Comparative table of technical and qualitative characteristics of portable complex Spectr-Express and portable spectrum analyzer OSCOR Green-8

№	Characteristic	Spectr-Express	OSCOR Green-8
1	Frequency band	10 MHz - 6 GHz	100 kHz - 8 GHz
2	Scanning speed	up to 1150 MHz/s, with frequency resolution of 2 kHz	up to 8 GHz/s with frequency resolution of 12.2 kHz
3	Built-in preamplifier	-	10 dB
4	Built-in attenuator	8 dB, 16 dB, 24 dB	10 dB, 20 dB, 30 dB
5	Antenna switch	electronic with four inputs	-
6	Antennas	broadband receiver antenna – 2 pcs.; broadband directional antenna -1 pc.	built into the lid antenna, whip antenna -1 pc.; broadband directional antenna -1 pc.
7	Wire lines converter (WLC)	available, built-in	available, built-in
8	WLC frequency band	600 Hz-10 MHz	N/A
9	IR-sensor spectrum range	320 nm-1100 nm	450 nm-1100 nm
10	Screen type	built-in, touch screen	built-in, touch screen

№	Characteristic	Spectr-Express	OSCOR Green-8
11	Screen diagonal	12.1 inches 30.73 sm	8.4 inches 21.34 sm
12	Interface connectors	USB 2.0*3 HDMI LAN	USB 2.0*1 LAN
13	Rechargeable battery	available, built-in	available, built-in
14	Battery life	at least 2 hours	at least 2 hours
15	Dimensions	385*250*55 mm	295*335*75 mm
16	Weight	3.8 kg	4.4 kg according to web-site https://www.reiusa.net
17	Options for radiation sources localization	case, unloading vest, directional antenna	directional antenna, carrying strap (is not supplied)
18	Ability to store data of long-term radio observation	available, continuous, automatic	not available
19	Software features	Great functionality, regular updating	minimum set of necessary functions

Explanatory notes to paragraph 2

Frequency resolution is the minimum 'distance' on the frequency axis at which two adjacent signals vary as independent spectral components. The term frequency resolution is of great practical importance. It determines the ability of receiving equipment to distinguish between narrowband signals. For example, the ability to distinguish a narrowband signal from a wireless microphone mounted close to the frequency of legitimate radio means (method of operation under cover). Modern radio microphones feature frequency bands from 6-7 kHz. **Resolution of 12.2 kHz of OSCOR Green-8 portable spectrum analyzer does not provide a guaranteed detection of modern radio microphones operating undercover.**

Explanatory notes to paragraph 5

Spektr-Express portable complex is equipped with antenna switch, which allows the operator to simultaneously control several geographically dispersed facilities. In addition, the antenna switch allowed it to implement diversity reception method in a software complex. **This major search method allows the operator to understand whether the detected signal refers to external sources of RF energy or this is an internal signal from the room under control. This method works regardless of the applied types of modulation and coding (encryption) of radio signal.**

Explanatory notes to paragraph 6

The antenna built into the cover of OSCOR Green-8 portable spectrum analyzer does not allow the operator to simultaneously control several geographically dispersed facilities. The lack of several reception antennas with identical parameters makes it impossible to apply universal search method (algorithm) of diversity reception. Frequency range of directional antenna DA-8000 of OSCOR Green-8portable spectrum analyzer 1.5 GHz-8 GHz does not allow it to confidently locate radio microphones, radio stethoscopes and wireless video cameras operating in the frequency range of up to 1.5 GHz. The majority of the above transmitters operate within the range of up to 1.5G.

Spektr-Express portable complex is composed of two identical broadband receiving antennas and one directional antenna. Frequency range of a directional antenna ANP-6000 300 MHz - 8 GHz allows the operator to locate the vast majority of modern eavesdropping devices. Optionally, the complex may be equipped with two more broadband receiving antennas. By agreement with the customer, cable assemblies of a particular brand and length can be supplied.

Explanatory notes to paragraph 7

Built-in wire line converter provides more convenient operation of the complex. The operator of Spektr-Express complex only needs to hook the necessary probes supplied and connects to the line under study.

Explanatory notes to paragraph 11

Large diagonal of a touch screen of Spektr-Express complex provides better perception of graphical, textual and tabular information by the operator. The software complex is convenient to administer both by a mouse-type manipulator, stylus or the finger.

Explanatory notes to paragraph 12

The only one USB connector in OSCOR Green-8portable spectrum analyzer greatly complicates operation with the outer periphery (mouse-type manipulator, keyboard, external drives, printers, etc.).

Three USB connectors of Spektr-Express portable complex allow the operator to work smoothly with the outer periphery. The operator can simultaneously connect to a complex of three external USB devices.

Explanatory notes to paragraph 17

Spektr-Express portable complex is equipped with a special cover, webbed gear and a directional antenna. These options make it easy to operate the complex in the localization of radio sources both in premises and on the ground, as the weight of the unit is evenly distributed on the shoulder girdle of the operator.

OSCOR Green portable spectrum analyzer is not equipped with a cover and webbed gear. The operator has to hold the device in his hands (Figure 1). Optionally OSCOR Green portable spectrum analyzer can be upgraded with a carrying strap (Figure 2). However, that does not add to the convenience when using the product. In fact, the loading falls on the neck of the operator. In addition, the operator should almost always keep the device in one of his hands to fix it.

Figure 1 Operator with OSCOR Green portable spectrum analyzer is locating radio source

Figure 2 Operator with OSCOR Green portable spectrum analyzer locating IR transmitter

Explanatory notes to paragraph 18

The possibility of a long-term storage of radio observations is one of the most important characteristics of any professional search complex. This characteristic determines the ability of a radio receiving equipment to detect 'dangerous' signals including short-time, time interval being unknown in advance. These 'dangerous' signals can for example include the emission of radio microphones and radio stethoscopes accumulating information and short-term over-the-air transmission, with remote switching by a control unit command. **By this characteristic the functionality of the comparable devices varies greatly. OSCOR Green-8 portable spectrum analyzer shows a spectrogram (waterfall) for up to 10 minutes. After this time, the data is automatically deleted. Meanwhile, spectral realization of each scanning cycle is not saved. These factors make it practically impossible for the operator to detect covert eavesdropping devices**

with complex types of modulation in the period of time unknown in advance.

Spektr-Express portable complex provides continuous, automatic data recording of radio observations. Spectrogram (waterfall) data is saved, as well as spectral realization of each scanning cycle and detailed spectrum of each detected signal. Moreover, if the work is carried out with several antennas, detailed spectrum of the detected signals for each of the antennas is saved. Operating this search complex, the operator can refer to any recorded time interval, in any operating frequency range.

Explanatory notes to paragraph 19

OSCOR Green-8 portable spectrum analyzer has a minimal set of necessary functions. According to the extract from the operation manual, the operator can "... stretch to full screen the desired frequency range, save spectrogram peaks, display averaged spectrogram, enable detailed zoom and generate a list of signals. When a signal is detected, you can switch to Analysis mode and demodulate any analog signal. **Software interface in English.**

Spektr-Express Portable complex has powerful, advanced software. For example, the operator can set arbitrary frequency bands with any combination of antennas. The number of simultaneously scanned frequency ranges is unlimited. While operation, the operator can graphically scale any part of the frequency range without stopping scanning. In operation, the complex continuously and automatically stores both the graph of maximum values and spectral realization of each scanning cycle. The software complex of Spektr-Express provides three kinds of universal search method of diversity reception.

For a detailed study of the detected signals the complex has an express-analyzer mode. The operator has the opportunity of a detailed analysis of the detected signals real-time using the modes Spectrum, Spectrogram, Amplitude, Frequency, Phase, and Vector. Using base and context menu, the operator can create a list of legal signals, flexible threshold scheme, mark detected and legal signals to conduct marker measurements. The software has the option of recording demodulated audio signals as well as signals from wireless hidden cameras. While operating, the complex makes a list of detected signals. For each detected signal, the detailed spectrum is saved. Software interface is in Russian. Spektr Express portable software complex is regularly updated and improved.