









tapping. To obtain this effect while using the LUX device, it is sufficient to tap a 15-cm thick reinforced concrete wall lightly with one's hand.

4.4 The LUX device use a battery as a power supply. The battery lifetime is sufficient for 4 hours of the device continuous operation. Battery discharge is indicated by the Batt LED installed at the device handle: when the battery is discharged, the LED starts blinking. The device operation with the LED blinking is only allowed for up to 10 minutes.

## 5. Device design

The Non-Linear Junction Detector is implemented as a non-demountable device consisting of an antenna module and a handle rod, connected with a pivot joint. The battery module is attached to the device body with a threaded joint.

Control buttons and LED indicators are arranged at the device front panel as shown in Fig. 1.

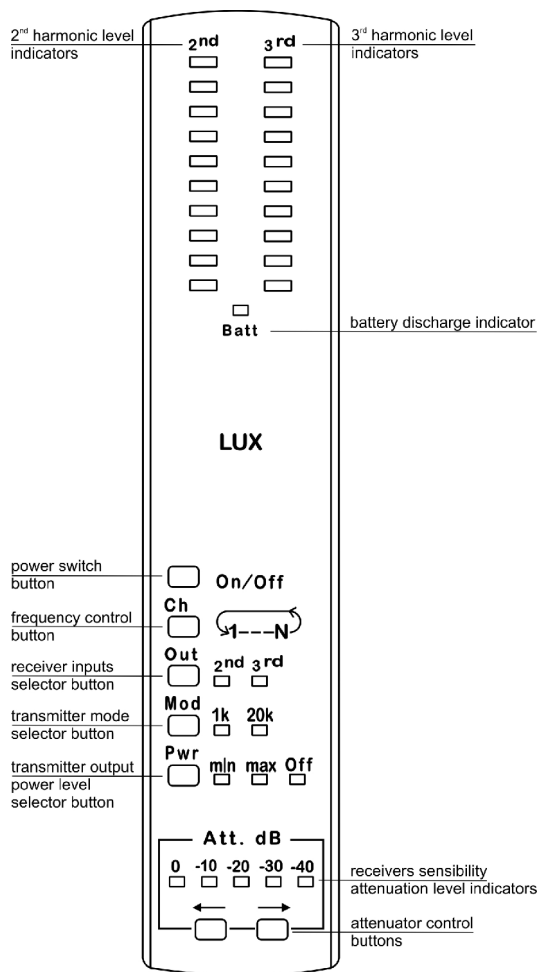


Fig. 1

The following connectors are provided at the end face of the battery module:

- battery charger connector;
- headphones connector.

## 6. Marking and seals

6.1. A marking LUX is present at the device control panel.

## 7. Packaging

7.1. The device and its accessories are packed in a dedicated back made of high-strength material.

## 8. General operation guidelines

8.1. The present Manual states the main operation rules for the LUX device and constitutes a set of official guidelines for all personnel directly related to the device operation.

8.2. All personnel admitted to the device operation must read and understand the Technical Description and User's Manual prior to the use of the device.

8.3. The LUX device is a complex electronic apparatus requiring careful handling while operated.

## 9. Safety measures

9.1 During the device operation, observe safety rules applicable to devices containing open radio-frequency radiation sources.

9.2. Radiation emission levels were evaluated by measurements of power flux density produced by the device at the operator location. Measurements were carried out according to methods approved by Russian Sanitary and Epidemiological Service (SES) using dedicated apparatus for checking electromagnetic field levels at the workplaces of personnel operating radioelectronic devices. The electromagnetic power flux density at 0.5 m from the antenna back face at the maximum transmitter output power (average power of 200 mW) was found to be equal to 4.2  $\mu\text{W}/\text{cm}$ . At the minimum transmitter output power (average power of 20 mW), the power flux value did not exceed the level existing noise level (about 0.5  $\mu\text{W}/\text{cm}$ ).

According to the Sanitary Standard 2.24/2.1.8.055-96 (Radio-Frequency Range Electromagnetic Radiation. Sanitary Standards and Guidelines), power flux density must not exceed 10  $\mu\text{W}/\text{cm}$  at residential development areas, public rest areas, and other locations open for people unrelated to the operation of radioelectronic devices. For personnel operating radioelectronic devices, the allowed duration of stay in the hazardous area at the power flux density of 25  $\mu\text{W}/\text{cm}$  must not exceed 8 hours a day.

Note: According to GOST 12.1.006-84 standard, the maximum permissible value of electromagnetic radiation flux in the area of possible operator location is equal to 200  $\mu\text{W}\cdot\text{h}/\text{cm}$ .

## 10. Getting ready for operation

10.1. After the unpacking or a long-time storage of the device, inspect it visually in order to make sure it has not sustained any mechanical damage.

10.2. If the device has been brought from outdoors in frosty weather, keep it indoors for at least 2 hours before unpacking.

10.3. Check the device package completeness. If necessary, recharge the batteries. Battery recharging should be performed according to the manual provided with the battery charger.

10.4. Attach the battery module to the device using the screw(s) provided.

## 11. Operation sequence

11.1. Direct the device antenna away from the operator and other persons. Switch the device on by pressing the On/Off button. Red LED indicators will light.

11.2. Tune the device to eliminate the interference produced by cellular communication systems. To do so:

- switch the device transmitter off by pressing the Pwr button and holding it for 2 seconds; the Off LED indicator will light;
- press the Ch button until you find an interference-free channel (where the presence of the 2<sup>nd</sup> harmonic is not indicated);
- switch the device transmitter on by pressing the Pwr button and holding it for 2 seconds.

11.3. Check that the device is in working order. To do so:

- press the left (–) control button of receivers attenuators; the O LED indicator will light;
- set the transmitter output power control to min;
- select the orientation of the device antenna so that the low-frequency signal is not heard in the headphones, and LED indicators of harmonic levels do not light;
- without changing the antenna orientation, bring the 2<sup>nd</sup> harmonic imitator to the distance of 30–50 cm from the antenna. An audible signal will appear in the headphones, and one or more LEDs will light in the left-hand LED bar marked 2<sup>nd</sup>;
- without changing the antenna orientation, bring the 3<sup>rd</sup> harmonic imitator to the distance of 30–50 cm from the antenna. An audible signal will appear in the headphones, and one or more LEDs will light in the right-hand LED bar marked 3<sup>rd</sup>;
- set the output power level control to max, position the simulator(s) at the distance of 80–100 cm from the antenna, and repeat the testing sequence. An audible signal will appear in the headphones, and one or more LEDs will light in the indicator LED bar(s).

If all LEDs in both indicator LED bars light, it means that the indicator is overloaded; adjust the receiver sensibility levels by varying the positions of input attenuators. At lower receiver sensibility levels, the simulator detection distance may become shorter.

The device is now considered ready for operation. The transmitter output power level is selected by operator at will.

## 12. Recharging the battery

- Disconnect the battery from the device.
- Connect the charger to the Rapid Charge socket. The red LED will light at the charger indicator. The device battery is recharged for 1.5 hours, until the green LED lights.

## 13. Transportation and storage

13.1. The device can be transported in all passenger transportation vehicles.

13.2. The device should be stored in storage rooms providing the device protection from atmospheric precipitation. It should be stored in racks or kept in its packaging. Storage room atmosphere must be free from vapors of acids, alkalis and other aggressive substances.

13.3. Ambient air temperature in storage rooms where the device is kept should be in the range from –50 °C to +40°C with relative air humidity of 80% at 30°C.