A Very Brief Test Of The Icom IC-R1500 Receiver

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October 2007

The IC-R1500 PC-controlled receiver is an evolution of their IC-R100 and IC-R1000 receivers, released many years ago. I got a chance to look into this from DX-er and radio amateur Olav Skår from Stavanger, Norway who visited us during the KONG17 DX-pedition in October 2007. This test, if such an ambitious word can be used, focuses on its abilities as a MW DX-receiver only.

The IC-R1500 covers 100 kHz to 3,300 Mhz. The one I borrowed is a US version. All common demodulation modes are supported. It is connected to the PC by a standard USB cable, and it has a small wired remote unit (called a controller) so it can run independently from the PC. The weight is 1.2 kg (plus 0.2 kg for the remote) and it measures 146x41x206 mm. Small and handy, in other words.

According to specifications, AM bandwidths are 6 and 15 kHz while SSB bandwidths are 2.8 and 6 kHz. Sensitivity below 1.8 Mhz is claimed at «less than 25 µV» for AM, 1kHz/30% modulation, 6 kHz bandwidth. For the SW bands sensitivity is stated as «less than 2.5 µV».

As is usual when I test a new receiver, the signal generator is the first instrument I connect to it. Sensitivity measurements confirmed that the Icom sensitivity claims are extremely conservative as usual. On MW, I found sensitivity (using the same parameters as above) to be around -96 dBm (less than 4 µV) throughout the band. Sensitivity on a number of SW frequencies up to 10 Mhz was around -108 dBm (1 µV). No doubt, Icom had placed a MW attenuation pad of 10-12 dB below 1.8 Mhz. 4 µV may be acceptable in areas with high signal levels, but is nowhere near what a serious MW DX-er would accept. A/B-tests with my modified (0.6 µV) Icom IC-746Pro transceiver confirmed this. As long as the stations were well readable it performed OK but as soon as signal levels dropped the IC-R1500 would lose the signal.

I suppose that is is possible for the experienced person to remove the attenuation pad and let the radio enjoy its normal 1 µV sensitivity.

The filters appear to have very good shape factors although I did not measure them. The bandwidths of 6 kHz for «narrow» AM and 2.8 kHz for «narrow» SSB seem well chosen. The radio has Fast and Slow AGC settings, but no Off setting. I found the audio quality to be good, although I only listened to its own, small internal speaker. The old UT-106 DSP module can be fitted to the radio, enabling automatic notch filtering and noise reduction. Experience from other Icom receivers I've had shows that the DSP module does have its pros, especially for reducing heterodynes, but it compromises audio quality somewhat. It wasn't fitted into the one I borrowed.

Like the other Icoms, the IC-R1500 has a wide selection of tuning steps than can be selected. This simplifies tuning a lot.

I do not have the tools to measure its strong signal handling. I did run it alongside with my other receivers, connected to long beverage antennas and in-house preamplifiers. While the signal level at the time of testing wasn't very high, it showed no sign of overloading or creating IMDs. My educated guess is that it will not face problems on MW or SW due to overload in a normal signal level environment.

Icom supplies its own software which installs without problems. The application has a Tool Bar

from which one can choose 14 functions including On and Off. When you start the software, you really see that this is a scanner, not an HF receiver primarily. The «Multi-Function Receiver Screen» is what seems to be the main control display. Several functions, like tuning, audio, squelch and passband tuning are represented by potentiometer look alikes, making adjustments unnecessarily difficult – not least because of their modest size. Adjustments are done by pointing to the «pots» and right-click or left-click with the mouse or mousepad. Changing mode and bandwidth is easy, but after changing between LSB and USB you actually do not see if you're in USB or LSB. No good for someone DX-ing splits on MW. The same goes for changing tuning steps (from 9 to 10 kHz for instance).

After a while I actually found that another display, the «Simple Screen» is a better solution, at least a bit faster.

Actually I do not see the point of making a visual representation similar to a «real» radio on a PC display. Knobs are for physically turning and/or pressing and belong to a real radio. A PC programmer has access to a totally differerent set of tools that could make PC-controlling of a receiver much more intuitive and simple. A fancy display is more often than not an impractical one.

Very much is dependent on mouse clicks. I did find though that Icom can make extensive use of user defined keyboard shortcuts which should speed up operation quite a bit and eliminate some of the problems mentioned above.. Also, since its main purpose is for scanning, it has 2600 memory positions. So you could program every MW frequency with its own parameters, and make things easier that way. It takes some time to program every 9 kHz and every 10 kHz MW channel though.

I thought the remote control might make things a bit easier, but I experienced the contrary. Its ergonomics is very convoluted. Going from say 10 kHz tuning steps into fine tuning, like you can with other Icoms, is a long process. Every now and then a station is 10, 20 or 30 Hz off its nominal frequency and if you're in ECSS mode you would want to fine tune for best audio. With the IC-R1500 you'd probably give up and tune to another frequency instead. Again, you could make use of its memory positions.

The software has a basic built-in audio recording facility. It records wav-files in 44.100, 22.050 or 11.025 kHz and the file names contain the date of the recording plus a number from 000 upwards. There is no playback function.

All in all, this is not the receiver of choice for the MW DX-er. Actually I don't think it's the receiver of choice for any below 30 Mhz DX-er, but it may work well for the casual SW or MW listener. How it performs as a scanner I don't know and I will not try to find out. That said, I've read that many scanners have SW and MW sections with very pedestrian performance. The sensitivity (apart from MW), selectivity and audio quality of the IC-R1500 is good. But the user interface is, at least for serious MW/SW DX-ing, not satisfactory.