SIGNAL-T

ST 169

Tester of cellular and wireless data jammers

TECHNICAL DESCRIPTION AND OPERATING MANUAL

Content

INTRODUCTION

This User's Guide contains information necessary for operation of the ST169.

Before operating your ST169, read this Technical description carefully and consult it every time you have questions about the operation of the unit.

The information is subject to change without prior notice.

The manufacturer reserves the right to change the product's specifications in such a manner that they do not worsen or reduce the product's functionality.

1 PURPOSE

ST169 is designed for monitoring operability jammers operating at frequencies of cellular standards GSM 900, 1800, UMTS (3G), microcellular (DECT), wireless data transmission WI FI and BLUETOOTH.

Allows you to determine the real area of suppression and associated frequency bands controlled standards.

To suppress signals the jammer must have the following properties:

- When separate transmit and receive channels (GSM, 3G) interference signal generated in the frequency range of the base station. In the absence of frequency separation (DECT, WI FI and BLUETOOTH) interference signal must cover the whole frequency range of the standards.
- Level of Jammer signal must be greater than the suppressed signal by a specified amount.

To control these properties in ST169 is provided:

- Display of level of signals the base stations, and the jammer, both numerically and in graphical form
- Comparison of the signals and inform the user about the quality of the suppression in the form of information line

2 SPECIFICATIONS

Frequency ranges, MHz	463-467.5, 935-960, 1800-1900, 2110-2170, 2400 -2 485, 2600-2800, 5150-5825
Threshold sensitivity, dB	
935-960	minus 75
1800-1900	minus 85
2100-2170	minus 77
2400-2485	minus 66
5150-5825	minus50
Average dynamic range, dB	65
Indication	color OLED display 169X128
Built-in power supply	3.6 V Li-Polymer rechargeable battery
Consumption current, mA	500
Main block dimension, mm	90x54x21

3 COMPLETE SET

Main block

RF antenna

USB cable

Power supply/charger

USB flash drive with the "Technical description and operating manual"

4 DESIGN AND OPERATION

The principle of operation ST169 is a direct conversion receiver with digital control and a color display.

4.1 OPERATION


Choice of standards. Menu navigation


Fixing level and spectrum of signals


Confirm selection in menu


Choosing between indication the numerical value and range or spectrum


Entry in MENU

Switching on and off ST169 carried out by using switch located on the lateral surface the main unit.
To turn on ST169 the following will temporarily appear on the display:
"ST169 Version X.X. ,

where X.X. is the installed firmware version number.

5.2 DISPLAY

The work results is performed on color graphical OLED display having 169X128 resolution.

Indication common for all the operational modes is highlighted violet and contains:

- in upper right corner of the display – indicator of power supply condition (see item 4.3)
- lines in bottom part of the display indicating short names of digital data transmission standards

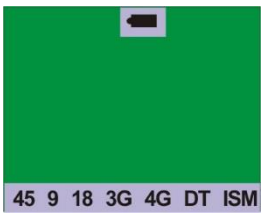

Fig. 1

45- CDMA450**, 9** – GSM 900, **18**- GSM 1800, **3G**- 3G (UMTS), **4G** – 4G, **DT**-DECTISM, **ISM**- unlicensed frequency band 2400-2485MHz applicable standards BLUETOOTH and Wi Fi and 5150-5825MHz. This frequency range can also use the device with other data transmission protocols (for example, wireless surveillance cameras, microwave ovens, etc.).

4.3 POWER SUPPLY

The ST169 can be powered by a built-in Li-Pol rechargeable battery, external power supply/charger or USB port of PC.

At built-in rechargeable battery running its status is represented by icon.

When the battery is fully charged it is indicated by a filled battery pictogram. When the battery is almost completely discharged, the battery indicator will turn from solid to blinking outline.

An average operation time of the detector with a fully charged battery is approximately 4 hours.

4.3.1 CHARGING THE BATTERY

Connect the charger/power supply unit to the «5V» socket of the product, and to the electric system of 220V.

Charging is indicated by constant glow of the «», located on the side of the main unit. Once completed the indicator light goes out. Full charge when the unit is turned off takes about four hours.When the unit is turned on, the battery can be charged, too. Full charge in this case takes at least fourteen hours.

5 ST169 OPERATION

5.1 PREPARING FOR OPERATION

Attach the RF antenna to the main unit.
Turn the unit ON.
If the text "BATTERY DISCHARGED" appears on the display, you will need to charge it (see 4.3.1.).

5.2 MEASURING THE LEVEL OF SIGNALS

Selection standards carried out buttons .

Signal level indication GSM base station 900 is shown in Figure 2.

3G standard is divided into four sub-band-3G1, 3G2, 3G3 and 3G4. The selection is made successive pressing on position when in "**3G**".

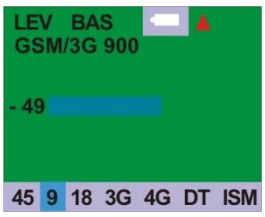

Fig. 2

The appearance of the red triangle in the top right corner of the display indicates the change in the gain of the internal amplifier. If the triangle pointing up, the gain decreases - to eliminate the overload when down, - increasing before the the maximum value based on the level of noise and dynamic range in a given band.

In DECT, WI-FI and BLUETOOT**H** (ISM) absent frequency separation of transmission and reception channels. Thus, when selecting a "DT" or "ISM" appears on the screen with the maximum signal level of all signals (and the peripheral base station device) of these standards.

To jump to the panorama press the . Pressing again provides return in the indication of the level of signals. Panorama base station signals of band GSM 900 is shown in Fig. 3.

Selection standards carried out buttons .

A subsequent press of the button returns to the level indication.

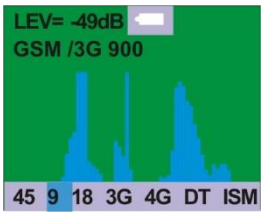

Fig. 3

5.3 INSPECTION AND SETUP OF JAMMERS

Set ST169 in the center the protected areas (further checks shall be made at the control points located along the perimeter). Select the desired standard. Press to store the current value of the signal level. At the same time shows "LOCK" in the upper right corner of the screen and "Increase by XX dB" at the bottom (Fig. 4), where XX - the value of the required increase of the signal of jammers.

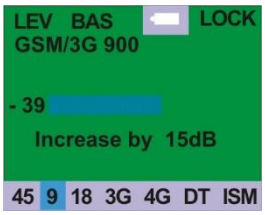

Fig. 4

Turn on the jammer. Exceeding signal of jammer on the stored level will be displayed in red (Fig. 5). With sufficient signal of jammer will appear: "Enough dB XX" where XX - numerical value of the excessive level of signal of jammers.

With insufficient appears "Increase by XX dB." In this case it is necessary to increase the transmission power jammers. (if its design allows it), or increase the number of jammers.

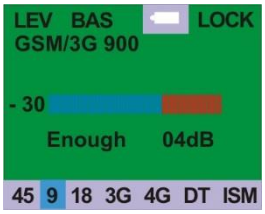

Fig. 5

To control the frequency range of jammer go to panoramas by pressing on (Fig. 6). Set with the required level of attenuation. Press on the and turn on jammer. Jammers signal appears red line and must cover the base station signal or the entire frequency range of suppression standard (shows a blue line).

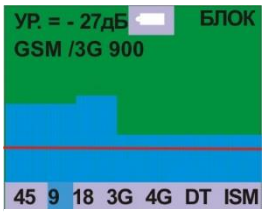

Fig. 6

5.4 MENU

To enter the MENU, press the . Use and to highlight the required menu item. To choose a item press .

"**Suppression factor**" - setting values exceeding the signal jammers required to reliably suppress the communication channel. Average values are set by default.
Access to change values carried out by consecutive pressing and . Change carried out by buttons. Confirm changes and the transition to other standard - . Return to the level indication - .

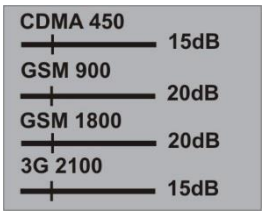

Fig.7

"**System**" - setting, determine the overall configuration of the product.

	Description	Value	Default Settings
Bright	Sets brightness of the backlight	10 to 100 % with 10 % increments	50
Display OFF	Sets time before backlight will turn off after the last key pressing	(8 seconds to 2 minutes with 8-second increments). The rightmost position equals 99 min 99 sec.	99
Acoustic signals	Confirmation beep pressing button.	Selected/not selected	Selected
Language	Language choice for displaying	English/Russian (Русский)	Russian (Русский)
Factory defaults	Resets ALL settings to factory defaults		

5.5 FIRMWARE UPDATING

WARNING! The following steps are true for Microsoft Internet Explorer™. The procedures for other web browsers may be different from those described below.

Select the appropriate firmware version. You will be presented with the following prompt: "Would you like to open the file or save it to your computer?" Choose Open and within a few seconds the application will be downloaded and launched.

Connect the USB cable to the ST169 and a free USB port on your PC. Press and hold key and turn on the power switch. Check the appearance of the inscriptions: "PC->169 (165)".

Monitor the updating process on your computer display. If this process fails, the application will offer you to attempt again.

6 SOME LIMITATIONS AND RECOMMENDATIONS

6.1 Use the original packaging for storing and transporting the ST169 set.
If you are not using the unit for a prolonged period of time, keep it in a closed, heated room with a temperature of 10 to 35ºC (50º to 95º F) and relative humidity of no more than 80 %.

6.2 After the unit has been exposed to temperatures below –5ºC (23º F) for prolonged periods (over 4 hours), turn it on only after making sure there are no visible traces of condensation.

6.3 When operating the ST169 , try to protect it from concentrated moisture (rain, drizzle, and snow).

7 WARRANTY INFORMATION

7.1 The manufacturer guarantees that the unit will comply with the specifications for a period of 12 months beginning from the day of purchase.

7.2 The manufacturer will carry out repairs of the unit and its accessories or replace them if they malfunction or if the functioning will not comply with the stated specifications free of charge during the guarantee period.

7.3 This warranty only covers free-of-charge repair or adjustment of faults that are not the result of improper use, failure to follow the usage tips and recommendations stated in the User's Guide, improper storage or shipment, and mechanical damage to the unit or its parts. The warranty will only be ensured with a guarantee claim accompanied by a properly filled out certificate of warranty.

7.4 The manufacturer offers post-guarantee servicing of the unit .

Quality control sertificate

The «ST169» №_____ is produced according to the requirement, accepted and approved as ready for operation.

Q.C. chief

Stamp

_____ _____

Personal signature clarification of signature

_____

Day, month, year