

Alinco DJ-X11T Wide Frequency Coverage Scanning Receiver

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In spite of the lagging economy, scanner manufacturers have been unleashing a series of new products with advanced features. The recent emphasis made by GRE, Uniden, and Radio Shack has been on simplicity of operation – a welcome addition, while manufacturers like Alinco and ICOM have emphasized wide, continuous frequency coverage and more features.

An example of the latter is Alinco's new DJ-X11T with its 50 kHz-1300 MHz (less cellular) tuning range, which includes SSB reception for voice and data demodulation found in the shortwave range – a mode not available on conventional VHF/UHF-only scanners or even on many scanner models that include shortwave.

Selectable reception modes are FM, WFM, AM, USB, LSB, SSB, CW, and Auto which automatically enters the proper mode for the frequency chosen.

An internal ferrite bar or external earphone cord (not provided) may be selected for medium wave (AM broadcast band) reception; the whip antenna is used above 1.8 MHz.

The receiver's triple-conversion architecture reduces image response and improves selectivity. Its compact 2-1/2"W x 4-1/4"H x 1-1/2"D sits nicely in the hand, while its 8 oz. weight is easy to carry. A rugged polycarbonate case with rubber lower-edge bumpers offers further protection; the rubber bumpers also prevent slipping on a slick surface.

❖ What is in the Box

The DJ-X11T comes with an SMA-base rubber whip, belt clip (EBC-23), wrist lanyard, 3.7V 1800 mAh high-capacity Li-ion battery (EBP-74), four-hour AC charger (EDC-139), 3 x AA dry-cell battery holder (EDH-36), and comprehensive manual.

You'll want to keep that manual handy until you are thoroughly familiar with all the features and functions: they aren't intuitive.

❖ Operating Features on the DJ-X11T

Two pairs of concentric knobs on the top panel are used to select menu changes as well as adjust squelch and volume. Since the knobs are rather tightly placed (or if your choice of right-handed or left-handed use is preferable), the function of these knobs may be interchanged. For more rapid access to a menu item, a WILD key allows you to set instant access to a particular item. To avoid accidental or intentional

corruption of your settings, a keypad lock can be enabled.

Up to 15 hours of continuous, full-volume operation is available from one charge of the 1800mAh Li-Ion battery pack. For reserving unnecessary power, you can choose the amount of time between 1/2 and 8 hours before an auto-power-off function switches off the scanner. This little Alinco can also be powered by an external source of 6 VDC.

Dual-frequency reception allows the monitoring to two separate frequencies simultaneously, anywhere in the receiver's tuning range for the main choice, and anywhere between 118-171 or 336-470 MHz AM or FM mode for the secondary choice.

A frequency shift function allows the quick selection from one frequency to another, such as the up and down links (input and output) of a repeater system.

Selectable tuning/scanning steps are chosen from a remarkably flexible list of options which should cover virtually anyone's requirements: 0.05 / 0.1 / 1 / 5 / 6.25 / 8.33 / 9 / 10 / 12.5 / 15 / 20 / 25 / 30 / 50 / 100 / 125 / 150 / 200 / 500kHz / 1 MHz.

1200 memory channels can store favorite frequencies, and the bank sizes can be individually selected to any number of channels by using third party software (not provided); an optional PC cable will be required.

A 3.5 mm (1/8") IQ jack adjacent to the whip connector on the top panel functions as an IQ signal and discriminator output. The IQ signal output can be used with a 3rd-party software package to allow the DJ-X11T to operate as an SDR (Software Defined Receiver). Also available on the IQ jack is a 10.7 MHz IF discriminator signal that can be used with other receiver-related software available on the net, such as AIS-plotting to decode FSK data streams.

Decoding circuitry decodes and identifies both tone squelch and DSC squelch; you may encode your scanner channels as well to restrict reception to only those users on the channel(s) that you want to hear.

A feature rarely found in hand-helds is the ability to contour your audio spectrum to suit your personal listening preference. Like it bassy? Shrill? Suit yourself at the touch of a key.

The audio output is nominally 100 milliwatts, adequate for room listening,

but marginal in a noisy environment. The tiny internal speaker faces quite a task, and shows some distortion at high listening levels.

❖ DJ-X11T Scan Features

The scan feature offers five different configurations: preset, programmed, memory, VFO, and tone, thereby allowing the user to search his memory banks, scan a range for new signals, or even check for specific squelch tones to monitor a channel.

Scan speeds are also selectable depending on the mode. For VFO search, 25, 33, or 100 channels per second; for memory channels, 4.5, 8.3, or 20 channels per second. The faster the speed, the more likely the scanning will skip over weaker signals, because it takes a finite time for the switching circuitry to come up to full performance.

A priority selection samples your choice of an important frequency every five seconds so you don't miss a transmission while monitoring or scanning other channels.

The memory scan function may seem slow



compared to VHF/UHF scanners, but if you're in a busy metropolitan area, it doesn't take long to find a busy channel, and if you're in a remote, radio-quiet location, then you probably won't have many channels in memory anyway!

Years ago, Alinco was the first scanner manufacturer to introduce an automatic signal-capture feature which quickly displayed the frequency of an unknown, nearby transmission and monitored its contents. This function is now found on a number of models from GRE, Uniden, and Radio Shack.

The DJ-X11T allows two different modes for this feature; "F Count" performs a frequency counter function, immediately displaying that unknown frequency, while "F Tune" engages the full receiver for finer tuning accuracy and to allow audible reception.

The channel sampling function of the receiver can be used as a "bug" detector as well, searching for nearby, surreptitious, wireless microphones. The user can choose which bands the search should cover.

In that mode, the DJ-X11T's speaker emits a tone which is picked up by the wireless mike and then retransmitted by the bug. The receiver recognizes its own tone and then will either register a silent message on its screen for privacy, or signal an audible alarm.

❖ DJ-X11T LCD Display

Up to 16 alphanumeric characters may be shown on the back-lit LCD window. The keypad is also backlit for night-time manipulation. And, you're not stuck with the factory's choice of character font; you can custom select size, style, language, contrast, illumination and even the welcome message!

A "dual channel-scope" presents a bar graph of signal presence on 11 contiguous channels – five up and five down from the chosen center frequency. Relative signal strengths are indicated by the height of the bars. The total span from edge to edge is determined by the selected step intervals between each channel frequency.

❖ Stability Specifications

The receiver's frequency stability is quite acceptable: $-7/+3$ ppm (parts per million) over a temperature range of $+14$ to $+140$ degrees Fahrenheit. This means that if you were listening to a frequency of 1 MHz at the lowest temperature, and then stepped into a blazing-hot area at the higher temperature, the receiver would drift no more than 3-7 Hz.

Of course, at 10 MHz it could drift as much as 70 Hz so that an SSB signal might be somewhat distorted. At 450 MHz it could drift about 3 kHz (3000 Hz), but with the wide bandwidths

of FM signals at that part of the UHF spectrum, it would be barely noticeable on the recovered audio except for some minimal distortion.

But, the reality is that no one is likely to subject the receiver to such an enormous ambient temperature excursion, so the good frequency stability rating for the DJ-X11T stands.

❖ Selectivity Specifications

Selectivity – the ability of a receiver to isolate the center frequency from adjacent interference – varies considerable with the bands and modes chosen.

SSB/CW (single sideband/continuous wave, or Morse code) measurement for a desirable 2 kHz bandwidth is down -6dB at its edges, increasing to -50 dB at 7.5 kHz or less, which is commendable for a consumer scanner.

AM/FM (amplitude modulation/frequency modulation) bandwidth of 12 kHz is down -6 dB, and increases -60 dB at 35 kHz; that's fairly broad, but under most reception conditions, is acceptable.

WFM (wideband FM), as found in the FM and analog TV broadcast bands, has a bandwidth of a broad 180 kHz for only a -6dB rolloff, and increases to only -20 dB at 470 kHz bandwidth – very poor by rigid standards, but once again, typical of radios whose main application is not FM broadcast DXing. Apologists may argue that the FM capture effect automatically selects the stronger of two interfering signals anyway. While that may be true, what if you want to hear the weaker one?

❖ Sensitivity Specifications

The receiver's high sensitivity may invite phantom signals from strong signal overload, in which case the user may opt to reduce the RF gain, enlist the attenuator, or change the squelch level.

Sensitivity (typical) for 10dB S/N on AM/SSB/CW, or 12dB SINAD for FM/WFM

Main Band Measurements

0.050 to 0.531 MHz	AM	5dBu
0.531 to 1.620 MHz	AM	2dBu
1.620 to 76.00 MHz	AM	-5dBu, SSB and CW -10dBu, FM -15dBu
76.00 to 108.0 MHz	WFM	-3dBu
108.0 to 136.0 MHz	AM	-6dBu (Sub band measurement below)
136.0 to 174.0 MHz	FM	-14dBu (Sub band measurement below)
175.0 to 221.75 MHz	WFM	-6dBu
221.8 to 336.0 MHz	AM	0dBu
336.0 to 475.75 MHz	FM	-13dBu (Sub band measurement below)
475.75 to 770 MHz	WFM	-13dBu
770 to 1260 MHz	FM	-9dBu
1260 to 1300 MHz	FM	-6dBu

Sub Band Measurements

118 to 136MHz (AM)	-3dBu
136 to 170MHz (FM)	-14dBu
336 to 470MHz (FM)	-14dBu



❖ DJ-X11T Accessories

There are quite a few accessories available for the DX-X11T. These include:

EDH-33	Cigar-plug DC conversion cable (12VDC/24VDC to 6VDC)
EDS-12	Wire Remote-controller
EME-6	Straight-cord Earphones
EME-26	Curly-cord Earphones
ERW-7	Allows you to use clone or utility software only.
ERW-8	Mini USB/USB ports PC interface cable (Full-functions).

Approved government agencies can also purchase an analog inversion-scramble decoder for the DX-X11T.

The ERW-8 cable enables the use of both clone-utility and real-time control software. Both types of software are available for download at no charge from a link below the Alinco website at www.alinco.com/Products/DJ-X11/utildown.html. To use third party SDR freeware, you will need to purchase a 3.5mm stereo mini-plug cable for connection to a PC. All functions are not guaranteed when used with third party software.

❖ The Bottom Line

A complete list of features and specifications may be seen at www.grove-ent.com/DJX11T.html

Considering the pricing points of competitive scanners on the market, the Alinco DJ-X11T is reasonably placed. It offers a wide frequency range with multiple reception modes and an array of functions not presently found elsewhere.

The Alinco DJ-X11T is available from Grove Enterprises for \$329.95 and from other MT advertisers.

TABLE ONE: GENERAL SPECIFICATIONS

Receiver range: Main VFO 0.05 - 1299.99995 MHz in all available modes
Sub VFO 118 - 170.995 MHz and 336 - 469.995 MHz using the AM/FM modes.
Mode: FM, WFM, AM, SSB (USB/LSB), CW (CU/CL)
Antenna Impedance: 50 ohms (SMA)
Supply voltage: DC 3.7V (EBP-74) / DC 4.5V (EDH-33) / DC 5.4V - 6.0V (external regulated source) negative ground
Current consumption: Approx. 130mA Mono band / 180mA Dual band
Temperature range: -10 to +60 deg C (+14 to +140 deg F)
Frequency stability: -7 to +3 ppm (-10 to +60 deg C) (+14 to +140 deg F)
Weight: Approximately 235-grams / 8.29 oz (Antenna and EBP-74 inclusive)
Receiver: Triple-conversion super heterodyne receiver using the AM/SSB/CW/FM modes on the Main VFO.
Double-conversion super heterodyne receiver using the AM/FM modes on the Sub VFO and WFM on the Main VFO.
Audio Output power: More than 100-mW (8-ohm)

Specifications subject to change without notice or obligation. Cellular frequencies blocked on USA model. Unblocked versions available with proper documentation for authorized users only.