



# Equipment Review

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## Icom IC-32AT Dual Band FM Transceiver

When Icom bring out a new piece of equipment, you can be sure that they have researched the situation very well. The new IC-32AT certainly has some advanced features and would definitely satisfy the most particular amateur.

The IC-32AT incorporates the following features: It is a hand-held transceiver with a maximum of five watts output on both the 144 and 430 MHz bands. The actual frequency coverage of the Australian version is 144 to 148 MHz and 430 to 440 MHz. The frequency steps for covering this range is selectable for either of 5, 10, 15, 20 or 25 kHz steps. The transceiver is normally supplied with the BP-70 battery pack which has an output of 13.8 volts, enabling the transceiver to deliver the full five watts output. A variety of other battery packs are available as optional extras. These give a selection of voltage outputs which in turn give different power output from the IC-32AT and many are designed to be used with a rapid charger. In all, there are eight different packs including one to take either dry or nicad battery cells.

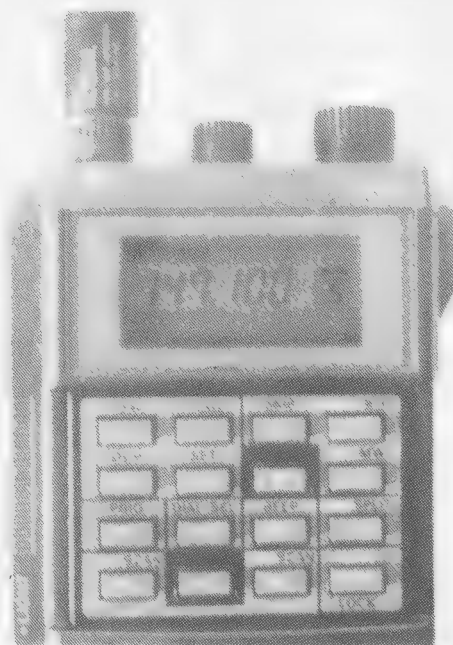
There are 20 memory channels provided and these can be set up in any combination on the two bands. One of the more intriguing features of the transceiver is its ability to transmit on one band and receive on the other simultaneously. With two transceivers, it is possible to conduct a full duplex conversation. Presumably, if you had two transceivers at each end you could have full duplex in stereo!

The IC-32 has, of course, a full range of scanning facilities. You can choose full band scan, programmed band scan, where any segment of the whole band is scanned, memory scan plus a selected band memory scan.

Frequency selection is duplicated with either keyboard entry or by tuning to the required frequency with the "Main Dial" control. As mentioned above, the tuning steps are separately selected. The LCD dial readout tells the user just what is happening. As well as frequency display, it

shows transmitter relative output, received signal strength, memory channel, repeater offset, call channel selection. The display is illuminated for night operation and, like its small brother the Micro Two, one push of the "light" button gives about five seconds illumination. Again, like the Micro Two, a battery saver function is provided to cut the battery drain to about a quarter of the normal receive current if no signal is heard or no controls operated for 30 seconds.

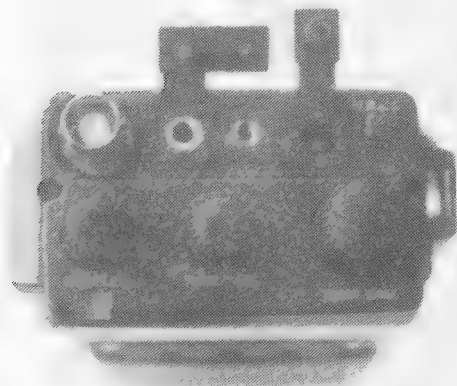
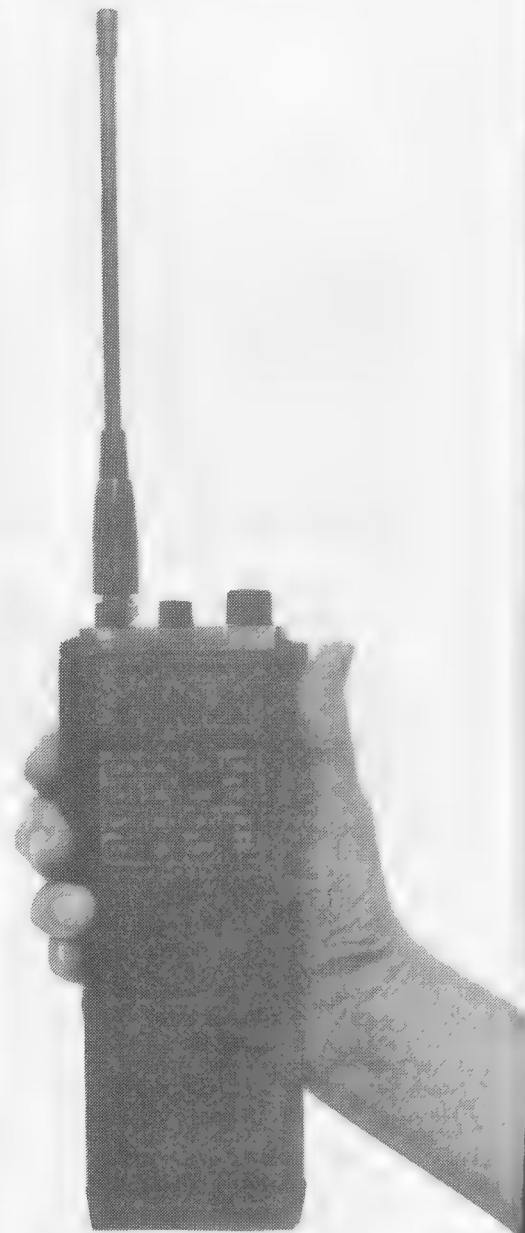
With the relatively high power output and the extreme versatility that this transceiver offers, it does not come in a miniature package, as the illustration shows when compared to the Micro Two. The overall dimensions are 65, 180.5, 35 millimetres (WHD) and it weighs 590 grams. These dimensions are with the normal BP-70 battery pack fitted. This, of course, does not put it into the shirt-pocket category. So if small size is an important consideration, you might have to settle for a single band hand-held.



Close up view of the controls.

### ON AIR

After loading up the memories with the usual local repeater and simplex channels, I got to work to try the transceiver out on the air. I should say that it was necessary to study the instruction book at some length to actually get the required frequencies into memory. Of course, the transceiver produces the usual 'beep' sounds to signify that all is okay. Entering memories requires the use of the function button which is not on the keyboard, but around on the side near the PTT button. In addition to these, there are two other buttons on the side, the display light and one labelled 'moni-



Top view of the IC-32AT.

tor'. This has two functions — firstly, it opens the squelch, and allows you to hear a weak signal below the squelch level. But if the channel you have selected happens to have a repeater offset programmed, the 'monitor' button, in addition, selects repeater input frequency. Quite a neat idea!

The first impression of the transceiver was the very poor received audio quality. The sound was more like a miniature ear piece turned up loud rather than a proper loudspeaker. With an external speaker plugged into the external speaker socket, the quality sounded quite normal. At the same time, the actual acoustic output appeared to be very low. If the transceiver was to be used mobile, an external speaker would be essential.

The dual band antenna supplied with the transceiver measured 18.5 centimetres long and appeared to perform very well. Checking the efficiency by measuring the noise received back from a local repeater, it was 6 dB better than the shorter Micro Two antenna on two metres. Unfortunately, no comparison antenna was not available to check the performance on 430 MHz.

## ON TEST

Unfortunately, due to the very short time that the transceiver was available to us, we were unable to carry out many of the normal range of tests. Power output was checked on each band and found to be a little down in the specified output. At 147 MHz, 4.7 watts was indicated and at 440 MHz 4.2 watts. This is a little down on the specified 5.5 and 5 watts. These tests were carried out with the battery fully charged. As a point of interest, the wall

charger supplied with the IC-32AT is not compatible with other Icom hand-held transceivers as a smaller diameter plug is used to connect to the battery pack. However, Icom still retain the LED indicator on the battery to show that charge is taking place.

Receiver performance was subjectively checked. On a comparative basis sensitivity was rated as excellent, and it was noted that there was a lack of spurious signals when the transceiver was in the memory scan mode. Spurious rejection was rated better than most hand-helds and better than some mobile-base units.

The S-meter was checked against our signal generator with the following results. There are seven segments on the bar graph.

Segment 1 (S1)	Mute open
Segment 2	.5 uV
Segment 3 (S5)	.7 uV
Segment 4	.9 uV
Segment 5 (S9)	1.2 uV
Segments 6 and 7 (S9+)	1.5 uV

In general, this shows that there either is a signal being received or not. On transmit the meter showed full scale with maximum power out and three segments (S5) on low power output.

Transmit audio quality was rated as good with plenty of punch to the sound.

Received audio was as commented on earlier, rather poor.

Battery life, as you may expect, is very dependent on how long you talk. At five watts output, the current drain is a massive 2 to 2.2 amps. I calculate that you would have about 15 minutes talk time

maximum. Even on low power the battery drain is about one amp.

## INSTRUCTION MANUAL

The IC-32AT Instruction Manual has a total of 52 pages. This is divided into 12 basic sections that cover amongst others, control functions, pre-operation, basic operation, memory and call operation, scan and watch operation and set mode. The only technical data supplied is a schematic diagram. A separate sheet gives data on the optional battery packs and other options such as carry cases, chargers and speaker microphone and headset combinations. While the rather complex operating procedures are very well covered, there is no technical information at all.

Overall, I would rate the manual at six out of 10.

## CONCLUSIONS

This piece of equipment certainly offers a wide range of operating possibilities. If you are considering the purchase of a hand-held transceiver for each of the two bands then the IC-32AT might well be the most economical approach. It is, however, rather large compared to the latest single band units.

Apart from the poor received audio quality, the set offers a high standard of performance.

The transceiver used in this review, serial number 01182, was supplied by Icom Australia, to whom all inquiries should be directed.