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Alinco DJ-100T Hand-Held 2-Meter FM Transceiver

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The DJ-100T represents Alinco Electronics' entry into the world of miniature hand-held transceivers, and offers many of the features hams have come to expect in VHF hand-held rigs. Weighing in at a hair over half a pound, the DJ-100T is plenty of radio packed into an attractive and compact package—with a price tag that's in the same range as those of most transceivers in its size/performance class. The DJ-100T is supported by a modest complement of accessories (discussed later) that meet the operating needs of the average hand-held-radio user.

The DJ-100T's standard features include 10 dual-function memories (discussed later), a dual-tone multifrequency (DTMF) pad, a programmable subaudible tone encoder, and switchable high/low power output. The standard battery pack (EBP-9NA) provides 2.5 watts of RF output (450 mW in the low-power mode), and has a built-in dc-to-dc converter that allows easy mobile operation. Other features include a backlit liquid-crystal display (LCD), a battery save function and a call channel that provides instant access to your favorite repeater or simplex frequency.

Familiarization

Becoming familiar with the DJ-100T is a fairly easy task, requiring only a small investment in time. Most of the controls are self-explanatory and straightforward. The brief instruction manual included with the rig does an adequate job of describing the operation of the rig, but no schematic or block diagrams are provided for reference.

The DJ-100T's frequency coverage is 144.000 to 147.995 MHz, in 5-kHz steps. The rig's LCD provides a four-digit frequency readout (digits for 10 MHz, 1 MHz, 100 kHz and 10 kHz), as well as a 5-kHz indicator. In addition, the LCD provides the following indicators: memory number, relative signal strength/RF output level, frequency lock, offset (+, −, or none) and a segment indicating call-channel operation. Although the display measures only 3/4 × 3/8 inch, I found it easy to read (even in direct sunlight) and quite appealing to the eye. Lamps located behind the LCD provide more than adequate display lighting during night operation.

After choosing one of the 10 memories, selecting the operating frequency is a simple matter of setting the four right-most digits of the desired frequency. This is accomplished via two frequency step keys (UP and DOWN) which, when used separately or in combination with one or two other keys, either increases or decreases the frequency in 1-MHz, 100-kHz, 10-kHz or 5-kHz steps. Because control labeling is minimal, it is easy to confuse the key sequences required to change frequency, but I found this to be only a minor inconvenience. Once the proper offset is chosen (±600 kHz or simplex), the contents of the memory or VFO can be locked to prevent accidental alteration. Repeatedly pressing the MEMO button sequentially steps through each of the memories, and holding this button down executes a quasi-memory scan.

The DJ-100T has a battery-save function that keeps power consumption minimal during periods of inactivity. To do this, the DJ-100T turns off many of its functions for 0.7 to 0.8 seconds during each second. If the rig detects activity on the receiving frequency, it enables all functions. There are no signs visible to the operator that this function is working—it just silently extends battery life.

In one respect, the DJ-100T has a rather unusual means of operation. Each of the ten memories can also function as a VFO. If you want a memory to hold the frequency and offset of a repeater that you use a lot, you can lock the contents of the memory after loading. (This is done by holding the FUNCTION key and pressing the CALL key at the same time. Unlocking the memory is done the same way.) If, however, you don't use a particular frequency often, you can elect to keep the memory unlocked. In the latter case, you can change the frequency and/or offset stored in the memory at will. If you should do this and then step through the memories until you reach the same one, the frequency and offset information will be the same as they were when you tuned away. It is possible to lock all the memories, in which case you'd need to unlock a memory before you could use it as a VFO.

Operation

Once familiar with the use of the various operating controls, I found operation of the DJ-100T to be, for the most part, effortless. Because of the radio's small size, though, I found both the DTMF pad and the 7-position DIP switch used to program the continuous tone-coded squelch system (CTCSS) tones to be a bit difficult to manipulate, even with my average-sized, nimble fingers. Most of the controls are fairly easy to use, however, despite the compactness of the transceiver.

Being used to a full-sized (ie, larger) hand-held rig, I initially found the DJ-100T to be a bit awkward to handle. I soon adjusted to the rig's scaled-down dimensions, however, and came to appreciate its lightweight design. The transceiver is well balanced, fits nicely in the palm of the hand, and is equally comfortable in either hand. All the radio's features worked fine, and I found no unpleasant surprises or drawbacks in the design. The standard battery pack provided an acceptable span of operation between charges, and held its charge even during extended periods of inactivity. One shortcoming of the DJ-100T is the lack of a battery charge indicator.

One feature I found particularly useful is the CALL button. When pressed, this button causes the DJ-100T to toggle back and forth between the current memory and memory 0. This allows you to monitor a second frequency without stepping through each of the memories. The DJ-100T also provides the ability to monitor the input frequency of a repeater input/output pair at the touch of the SHIFT button.

In performance, the DJ-100T seems to hold its own quite nicely. Reports from hams familiar with my voice (both on the air and in person) indicate that the signal quality of the DJ-100T is comparable to that of my own hand-held rig. In fact, most times there was no perceivable difference in performance. On the receiving end, however, things were somewhat different. I found the audio quality of the DJ-100T to be too tinny for my liking, and the radio's limited distortion-free audio output made mobile operation quite inconvenient. An external speaker hookup is possible.

Accessories

Alinco makes four battery packs designed to accommodate most operating

Table 1

Alinco Electronics DJ-100T 2-meter FM Transceiver, serial no. 0000606

Manufacturer's Claimed Specifications	*Measured in ARRL Lab*
Frequency coverage: 144 to 147.995 MHz.	As specified.
Mode of operation: FM.	As specified.
Frequency display: not specified.	4-digit LCD, black digits on light gray background.
Frequency resolution: 5 kHz.	As specified.
Frequency accuracy: not specified.	Indicated frequency, 146.000 MHz; measured frequency, 146.0000 MHz.
Power requirements: squelched, 42 mA; maximum audio output, 98 mA; transmit high power, 750 mA; transmit low power, 350 mA.	Squelched, 35 mA; maximum audio output, 102 mA; transmit high power, 790 mA; transmit low power, 380 mA.
Transmitter	*Transmitter Dynamic Testing*
Power output: low, approx. 450 mW; high, 2.5 W (with EBP-7NAZ or EBP-9NA battery packs).	Low, 480 mW; high, 2.5 W.
Spurious signal and harmonic suppression: better than 70 dB.	See Fig 1.
Receiver	*Receiver Dynamic Testing*
Type: dual conversion; first IF, 21.6 MHz; second IF, 455 kHz.	As specified.
Receiver sensitivity: better than 0.25 μV for 12-dB SINAD.	0.26 μV for 12-dB SINAD. 0.42 μV for 20-dB quieting.
Squelch sensitivity: not specified.	0.22 μV (not adjustable).
Receiver audio output: more than 200 mW at 10% distortion (8-Ω load).	228 mW at 10% total harmonic distortion (THD) with an 8-Ω load.
Color: black.	
Size (H × W × D): 6.625 × 2.375 × 1.19 inches with FNB-10 battery pack.	
Weight: 0.55 lb.	

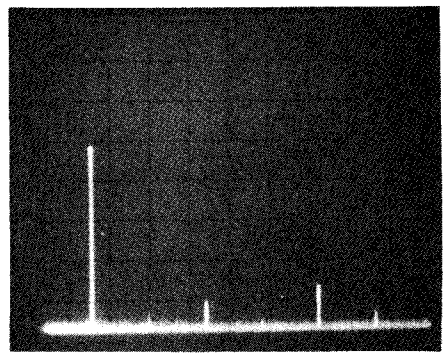

Fig 1—Worst-case spectral display of the Alinco DJ-100T. Horizontal divisions are each 100 MHz; vertical divisions are each 10 dB. Output power is approximately 2.5 W at 146 MHz. The fundamental has been reduced by approximately 32 dB by means of notch cavities to prevent spectrum-analyzer overload. All harmonics and spurious emissions are at least 66 dB below peak fundamental output (−66 dBc). The DJ-100T complies with current FCC specifications for spectral purity.

needs. Depending on the battery used, the DJ-100T provides maximum RF output of 2.5, 4.5, or 6.5 W. All but the battery that allows 4.5-W operation include a built-in dc-to-dc converter. When used with the compact battery pack that gives 4.5-W operation, the DJ-100T truly becomes a "shirt-pocket" rig. Most other common hand-held transceiver accessories are also available for the DJ-100T: wall chargers, speaker/microphone, earphone/microphone, cigarette-lighter plug (with and without line filtering), dry cell case and a soft carrying case. The rig comes with the EBP-9NA battery pack, a "rubber duck" antenna, a wall charger, a belt clip and a wrist strap.

Conclusions

In my opinion, Alinco Electronics has done an adequate job of designing and manufacturing the DJ-100T. My main concern with the DJ-100T is durability. Although the transceiver appears to be fairly sturdy, I wouldn't expect the battery pack supplied with the rig to withstand much of an impact. The DJ-100T should, however, stand up fairly well to everyday wear and tear.

The restriction of allowing only a ±600-kHz offset and frequency coverage limited to the ham band may cause some hams to look to other manufacturers to provide the answer to their hand-held-transceiver needs. Also, the lack of any indication as to the amount of remaining charge in the battery can be an inconvenience. Even without these features, I received a great amount of operating pleasure from the DJ-100T.

Price class: $299. Manufacturer: Alinco Electronics, 20705 S Western Ave, Suite 104, Torrance, CA 90501, tel 213-618-8616.

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