

# IC-T70A

Dual Band FM Transceiver

## QST Product Review

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# ICOM IC-T70A Handheld Dual Band Transceiver

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ARRL Contributing Editor

The IC-T70A is the dual band (2 meter and 70 cm) sister of the IC-V80. Physically it appears to be almost identical to the 'V80, but there are a few differences. The display window is taller, allowing for a better signal strength meter than the tiny meter on the 'V80. (I question the utility of having a signal strength meter at all on a handheld radio; I'd rather have the space used for larger display characters). The dual band flexible antenna connector is the SMA screw-in type. A BNC adapter is available.

## Power Options

There is a dc input jack on the 'T70A, which is absent on the 'V80. Thus, a desktop drop-in charger is employed to charge the 'V80, while a regular (wall cube) charger is connected to the dc input jack of the 'T70A. It takes about 8 hours to charge the standard NiMH battery pack. An optional quick-charge desktop drop-in charger is available — the BC-191. An optional Li-ion battery pack (BP-265) is available and requires the BC-193 desktop charger.

A nice feature of the dc input jack is that the radio can be used with an external dc power supply with an optional adapter (OPC-254L). A cigarette lighter socket can also be used with another optional adapter. The standard battery pack (BP-264) is 7.2 V with a capacity of 1400 mAh. The Li-ion pack is 7.4 V with about 2000 mAh of capacity. ICOM claims about 10-12 hours of radio operation with the BP-264, depending on transmitter power output, of course. This is based on a ratio of 5% transmit time, 5% receive time, and 90% of standby time if the auto power save function is employed. The BP-265 offers a couple of hours more.

A nice feature of the unit is that while the battery is being charged, CHARGE is seen in the display screen, and it disappears after the battery is fully charged. This eliminates the guessing game as to when the unit is charged. There is no such function for the IC-V80, although the charger has an LED to indicate charge status.

For emcomm use, I recommend getting the optional AA battery holder case and a good supply of AA batteries, which will last a long time in the absence of commercial mains to charge the NiMH battery pack as discussed in the IC-V80 review.

## Features and Functions

Functionality is also different from the 'V80: There is a concentric knob on top of the radio that allows selecting the operating frequency in both VFO and memory recall (MR) modes, SET mode selections, scanning direction, squelch level (while pushing the MONI squelch defeat button), and programmed memory bank. The outer knob is the VOLUME control and during SET mode operation, it is rotated to select the options.

The keypad seems simpler to operate because there is no FUNCTION key to press prior to setting power levels and operating modes (VFO/MR/Call/WX). Instead, the operator merely holds the corresponding button down for one second to enter SET mode or change the band, start a scan or tone scan, or turn the subaudible tone on. The result is a cleaner look to the keypad and only one button to push versus the two steps required to change a mode on the IC-V80. I like it better than the 'V80's keypad.

As with the 'V80, there is plenty of audio for outdoor use or operation in noisy locations. I ran the unit through the same tests described in the IC-V80 review with roughly the same results.

The IC-T70A has 300 memory channels, and two call channels. Memory channels include scan edge channels, and 26 memory banks in each band for storing groups of frequencies. Up to six characters can be entered to give a memory, bank or scan, an alphanumeric name, as described in the discussion of the IC-V80. That is one more character available than with the 'V80.

Nominal power output is 5 W on the HIGH power setting; 2.5 W on the MIDDLE level setting; and 0.5 W on the LOW power setting. All audio reports received from both repeater and simplex operators were fine. Mic gain is adjustable in the SET mode. The IC-T70A has an internal

VOX (voice operated transmit) function as does the 'V80, but I did not test these functions. An optional headset and plug adapter cable are necessary. VOX level and VOX delay time are adjustable.

The unit seems very rugged and falls under the same codes (IP54 and MIL-STD 810) as discussed in the IC-V80 review.

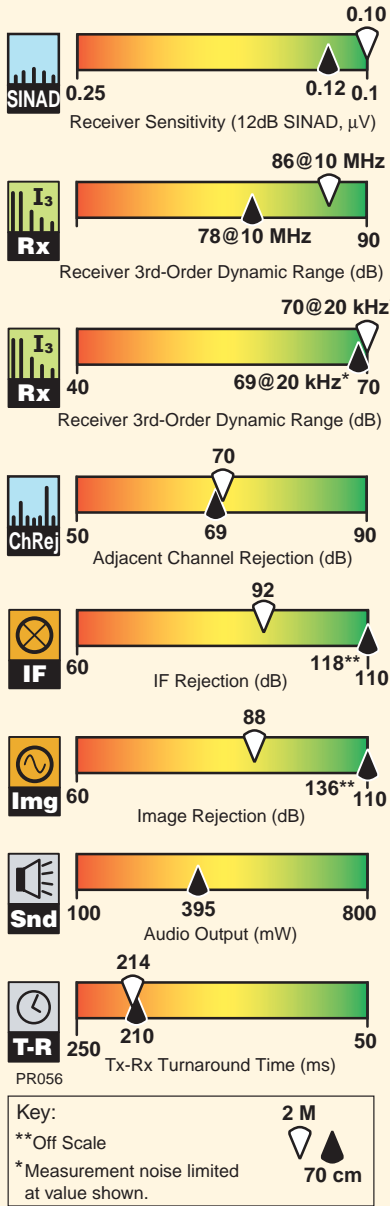
Other features include a NOAA weather alert, power save function, a time out timer to save the transmitter, PC programmable with the optional cable and software, transceiver-to-transceiver cloning (also optional), 16 DTMF autodial memories, auto power off and an LCD backlight.

If there is 70 cm activity in your area, the IC-T70A would be a good choice, although it is a bit more expensive with prices about \$100 higher than the 'V80. The manuals for both radios are very good and easy to understand. After a 5 minute quick read, you are on the air.

*Manufacturer:* ICOM America, 2380 116th Ave NE, Bellevue, WA 98004; tel 800-872-4266; [www.icomamerica.com](http://www.icomamerica.com).



## Key Measurements Summary



## Bottom Line

The IC-T70A is a solid dual band handheld transceiver that includes a wide range of features yet is easy to operate.

**Table 2**  
**ICOM IC-T70A, serial number 05001097**

### Manufacturer's Specifications

Frequency coverage: Receive, 136-174, 400-479 MHz; transmit, 144-148, 420-450 MHz.

Modes: FM, NFM.

Power requirements: 7.2 V dc (battery)<sup>†</sup> or 10-16 V dc external supply; receive, 450 mA (max audio, internal speaker), 300 mA (max audio, external speaker), 90 mA (standby), 40 mA (power save); transmit, VHF, 1.4 A (high), 1.2 A (middle), 0.6 A (low); UHF, 2.1 A (high), 1.5 A (middle), 0.8 A (low).

### Receiver

FM sensitivity: 12 dB SINAD, 0.18  $\mu$ V.

FM two-tone, third-order IMD dynamic range: Not specified.

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

Adjacent-channel rejection: Not specified.

Spurious response: Not specified.

Squelch sensitivity: 0.18  $\mu$ V.

Audio output: >700 mW at 10% THD into 16  $\Omega$  (internal speaker), >400 mW at 10% THD into 8  $\Omega$  (external speaker).

### Transmitter

Power output: 5.0 W (high), 2.5 W (middle), 0.5 W (low).

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.

Size (height, width, depth): 4.4 x 2.3 x 1.2 inches; weight, 13.4 ounces.

Price: IC-T70A, \$225. OPC-478UC USB cable, \$60; CS-T70 software, \$50; HS-95 headset, \$160 and OPC-2006 cable, \$25.

<sup>†</sup>Measurement was noise limited at the value indicated.

BP-264 7.2 V, 1400 mAh NiMH battery and wall charger supplied. Available options: BP-265 7.4 V, 1900 mAh Li-ion battery, \$70; BC-191 drop-in rapid charger for BP-264, \$70; BC-193 drop-in rapid charger for BP-265, \$70; BP-263 battery case for 6 AA cells, \$30; OPC-515L dc power cable, \$20.

### Measured in ARRL Lab

Receive and transmit, as specified.

As specified.

Receive, battery power, 432 mA (max volume, no signal, lights on); 280 mA (max vol, no signal, lights on, external speaker); 86 mA (standby, lights off), 42 mA (power save on).

Transmit, battery power, VHF, 1.7 A (high) 1.2 A (middle), 0.8 A, (low); UHF, 2.4/1.7/0.8 A at 8.2 V dc (full charge). External 13.8 V dc supply, VHF, 1.6/1.2/0.6 A; UHF, 2.2/1.7/0.8 A.

### Receiver Dynamic Testing

For 12 dB SINAD, 146 MHz, 0.10  $\mu$ V; 162.4 MHz, 0.14  $\mu$ V, 440 MHz, 0.12  $\mu$ V.

20 kHz offset: 146 MHz, 70 dB\*; 440 MHz, 69 dB\*; 10 MHz offset; 146 MHz, 86 dB, 440 MHz, 78 dB.

146 MHz, 86 dB, 440 MHz, 118 dB.

20 kHz offset: 146 MHz, 70 dB, 440 MHz, 69 dB.

IF rejection, 146 MHz, 92 dB; 440 MHz, 118 dB. Image rejection, 146 MHz, 88 dB; 440 MHz, >136 dB.

At threshold, 146 & 440 MHz, 0.38  $\mu$ V, 0.11  $\mu$ V (auto), 1.22  $\mu$ V (max).

395 mW at 10% THD into 8  $\Omega$  (external speaker); THD at 1 V RMS, 1.5%.

### Transmitter Dynamic Testing

Battery (8.2 V) or ext 13.8 V dc power: VHF, 5.2/2.5/0.5 W; UHF, 4.6/2.3/0.4 W

>70 dB, meets FCC requirements.

Squelch on, S9 signal, 146 MHz, 214 ms, 440 MHz, 210 ms.

146 MHz, 196 ms; 440 MHz, 194 ms.