vintage RF review

The Icom IC-2AT Synthesized Talkie

by Dave Ingram K4TWJ

Miniaturization techniques and frequency synthesizers are creating some radical and exciting innovations in the world of 2 meter hand-held transceivers. Large, crystal-controlled handies capable of operation on five or six discrete channels are giving way to pocket-sized equivalents capable of 800-channel operation, two-tone encoding and much more. The mass clamor for these palm-sized gems and their accessories is extensive, with almost every active amateur wanting to get in on the action. The capability of carrying a full communications system comfortably in one hand has a distinct advantage which is, indeed, hard to beat.

In addition to their everyday use through one's local repeaters, frequency-synthesized handies are particularly useful when traveling via airlines and rental cars. (I don't advocate using the HT aboard a commercial airline, but its emergency capability is reassuring.) Once clear of airport hassles, the HT can be set on an area repeater and placed on the rental car's seat. This pleasure is proving its worth to HT owners every day.

Hand-held talkies also make ideal mobile rigs when used with a 25- or 50-watt amplifier and a gain antenna mounted on the auto's roof. When leaving the auto, the handie can be carried right along and used portable.

During recent years, I've used almost every hand-held transceiver on the market. Every unit was an exceptional performer, each exhibiting some special feature or features unique to that manufacturer. Recently, however, I secured what seems the most enjoyable and logical talkie I've ever owned—a new Icom IC-2AT.

The Rig

Two models of the Icom handie are available in the US: the IC-2A and the IC-2AT. The difference between these units is that the IC-2AT includes a touchtone encoder which is molded into its front case. The encoder adds only 1/16" to the case thickness, its inner area is rubberized, and the buttons have a positive snap action. The rubberized area is slightly recessed to provide some protection from pocket edges, etc.

There are two unique features in the Icom's encoder. When punching numbers, the tones can be heard on the handie's speaker. The loudness of these tones follows the handie's volume control setting. After punching a single digit and hearing those two tones in return, the handie's push-to-talk can be released. A VOX circuit in the unit holds the rig on transmit until approximately one second after the tones are completed. This delay will follow almost any dialing speed one cares to use. Next, the transmit LED atop the unit will extinguish and the handie will automatically return to receive mode.

The Icom handie is smaller and lighter than other handhelds, and it can actually be slipped into pockets where other units won't fit. In fact, the Icom can be comfortably carried in the vest pocket of a suit coat all day without evidencing itself by a bulge.

Frequency selection with the Icom handie is done with small thumbwheel switches mounted atop the unit. Two main advantages of this arrangement are the ability to change frequencies by merely feeling and counting steps rather than by looking at the rig (very beneficial when mobiling in rush-hour traffic) and the fact that this mechanical memory doesn't require battery current or reprogramming during periods of minimal use. An LED mounted beside the thumbwheel switch/frequency display indicates transmit mode and battery condition. Three small switches are submounted on the Icom's back for selecting high/low power, simplex or duplex operation, and +600 or -600 kHz transmitter offset. Odd splits and 1 MHz splits are not provided in the Icom. A belt clip is also furnished with the Icom; it can be used or removed, as desired.

Internally, the Icom handie consists of layered PC boards which open book-style for servicing. The receiver is double conversion with a first IF on 10.695 MHz and a second on 455 kHz. Through actual on-the-air use, I've found sensitivity and selectivity comparable to other quality handies on the market. The transmitter uses a conventional and popular varicap/frequency multiplier arrangement to achieve a crisp, clean transmitted signal. A voltage regulator circuit applies +5 and +6 volts to all stages except the transmitter's driver and final amplifier. Those stages receive full battery voltage for producing maximum transmitted RF energy. The handie's LED monitors voltage to the regulator during transmit mode.

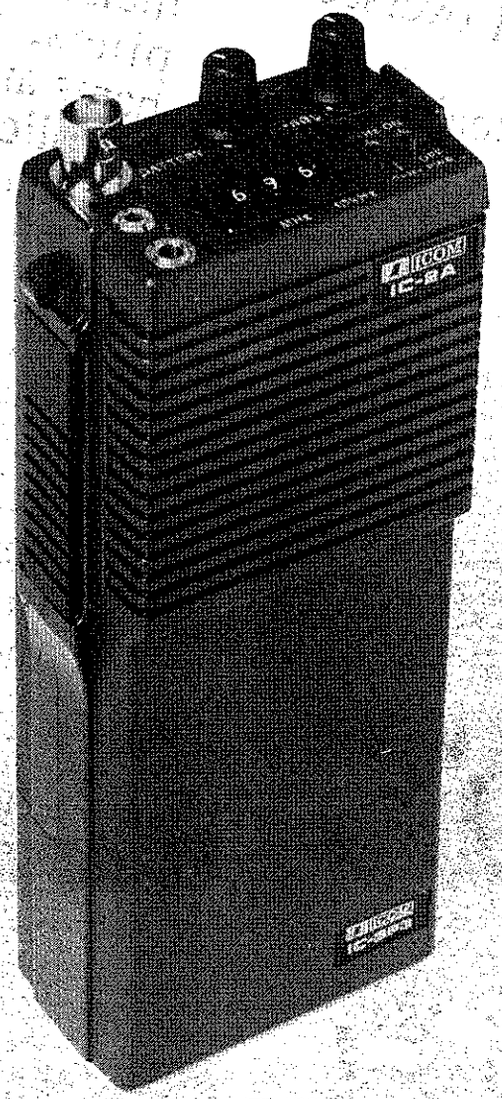

Photo A. The IC-2A.

The Power Source

Power for the Icom handie is supplied by a slide-on battery pack on the unit's bottom section. Mating is accurate and positive, without "play" or loose edges. The standard battery pack supplied with the Icom is a 250 mAh unit of relatively small size. This pack is no slouch, however; it powers my unit to 2.4 watts output when normally charged. The output power drops from 1.3 watts when the batteries are almost depleted. (These measurements were conducted using a dummy load and a Bird wattmeter.) Battery life when using this 250 mAH pack depends on the amount of transmitting, receiving and squelched time employed. Obviously, this situation varies with individual applications. You can calculate HT use time for your particular type of activity with the aid of Table 1. If, for example, you listen for one hour (approximately 30 mA) and transmit for a total of three-and-a-half minutes (approximately 60 mA), a fully charged 250 mAH pack will be dropped to approximately 160 mAH. Speaking from a more non-technical standpoint, the Icom (with its 250 mAH pack) exhibits the same battery life as the Yaesu FT-207R. Several optional battery packs should soon be marketed for the Icom handie. The BP5 pack will contain nine 450 mAH NiCds and power the HT to an advertised 2.3 watt output.

Finally, the BP4 case looks particularly appealing and useful. This is a blank case which can be loaded with six alkalines or six NiCds of the 450 or 500 mAH variety. When this case is used in conjunction with the standard 250 mAH pack (BP3), continuous operation is possible by alternately swapping and charging packs. The slide on/off feature permits this option without missing a single QSO.

Conditions	Total Current
Receiver on, squelched	12 mA
Receiver on, signal present, low volume	25 mA
Receiver on, signal present, high volume	35 mA
Transmitter on, low power	200 mA
Transmitter on, high power	400 mA

Table 1. Current drains measured on the IC-2AT. Battery voltage was 8.7 volts.

Personal Evaluation

I've personally found the Icom handie perfectly adaptable to my particular needs and pleasures. Its small size and light weight are, in my opinion, definitely a worthwhile trade-off for the scanning feature of my previous frequency-synthesized HT, and the slide on/off battery packs are an ideal means of keeping the unit operating continuously. The microphone is placed midway along the unit and opposite the antenna. This allows the unit to be canted back during use to prevent RF from radiating broadside into the eyes. Both transmit and receive audio are exceptionally crisp and clean. I think it's a great little transceiver and recommend it heartily. RF

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