

IC-V82

144MHz VHF FM Handheld Transceiver

QST Product Review

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PRODUCT REVIEW

ICOM IC-V82 2 Meter Handheld Transceiver



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Those looking for a basic 2 meter FM handheld transceiver will certainly want to consider the latest entry into this highly competitive market from ICOM—the IC-V82. It is specified to pack a full 7 W on high power, enough signal whether you are providing support communications in an emergency or checking into the net on the local repeater. If you are looking for a similar transceiver for 70 cm, ICOM offers the IC-U82 for that band. What's really new is that this radio is easily upgradeable to D-STAR digital voice and data operation, as described later in the column.

So What's it Like?

The first impression of the 'V82 may be about its physical size. The last several handhelds I have reviewed were smaller in size. The 'V82 is not bulky, about comparable to a standard cordless home telephone. My first impression was that it was a substantial radio, one that you would definitely feel clamped onto your belt ready for action. It feels good in my hand and I was comfortable using it

while walking around the neighborhood. Its sleek modern look is appealing to me.

ICOM is known for quality and the 'V82 is next in the line of this proud tradition. Its documentation is thorough, though at times finding information in the 84 page manual took some digging.

How's it Play?

My standard first test is "how easy is it to get on the air and make a contact with this radio." The 'V82 passes this one with relative ease. Attach a charged battery pack and the provided BNC-connected flexible antenna and you are ready to go.

With the exception of the VOLUME control (also a MULTIFUNCTION control; see below), the large knob on top of the radio, all of the buttons necessary for operating the 'V82 are on the front panel as shown in Figure 1. To turn the radio on, push and hold the orange button on the panel until you hear the radio beep, and you are powered up. For fast tuning, you can either manually enter the operating frequency on the keypad or you can use the UP and DOWN arrows on the top row of the keypad. The 'V82 automatically sets in standard repeater offsets, depending on the band segment you select. Punch up the desired frequency, and unless you need to set repeater access tones, you can press the push-to-talk button on the side and you are on the air—straightforward and simple.

Would you prefer to use the knob on the top of the radio as a turning dial instead of a volume control? You can use the initial set mode to change this option. When you do so, the UP and DOWN arrow buttons will function as the VOLUME control for the radio.

Another operation basic to the casual user is setting the squelch level. It's as simple as pressing the MONI button on the keypad and using the UP and DOWN arrows to loosen or tighten the squelch as desired. Just be careful. If you have big fingers as I do, you may have

to learn to use a light touch on the keypad to avoid hitting multiple keys.

The digital display is black on gray, which I found a bit difficult for me to read under some lighting conditions, even while using the backlight function. The layout of some of the keypad buttons is different from some other radios I've tested. The *, 0 and # buttons are located on the right side and the A, B, C and D buttons are across the second row of the keypad. As you learn to use the radio, this layout should become second nature.

I found the method of setting the various functions from the keypad took some getting used to as well. For example, the process for changing power level was: first push keypad button FUNC to activate the function tier, then push keypad H/M/L to change the power level. However, if you wanted to change the power by two levels, from HIGH to MEDIUM for example, you would have to do the sequence twice—the first to go from HIGH to LOW, the second from LOW to MEDIUM.

Thanks for the Memories

The 'V82 comes with the bells and whistles that one expects in this new generation of compact handhelds. You will find 207 memory channels, complete with the capability of programmable features for each, such as subaudible tone encoding, tone squelch, odd repeater offsets and the ability to give channels names for easy identification on the display.

A very handy function, especially when traveling in an unfamiliar area, is *tone scan*. This function allows the operator to monitor a repeater frequency to determine the access tone or digital coded squelch (DCS) sequence in use. The radio will remember it for immediate use or it can be stored in memory for use later.

The display method for the frequency can be set in one of three ways. If you prefer to see the specific frequency, you can set the radio to FREQUENCY indication mode. If you prefer seeing the display of the programmed memory channel, then use the CHANNEL NUMBER indication setting, although this will limit the availability of some of the available user functions. If you have set up alphanumeric names, then the CHANNEL NAME indication mode can be utilized.

There is a large demand for VHF repeater frequencies. This sometimes means the need for reverse and non-standard shifts in the

Bottom Line

ICOM brings digital voice and data capability to a handheld transceiver that is compatible with the open D-STAR standard yet still can function as an analog transceiver.

Table 1
ICOM IC-V82, serial number 2501315

Manufacturer's Specifications

Frequency coverage: Receive, 136-174 MHz; transmit, 144-148 MHz.

Power requirements: 6.0-10.3 V dc**; receive, 0.25 A (max); transmit, 2.6 A.

Size (height, width, depth): 5.2"x2.1"x1.4"; weight, 7.1 ounces.

Receiver

Sensitivity: 12 dB SINAD, 0.16 μ V.

Adjacent-channel rejection: Not specified.

Two-tone, third-order IMD dynamic range: 65 dB, (spacing not specified).

Two-tone, second-order IMD dynamic range: Not specified.

Spurious and image rejection: 80 dB.

Squelch sensitivity: 0.11 μ V.

Audio output: 300 mW at 10% THD into 8 Ω .

Transmitter

Power output: 7 W high, 4 W mid, 0.5 W low. Under battery power; Powered by 10 V dc supply;

Spurious signal and harmonic suppression: 60 dB.

Transmit-receive turnaround time (PTT release to 50% of full audio output): Not specified.

Receive-transmit turnaround time ("tx delay"): Not specified.

Unless otherwise noted, all dynamic range measurements are taken at the ARRL Lab standard spacing of 20 kHz.

*Measurement was noise limited at the value indicated.

**Using ICOM-supplied battery pack.

Measured in the ARRL Lab

Receive and transmit, as specified.

Receive, 0.16 A (max volume, no signal); transmit, 2.4 A, tested at 10 V.

Receiver Dynamic Testing

For 12 dB SINAD: 0.11 μ V.

20 kHz offset from 146 MHz, 69 dB.

20 kHz offset from 146 MHz, 69 dB,*
 10 MHz offset from 146 MHz, 88 dB.

82 dB.

IF rejection, 104 dB;
 image rejection, 108 dB.

0.09 μ V at threshold.

350 mW at 5% THD into 8 Ω .

Transmitter Dynamic Testing

7.2 W high, 3.9 W mid, 0.5 W low,
 7.4 W high, 4.0 W mid, 0.5 W low.

70 dB. Meets FCC requirements for spectral purity.

Squelch on, S9 signal, 116 ms.

65 ms.

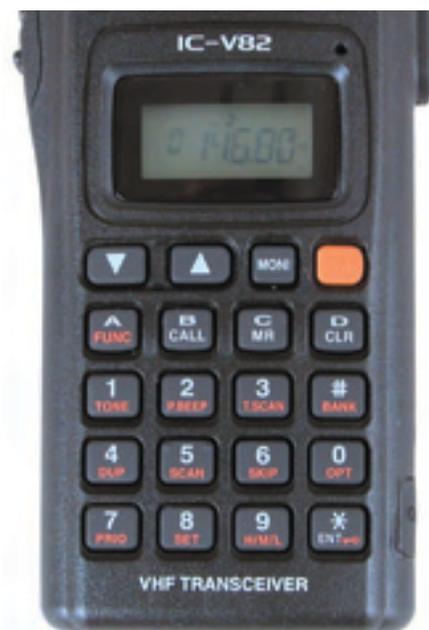


Figure 1—Close-up of the IC-V82 control panel and display.

duplex mode, and the 'V82 can readily be programmed to support these in addition to the standard offsets. The user can program these special cases into stored memory channels. If you don't want to store the offset in a memory, you can use the FUNCTION/4*DUP button to change the offset for immediate use. Again, if you wish to change from a standard offset to simplex, for example, you will have to go through the process twice, as you did to change power levels.

It is becoming rare to find repeaters that do not require an access tone, so you will want to make sure you are familiar with how to program these. You will need to remember that you first need to set the subaudible tone frequency, using the A/FUNC and 8/SET button. To change the tone, you will use the VOLUME/MULTIFUNCTION knob on the top. Once you have selected the correct tone, press the 8/SET button again to confirm the tone. To activate the tone on the selected stored memory channel of current display frequency, you will need to then press A/FUNC and keypad 1/TONE in sequence until you see a small "musical note" above the channel frequency display. That will tell you the tone is set and ready for transmit.

Extra Bells and Whistles

The 'V82 has numerous features that will be valuable to those interested in more advanced operation. I formerly lived in an area where I monitored a repeater to listen for friends. I often found myself turning off the radio because of other chatter on the frequency. The 'V82 offers the capability to use the DTMF touchtone codes as a *message pager* to allow calls to be heard by particular radios. This would have been a perfect solution to my problem. Some special programming of the radio is required to use this function, but the step-by-step instructions in the manual allow this feature to become yet another useful tool in an amateur's bag of tricks.

Perhaps the most exciting new feature to the 'V82 is that it has been designed operate in digital voice as well as D-STAR low-speed data modes, to 9600 kbps. The 'V82 has a special socket to accept the optional UT-118 digital encoding unit (see the remainder of this review for more about the UT-118 and digital voice and data) that provides for simultaneous digital voice and data in addition to regular FM voice operation. The 'V82 thus can be equipped to provide a new level of capability and versatility.

The 'V82 provides very simple access to local NOAA weather channels, of particular interest to those active in local SKYWARN or weather watch activities. It also incorporates the ability to notify the user when NOAA broadcasts the special weather alert tone. When the weather alert function is activated, the 'V82 monitors the selected weather channel every 5 seconds. If NOAA has issued no alert, the radio continues to operate in whichever mode you have it set for. When an alert is issued, the 'V82 displays the alert on the LED screen and sounds a beep tone until acknowledged.

Handheld 2 meter FM transceivers have come a long way in my 35 years as a licensed amateur. From large, bulky crystal controlled radios the size of a small boom box to the first of the synthesized radios to the next generation that included tone access pads for autopatch use to today's microchip marvels in miniature form, the handheld has evolved not only in style. It has become one of the standard pieces of equipment in almost every amateur's shack or pocket. With its design features and options expanded to incorporate today's digital technology and the quality of the ICOM name behind it, the 'V82 is a durable, high quality handheld transceiver—one that any amateur would enjoy having in their shack or in the field.

Manufacturer: ICOM America, 2380 116th Ave NE, Bellevue, WA 98004; tel 425-454-8155; www.icomamerica.com. Price: IC-V82, \$229.95; IC-V82 Sport, identical to the 'V82 except it comes with a holder for AA batteries instead of rechargeable and trickle charger, \$199.95.