

EDD-24T
Handheld Non Linear Junction Detector (NLJD)
Instruction Manual



INTRODUCTION

The EDD-24T is a compact handheld Non Linear Junction Detector or 'NLJD' designed specifically for professional countermeasures use (TSCM). It will detect the presence of semiconductor circuits that are used in all modern electronic devices such as mobile phones, tracking devices, listening devices, covert cameras, digital voice recorders, SIM cards etc. Importantly, the EDD-24T will detect such devices whether they are switched on and in use, powered on but in standby mode, or even switched off without any power.



PRINCIPLE OF OPERATION

Semiconductor Electronics are used in all modern electronics and are made using Silicon Substrates. When high frequency radio signals are transmitted directly over silicon they produce a strong second harmonic frequency of that radio signal. Other materials such as some bi-metals or oxidised metals can respond with a third harmonic signal.

The EDD-24T transmits a focused directional signal on 2.4 GHz (ISM Band Type B) through its rear facing internal antenna. It receives on 4.8GHz (Second Harmonic) and 7.2GHz (Third Harmonic).

The highly sensitive receiver will respond to any signals produced on the 2nd Harmonic by even the smallest piece of Silicon such as that used in SIM Cards, Mobile Phones, Bugging Devices, Voice Recorders, Covert Video Cameras etc. Importantly those devices do not have to be in use, in standby or even have any power connected to them to be detected.

The 3rd Harmonic receiver acts as a valuable confirmation for signals that may be ambiguous or are not a threat such as those in oxidised metals, bi-metals etc.

CHARGING THE BATTERY

The EDD-24T has an internal Lithium Polymer battery pack. Before use connect the supplied 5V (Micro USB) charger to the socket marked 'CHARGE 5V' on the side of the unit. Only charge whilst the power is switched off and not in use. When charging the red charge LED will illuminate. When the charge is complete the green LED will illuminate. Depending on the condition of the battery the charge will take up to 4 hours. Use only the specified charger and cable provided with the unit.



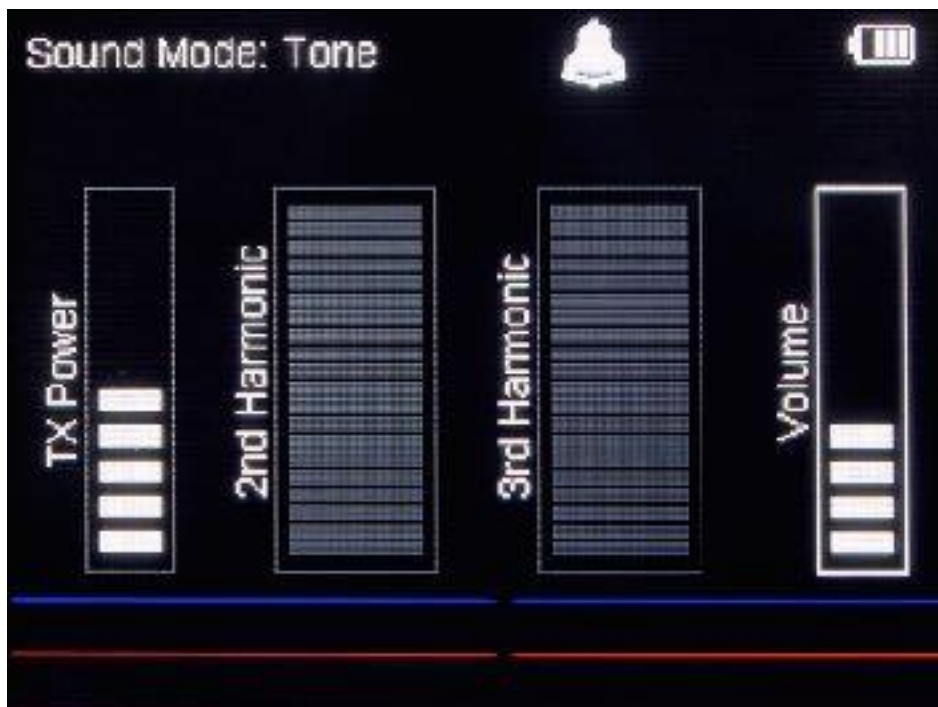
OPERATING THE EDD-24T

POWER ON/OFF

To switch on the EDD-24T press and hold the Power Symbol button for 1 second. The display will momentarily show the start-up screen and then the main live monitoring screen. To switch off the unit press the Power Symbol button for more than 2 seconds.



MAIN SCREEN



Main screen of the EDD-24T with no detected materials

At the center of the screen the detected signals of the 2nd and 3rd Harmonic are displayed. Signal Strength is shown within vertical bars ranging from green through to red in color.

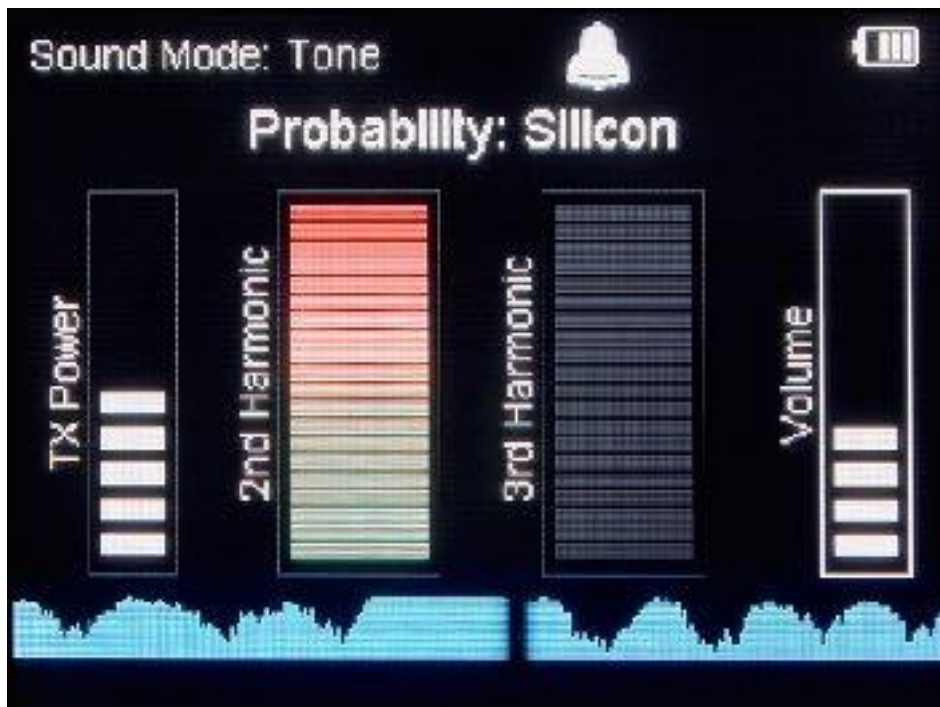
At the bottom of the screen the 2nd and 3rd Harmonic Traces are also shown running from left to right to give the user a brief historical indication of any detected signals. The Blue trace represents the 2nd harmonic and the Red trace represents the 3rd harmonic.

The Battery Level is indicated at the top right of the screen.

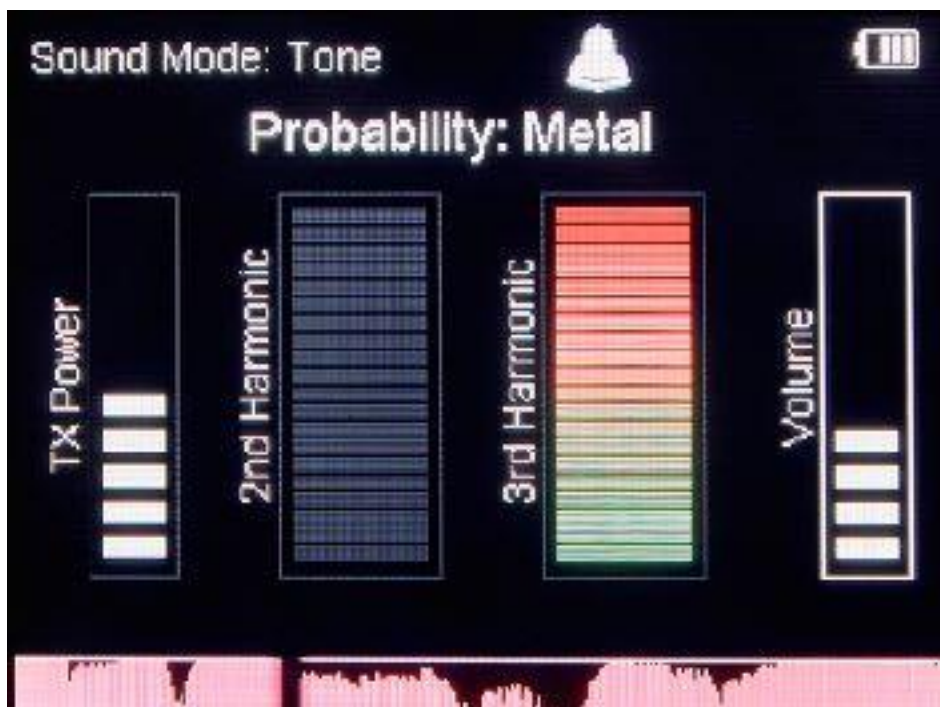
PROBABILITY INDICATOR

To allow the user to make a quick assessment of a detected signal the EDD-24T uses an intelligent algorithm to analyse the detected signals from both the 2nd and 3rd Harmonic Receivers and evaluate the probability of material being detected as 'Silicon' or 'Metal'.

If a strong 2nd harmonic is detected with either a weaker or non-existent 3rd harmonic the probability indicator will predict 'Silicon'. If however, a much stronger 3rd harmonic is detected, above the strength of the 2nd harmonic, a 'Metal' substrate is indicated.



Main screen of the EDD-24T with detected material on 2nd Harmonic
Probability: Silicon



Main screen of the EDD-24T with detected material on 3rd Harmonic
Probability: Metal

TX POWER

TX Power or Transmit Power is shown on the left of the screen. The default setting is minimum (1 bar) and for general use will provide enough power to detect most electronics at distance. For especially small electronics such as SIM cards or for penetration through thicker objects such as walls the TX Power can be increased.

To increase or decrease the TX Power press the TX POWER Button and the 'TX Power' text will change to RED. Within five seconds use the UP and DOWN arrow keys to select the desired TX Power level.

TONE/DEMODO

The EDD-24T can provide audio confirmation of detected signals in two modes, through the internal loudspeaker or earphones.

1. TONE

TONE Mode can be used to provide an audible tone of a detected signal on the 2nd Harmonic only. This enables the user to search without looking at the display screen. The TONE changes in pitch according to the strength of the detected signal.

2. DEMODO

DEMODO Mode can be used to listen to an actual demodulated signal of the 2nd Harmonic Receiver. When no signals are detected a random audible 'Click' sound will be heard. In some cases when Silicon is detected the click level will reduce or become completely silent.

SOUND MODE

To switch between TONE and DEMODO Functions press the TONE-DEMODO button. The selected mode will be displayed at the top left of the screen.

To adjust the volume level of either the TONE or DEMODO function, press the TONE-DEMODO button and then use the UP and DOWN arrow keys to select the desired volume level. The volume level will be indicated in bars on the right hand side of the screen. To switch the audio off press the DOWN arrow key until 'Sound Off' is displayed.

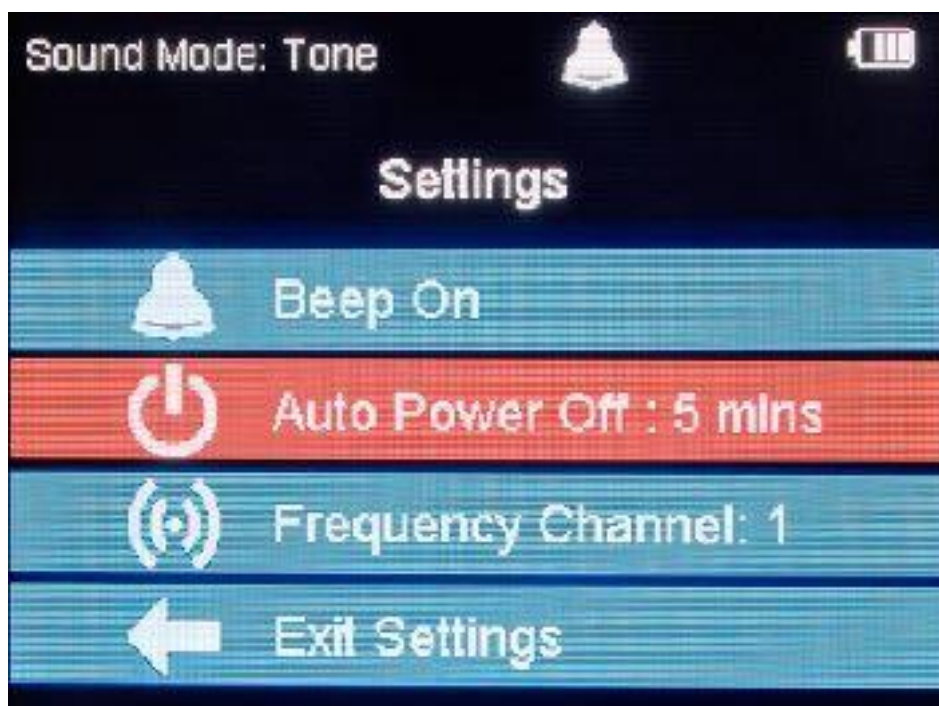
EARPHONE SOCKET

To listen through earphones (supplied) connect the earphones to the EAR socket at the side of the unit. This will automatically mute the internal speaker for silent operation.



SETTINGS

To enter the SETTINGS screen press the SETTINGS button. Use the UP/DOWN arrow keys to scroll through the list:



Settings Menu

Beep On/Off - To switch the audible Beep Tone on or off when a key is pressed use OK to switch between settings. The Beep bell symbol will be shown at the top of the screen when On is selected.

Auto Power Off - If the EDD-24T does not detect any signals for a preset time or if no keys are pressed the unit will switch off to save battery power. The default setting is 5 minutes but can be set at 5, 10, 20, 30 minutes or NEVER using the OK Button.

Frequency Option - The EDD-24T has three settings for frequency of operation. In the unlikely event of interference on the receiver channels the channel can be changed to 1, 2 or 3 using the OK Button.

To exit the Settings screen and return to the main screen select 'Exit Settings' and press OK.

MASTER RESET

In the unlikely event of a firmware failure the EDD-24T can be reset by pressing the following three buttons simultaneously:

'TONE/DEMOD', 'UP' Arrow and 'Power Symbol' Button

This will force the EDD-24T to shut down so it can then be restarted as usual.

SUPPLIED IN PACKAGE

EDD-24T Handheld Electronic Device Detector

Charger - 110V to 240V AC input (Auto Switching) with International Adaptors Output 5V DC 2A

Earphones

High Protection Military Standard Carry Case





TECHNICAL SPECIFICATION

Transmit Frequency	2.400 GHZ to 2.425 GHz (ISM Band Type B)
Transmit Power Level	up to +30dBm (1 Watt)
Radiated Power Antenna	up to +36dBm (4 Watts) within allowable limits of ISM band (Type B)
Display	3.5 inch Colour TFT Daylight Readable
Receiver Sensitivity	better than -120dBm on 2nd and 3rd harmonics
Receiver Bandwidth	Approx 10KHz
Battery	3.7V Lithium Polymer Internal rechargeable
Battery Life	4.5 Hours (Minimum TX Power) 2.0 Hours (Maximum TX Power)
DC Charge	Micro USB Socket 5V 1A
Charger	Input 110/220V Auto-switching - International Adaptors Output 5V DC 2A
Audio	Internal Loudspeaker or via 3.5mm Earphone Socket
Operating Temperature	0 to 40 degrees C
Enclosure	Machined Aluminium Enclosure with Plastic Antenna Cover
Weight	700g (Main unit)
Dimensions Main Unit	Height 225mm x Width 118mm x Depth 51mm
Carry Case	Military Standard 321mm x 229mm x 111mm

