

ICOM, which began the HF/VHF/UHF-in-one-radio revolution with the IC-706, has now joined the take-it-anywhere QRP category with its low-power IC-703, which even has its own optional backpack for operating while hiking. QRP Editor K4TWJ has our review.

CQ Reviews:

The ICOM IC-703 Portable/QRP HF Transceiver

BY DAVE INGRAM,* K4TWJ

ICOM has entered the world of QRP in a big way with the new IC-703, and we will surely hear more and more of these versatile little transceivers on the air during the weeks and months ahead. They are small, lightweight, energy efficient, loaded with features, and reasonably priced to boot. That, dear friends, is a winning combination from any point of view!

An understandably natural reaction when first seeing an IC-703 is that it looks just like ICOM's world-famous IC-706. That makes sense, as it is built on the same 2.2" x 6.2" x 7.6" main-frame with the same physical design/layout as an IC-706, and even uses the same menu set. It differs from an IC-706 with more battery-efficient circuitry, and enhanced/lower noise receiver, a built-in automatic antenna tuner, and a maximum output of 10 watts. The transceiver's microprocessor has also been changed such that it monitors and controls battery-current consumption of various circuits to ensure maximum in-field operating time. The features? Wow, this little rig is amazing! Our enthusiasm may be starting to out-pace our discussion, so let's step back and start with an overview of this little delight's general specs and assets.

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Photo 1— ICOM's new IC-703 is small in size, big in performance and a QRP'er's dream. It looks like an IC-706, but it is lighter in weight and specially designed for portable operation with a built-in automatic antenna tuner, DSP, and battery-efficient circuitry.

Facts and Figures

The IC-703 may be small in size, but it is loaded for big-time radio action with all-mode operation on 160–10 meters (the IC-703 "Plus" version includes 6 meters) and full shortwave reception from 300 kHz to 30 MHz. It sports 101 memories, five "scratch pad" memories, dual VFOs, three scan modes, an adjustable speech compressor and noise blanker, RIT, and IF Shift with a pop-up display of the IF response curve when adjusted. The receiver section seems to have a slight edge in high sensitivity and low noise floor compared to an IC-706, and its overall gain can also be stepped up 10 dB or down 20 dB with the panel-selectable RF preamp or attenuator. The

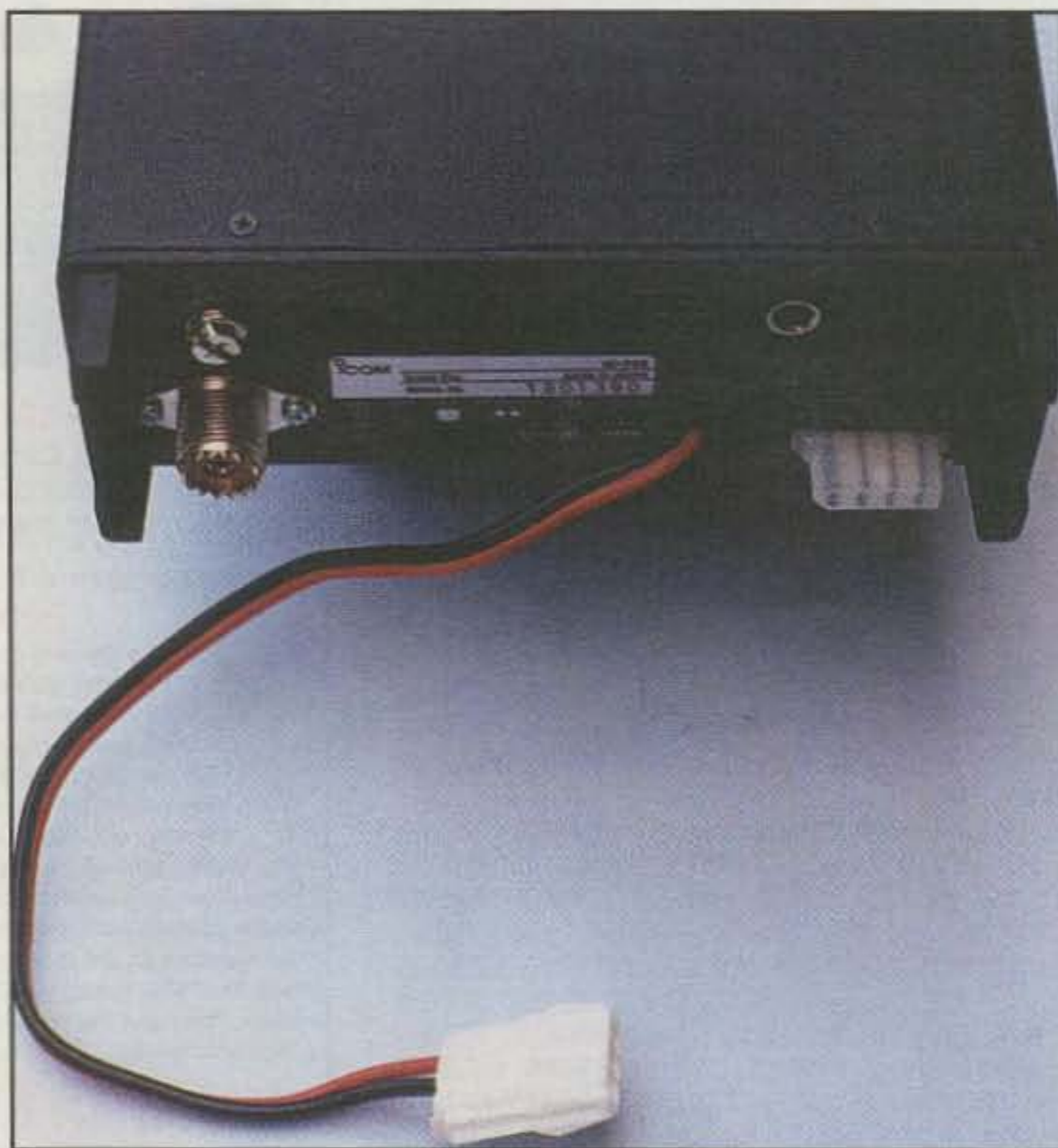


Photo 2— The rear panel of the IC-703 is flat without a protruding heatsink, so the transceiver can be operated while inside a carrying bag or backpack.

rig's out-of-the-box selectivity of 2.4 kHz on SSB and CW also seems fine to me, although some folks may prefer to add ICOM's optional FL-52A/500 Hz filter for CW work. Personally, I find using the wider SSB bandwidth and adjusting the IF Shift quite adequate for dodging any difficult-to-ignore QRM on both SSB and CW, and it lets me keep an ear on adjacent frequency activities at the same time. Additional "specs" on the IC-703, incidentally, may be found at <<http://www.icom.co.jp/world/info/ic-703/index.html>>.

Particularly notable is the IC-703's ability to operate with input voltage ranging from 9–15 volts. When the voltage is between 11 and 15 volts, power output is adjustable up to 10 watts. When the input drops below 11 volts, the IC-703's microprocessor reduces output to 5 watts and begins controlling current to various stages to reduce overall current demands and extend battery life. Does it work? Yes, indeed. At 9.6 volts, receive current is a scant 300 ma and transmit current is only 2 amps—noticeably lower than the 1.8 amp receive/10–20 amp transmit demands of most compact transceivers.

Special Features and Frills

ICOM's new IC-703 also has a lot going for it in the "fancy features and spiffy frills" department, such as an automatic antenna tuner, CW keyer with memory, high-stability TCXO (temperature-compensated crystal oscillator), plus bandscope and SWR plotting function.

The built-in automatic antenna tuner is really cool. It is a digital unit that uses latching relays for tuning. It only matches coax-fed antennas, but it has a quite wide impedance matching range and tames high SWRs with no problem. The big benefit of latching-type relays is they hold their settings without any "keep alive" current drain after tuning. In fact, the tuner will continue "holding its tune" even if all external power to the radio is removed, an always-appreciated asset when camping or operating portable.

The CW keyer is adjustable in both speed and paddle-lever selections, plus it has three 50-character memories that are dandy for "push-button contesting." Just program the memories, tap the buttons, fill in callsigns during QSOs, and experience contesting supreme!

Although a high-stability TCXO is optional in most transceivers, ICOM included it at the factory in the IC-703. Apparently, ICOM is anticipating many folks will use the little rigs for backpacking or operating in other areas of possibly extreme temperatures. A

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transceiver's TCXO, as you may know, determines its overall frequency stability from "cold turn on."

The on-board DSP (digital signal processing) has two modes: It can reduce band noise or minimize "beat tones" or tune-up carriers on SSB. The noise-reduction mode is adjustable in 15 steps, and like any DSP, it tends to introduce a strange watery sound when set near maximum. With the IC-703's built-in noise blanker minimizing intermittent noise and its DSP reducing constant noise, this double action pulls weak signals out of the mud surprisingly well.

Do you like to quickly check action on different bands when pressed for time or when first switching on your rig? The IC-703's bandscope function is quite helpful here. You just set the range to check and punch it up, and it gives you a visual display of signals above and below your tuned/center/displayed frequency. Nice!

One especially neat feature of the IC-703 is SWR plotting over a selected range. You just menu-select G2, set the steps of measurement and range to be analyzed, then tap the mic's PTT switch a few times while watching the IC-703 step through frequencies and graph SWR across the range. It is a killer—especially when mobiling—and it is ideal for determining resonant frequency and 2:1 SWR bandwidth of an antenna.

Using the IC-703

Whether used on a casual or continuous basis, the IC-703 is a most delightful little rig to operate. In fact, there is a natural tendency to forget that it runs low power (probably because it looks and handles like an IC-706) and call any station heard just like you do when running any 100 watt transceiver. Yes, and that positive mindset can prove beneficial for working in-country and DX stations alike, especially if you have the operating savvy to back it up. Then if you truly believe you can work the world (well, most of it) with QRP, you can! Attitude and confidence are everything!

The IC-703's receiver is really good. It is sensitive but not noisy from static, intermod, and/or AGC pumping like many economy-class rigs. The built-in automatic antenna tuner works like a champ and even remembers to switch back in or out of line when changing bands if you forget. Both semi and full CW break-in operation are smooth and pleasant. There is some T/R relay noise on CW, but it does not seem overly objectionable. Some transceivers are quieter here, but some are also noisier, and some even introduce CW chirp due



Photo 3— Rhonda Comer, KG4FVL, shows us the concept of operating pedestrian mobile with the IC-703. The rig is enclosed in its optional LC-156 backpack, fitted with a W6MMA multi-band MP-1 mini-antenna, and mated with a Heil "Traveler" headset with boom mic.

to T/R relay lag. The IC-703, however, delivers a very clean, clear output signal. The ability to operate full break-in style and listen to on-frequency activity in between your transmitted dots and dashes—to hear other callers in pile-ups and time your calls perfectly—incidentally, is a 6 to 10 dB advantage in communicating!

During the first few days of using the IC-703 (actually quickly grabbing 15 or 20 minutes in the morning and evening), I worked VK3BVM and OM3SEZ on 30 meters, 5R8FU and R1PQ on 20 meters, and G3HWS/FO-Tahiti on 17 meters. The DX success continued day after day and even included working Europe, South America, and Caribbean areas while mobile with a 6 foot whip. The little rig proved to be such a romper that I had to disconnect its power cable and hide the antenna's coax to stop it from working DX and blowing those "big guns" right off the bands. Would Dr. Dave jest?

A Real "Grab 'n Go" Rig

HF packing, pedestrian mobiling, or walk-and-talk HF'n and emergency preparedness are hot interests nowadays, and the IC-703's highly portable nature mates perfectly with those pursuits. How so? The transceiver's case is fully enclosed with a flat rear panel and does not need or have a cooling fan or a large



Photo 4— Rhonda shows us the IC-703's front panel/controller, which is carried in its belt clip pouch and connected to the transceiver's main body by an optional OPC-581 controller/rig separation cable.

rear heatsink. The rig and an optional 9.6 volt 2800 maH BP 228 battery pack can thus be stuffed into a carrying bag or backpack for on-the-spot operation anytime and anywhere. Realizing that fact, ICOM also developed the LC-156 "multi pack" for the IC-703. In addition to holding the IC-703 and BP-228 safe and sound, the backpack has mounting loops to hold a whip antenna, a removable belt pouch for the front panel/controller, and extra pockets for the microphone and maybe a key. An optional ICOM OPC-581 cable is used/required when the front panel is separated from the main body.

Two facts few people realize until actually getting into pedestrian mobiling or walk-and-talk HF'n is how important a counterpoise wire is to a vertical antenna and how much SWR changes as you move around. Any vertical that is a quarter wave or shorter must have a metal ground plane to



Photo 5— A close-up look at the optional LC-156 multi/backpack with a cover flap turned back so you can see how the IC-703 fits inside. It is "grab 'n go" HF'n at its best!

"work against." In an automobile or on a bicycle, the metal frame serves as a ground/counterpoise. When walking, however, you need to pull a quarter-wave length of braid or shield behind you as a counterpoise for the antenna. Since wavelengths are much longer on HF than on 2 meters; everything within 30 feet or more affects SWR. The IC-703's automatic antenna tuner is not just helpful here, it is invaluable. Just tap its tune button and walk on!

Conclusion

Overall, ICOM's new IC-703 strikes me as one cool "go anywhere, do anything" QRP transceiver at a quite affordable price. We hear rumors some amateurs still use their big 100 watt rigs reduced to 5 watts output for serious QRP pursuits and contesting, and that's fine (although folks habitually question if you are really running QRP when catching good DX). Factually speaking, however, nothing brings home the real radio thrills and excitement of low-power communications like hitting the bands with a brand-new and dedicated QRP transceiver such as the IC-703. It is akin to hitting the roads with a new automobile, but it is much less expensive. Try one (IC-703, not automobile!) in your own shack and see for yourself!

The IC-703, HF only, lists for \$853.32 (average street price under \$700); the IC-703, HF plus 6 meters, lists for \$919.99 (average street price around \$750). It is complemented by a wide range of accessories, including the previously mentioned LC-156 multipack, FL-52A/500 Hz CW filter, FL-222/1.8 kHz SSB filter, FL-257/3.3 kHz SSB filter, UT-102 voice synthesizer, and more. The transceiver and its accessories are available from dealers nationwide. For more information, check <www.icomamerica.com>. ■

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