuously offers twin Coil Ferrite AM antenna, backlit LCD display that activates when tuning.

Etón S350DL MW/FM/FM Stereo/SW receiver (shortwave coverage from 2.9 to 27.4 MHz) offers single conversion analog receiver with digital display frequency and clock.

Freeplay Summit LW/MW/FM/SW radio (shortwave coverage from 5900 to 15600 kHz) is powered by wind-up dynamo, solar or rechargeable cells. LCD display with 12/24 hour alarm clock.

Grundig G4000A LW/MW/FM/FM Stereo/SW receiver offers dual conversion with SSB capabilities. Illuminated LCD displays resolution to 1 kHz on shortwave. Keypad and up/down slew buttons; frequency search feature.

Kaito KA1103 MW/FM/SW receiver (shortwave coverage in 10 segmented

bands from 3.2 to 21.9 MHz). Dual conversion; analog display; SSB capabilities via fine tuning control; 268 memories plus auto scan and auto memory.

Sangean ATS-909 LW/MW/SW/SSB/FM receiver (shortwave coverage from 1711 to 29999 kHz). SSB fine tuning in 40-Hz steps. Tuning via knob, keypad, up/down slew buttons, auto scan, manual up/down and memory recall; 306 alphanumeric presets.

Sony ICF-SW7600GR LW/MW/FM/SW/SSB/CW receiver with continuous coverage from 150 to 29999 kHz. Dual-conversion microprocessor-controlled circuitry. Backlit LCD display with readout to 1 kHz; 100 non-volatile memories; SSB tuning via USB/LSB switch and fine tuning thumbwheel.

## Closing Thoughts

Another option is to search for older receivers with classic names like Hammarlund, Hallicrafters, Collins, and National. Opportunities abound to pick up a receiver that a fellow hobbyist is no longer using and would be willing to sell for a reasonable price.

My own search led me to a Hallicrafters SX-100 Mark II receiver in excellent condition, which continues to

## Newer World Band Receivers And Highlights Of Used Market

Category	Name & Model	Website	MSRP	Top Features
Tabletop Receivers	ICOM IC-R75	www.icomamerica.com	\$824.00	DX capabilities for serious listening under a kilobuck
	Yaesu VR-5000	www.yaesu.com	\$850.00	All-mode wideband receiver with scope for under a kilobuck
Professional Receivers	Ten-Tec RX-340	www.tentec.com	\$4,250.00	High performance SW/DX receiver with advanced features
	ICOM IC-R9500	www.icomamerica.com	\$13,200.00	Ultra advanced SW/DX receiver with high performance scope
	AOR AR-Alpha	www.aorusa.com	\$9,899.95	Wideband high tech receiver with spectral display
Crossover Receivers	Palstar R30A	www.palstar.com	\$749.95	User friendly controls easy to use
	Grundig Satellit 750	www.etóncorp.com	\$399.95	Attractively priced for beginners
Software Controlled Receivers	ICOM R1500	www.icomamerica.com	\$776.00	Wideband computer receiver; tunes two signals simultaneously
	ICOM IC-R2500	www.icomamerica.com	\$1,156.00	Wideband computer receiver; stores up to 26,000 memory channels
	Microtelecom Perseus	www.microtelecom.it	\$1,199.95	Software-defined multi-mode receiver; spectrum analyzer capabilities
	RFspace SDR-IQ	www.rfspace.com	\$499.95	Software-defined receiver; spectrum display capabilities for \$500
	RFspace SDR-I4	www.rfspace.com	\$1,299.98	Software-defined receiver with digital display processing
	RFspace SDR-IP	www.rfspace.com	\$2,999.00	Software-defined internet protocol (TCP/IP) plug-and-play receiver
	Ten-Tec RX-320D	www.tentec.com	\$369.00	Computer based DSP receiver; spectrum display function supported
	WiNRADiO WR-G303e	www.winradio.com	\$599.95	Software-defined HF receiver; real-time spectrum analyzer
	WiNRADiO WR-G303i	www.winradio.com	\$499.95	Shortwave receiver on a PC card; real-time spectrum scope
	WiNRADiO WR-G31DDC	www.winradio.com	\$849.95	Digitally down-converting Software-defined receiver; real-time spectrum analyzer
	WiNRADiO G313e	www.winradio.com	\$1,149.95	Software-defined HF receiver; external version of the WR-G313i
	WiNRADiO G-313i	www.winradio.com	\$999.95	Software-defined HF receiver; on-board DSP
	Portable/Handheld Receivers	Alinco DJ-X3T	www.alinco.com	\$302.95
Alinco DJ-X30T		www.alinco.com	\$239.00	Selectable Keypad tuning; 1,000 alphanumeric memory channels
Alinco DJ-X7T		www.alinco.com	\$199.95	Operating mode and memory channel display; 1,000 alphanumeric memory channels
Alinco DJ-X11T		www.alinco.com	\$399.95	Three scan speeds; 1,000 alphanumeric memory channels
ICOM IC-R20		www.icomamerica.com	\$664.00	Bandscope with dual watch capability; 1,250 memories
ICOM IC-RX7		www.icomamerica.com	\$380.00	CTCSS and DTSC decode; 1,650 scannable alphanumeric memories
ICOM R6		www.icomamerica.com	\$246.00	Triple conversion; 100 channels per second scan; 1300 alphanumeric memories
ICOM R5		www.icomamerica.com	\$212.00	Triple conversion with CTCSS/DTSC decode; 1,200 memories
C. Crane CSW		www.ccrane.com	\$149.95	Continuous coverage; twin coil Ferrite AM antenna
C. Crane SWP		www.ccrane.com	\$49.95	Keypad entry/knob tuning; 200 memories
County Comm Marathon ETR		www.countycomm.com	\$30.00	LCD display; pocket size portable
County Comm GP-4L		www.countycomm.com	\$21.95	LCD display; pocket size portable with aluminum faceplate
Degen DE15		www.kaitousa.com	\$49.95	PLL synthesized world band pocket size radio; made by Kaito Electronics
Eiön FR250	www.eiöncorp.com	\$25.00	Analog dial emergency radio; dynamic crank	
Eiön FR350	www.eiöncorp.com	\$58.98	Analog dial emergency radio; dynamic crank and cell phone recharge capability	
Eiön S350DL	www.eiöncorp.com	\$99.95	Analog radio with digital display; single conversion	
Eiön FR600	www.eiöncorp.com	\$100.00	Emergency radio with digital tuner; weather notification	
FreePlay SUMMIT	www.freeplayenergy.com	\$79.00	PLL digital tuning receiver; solar powered and hand crank option	
Grundig G8	www.eiöncorp.com	\$59.95	Digital signal processing; 500 memory system	
Grundig G6 Aviator	www.eiöncorp.com	\$100.00	Dual conversion; single sideband capabilities	
Grundig G4	www.eiöncorp.com	\$300.00	MP3 play/record capabilities; 1,000 memory capacity	
Grundig G3	www.eiöncorp.com	\$169.95	Dual conversion; single sideband capabilities and synchronous detection	
Grundig G4000A	www.eiöncorp.com	\$129.95	Dual conversion; single sideband capabilities; resolution to 1 kHz on shortwave	
Grundig M400	www.eiöncorp.com	\$29.95	Analog circuit with digital display to 1 kHz on AM and 5 kHz on shortwave	
Grundig M300PE	www.eiöncorp.com	\$29.98	Digital display shows frequency and 12 hour time	
Grundig YB-300PE	www.eiöncorp.com	\$99.95	Three tuning methods; LCD display and 24 hour clock	

Kaito WRX911	www.kaitousa.com	\$39.99	Analog display; segmented shortwave coverage
Kaito KA008	www.kaitousa.com	\$59.95	Emergency radio; hand crank and solar powered; digital display
Kaito KA105	www.kaitousa.com	\$49.95	Four tuning methods; LCD display; dual 24 hour clock
Kaito KA1102	www.kaitousa.com	\$79.95	Dual conversion; single sideband capabilities; tuning in 1/5 kHz steps
Kaito KA1103	www.kaitousa.com	\$79.95	Dual conversion; analog display; SSB capabilities via fine tuning control
Kaito KA1107	www.kaitousa.com	\$49.95	Dual conversion; analog display; digital 12 hour clock/sleep timer
Kaito 1121	www.kaitousa.com	\$179.95	Dual conversion; single sideband capabilities; fine tuning control; 4000 memories
Kaito KA11	www.kaitousa.com	\$49.95	LCD display; 12/24 hour clock timer; 1000 non-volatile memories
Kaito KA801	www.kaitousa.com	\$99.95	Auto Tuning Station (ATS) system; stores in memory; MP3 player/recorder
Kaito KA1123	www.kaitousa.com	\$69.95	LCD display; built-in 12/24 hour clock/sleep timer; Auto Tuning Station (ATS) system
Kaito KA500	www.kaitousa.com	\$69.95	Emergency radio with dynamo crank/solar panel; weather band
Sangean ATS-505P	www.sangean.com	\$199.95	LCD display; 12/24 hour time; single sideband capabilities
Sangean ATS-404	www.sangean.com	\$119.95	LCD display; 12/24 hour clock; four tuning methods
Sangean SG-622	www.sangean.com	\$59.95	LED tuning indicator; 2.5 inch speaker
Sangean PT-633	www.sangean.com	\$79.50	Analog dial; built-in dual 12/24 hour digital clock
Sangean ATS-909	www.sangean.com	\$399.95	Six tuning methods; single sideband capabilities; 306 alphanumeric presets
Sangean PT-80	www.sangean.com	\$219.50	Dual conversion PLL circuitry; LCD display; SSB capabilities; Auto Tuning Station (ATS) system
Sangean PT-50	www.sangean.com	\$99.50	LCD display; built-in 12/24 hour clock; world time zone selector
Sangean PT-10	www.sangean.com	\$69.95	Analog dial; LED tuning indicator
Sangean KA105	www.sangean.com	\$54.95	Four tuning methods; LCD display; dual 24 hour clock
SONY JCF-SW7600GR	www.sonystyle.com	\$159.95	Dual conversion microprocessor-controlled circuitry; SSB tuning; synchronous detection
Coming Soon			
Alinco DX-R8	www.alinco.com	TBD	Software-defined receiver; expected to be attractively priced
AOR 7070	www.aorusa.com	TBD	Desktop receiver; keypad tuning; final DSP IF for filter bandwidth selection; improved IP3 circuitry
RFspace NetSDR	www.rfspace.com	\$1,399	NetSDR Software-defined receiver with 1.3 MHz of useful real-time BW for about \$1399.
RFspace SDR-X2	www.rfspace.com	TBD	Dual channel receiver that will do adaptive direction and adaptive polarity. (Available in 2011).
Sangean ATS-909x	www.sonystyle.com	\$449.95	LW/MW/SW/FM/FM Stereo; five tuning methods SSB capabilities; 406 memories
Grundig S450DLX	www.et6ncorp.com	\$99.95	Dual-conversion superheterodyne circuit; continuous SW coverage; field radio
Discontinued Receivers			
AOR AR-3030/7030/7030+			Check
E10n E1/E1XM			www.universal-radio.com
RL Drake R7/R7A			or
RL Drake R8/R8A/R8B			www.eham.net
JRC NRD 515/525/535/545			
JRC NRD 345			
Vacuum Tube Receivers			See above
Collins, Hammarlund			
Hallicrafters, National			
Sources for Used Receivers and Reviews			
	www.eham.net		Buyers Beware!
	www.radiointel.com/reviews.htm		Condition/Return Policy
	www.ebay.com		
	www.universal-radio.com		
	Passport To World Band Radio		
	(Out of print but still useful)		
	Popular Communications		
	QST Magazine		
	www.sherweng.com		Select Receiver Upgrades 1-303-722-2257
	www.bigskyaudiomt.com		Select Receiver Upgrades 1-406-461-6805
	www.rldrake.com		Note: For R8 Series Only 1-937-746-6990 (Tech Support)
Upgrades and Repairs			

perform admirably. On another occasion, I was talking with a fellow hobbyist who happened to own a Drake R8A I was interested in and he gave me first dibs. The moral here is to make contacts, ask questions, and follow up. Contact local hams and clubs in your area, and don't overlook hamfests, even if you have to travel to get there. Partner up with a friend or mention to others that you would like to carpool. Make sure to also visit [www.universal-radio.com](http://www.universal-radio.com) and [www.eham.net](http://www.eham.net).

classifieds/, where you can search for a wide array of used receivers.

Enjoy the search, make new friends, and have fun along the way. All things considered, this is a great time to buy a receive—thanks to the wealth of products out there, you're certain to find something to meet your needs and fit your budget. So go ahead and drop a hint to family members—the man in the red suit may leave that perfect radio under your tree.

## Used Market: Coups And Caveats

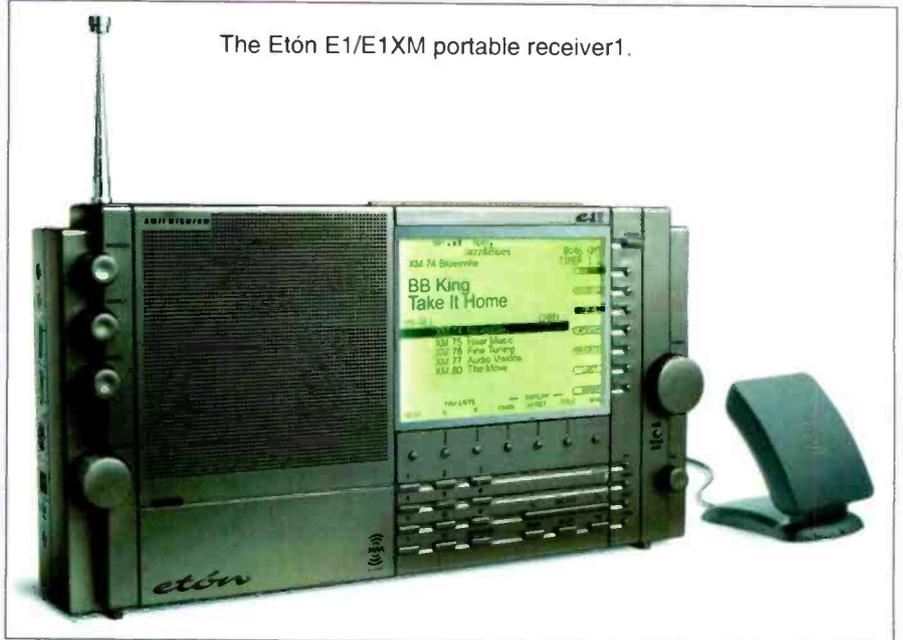
There are some excellent pieces of gear to be had via the used market. Spending some time checking out the availability of this equipment can pay dividends and provide you with an alternative to the new marketplace without sacrificing performance.

For starters, the Etón E1 or E1XM receiver offers a wide range of features. This receiver was conceived by Grundig AG Germany, with R.L. Drake circuitry and final assembly performed by a military contractor in India. It is chock full of features to delight both the serious shortwave listener and hard core DXer, disappointing neither. One caution: avoid E1XM's in the serial number range 3,067 to 5,462: quality control issues caused a recall by Etón.

Moving on to desktop receivers, there are several tried and true gems available that are worth your consideration. AOR manufactured three receivers beginning in 1994: the AOR AR-3030, AR-7030, and AR-7030+. The 3030 was a limited production run receiver possessing excellent features and performance. The 7030 receiver out of the UK was introduced in 1996. The AR-7030+, introduced in 1997, added some features and improvements to the original model.

R.L. Drake is a name well-known to hobbyists, with a reputation for manufacturing excellent receivers for amateurs, SWLs, and DXers. Its communications receiver line included the R7 and R8 series. The R7/R7A distinguished itself for its superb passband tuning, selectivity and sensitivity. If there is a weak signal present, the R7 can usually pull it out of the noise to a level of readability. One negative factor was initial frequency drift for the first 30 minutes of operation. In addition, frequencies had to be tuned using the band selector and tuning knob. The R8 series contained three releases, culminating in the R8B in 1997. All the features of the R7 were present, in addition to rock-solid digital readout

The Etón E1/E1XM portable receiver1.



The JRC NRD-525 tabletop receiver.

and direct keypad frequency tuning. The R8B remains in demand for the serious DXer and is a benchmark of comparison for communications receivers.

Japan Radio Company produced a line of excellent receivers for the serious SWL/DXer, including the NRD-515/525/535/545. All were noted for their exceptional build quality and perfor-

mance. First-time users were immediately impressed by the smooth tuning knob, and gave all aspects of performance high grades—with the exception of audio quality (fortunately there are some remedies to improve the audio). The JRC NRD-345 is less expensive and worth consideration for the SWL.

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## AR2300 "Black Box" Professional Grade Communications Receiver

First in a new generation of software-controlled black box receivers, the AR2300 covers 40kHz to 3.15 GHz\* and monitors up to 3 channels simultaneously. Remote control functions, internal SD audio recorder allows for unattended long term monitoring. Spectrum recording with optional AR-IQ software can be used for laboratory signal analysis. Using FFT, the unit scans large frequency segments quickly and accurately. Optional IP control port.

## AR5001D Professional Grade Wide Coverage Communications Receiver

With amazing performance in terms of accuracy, sensitivity and speed, the AR5001D features ultra-wide frequency coverage from 40kHz to 3.15GHz\* in 1 Hz steps with 1ppm accuracy and no interruptions. Large easy-to-read digital spectrum display and popular analog signal meter. The AR5001D makes it easy to monitor up to 3 channels simultaneously. Can also be controlled through a PC running Windows XP or higher. Great as a mobile or desktop receiver.



## AR-Alpha with I/Q Control Software

Welcome to a new class of professional monitoring receivers. The AR-Alpha can perform unattended datalogging for extended periods and covers 10kHz to 3.3GHz\* continuous, with no interruptions. It boasts a 6-inch color TFT monitor that displays spectrum bandwidth, a switchable time-lapse "waterfall" display or live video in NTSC or PAL. Five VFOs, 2000 alphanumeric memories that can be computer programmed as 40 banks of 50 channels, 40 search banks, a "select memory" bank of 100 frequencies and a priority channel. Also includes AFCO-25 digital capability and can record up to 52 minutes of audio.

## AR-One Communications Receiver

Enjoy total command of frequencies, modes and tuning steps with this versatile performer that allows you to control up to 99 units with a single PC. Covers 10 kHz to 3.3 GHz and delivers excellent sensitivity, ultra-stable reference frequency oscillator, high intercept, adjustable BFO and multi-IF signal output 10.7 MHz or 455kHz plus 1000 memory channels and 10 VFOs.



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\*Government version, cellular blocked for US consumer version.

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## AR8200 Mark III World Class Portable Receiver

With 1,000 alphanumeric memories and a TCXO that delivers solid frequency stability and performance not found in most desktop units, the AR8200 Mark III covers 500 kHz to 3GHz\* and can be used with optional internal slot cards that expand its capabilities. It features true carrier reinsertion in USB and LSB modes and includes a 3kHz SSB filter. The data port can be used for computer control, memory configuration and transfer, cloning or tape recording output. A special government version, AR8200Mark III IR, features user-selectable infra-red illumination of the display and operating keys.

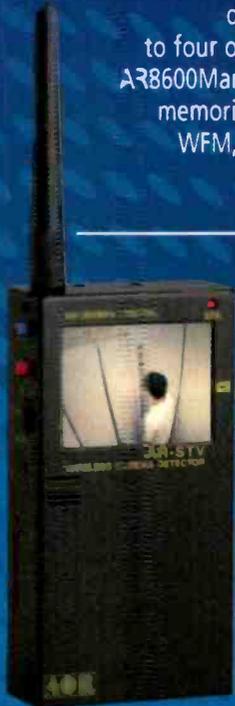
## AR8600 Mark II Wide-Range Desktop Receiver

With an optional P25 (APCO25) decoder module, improved front end and receive audio response, display illumination control, ultra-stable TCXO and up to four optional cards that can enhance certain functions, the AR8600Mark II covers 100kHz to 3GHz\* with 1000 alphanumeric memories and free downloadable control software. Receives WFM, NFM, Super-narrow FM, Wide and Narrow AM, USB, LSB and CW.



## AR-STV Handheld Video Receiver

See who is watching you on wireless video surveillance cameras. The AR-STV handheld receiver detects hidden NTSC or PAL analog video signals in real time. A valuable addition to any security operation, the AR-STV features a large 2.5 inch color LCD display and a USB connector that makes it easy to download stored images into a computer. With optional 4GB SD memory card, up to nearly 2000 images can be stored for later analysis.



## SR2000A Spectrum Display Monitor

Ultra sensitive, incredibly fast, yet easy to use, the SR2000A lets you SEE received signals in FULL color. Using the power of FFT, it covers 25 MHz to 3GHz\* and features a color monitor that displays spectrum bandwidth, a switchable time-lapse "waterfall" display or live video in NTSC or PAL. High quality internal speaker delivers crisp, clean audio signals. Scans 10 MHz in as little as 0.2 seconds. Instantly detects, captures and displays transmitted signals. PC control through RS232C serial port or USB interface. With 12 VDC input, it's perfect for base, mobile or field use.



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# The Scanner Scene: Sizzlin' Receiver Debuts Heat Up The Market For The Holidays



***There's Been A Cornucopia Of Great Product Introductions Recently—Here's A Look What's New And Exciting***

by Chuck Gysi, N2DUP

The Holiday Season means many of us hobbyists are busily shopping for a shiny new radio-related gift for a special someone—maybe ourselves—as a well-deserved reward for being extra good all year. But for scannists, that can be even more challenging than usual this year, thanks to the number of great product introductions we've seen lately.

If you're still checking off your gift list and are a bit confused by all the choices out there, *Pop'Comm* is here to help with this overview of all the latest releases. We offer a brief summary of some of their important features, prices, and where to find out more so you can sort out the cool new receivers that arrived on store shelves and at online retailers (see chart). This will provide you with a good starting point to determine if a particular scanner fits your needs. If you're still trying to decide if you need a digital, analog, or trunking scanner, visit the [www.policescanners.net](http://www.policescanners.net) website and punch in your information: the database at that site will tell you what type of scanner you should get. Now, let's dive right in.

## **Uniden HomePatrol-1**

The most exciting scanner to come out in the past year or so is Uniden's HomePatrol-1, and it may well revolutionize the hobby by allowing non-technical people to listen to scanners without having to do any programming at all. Uniden has positioned the HomePatrol-1, which first went on sale this past fall, to create new marketing opportunities in communities where complex digital trunked radio systems make it impossible to program scanners easily. It may separate scanners from geek gear just by the ease in which it operates.

With all the digital and trunking systems of various flavors, it's become a real chore to program a new scanner if you want to hear all the public safety activity in your area. The HomePatrol-1 scanner, however, uses a preprogrammed database and can access an additional online database for updates for automatic programming. The only information you need to program the scanner is the ZIP code of the community you're

Chuck Gysi, N2DUP, is a former columnist and editor of *Popular Communications*, long-time journalist, hobby communications author, and a non-profit marketing executive.

*"If you're still checking off your gift list and are a bit confused by all the choices out there, Pop'Comm is here to help..."*

interested in. After you key in the local five-digit ZIP code, the scanner loads frequencies not only for that community, but also for the surrounding communities. Now isn't that easy?

This new radio is a decent size, sits on a table top easily, and can even go mobile. And here's where another really cool feature comes in: If you plug in a GPS receiver to the HomePatrol-1, it will automatically reprogram itself as you drive along so you can hear all the scanner activity along the way. With a GPS receiver linked to the HomePatrol-1, you literally could drive across the entire country without ever reprogramming the receiver! The receiver dumps into its scanning memory those frequencies in use around you as you move about so you never miss any action within the covered range.



The new HomePatrol-1 scanner is creating a buzz because all you need to program it is your ZIP code.

But, for argument's sake, let's say you *did* just miss part of a transmission, maybe the end of a fire call or police on a chase. With this radio, you can play back the last four minutes and hear it all again. How many times have you been listening to the scanner and missed something and wished you could play it back? Now you can!

One possible drawback of the HomePatrol-1 scanner is that its database, both preprogrammed and that used for updates, is based on the RadioReference.com website. The information on RadioReference is only as accurate as the information submitted by the tens of thousands of people who contribute to the site. In addition, Uniden is banking on RadioReference keeping its website current and online. If something happens and the website goes down, breaking that link, well...let's hope Uniden has a back-up plan.

All this scanning oomph doesn't come cheap. The HomePatrol-1 covers conventional analog frequencies as well as digital, trunked, and digital trunked radio systems, and while you may only have conventional radio systems in your environs, you still pay the price for the digital and trunking aspects of this radio. That could prove to be a drawback for someone who might pay \$100 for an analog scanner versus the approximate \$500 street price for this radio.

### GRE PSR-700 And RadioShack Pro-107

Two other new scanners—the similar GRE PSR-700 and RadioShack Pro-107—offer a similar approach to programming ease, but are not nearly as simple as Uniden's new receiver.

Made by GRE and marketed as both GRE and RadioShack scanners, the PSR-700 and Pro-107 radios are very similar with just some minor differences in appearance. Like the HomePatrol-1, this radio is designed to be programmed on the fly by beginners and also includes the same 2 GB microSD card that contains the RadioReference.com database.

The PSR-700 and Pro-107 radios essentially combine the simplicity and the familiarity of a portable media player (PMP) with the power and sophistication of a state-of-the-art scanning receiver. It's as easy to program as a PMP, and you can update the database much like the HomePatrol-1 with an Internet connection. The main difference between these two handheld radios and the

HomePatrol-1 is that the former don't cover digital signals or digital trunked systems. So, if you live in a digital trunked area like Minnesota or Illinois, these two radios won't tune in the state police radio systems, and you'll need the pricier HomePatrol-1 for that purpose. The same applies if your local authorities are using digital conventional radio systems without trunking.

Again, while not as simple to use as the HomePatrol-1, if you don't have the need for digital, these two handhelds will offer a less-expensive option for programming on the fly. The street price for both is in the \$200 to \$230 range.

### GRE PSR-500, RadioShack Pro-106, GRE PSR-600, And RadioShack Pro-197

Now here's an impressive gaggle of receivers, all similar and all made by GRE America. The GRE PSR-500 and RadioShack Pro-106 handheld scanners are very much alike except for their external cases; the GRE PSR-600 and RadioShack Pro-197 mobile/base radios also are similar in appearance to each other.

These four radios offer very powerful receivers that are super sensitive and can handle virtually every type of radio system, except for some minor types that aren't popular. If you have analog, digital, trunked (of almost every variety) or digital trunked, including the 700-MHz band being used in some states, these four radios will do the job for you nicely.

One really great thing about these four radios is that they all can be programmed with each other's program data. If you own a PSR-500 and a Pro-197, the same software and data can program each radio. You essentially can clone any or all of these radios exactly the same.

The street prices on these radios vary and run anywhere between \$400 and \$500. When RadioShack introduced the Pro-

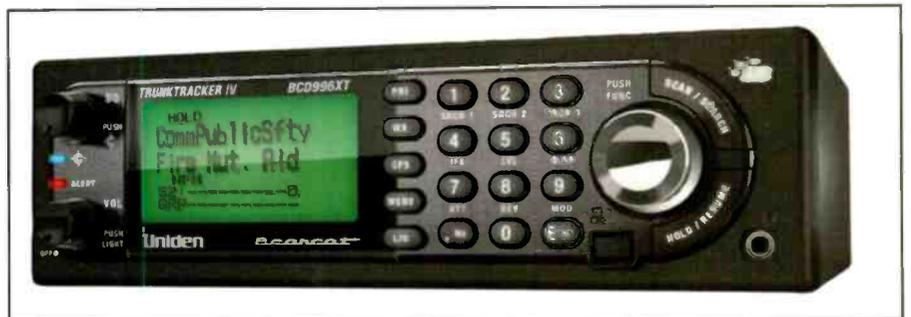


GRE's PSR-500 has become a popular do-it-all handheld scanner. It's the same basic radio as RadioShack's Pro-106 handheld.

197, it was possible to get the scanner close to \$300. Keep an eye out for specials.

### Uniden BCD396XT And Uniden BCD996XT

The Uniden BCD396XT handheld and the BCD996XT mobile/base scanner are similar to each other, much like the GRE and RadioShack scanners above. They use the same programming software packages and also can use the same program data in each radio.



The BCD996XT from Uniden can be used with a GPS unit to update your programming as you travel from one area to another.

Again, like the four GRE/RadioShack scanners above, these two radios cover all the bands and most of the modes and trunking systems, and a buying decision may come down to whether you prefer Uniden over GRE/RadioShack scanners or vice versa. Most of these brands get loyal customers.

These Unidens offer an additional nice feature called Fire Tone Out that allows you to program in the alerting tones of your local fire department or EMS team, and your scanner will remain silent until the alerting tones are set off by the dispatcher. This makes your scanner function much like the pagers used by volunteer firefighters to alert them to calls. It's a cool feature to have for the times when you only want to hear when there's a fire in town and you want to tune out all the other scanner chatter.

The street price on these two radios is a bit higher than the GRE/RadioShack receivers, running in the \$500 ballpark.

### GRE PSR-400, RadioShack Pro-164, And MFJ MFJ-8322

The GRE PSR-400 base/mobile radio, RadioShack Pro-164 handheld, and MFJ Enterprises' MFJ-8322 handheld radio are newer versions and basically clones of the GRE PSR-300 handheld and RadioShack Pro-163 mobile/base scanner. This radio design, however it's labeled, offers affordable analog trunking coverage in a complete package. It covers all bands and offers a good feature set; the only way to get a better radio is to step up to a digital receiver.

While the PSR-400 can be found for as low as \$140 on the street, you'll typically pay up to \$200 for the other versions of this radio. If you want to monitor analog trunking systems—but not digital systems or frequencies—this radio should work very well for your purposes.

### GRE PSR-200U And MFJ MFJ-8310 (And GRE PSR-100)

The GRE PSR-200U scanner basically is an updated version of the PSR-200, which adds CTCSS decode capability. The MFJ-8310 is made for MFJ Enterprises by GRE, but doesn't include the new CTCSS decode capability. Both radios are clones of the GRE PSR-100 handheld scanner.

If you're in the market for a non-digital, non-trunking, analog-only scanner, this is a great little receiver that doesn't

shortchange on features and usually comes in as low as \$90 on the street. Its 200 memory channels and weather alert decoding make this a good bargain for someone who wants a basic scanner.

### GRE PSR-310

The new GRE PSR-310 scanner was just being released at press time and its price had not been determined, but it offers great features in a handheld package that's based on the PSR-300 handheld.

This is an analog-only scanner, though it offers all basic trunking formats as well as the new 380-MHz military band and the new 700-MHz public safety band. While most communications in the 380-MHz band come up as digital, you'll still be able to receive some analog use in the band.

### Alinco DJ-X11

While it's undoubtedly a scanner, the new Alinco DJ-X11 handheld is also a wideband receiver that allows you to tune in any frequency from 50 kHz to 1.3 GHz. For shortwave coverage, this receiver has SSB and CW reception, and FM wide and narrow, as well. Its 1,200 channels are ample and it offers three scan speeds. It's a lot of power in a handheld and runs about \$330 on the street.

### Uniden BCT15X

Uniden's BCT15X is a new version of the BCT15. It's much like the BCD996XT, though it doesn't offer digital capability. You can also plug a GPS receiver into the BCT15X to traverse the country, and the scanner will tune into new channel groups as you drive along, keeping you tuned into local emergency services action on analog frequencies. In some states, where troopers have mobile repeaters in their cars on discreet frequencies, it will alert you when police



MFJ Enterprises' MFJ-8322 trunking scanner is also made by GRE.

vehicles are in the vicinity. (The mobile repeaters transmit low-power radio signals all the time, and when the BCT15X hears the signal on these frequencies, it lets you know a trooper car is nearby.)

### Uniden BC355C

Uniden's BC355C is an updated version of a previous model and offers an affordable, preprogrammed mobile scanner. It's analog only, but you'll easily hear all police and fire activity in the area with this radio. Not to skimp on coverage, this scanner also



Uniden's BCT15X is a great scanner for those who travel and want to know what's going on around them at all times. Program the scanner for each state you travel through and the frequencies will keep active.

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## Looking For A Used Scanner? Don't Be Bitten By A Bum Radio

There's absolutely nothing wrong with having a used scanner—as long as it works! If you're in the market for a receiver and don't want to spend the bucks on a brand-new radio, here are some tips on a few radios to keep an eye out for, where to look, and what to look out for when buying on the used market.

If you're interested in a solid, analog, trunking-capable mobile/base scanner, you might like the Uniden BCT15, which offers great flexibility in the \$100 to \$150 range. Look for the lower end of that range; \$150 is getting pricey for this radio unless it's in excellent shape.

If you like the features of the GRE PSR-500 handheld and PSR-600 base/mobile or the similar RadioShack Pro-106 handheld or Pro-197 base/mobile, then take a look on the used market for a RadioShack Pro-96 handheld or Pro-2096 base/mobile scanner. The Pro-96 and Pro-2096 use the same software to program and are well established as high-performing, digital trunking-capable scanners. While they don't offer the full-feature set of the newer GRE digital trunking radios, they will work for you in most instances, except for 700-MHz systems.

If the cosmetics of your used scanner are important to you, watch out for the rubber pads on the exterior sides of the Pro-96, as they have a tendency to fall off; your radio, of course, will work regardless. The Pro-2096 is a pretty solid radio and should perform well used or new.

The predecessors of the Uniden BCD996XT base/mobile and BCD396XT handheld scanners are the BCD996T and BCD396T. There isn't much difference between those models, but you may get a very good deal on a used 996T or 396T. You should be able to save about \$200 between the cost of new and old here.

You may also want to check out the Uniden BC250D, a digital trunking-capable handheld that received digital signals only if you installed the add-on digital card. If you buy this radio, be sure that the digital card is installed if you need digital service out of your scanner. Unlike most scanners, the BC250D offers wideband receive capability in the 900-MHz band, which you'll want if you



Thinking of buying a used GRE-made RadioShack Pro-96 handheld digital trunking scanner? Quite a few have lost their rubber pads on the sides of the radio. It's only cosmetic and doesn't affect the performance of the radio. (Photo by Chuck Gysi, N2DUP/[scancomm.net](http://scancomm.net))

like monitoring fast-food drive-through windows and crews.

The easiest place to find used scanners is [www.ebay.com](http://www.ebay.com). Of course, you'll have shipping costs if you buy online, but it's probably your best bet if you don't have a radio store in your area that sells used scanners.

It won't help you Holiday shopping procrastinators, but for next year be sure to drop in on any nearby hamfests. Vendors at the flea markets at these events often have used scanners for sale. Be aware of crystal scanners that will require you to have the right crystals—often at \$5 a pop, or more, per channel.

Another good resource is Yahoo Groups, at <http://groups.yahoo.com>. There you'll most likely find groups for each type of radio you may be looking for, as well as groups allowing people to



The Uniden BC250D handheld scanner offered digital as an option—you had to install a card to receive digital signals. You can expect good deals on this solid performer.

post their used scanners for sale. You may very well find just the radio you're looking for this way.

Finally, every used scanner is worth something as long as it's working. You should be aware that buying through eBay protects you in case you get a bum radio in the mail; you can go back through eBay to correct the transaction. If you buy online, or sometimes even at a hamfest, you won't know for sure whether the radio works. You might ask the seller if they have an eBay ID, which then you can search to see how well they do on selling things on eBay and whether or not other buyers and sellers have complaints about them.

## Scanner Overview: New Releases And Some Highlights From The Used Market

Category	Name & Model	Website	Street price	Top features
Beginner level; easy to program	Uniden HomePatrol-1	<a href="http://www.homepatrol.com">http://www.homepatrol.com</a>	\$500	Programs as easily as entering your ZIP code
	RadioShack Pro-107	<a href="http://www.radioshack.com">http://www.radioshack.com</a>	\$230	Easy for beginners with internal database
	GRE PSR-700	<a href="http://www.greamerica.com">http://www.greamerica.com</a>	\$200	Easy for beginners with internal database
Handheld digital	GRE PSR-500	<a href="http://www.greamerica.com">http://www.greamerica.com</a>	\$400-\$500	Powerful handheld digital trunking; supersensitive receiver
	Uniden BCD396XT	<a href="http://www.uniden.com">http://www.uniden.com</a>	\$485-\$550	Has fire tone decode capability to silence receiver for fire alerts
	RadioShack Pro-106	<a href="http://www.radioshack.com">http://www.radioshack.com</a>	\$400	Same as the PSR-500; stores up to 1,800 frequencies
Handheld analog trunking	RadioShack Pro-164	<a href="http://www.radioshack.com">http://www.radioshack.com</a>	\$200	Preprogrammed service searches and most analog trunking
	MFJ MFJ-8322	<a href="http://www.mfjenterprises.com">http://www.mfjenterprises.com</a>	\$200	GRE PSR-300 clone; most analog trunking
	GRE PSR-310	<a href="http://www.greamerica.com">http://www.greamerica.com</a>	unknown	Offers variety of tuning steps for narrowband systems; all bands
Handheld analog only	Alinco DJ-X11	<a href="http://www.greamerica.com">http://www.greamerica.com</a>	\$330	Wideband coverage 50 kHz to 1.3 GHz; 1,200 memory channels
Base/mobile digital you	GRE PSR-600	<a href="http://www.greamerica.com">http://www.greamerica.com</a>	\$400-\$500	Same as the PSR-500 and covers most types of systems, bands
	Uniden BCD996XT	<a href="http://www.uniden.com">http://www.uniden.com</a>	\$485-\$550	Can attach a GPS receiver while traveling and not miss any calls around you
Base/mobile analog trunking	RadioShack Pro-197	<a href="http://www.radioshack.com">http://www.radioshack.com</a>	\$400	This solid radio covers it all while base or mobile; same as PSR-600
	GRE PSR-400	<a href="http://www.greamerica.com">http://www.greamerica.com</a>	\$140-\$150	This is a bargain for an analog trunking scanner
Base/mobile analog only	Uniden BCT15X	<a href="http://www.uniden.com">http://www.uniden.com</a>	\$220	Alerts you when police vehicles are nearby by monitoring mobile repeaters
	GRE PSR-200U	<a href="http://www.greamerica.com">http://www.greamerica.com</a>	\$90-\$100	With CTCSS decode added to this radio, it's an incredible bargain for analog
	Uniden BC355C	<a href="http://www.uniden.com">http://www.uniden.com</a>	\$105-\$120	Preprogrammed yet user programmable for mobile use
Communications receivers	MFJ MFJ-8310	<a href="http://www.mfjenterprises.com">http://www.mfjenterprises.com</a>	\$100	Weather alert; 200 channels; skywarn button; all for an affordable price
	AOR AR5001D	<a href="http://www.aorusa.com">http://www.aorusa.com</a>	\$3,800-\$4,300	40 kHz to 3.15 GHz coverage; all modes; five VFOs; top-of-the-line radio
Black box receivers	AOR AR2300	<a href="http://www.aorusa.com">http://www.aorusa.com</a>	\$3,200-\$3,800	Black box version of AOR AR5001D; can be controlled by PC
Coming soon	GRE PSR-110	<a href="http://www.greamerica.com">http://www.greamerica.com</a>	unknown	Sporty race scanner covering UHF frequencies only; designed for races
	GRE PSR-410	<a href="http://www.greamerica.com">http://www.greamerica.com</a>	unknown	Expected mid-December 2010; narrowband frequency steps
Used scanners	Uniden BCT15	<a href="http://www.uniden.com">http://www.uniden.com</a>	\$100-\$150 avg	Frequency database may be out of date, but solid analog trunking scanner
	Uniden BCD996T	<a href="http://www.uniden.com">http://www.uniden.com</a>	\$300-\$400 avg	Just one version less than the BCD996XT, yet a good receiver
	Uniden BCD396T	<a href="http://www.uniden.com">http://www.uniden.com</a>	\$300-\$400 avg	Same as above and a great handheld; watch for heavy use
	Uniden BC250D	<a href="http://www.uniden.com">http://www.uniden.com</a>	\$150-\$250 avg	First popular handheld digital trunking handheld, if digital card is installed
	RadioShack Pro-96	<a href="http://www.radioshack.com">http://www.radioshack.com</a>	\$250-\$325 avg	Solid all-around digital trunking handheld; watch for use and missing pads
	RadioShack Pro-2096	<a href="http://www.radioshack.com">http://www.radioshack.com</a>	\$200-\$300 avg	Mobile version of Pro-96 and takes same program; solid sensitive receiver
Sources for used scanners and reviews		<a href="http://www.eham.net">http://www.eham.net</a>		
		<a href="http://www.radioreference.com">http://www.radioreference.com</a>		
		<a href="http://www.ebay.com">http://www.ebay.com</a>		

features the 800-MHz and VHF air bands for good all-around coverage in a package that usually goes for \$105 to \$120 on the street. This is a popular scanner for truckers who travel wide stretches and like to know they can easily program it for each state as they come and go.

## AOR AR5001D And AOR AR2300

These are basically the same high-end receiver from the folks at AOR, offered in two different packages. The AR5001D is a complete receiver that will set you back a bunch of change (in excess of \$3,000!) and the AR2300 is basically the same radio, but a black box version. (For more on AOR's AR2300, see the "Tech Showcase" elsewhere in this issue.—editor)

Black box radios can be remotely accessed and controlled by a PC. If you have the need for a high-end receiver and can afford it, these two AOR receivers will allow you to monitor a lot of signals. Both radios cover 40 kHz to



AOR's AR5001D communications receiver is a top-of-the-line radio that functions as a scanner. It will set you back several thousand dollars.

3.15 GHz, which doesn't leave too many signals uncovered. APCO P25 digital mode can be added to these rigs at an additional cost.

## Coming Soon

At press time, GRE was readying two other scanners for an expected

release by the end of the year: the PSR-110 and PSR-410.

The bright-yellow PSR-110 is GRE's entry into the race scanner market and includes only the UHF band, which most race car teams use for communications. It comes preprogrammed for six major race series: Champ Car, ARCA Re/Max, Indy Racing, Craftsman Truck, Busch Series, and Nextel Cup. It has an LCD screen on top of the radio to help you see the drivers' channels. It's a neat radio with a specific purpose. A specific release date and MSRP had not been announced by press time.

The PSR-410 scanner is due out the middle of December 2010, and though the price had not yet been set, it already looks like this one will be a winner. It covers all analog and trunking types, except for digital systems, and includes the new 380-MHz military and 700-MHz public safety bands, which usually are digital.

## Wrapping Up

We hope we jogged your memory about some of the great recent product introductions, and maybe even introduced you to one or two you'd missed. If you're looking for additional information on any of these scanners, go to the websites listed in the accompanying chart. The websites will help you learn more about each scanner and find phone numbers, email addresses, and mailing addresses. I'd also recommend using Google to find additional data and reviews on the Web.

Even if you can only dream about them now, it's still fun learning about all the new scanners out there—and imaging all the exciting signals they'd capture. Enjoy and Happy Holidays!

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# Radio Goodies— Tuned And Tested For Santa



## ***Gordo Offers Up His Latest Grab Bag Of Ideas For Hobby Gift Giving (And Getting!)***

by Gordon West, WB6NOA

**O**ver the course of each year, a whole sack-full of radio goodies make their way across my test bench, as I always like to try products out before recommending them to my radio class students. Plus, whenever I do a hamfest or scanner/shortwave radio event, I bring lots of stuff home to enjoy myself!

But of all these devices, only a few treasures remain “in service” after I’ve given them a few weeks of workout. For those still looking to fill a stocking for a good friend—or an empty spot in your own shack—here are some of my favorite “test bench survivors” for 2010.

### **Glass Callsign Plaque**

Show your pride in your hobby by displaying your radio callsign or other personalized station ID, etched into mirror glass and illuminated by 12 white LEDs, with this eye-catching plaque set into an elegant hardwood base. When I do hamfests, everyone asks where I got it. The answer is through the one-man show of Jim Thibeault and his company Engraved Memories. Contact Jim at [www.jimengraving.com](http://www.jimengraving.com) or by phoning 618-409-8284. This beauty will cost you about \$100 bucks, but it’s absolutely unique, and you can even select how you want it bottom-illuminated—with color undulating LEDs, straight white LEDs, or flashing LEDs. Lighted by red LEDs it would also make a great “ON THE AIR” sign, with or without a callsign below. It comes with an AC adaptor, or it can run portable for many hours on a small 12 VDC source.

### **Heil Listen, Talk, And Talk/Listen**

Heil headphones and Heil microphones are considered the ultimate concert-grade gear for any contest or Field Day operation. I found out first hand the Field Day capabilities of the Quiet Phone Pro (\$140) headset when I discovered my operating position was just 50 feet from a 10-kW generator running all night. I simply clicked on the active noise-canceling circuit within the Heil headphones, and it was like the generator was

Gordon West, WB6NOA, writes *Pop’Comm*’s “Gordon West’s Radio Ways” column. A prolific writer and teacher, he is a highly regarded “guru” in many aspects of the radio hobby.

*“For those still looking to fill a stocking for a good friend—or an empty spot in your own shack—here are some of my favorite “test bench survivors” for 2010.”*

no longer there. It provided the pure silence I needed to make out the faint DX calls coming in on my rig.

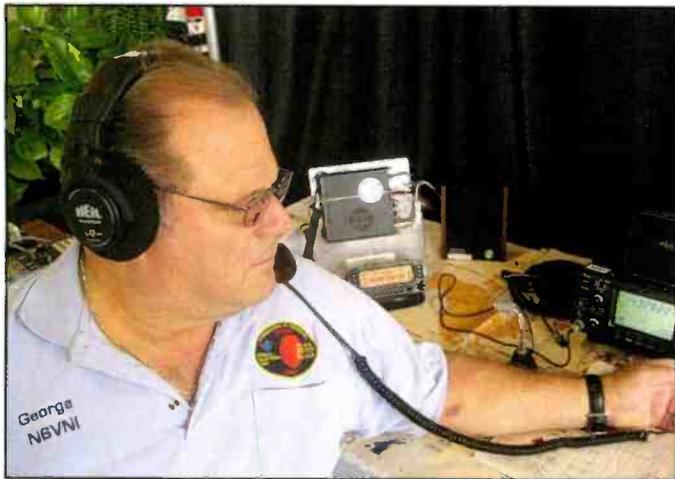
The company’s HC 6 mic boom element even unscrews, so you can enjoy some private stereo music from your sound machine when your Field Day stint is over.

I tried another headset, the new Heil Pro Set Elite (\$165) at the very noisy County Fair, and both TX and RX were terrific. “The new rigs with DSC EQ, carrier balance, are the perfect match for the HC 6 element,” explained Bob Heil, K9EID. “These new rigs and our HC-6 element can sound like the HC-4 and HC-5 full-range broadcast element by adjusting a few dB of rig equalization,” added Heil. The Pro Set Elite mics have major-sized ear cushions, and gave me a super-quiet, super-comfortable receive in the very loud fairground booth.

Finally, for the International Lighthouse on the Air weekend operating event, during which I was running my homebrew 1/2-kW power amplifier, I found that it was always a chore to



The mirror etched glass is a distinctive way to display your station ID. It works on batteries, too!



During a recent test, the Heil headset provided much needed relief from a fairground's background noise.



This CCRadio-SW was a hot performer on the AM broadcast band for nighttime DXing.

build up my electronic switching so a variety of rigs could drive the amp TX/RX circuit on transmit. To my delight, I discovered that the Heil FS-2 footswitch has one cable for the transceiver's color-coded adapter cable, plus an *independent* second cable to hard key the amp—even with proper sequencing!

When you order Heil devices, always add on the AD-1 adapter cables to fit your specific rig: red for Kenwood and Alinco; black for Ten-Tec; white for Collins; yellow for Yaesu; and blue for ICOM. Its plug-and-play, and you'll sound like a commercial broadcast station with your full-fidelity audio transmit on the air. And your personal music machine will never sound as good as when you noise cancel the racket to enjoy full fidelity sound. Check them out at [www.HeilSound.com](http://www.HeilSound.com).

## AM Broadcast DX Receiver

The C. Crane Company ([www.ccrane.com](http://www.ccrane.com)) specializes in receive products for the serious radio enthusiast. Each year it displays its products at the Consumer Electronics Show in Las Vegas, which takes place three weeks before we all head for ham boondocking in Quartzsite, Arizona. At CES, I asked Bob Crane for his recommendation for the best AM portable radio for DXing on the desert floor. He suggested the CCRadio-SW AM/FM (\$124.95) shortwave unit because of its built-in twin coil ferrite AM broadcast band antenna. He said I wouldn't need any external ferrite antenna add-on packages, because the twin internal antennas would pull in every last microvolt of AM broadcast signal out there. And it did! Best of all, the twin ferrite antennas lie in the same plane, so I could turn the receiver slightly to null out interference.

The wide/narrow bandwidth selector rolled off adjacent strong interference on a cluster of stations surrounding 1000 kHz at night. The big tuning knob allowed 1-kHz or 5-kHz fast steps on the 5 and 0 kHz setting on the AM radio dial. A local/DX switch, along with the variable RF gain control, gave me all the attenuation I needed to keep a local AM station from saturating the receiver during the day. At night, I pulled in AM stations all the way from the East Coast. Several other hams with longwire antennas couldn't get the reception that I was pulling in on the AM broadcast band. Of course, I got shortwave and FM, too. But let me tell you, the AM DX performance was outstanding.

Other products from C. Crane's CES booth came with me out into the desert to be put through their paces. Another prod-

uct I tested was the company's Voz-P premium wooden earbuds (\$24.95), and they really added to the fidelity of AM radio reception. Several different size earpads are provided, so you get the perfect fit. The wooden structure of the Voz-P premium wooden earbuds made for very mellow sound recovery.

I also tested C. Crane's QC2, a new battery charging system for rechargeable chemistry (AA, AAA, C, D, or 9-volt batteries—not for lithium ion). There wasn't much in the way of documentation, and at first look I didn't see how, technically, this little unit, running on AC or DC, would charge up to 4 AA, or 4 AAA, C, or D size NiCd or NiMH batteries. (Multiple sizes of batteries can be inserted at one time, and the charger will adjust current for the different sizes automatically.) But in the field, this following is what I found.

The little blue display shows you four battery icons, and if you look *very* carefully, you'll see the micro words "bad" and "full" come on screen. To see the display clearly, you can't stand above the charger and look down; you must look at it straight on. I popped in 4 AA rechargeables, each with a different capacity, and ran them all down in the discharge cycle, then recharged them, with each individual cell getting its own recharge.



The Voz-P earphones from C. Crane provide a rich sound for enjoying stereo FM music.



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For starters, don't believe the word "Full." This simply means that some or all of the batteries have hit a voltage plateau, which then turns the charging current into conditioning and maintenance pulses. "We chose a low charge rate which greatly increases the total charges received by the battery from the charger," explained Crane. "This charger treats each battery individually, rather than an average. "I put in four relatively old AA batteries, and just like Gordo's tests, they showed 'Full' in just five minutes, and not even warm," added Crane, agreeing with me that the word "full" on this charger is somewhat misleading. Crane went on to say that he gave these batteries some discharge commands, and on the second and third time around, they didn't immediately show "Full," which indicates that with a little help from the operator, the charger can rejuvenate old, but still-usable rechargeable cells.

For my test, I ran the recharged batteries, both AA and D cells, in the CCRadio-SW for AM broadcast reception, leaving the radio on all night. The next morning, what had been some very tired batteries before the C. Crane charger treatment were still running the equipment at nearly full tilt. The QC2 lists for \$39.95.

## Band Pass Filters

I'd like a NiMH for every time I heard this scenario: All was well with your radio comms until that ham or CBer moved in down the street. Now, no matter what band you're on, the other operator swamps your receiver, killing reception of that rare DX station. Or maybe you're working a Field Day site and your 40-meter station causes the gang on 15 meters to miss lots of medium strength signals. The answer may be a band pass filter. Band pass filters really made the difference in our Lighthouse on the



The C. Crane battery charger does a nice job—just be aware that "full" may really mean "still more to come."

Air stations where our two antenna systems were very close together, yet we always operated on separate ham bands.

For just \$40, Industrial Communication Engineers ([www.iceradioproducts.com](http://www.iceradioproducts.com); 800-ICE-COMM) offers half brick-size band pass transceiving filters that really do the job. If you're on 20 meters and your neighbor is on 40 meters, each of you can use a filter and enjoy improved performance. Get one filter per band: this way you can loan one to the transmitting station and put one on your station. Each filter will pass transmit and receive frequencies, for that specific band. You can get them for the 40-channel CB band, too. Internal coils and capacitors can work up to 200 watts output, and there is almost no insertion loss on the band you select.

Since these are band pass filters, you don't even need to know what other ham band is clobbering your station. You can get 40 dB of relief just on receive. Now, if that other station on the other band would put on one of your loaned filters, everyone would get along a lot better!

Same-band interference, however, would take a physically larger filter system. For instance, if I'm operating phone and another station is using CW on the same band, each of us (with a 2-kW manual tuner) may really need some relief. Yes, ICE makes a single unit with multiple filter selections, but its expensive. I'd recommend you get the \$40 apiece units on different bands for a good arsenal of QRM protection from another nearby operation.

## Amplified DSP Speaker

Here's a great addition to a communications receiver, a CB radio, and your home scanner: the 10-watt amplified digital signal processing speaker from bhi Ltd. ([www.bhi-ltd.com](http://www.bhi-ltd.com)). The bhi DSPKR 10-watt amplified speaker, which sells for £154.95 (approximately \$245 U.S.), incorporates bhi's digital signal processing technology that removes unwanted background noise and interference from speech. It has seven DSP filter levels, allowing operators to optimize the setting for their specific level of noise and interference.

The DSPKR offers a wide frequency range four-inch speaker and an audio amplifier capable of producing up to 10 watts RMS audio power. Simply plug the speaker into your speaker output jack, add 12 volts to its red and black wires, and start pushing the button for the amount of DSP action you need, from none to 25 dB. A status LED shows red to indicate no DSP

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Industrial Communication Engineers' band filter worked great to eliminate another-band's QRM.



The bhi DSPKR amplified speaker blasts out 10 watts and offers seven levels of digital signal processing.

action, and an audio level LED helps you select the proper radio audio drive. Once a suitable filter level has been selected, you can store this setting! This allows you to both customize your preference of DSP action and recapture it with just a couple of button pushes, rather than repeating the whole process. The built-in amplifier also offers RFI protection to keep transmit from getting into your speaker system. This is tough to do with an amplified speaker, but bhi has done a nice job of minimizing transmit coming over your DSP speaker.

bhi has plenty of other DSP products, sold primarily by well-respected antenna manufacturer GAP. If you already have your favorite speaker, GAP offers several bhi in-line DSP fully

adjustable modules. GAP can get you set with the bhi product that will suit your monitoring needs. You can contact them at [www.GAPantenna.com](http://www.GAPantenna.com).

**Grab A Goodie And Go!**

So, there you have it, the latest and greatest of the tried and true from Gordo's workbench (Santa's workbench ain't got nothing on it!). When you're looking for the perfect gift for that radio hobbyist on your shopping list (including yourself!), there's nothing quite like finding a bona fide radio goodie under the tree.

## Using The iPad For Radio—Part II

by Ken Reiss  
radioken@earthlink.net

We left off last time with an overview of using a high-tech, non-radio gadget—the wildly popular iPad—to enhance your enjoyment of the hobby. This tablet device from Apple, based on the same operating system as the iPhone and iPod Touch, offers more computer power in your palm, so you can really put it to some great use. Plus, with its veritable orchard of apps out there, new ways to incorporate it into the hobby keep popping up and ripening.

*“One of my favorites is not really an aviation app at all, but rather an information app. It’s called Point Inside and it gives details of the interior of airports and shopping centers.”*

Let’s conclude our look at putting the “i” in iPad for the radio enthusiast who also has this cool gizmo on his or her Holiday Wish List. Here are some interesting apps to whet your appetite.

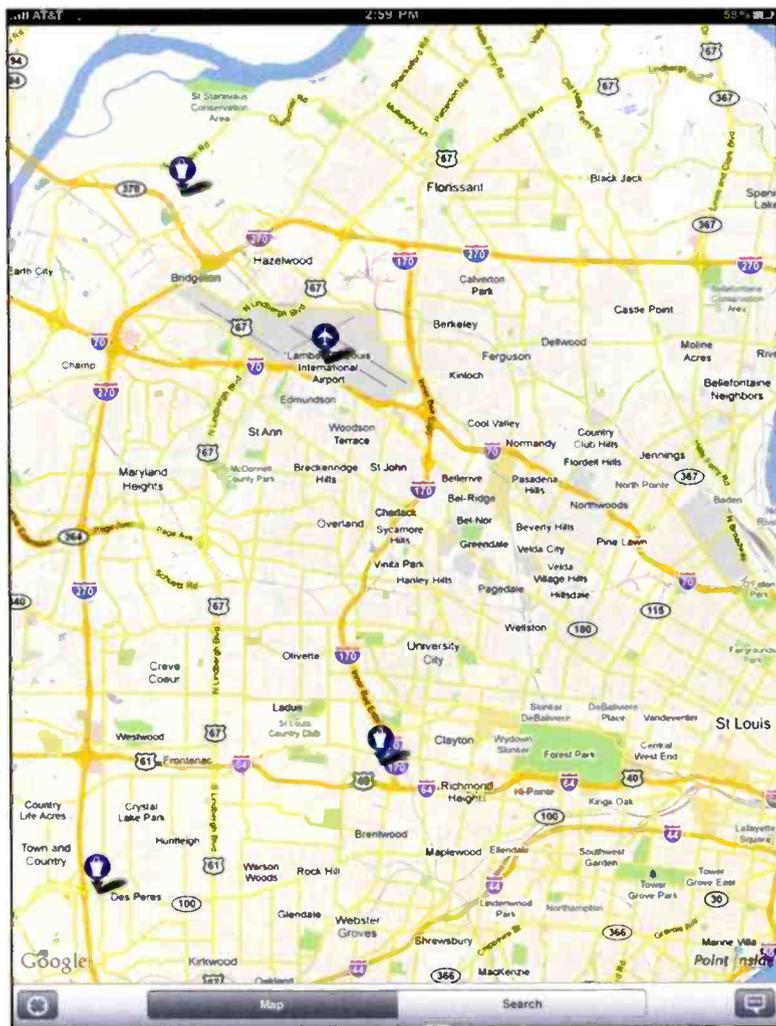
### Specialized Apps

There’s a whole group of apps out there that allow you to do some very specialized things. Everything from marine navigation charts with lots of detail and satellite image overlays, to tons of information for aviation enthusiasts (or just folks who find themselves traveling a lot). The variety of information on aviation and the detail of the charts surprised me. There are professional charts for navigation (and some professional prices on the apps, too!), but there’s also a lot of good info free or at very reasonable prices. Since this is my special area of interest, I spent some time looking through the variety of stuff here.

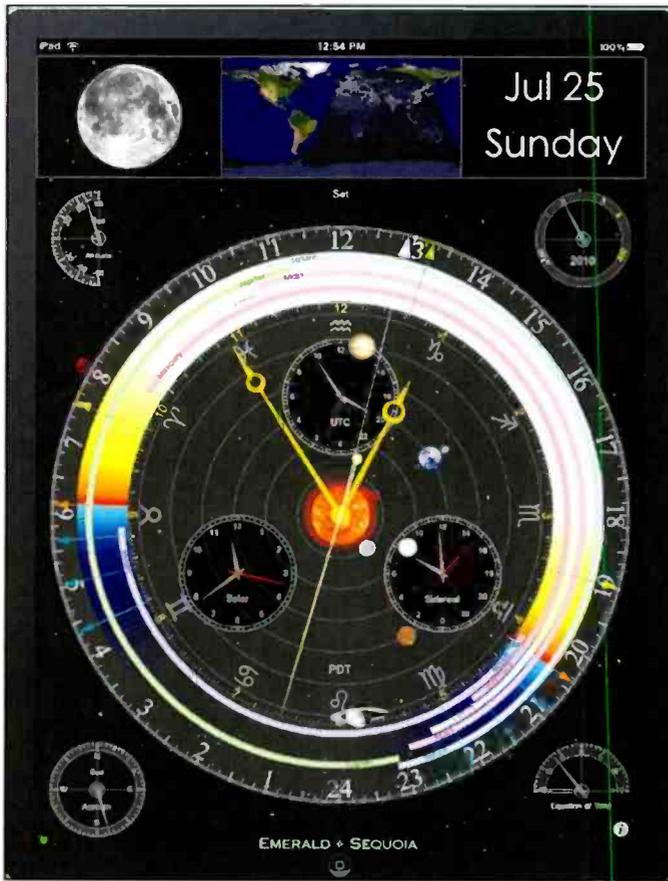
In addition to charts, you can get a specialized aviation dictionary as well as study aids in case you happen to be working on any of licenses or ratings. You’ll find a great deal of weather information, including both civil and aviation weather radar systems that would be great for both pilots and SKYWARN enthusiasts.

One of my favorites is not really an aviation app at all, but rather an information app. It’s called Point Inside and it gives details of the interior of airports and shopping centers. I don’t travel much these days, but it sure has been handy for finding things in the local shopping centers.

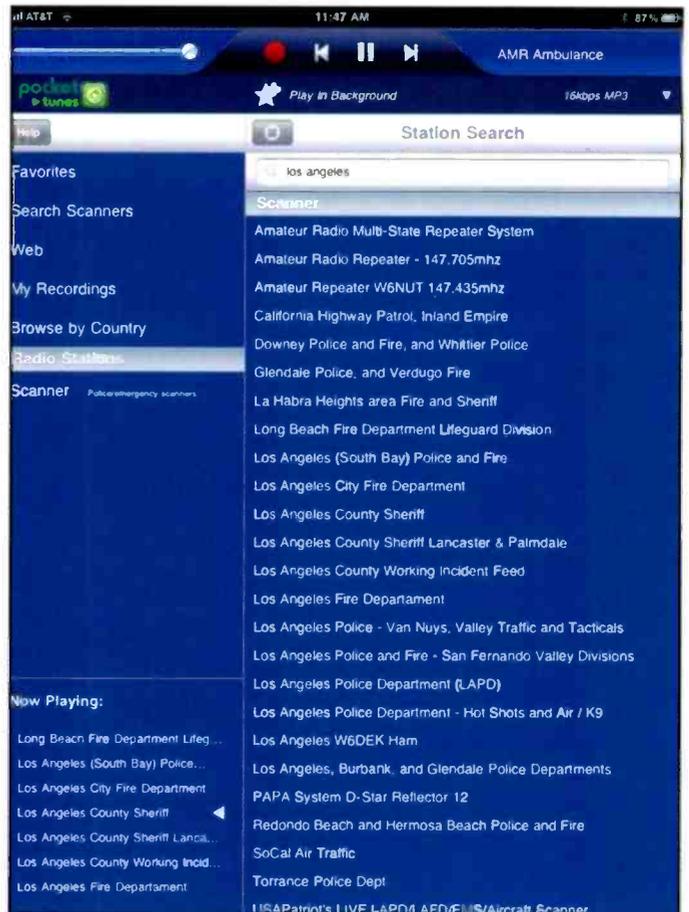
Another fun one, since radio people seem to have a great interest in time (we have to figure out those schedules in UTC, don’t we?), is a program called Emerald Observatory. Alas, it’s not digital, although there are tons of multi time zone digital clocks available. This one shows UTC and local time (syncd with the Naval Observatory time signal) as well as the angles and orientations of the



This is a city view of the St. Louis area with graphics of pins indicating where the Point Inside app has detailed information. The local airport is shown in the grey area with a few shopping centers also visible. Clicking on one of the pins will bring up details of that space.



The Emerald Observatory app for the iPad displays a variety of astronomical information and is both interesting and great to look at.



This is a quick search from Pocket Tunes showing the Los Angeles area. Lots of streaming scanners to listen to here!

five classical planets and the moon. It also includes a daylight/darkness map, although again there are better ones out there if that's mostly what you're after. I just like this one because it looks so cool!

The National Geographic World Atlas has also been fun to play with. In the old days when I was doing a lot more radio listening and more shortwave in particular, I used to keep an atlas handy to look up where in the world things were. This one is handy and pretty detailed as it zooms into maps from Bing that can display satellite imagery as well as road systems for most of the world. There's also a built-in maps app that uses Google data and is quite good for satellite images. The maps app is also connected to Google streets so, for those places where on-the-ground photography exists, you can flip right over and take a look at the street. Lots of fun.

### Listening To The Radio

For those of you only interested in what you can hear, you'll be happy to

know that you can actually listen to the scanner with the iPad. Many of the applications are ported from the iPhone and don't have full-sized graphics yet

(although they are coming along), but they run just fine. A newer app that I found just as I was researching this article is called Pocket Tunes Scanner,

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### Why just listen?

*Morse Code requirement dropped!*

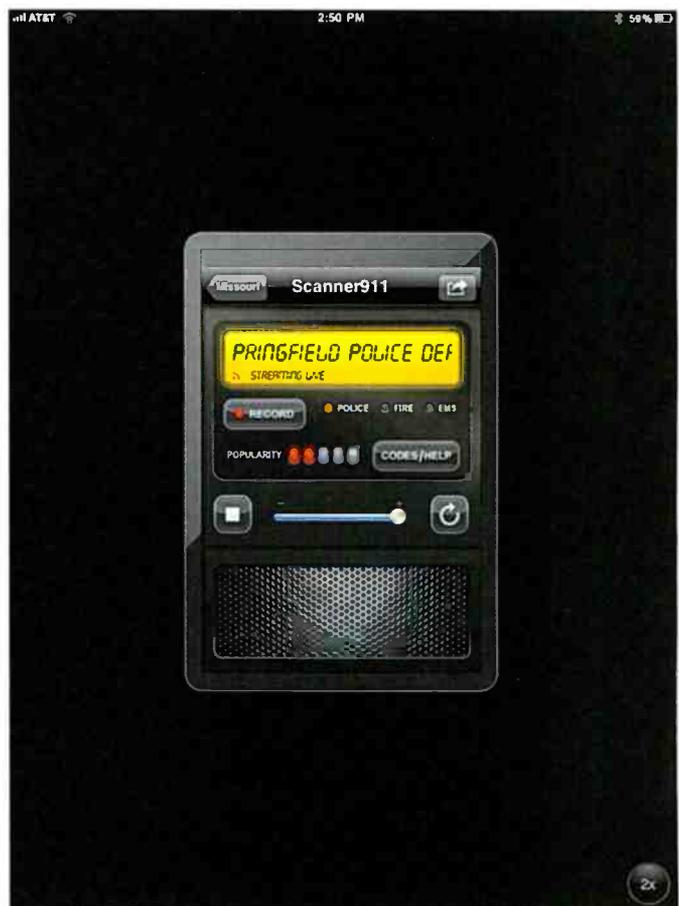
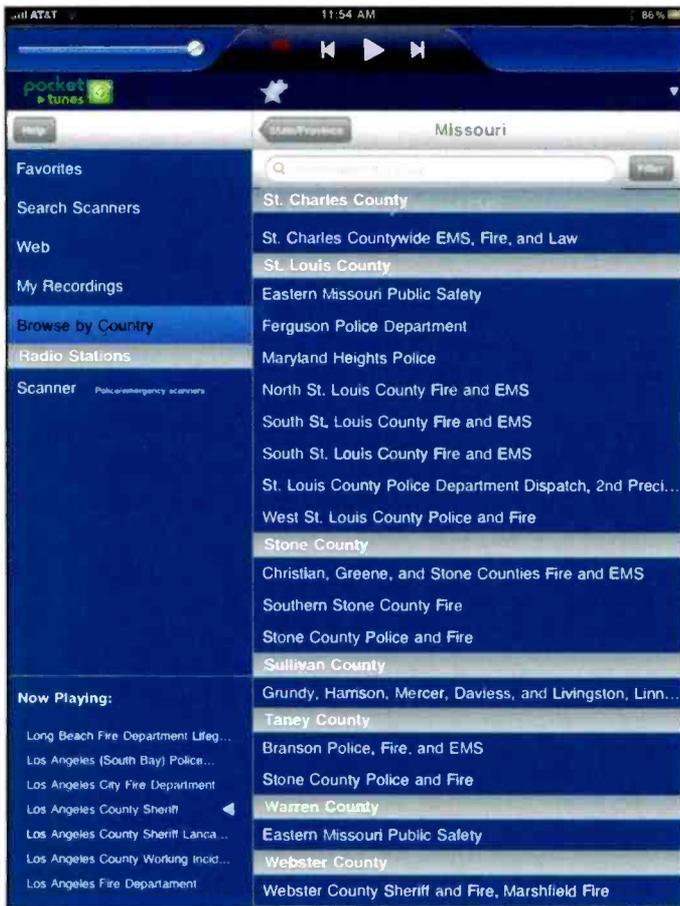
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You can also find stations by browsing starting at the country level. Here, I first chose the U.S., then Missouri, and then this list by county appears, allowing selection of a stream to listen to. Once you find one you like, you can add it to your favorites list so you can come back later.

This image is from an iPhone app running on an iPad and really illustrates how much bigger the iPad screen is than the iPhone's. It's another streaming app for scanner audio, called Scanner 911.

and it's available for both the iPad and iPhone. It has the ability to play in the background, so that's a terrific plus if you're doing other things with the iPad.

Essentially, these apps are just front ends for Internet-streamed scanners, so you don't have a lot of control over what you're listening to. On the positive side, you can listen to any location in the country that has a stream available. Most of the streams are provided by hobbyists just like you, and some are more reliable or of higher quality than others. Once you find a few you like, you're all set for some local or long-distance listening.

### Should You Give It A Try? Absolutely!

This is just the tip of the iceberg of how a device like the iPad might be used to enhance your enjoyment of the lis-

tening hobby. Of course, once you begin playing with an iPad and investigating all the apps out there, you're likely to find all kinds of other things to do with it, including audiobooks, ebooks, music, email, Web surfing, etc., etc., and definitely etc.

You can also do a lot of cool hobby-related things with an iPhone or iPod touch if you have one of those and some extra time to experiment with it. Check it out—you might find new uses I haven't thought of. If you do, I'd love to hear from you.

### Frequency Of The Month

Each month we ask our readers to let us know what they're hearing on our "Frequency Of The Month." Give it a listen and report your findings to me here at "ScanTech." We'll pick a name at random from the entries we receive and give that lucky winner a free one-year subscription, or extension, to *Pop'Comm*. Remember to include your address in case it's your name that's drawn! Good luck!

For our frequency this month, from a low band for a change, is **39.860**. Check it out to see what do or don't hear. Let me know and we'll enter your name into the monthly drawing. Send entries, as well as suggestions and questions, to radioken@earthlink.net or via more traditional methods to Ken Reiss, 9051 Watson Rd. #309, St. Louis, MO 63126. Please note frequency of the month entries with the frequency on the envelope or subject line for correct routing. And don't forget that address!

The most recent winner of our drawing is **William Wilson of Tucson, Arizona**. Congratulations, William!

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## More On Monopulse Radar Basics

by Kent Britain, WA5VJB  
wa5vjb@cq-amateur-  
radio.com

In my last time I ran a photo of a Monopulse Radar Decoy for the Navy, and boy, did that generate a lot of interest. Since you all shouted for more, here's a picture of yours truly (**Photo A**) in a Radar Cross Section test lab during the testing of said Monopulse Decoy. I was responsible for the receive and transmit antennas, and while the Navy ultimately went with another electronics package, all the electronics shown in this decoy were designed and built in my lab. Let's just say that on radar that decoy looked like it was about the size of a Boeing 737 airliner.

Again, a monopulse is a simple and very effective radar seeker used on many missile radars. The antenna is designed to transmit four beams: let's say one high, one low, one to the left and one to the right. The radar pulse goes out all four antennas and bounces off the aircraft or ship and four receivers compare the strength of the return echo. From this comparison, the seeker determines the distance to the target and the vector angle to the target. The missile turns on that angle and pulses again. Turns, pulses, turns, pulses, until all four receivers have the same signal strength. Now the missile is heading right at the target. This is much

*"Let's just say that on radar that decoy looked like it was about the size of a Boeing 737 airliner."*

simpler, much faster, and a much more deadly seeker than a radar that has to search the entire sky and then remember where the target was.

The radar decoy receives the radar signal, amplifies it about 100,000 times, and then retransmits the signal back to the seeker on the opponent's radar. The idea is that the decoy now looks bigger than the airplane towing it, and with luck the enemy will shoot at the decoy, which is a much smaller and harder to hit target and often survives the attack (in any case, they didn't shoot at you!).

In another technique, the target turns on a jamming signal to interfere with the radar seeker in the missile. This can confuse the circuitry that is computing the distance to the target, but the angle information now sees a stronger signal to work with and homes in on this new stronger signal. In short, monopulse seekers just *love* jammers and zero right in on them.

Last time I also talked about radar reflectors being used to decoy anti-ship missiles. Again these are in many ways very similar to the red reflectors you might have on a bicycle. To recap, imaging throwing a ball so that it hits the ground, then the wall, and then comes right back to you. Now throw a ball into a corner such that it hits both walls and the floor, and it is theoretically returned in any direction in free space, which is why that bicycle reflector is made up of lots of three-sided cones.

In **Photo B** I show a corner cube, which is basically just the end of a cube cut off. As you'll notice, it's kind of hard to get a good photo. Not only does it reflect radar back exactly in the same direction it came from, but also light from the camera flash. If you've ever worked around radars, you know that corner cubes are often used as calibrators since they return a very precise reflection.

**Photo C** may not be one of my better photo examples, but it does help you quickly see how a box is also four corner cubes. A metal box is an excellent radar target and quite bright on a radar or a missile seeker. Arrays of metal boxes much



Photo A. Your columnist and a Monopulse Radar Decoy in Radar Cross Section chamber.

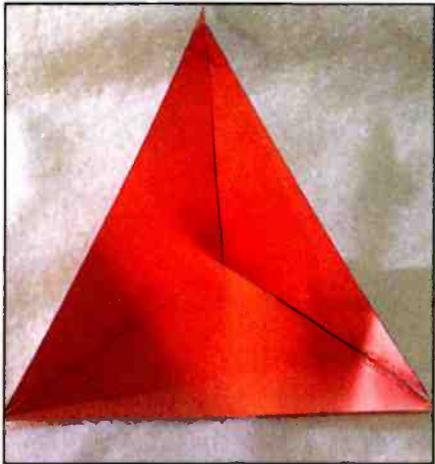


Photo B. Corner cube radar reflector.



Photo C. Box-type radar reflector.

like the one in this photo were used in the Persian Gulf to decoy anti-ship missiles.

## Ground Bounce Jamming

Let's get back to our missiles that love to home in on the strong signal from a jammer. **Figure 1** is an example of ground bounce jamming and shows the jamming signal being aimed at the ground, or something else with a strong reflection. The idea here is to never send a signal directly at the enemy. Now if the jamming signals do not confuse the seeker and the seeker homes in on the transmitter, the missile will hopefully strike the ground instead of you.

Development of ground bounce jamming was very important in the B1B bomber electronic warfare systems. Even older radars will still direction find on a jammer signal. The operator won't get any range information about you because of the jamming, but he will still know what in direction you are to be found.

The developers did have one problem with the early B1B electronic warfare system. There was a state-of-the-art elec-

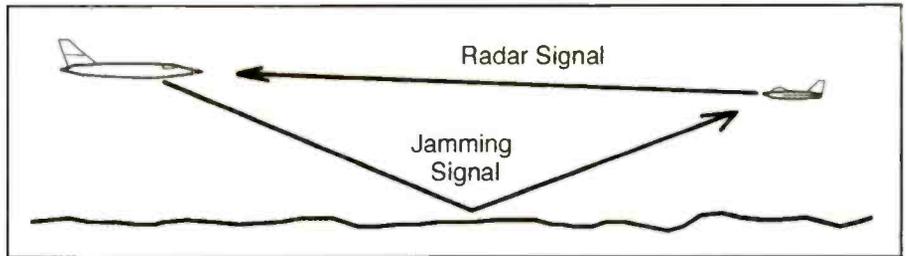


Figure 1. Ground bounce jamming.

tronic warfare computer that analyzed any radar signal and quickly designed a jamming signal to match that radar and start transmitting an appropriate counter measure. Maybe it was a bit too smart. A radar signal would hit the B1B, the computer would identify the radar and start ground-bounce jamming it. The computer would then see the reflection of this new complex jamming signal as another "threat" radar, devise a jamming signal for the jamming signal, and start transmitting another signal. Wow, another new Threat radar, and on and on. In simple terms, the fix was to make the electronic warfare system a bit more "stupid."

## A Reader Question

One *Pop'Comm* reader recently sent me this question: "How many antennas can I connect to the same ground?"

Well, I find it interesting that the reader thinks only one antenna per ground might be the best solution. I know of one commercial installation where 15 broadcast and dozens of two-way antennas all use the same ground. The "Star" ground technique, where as many systems as possible use the same ground rod, has many advantages. Hmm...sounds like a future column. But the short answer is, as many as you can!

## And A Realization

In the second grade I got my first diode set. My father strung a long wire with insulators at the corners of our house—a nice proper long wire antenna! A few years later at a new house I built my first antenna using the window screen near my bed. Then I improved my antenna by running wires to the next, then the next, then the next window screen. There must be a thousand feet of wire in each of those screens! What a long wire antenna!

I now realize that the wire between the screens was doing more than the thousand feet of wire in the screen mesh. The capture area of an antenna has more to do with

the distance between the ends than the closely spaced wires all shorted together.

## Coming Up

I do have a few more radar stories, and if there is any interest I may even cover infrared jamming techniques. Of course I won't cover any topics that are outside the basic physics of infrared detectors...hihi.

As always we welcome questions from you, our readers. Suggestions for column topics are always handy during times of writer's block. Snail mail can be sent care of CQ Communications at the address on page 4 of your magazine. Email can go to [WA5VJB@cq-vhf.com](mailto:WA5VJB@cq-vhf.com). For additional antenna projects see the reference section in [www.wa5vjb.com](http://www.wa5vjb.com).

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# BROADCASTING

## World Band Tuning Tips

# World News, Commentary, Music, Sports, And Drama At Your Fingertips

This listing is designed to help you hear more shortwave broadcasting stations. The list covers a variety of stations, including international broadcasters beaming programs to North America, others to different parts of the world, as well as local and regional shortwave stations. Many of the transmissions listed here are not in English. Your ability to receive these stations will depend on time of day, time of year, your geographic location, highly variable propagation conditions, and the receiving equipment used.

AA, FF, SS, GG, etc. are abbreviations for languages (Arabic, French, Spanish, German). Times given are in UTC, which is five hours ahead of EST, i.e. 0000 UTC equals 7 p.m. EST, 6 p.m. CST, 4 p.m. PST.

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0000	15275	Radio Thailand		0300	7305	Vatican Radio	SS
0000	9665	Radio PMR, Moldova		0300	7475	Voice of Greece	Greek
0000	15385	Voice of America, Philippine Relay	CC	0300	7505	WRNO, Louisiana	
0030	12095	Radio Thailand		0300	4780	Radio Djibouti	AA
0100	9645	Radio Bandeirantes, Brazil	PP	0300	4976	UBC Radio, Uganda	
0100	3250	Radio Luz y Vida, Honduras	SS	0300	5446.5	AFN/AFRTS, Florida	usb
0100	7295	Radio Farda, USA, via Germany	Farsi	0300	5940	Voz Missionaria, Brazil	PP
0100	11940	RDP International, Portugal	PP	0300	7110	Radio Ethiopia	Amharic
0100	9715	RDP International, Portugal	PP	0330	6020	Radio Oromiya, Ethiopia	Oromo
0100	15475	Sri Lanka Broadcasting Corp.		0330	11895	Radio Romania International	
0100	11765	Super Radio Deus e Amour, Brazil	PP	0400	7255	BBC, Ascension Island Relay	
0100	7270	Voice of Russia, via Armenia	RR	0400	7310	BBC, South Africa Relay	
0100	4700	Radio Yura, Bolivia	SS	0400	3255	BBC, South Africa Relay	
0100	4905	Radio Anhanguera, Brazil	PP	0400	4965	CVC-One Africa, Zambia	
0100	4700	Radio San Miguel, Bolivia	SS	0400	7240	Deutsche Welle, Germany, Rwanda Relay	GG
0130	7425	Radio Tirana, Albania		0400	9545	Deutsche Welle, Germany, via England	RR
0200	11710	Radio Argentina al Exterior		0400	9445	Radio Prague, Czech Republic	
0200	7345	Radio Prague, Czech Republic	SS	0400	6090	Federal Radio Corp., Nigeria	Hausa
0200	9905	Islamic Republic of Iran Broadcasting	SS	0400	9740	Miraya FM, Sudan, via Slovakia	AA
0200	11590	Radio Cairo, Egypt	AA	0400	15240	Radio Australia	
0200	4885	Radio Clube do Para, Brazil	PP	0400	4915	Radio Difusora Macapa, Brazil	PP
0200	7280	Radio Farda, USA, via Germany	Farsi	0400	7295	RT Tunisienne, Tunisia	AA
0200	4755	Radio Imaculada Conceicao, Brazil	PP	0400	9725	RT Tunisienne, Tunisia	AA
0200	9720	Radio Victoria, Peru	SS	0400	4930	VOA Relay, Botswana	
0200	7440	Voice of Russia, via Ukraine		0400	4960	VOA Sao Tome Relay	
0200	9665	Voice of Russia, via Moldova		0400	9710	Voice of the Broad Masses, Ethiopia	vernacular
0200	4828	Voice of Zimbabwe	vernacular	0430	4775	TWR, Swaziland	GG
0200	3200	TWR, Swaziland		0430	9660	Vatican Radio	FF
0200	3985	Hrvatski Radio, Croatia		0430	11625	Vatican Radio, via Madagascar	FF
0200	5025	Radio Rebelde, Cuba		0430	9925	Voice of Croatia, via Germany	Croatian
0200	6025	Radio Amanecer, Dominican Republic	SS	0500	9915	BBC, England	AA
0230	6175	Voice of Vietnam, via Canada		0500	9410	BBC, England	
0300	5960	Radio Japan, via Canada	JJ	0500	6190	China Radio International, via Canada	
0300	5010	Radio Madagasikara, Madagascar	Malagasy	0500	6180	Deutsche Welle, Germany, Portugal Relay	
0300	4950	Radio Nacional, Angola	PP	0500	11760	Radio Havana Cuba	SS
0300	5910	Marfil Estereo, Colombia	SS	0500	6155	Radio Austria International	GG
0300	7210	Radio Fana, Ethiopia	amharic	0500	4985	Radio Brazil Central	PP
0300	11935	Radio Japan, via Bonaire	JJ	0500	3350	R. Exterior de Espana, Spain, Costa Rica	SS
0300	13730	Radio New Zealand		0500	12035	Radio Exterior de Espana, Spain	SS
0300	15355	Radio Sultanate of Oman		0500	11700	Radio France International	FF
0300	5950	Radio Taiwan International, via Florida		0500	11995	Radio France International	FF
0300	3240	TWR, Zambia	vernacular	0500	11715	Radio Japan	RR

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0500	7255	Voice of Nigeria		1300	15285	BBC, Singapore Relay	
0500	9865	Radio Nederland Bonaire Relay	DD	1400	11715	KJES, New Mexico	
0500	5005	Radio Nacional, Equatorial Guinea	SS	1400	9580	Radio Australia	
0600	6250	Radio Nacional, Equatorial Guinea	SS	1400	6170	Radio New Zealand	
0600	6185	Radio Educacion, Mexico	SS	1500	11680	Radio Nacional Venezuela, via Cuba	SS
0600	5045	Radio Cultura do Para, Brazil	PP	1500	15630	Voice of Greece	Greek
0600	6010	Radio Havana Cuba		1500	15235	Radio Jamahiriya, Libya	
0600	3960	Star Radio, Liberia		1600	15205	BSKSA, Saudi Arabia	AA
0600	7220	Radio Centrafrique, Central African Rep.FF, vern.		1600	15235	Channel Africa, South Africa	FF
0700	3290	Guyana Broadcasting Corp.		1600	9920	Far East Broadcasting, Philippines	CC
0800	9635	RTV Malienne, Mali	FF	1600	15215	Gospel for Asia, USA, via France	Hindi
0800	5020	Solomon Islands Broadcasting Service		1600	11795	Radio Free Asia, Northern Marianas Relay	CC
0900	6160	CKZN, Newfoundland, Canada		1600	17700	Sudan Radio Service, USA, via Ascension	AA
0900	6010	Radio Mil, Mexico	SS	1600	9335	Voice of Korea, North Korea	FF
0900	3310	Radio Mosoj Chaski, Bolivia	Quechua	1700	15300	Radio France International	FF
0900	3915	Radio Fly, Papua New Guinea		1700	15560	RDP International, Portugal	PP
0900	6050	HCJB Global, Ecuador	SS	1800	15085	Islamic Republic of Iran Broadcasting GG, others	
1000	4955	Radio Cultural Amauta, Peru	SS	1800	15120	Voice of Nigeria	
1000	9840	Radio Japan		1900	15540	Radio Kuwait	
1000	4835	Radio Maranon, Peru	SS	1900	11610	Radio Nederland, via Rwanda	
1000	11750	HCJB Global, Australia		2000	9625	CBC Northern Service, Canada	
1000	7275	KBS World Radio, South Korea	KK	2000	17680	CVC-La Voz, Chile	SS
1000	15580	KFBS, Northern Marianas	II	2000	17775	KVOH, California	SS
1000	6035	La Voz Guaviare, Colombia	SS	2000	17735	Radio Canada International	
1000	4815	Radio el Buen Pastor, Ecuador	SS	2000	13755	RDP International, Portugal	PP
1000	4950	Radio Madre de Dios, Peru	SS	2100	11620	All India Radio	
1000	3330	Ondas del Huallaga, Peru	SS	2100	11865	Deutsche Welle, Germany, Rwanda Relay	
1100	6070	CFRX, Canada		2100	9765	Islamic Republic of Iran Broadcasting	JJ
1100	11550	Family Radio/WYFR, via Taiwan		2100	12085	Radio Damascus, Syria	
1100	5995	Radio Australia		2100	15110	Radio Exterior de Espana, Spain	SS
1100	3385	R. East New Britain, Papua New Guinea	Tok Pisin	2100	9860	Radio Nederland, via Rwanda	AA
1100	6165	Radio Nationale Tchadienne, Chad	FF	2100	15550	WJHR, Florida	USB
1100	9655	Radio New Zealand International		2100	15190	Radio Africa, Equatorial Guinea	
1100	3925	Radio Nikkei, Japan	JJ	2200	9580	Africa Number One, Gabon	FF
1100	15210	Radio Romania International		2200	7125	Radio Guinee, Guinea	FF
1100	2368.5	Radio Symban, Australia		2200	12030	Radio Havana Cuba	SS
1100	9975	TWR, Guam	Mandarin	2200	4845	Radio Mauritanie, Mauritania	AA
1100	9525	Voice of Indonesia	II, others	2200	11670	Radio Nacional Venezuela, via Cuba	SS
1100	11710	Voice of Korea, North Korea	FF	2200	9890	Voice of Russia	
1100	7385	Xizang PBS, China (Tibet)	Tibetan	2200	9830	Voice of Turkey	
1100	7250	Radio Nederland, via Philippines	DD	2200	9370	WTJC, North Carolina	
1100	2485	ABC Northern Territory Service, Australia		2200	9980	WWCR, Tennessee	
1100	3340	Radio Misiones International, Honduras	SS	2300	15250	Radio Nacional Venezuela, via Cuba	SS
1130	6185	Radio Japan	RR	2300	9480	KAIJ, Texas	
1200	12105	Adventist World Radio, Guam	Mandarin	2300	9700	Radio Bulgaria	
1200	7270	All India Radio	Hindi	2300	9295	Radio Cairo, Egypt	AA
1200	11690	China Radio International		2300	13710	Radio Canada International	PP
1200	11835	Far East Broadcasting, Philippines	CC	2300	9535	Radio Exterior de Espana, Spain	SS
1200	11580	KFBS, Northern Marianas	CC	2300	11680	Radio Exterior de Espana, Spain	SS
1200	7355	KNLS, Alaska		2300	13740	Radio Free Asia, Northern Marianas Relay	Khmer
1200	17795	Radio Australia		2300	11780	Radio Nacional Amazonia, Brazil	PP
1200	3290	Radio Central, Papua New Guinea	Tok Pisin	2300	15345	Radio Nacional/RAE, Argentina	SS
1200	3335	Radio East Sepik, Papua New Guinea	Tok Pisin	2300	17605	Radio Nederland, Bonaire Relay	DD
1200	11825	Voice of America, Philippines Relay	CC	2300	6100	Radio Romania International	SS
1200	11785	Voice of America, Thailand Relay		2300	11630	RDP International, Portugal	PP
1200	12010	Voice of America, Philippines Relay	II	2300	13830	WEWN, Alabama	SS
1200	11665	Radio Taiwan International	CC	2300	9465	WINB, Pennsylvania	SS
1300	11675	Polish Radio External Service, via Austria					

# Getting Started With The AOR AR2300— A Closer Look At The Software

by Ken Reiss  
Radioken@earthlink.net

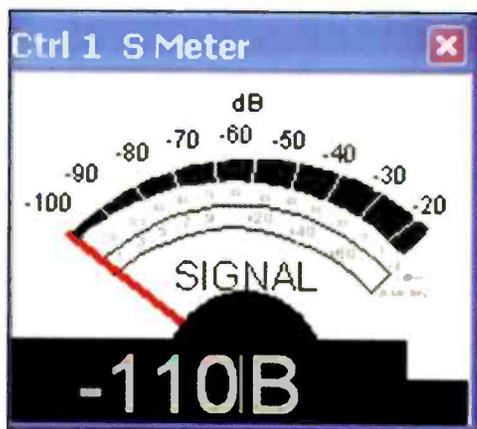
*“The software has the ability to export log, database, and memory files into a standard CSV (comma separated values) format... It’s hard to overstate the value of this feature since it allows computer collection of the data and offers an ease of entry that few programs can duplicate.”*

In our August 2010 issue we introduced you to the AR2300, the latest black box computer-controlled receiver from AOR. This month we continue our examination of this radio by taking a closer look at the software that drives it. In case you missed that issue, however, we’ll start with a brief recap.

The AR-2300 is a computer-controlled communications receiver unlike any other on the market. Wideband coverage from 40 kHz to 3.15 GHz\* is the hallmark of this black box, and AOR’s high performance is right behind it. The unit features many unusual options, including digital I/Q output (with an optional board), which allows capture of the raw signal data up to 1 MHz wide to the computer’s hard drive. That data can be played back or analyzed later for stray signals or information that may be important. There is also a 45-MHz analog IF Output available (15 MHz bandwidth) for connection to external spectrum scopes and other equipment for high-end signal analysis.

*\*Cellular frequencies blocked on U.S. consumer version. Unblocked version available to qualified purchasers with documentation.*

Ken Reiss is Pop’Comm’s “ScanTech” columnist.

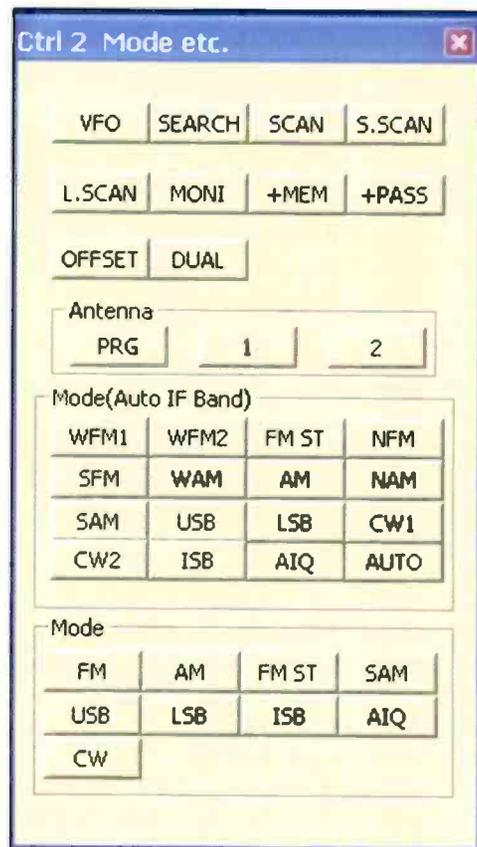


Control 1 is the S meter, comprising a very responsive analog meter as well as a digital readout below.

With a price tag of \$3,799, it’s clearly aimed at the upper end of the market and will no doubt be used by many government agencies with an alphabet soup of letters. But this same receiver is available to the consumer market, and if you have the budget for it you won’t be disappointed.

## The Brain In The Box

One of the great features of computer-controlled receivers is that an imaginative programmer can release a new set of control software and completely change how the unit works. So far,



The Control 2 window gives you the main mode controls as well as settings for what you want the receiver to do. VFOs, scan and search, even saving a channel in memory are all here.

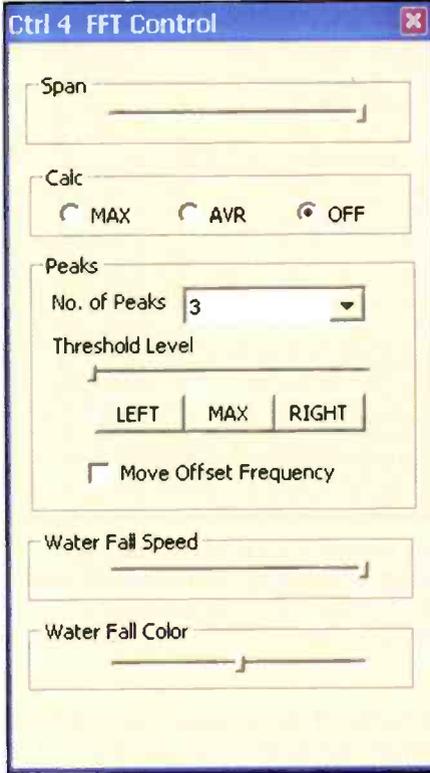


The Control 3 window is a good one to keep handy for scanner listening, as the squelch control is here.

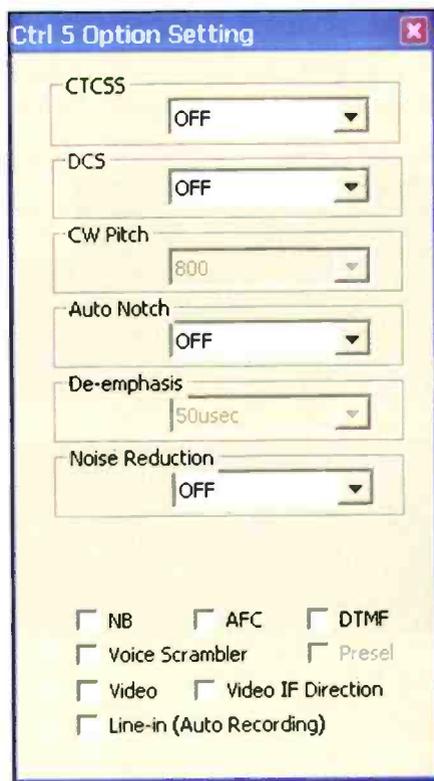
AOR's control program that comes with the receiver is the only option, but keep your eyes open if you have an interest in this receiver. There are many independent software developers who support AOR receivers.

In the meantime, the AOR program should be enough to keep you busy. All the key features of the receiver are supported and the effect is a fully functional communications receiver that will make any listener proud to own one. Let's take a look at the details of how the software controls this excellent receiver.

The basic control window is actually divided into two windows, a display window called Main Control and a control window called AR2300 Control Soft, which is where you'll make most of your changes and settings adjustments. The Main Control window gives you quick access to many of the major settings and the current state of the receiver. Many of the items displayed in the Main Control are also hot spots, so you can actually control the receiver from there as well: for instance, the frequency can be adjusted with the little circle guide next to the frequency display. For some reason the volume also can be adjusted here, but not the squelch, which requires access to the Control 3 window, which we'll get to later.



Control 4 provides options for the spectrum display and waterfall modes.



Control 5 is the "options" window where tone squelch (both CTCSS and DCS) are set as well as functions like Noise Blanking and video output. It's a real catchall window.

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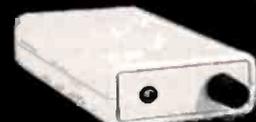
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It's possible to listen to as many as three frequencies at once with the AR2300: a main frequency in the HF range and a main frequency in the VHF/UHF range (each of which has its own display window) and then an "offset" frequency that needs to be within 5 MHz of the VHF/UHF "Main" frequency. This is perfect for monitoring the input of a repeater or a second VHF/UHF channel.

The AR2300 Control Soft window is actually the main window for the program. Closing this window will also close the program. While it's open, you'll find a lot of detail in this window, including the spectrum display from the Fast Fourier Transform spectrum scope, as well as detailed information on memory contents, search settings, scheduled events, and more. There's a lot of capability in this window, and all of the other windows are supportive of the controls contained here.

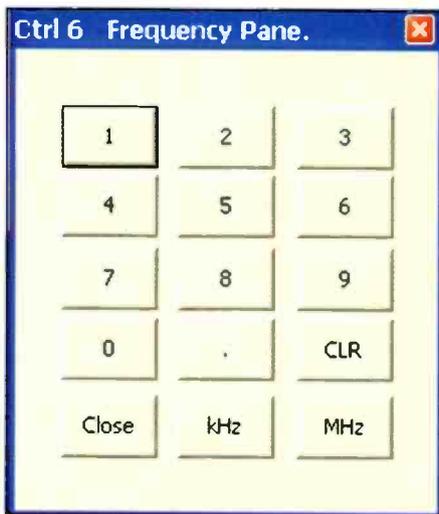
One of the many interesting features and more unusual applications of computer control is the maintenance of a central database. The database can be imported as a CSV file from any spreadsheet to database (or many websites with frequency information). Once imported, the database is used to reference the frequency any time it becomes active. Essentially, you could do a search and have your known frequencies show up as already alphabetagged!

## Control Windows

There are lots of settings contained in just the two main windows, but there are more buried in various other windows spread throughout the program. Most of the other windows are context sensitive so, for instance, you'll get an antenna program window when you enter a new antenna control (switching antennas at specific frequencies) entry into the database. There are, however, six ancillary windows, labeled Control 1 through 6. The window menu in the Control Soft window lists the six control windows and their titles, so it's not too hard to find what you're after once you become familiar with their contents.

Control 1 is simply the S Meter window. It's convenient that you can freely move it around on your screen since it's a separate window. It also includes a digital DB display below the analog meter, which is a nice add-on that you don't see on a typical receiver.

Control 2 is one of the Main Control windows and you'll likely have this one open most of the time. Here you can set



The keypad window of Control 6 is largely unnecessary with a conventional PC, but might be more useful on a laptop or touch-screen computer.

the mode of the receiver from VFO to Search and Scan. You can also add a received frequency displayed on the VFO indicator to memory or to the PASS memory so that it will be skipped in subsequent search operations.

The antenna switch is here, too, as well as the mode settings for switching receive modes. These include a set of buttons with not only mode, but also auto bandwidth adjustments that are appropriate for the

## At A Glance

### The AOR AR2300 Black Box Receiver

#### Major Features And Specifications

- Covers 40 kHz to 3150 MHz
- Up to three channels can be monitored simultaneously
- All functions can be computer controlled
- Monitoring and storage of up to 2,000 frequencies
- Digital signal processing
- Direct digital sampling
- Built-in digital audio recording
- High-performance analog RF front-end
- DDS local oscillator
- Can detect hidden transmitters
- Remote control operation uses optional LAN controller
- Unattended long-term monitoring with internal SD audio recorder
- Spectrum recording with optional AR-IQ software for laboratory signal analysis

#### List Price

Govt. Version (AR2300U): \$3,799  
U.S. Consumer Version (cellular blocked): \$3,699

#### Contact

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The dual main windows showing the VHF/UHF on the left and the HF frequency on the right. The VHF/UHF is also running an offset frequency, so three frequencies are being monitored in this case.

mode chosen. For instance, the Wide FM will also flip the bandwidth to 100 kHz for mono FM listening, or to 200 for the WFM2 or FM Stereo mode. NFM switches to a much more useful (for scanner fans anyway) 15 kHz. I've found these mode switches perfectly acceptable, but there are also controls to set these separately if you prefer.

Control 3, as we mentioned earlier, is where the volume and squelch controls reside. Volume is also adjustable elsewhere, but if you're using VHF/UHF frequencies, you'll need access to the squelch control that's provided here. Also in Control 3 is the adjustment for frequency step, used when clicking through frequencies on the VFO or in the search mode (although search settings can store their own, too).

There's a voice squelch option that can be useful in search operations. The voice squelch causes the squelch to remain closed unless the radio can detect a voice modulation. It's not perfect, but it can greatly reduce the number of pagers and data signals you get stuck listening to. You'll have to experiment with settings to make this work for you.

Finally, in the Control 3 window is also the setting for manual IF bandwidth and

IF Shift control. These will be quite useful on HF frequencies, or if you prefer to choose your own bandwidth instead of using the preset ones associated with the mode switches mentioned earlier.

Control 4 is the FFT Spectrum display control. The primary control here is the span of spectrum that you're watching on the display. This can range from 800 kHz (useful for HF and utility monitoring) to as wide as 10 MHz, which is great for scanning applications. The FFT also offers two calculation (CALC) modes that determine the display pattern. The Maximum mode retains the data from sweep to sweep and shows the maximum signal received. Over time, a picture is built up of active frequencies in the sweep area. The Average mode takes an average of the signal built up over time so that a fluctuating signal won't have quite as much impact as it would in the MAX mode. By turning this feature off, you get a real-time display of activity as it happens. All three are a lot of fun to experiment with.

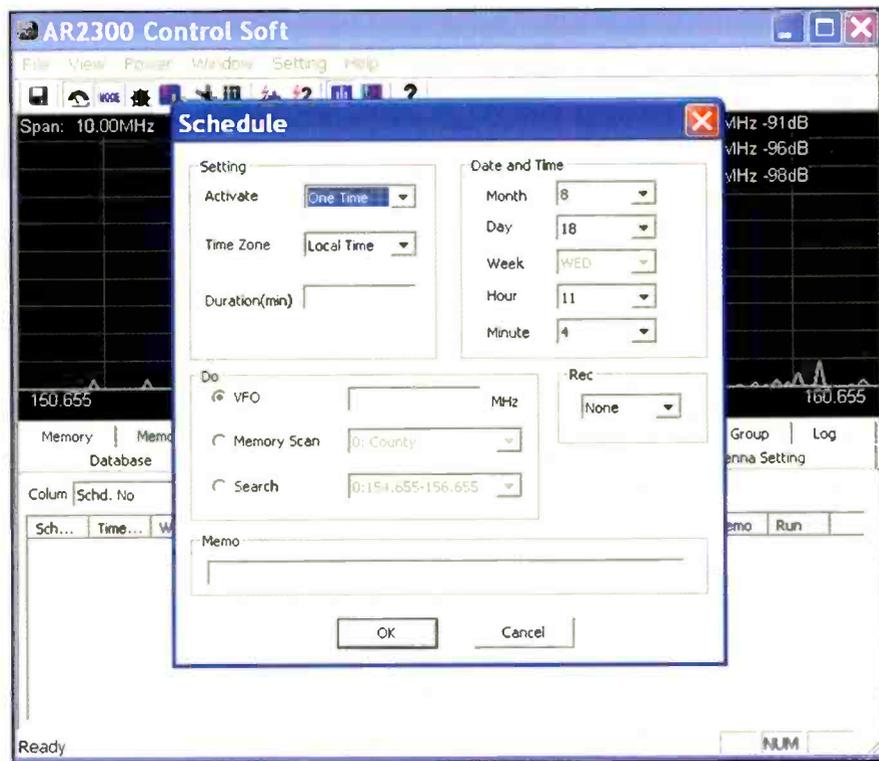
There's also a setting for the number of peaks you'd like to track in real-time searching. This function identifies the strongest signals, both listing and highlighting them with a square indicator in the display. I have it set at 3 (10 is maxi-

um) and it works quite well for helping to locate strong signals. A threshold adjustment helps to locate only the strongest signals or to keep strong noise out of the display if you have a problem.

Finally, it is also possible to see a waterfall display with the spectrum display. This is useful in commercial applications when looking for interference. In the Control 4 window, you can choose the speed of the waterfall, opting for anything from real-time data to a slow-moving history of the spectrum. This is also a lot of fun to experiment with.

Control 5 provides the Option settings, including tone squelch, notch filters, and noise reduction. If your unit is equipped with the optional voice descrambler, you'll find that also controlled here. It appears to be kind of a catchall panel for the remaining controls.

The AR2300 is also capable of analog video reception, which is output through a jack on the front panel of the receiver. There's a check box in Control 5 to enable this function. Keep in mind that it is only useful for analog video, which is becoming somewhat scarce since the digital transition finally went through, but it can be used to monitor security cameras or search for "bugs."



Events can be scheduled through the schedule tab in the AR2300 window. You can set up a search to run at a specific time and then start another at the end of that time, or return to normal scanning. The possibilities for unattended operation are limitless.



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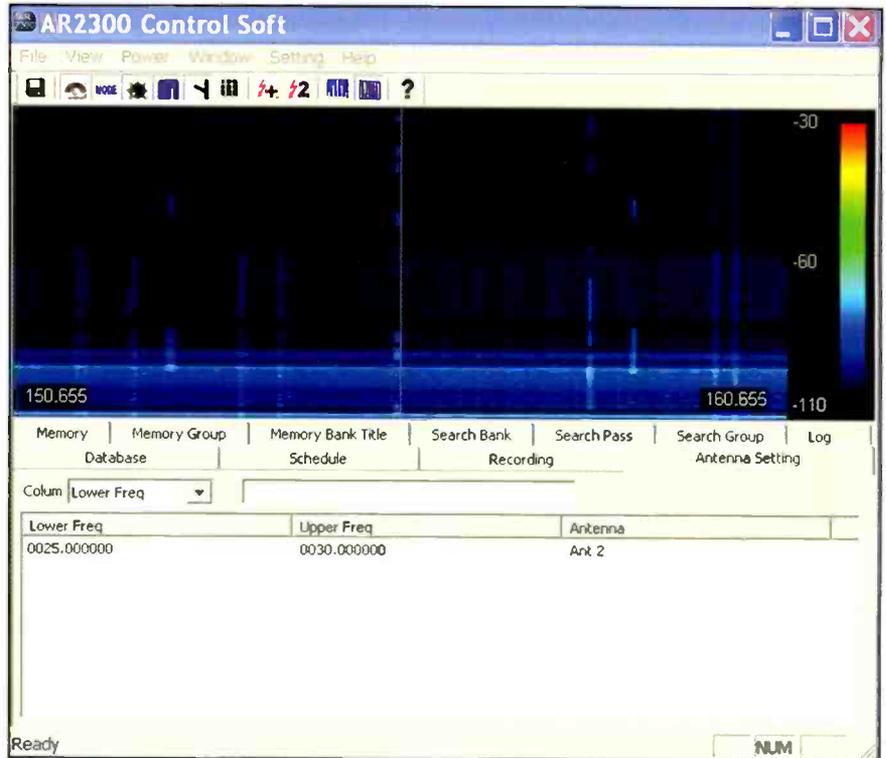
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This waterfall display shows some bright blue lines near the middle and bottom that are a result of shifting the color emphasis while it was running, representing a shift in the sensitivity of the display. Normally, you'd probably want the black areas, as in the top portion (most recent activity), to represent no activity and the blue marks (or brighter, depending on signal strength) to represent the activity; in this example, the top third of this display is how it would normally run all the time. This was done for demonstration only.

There's also a check box for "line-in" recording. The AR2300 has the ability to record received audio and save it to an SD card loaded into the front slot, but the check box allows for direct line-in recording to the computer. There's a line-out jack on the rear of the receiver that enables you to capture WAV files if it is connected to the input of your computer's sound system. Nice feature to have!

And last, but not least (although almost anti-climatic at this point), Control 6 is a simple frequency input pad. You can use this to enter frequencies into the VFO for reception, or you can just use the numeric keypad on your computer. This might be handy if you were on a laptop that didn't have numeric input, or if one of the touch-tablet computers ever becomes practical for this type of application.

**Other Features**

The software has the ability to export log, database, and memory files into a standard CSV (comma separated values) format. Any spreadsheet can read these and edit the data. It makes sense to export

one first so you know the correct format and order the files should be in before spending a lot of time editing. It's hard to overstate the value of this feature since it allows computer collection of the data and offers an ease of entry that few programs can duplicate.

Up to 2,000 memory channels are supported by the software, and "sets" of data can be saved and reloaded quickly from disk. As with most computer-controlled receivers, that means you have an almost unlimited number of channels available quickly without extensive reprogramming. You could have sets established for home, work, vacation destinations, or just about any other application you might think of.

**Lastly, There's That AOR Performance**

Given all this receiver has to offer, it's certainly a top choice. Additional software from third-party sources may take a while to become available to the public, but I'm fairly confident that that will happen eventually. Even if it doesn't, this is one receiver you will be happy to have in your shack!



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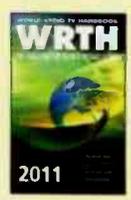
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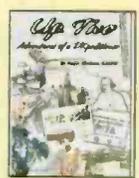
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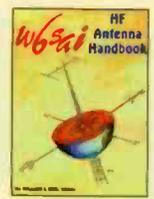


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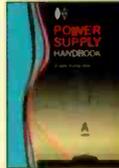
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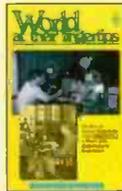
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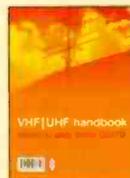


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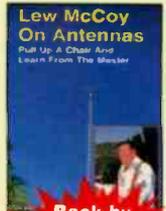
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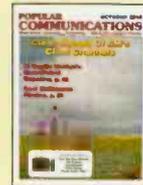
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## Sydney's Radio Symban Returns, AIR Dives Into DRM, A Correction, And More

by Gerry L. Dexter  
gdex@wi.rr.com

The headline news this month is the return of Radio Symban in Sydney, Australia. The station initiated broadcasts some months ago, but soon went silent for a time while its antenna was being relocated to a site near Sydney. Radio Symban uses 2370 (actually it's 2368.5) and is said to be active around the clock with programming mostly in Greek. It won't be a snap catch for us in the middle of the U.S., but those on the West Coast (at least) shouldn't have much of a problem. Reports (with two IRCs) can be sent to John Wright, 29 Milford Rd, Peakhurst NSW 2210, Australia. At this writing the station still seems to be in test mode and is running considerably less than 1 kW. It's on the Web at [www.radiosymban.com.au](http://www.radiosymban.com.au).

It seems I erred in reporting the return of Radio Cultural Coatan, Guatemala, on 4780. Other reports say that the station is not on shortwave, nor will there be a return to HF. Ugh!

All India Radio is dishing out the required rupees to get itself in tune with the DRM world,

*"Radio Symban uses 2370 (actually it's 2368.5) and is said to be active around the clock with programming mostly in Greek."*

preparing to add DRM-capable transmitters, the associated antennas, and related equipment. Included in this buying binge are five new shortwave transmitters. I don't know what all this is costing the Indian government, but it must be enough to maintain Sri Lanka for a couple of years! All this will probably take years to implement. Meantime the regional SW stations which are left will continue operations until they pass away from old age—not to be replaced. The future of shortwave from India doesn't look very bright for SWBC DXers.

Saudi Arabia's Broadcasting Service of the Kingdom is getting four 250-kW transmitters for its international service. Of course, it, too, will be DRM-ready. When this DRM fad fades (think AM stereo), I bet the so-called "experts" who pushed all this expense on governments will somehow manage to retain their jobs.

Radio France International has begun broadcasting in Swahili, using the Meyerton (South Africa) site for half an hour at 0430 on 7360, 0530 on 9835 and 1530 on 12015.

If you sent a reception report on the 2009 Radio St. Helena Day broadcasts you should have received your QSL by now. It took some 10 months for QSLs for last year's broadcast to begin arriving, around mid-August. Now the wait is on for the 2010 broadcast replies!

Radio Jornal a Critica in Manaus, Brazil, is reported to have been reactivated on 5055, relaying its domestic a Critica FM station. It's being heard in Portuguese around 0300.

And Star Radio from Liberia has apparently already left 4025 in favor of ham-infested 3960 and is being heard by some in the post-0600 hour.



The pirate Radio Ronin shortwave verified Rich D'Angelo's reception with this unusual card.

### Reader Logs

Remember, your shortwave broadcast station logs are always welcome. But *please* be sure to

## Help Wanted

We believe the "Global Information Guide" offers more logs than any other monthly SW publication (465\* shortwave broadcast station logs were processed this month!). Why not join the fun and add your name to the list of "GIG" reporters? Send your logs to "Global Information Guide," 213 Forest St., Lake Geneva, WI 53147. Or you can email them to [gdex@wi.rt.com](mailto:gdex@wi.rt.com). Please note that attachment files do not always go through. See the column text for formatting tips, and please check over your submissions, making sure you've included frequency and UTC time.

*\*Not all logs get used. There are usually a few which are obviously inaccurate, unclear, or lack a time or frequency. Also discounted are unidentifieds, duplicate items (same broadcaster, same frequency, same site), and questionable logs.*

double or triple space between the items, list each logging according to its *home country* and include your last name and state abbreviation after each. Also needed are spare QSLs or good copies you don't need returned, station schedules, brochures, pennants, station photos, and

anything else you think would be of interest. And where's that photo of you at your listening post? I'm still waiting!

Here are this month's logs. All times are in UTC. Double capital letters are language abbreviations (SS = Spanish, RR = Russian, AA = Arabic, etc.). If no lan-

guage is mentioned English (EE) is assumed.

**ALASKA**—KNLS, Anchor Point, (p) 7355 with Christian talk over instl music at 1210. (Taylor, WI)

**ALBANIA**—Radio Tirana, 7425 at 0230 with musical tones and W opening pgm. (Barton, AZ) 0335 about elections there. (Maxant, WV)

**ANGOLA**—Radio Nacional, 4949.9 in PP with phone calls at 0040. (Paszkwicz, WI)

**ARGENTINA**—Radio Nacional, 11710 at 0158 with IS, time pips, opening music and multi-lingual IDs, then opening EE at 0202 with Argentine vocals. (D'Angelo, PA) 15345 in SS at 0017 with sports coverage. (MacKenzie, CA) 2300 with futbol, //6060 was poor. (Alexander, PA)

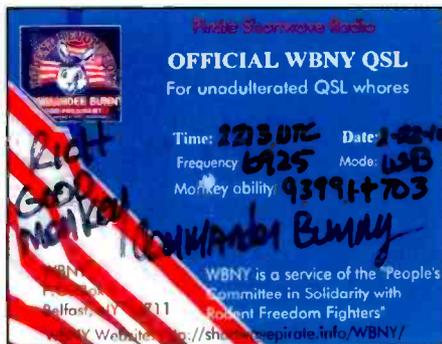
**ASCENSION ISLAND**—BBC South Atlantic Relay, 7255 with news at 0430. (Brossell, WI) 12095 at 2224 with *World Business News*. (MacKenzie, CA)

**AUSTRALIA**—Radio Australia, 5995-

## A Guide To "GIG-Speak"

Here's a partial list of abbreviations used in the "Global Information Guide"

(l)	listed	Lang	language
(p)	presumed	LSB	lower sideband
(t)	tentative	LV	La Voz; La Voix
*	sign on/off time	M	man
//	parallel frequency	NBC	National Broadcasting Corporation (Papua New Guinea)
AA	Arabic	nf	new frequency
ABC	Australian Broadcasting Commission	ORTB	Office de Radiodiffusion et Television du Benin
AFN	Armed Forces Network	PBS	People's Broadcasting Station
AFRTS	Armed Forces Radio TV Service	PP	Portuguese
AIR	All India Radio	PSA	public service announcement
am	amplitude modulation	QQ	Quechua
ancr	announcer	RAE	Radiodifusion Argentina al Exterior
anmt(s)	announcement(s)	RCI	Radio Canada International
AWR	Adventist World Radio	Rdf	Radiodifusora, Radiodiffusion
BBCWS	BBC World Service	REE	Radio Exterior de Espana
BSKSA	Broadcasting Service of the Kingdom of Saudi Arabia	RFA	Radio Free Asia
CBC	Canadian Broadcasting Corp.	RFE/RL	Radio Free Europe/Radio Liberty
CC	Chinese	RFI	Radio France International
CNR	China National Radio	RHC	Radio Havana Cuba
co-chan	co-channel (same) frequency	RNZI	Radio New Zealand International
comml	commercial	RR	Russian
CPBS	China People's Broadcasting Station	RRI	Radio Republik Indonesia; Radio Romania International
CRI	China Radio International	RTBF	RTV Belge de la Communaute Francaise
DD	Dutch	s/off	sign off
DJ	disc jockey	s/on	sign on
DW	Deutsche Welle/Voice of Germany	SIBS	Solomon Is. Broadcasting Corp.
EE	English	sked	schedule(d)
f/by	followed by	SLBC	Sri Lanka Broadcasting Corp.
FEBA	Far East Broadcasting Association	SS	Spanish
FEBC	Far East Broadcasting Company	TC	time check
FF	French	TOH	top of the hour
GBC	Ghana Broadcasting Corp.	TT	Turkish; Thai
GG	German	TWR	Trans World Radio
HH	Hebrew; Hungarian	unid	unidentified
HOA	Horn of Africa	USB	upper sideband
ID	identification	UTC	Coordinated Universal Time (= GMT)
II	Italian; Indonesian	UTE, Ute	utility station
Intl	International	v	variable
IRIB	Islamic Republic of Iran Broadcasting	vern	vernacular (local language)
IRRS	Italian Radio Relay Service	VOA	Voice of America
IS	interval signal	VOIRI	Voice of Islamic Republic of Iran
JJ	Japanese	VOR	Voice of Russia
KBS	Korean Broadcasting System	W	woman
KK	Korean	ZBC	Zambian Broadcasting Corp.



D'Angelo also heard from Commander Bunny at pirate WBNY.



Here's the shack of William Rust, N3ASG, in Pennsylvania. He does his DXing with a Kenwood TS450S transceiver. Thanks for the photo, Bill!



Bruce Cech in Tennessee got this railroad QSL from Radio Prague.

Brandon with news at 1100, 15240-Shepparton with soccer coverage at 0418 and 15515-Shepparton, same thing at 0440. (Brossell, WI) 5995 on politics there and 15515 with news at 0400. (Maxant, WV) 9580-Shepparton at 1732, 13630-Shepparton at 2146, 15225 in CC at 2337, 15250 at 0002 and 17795 at 2305. (MacKenzie, CA) 9580-Shepparton with rugby coverage at 1045. (Cody, ON) 11875 with *Connect Asia* pgm at 2310. (Barton, AZ) 11945 with *Australia Talk* at 0910. (Ng, Malaysia)

HCBJ Global Voice, 11750 with *Family Life Today* at 0830. (Ng, Malaysia) 0915 talking about the Gaza Strip. (Maxant, WV)

ABC Northern Territories Service: VL8K, Katherine, 2485 with futbol at 0949. //2385-Tennant Creek, also poor. (Taylor, WI) 4910-Tennant Creek with Beach Boys at 2150. (Ng, Malaysia)

Radio Symban, 2368.5 with music at 1050. (Wilkner, FL)

**AUSTRIA**—Radio Austria Intl, 6155 in GG at 0501. (Parker, PA)

**BAHRAIN**—Radio Bahrain (t), 9745 at 0006 with ME vocals and music, and AA M anc. Poor and later lost in noise. Needed to use upper sideband mode. (D'Angelo, PA)

**BOLIVIA**—Radio Mosoj Chaski, Cochabamba, 3310 in Quechua with indigenous music and M/W anc. heard at both 0904 and again at 0040. (Taylor, WI) A regular between 0930–1000. (Wilkner, FL)

Radio Emisoras Camargo, Camargo, 3390 weak in SS at 2345. (Wilkner, FL)

Radio Eco, Reyes, 4409.8 with slow SS anmts at 0000. (Wilkner, FL)

Radio Santa Ana, S.A. del Yucuma, 4451.2 in SS at 2340. (Wilkner, FL)

Radio San Miguel, Riberalta, 4700 in SS at 1005. (Wilkner, FL)

Radio Yura, Yura, 4716.2 with rustic Peruvian vocals at 1023. (Wilkner, FL)

Radio Lopez, Uyuni, 4796 at 0935 with Andean flutes and SS anc. (Wilkner, FL)

Radio Pio XII, Siglo Vicente, 5952.5 at 1012 with children in SS over percussion solo. (Wilkner, FL)

**BONAIRE**—Radio Nederland Relay, 6165 in SS at 0240 and 17605 in DD at 2310. (MacKenzie, CA)

**BOTSWANA**—Voice of America Relay, Mopeng Hill, 4930 at 0303 with W and news, ID and *Daybreak Africa*. (D'Angelo, PA) 0420. (Parker, PA) 12080 in PP at 1750 with comments and occ. pops, also 17895 at 1710. //13710. (MacKenzie, CA)

**BRAZIL**—(All in PP—gld) Radio Municipal, Sao Gabriel da Cachoeira, 3375.3 with upbeat music and ID at 0935. (Wilkner, FL)

Radio Imaculada Conceicao, Campo Grande, 4755 at 0040. (Wilkner, FL) 0217 with M anc. and slow religious music. (Parker, PA) 0245 with mellow instls. (Taylor, WI)

Radio Difusora do Amazonas, Manaus, 4805 at 1000. (Wilkner, FL)

Radio Difusora Acreana, Rio Branco, 4885 with talk at 0258, apparent network ID at 0204, complete with station list. (Taylor, WI)

Radio Clube do Para, Belem, 4885 heard at 0205 with two-fast talking anc. (Parker, PA)

Radio Difusora, Macapa, 4915 heard at 0427 with M anc. and slow ballads. (Parker, PA)

Radio Brazil Central, Goiania, 4985 at 0533 with M anc. and pops. (Parker, PA)

Radio Cultura do Para, Belem, 5045 at 0602 with slow music. (Parker, PA)

Super Radio Deus e Amor, 9587.3 with preacher at 0510. (Alexander, PA) 11765 heard at 0114 with M preacher. (D'Angelo, PA)

Radio Bandeirantes, Sao Paulo, 9645 with long talk at 0209. (Taylor, WI)

Radio Voz Missionaria, Camboriu, 9665 heard at 0003 with preacher, //5940 weak in noise and 11750 very weak. (Alexander, PA)

Radio Nacional Amazonas, Brasilia, 11780 at 2315 with talk and comments. (MacKenzie, CA)

**BULGARIA**—Radio Bulgaria, 9700 at 2306 ending news and local weather. //11700. (Coady, ON)

**CANADA**—Radio Canada Intl, 11990 in SS at 2252, 13710 in PP at 2310, 15455 in SS at 2311, 17735 at 2034 and 17860 in PP at 2255. (MacKenzie, CA)

CBC Northern Service, 9625 at 1958 with laid-back NPR-type features and W with contact info at TOH. (Parker, PA)

CKZN, St. John's (Newfoundland), 6160 on slowing tourism at 0930. (Maxant, WV)

CFRX, Toronto, 6070 at 1120. (Maxant, WV)

**CHAD**—Radio Nationale Tchadienne, 6165 heard at \*0430 abrupt sign on with FF talk, local Afro-pops and tribal music. Covered by Netherlands at 0459. Also in FF with hi-life and Afro-pops at 2220 to 2301\*. Previously sign off was usually at 2230. (Alexander, PA)

**CHILE**—CVC-La Voz, 11665 in SS at 2320 and 17680 in SS at 1852. (Parker, PA) 2033. (MacKenzie, CA)

**CHINA**—China Radio International, 6020 at 0131 with news and anmts in CC. (Padazopoulos, Greece) 6190 via Canada at 0545, 9490 in SS at 2340, 9665 in Hausa at 1725, 9710 in CC at 1705, 11960 in CC at 0532 and 17495 in CC at 0032. (MacKenzie, CA) 7320 via Russia in CC at 2050 and 13790-Kashi at 1030 with *Life in China* pgm. (Ng, Malaysia) 11690-Xi'an with news at 1210. (Brossell, WI)

CPBS/China National Radio: Xizang PBS (Tibet), 4820-Lhasa in CC at 2110. (Ng, Malaysia) 7385 in (I) Tibetan at 1157. (Brossell, WI)

PBS Xinjiang, 7260-Urumqi, in Mandarin at 1159 M/W anc. and apparent news headlines. Also, 7275-Uighur at the same time. (Taylor, WI)

Voice of Pujiang, Shanghai, 3280 at 1227 with M/W in CC. (Sellers, BC)

CPBS, 9455-Lingshi, in CC at 2110. (Ng, Malaysia) 9810 in CC at 1718 and 15380 in CC at 0012. (MacKenzie, CA)

CNR-1, 7280 in Mandarin (used as a jammer) at 1204 with W over instls against (I) Sound of Hope. (Taylor, WI)

Firedrake jammer, 11500 at 1154 and 13600 at 1206. (Brossell, WI)

**COLOMBIA**—La Voz del Guaviare, SJ de Guaviare, 6035 in SS det. at 0959 and at 0117 sign off. (Alexander, PA)

Marfil Estereo, Puerto Lleras, 5910 at 0345 with EE/SS preaching. (Parker, PA)

**COSTA RICA**—Faro del Caribe (p) San Jose, 5055 at 0243 with M/W in SS, slow pops. Difficult to copy through static crashes. Still going at (I) 0300\*. (Parker, PA)

**CROATIA**—Voice of Croatia, 6165 in Croatian heard at 0508 with talks and interviews. Also, 9925 via Nauen in Croatian at 0445. (Parker, PA) 9925 via Germany at 0436 with talks in Croatian. (Brossell, WI)



Radio Romania International sent Bruce Cech this QSL featuring a Philips model 204-U radio.



Here's log reporter Mark Coady in his Ontario shack. In addition to being a "GIG" contributor, Mark edits the "Your Reports" section of the Ontario DX Association. (Wow! Two shack photos in the same month!)

**CUBA**—Radio Havana Cuba, 6010 with DX pgm at 0600. (Waterbury, AZ) 9660 in SS at 2245, 11760 in SS at 2150, 12030 in SS at 2050 and 15380 in PP at 2344. (MacKenzie, CA)

**CZECHSLOVAKIA**—Radio Prague, 7345 in SS at 0206. (Brossell, WI) 9440 with *Talking Point* at 2250. (Coady, ON) 9445 with news at 0340. (Maxant, WV)

**DJIBOUTI**—Radio Djibouti 4780 from \*0258 sign on with O/C, NA at 0301. W with ID and opening annts in AA, brief musical interlude and news f/by Koran. (D'Angelo, PA)

**DOMINICAN REPUBLIC**—Radio Amanecer, Sto Domingo, 6025 at 0300 with Christian music, SS talks and ID at 0307. (Alexander, PA)

**ECUADOR**—Radio Buen el Pastor, Saraguro, 4815, weak in SS noted from 1000. (Wilkner, FL)

**EGYPT**—Radio Cairo, 9295-Abu Zaabal at 2352 with W in AA and ME music. (Taylor, WI) 9305-Abis in AA at 0532. (Parker, PA) 11590 in AA at 0210. (Brossell, WI)

**ENGLAND**—BBC, 3255 South Africa Relay, poor at 0435 with much QRN. (D'Angelo, PA) 5905-Skelton in AA at 0335, 6115-Skelton in AA at 0410, 9410-Rampisham at 0545, 9915-Rampisham in AA at 0505 and 11815 Cyprus Relay in AA at 1422. (Parker, PA) 7310 South Africa with world news at 0434, //7255. (Brossell, WI) 7310 South Africa with news items at 0431. (Taylor, WI) 15310 Oman Relay with *The World Today* at 0300. (Ng, Malaysia) 15335 Singapore

Relay with news at 0004 and 15360 Thailand Relay at 0010. (MacKenzie, CA)

CVC International, 9660 via Uzbekistan in (I) Hindi heard at 1145. (Brossell, WI)

**EQUATORIAL GUINEA**—Radio Nacional, Malabo, 6250 at \*0545 with abrupt sign on, SS talk. Irregular operation. (Alexander, PA)

**ETHIOPIA**—Radio Fana, 7210 at 0340 with Afro-pops, Amharic talk, //6110. (Alexander, PA)

Radio Oromiya, 6030 at \*0321 with xylophone IS, ID, opening with W in (p) Oromo. HOA vocals. (D'Angelo, PA)

Voice of Peace and Democracy, 7165 in Tigrina at 0415 with M/W ancrs. (Taylor, WI)

**ERITREA**—Voice of the Broad Masses, 9710nf at \*0355 with IS, talk, some HOA music, fair to good, but //7175 was poor and jammed. (Alexander, PA)

**FRANCE**—Radio France Intl, 11700-Issoudun in FF heard at 0510. (Parker, PA) 11995 in FF at 0527. Off at 0530. Also, 15305 in FF at 1737. (MacKenzie, CA)

**GABON**—Africa Number One, 9580 in FF heard at 0555. (MacKenzie, CA)

**GEORGIA**—Abkhazia Radio (very tentative), 9495.9 at 1344 in apparent RR with W ancr, massed choir with patriotic-sounding music. M/W talk and a brass band at 1400; more M/W talk. Very poor. (Taylor, WI)

**GERMANY**—Deutsche Welle, 5905 via Bonaire in GG at 1050. (Barton, AZ) 6180 Portugal Relay at 0526. (Parker, PA) 7240 Rwanda Relay with ID at 0423 and GG language lessons, 9545 via England in RR at 0425 and 15510 in RR at 1545. (Brossell, WI) 12050 Rwanda in GG at 0047, 17820 via US in GG at 2340 and 17865 via Singapore in RR at 0033. (MacKenzie, CA) 9735 Portugal Relay with *Spectrum* at 2130, 15400 Sri Lanka Relay with EE lesson at 0405 and 15650 Sri Lanka in GG at 0835. (Ng, Malaysia) 11865 Portugal Relay at 2030 with *Inspired Minds* pgm. (Coady, ON)

Deutschlandfunk, 6190 at 0324 with classical music, M in GG, half hour time pips, ID and news in GG. (D'Angelo, PA)

**GREECE**—Voice of Greece, 7475, at 0355 with talks in Greek. (Parker, PA) 9420 in Greek at 2150. (Ng, Malaysia) 15630 in Greek at 1530. (Brossell, WI)

RS Makedonias, 7450 at 0447 with singing and talks in Greek. (Brossell, WI)

**GUAM**—Adventist World Radio, 12105 in (I) Mandarin heard at 1207. (Brossell, WI)

TWR, 9975 in (I) Mandarin at 1150. (Brossell, WI)

**GUINEA**—Radio Guinee, 7125 at 2158 with tribal songs, FF talk, Afro-pop. Abruptly off at 2255. (Alexander, PA)

**GUYANA**—Guyana Broadcasting Corp., 3290 at 0830 with religious pgm, vocals, pop/rock, greetings to specific people. (Wilkner, FL)

**HONDURAS**—Radio Luz y Vida, San Luis, at 1100 in SS, also noted at 0000. (Wilkner, FL)

**INDIA**—All India Radio, 4920-Chennai monitored at 0036 with M and news in Hindi, f/by Hindi vocals. Beginning to fade out by 0049, 5010-Thiruvananthapuram, at 0050 with M and Hindi vocals, Hindi talk and discussion pgm. (D'Angelo, PA) 7270-Chennai with Indian music at 1202. (Taylor, WI) 1205. (Brossell, WI) 9445-Bangaluru at 2111. (Coady, ON) 11620-Bangaluru with *Faithfully Yours* at 2120. (Ng, Malaysia)

**INDONESIA**—Voice of Indonesia, 9525 at 1135 with an interview in II. (Brossell, WI) 2059 with FF ID, website info and sign off. (Ng, Malaysia)

### In Times Past...

Here's your blast from the past for this month...

**ECUADOR**—Radio Cenit, Portoveijo, 4700 at 0233 in SS on April 6, 1957. (Dexter, IA)



The logo now in use by the Voice of Russia. (Thanks Rich D'Angelo)

Radio Republik Indonesia, 9680-Jakarta at 1055 at excellent level with Koran. (Barton, AZ)

**IRAN**—Islamic Republic of Iran Broadcasting, 9765 in JJ at 2130. (Ng, Malaysia) 9905-Kalamabad in SS at 0233. (Taylor, WI) 13600 in FF at 1911 with M/W talks, music bridges. (Parker, PA) 15085 in GG at 1802. (Brossell, WI)

**JAPAN**—Radio Japan, 5960 via Canada in JJ at 0301 and 11935 via Bonaire in JJ at 0343. (Parker, PA) 6185 with 1130 sign on in RR. (Brossell, WI) (Coady, ON) 9835 in JJ at 1720, 11715 in RR at 0544, 13640 in JJ at 2143, 13650 in VV at 2337 and 15195 in CC at 2358. (MacKenzie, CA) 9840 at 0956 with music box-like IS to time signal at 1000. ID and into news. (Coady, ON)

Radio Nikkei, 3925 at 1113 with piano and JJ anmts. (Brossell, WI) 1206 with classical music. (Sellers, ON) 1750 with Strauss waltzes. (Barton, AZ)

**KUWAIT**—Radio Kuwait, 15540 in EE heard at 1903 with cover U.S. pops. (Parker, PA)

**MADAGASCAR**—Radio Madagasikara, 5010 at 0348 with rap number, M in Malagasy, local vocals and ID. (D'Angelo, PA)

**MALI**—RT Malienne, 9635 monitored at \*0800 with flute IS, FF ID anmts, local string music and vernacular talk. (Alexander, PA)

**MAURITANIA**—Radio Mauritanie, 4845 at 0247 with ME music, AA discussion. (D'Angelo, PA) 2350 in vernacular with M/W and fast music bridges. (Parker, PA)

**MEXICO**—Radio Mil, Mexico City, 6010 at 0935 with SS Mexican music. (Maxant, WV) 0953 with disco. (Wilkner, FL) Radio Educacion, Mexico City, 6185 with SS and opera at 0930. (Maxant, WV)

**MOLDOVA**—Radio PMR, 9665 at 0008 with news, ID and contact info. EE ends at 0011 FF begins at 0012. (D'Angelo, PA)

**MONGOLIA**—Mongolian Radio, (t) 7260 at 1122 with anc in (p) Mongolian, brief theme-like piece, short anmt and off at 1130. (Taylor, WI)

**MOROCCO**—Radio Medi-Un, 9575 at 0349 with non-stop AA vocals, news in AA at 0400. (D'Angelo, PA)

**MYANMAR**—Myanmar Radio, 9730 at 0700 with EE news and *Lunchtime Music* featuring oldies from the 1960s. (Ng, Malaysia)

**NETHERLANDS**—Radio Nederland, 7360 via Philippines in DD heard at 1115 and 9860 via Rwanda in AA at 2140. (Brossell, WI) 9865 Bonaire Relay in DD at 0520 and

## This Month's Winner

To show our appreciation for your loggings and support of this column, each month we select one "GIG" contributor to receive a free book or other prize. Readers are also invited to send in loggings, photos, copies of QSL cards, and monitoring room photos to me at *Popular Communications*, "Global Information Guide," 25 Newbridge Rd., Hicksville, NY 11801, or by email to [gdex@wi.rr.com](mailto:gdex@wi.rr.com). The email's subject line should indicate that it's for the "GIG" column. So, come on, send your contribution in today!

This month's prizewinner is **Robert Fraser**, who gets "mugged" with a Universal Radio coffee mug. I've recently seen Universal's latest radio equipment catalog—it's bigger than ever with 128 full-size, fully illustrated pages! It's easy to get your free copy: Just email your request to [dx@universal-radio.com](mailto:dx@universal-radio.com), phone them at (614) 866-4267 or drop a line to them at 6830 Americana Parkway, Reynoldsburg, OH 43068. You can't go wrong! And please mention *Pop'Comm* and the "Global Information Guide" when contacting them.

11610 via Rwanda with a program about the Congo at 1907. (Parker, PA)

**NEW ZEALAND**—Radio New Zealand International, 6170 with M hosting *Late Edition* at 1030. (Coady, ON) 1430 with pops. (Barton, AZ) 0925 on alcohol problems in London, also 11725 with cricket commentary and 13730 on a breed of domestic dogs. (Maxant, WV) 9665 at 1145 with music from the '30s and '40s. (Brossell, WI) 11725 with a talk at 0509. (Parker, PA) 0540 with an interview and 13730 at 0027 with two M commenting. (MacKenzie, CA)

**NIGERIA**—Voice of Nigeria, 7255 monitored at 2120 with vernacular talk, local chants and drums. Off with NA at 2257. (Alexander, PA) 2240-2259. (D'Angelo, PA) 15120 at 0545 on upcoming trial of the former Liberian president. (Maxant, WV) 1803-1820 with EE pgm. (Alexander, PA)

Federal Radio Corp., Kaduna, 6090 at 0400 with talk in (l) Hausa and Koran. Co-channel Anguilla was off this night. (Alexander, PA)

**NORTH KOREA**—Voice of Korea, 3960-Kanggye in KK at 0635 when propagation suddenly "went long." (Parker, PA) 9335 in FF at 1655, comments in KK at 1700 and 11710 with choir at 1636. (MacKenzie, CA) 9345 in CC at 2100. (Ng, Malaysia) 11710 in FF at 1143 with W and much martial music. (Coady, ON)

KCBS, 3320 at 1225 with classical choir, M in KK. (Sellers, BC) 9665 with KK talk at 1130, //11680. (Paszkiwicz, WI) 11710 in KK at 1210. (Brossell, WI)

**NORTHERN MARIANAS**—KFBS, 11580 in CC at 1210. (Brossell, WI) 15580 in II at 1030. (Ng, Malaysia)

**OMAN**—Radio Sultanate of Oman, 15355 at 0300 with EE news, local press review. (Ng, Malaysia)

**OPPOSITION**—Voice of Oromo Liberation (to Ethiopia), 13580 via France at 1745 in (l) Oromo. Off at 1800. Listed for Sun/Wed only. (Alexander, PA)

Radio Bilal (to Ethiopia), 15350 via Samara at \*1800 with local chants at sign on, Amharic talk and more local chants. (Alexander, PA)

Radio Voice of the People (to Zimbabwe), 9875 via Madagascar in vernacular monitored at 0410 with discussions, short music segments, IDs and address. (D'Angelo, PA) 0434 with an interview. (Brossell, WI) 0434 to 0457\*. (Alexander, PA)

Pyam e-Doost (to Middle East), 7460 via Moldova in Farsi at 0248 with ID by W over music. (Taylor, WI)

Voice of the People (to North Korea), 3912 in KK at 1204 with M talk, marching band music bridges. (Sellers, BC)

Baati Rewmi Radio (to Gambia), 15225 via Germany at \*1815 with tribal music at sign on, vernacular talk with some EE, including advertisements. Saturday only. (Alexander, PA)

Sudan Radio Service (to Sudan), 17700 via Ascension at 1600 with talk in AA. (Brossell, WI)

Denge Mesopotamia (to Iraq), 11530 from \*0400 with anthem, local music and talk in (l) Kurdish, local pops. (Alexander, PA)

**PALAU**—Radio Free Asia, 9905 in CC at 1703. (MacKenzie, CA)

**PAPUA NEW GUINEA**—Radio Central, Port Moresby (Papua), 3290 at 0900 in EE with instls, ID. (Taylor, WI) 1232 with music and M in Tok Pisin. (Sellers, BC)

Radio East Sepik, Wewak (New Guinea), 3335 heard at 1118 in Tok Pisin with news, security issues, trade with Vietnam. (Taylor, WI) 1153 with classic oldies, news at 1200 in apparent EE. (Sellers, BC)

Radio East New Britain, Rabaul (East New Britain), 3385 at 1135 in Tok Pisin with live-ly W responding to occ. questions. (Taylor, WI)

**PERU**—(All in AA—gld) Ondas del Huallaga, Huanuco, 3329.5 at 1030. (Wilkner, FL)

Radio Huanta 2000, Ayacucho, 4747, with hyper W and rustic vocals at 1001. (Wilkner, FL)

Radio Vision, Chiclayo, 4790 at 0159 with wailing, speaking in tongues. (Taylor, WI)

Radio Sicuani, Cusco, 4826.7 good with traditional OA music at 0920. (Wilkner, FL)

Radio Maranon, Jaen, 4835.4 at 1021 with M and music. (Wilkner, FL)

Radio La Hora, Cusco, 4857.4 being heard by 1120. (Wilkner, FL)

Radio Madre de Dios, Puerto Maldonado, 4950 at \*1030. (Wilkner, FL)

Radio Cultura Amauta, Huanta, 4955 at 1030, excellent with OA vocals. (Wilkner, FL)

Radio Libertad, Junin, 5039.2 with sign on as late as 1130. (Wilkner, FL)

Radio Victoria, Lima, 9720 with M preaching at 0228. (Taylor, WI) 1155 with a shouted sermon. (Paszkievicz, WI)

**PHILIPPINES**—Far East Broadcasting Co., 9920 in CC at 1648. (MacKenzie, CA) 11835 with hymns in CC at 1230. (Brossell, WI) 15450 in II at 0915. (Ng, Malaysia)

**PIRATES**—WEAK Radio, 6930u monitored at 0235 with classic and punk rock, different W with IDs. (Hullender, TN) 0243 with very strange music. weakradio@gmail.com. (Hassig, IL) 0408 to 0429\* with rock, W with IDs, off with U.S. anthem. (D'Angelo, PA)

Northwoods Radio, 6935u heard at 0050 with 70s things, ID and off. northwoodsradio@gmail.com. (Hassig, IL) 0210-0248\* with M and IDs, gmail address for reports, numerous UTC time checks. (D'Angelo, PA)

Radio Gaga, 6925u at 0314-0318\* with rock vocals, ID at 0318 close. (D'Angelo, PA)

The Crystal Ship, 6858 at 0147 with classic rock, hosted by "John Poet." (Zeller, OH) 0224. (Hassig, IL)

Radio Ronin Shortwave, 6940.8 with vocal just prior to ID, contact info and off at 0100. (D'Angelo, PA)

Captain Morgan, 6924 at 0159-0209\* with rock, possible ID at 0209\*. (D'Angelo, PA)

Radio Pigmeat, 6925.3 at 2340-0001 with rock. Very poor signal. (Zeller, OH)

WBNY, 6950 at 0021-0025 with remarks by Commander Bunny. (Zeller, OH)

Wolverine Radio, 6925u heard at 0215 with '50s-'60s oldies. (Alexander, PA)

Radio Casablanca, 6940 heard at 0240-0255 with oldies from the 1940s. (Alexander, PA)

Voice of Chaos, 6925u heard at 0011 with "Get Smart" theme, various songs. Email as voiceofchaos@gmail.com. (Hassig, IL)

Outhouse Radio, 6930 at 0047 with rock and techno things: apparently a relay of All Europe Radio. Featured some WWV spoofs. (Hullender, TN)

WLBJ, 6925u at 0308 with various songs, and Windows OS "dings" in background with a computer voice requesting reports to wlbj@pirateradio.com. (Hullender, TN)

WHYP, 6899.8 at 0220-0240 with various songs, heavy metal, short snippets of other things. (Hassig, IL)

**POLAND**—Polish Radio, 11675 via Austria at 1315 with *Europe East* pgm. (Coady, ON)

**PORTUGAL**—RDP Intl, 9715 with PP news heard at 0100. (Waterbury, AZ) 11630 in PP at 2322 and 13755 in PP at 2044. (MacKenzie, CA) 11940 with continuous PP vocals, W ending pgm heard at 0158, M with closedown anmts, time pips and off at 0300.

(D'Angelo, PA) 15560 in PP at 1215. (Brossell, WI) 1700. (Padazopoulos, Greece)

**ROMANIA**—Radio Romania Intl, 6100 with W in SS monitored at 2305. (Ng, Malaysia)

**RUSSIA**—Voice of Russia, 7270-Armavir, at 0202 with (p) news in RR and 7440 via Ukraine at 0210 with news headlines. (Brossell, WI) In RR at 0136, //7285 via Moldova, 9890 at 2208 going into *News and Views*. (Coady, ON) 9665 via Moldova at 0350 with classical piano music, and 15210 at 1110 with news of the Balkans. (Maxant, WV)

**SAO TOME**—VOA Relay, 4960-Pinheira, with news items at 0418. (Parker, PA)

**SAUDI ARABIA**—Broadcasting Service of the Kingdom, 15205 in AA with live Koran recitations at 1603. (Parker, PA) 21670 in II at 0900 ID'ing as "Radio Jeddah." (Ng, Malaysia)

**SOLOMON ISLANDS**—SIBC, 5020 at 1010 with Radio Rebelde in remission. (Wilkner, FL)

**SOUTH AFRICA**—Channel Africa, 15235 in FF heard at 1627. (Parker, PA)

**SOUTH KOREA**—KBS World Radio, 7270 at 1040 with KK talk by W/M. Also, 15160 with EE ID and into KK at 0900. (Ng, Malaysia)

**SPAIN**—Radio Exterior de Espana, 3350 Costa Rica Relay at 0516, 9535 at 2343, 9765 Costa Rica at 2234, 11680 at 2318, 11815 Costa Rica at 2155, 12035 at 0518, 15110 at 2152, 15130 at 2040, 15160 at 0020, 17595 at 1718 and 17850 at 2300—all in SS. (MacKenzie, CA) 6055 with *This, That and the Other* at 0010. (Coady, ON) 9650 at 2125 with *Rocking Spain*. (Ng, Malaysia) 11910 via China in SS at 1232. (Brossell, WI)

**SRI LANKA**—SLBC, 15475 at 0130 with their All Asia Service and *Back to the Bible* broadcast. (Ng, Malaysia)

**SUDAN**—Miriya FM, 9740 via Slovakia at 0358 with AA talk, EE news, "Radio Miriya" IDs, jingles, more AA talk. (Alexander, PA)

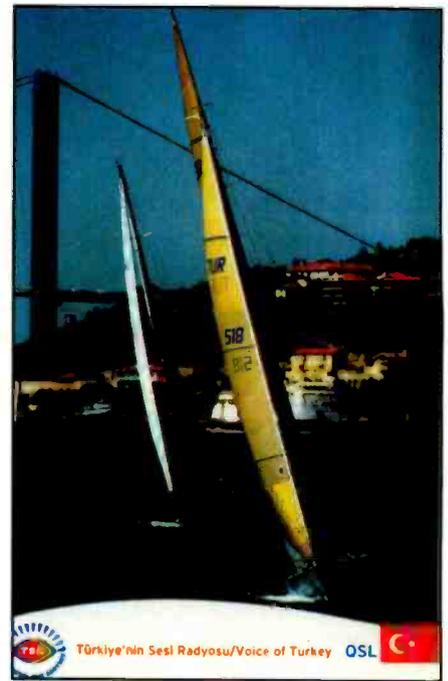
**SWAZILAND**—TWR, 3200 at 0413 with W singing in GG and GG religious talk. Pgm close at 0429, M with closing ID and carrier cut. (D'Angelo, PA) 0300 in EE with African group, M/W aners. Also 3240 in EE at 0253 with harmonica IS and ID. Into (I) Shona, 4775 in GG with M/W aners at 0439. (Taylor, WI)

**SYRIA**—Radio Damascus, 12085 at 2118 with ME vocals. (Coady, ON)

**TAIWAN**—Radio Taiwan Intl, 5950 via Florida at 0350. (Maxant, WV) 9735-Tamshui with JJ talk at 1158, website, 3 + 1 time pips and off. (Paszkievicz, WI) 11550 in II at 1040. (Ng, Malaysia) 11665 in CC at 1215. (Brossell, WI)

**THAILAND**—Radio Thailand, 12095 at 0045 with two M conversing in EE. (MacKenzie, CA) 15275 with EE news at 0002. Apparent carrier cut (or antenna pattern change) at 0029. (D'Angelo, PA) 1020 with M in Thai. (Ng, Malaysia)

**TUNISIA**—RT Tunisienne, 7275 in AA



This Voice of Turkey QSL shows a yacht race off Istanbul. (Thanks Paul Gager, Austria)

at 0432 and 9725//12005 in AA at 0433. (Brossell, WI)

**TURKEY**—Voice of Turkey, 9830 with mix of instl and vocal folk things, news headlines at 2252, brief IS and off at 2254. (Coady, ON)

**UNITED STATES**—Voice of America, 11785 Thailand Relay in Mandarin at 1156 and 15225 Philippines in Mandarin at 1229. (Coady, ON) 11825 Philippines Relay in CC at 1220 and 12010 Philippines in (I) Indonesian at 1205. (Brossell, WI) 15385 Philippines in CC at 0015 and 17820 Philippines at 0030. (MacKenzie, CA) 17775 Tinian, NM Relay in CC at 0700. (Ng, Malaysia)

Radio Free Asia, 9455 Saipan, NM Relay in CC at 2105. (Ng, Malaysia) 11795 Northern Marianas in CC at 1750, 13625 Northern Marianas in CC at 2140, 13740 Northern Marianas in Khmer at 2323, 15560 Northern Marianas in VV at 0005 and 15585 Northern Marianas in CC at 2354-0000\*. (MacKenzie, CA)

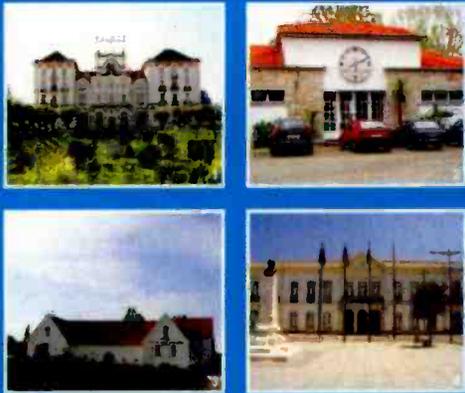
Radio Farda, 9280 Germany Relay in Farsi at 0205. (Brossell, WI) 7295 Germany Relay in Farsi at 0144. (Coady, ON) 17845 Sri Lanka Relay at 0915. (Ng, Malaysia)

Radio Free Afghanistan, 15090 in Dari at 1015. (Ng, Malaysia)

Radio Liberty, 17730 Philippines Relay in RR at 0910. QRM from CRI in II. (Ng, Malaysia)

Family Radio/WYFR, 9455 in VV at 1020. (Ng, Malaysia) 11515 via Taiwan in CC at 1205, 11550 via Taiwan at 1155-1157\* and 11640 via Tajikistan in CC at 1211. (Brossell, WI)

WWCR, Tennessee, 4840 at 0015.



Anadia

Scenes from Anadia, Portugal, are featured on this RDP International card, sent in by Paul Gager.

(Parker, PA) 7465 at 2330, 9350 at 2218 and 9980 at 2242. (MacKenzie, CA) 2330 with DX program. (Waterbury, AZ)

WWRB, Tennessee, 3185 at 0506 and 9385 heard at 2252. (MacKenzie, CA)

WTJC, North Carolina, 9370 at 2329. (MacKenzie, CA)

KJES, New Mexico, 11715 at 1435. (D'Angelo, PA)

KVOH, California, 17775 in SS at 2022. (MacKenzie, CA)

KAJI, Texas, 9480 heard at 2338. (MacKenzie, CA)

WJHR, Florida, 15550u heard at 2145-2299. (Alexander, PA)

WINB, Pennsylvania, 9465 in SS at 2325 and 13570 in EE at 2047. (MacKenzie, CA)

WEWN, Alabama, 6890 at 0505. (Maxant, WV) 13870 in SS at 2318. (MacKenzie, CA)

7505 at 0345. (Maxant, WV)

Gospel for Asia, 9445 via Germany at 0042 in (I) Indian minority language Vasavi, then in Drogi. (Taylor, WI) 15215 via France in Hindi at 1621. (Parker, PA)

**VATICAN**—Vatican Radio, 7395 in SS at 0355. (Maxant, WV) 9660 at 0428 with IS, FF ID and news in FF. (Brossell, WI) 11625 via Madagascar in FF at 0446. (Parker, PA)

**VENEZUELA**—Radio Nacional de Venezuela, 11670 in SS at 2246, 11680 in SS at 1554, 15250 in SS at 2315 and 17680 in SS at 1715, all via Cuba. (MacKenzie, CA)

**VIETNAM**—Voice of Vietnam, 6175 via Canada at 0236. (MacKenzie, CA) 0520 in VV. (Parker, PA) 7210-Dacia in VV at 2338. (Taylor, WI)

**ZAMBIA**—CVC-One Africa, Lusaka, 4965 at 0431 with vocals, EE Bible talk and Christian vocals. (D'Angelo, PA; Parker, PA) 0428 with contemporary Christian music. (Taylor, WI)

**ZIMBABWE**—Voice of Zimbabwe, Guinea Fowl, 4828 in vernacular with a long talk or speech at 0242. (Taylor, WI)

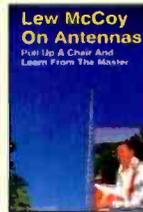
And so, once again, order is restored! A mountain of thanks to those who made it work this time, namely: Peter Ng, Johor Bahru, Malaysia; Rich D'Angelo, Wyomissing, PA; William Hassig, Mt. Prospect, IL; Brian Alexander, Mechanicsburg, PA; Stewart MacKenzie, Huntington Beach, CA; George Zeller, Cleveland, OH; Fotios Padazopoulos, Athens, Greece; Richard Parker, Pennsburg, PA; Robert Brossell, Pewaukee, WI; Robert Wilkner, Pompano Beach, FL; Gardner Waterbury, Phoenix, AZ; Rick Barton, Phoenix, AZ; Charles Maxant, Hinton, WV; Mark Coady, Peterborough, ON; Sheryl Paszkiewicz, Manitowoc, WI; Harold Sellers, Vernon, BC (welcome!); and Mark Taylor, Madison, WI. Sincere thanks to each of you!

Until next month—good listening!—and Happy Holidays!



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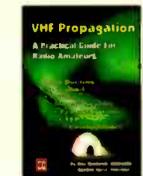


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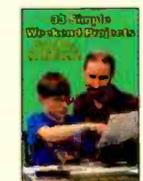
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# Holiday Season Gift Suggestions For Radio Enthusiasts

by Bruce A. Conti  
contiba@gmail.com

*“Just place this magazine in a prominent location for your co-workers, relatives, or significant other to see, and hopefully they’ll get the hint.”*

It's not easy for a non-radio person to find the right gift for us radio geeks. Fortunately *Popular Communications* is here to help with this month's focus on radio gadgets, gizmos, and other gift ideas. Just place this magazine in a prominent location for your co-workers, relatives, or significant other to see, and hopefully they'll get the hint. Number one on the list, of course, is a radio, so we begin with these suggestions (you'll also find plenty of other suggestions and info in this month's feature articles).

## Software-Defined Radio

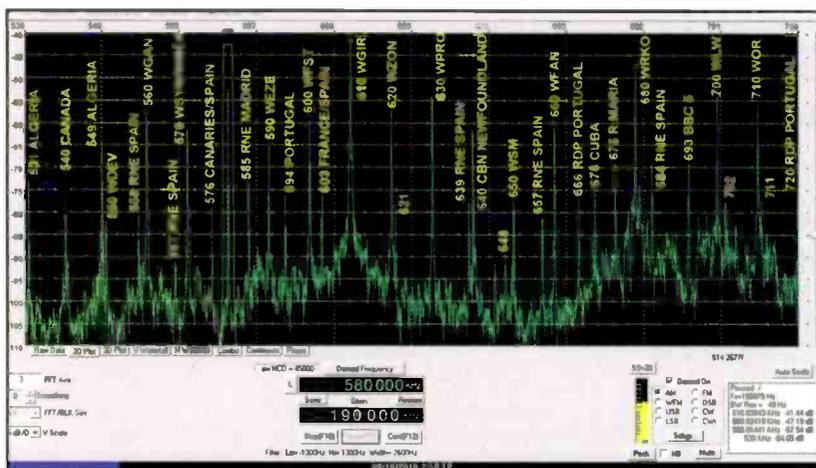
The latest and greatest technology for AM broadcast DXing is the software-defined radio (SDR), a no-knobs black-box receiver operated by computer with spectrum analyzer software. SDR advantages over conventional receivers are many. The ability to monitor multiple signals over a wide frequency range on a spectrum analyzer display while listening to one station, nearly infinite IF brick-wall filter adjustment for optimum reception, easy and accurate frequency measurement to within 1 Hz, and wide bandwidth RF recording capability to capture a large swath of the broadcast band for later playback are among the most popular features used by DXers.

The basic technology behind the SDR is rather simple, made possible by advancements in high-speed analog-to-digital converters. A converter samples the ether, typically at a greater than 60 MHz sample rate to obtain signals up to 30 MHz, and converts the analog RF signals to a digital representation of the airwaves. Spectrum analyzer software is used to manipulate the digital data stream from the converter, providing virtual receiver functions, such as tuning and demodulation, and audio output through your computer soundcard. The digital data stream can also be saved in computer memory and retrieved by the spectrum analyzer software at any time.

There are currently three SDR receivers that are the most recognized among DXers: the RFSpace SDR IQ, Microtelecom Perseus, and WiNRADiO Excalibur.

The RFSpace SDR IQ is an entry-level receiver and relatively affordable at \$500, yet it offers performance equal to, if not better than, most conventional high-end general coverage communications gear costing thousands of dollars. The IQ is designed for portability with a laptop computer, powered solely by USB. RF recording bandwidth is 190 kHz maximum, rather limited by comparison with other SDR models, but still a huge advantage over single-channel recording on an old-fashioned analog receiver. On the down side, the IQ computer screen interface using MoeTronix SpectraVue analyzer software is somewhat geeky to operate, so be prepared for an initially steep learning curve if you don't have much experience with high-tech computer software.

Designed by DXers, the Microtelecom Perseus, at \$1,200, is currently the most popular SDR receiver among hard-core DXers. The ergonomic design of the computer screen user interface is intuitive and easier to operate than the IQ, though the spectrum analyzer software can still be a challenge for the less technically inclined. The top feature is recording capability. Given enough computer horsepower the Perseus can capture as much as 1600 kHz of bandwidth, enough to make RF recordings of the entire long and mediumwave broadcast bands for later playback. Although connected by USB, the Perseus



Annotated RFSpace SDR IQ spectrum analyzer display showing signals across the lower 190 kHz of the AM broadcast band



The Sony XDRF-HD1 AM/FM/HD digital receiver.

does require an included external 5-volt power supply, making it less convenient for portable use than the IQ.

The WiNRADiO Excalibur is a new high-end entry in the SDR receiver market that's generating plenty of excitement in the DX community. It features 2-MHz RF recording capability, three demodulators for monitoring of three signals simultaneously, 107 dB dynamic range, and tunes up to 49.995 MHz. An external 12-volt noise-free linear power supply is provided, or it can be conveniently powered for portable or remote operation directly from a vehicle or alternative 12-volt DC power source. Amazingly the Excalibur sells for a reasonable \$850. Initial reviews have been positive, but it remains to be seen whether or not the Excalibur will attain dominance in DX circles.

Keep in mind that SDR receivers require quite a bit of computer processing power and memory to achieve full potential; 2 GHz CPU speed, 512 MB RAM, 10 GB memory, and USB 2.0 are typical minimum requirements. The RFSpace SDR IQ and Microtelecom Perseus are available from Universal Radio ([www.universal-radio.com](http://www.universal-radio.com)), and WiNRADiO products from Grove Enterprises ([www.grove-ent.com](http://www.grove-ent.com)).

## HD Digital Radio

While HD digital radio continues to struggle for public acceptance, the receivers are highly recommended by FM broadcast DXers. Two top-notch component system HD receivers are the Sangean HDT-1X and the Sony XDRF-HD1. The Sangean at \$250 is a studio monitor quality receiver with features a broadcast engineer would appreciate, including

S/PDIF optical digital output and a split analog/digital reception mode for radio station technical applications. The Sony offers FM HD performance at an affordable price, just under \$100.

Overall FM HD receiver performance is remarkable, far better than most of today's analog FM radios, and rivaling that of vintage analog FM receivers like the Kenwood KT-6040 and Yamaha T-85. The Sangean and Sony receivers also display auxiliary FM RDS signals. AM performance is good too, although few AM stations broadcast in HD, and even fewer have high fidelity analog signals these days that are worthy of a component sound system. Remember that a component system receiver requires an amplifier and speakers, and an outdoor FM antenna is recommended for best performance. Visit

our friends at C. Crane ([www.ccrane.com](http://www.ccrane.com)) for Sony and Universal Radio for Sangean HD receivers.

## Ultralight Radio

Chinese manufacturer Tecsun continues to make waves with high-performance pocket-size radios, or ultralights. The latest Tecsun entry is the PL-380 LW/MW/SW/FM radio. Like their previous pocket multi-band models it takes advantage of DSP technology for superior AM/FM performance, featuring big rig controls such as selectable IF bandwidths of 6, 4, 3, 2, or 1 kHz, and switchable 9/10-kHz step tuning. The PL-380 also has a few common Tecsun oddities, such as a 5-volt DC external power jack, an automatic slow/fast tuning sensor, and a "soft mute" designed to reduce AM noise. However the best of the Tecsun ultralights remains the PL-310, introduced last year as an improved version of the original PL-300 or equivalent Grundig G8. Tecsun radios are available direct from China through highly rated and reputable eBay seller Anon-co. The PL-310 sells for under \$40 plus shipping. Don't forget the batteries! Three AA-cell batteries required.

## Antenna Wire

With the economic recovery sputtering along, practical gifts are the in-thing this year, and there's nothing more practical than a roll of wire for outdoor antenna construction. Double-insulated #14 stranded copper machine wire from the hardware store is strong and durable enough to survive the weather for sever-



The surprisingly high-performance Tecsun PL-310 ultralight radio from China.



A 500-foot roll of double-insulated stranded copper wire, recommended for outdoor antennas, makes a great, affordable hobby gift.

al years. A 500-foot roll sells for around \$40, subject to fluctuations in the current market price of copper. Throw in a length of coaxial lead-in, plus some electrical tape, RF connectors, and binding posts for one very happy antenna experimenter.

## NRC AM Radio Log

The indispensable National Radio Club (NRC) *AM Radio Log* carries on the tradition of old-time publications such as *Radex* magazine, *White's Radio Log*, and the Newark News Radio Club log. Now in its 31st edition, the *AM Radio Log* is published annually by the NRC and contains a wealth of Canadian and U.S. radio station information for broadcast DXers.

The *Log* incorporates information provided by DXers, often not found in the FCC online database or on radio station websites. Listings are sorted by frequency, containing the basic call-sign and location information, in addition to QSL addresses, slogans, FM relays, format, day/night power, network affiliations, and syndicated programs. The *Log* is packed with more info than is available from any other single source. Get your *AM Radio Log* for only \$23.90 from Universal Radio. Then visit [www.nrcdxas.org](http://www.nrcdxas.org) to learn more about the activities and membership of the National Radio Club, serving DXers since 1933!

## FM Atlas

The long anticipated 21st edition of the *FM Atlas* by Bruce F. Elving is finally here. FM radio station listings for Canada, Mexico, and the U.S. are sorted by state/province and include primary coverage area. Canada and U.S. listings are cross-referenced by frequency with slogans, height above average terrain, and power. Of course it's the atlas that makes this reference book unique. State and province maps show the locations of all listed FM stations including Mexico. Soft cover bound, it's only \$19.95 from Universal Radio.

## 2011 Calendars

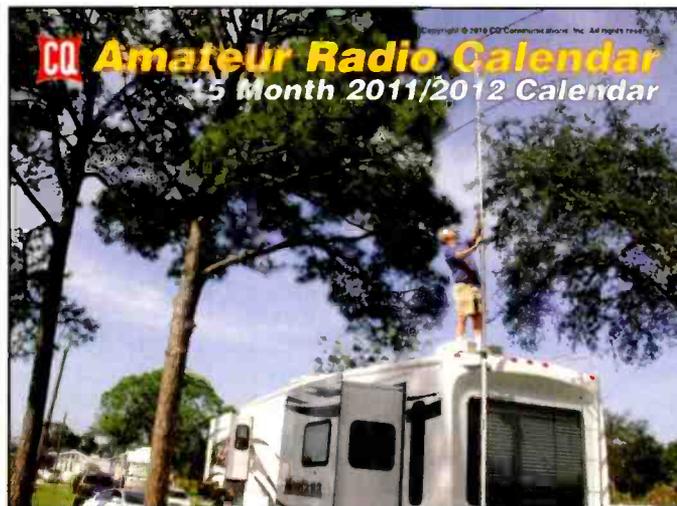
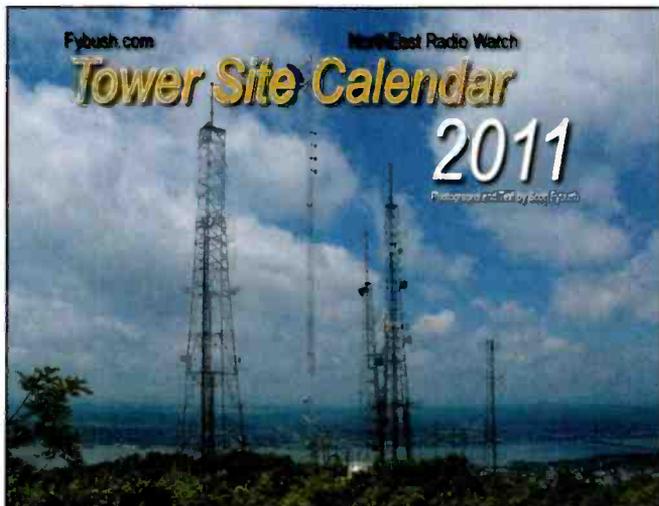
Scott Fybush has published yet another spectacular edition of the *2011 Tower Site Calendar*, a must for any radio shack.



The 31st edition of the National Radio Club's *AM Radio Log*.

Each month of the calendar features a color photograph of a broadcast transmitter site taken by Fybush during his travels around the U.S., Canada, and Mexico. The sites pictured in the 2011 calendar include many dramatic vistas: Picturesque Mount Beacon overlooking New York's Hudson Valley; 1440 WPGW in Portland, Indiana, on Highway 67; Georgia Public Broadcasting's 312-foot tower atop historic Stone Mountain; Mount San Antonio, the major local television broadcast site for Tijuana, Mexico; 990 KTKT just west of downtown Tucson; 60-year-old 980 WCAP in Lowell, Massachusetts; 540 KWMT in Fort Dodge, Iowa, one of the largest-coverage AM signals in the country; 1240 KEVA, an AM stereo station in Evanston, southwest Wyoming; the five towers of 790 WAEB in Allentown, Pennsylvania, seen before they were vandalized last year; Pinnacle Hill in Rochester, New York, one of the country's most centrally located tower farms; Tiger Mountain, rising almost 3,000 feet above sea level east of Seattle; the broadcast site of one of Idaho's oldest radio stations, 590 KID in Idaho Falls; and a stunning night shot of 640 KFI Los Angeles. In addition to tower photos, the calendar's monthly pages include significant dates in radio and television history. The *2011 Tower Site Calendar* is available for \$18 exclusively at [www.fybush.com](http://www.fybush.com), home of the Tower Site of the Week and Northeast Radio Watch.

Also now available to help keep you on schedule is the *2011/12 CQ Amateur Radio Operators Calendar*. This 15-month calendar (January 2011 through March 2012) from Pop'Comm publisher CQ Communications, features images of some of the biggest, most photogenic amateur radio shacks, antennas, personalities and scenics in the country. It also includes dates of importance to ham radio operators, such as major contest and other operating events, meteor showers, phases of the moon and other astronomical information, as well as important and popular holidays. The *2011/12 CQ Amateur Radio Operators*



The 2011 *Tower Site Calendar* by Scott Fybus and the 2011/12 *CQ Amateur Radio Operators Calendar* from CQ Communications also make great practical—and attractive—gifts.

*Calendar*, which sells for \$10.95 plus shipping, can be ordered through CQ's website at [www.cq-amateur-radio.com](http://www.cq-amateur-radio.com), or by phone at 516-681-2922.

## Broadcast DX Loggings

Now this month's selected broadcast logs from our readers to help put your new receivers, antennas, and references to work. All times are UTC.

**530 Radio Enciclopedia, La Habana, Cuba**, at 0200 heard the usual tropically influenced lounge and elevator music, Spanish talk by a woman; over 531 transatlantic het. (Connelly-MA)

**531 Chaîne 1, El Ain Beida, Algeria**, at 2249 fair with apparent radio drama: men in Arabic, crowd noise and military march music; into wailing in Arabic, parallel to 549 kHz. (DeLorenzo-MA) At 0255 Koranic vocals with ud accompaniment parallel 549 kHz, which was a solid S9 signal. (Conti-NH)

**540.18 YNOW Radio Corporación, Managua, Nicaragua**, at 0200 noted a het and bits of Spanish talk; separable from 540 CBT Newfoundland and others. (Connelly-MA)

**549 Chaîne 1, Les Trembles, Algeria**, at 2258 noted parallel 531 and a much weaker 702 kHz with Arabic music, pips on the hour, ID, and theme music. A very good signal. (Black-MA)

**555 ZIZ Basseterre, St. Kitts & Nevis**, at 0200 pop music and an island-accented DJ. Later at 0815 heard news on an almost local-like signal. (Black-ME) 895 Voice of Nevis has moved to 860 kHz, leaving ZIZ as the sole surviving Caribbean split-frequency station.

**650 YVLH Arangueña 650, Maracay, Venezuela**, at 2357 first thought to be a Brazilian station with announcements in Portuguese, heard an "Arangueña" mention followed by "Moliendo Café," a Venezuelan tune by Hugo Blanco. Many thanks to Henrik Klemetz who helped determine that this could

be a program paid for by a Brazilian church, as there are many Portuguese (although not Brazilian) immigrants in the area. (Black-MA)

**690 Radio Shalom, Fortaleza, Brazil**, at 2359 "690 AM, un sinal de paz no ar." Sold to a Catholic organization operating Radio Shalom per Henrik Klemetz via RealDX. (Black-MA)

**693 RNE Spain**, at 0327 fair peaks over/under co-channel BBC5, which was often very good and clear to listen to. Heard overnight RNE programming in Spanish parallel 684, 774 and others. Bits of music from Azores occasionally noted also underneath. New log thanks to CINF Montreal being gone. (Kazaross-WI)

**720 RDP Portugal**, heard at 0200 fair, over nulled WGN Chicago; woman in Portuguese, then signature time marker and fanfare. (Conti-NH)

**800 PJB TransWorld Radio, Bonaire, Netherlands Antilles**, heard at 0030 "Aquí Radio Transmundial, transmite desde Bonaire, Antillas Holandesas." fair to good over co-channels. Spain 801 het on USB and probable WGY HD interference on LSB. (Connelly-MA)

**810 ZNS3 Freeport, Bahamas**, heard at 1000 strong in co-channel WGY null with slogan, "Radio 810 AM, The Power Source," followed by woman with Caribbean accent introducing Pastor William Calvin Parker and hymn "If You Go In Jesus' Name." At 1003 mention of "The Worldwide Church of God... in Freeport, Grand Bahama." (DeLorenzo-MA)

**860 Voice of Nevis, Bath Village, St. Kitts & Nevis**, at 2300 "VON Radio, St. Kitts and Nevis." Fair; first log on new frequency since moving from 895 kHz. (Black-MA)

**940 WIPR San Juan, Puerto Rico**, at 0101 "Esta es WIPR, nueve cuarenta AM en San Juan, Puerto Rico," to good peak. (Connelly-MA)

**999 Voice of Russia, Grigoriopol, Moldova**, at 0200 a series of 1-kHz 6-second test tones with 6-second gaps noted on LSB at 998 kHz. Per Mauno Ritola, probably Grigoriopol, Moldova, although strongest audio was co-channel COPE Spain. (Black-ME)

**1053 Radio Iasi, Romania**, at 0250 heard a loud 1 kHz test tone, obliterating co-channel TalkSport. Then at 0255 a choral national anthem. (Conti-NH)

## This Month In Broadcast History

**75 Years Ago (1935)**—The Heusweiler, Germany, mediumwave transmitter site first went on the air, the current site of Deutschlandfunk broadcasting at 1422 kHz.

**50 Years Ago (1960)**—The first episode of the popular UK soap opera *Coronation Street* aired on ITV. Bert Kaempfer's "Wonderland by Night" beat Elvis for the number one song on the WDSM Big 71 Top Tunes, dial 710 in Duluth, Minnesota.

**25 Years Ago (1985)**—The FCC extended the time limit to complete construction of a new radio station from 12 to 18 months, and a new TV station from 18 to 24 months.



**1062 Danmarks Radio, Kalundborg, Denmark**, at 0335 an excellent, solid S9 signal; pre sign-on open carrier, then at 0340 repeated alternating between two cycles of interval signal and announcement leading up to 0345 weather reports. (Conti-NH) At 0340 pre sign-on interval signal, notes strong enough to see both side carriers on SDR spectrum analyzer. (Barstow-MA) The distinct interval signal should be an easy target for inland DXers.

**1089 TalkSport, United Kingdom**, at 0200 good; "On DAB digital radio, 1089 and 1053 AM, official broadcaster of the Barclays Premier League. TalkSport..." into news. (Conti-NH) At 2333 noted getting by adjacent daytimer 1090 WILD Boston. (Connelly-MA)

**1110 YVQT Radio Carúpano, Venezuela**, at 0044 "En Venezuela, Carúpano," mixed with co-channel WBT. (Connelly-MA)

**1161.02 IRIB Abadan, Iran**, heard at 0100 presumed this with Koran through the hour. Measured frequency offset slightly high which corresponds with the mwoffsets online database. (Conti-NH) At 2333 a Koranic vocal occasionally getting through heavy splatter from oldies music on 1160 WSKW Maine. Iran? (Connelly-MA)

**1170 HJNW Caracol Cartagena, Colombia**, at 0200 Colombia and Caracol Radio mentions; over jumble. (Connelly-MA) At 0600 teletalk in Spanish, many Caracol and

Colombia mentions. (Black-MA) 1170 WWVA West Virginia has been operating on reduced power with an inverted-L antenna under an FCC special temporary authorization after a windstorm knocked down their entire directional antenna tower array.

**1215 Absolute Radio, United Kingdom**, at 0207 ID and "Don't Dream It's Over" by Crowded House: good. (Connelly-MA) At 0210 an excellent, S9+10 local-like signal; playing past and present rock hits including The Who "Won't Get Fooled Again," Gary Newman "Cars," and "Place Your Hands" by Reef. (Conti-NH) At 0243 fair with liner, "Absolute Radio, every morning when you wake up," and "I'm Fine" by The Soup Dragons. (DeLorenzo-MA)

**1440 RTL Marnach, Luxembourg**, at 0400 RTL ID and ad for "Missionswerk Heukelbach," a religious program carried by RTL in German. Thanks to Chuck Hutton and Mauno Ritola via RealDX for help with ID. (Black-MA) At 2359 "Hi there, you're listening to KBS World Radio, Korea's only international broadcaster...shortwave, mediumwave, and DRM..." and instrumental anthem. (Conti-NH)

**1503 IRIB Sarasary, Bushehr, Iran**, at 2330 fair carrying a speech delivered in an echoey room, parallel Sarasary streaming audio. All IRIB channels are now streaming online at [www.radio.ir/channel\\_live.htm](http://www.radio.ir/channel_live.htm). (Conti-NH)

**1512 ERA Chania, Greece**, at 0356 fair with light music, news on the hour. Faded out in 5 minutes but managed to parallel on 1404 kHz. (Barstow-MA)

**1530 VOA Pinheira, São Tome**, heard at 0300 Yankee Doodle sign-on music and VOA news in English; over/under co-channel WCKY Cincinnati. (Connelly-MA)

**1530 Radio Vaticana, Vatican City**, at 0359 good, in WCKY null; one cycle of interval signal, chamber instrumental into Polish program. (Conti-NH) At 0359 interval signal then religious hymn music. Poor under WCKY. (Black-MA)

**1602 SER Spain**, heard at 0343 poor to fair, mostly under Euskadi from Vitoria which was decent with usual Spanish music. The high end of the band seemed to peak nicely to Spain at this time. SER Spanish news/talk was parallel 873 mixed with AFN and 1116 with WISN HD digital noise phase nulled. A rare log. (Kazaross-WI)

Thanks to Roy Barstow; Chris Black, N1CP; Mark Connelly, WA1ION; Marc DeLorenzo; and Neil Kazaross for sharing their tropical and transatlantic mediumwave DX logs. Maine, Massachusetts, New Hampshire, and Wisconsin are well represented here. What about your state or province? Let us know what you're hearing by email or by connecting with *Popular Communications* on Facebook. Until next time, 73 and Good DX!

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# The Marshall Space Flight Center And Redstone Arsenal— Their Ongoing Mission

by Mark Meece, N8ICW  
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As I sat down to think about a topic for this issue's column, the first thing that popped into my head was a poignant realization: There are only a few flights left in NASA's historic Space Shuttle Program. The program's history actually goes back further than some people may realize, with the early concepts beginning to take shape long before the final lunar landing of Apollo 17 in December 1972. Much of the work behind the program's development was conducted at the Marshall Space Flight Center and Redstone Arsenal, so what better way to bid farewell the shuttle flights than to take a look at the heart of our various manned space programs: Huntsville, Alabama.

## The Early Years Of Redstone

This area located in Madison County, Alabama, was developed for government use as a part of our country's preparations for World War

*“Marshall Space Flight Center cemented its position at the forefront of manned spaceflight with the development of the Constellation program, which will replace the Space Shuttle program by concentrating on the next generation of spacecraft and booster vehicles.”*

II in 1941. The U.S. Army purchased the land, eventually forcing over 550 families, over half which were tenants and sharecroppers, to relocate. The Army also signed a land-use agreement with the Tennessee Valley Authority for use of 1,250 acres along the Tennessee River frontage.

Originally the new military facility was comprised of three separate organizations: The Huntsville Arsenal and Huntsville Depot, both of which were overseen by the Chemical Warfare Service, and the Reston Ordnance Plant, which was operated by the Army Ordnance Department. In 1943 the Ordnance Plant was renamed as the Redstone Arsenal.

Early on, the arsenal's main operations were producing chemical weapons and serving as a stockpiling facility. Other materials produced at the facility included carbonyl iron powder (for radio and radar tuning), tear gas, and smoke and other incendiary devices. In fact, the 6th Army Air Forces used the newly built Reston Army Airfield to test incendiary devices in preparation for the firebombing of Japanese cities, which commenced in February 1945. The arsenal received the first of four Army-Navy “E” Awards, presented for Excellence in War Production, on October 31, 1942, in recognition of its high production values. On August 15, 1945, the Japanese announced their surrender, and three days later production at the facilities were placed on standby.

In the first few years following the war's end, Huntsville Arsenal was used primarily as a storage facility for the Chemical Warfare Service. It also served in the dismantling of surplus incendiary bombs and the manufacturing of gas masks. The civilian workforce was furloughed and the



Gate sign to Marshall Space Flight Center And Redstone Arsenal.  
(All photos public domain)



A missile launch at Redstone Arsenal.

installation's population dropped from a wartime high of over 4,400 to 600. The government began leasing parts of the facility for other use; some of the land was leased for agricultural interests and many buildings were leased to local industry. By 1947, the demilitarization of the facility was underway, and it was declared as excess. The Air Force considered using the installation, but abandoned its bid. On July 1, 1949, the Office of the Assistant Secretary of the Army ordered that the facility be advertised for sale.

In 1948, Redstone Arsenal was designated the center for ordnance rocket research and development by the Army Chief of Ordnance, laying the foundation for the future of U.S. Space operations. The Ordnance Research and Development Division Sub-Office (Rocket) at Fort Bliss, Texas, arrived at Redstone Arsenal in April 1950. Led by Major James Hamill acting as



Ceremony of transfer from Army to NASA, July 1, 1960.

commander and Wernher von Braun as Technical Director, it became the Ordnance Guided Missile Center, and it was there that the first tactical missile was developed, dubbed the "Major."

The Experimental Missiles Firing Branch was instituted led by Kurt H. Debus in November of 1951, leading to the Redstone rocket program. This was reorganized in January 1953 as the Missile Firing Laboratory and comprised three divisions: Mechanical, headed by Albert Zeiler; Guidance, Control & Networks, headed by Hans Gruene; and Radio Frequency (RF) & Measurements, headed by Karl Sendler. A team of mostly German rocket engineers who relocated to Huntsville after World War II developed the "Redstone," which is a direct descendant of the German V-2. On August 20, 1953, the first Redstone launch took place, carried out by a team of 30 laboratory personnel.

## Let The Race To Space Begin

The American Rocket Society's Spaceflight Committee held a meeting in 1954 in which Wernher von Braun first proposed the idea of placing a satellite in Earth orbit using a modified Redstone. In 1955, the proposal, called "Operation Orbiter," was rejected, and the Army Ballistic Missile Agency (ABMA) took



Launch of a Mercury-Redstone

command of the Laboratory on February 1, 1956. In response to the successful Soviet launch of Sputnik 1, the ABMA Laboratory launched the first successful United States' satellite Explorer 1 on January 31, 1958. That counter launch served as the starting gun, and the Space Race was officially underway. A month later the Army Ordnance Missile Command (AOMC) was established.

The "Sputnik Crisis" created a furor throughout the United States, especially in Washington D.C., and the country pushed forward toward space with a sense of urgency. It was a red-letter day on July 1, 1960, when President Dwight D. Eisenhower created the National Aeronautics and Space Administration (NASA), and an official ceremony transferred the base from military to civilian control.

Redstone Arsenal became an integral part of the space race with the establishment of the Marshall Space Flight Center (MSFC) as NASA's first facility. The center was named in honor of General of the Army George C. Marshall, who served as Chief of Staff of the Army, Secretary of State, and the third Secretary of Defense.

### Sixty Years Of Marshall

Components at Marshall are responsible for the success of the various U.S. manned spaceflight projects of Mercury, Gemini, and Apollo. It was at Marshall Space Flight Center that a team led by Wernher von Braun and Arthur Rudolph designed the largest and most successful rocket program in history: the Saturn V.

Since the early stages of the Space Shuttle Program through today Marshall Space Flight Center remains NASA's primary

center for Space Shuttle propulsion, its external tanks, payloads and related crew training. It is also responsible for the International Space Station (ISS) design and assembly, its computers, networks, and information management. The Huntsville Operations Support Center (HOSC), a facility that supports Space Shuttle launch, payload, and experiment activities at the Kennedy Space Center, ISS launch, and experiment operations is also a primary focus at Marshall.

Marshall Space Flight Center cemented its position at the forefront of manned spaceflight with the development of the Constellation program, which will replace the Space Shuttle program by concentrating on the next generation of spacecraft and booster vehicles. Other continuing programs at Marshall include the Chandra X-Ray Observatory and Hinode (Solar-B), a project to study the sun.

### If You Visit, Bring The Scanner And The Family

Redstone Army Airfield (KHUA) currently supports operations for the U.S. Army Aviation and Missile Command and NASA. It has one 7,297-foot runway, 17/35, controlled by Redstone Tower five days a week (Monday-Friday) and by Memphis ARTCC when Huntsville Approach/Departure is closed. All pertinent frequencies for Redstone Arsenal operations and Marshall Space Flight Center can be found listed in our "Listening In" sidebar.

There is so much to see and do in the area that it would be hard deciding where to start. Perhaps the best place is the U.S. Space and Rocket Center located at One Tranquility Base, just off Interstate 565 at Exit 15 on the southwest side of Huntsville

# 2011-2012 calendar

15 months of value  
January 2011 through  
March 2012



**Better than ever!** This year's calendar will bring you 15 spectacular color images of some of the biggest, most photogenic shacks, antennas, scenics and personalities from across the country for only \$10.95!

Calendar includes dates of important Ham Radio events such as major contests and other operating events, meteor showers, phases of the moon, and other astronomical information, plus important and popular holidays. The CQ Amateur Radio Operators Calendar is not only great to look at, it's truly useful, too!

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## Listening In On The Marshall Space Flight Center And Redstone Arsenal

**Redstone Army Airfield (KHUA)**

### Aeronautical Operations

118.050	Huntsville Approach/Departure West
120.800	Memphis ARTCC Approach/Departure (Huntsville RCAG)
122.200	Huntsville Flight Service
124.800	Redstone Ground Controlled Approach (GCA)
125.600	Huntsville Approach/Departure East
126.200	Redstone Ops
126.950	Tower/CTAF
127.600	Huntsville Tower/CTAF (KHSV)
229.400	Redstone GCA
239.000	Huntsville Approach/Departure West
290.275	Tower/CTAF
307.000	Memphis ARTCC Approach/Departure (Huntsville RCAG)
350.350	Huntsville Tower/CTAF (KHSV)
354.100	Huntsville Approach/Departure East

Marshall Space Flight Center and Redstone Arsenal utilize a Motorola Type II Smartnet trunked radio system using a mix of analog and digital voice as listed here:

SYSTEM: MSFC/Redstone Arsenal  
 TYPE: Motorola Type II Smartnet  
 VOICE: Analog and APCO-25 Common Air Interface  
 SYSID: A41B

### Frequencies

406.23750c	406.43750	406.83750	407.03750c	407.23750
407.63750c	407.86250	409.02500		

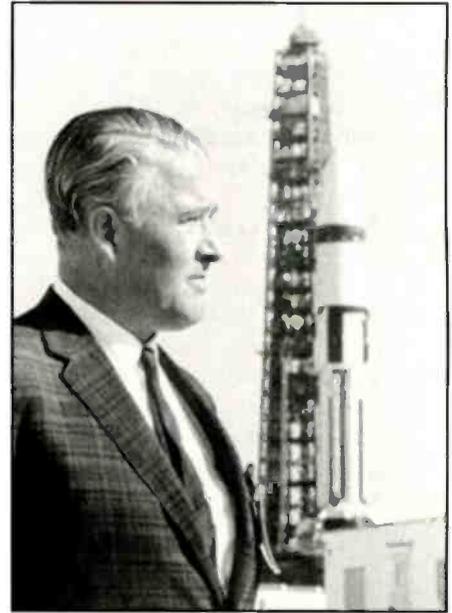
c- denotes control channel

### Custom Tables

Base: 406.2375  
 Spacing: 12.5 kHz  
 Offset: 380

Uniden DSP Settings: 883 1985 2992

TGID	MODE	USE
3248	D	Redstone Military Police
3632	D	Redstone Maintenance
8016	D	MSFC Police
8112	D	Redstone Intrusion Detection Systems (IDS, used by contractor North American Video)
8528	D	MSFC Fire Dispatch
8560	D	MSFC Emergency Operations Center 1
8592	A	MSFC Fire TAC 1
8624	A	MSFC Fire TAC 2
8656	A	MSFC Fire TAC 3
8688	A	MSFC Fire TAC 4
8752	D	Redstone Talk-Around 1 (TA-1, Missile Firing Countdowns)
9424	D	Redstone Unknown use
9616	D	IDS REDSTONE Intrusion Detection Systems (IDS, used by contractor North American Video)



Publicity photo of Wernher von Braun.

and the northern side of Redstone Arsenal. The museum is open daily from 9 a.m. to 5 p.m., with entrance fee prices varying according to package. Check out its website ([www.spacecamp.com/museum/](http://www.spacecamp.com/museum/)) for more details.

This is also the site of the United States Space Camp, which features many attractions for the entire family, including an IMAX theater. On the southern edge of the base along the Tennessee River is the Wheeler National Wildlife Refuge, which is administered by Marshall Space Flight Center. There are hiking trails, fishing and hunting permitted in some areas, and a visitor center provides an overlook for wildlife observation.

So grab the family and your scanners and explore the beginnings of manned space flight in Huntsville, Alabama.

### Military Loggings

We appreciate input and loggings from all of our readers and encourage you to report your catches, whether on HF, VHF, or UHF. You can send them to the email address listed in the column header. Please try to follow the format you see here and we will include them in a future column.

Using a new ICOM R-75 and his trusty Sony ICF-2010 with 50-foot longwire antenna, Doug Bell of Ontario, Canada, provides us with his HF military intercepts this issue.

**5616:** USB 0058Z CANFORCE 4168 (CC-150 #15003/8 WG, 437 SQN, CFB

Trenton, ONT) wkg Gander Radio with a 040W position report from fl 340.

0110Z REACH 389 (KC-10A #82-0193/60th AMW, Travis AFB, CA) wkg Gander Radio with a position report, but flight instructed to contact Gander Center on 120.55 VHF.

0112Z REACH 258 (C-17A #01-0188/437th AW, Charleston AFB, SC) wkg Gander Radio with a 050W position report with fl 350.

0120Z REACH 449 (C-17A #90-0535/62nd AW, McChord AFB, WA) wkg Gander Radio with a CPKR SELCAL check.

0218Z HIRE 42 (C-17A #98-0049/62nd AW, McChord AFB, WA) wkg Gander Radio

and receiving instructions to maintain fl 350. Flight performed an ESGR SELCAL check.

0227Z REACH 304 (C-5B #85-0008/60th AMW, Travis AFB, CA) wkg Gander Radio with a FPJR SELCAL check. Flight reported having HF radio trouble and was using its secondary radio.

8864: USB 1945Z VIKING 83 (C-130H #92-3285/934th AW, 96th AS, Minneapolis-St. Paul, MN) wkg Gander Radio and receiving clearance to climb to fl 250.

11175: USB 1211Z KING 55 (HC-130P #64-14855/920th RQW, 39th RQS, AFRC, Patrick AFB, FL) wkg HF-GCS Station ANDREWS with an HF radio check.

1432Z JEEP 31 (KC-135R/127th WG,

171st ARS, MI-ANG, Selfridge ANGB, MI) wkg HF-GCS Station OFFUTT with a request for latest message traffic.

1647Z OPEN SKIES 12T (OC-135B #61-2670/55th WG, 45th RS, Offutt AFB, NE) wkg HF-GCS Station OFFUTT with an HF radio check.

1743Z REACH 8376 (KC-10A #83-0086/60th AMW, Travis AFB, CA) wkg HF-GCS Station OFFUTT with a phone patch and mission traffic passed.

1803Z ORCA 70 (KC-10A #86-0036/60th AMW, Travis AFB, CA) wkg HF-GCS Station OFFUTT with a phone patch and flight data passed.

1913Z COBRA 70 (OC-135W #61-2670/55th WG, 45th RS, Offutt AFB, NE) wkg HF-GCS Station OFFUTT with an HF radio check.

1920Z REACH 5849 (KC-135T #58-0049/127th WG, 171st ARS, MI-ANG, Selfridge ANGB, MI) wkg HF-GCS Station OFFUTT with a phone patch and flight data passed.

2038Z NAVY LL 071 (P-3C/"The Pro's Nest," VP-30, NAS Jacksonville, FL) wkg HF-GCS Station OFFUTT with an HF radio check.

2143Z SNOOP 59 (WC-135W #62-3582/55th WG, 45th RS, Offutt AFB, NE) wkg HF-GCS Station ANDREWS with an HF radio check.

2317Z TUFF 15 (B-52H/917th BW, 93rd BS, Barksdale AFB, LA) wkg HF-GCS Station MCCLELLAN with a phone patch to Barksdale AFB, and flight data passed.

11232: USB 1155Z CANFORCE 4125 (CC-150 #15001/8 WG, 437 SQN, CFB Trenton, ONT) wkg TRENTON MILITARY with weather data passed.

1250Z CANFORCE 2155 (CC-130E #130328/8 WG, 436 SQN, CFB Trenton, ONT) wkg TRENTON MILITARY with an HF radio check and a FMDK SELCAL check.

1332Z CANFORCE 2356 (CC-130E #130325/8 WG, 436 SQN CFB Trenton, ONT) wkg TRENTON MILITARY with weather data passed.

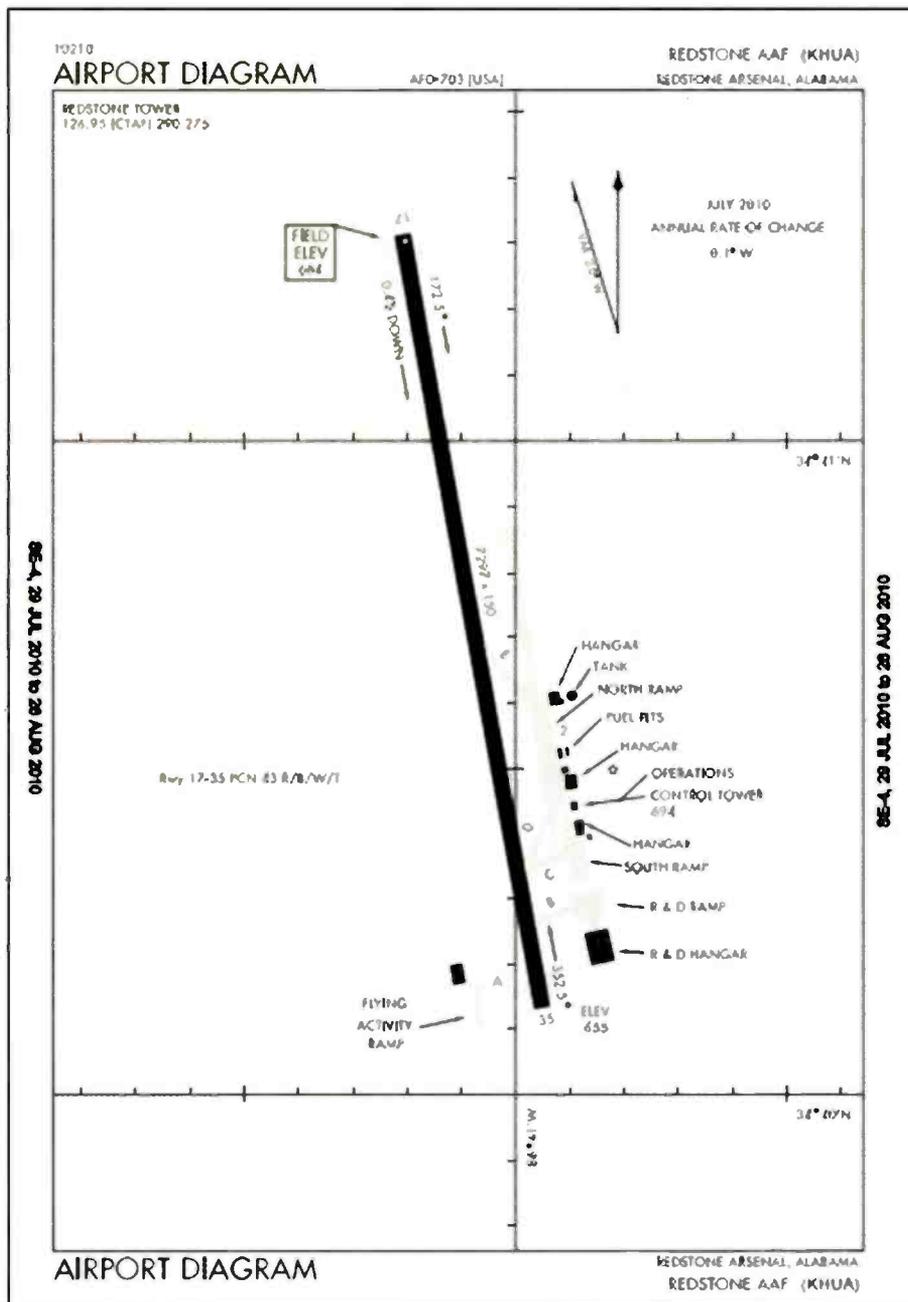
1959Z AIR CANADA 868 (B-767-300/Toronto>London) wkg TRENTON MILITARY with unreadable traffic passed. Flight instructed to QSY to 13257.

13306: USB 1412Z REACH 380 (C-17A #06-6160/60th AMW, Travis AFB, CA) wkg New York Radio with a 040W position report with fl 340.

1702Z REACH 511 (C-5B #85-0008/60th AMW, Travis AFB, CA) wkg New York Radio CPDLC and a FPJR SELCAL check.

1731Z REACH 635 (C-17A #08-8199/305th AMW, McGuire AFB, NJ) wkg New York Radio with a 050W position report with fl 310.

13927: USB 1436Z CRAB 57 (C-130J #98-1357/175th AW, 135th AS, MD-ANG, Martin State Airport, MD) wkg MARS Operator AFA7HS (Kansas City, KS) with a phone patch and flight data passed.



FAA diagram of Redstone Army Airfield.

## Fair Sailing And Scanning

by Mitch Gill, NA7US,  
NA7US@yahoo.com

**W**orking in the National Guard I'd long assumed that I had a good idea of how much security has increased since 9/11. I was wrong—it's changed much more than I'd realized.

During the summer of 2001, I had the privilege of sailing on a portion of the Puget Sound near Indian Island—an island off limits to the public. We were able to get fairly close to it and a Navy Supply ship before being called on Channel 16 on Marine Radio and told to leave the area. Indian Island is where ammunition is stored and the ships are resupplied.

Recently, having purchased my own boat, I decided to trailer my Macgregor 25 to Port Hadlock, Washington, and sail around the Northern side of Indian Island to Fort Flagler. This time I did not have to wait for a call on the radio that I was getting too close as there was a Navy speedboat circling the area about 500 meters from a Navy ship that was being repaired. The sight of a speed boat, as well as the large buoys indicating a restricted zone, was enough of a deterrent to keep me far away.

*"I did not have to wait for a call on the radio that I was getting too close as there was a Navy speedboat circling the area about 500 meters from a Navy ship that was being repaired."*

The vicinity of Bangor, Washington, has also dramatically increased security. It makes sense as it is the location of our Trident nuclear submarines in the Pacific. Bangor is located on the Hood Canal, which is a part of the Puget Sound and is a frequent target of protests. If you're in the area you can monitor the frequencies we've listed here. I have listened in on several interesting conversations between security personnel when protesters are in the area but have avoided sailing near it.

I learned to give two other local areas a wide berth: Keyport and Bremerton. While I wouldn't want to get too close physically, they are fascinat-



An aircraft carrier leaving Bremerton, Washington.

ing to monitor and I always bring my scanner when cruising on the Puget Sound.

## Ooops...I Should Have Known

Last summer I was detained by security on Joint Base Lewis McChord (JBLM). The reason? Some fellow Guardsmen and I were filming as we entered one of its many gates, unaware that was prohibited. We also hadn't anticipated any problems

since we were in uniform. We soon discovered that being in uniform and having our military IDs made no difference as we were escorted by security to meet with a Homeland Security Officer. The purpose of the filming had been to test a new system for the National Guard that utilized full motion video in the event of a disaster. I also had my 2-meter handheld to stay in contact with my co-worker back at Camp Murray (frequency is just outside the 2-meter band, 148.775). The combi-

nation made the guards uneasy, but we were able to convince them that we would erase all the film and they let us go. What they did not know was that the film was automatically sent to a server in Alabama and then on to Camp Murray. We dutifully erased those when we got back. It would have been nice to have had with me one of the radios from the National Guard with the same frequencies as JBLM. It would have enabled me to get a "heads up" a few minutes before he reported us! Then again,

## Some Local Naval Frequencies

Freq	PL/M	Ty	City	Notes
36.55				*WHIDBEY ISLAND NAS PRIMARY
138.650		S	Bangor	(SOME BANGOR USE - MAINT/SEC?)
138.650	CSQ	S	Bremerton	PSNSY BREMERTON E.PARK/JACKSON PK. HOUSING SECURITY
138.725	123.0	S	Bremerton	PSNSY BREMERTON BASE POLICE NASCOM ch. 1
138.750	CSQ	S		(RARE USE) KEYPORT ? QUEBEC BASE - BASE HOSPITAL ?
138.800	CSQ	S	Keyport	
138.975	CSQ	R	Bangor	BANGOR SUB BASE ADMIN/SECURITY (VRFD)
139.050	CSQ	R		USN RADIO TECHS. *WI NAS AIRSHOW BOSS ch. F-3 ?
139.500	CSQ	R		USN RADIO TECHS (WAS MAGIC BASE) *BANGOR
139.575	CSQ	S	Bangor	NAVY BRIG
139.725	CSQ	S	Indian Is	INDIAN IS. ORD. DEPOT FORKLIFT OPERATORS (BOMB LOADING)
139.750	CSQ	S	Keyport	BASE SECURITY (ALPHA UNITS) - SEE 140.350 (VRFD)
140.225	CSQ	S	Bangor	BANGOR OSCARNET TTF TRUCKS
140.350	CSQ	S	Keyport	NAVY SECURITY ALPHA UNITS (SEE 139.750) (VRFD)
140.450	123.0	S	Bremerton	PSNSY BASE HOUSING POLICE DISP (NASCOM & GOLF UNITS)
140.450	CSQ	S	Bremerton	PSNSY BASE HOUSING UTILITIES/FACILITIES (BRAVO UNITS)
140.475	CSQ	R	Bremerton	NASCOM. 93 KILO, ALARM ZONE 5 (RARE USE) (INPUT ???)
140.525	CSQ	S	Bangor	NUWC KEYPORT DABOB BAY (@BANGOR) TEST RANGE CONTROL
140.825				ALSO BANGOR FIRE ? - MARK S.
140.825	CSQ	S	Bremerton	PSNSY BREMERTON FIRE DISP GOLF 1 BASE. ENG. 61, ENG. 62 ch. 8
140.850	CSQ	S	Bremerton	PSNSY BREMERTON - CRANE OPERATORS FOR THE DRYDOCKS
140.875	CSQ	S	Bangor	NAVY SONAR TESTING - SAME FOLKS AS ON 140.525
140.950	CSQ	S	Bangor	BANGOR BASE HOUSING POLICE F-2 ch. 2
140.975	CSQ	S	Bangor	BASE POWER LINE CREWS (RARE USE - USUALLY FOR OUTAGES)
141.975	123.0	R	Keyport	(MOSTLY DVP) ALPHA 1, ALPHA 80 COG (VRFD)
141.975	CSQ	R	Keyport	*BANGOR F-4 MARINE ADMIN (VRFD)
142.075	CSQ	S	Bangor	BANGOR PUBLIC WORKS/UTILITIES
142.525	CSQ	S		*NAVY BREMERTON
142.550	CSQ	S	Bremerton	PSNSY - MOVING TRAILERS TO DRYDOCK 5
142.600	CSQ	S	Bremerton	PSNSY (RARE USE) - BUILDING MAINT, ALSO PAG(V)
142.775	CSQ	S	Bangor	BANGOR PUB WKS TRANSPORTATION DIVISION
143.525		S	Bangor	NAVY BASE TAXIS ICPB BANGOR & INDIAN ISLAND
148.300	CSQ	S	Bremerton	PSNSY BREMERTON - BASE BUSES & TAXIS
148.325	CSQ	S	Bremerton	DRYDOCK MAINTENANCE WORKERS. CRANE OPERATORS

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Trident submarine being moved through the Hood Canal in Washington.

he may not have been too happy to find me monitoring his frequency.

Monitoring military frequencies can be very interesting, especially here in the Northwest where there is a large military presence. Within a couple of hours' drive you'll encounter Navy, Army, Air Force, and Coast Guard facilities, as well as the Reserves, National Guard, and Coast Guard Auxiliary. That's a lot to monitor! Check out frequencies below should you find yourself in the area. If you live near any military installation, seek out those

frequencies—you never know what you might hear. The recent shootings at Fort Bliss had several frequencies that were monitored as the event unfolded. The possibilities are endless, so get your scanners up and running.

Until next time, I'd like to thank the Coast Guard Auxiliary. They are all volunteers using their own boats to assist the Coast Guard during any emergency on the water. I feel more secure sailing on the Sound knowing they're a simple communication away?

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 CHOICE. WE CAN BE  
 AFRAID. OR  
 WE CAN BE READY.**

**READY**

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**1-800-BE-READY**



**Fort Lewis Frequencies**

Freq	PL/M	Ty	City	Notes
32.775				SHADOW UAV OPERATIONS
125.140	AM			FORT LEWIS DROP ZONES
126.2	AM			GRAY ARMY AIRFIELD TOWER REPLACED BY 119.325 MARCH 2001
139.1375	CSQ	R	Tacoma	(139.140??) FT. LEWIS TACTICAL TRAINING
139.375	146.2	S	Tacoma	MADIGAN ARMY HOSP. AID/MEDIC DISP. (NO PL ON BASE XMIT)
141.125	179.9	R	Tacoma	FT. LEWIS RANGE CONTROL (NOW SIMPLEX?) (RARE USE)
143.450	CSQ	R	Tacoma	MARS MCCORD AFB (NET MONDAY 8PM) CWID 2020 AFA5MC?
148.125	127.3	R	Tacoma	CAP ch. 20/C4
148.225	77.0	S	Tacoma	WA. AIR NATL GUARD (AT MCCHORD AFB)
148.600	CSQ	R	Ft Lewis	XBAND RPT OF TRAINING AIRCRAFT/SKYDIVERS (RARE USE)

# Antenna Tips For The Average Ham

by Kirk Kleinschmidt, NTOZ  
kirk@cloudnet.com

Now that I have a couple of friends who are coming up through the ham radio ranks, I find myself having a lot of *déjà vu* conversations about the biggest, baddest, most perennial ham radio topic of all: Antennas. What? You were thinking gall bladder surgery? No way, Pops!

Antenna talk is still the talk of the town. It's a topic that's still rife with wives tales, misinformation, folklore—and a few pearls of wisdom—some of which I hope to impart in this month's column.

Of course, hams will forever debate the merits of the coax-fed inverted schnarfelbanger as compared to the ladder-line-fed flat-topped flumpenspiel, but I'm talking about the real basics. The stuff I wish I had known back in my early days. The truthy tidbits that make any antenna or antenna installation more effective. Remember, your antenna, more than anything else—including sexy, high-tech radios—determines your success and enjoyment of ham radio.

So, if you want to eavesdrop of what I've been telling "the boys" about the subject, read on.

## • *Inexpensive Coax Usually Isn't*

A lot of beginning hams start out using "50-ohm coaxial cable of questionable parentage" purchased at one discount vendor or another, or from the local CB radio section of a truck stop, etc. Avoid this stuff like the plague. In other words, don't do as I did in my early years. I strung 150-foot lengths of crappy-quality RG-58 here, there, and everywhere. No wonder I became a QRPer! Once the losses were tallied—the usual resistive losses plus the losses related to the cable's low quality—I was running low power at the antenna no matter what I was running at my rig.

## • *Satellite TV Saves The Day!*

Inexpensive 75-ohm satellite TV coax such as RG-6, RG-6 Quad Shield, and the beefy RG-11, although inexpensive, perform *much better* than better-than-low-cost 50-ohm cables. I, and many other hams, have taken to using this stuff for just about everything. The slight impedance difference is insignificant in all but the most critical applications (none of which you're likely to encounter), and the economy of scale really

*"...hams will forever debate the merits of the coax-fed inverted schnarfelbanger as compared to the ladder-line-fed flat-topped flumpenspiel, but I'm talking about the real basics."*

works in your favor. Used in satellite and cable TV installations everywhere, millions of feet of this handy stuff spool off the assembly lines each year, keeping costs down and availability up. Just the fact that you can buy decent quality RG-6 coax at Wal-Mart, in the middle of the night, if necessary, is a real blessing for the spur of the moment experimenter.

RG-6, the least-expensive of the three cables mentioned here, can easily handle power levels of 100 watts up to 2 meters. If you're hoping to operate on 430 MHz or beyond, though, unless your cable run is very short, you'll probably need to use RG-11 (or another UHF-rated coax, 50 or 75 ohms) to minimize losses.

Unless you're connecting the RG-6 to a scanner that happens to have a chassis-mount F-connector as an antenna port, you'll need to pick up a few PL-259-to-Type-F female adapters to easily make connections at your rig or antenna tuner.

## • *Use Coax Only For Resonant Antennas Only*

Coax only works well if the antenna it's connected to is reasonably resonant at its operating frequencies. That's huge, so read that again!

For example, feeding a 40-meter dipole with 50-ohm coax works great (on 40 or 15 meters, where the SWR is reasonable), but using the same antenna and feed line on 80 meters is an SWR disaster, and you'll encounter huge SWR losses! Don't feed non-resonant, multiband antennas with coax! Just don't do it.

If, like many of us, you can only put up one wire antenna to be used on all HF bands, simply put up the biggest, highest loop or dipole you can muster and feed it with ladder line via an antenna tuner (a balanced tuner, if possible). If you must run coax all the way, use an autotuner at the antenna feed point (more on this in a bit).

### • Outside Is Better Than Inside

Skyscraper QTHs aside, outdoor antennas always outperform indoor antennas. Although in the right locations and with the right configurations, indoor antennas can really do well, the same antenna would undoubtedly work better if it's outside.

### • The Higher The Better

For most practical installations, the higher an antenna is, the better it performs. This isn't *always* true, of course, especially when you're trying to work nearby stations on 80 and 40 meters. In those situations an NVIS (Near Vertical

Incident Skywave) antenna, such as a resonant dipole, mounted six feet above the ground will kick butt.

### • Size Matters

Almost universally, the bigger an antenna is (in length and wire/element diameter), the better it performs. A 30-foot wire works better than a 12-footer, which works better than a five-footer. If you could make a full-size dipole from solid copper wire (or hollow copper pipe) the diameter of a basketball, it would outperform a similarly sized dipole made from conventional antenna wire.

If you go too far, though, the rule breaks down. A dipole antenna made with

20 miles of wire (a handy 10 miles per side) won't work any better than a dipole cut for 160 meters. In fact, it might not do much of anything. The same holds true for the vertical antenna discussed above. Once the length exceeds 5/8-wavelength or so, almost all of the radiated energy will go straight up, off the end of the vertical element. So forget that 500-foot vertical for 10 meters.

### • Balanced Antennas Are Just Easier

For beginners, balanced antenna designs (dipoles, loops, and reasonable variations) are easier to successfully build and use than unbalanced antennas (verticals, end-fed wires, random wires, and the like). Achieving a decent RF ground for unbalanced antennas can be a real pain, while balanced designs need no RF ground to perform as intended. It's just plain physics.

### • Autotuners Belong At The Antenna Feed Point

Shack-mounted antenna tuners can be a real life-saver, especially when the loads they're matching are reasonable (such as using a coax-fed 80-meter dipole on 75 or 10 meters, where the SWR on the feed line isn't too extreme). On 160 meters, though, SWR feed line losses for a dipole cut for 80 meters become huge unless you're feeding the dipole with open-wire line and a balanced antenna tuner. In that case, you'll still have to fuss with the knobs and switches on the tuner when you need to change bands, but your signal will succeed, even if the process can get tedious for band hoppers.

The ultimate solution to a low-loss, multiband wire antenna is to put the antenna tuner *at the antenna feed point* and feed the tuner with 50-ohm coax. The tuner matches the antenna and the SWR on the coax is negligible, which makes for low loss and speedy band changes. These special tuners are called couplers or auto-couplers, and they're also automatic. As you speak into your mic or press your keyer paddle, the auto-coupler matches the antenna for you—in a jiffy. ICOM, MFJ, LDG, and others manufacture auto-couplers. Check 'em out.

### My Final Tip

Oh, by the way, I'd go with the ladder-line-fed flat-topped flumpenspiel any day of the week...!

Until next time, happy hamming—and Happy Holidays to you and yours.



Now that Santa Season is upon us, I find myself hoping that Jolly Ol' St. Nicholas will drop a new HF transceiver under my antenna-supporting pine tree this holiday season.

Two new radios that may even be available by the time you're reading this (at press time they're not yet type-accepted for sale in the U.S.) are the ICOM IC-9100 and the Kenwood TS-590S.

The IC-9100 is a true "dc-to-daylight" station in a box, covering HF, 6, 2 and 70 cm, plus 1.2 GHz via an optional module. Designed for DXing, contesting and split-band satellite operation, the '9100 has dual independent receivers, each with its own high-end DSP. Other goodies include built-in RTTY demod and an HF+6 autotuner. ICOM's do-everything rig debuted at the 2009 Tokyo Ham Fair. Still officially listed as "TDB," I expect the street price of ICOM's only wide-coverage desktop transceiver to top \$4,000. Ouch! Santa! Help!

Kenwood's new TS-590S has a much lower expected street price of \$1,800, but coverage tops out at 6 meters (no dual receivers, etc.). Still, at that price point, the '590's aggressive "down-conversion + roofing filters + DSP IF" design (shared with other top performers, such as Elecraft's K3 and Ten-Tec's Orion II) could set Kenwood back on the path. The company, which once owned the HF transceiver market, hasn't rolled out a new rig in years. The TS-590S debuted at the 2010 Dayton HamVention.

## Trivia And Toons

by R.B. Sturtevant, AD7IL

**Q.** You've given us the impression that, given time, hams working with the military Signalmen can solve just about any communications problem. Do you really believe that?

**A.** Signalmen and hams (sometimes they're one in the same) are very creative types and, when working together, they seem downright unstoppable. Military communicators around the world often have to deal with problems that no one ever even thought of before. Hams, either in uniform or as civilians working with the military, usually find a way to solve these problems in unique and creative ways. Let me relay one case in point.

In 1960, after the Congo received its independence from Belgium, civil war broke out. The UN sent in troops, which included a contingent from Ireland. The Irish established three bases: one in what is now Kalemie (formerly Albertville) and the other two in the outlying areas of Kamina (approximately 500 miles southwest) and Goma (approximately 300 miles north). Good communications between the bases was established quickly, but because the radio gear used by the Irish Army would not work above 10 MHz, contact with army HQ in Dublin was impossible.

Coincidentally, an Irishman working as an engineer at a hydroelectric plant in Ginga, Uganda, was maintaining a regular schedule with a Catholic priest near Dublin on 28 MHz. One day the engineer was tuning around the 7-MHz band when he heard Irish accents from the army's ham club calling CQ. The operator send CQ was a captain operating from Goma. For several days the engineer passed traffic from Goma to the army in Ireland through the priest friend.

Over the next few days the engineer built a

Heathkit Apache Transmitter and found a BC348 receiver. He also arranged for the army unit in Goma to meet him near the Congo/Uganda border. The engineer drove the 300 miles over 12 hours to meet the soldiers at the border, no small accomplishment in country full of Congolese militants and mercenaries. His payment for all this work? Some Irish biscuits and tea and the gas to get home.

With some improvements to the antenna system in Goma contact with Dublin soon became routine. The chief of staff of the Irish Army was even able to address his troops in far-off Africa.

**Q.** Nations in time of war listen to every possible source of intelligence that they can to gain information on the opposition. How long does it typically take to put together an accurate picture of changes occurring behind enemy lines?

**A.** We can't really tell very much while the war is still going on, because it's hard to get a look at the other guys' logbooks. Monitoring, nevertheless, goes on around the clock on all available frequencies. President Franklin D. Roosevelt died at 3:35 p.m. on April 12, 1945, in Georgia. Japanese records from the time reveal that the staff of Major General Seizo Arisue, chief of Imperial Army Intelligence, had picked up a wire service flash report, transmitted by radio, about the President's death. The Japanese had the details before the citizens of Warm Springs, Georgia, were aware of their neighbor's passing.

**Q.** Were the Viet Cong able to get any radio intelligence on American forces in Vietnam through the use of radio intercept?

**A.** In Cu Chi, the massive complex of tunnels about 20 to 30 miles from Saigon, the Viet Cong had two hospitals, huge caches of food and weapons, barracks facilities for troops, equipment for printing propaganda—and a large radio intercept operation. Antennas were camouflaged in the jungle and the American Command and Control frequencies were monitored 24 hours a day. The American military knew about Cu Chi, but it was never destroyed or captured during the war.

The Viet Cong had undertaken code breaking even before the Americans arrived in significant numbers. That's why the military tried to use wire communications whenever possible. Wire-based comms don't reach out as well as radio, but they are more secure, by far.



# STEREO—A Look At The “Other Side” Of The Sun

by Tomas Hood,  
NW7US, nw7us@arll.net

One year ago, after a few years of practically no sunspot activity, the sun awakened. Observers didn't want to get too excited, because there were too many times when a sunspot had emerged, only to quickly disappear, leaving the sun spotless again for days on end. Looking back over the year, though, we can now say *with great excitement* that the sun is, indeed, awake and showing signs of moving away from solar cycle minimum toward an eventual solar cycle peak (perhaps in 2013).

The majority of days from last December until press time (in late September) have been “spotted” days; that is, days where we've counted sunspots on the visible solar disc. And, on the very

*“The Geminids is a great shower if you'd like to try the meteor-scatter mode of propagation, since you don't have to wait until after midnight to catch it.”*

few days where no sunspots were visible, we knew that there were spots on the *other side* of the sun.

How did we know this? It's because we now have two spacecraft orbiting around the sun using the same orbit as Earth's. One spacecraft is ahead of the Earth, while the other spacecraft is behind it. Both orbit in the same direction as Earth (**Figure 1**). These two unmanned spacecraft are part of the Solar TERrestrial RELations Observatory, or STEREO, mission.

The amazing result of having two spacecraft orbiting our local star in the same orbit as the Earth is having a near-total view of the entire sun. As of December, 2010, we can see almost the entire solar sphere. This allows us to see what is orbiting into view, as well as to watch sunspots and other solar activity as they rotate away from Earth's view.

By seeing the sun in such an unprecedented way, we have the ability to better forecast and understand space weather. For example, **Figure 2** shows the extreme ultraviolet view at the 195-Angstrom wavelength from the perspective of “STEREO Behind” on September 10, 2010. It reveals two very bright regions that will be rotating into view from Earth, by the end of that day, with the leading (right-most) bright region rotating into view by the next day (Figures 3 and 4).

Another benefit of having the STEREO perspectives is the ability to watch coronal mass ejections in nearly a three-dimensional perspective. Prior to having this STEREO view, when a solar event occurred, we could only watch something directed toward us. Now we can see from both sides of such an event to gain a better understanding what is happening, how fast it is moving, and so on.

The STEREO spacecraft have been revealing a lot of solar activity as 2010 progressed. Indeed, we've seen sunspot region after sunspot region

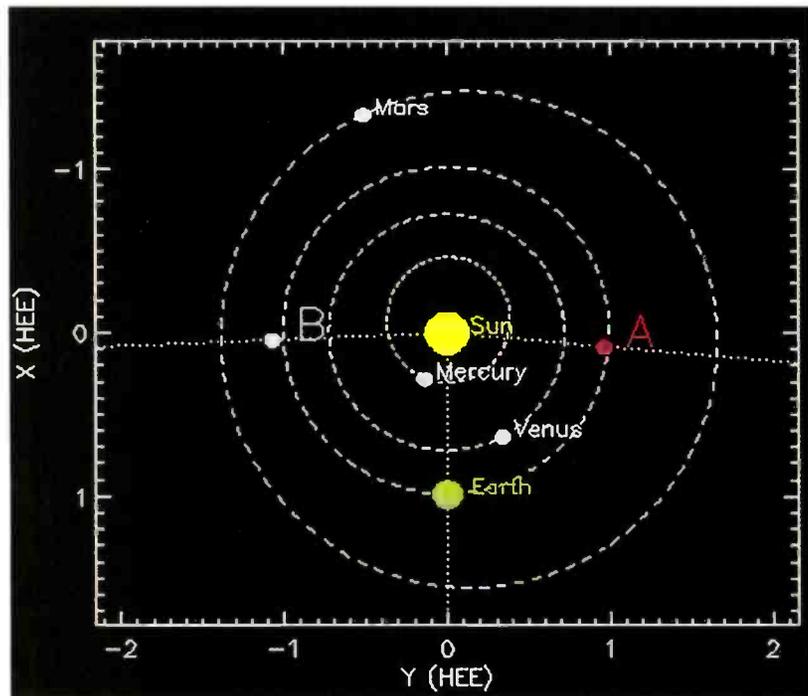


Figure 1. Where is STEREO? This figure plots the current positions as of December 15, 2010, of the STEREO Ahead (red) and Behind (blue) spacecraft relative to the Sun (yellow) and Earth (green). The dotted lines show the angular displacement from the sun. Units are in Astronomical Units (A.U.). The STEREO Behind spacecraft gives us a view of the sun that lets us see what is rotating around into view, while STEREO Ahead allows us to view what has rotated out of Earth's view. This gives us the ability to see new sunspots before they rotate into view, and to watch them after they rotate away from our view. (NASA/STEREO image)

rotating around the sun, increasing in size, complexity, duration, and number. Solar Cycle 24 is certainly alive and well, and gaining energy.

## HF Propagation

The autumn DX season is in full swing! Listeners throughout the Northern Hemisphere are actively chasing mediumwave DX of AM broadcast stations from all over North, Central, and South America, and from Europe and Asia. This is the time of year when it's easier to catch such difficult signals, because in the fall conditions are most favorable to propagation of this spectrum of the radio frequencies. Shortwave DX is hot, too, especially on the mid- to low-HF bands from early evening until late at night, and then again from early morning through high noon.

December 21 is the winter solstice and marks the beginning of that season. With

the sun sitting at its yearly southern-most point in the sky at 2338 UTC, it is the day with the shortest daylight period of the year for observers situated north of the equator.

Long hours of darkness make for a less-energized ionosphere. Since the *D* layer of the ionosphere is less ionized during winter, mediumwave and the lower shortwave frequencies are generally less absorbed by that layer than they are during the summer. Because of this, mediumwave frequencies are propagated by the *E* and *F* layers better during the winter than during the summer. Additionally, the seasonal decrease in weather-related noise makes it easier to hear the weaker DX signals on the lower frequencies. With thunderstorms few and far between, storm-related static and noise is greatly reduced.

Seasonally, the geomagnetic activity tends to quiet down during the winter

months. The most active geomagnetic seasons are centered on the two equinoxes, the spring and autumn. We are also in the very bottom of the current solar cycle, and that means very few flares occur, and therefore, very few if any shortwave fade-outs. This results in more stable and reliable propagation on the shortwave spectrum, especially on the lower frequencies.

December is well enough past the autumnal equinox and the associated peak auroral activity to support transpolar propagation. With this overall reduction of geomagnetic activity and the decrease of radio signal absorption comes more stable high-latitude propagation. Mediumwave DXers enjoy catching broadcast station transmissions from over the North Pole. Shortwave DXing over high-latitude paths becomes exciting, even if the higher-frequency bands might be dead.

Fairly good DX openings are expected on 19 and 16 meters, remaining open towards the west during the early evening. Nineteen meters will be the hottest daytime band, while 22 and 25 meters will become a close second. These start with early morning openings in all directions until about an hour or two after sunrise, and then remain open into one place or another through the day until early evening. When conditions are good (days with low geomagnetic activity and higher solar sunspot activity), 22 through 16 meters are likely to remain open toward the south and west from early evening until about midnight.

The best bands for around-the-clock DX will be 31 and 25 meters. Twenty-five meters continues to be an excellent band for medium distance (500 to 1,500 miles) reception during the daylight hours, with longer-distance reception (up to 2,000 to 3,000 miles) possible for an hour or two after local sunrise, and again during the late afternoon and early evening.

From midnight to sunrise, 41 and 31 meters promise some of the hottest nighttime DX during December. The first DX openings should be toward Europe and the east during the late afternoon, then move across the south through the hours of darkness, while remaining open into most parts of the world. Just after sunrise, openings will be more in a westerly direction. Low seasonal noise will make DXing a pleasurable pastime.

For short-skip openings during December, try 90 through 41 meters during the day for paths less than 250 miles, and 90 down to 120 meters at night for

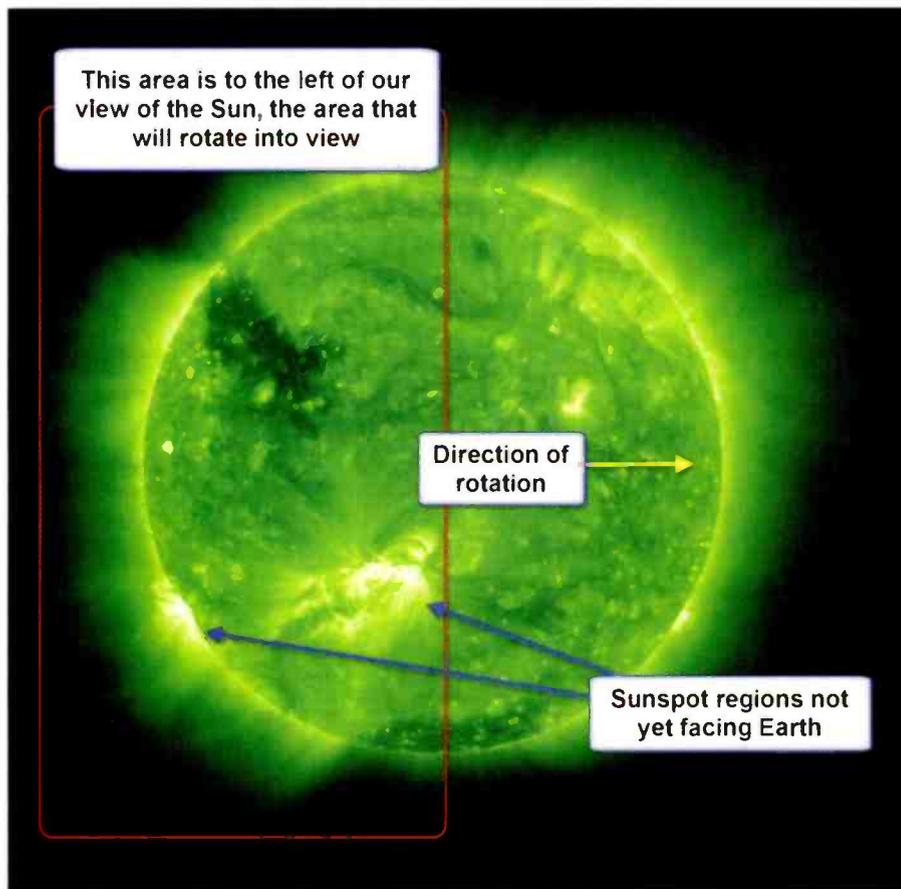


Figure 2. This is the STEREO Behind view at the extreme ultraviolet wavelength of 195 Angstroms. The left half of this image is the area of the sun that is around the "left" side of the solar disc, when viewed from Earth. You can see two very bright areas, which reveal possible sunspot regions (sometimes, these are just active magnetic regions). The right-most of these two bright areas will rotate into view within two-days' time. As was revealed by the end of September 11, this leading bright region was, indeed, a sunspot region. (NASA/STEREO image)

Optimum Working Frequencies (MHz) - For December 2010 - Flux = 98, Created by NW7US

UTC	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
TO/FROM US WEST COAST																									
CARIBBEAN	19	15	12	12	11	11	10	10	10	10	10	9	9	9	14	18	20	21	22	22	22	22	22	22	21
NORTHERN SOUTH AMERICA	27	24	19	16	15	14	14	14	13	13	13	13	12	12	16	24	27	28	29	30	30	30	30	30	29
CENTRAL SOUTH AMERICA	26	23	17	16	15	14	14	14	13	13	13	13	13	12	18	24	27	29	30	30	30	30	30	29	28
SOUTHERN SOUTH AMERICA	29	26	23	17	16	15	14	14	14	13	13	13	13	13	12	23	27	28	29	30	30	31	31	31	30
WESTERN EUROPE	9	9	9	9	8	8	8	8	8	8	9	9	9	8	8	11	12	11	11	10	9	9	9	9	9
EASTERN EUROPE	9	9	9	9	9	9	8	8	8	8	9	9	8	8	8	8	10	11	10	10	10	9	9	9	9
EASTERN NORTH AMERICA	20	17	13	13	12	12	12	11	11	11	11	11	11	10	15	20	22	23	24	24	24	24	24	23	22
CENTRAL NORTH AMERICA	12	11	9	7	7	7	6	6	6	6	6	6	6	6	6	9	11	12	13	13	13	13	13	13	13
WESTERN NORTH AMERICA	7	6	5	4	4	3	3	3	3	3	3	3	3	3	3	5	6	6	7	7	7	7	7	7	7
SOUTHERN NORTH AMERICA	21	19	15	12	12	11	11	11	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
HAWAII	20	19	18	17	14	11	10	10	9	9	9	9	9	8	8	8	8	14	17	18	19	20	20	20	20
NORTHERN AFRICA	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	13	14	15	16	12	11	10	10	10	10
CENTRAL AFRICA	11	10	10	10	9	9	9	9	9	9	9	9	9	9	8	12	14	15	15	14	13	12	12	12	12
SOUTH AFRICA	18	13	12	12	12	11	11	11	11	10	10	10	10	10	15	18	20	21	22	22	22	22	21	20	20
MIDDLE EAST	9	9	9	9	9	9	9	9	9	9	9	9	9	8	8	11	11	11	10	10	9	9	9	9	9
JAPAN	18	17	17	15	13	11	10	10	9	9	9	9	9	9	9	9	9	9	9	9	9	12	16	17	17
CENTRAL ASIA	18	17	16	15	13	10	10	10	9	9	9	9	9	9	9	9	9	9	11	11	11	11	11	12	18
INDIA	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
THAILAND	17	16	16	14	12	10	10	10	9	9	9	9	9	9	9	9	9	9	11	11	11	11	11	11	11
AUSTRALIA	27	28	28	26	22	16	16	15	14	13	13	13	13	13	13	13	12	17	16	16	18	21	23	25	25
CHINA	15	16	15	14	11	10	10	9	9	9	9	9	9	9	9	9	9	8	9	9	9	9	9	9	11
SOUTH PACIFIC	29	29	28	25	21	16	16	15	14	14	13	13	13	13	13	13	15	17	18	21	23	25	26	28	28
UTC																									
TO/FROM US MIDWEST																									
CARIBBEAN	21	14	14	13	12	12	12	11	11	11	11	11	11	18	22	24	25	26	26	26	26	26	25	23	23
NORTHERN SOUTH AMERICA	23	19	15	14	14	13	13	12	12	11	11	11	11	18	23	25	27	28	29	29	29	28	27	26	26
CENTRAL SOUTH AMERICA	24	17	16	15	15	14	14	13	13	13	13	13	12	22	26	28	29	30	31	31	31	30	29	27	27
SOUTHERN SOUTH AMERICA	27	23	17	16	16	15	14	14	13	13	13	13	13	16	24	25	27	28	29	30	30	31	31	29	29
WESTERN EUROPE	9	9	9	9	9	8	8	8	8	8	8	8	11	14	15	15	15	14	13	10	10	9	9	9	9
EASTERN EUROPE	9	9	9	9	9	8	8	8	8	8	9	9	8	8	12	14	14	13	10	10	9	9	9	9	9
EASTERN NORTH AMERICA	14	10	10	9	9	8	8	8	8	8	8	8	8	9	14	16	17	17	18	18	18	17	17	16	16
CENTRAL NORTH AMERICA	7	6	4	4	4	4	4	3	3	3	3	3	3	3	5	6	7	8	8	8	8	8	8	7	7
WESTERN NORTH AMERICA	12	11	9	7	7	7	6	6	6	6	6	6	6	6	6	9	11	12	13	13	14	14	13	13	13
SOUTHERN NORTH AMERICA	14	12	9	9	8	8	7	7	7	7	7	7	7	7	11	14	15	16	16	16	16	16	16	15	15
HAWAII	22	21	19	15	12	12	11	11	11	10	10	10	10	10	10	10	10	18	21	22	23	23	23	23	23
NORTHERN AFRICA	11	10	10	10	9	9	9	9	9	9	9	9	9	13	16	17	18	18	19	18	14	13	12	12	12
CENTRAL AFRICA	11	10	10	10	9	9	9	9	9	9	9	9	9	13	16	17	18	18	18	14	13	13	12	12	12
SOUTH AFRICA	18	16	15	14	14	14	13	13	13	13	13	12	12	23	26	28	29	30	30	30	29	28	26	24	24
MIDDLE EAST	9	9	9	9	9	9	9	9	9	9	9	9	9	10	14	15	16	14	11	10	10	9	9	9	9
JAPAN	17	16	14	11	10	10	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	10	15	17	17
CENTRAL ASIA	16	15	13	10	10	10	9	9	9	9	9	9	9	9	9	9	11	11	11	11	11	11	11	11	17
INDIA	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
THAILAND	15	14	10	10	10	9	9	9	9	9	9	9	9	9	9	9	9	12	12	11	11	11	11	11	11
AUSTRALIA	27	27	25	20	16	15	15	14	14	13	13	13	13	13	12	12	18	17	16	16	19	21	23	25	25
CHINA	14	13	10	10	10	9	9	9	9	9	9	9	9	9	9	8	9	9	9	9	9	9	9	9	9
SOUTH PACIFIC	29	27	25	18	16	15	15	14	14	13	13	13	13	13	12	18	17	17	20	22	24	26	27	28	28
UTC																									
TO/FROM US EAST COAST																									
CARIBBEAN	15	11	11	10	10	10	9	9	9	9	9	9	13	17	19	20	21	22	22	22	21	21	20	18	18
NORTHERN SOUTH AMERICA	20	17	15	14	13	13	12	12	11	11	11	10	15	19	22	24	25	26	26	26	26	25	24	23	23
CENTRAL SOUTH AMERICA	20	19	17	16	16	15	14	14	13	13	13	13	22	25	27	28	29	30	31	32	31	30	28	26	26
SOUTHERN SOUTH AMERICA	25	20	19	18	17	16	15	15	14	14	13	13	19	22	24	26	27	28	29	30	31	31	30	28	28
WESTERN EUROPE	9	9	8	8	8	8	8	8	8	8	8	8	14	16	17	17	16	16	15	14	11	10	9	9	9
EASTERN EUROPE	8	8	8	8	8	8	8	8	8	8	8	8	10	10	10	10	10	9	9	9	9	9	8	8	8
EASTERN NORTH AMERICA	6	5	4	4	4	4	4	4	4	3	3	3	3	7	8	8	9	9	9	9	9	8	8	7	7
CENTRAL NORTH AMERICA	15	11	10	10	9	9	9	8	8	8	8	8	8	10	15	17	18	18	19	19	19	18	18	16	16
WESTERN NORTH AMERICA	21	17	13	13	12	12	12	11	11	11	11	11	11	10	16	20	22	23	24	24	24	24	23	22	22
SOUTHERN NORTH AMERICA	16	12	11	10	10	10	9	9	9	9	9	8	8	13	17	18	19	20	21	21	21	20	19	18	18
HAWAII	22	19	14	13	13	12	12	11	11	11	11	11	11	11	11	11	11	20	23	25	25	25	24	23	23
NORTHERN AFRICA	12	11	11	11	11	11	11	11	11	11	10	16	20	22	23	24	25	24	22	19	14	13	13	12	12
CENTRAL AFRICA	12	11	11	11	11	11	11	11	11	11	11	11	16	20	22	24	25	23	20	14	14	13	12	12	12
SOUTH AFRICA	16	15	15	14	14	13	13	13	13																

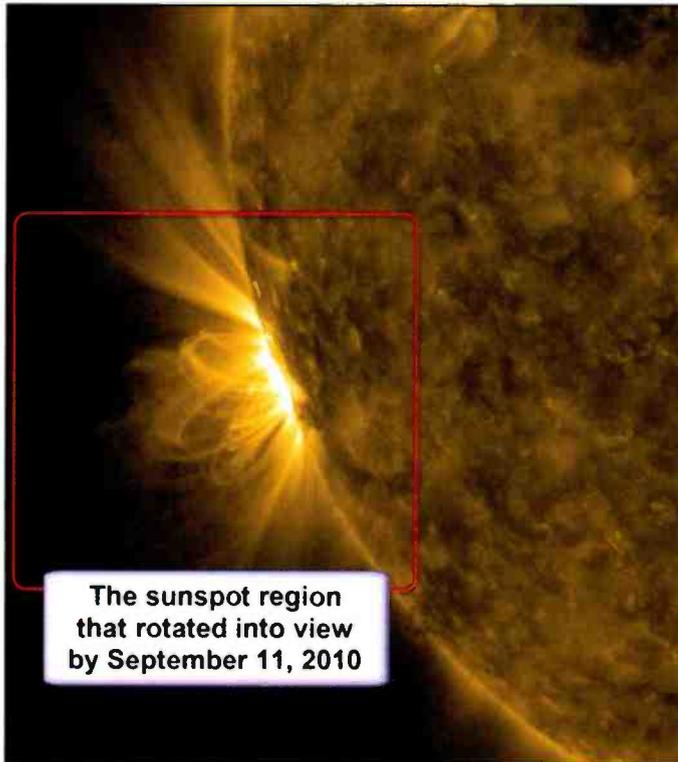


Figure 3. This is the 171-Angstrom wavelength view of the "bright" region that STEREO Behind revealed on the days prior to September 11, 2010. This image reveals the "bright" active region that is just rotating into view from the perspective of Earth, as seen by the Solar Dynamics Observatory on September 10. (Solar Dynamics Observatory/Atmospheric Imaging Assembly image)

these distances. For openings between 250 and 750 miles, try 41 meters during the day, and both 90 and 120 at night. For distances between 750 and 1,300 miles, 22 through 31 should provide daytime openings, while 41 down to 90 will be open for these distances from sunset to midnight. After midnight, 90 meters will remain open out to 1,300 miles until sunrise. Try 31 and 41 meters again for about an hour or so after sunrise. For openings between 1,300 and 2,300 miles, openings will occur on 22 through 16 meters, with fewer on higher bands, during the daylight hours. During sundown to midnight, check 22 through 41 meters for these long-distance openings, and then check 41 down to 90 meters after midnight until sunrise. Try 41 and 31 meters again for an hour or so after sunrise.

DX openings on 120 and 90 meters during the hours of darkness and into the sunrise period, with considerably decreased static levels, are a sure bet during the longer hours of darkness in the northern latitudes. Look for openings toward Europe and the south from the eastern half of the United States and towards the south, the Far East, Australasia, and the South Pacific from the western half of the country. Ninety meters should peak toward Europe and in a generally easterly direction around midnight, and then open in a generally western direction with a peak just after sunrise. The band should remain open towards the south throughout most of the night.

## MW DX Season

This time of year is also when we experience an improvement of radio wave propagation below 500 kHz and the medi-

umwave (MW) broadcast band. The MW broadcast band refers to the frequencies between 530 kHz and 1750 kHz. The low frequency (LF) range is the band of frequencies between 30 kHz and 300 kHz. Very low frequencies (VLFs) are those ranging between 3 kHz and 30 kHz, though the practical lower edge of the VLF band starts at 10 kHz. Medium frequencies (MF) range from 300 kHz to 3000 kHz. Radio waves in the LF and VLF spectrum propagate differently than those of the MF range and above. Between 300 kHz and 520 kHz, the lowest part of the MF and just below the MW broadcast band, the characteristics of propagation are a mix between those of the lower HF spectrum and those of LF.

The VLF and LF bands are usually referred to as the long-wave bands. The VLF band goes from 10 to 30 kHz, and the LF from 30 to 300 kHz. During the winter season, mediumwave transmissions can be heard over much greater distances than during the summer season.

When is the best time to look for MW DX? The general rule is to start in the early evening, and to continue through the night and into the early daylight hours. As sunset approaches, the ionosphere starts to change. The *D* layer recombines and signals begin to punch through to the *E* and *F* layers, and distant propagation is more likely. Most broadcast stations in the U.S. change from high power to low power after their local sunset. If you listen just prior to their local sunset time, their higher power will propagate well because of the characteristics of nighttime ionization. Thus, the idea is to maximize the degree of darkness at the station (and consequently, along the signal path from them to you) while they're on day power and pattern. The exception to this would be those cases where the power difference is small or non-existent, but the nighttime pattern actually is more favorable to you.

At the same time, any station to the west that has a favorable nighttime signal in your direction (in other words, a significant night power and no deep null antenna pattern aimed at you) is a potential sunrise target. *D*-layer absorption increases rapidly when in direct sunlight, and east of you begins to ionize, while west of you is still dark and free of *D*-layer ionization. Around the time of your local sunrise the relative strength of stations to the west of you increases, while eastern stations will start to fade, allowing the western stations to emerge from underneath. On rare and exciting occasions, this period will last long enough for some western stations to go to their higher power and daytime pattern. Here, as with sunset, the time of month can also be critical, as the more darkness on the path, the better. Because sunrise times get later in the fall, the end of the month is preferable; in the spring, the beginning of the month is better. Again, the longest hours of darkness fall toward the end of December, on the 21st.

However, the shortest day of the year is not the day when the sunrise is latest and the sunset earliest. The latest sunrise times at mid-latitudes are right around December 30, while the earliest sunset times are usually between December 5 and 10. This means that December can be viewed as an "autumn" month in terms of sunrise DX, but should be considered more like January for sunset DX.

## Propagation On VHF And Above

Quite a bit of meteor shower activity is expected this month, and this should result in improved conditions for meteor-scatter openings on the VHF bands for distances up to about 1,000 miles. When a meteor burns up in the atmosphere, its intense

heat creates an ionized trail, and radio signals can propagate off the ionized trail much as they would off of the ionosphere. The annual Geminids meteor shower, which will appear from December 7 to December 17, will peak on December 14. The maximum hourly rate may reach 120 this year.

The Geminids is a great shower if you'd like to try the meteor-scatter mode of propagation, since you don't have to wait until after midnight to catch it. The radiant rises early, but the best operating time will be after midnight local time. This shower also boasts a broad maximum, lasting nearly one whole day, so no matter where you live, you stand a decent chance of working some VHF/UHF signals off a meteor trail. For a complete list of meteor showers, visit [www.imo.net/calendar/2010](http://www.imo.net/calendar/2010).

A secondary seasonal peak in sporadic-E ionization should also result in some short-skip openings on low VHF between distances of about 800 and 1,300 miles. A rare occurrence of aurora during days of stormy geomagnetic activity is possible, providing some unusual short-skip openings on low VHF.

There is considerably less likelihood for transequatorial VHF openings during December, but look for a possible opening between the southern states and locations deep in South America. The best time to look for these is between about 8 and 11 p.m. local time.

### Current Solar Cycle 24 Progress

The Royal Observatory of Belgium reports that the mean monthly observed sunspot number for August 2010 is 19.6, up from July's 16.1. The lowest daily sunspot value during August

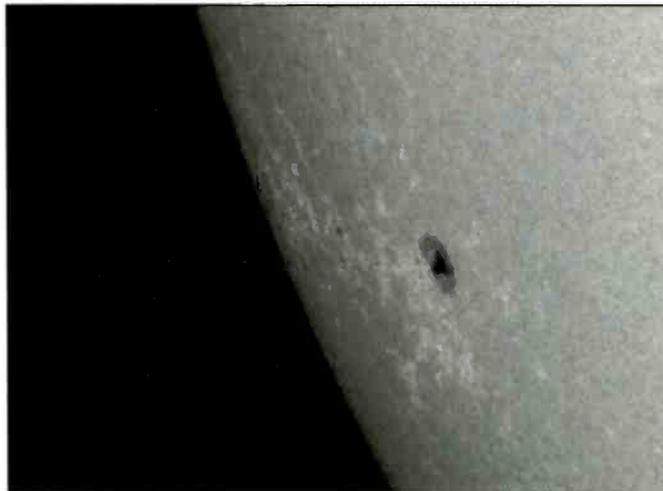


Figure 4. As expected, the "bright" region seen by STEREO Behind on September 10, 2010, was a large sunspot region. This image is the "intensitygram" view of the sunspot as seen by the Solar Dynamics Observatory Helioseismic and Magnetic Imager on September 11, 2010. STEREO Behind is a useful tool that allows us to better predict space weather, as it allows us to see what is coming around the Sun. (Solar Dynamics Observatory/Helioseismic and Magnetic Imager image)

2010 was zero (0) on August 21, 22, and 23. The highest daily sunspot count for August was 44 on August 11. The 12-month running smoothed sunspot number centered on February 2010 is 10.6, approximately one point higher than January. A smoothed sunspot count of 42 is expected for December 2010, give or take about 9 points.

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-cm observed monthly mean solar flux of 79.7 for August 2010. The 12-month smoothed 10.7-cm flux centered on February 2010 is 76.5, up one point from January. The predicted smoothed 10.7-cm solar flux for December 2010 is about 98, give or take about 8 points.

The observed monthly mean planetary A-Index ( $A_p$ ) for August 2010 was 8, showing the seasonal increase in geomagnetic activity. The 12-month smoothed  $A_p$  index centered on February 2010 is 5.1, about the same as January. Expect the overall geomagnetic activity to be quiet to active during December. Refer to the Last Minute Forecast published in CQ magazine or on my website (<http://prop.hfradio.org>) for the outlook on what days that this might occur.

### I'd Like To Hear From You

As always, I welcome your thoughts, questions, and experiences regarding this fascinating science of propagation. You may email me, write me a letter, or catch me on the HF amateur bands. Please come and participate in my online propagation discussion forum at <http://hfradio.org/forums/>. If you're on Facebook, check out <http://tinyurl.com/fbswx> and <http://tinyurl.com/fb-nw7us>. Speaking of Facebook—check out the Popular Communications magazine fan page at <http://tinyurl.com/fb-popcomm>.

Until next month, 73 de NW7US. Tomas Hood  
 nw7us@hfradio.org  
 P.O. Box 1980, Hamilton, Montana 59840

## WorldRadio Online

Here's a peek at a few of the columns scheduled for the December issue of WorldRadio Online

- \* Trail-Friendly Radio
- \* DX World
- \* Rules & Reg
- \* Propagation
- \* Aerials

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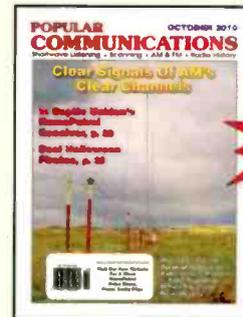
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## No Cows Have Been Harmed...

by Bill Price, N3AVY  
chrodoc@gmail.com

As Oscar Meyer said, "We have a wiener!" Well, a winner, anyway. George Grotz, AA4D, from within a hundred miles of my own Cowfield County had the detective skills to figure out that the mystery harmonica player introduced by Henny Youngman was my friend Chris Bauer, K2CJB. George has foolishly invited me to visit his ham club, which I hope to do sometime in the coming year—maybe when they're having some sort of big meal.

On an electrical note right here in Cowfield County, I was sitting in my lawn chair shooting my air rifle at Larry—my metal knock-down squirrel target—when I noticed that the electric fence, just six feet to my left, was hanging limply between its posts. This is not a good thing in the cow business, in which my landlord is engaged.

Being the good person that I am, I thought I might do a quick fix on the broken fence, and then let the landlord know that he needed to do some permanent repairs later.

I honestly wish Norm had been with me. Standing there all alone, I knew there would be no one to watch whatever it was that I was about to do, and therefore no one to appreciate the fool I was about to make of myself. Norm always liked a good laugh.

The part of the fence on my left was "hot," as it were, which a person can tell my very by quickly brushing his hand across the wire and feeling a little "zap." That meant that the part of the fence on my right was not "hot." Daringly, I grabbed it. Lucky guess.

These days neat little rigid plastic standoffs (standoff?) are used on a common T-shaped metal fence post. My problem was that the last one of these had been installed sideways, which allowed the electrified wire to rub against the (grounded) metal post. Whoever installed it used a short piece of insulated wire to span the short section that rubbed along the metal post. The insulation did not last long.

I looked for a piece of rubber or plastic tubing to slip over the wire—not a chance. The only tubular insulator around was the garden hose, and cows or no cows, Mrs. N3AVY would not have liked my cutting a section from that.

And for those of you who might wonder why I did not seek out the charger—the device that put the electricity into the fence in the first place—let me just say that I don't walk well over

*"...as I stood there with two pairs of insulated needle-nose pliers in hand, I began to realize just how difficult it was going to be to attach the two ends to make a strong joint, while not getting zapped every quarter-second or so."*

a few hundred yards of pasture while seeking such a device.

I thought that some gaffer tape—the television studio version of duct tape—would act as an insulator and that five or 10 wraps of it would keep it from shorting against the fence post until my landlord got around to effecting a proper fix.

Boy, was I wrong!

That fence kept zapping me through first one, then two, then three, then four, and finally about 10 wraps of gaffer tape until I admitted defeat and went to look for something else.

Finally, a short plastic bottle was discovered in Mrs. N3AVY's trunk. Of her car. She is not a pachyderm. I cut a hole in the bottom of the bottle, slipped it over the wire, and finally had an insulator, which I held in place with the gaffer tape, with the hot end of the wire sticking out of the neck of the bottle, waiting for me to connect it to the "cold" end, which was to my right.

Untwisting the "cold" wire was easy. Then, as I stood there with two pairs of insulated needle-nose pliers in hand, I began to realize just how difficult it was going to be to attach the two ends to make a strong joint, while not getting zapped every quarter-second or so.

It's not fun making a fool of yourself, but I've always thought that if you're going to do it, you should do it in front of friends so that they can at least get a good laugh out of it. Maybe I need a video camera.

In the end, I grabbed the \*%\$! wires and twisted them together as fast as I could, twitching about every quarter-second for what seemed to be an eternity. And not one person was there to enjoy it.

*Bill has been seen twitching his way down the lane as recently as last weekend. If you're in Cowfield County and you see him, be sure to wave, but don't get too close.—Editor*

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