

NON-LINEAR JUNCTION DETECTOR

RFD-23



BRIEF TECHNICAL DESCRIPTION

APPLICATION

The portable (hand held) non-linear junction detector RFD-23 is intended for the detection of devices containing semiconductor components.

RFD-23 can detect electronic devices regardless of their conditions, whether they are active (switched on) or passive (switched-off)

It is used to quickly search and examine floors, walls, ceilings, and furniture inside building, outdoors areas, as well as vehicles and means of transportation.

It is used for the detection and localization of hidden technical means used for data interception and transfer (listening devices), remote control devices, and explosive devices containing electronic components.

GENERAL INFORMATION

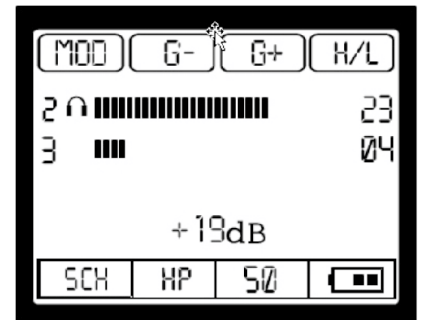
The operating principle of the RFD-23 detector is based on the property of semi-conducting elements (non-linear junctions) to re-emit second and third harmonics of super high frequency probing signals irradiating them.

Because semi-conductor junctions have non-linear characteristics that differ from those of natural junctions, it is possible to differentiate electronics from the background using the reception of the 2nd and 3rd harmonics of the probing signal. The comparison of the harmonics levels, as well as the mode of extraction of the envelope of the reflected signals allow the operator to identify which signals are reflected from the semi-conducting electronic devices and which signals are from the background of the natural (corrosive) non-linear reflectors.

The adjustable radiation power of the RFD-23 detector makes it possible to efficiently conduct searches for devices hidden in or behind various materials, including building structures and the ground.

The use of pencil-beam antenna system combined with the possibility to adjust the detector's parameters results in a very accurate localization of the objects during the search operations.

In addition to using the data displayed on the LCD screen, the operator may rely on audio signals from built-in speakers or headphones to define the presence of the second and third harmonics.



SEARCH MODE

The search mode includes the following steps:

- the presence of interference is assessed,
- the optimal value of the probing signal power and the receivers' amplification are selected,
- the search and localization of objects containing semi-conducting elements is performed.

IDENTIFICATION MODE

The presence of an artificial or natural non-linearity in the detected object is assessed based on the reflected signal parameters.

MAIN SPECIFICATIONS

Distance of assured detection of semi-conducting diode	In open space - not less than 0.7 m In dug underground: a) In dry soil - not less than 0.5 m b) In wet soil – not less than 0.2 m
Indication of detection	Visual (LCD), audible (headphone)
Emitted signal frequency	860 (optional 820) MHz
Emitted signal average power	
- in “Search High Power” mode	115 ± 15 mW
- in “Search Low Power” mode	15 ± 3 mW
- in “Identificatin” mode	300 ± 60 mW
Emitted signal pulse power	
- in “Search High Power” mode	190 ± 30 W
- in “Search Low Power” mode	25 ± 5 W
- in “Identificatin” mode	25 ± 5 W
RF pulses repetition frequency	
- in “Search” mode	300 ± 15 Hz
- in “Identification” mode	6000 ± 300 Hz
RF pulse duration in any mode	2 ± 0.1 μ s
Receiver sensitivity at S/N=10 dB	-115dBW
Receivers dynamic range	Not less than 75dB
Beam width of main lobe of transmitting and receiving antennas	Not more than 40 degrees
Side lobes suppression for transmitting and receiving antennas	Not less than 15 dB
Power supply of the detector	From storage battery 7.2 V
Time of continuous operation	4 hrs. on single full charge at high/maximum power
Operating temperatures range	-10°C...+50°C
Weight of the detector in operating condition	not more than 3 kg
*Weight of the detector in a packing case	not more than 8.5 kg

* The packing case type can be changed without notice.

COMPLETE SET

1. Main unit (transmitter, receiver, and display)..... 1
2. Armrest with a storage battery 1
3. Antenna system 1
4. Connecting HF cables 1
5. Headphones 1
6. Simulator 1
7. Spare storage battery 1
8. Charger 1
9. Charger's cable 1
10. Operating manual 1
11. Case for transportation and storage 1





TECHNICAL MEANS OF COUNTERACTION AGAINST TERRORISM

DEVELOPMENT AND PRODUCTION

**THE DEVICES ARE ADOPTED BY
SECURITY SERVICES OF RUSSIA**

THE DEVICES ARE USED IN 50 COUNTRIES FROM 4 CONTINENTS

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