

## ICOM IC-R20 Portable Receiver

The ICOM IC-R20 is a new product which fits into the category of superhandheld. Other superhandhelds include the older ICOM IC-R10, AOR AR8200, and Yaesu VR-500. They are distinguished from other portable models by their shortwave coverage, SSB/CW detectors, and full numeric keypad.

### ◆ The Basics

The IC-R20 covers 150 kHz to almost 3305 MHz. The USA version omits the 800 MHz range cellular phone bands. Like ICOM's USA version IC-R5 (July 2003 MT), the USA version IC-R20 cannot receive 822 - 824, 849 - 851, 867 - 870, and 894 - 896 MHz, even though these bands are not allocated to cellular telephony. The wider gaps

are troublesome to those of us who monitor the conventional and trunked systems in those ranges.

Reception modes include USB, LSB, CW, AM, WFM, and FM. Narrow FM is not available, though it would be useful for monitoring lower bandwidth MURS and land mobile signals.

A built-in RF gain control can be used to reduce the IC-R20's SSB and CW sensitivity. The IC-R20 also has an attenuator which can be used in all modes, and I measured 22 to 31 dB of attenuation during spot checks at various frequencies.

### ◆ Furnished as Standard

The IC-R20 comes with a BP206 3.7 volt, 1650 mAH lithium ion battery and wall wart charger. A small plastic tray is included which permits the radio to be powered using three AA batteries of your choice instead of the BP206.

The antenna jack is a good, old-fashioned BNC connector. For VHF/UHF reception, ICOM supplies a 23 inch, telescoping antenna which has two hinged joints near the connector. You can lay the radio flat on its back while changing the antenna orientation.

Speaking of antennas, an internal bar antenna may be selected for AM BCB reception and the earphone cord can be used for FM broadcast reception.

A spring loaded, plastic belt clip is furnished, though I didn't use it. The IC-R20's display is not recessed and this could make it easier to scratch the display if brushed up against something while wearing the radio on a belt.

### ◆ Dual Frequency Reception

The Dual Watch feature sets the IC-R20 apart from other portable receivers. During Dual Watch, the display is split into two parts (A and B) and the IC-R20 becomes two receivers, each with its own volume and squelch settings.

The flexibility is extraordinary. You can listen to two different signals simultaneously. You can tune a VFO or sit on a memory channel using the A receiver while the B receiver scans memories.

Text labels and tone indicators are displayed for both A and B receivers. In Dual Watch mode, the IC-R20 fits twice the amount of information on the display by using a smaller font size. This makes the display more difficult to read, of course.

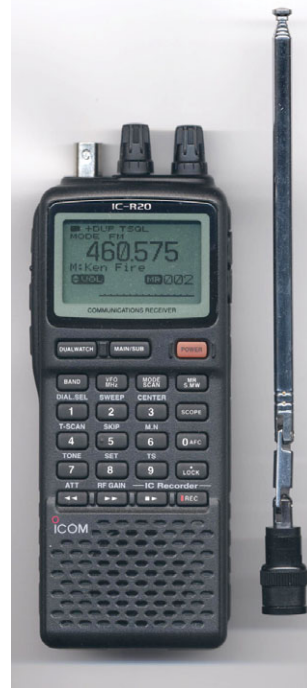
### ◆ Memories, VFO, and Scanning

You can program frequencies into 1000 memory channels, numbered 0 to 999. Each channel may be set with an optional CTCSS or DCS squelch code and an offset amount, used chiefly for monitoring repeater inputs. Each channel may be assigned to 1 of 26 memory banks. Up to 100 channels may be assigned to the same bank.

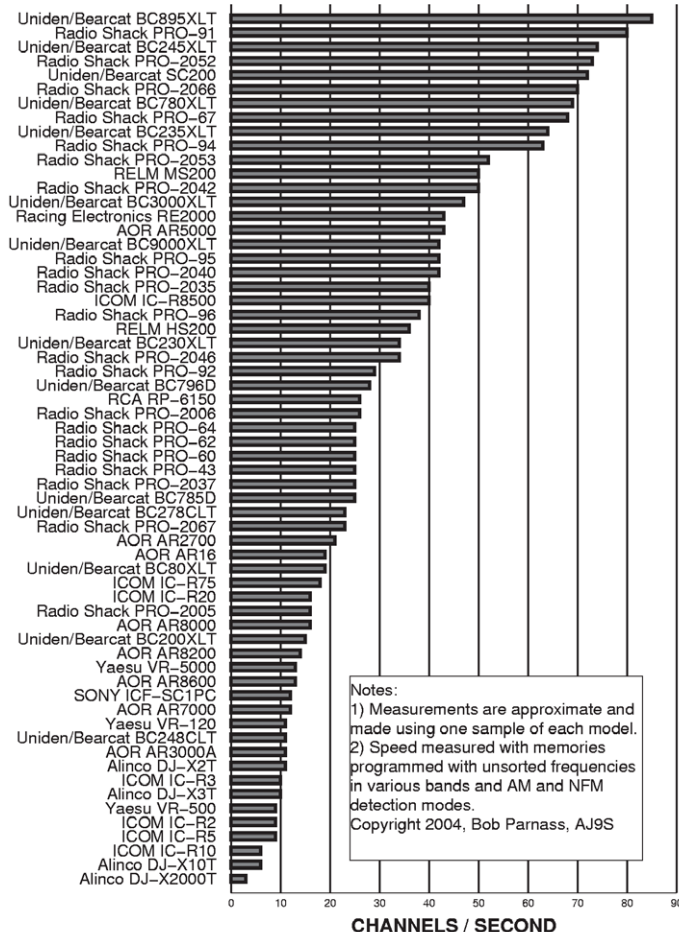
An 8-character label can be entered for each channel and bank. You can select whether the IC-R20 displays the bank or memory labels, but not both simultaneously.

At 16 channels per second, the IC-R20 scans memories considerably faster the IC-R2, IC-R5, and the IC-R10 I measured.

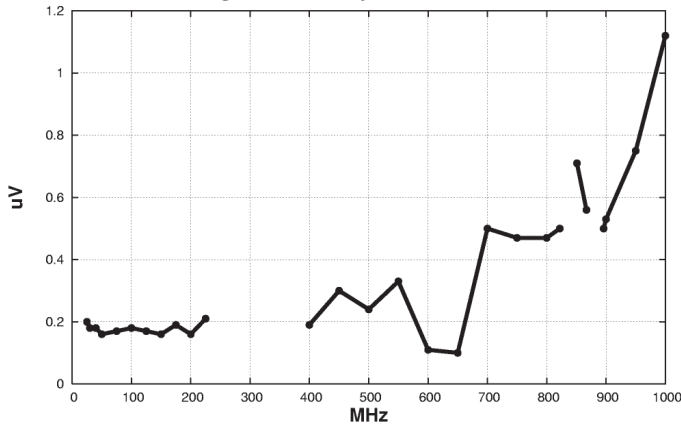
A VFO is provided which permits tuning across bands independent of the memory chan-



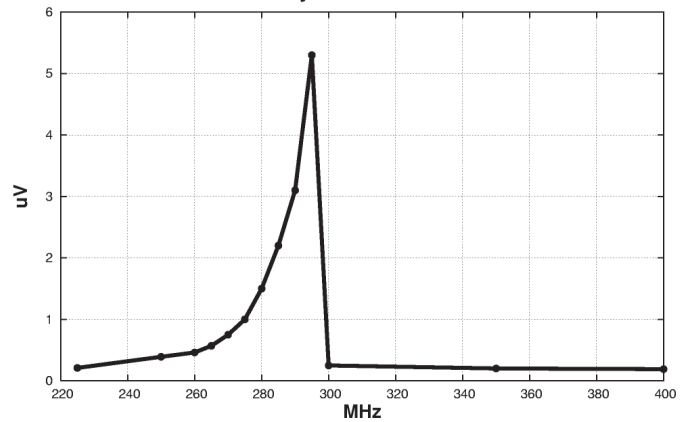
## PRACTICAL MEMORY SCAN SPEED



**ICOM IC-R20 FM 12 dB SINAD Sensitivity,  
Excluding UHF Military Air Band, s/n 0601162**



**ICOM IC-R20 FM 12 dB SINAD Sensitivity,  
UHF Military Air Band s/n 0601162**



nels. A second VFO may be used in Dual Watch mode. Frequencies may be entered directly via the numeric keypad or you can press the BAND key and use the multipurpose knob atop the radio.

You can search between frequency limits, and 25 pairs of registers are set aside for defining them. Most of the IC-R20's other scan types are the same as the prior ICOM models, with an important exception: the IC-R20 can scan multiple memory banks in any combination. For example, you can choose to scan banks A, B, and N if you link them together using one of the setup menus.

#### ◆ Other Features

ICOM's optional CS-R20 software lets you configure the radio settings using a PC running Microsoft Windows. An extra cost OPC-1382 is required to connect the radio to the PC's USB port. I use Linux, not Windows, and didn't try the CS-R20 software.

The IC-R20 can be computer controlled via a CI-V connection to its earphone jack. ICOM documents the interface commands in the IC-R20 instruction manual, but does not offer control software.

An internal audio recorder lets you record signals when the squelch is open, and this an excellent feature. Three audio quality levels are available and I use the Normal (middle) setting. You can record up to 260 minutes using the low quality setting. Recordings are played back through the IC-R20. The CS-20 software can transfer the recordings to and from a PC, but not play them on the PC.

I am impressed with the Band Scope's operation. You can listen to signals as the band scope sweeps. The sweep step size is selectable (1 to 100 kHz) and directly determines the sweep width (28 kHz to 2.8 MHz).

#### ◆ Sensitivity

With one exception, the sample IC-R20 is very sensitive below 700 MHz and fairly sensitive below 900 MHz. It is insensitive in the 280 to 295 MHz range, and I graphed the UHF military air band sensitivity separately to provide a more detailed view.

Portable scanners are designed to work best on VHF/UHF when connected to small antennas, but I often connect them to a rooftop an-

tenna and observe the results. Most handhelds experience overload and intermodulation when connected to a full size, roof mounted antenna, and the sample IC-R20 is no exception. NWR weather transmissions and television audio is heard while searching portions of the UHF military air and VHF-high bands.

You will have to experiment to find an antenna suitable for shortwave reception. I hear just a few shortwave signals when using ICOM's supplied telescoping antenna and reception is very weak. Shortwave reception improves when I clip a short length (10 ft.) of wire to the antenna.

The IC-R20's variable RF gain control is useful in mitigating interference from intermod and overload. The control provides finer adjustment than merely engaging the attenuator. The idea is to find an RF gain setting which eliminates the interference but not the desired signals, a balance which is sometimes elusive when using a large outdoor antenna.

The IC-R20 is able to receive aero beacons reliably below 500 kHz when connected to a 132 foot wire dipole antenna by using my homemade broadcast band rejection filter and activating the IC-R20's attenuator. Both filter and attenuator are required to prevent AM BCB stations from overloading this IC-R20.

#### ◆ Other Notes

The radio powers up in the same condition it was when last turned off, e.g., scanning memory, limit searching, etc. The rubber pushbuttons have a firm feel and provide tactile feedback. The audio is quite good – on par with the IC-R2.

I am impressed with the IC-R20's features and overall VHF/UHF performance. It's fun to use, has a flexible battery arrangement, and is decently constructed. I wish it had an internal preamp feature which would permit the telescoping antenna to be effective below 30 MHz.

#### ◆ Goodbye for Now

I have chosen to make this my final monthly *Scanner Equipment* column after a 10 year stint. I want to devote more time to riding recumbent bicycles, metal detecting, ra-

dio monitoring, woodworking, computing, walking, reading, and discovering new interests.

Thanks for reading the column. Writing it has been a wonderful experience. I've had an opportunity to test the finest equipment as well as some mediocre gear and to tell you about both candidly. Thanks to Bob Grove and editor Rachel Baughn for giving me the freedom to write with honesty.

*The ICOM IC-R20 (stock code SCN20) is available from Grove Enterprises for \$519.95 (plus shipping).*

NOTICE: It is unlawful to buy cellular-capable scanners in the United States made after 1993, or modified for cellular coverage, unless you are an authorized government agency, cellular service provider, or engineering/service company engaged in cellular technology.

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