

Alinco DR-735T VHF/UHF FM Transceiver

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If you're in need of a dual-band FM mobile transceiver with a big display and hefty RF output specs to match, the Alinco DR-735T may be worth considering.

The DR-735T has one of the largest and brightest displays that I've ever seen in an FM mobile transceiver. As anyone who has operated on the road will tell you, an easy-to-read display is a key feature. Distracted driving can be even more distracting when your eyes can't find the display, much less focus on it. You won't have that problem with the Alinco DR-735T.

When it comes to RF power, I'm accustomed to dual-band radios that tend to offer reduced output on UHF compared to VHF. Not so with the DR-735T; it offers 50, 20, or 5 W output on both bands. The transceiver case is compact, which means that space for a heatsink is limited. To solve that issue, Alinco added a powerful cooling fan to the DR-735T. The fan is a bit noisy, but not objectionably so. Still, you can change the way it functions — when it operates and when it doesn't — in the menu system. For example, you can set the fan to activate whenever you transmit and remain active for 2 minutes afterward. At the opposite extreme, you can set the fan to activate only when the internal temperature exceeds 158 degrees, although the manual seems to discourage this (for good reason).

The DR-735T's control head detaches quickly from the main body of the transceiver, allowing you to place the head under your dashboard while the rest of the unit hides beneath a seat or in your trunk. To separate the radio in this fashion, however, you'll need to purchase the EDS-30 separation kit that includes a 16-foot cable. You can plug the microphone into the control head when it is separated, but the head lacks a jack for speaker. This means you may need to mount an external speaker in proximity to your operating position if the radio isn't close enough for you to hear its



internal speaker. The radio has plenty of audio power, though, so I suspect the internal speaker may suffice for a nearby under-seat installation.

Other features of note include the DR-735T's full crossband repeater operation, expanded 2 meter receive range to include the AM aviation band, and 1000 memories that can be scanned. The DR-735T can also function as a digital voice transceiver if you install the optional EJ-47U GMSK board. However, you'll only be able to communicate with other similarly equipped Alinco users. We did not install the board for this review.

Indoor Exploration

I began by trying the DR-735T indoors, running it from my 13.8 V dc station power supply. When running at full throttle (50 W output), the transceiver draws about 10 A of current when transmitting.

Bottom Line

The Alinco DR-735T is a rugged dual-band FM transceiver with plenty of RF output power, a full feature set, and a bright, easy-to-read display.

With the DR-735T on the bench, I connected it to my dual-band ground plane antenna. Fortunately, the transceiver has a built-in diplexer feeding a single antenna jack. All I had to do was attach my feed line to the radio and I was ready to go. Some rigs sport separate 2 meter and 70 centimeter antenna jacks, which is fine if you have separate antennas, but for those of us with dual-band antennas (which includes the majority of mobile antennas these days) it is a blessing not to have to invest in an external diplexer.

While exploring the DR-735T, I noted that it had two external speaker jacks. This is a very useful feature for base or mobile operating, allowing you to send the audio from, say, the 2 meter band to the left speaker and the 70 centimeter band to the right speaker.

On the rear panel I also spotted a small DIN jack for connecting an external packet radio terminal node controller (TNC) for APRS and other activities. However, after consulting the manual, I discovered that the DR-735T is only designed for packet operation up to 4800 baud; you can't use the DR-735T for 9600 baud packet.

On the Road

The Alinco DR-735T is a fine indoor transceiver, but it really shows its talents on the road. Since I lacked the separation kit, I mounted the radio vertically on the console between the driver and passenger seats of my automobile. It was far from an ideal installation, but it was also just temporary.

Thanks to the strong audio output, I had no difficulty hearing the DR-735T's internal speaker. Considering the fact that I had the heatsink wedged up against the side of a leather seat, I was grateful for the potent cooling fan.

One feature I appreciated instantly was the fact that Alinco designed the DR-735T with independent sets of volume, squelch, and VFO controls for each band. This is a godsend when you're driving and you don't want to take your eyes off the road to make an adjustment. I could find and grasp

the knob I wanted by “feel” alone.

With a dual-band mag-mount antenna, I received excellent reports from local and distant repeaters. Operating at the 50 W level, I found myself enjoying simplex chats on both 2 meters and 70 centimeters. In one instance, I made a simplex contact on 2 meters with a fellow in New Jersey while cruising around central Connecticut. Granted, he was using a Yagi antenna on a hilltop station at his end, but he reported that my signal was quite strong, with outstanding audio.

The DR-735T seemed to have a reasonably sensitive receiver, although I did notice occasional “intermod” reception when driving through areas where commercial two-way transmissions were particularly strong. This was an issue that some amateurs reported in the DR-735T’s predecessor, the DR-635T. To help mitigate this problem, Alinco has added a function in the DR-735T menu system that allows you to activate what the manual calls “Image Signal Rejection.” Unfortunately, ARRL Lab testing revealed no difference in the adjacent channel rejection, IMD dynamic range, or image with this feature on or off.

You can toggle on an attenuator if local interference is severe. Lab testing indicated that turning on the attenuator improves adjacent channel selectivity by about 5 dB and IMD dynamic range by about 8 dB. The tradeoff is a 10 dB loss of sensitivity. An attenuator is a good function to have on an FM mobile transceiver.

This transceiver distinguishes itself by offering full duplex operation, which in this instance means that you can transmit on one band (the “main” band) while listening to the other (“sub”) band. I would imagine this would be highly useful during public service operations where it may be important to monitor activity on one band while transmitting on another. On the other hand, should you find this feature annoying, there is a menu function that will allow you to automatically disable subband reception whenever you transmit.

And There’s More

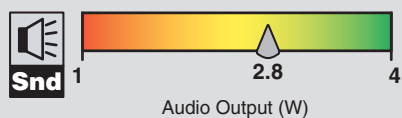
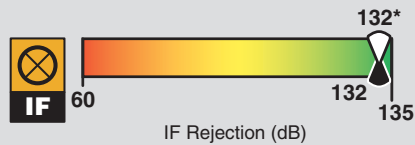
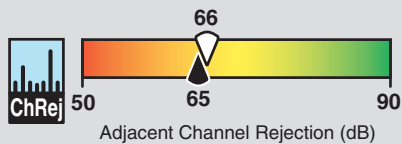
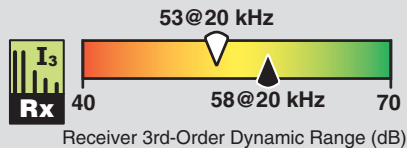
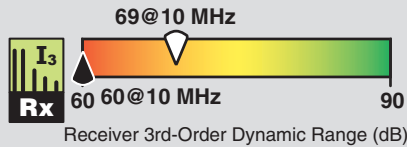
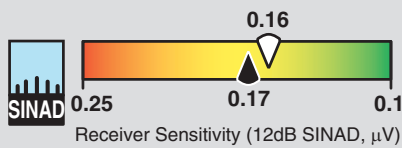
The DR-735T offers more features that are sure to appeal to FM enthusiasts, especially mobile operators. The scanning function

Table 3
Alinco DR-735T, serial number M00580

Manufacturer’s Specifications	Measured in ARRL Lab
Frequency coverage: Receive, 108 – 135.995 MHz (AM), 136 – 173.995 MHz (FM), 400 – 479.995 MHz. Transmit, 144 – 147.995 MHz, 430 – 449.995 MHz (FM).	Receive and transmit, as specified.
Modes: FM.	As specified.
Power requirements: Receive: 600 mA maximum, 400 mA standby. Transmit, 12 A, at 13.8 V dc \pm 15%.	At 13.8 V dc: Receive, 840 mA (max volume, max lights, no signal, one receiver); 900 mA (max volume, max lights, both receivers); 553 mA (standby, max lights); 323 mA (standby, no lights). Transmit (hi/med/low): 146 MHz, 8.5/5.7/3.2 A, 440 MHz, 10.4/6.3/3.3 A.
Receiver	Receiver Dynamic Testing*
Sensitivity: FM (12 dB SINAD), 0.16 μ V	FM (12 dB SINAD): 0.16 μ V (144 MHz), 0.17 μ V (440 MHz), 0.14 μ V (WX). AM (10 dB S+N/N): 0.63 μ V.
FM two-tone, third-order IMD dynamic range: Not specified.	20 kHz offset: 146 MHz, 53 dB; 440 MHz, 58 dB. 10 MHz offset: 146 MHz, 69 dB; 440 MHz, 60 dB.
FM two-tone, second-order IMD dynamic range: Not specified.	146 MHz, 80 dB; 440 MHz, 102 dB.
Adjacent-channel rejection: Not specified.	20 kHz offset: 146 MHz, 66 dB; 440 MHz, 65 dB.
Spurious response: Not specified.	IF rejection: 146 MHz, 132 dB (main RX), 129 dB (sub RX); 440 MHz, >132 dB (main & sub RX). Image rejection: 146 MHz, 57 dB (main RX), >133 dB (sub RX); 440 MHz, >132 dB (main & sub RX).
Squelch sensitivity: 0.14 μ V (144/430 MHz).	At threshold: 146 MHz, 0.16 μ V (0.4 μ V max); 440 MHz, 0.09 μ V (0.48 μ V max).
S-meter sensitivity: Not specified.	S-9, signal: 144 MHz, 1.27 μ V; 440 MHz, 1.70 μ V.
Audio output: >2 W at 10% THD into 8 Ω .	2.8 W at 10% THD into 8 Ω . THD at 1 V _{RMS} , 1.85%.
Transmitter	Transmitter Dynamic Testing
Power output: 50, 20, 5 W (hi, med, low) at 13.8 V dc \pm 15%.	At 13.8 V dc (hi/med/low): 146 MHz, 53/22/2 W, 440 MHz, 47/19/4 W. High power output at minimum specified voltage: 144 MHz, 49 W; 440 MHz, 44 W.
Spurious signal and harmonic suppression: –60 dB.	\geq 70 dB. Meets FCC requirements.
Transmit-receive turnaround time (PTT release to 50% of full audio output): Not specified.	Squelch on, S9 signal, 146 MHz, 166 ms; 440 MHz, 167 ms.
Receive-transmit turnaround time (“tx delay”): Not specified.	146 MHz, 67 ms; 440 MHz, 65 ms.
Size (height, width, depth): control panel, 2.3 \times 5.5 \times 2 inches (including protrusions). rear Chassis, 1.5 \times 5.5 \times 7.3 inches. Weight, 2.9 lbs (panel, rear chassis, and cable).	
Price: \$340. EDS-30 head separation cable (16 ft), \$55; ERW-7 USB cable, \$50; EJ-47U digital voice adapter, \$200.	
*Main and sub receivers measured identically, unless noted.	

Key Measurements Summary

Alinco DR-735T VHF/UHF FM Transceiver



PR109

Key:

2 M 70 cm

* Values shown are best case. There are some differences between receivers. See Table 3.

is very flexible and easy to use. Best of all, you can configure the display so that it boosts to full brightness whenever the scan stops on a signal, giving you a visual indication of activity in addition to the audible one. I found this to be extremely handy when I had to temporarily turn down the audio while scanning, such as when listening to a news story on the broadcast radio.

Another item worth mentioning is the shortcut key. This is a pushbutton that is positioned dead center along the bottom row of the front panel and labeled with a star. You can program this key to instantly toggle any “set mode” setting. For example, you can program the key to activate the DR-735T’s receive attenuator with a single press of a button, which is much easier than jumping through a set of menus.

Conclusion

The Alinco DR-735T is a rugged FM transceiver with all the RF output power anyone would normally need. In my tests I rarely

needed to increase the output power beyond 20 W, but it was nice to know that I could call upon the full 50 W output on either band if the need arose. For mobile operation, the large, bright display is a winner. Perhaps it is my 61-year-old vision, but I was grateful for the attention the Alinco engineers have given to creating a display that I can see from almost any reasonable distance. In addition to making it big and bright, Alinco included the ability to tailor the display parameters in ways I don’t usually see in other rigs (brightness, color, and contrast).

With a full complement of features, including alphanumeric labeling for all those 1000 memories, the DR-735T is a worthy transceiver for the serious FM operator.

Manufacturer: Alinco, Yodoyabashi Dai-Bldg 13F, 4-4-9 Koraibashi, Chuo-ku, Osaka 541-0043, Japan; www.alinco.com.
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