

Compact panoramic SDR receiver of VHF-UHF frequency band “Philin-VU/P”

Compact receiver of interception and surveillance “Philin-VU/P” is purposed for reception, demodulation, and listening of signals within the frequency band from 20 to 3000 MHz.

Receiver is controlled by computer using interface USB 2.0 (LAN 1 Gbps – optional) and provides observation of amplitude spectrum on the display in panoramic mode in the bandwidth 10 MHz. Information from the output of receiver is presented in the form of digital samples of amplitude spectrum transmitted via USB-port (LAN-port) to external computer.

High performance DSP with FPGA special computer of FFT built-in into panoramic receiver “Philin-VU/P” provides high speed of frequency searching ($V_{\text{look}} \geq 10 \text{ GHz/s}$).

The product can operate in automatic signal detection mode and also in the mode of spectrum analyzer under computer control.

Algorithm of spectral and statistical detection of newly appeared signal on the background of existing spectrum loading is realized on external computer on the base of operation with panoramic receiver “Philin-VU/P”.

Product “Philin-VU/P” provides efficient signal detection of current wideband communication systems including Bluetooth, Wi-Fi etc.

Results of signal detection are recorded to the DB for editing and sorting and printing out.

Panoramic SDR-receiver “Philin-VU/P” provides:

- 1) Automatic receiving and FFT detection of radio signals while scanning within frequency band from 20 to 3000 MHz
- 2) Generating of FFT-spectrum (amplitude spectrum) of received signals
- 3) Operation in field conditions and on stationary position

COMPOSITION

- panoramic receiver of VHF-UHF frequency band “Philin-VU/P”;
- special software for external computer;
- set of connecting cables;
- power supply unit from AC network 220 V, 50Hz;
- operational documentation.

Technical parameters of VHF-UHF receiver “Philin-VU/P”

Name	Parameter
Operating frequency band	20 MHz – 3000 MHz
Antenna input (connector SMA)	$Z_{in} = 50 \text{ Ohm}$
SWR _d of antenna input	not more than 2.5
Frequency tuning time of receiver	not more than 0.5 ms
Relative frequency instability of frequency tuning within operating temperature range	not more than $\pm 2.5 \cdot 10^{-6}$
Sensitivity with FFT frequency resolution = 6.125 kHz: in the frequency band 20...1000 MHz in the frequency band 1000...3000 MHz	not more than 0.7 μV not more than 1.0 μV
Scanning rate: with FFT frequency resolution = 3.125 kHz with FFT frequency resolution = 6.25 kHz with FFT frequency resolution = 12.5 kHz with FFT frequency resolution = 25.0 kHz	not less than 3 GHz/s not less than 5 GHz/s not less than 7 GHz not less than 10 GHz
Real time bandwidth	10 MHz
Noise factor	not more than 13 dB
Attenuation of IF channels	not less than 85 dB
Attenuation of image channels	not less than 80 dB (25-1000 MHz) not less than 60 dB (1000-3000 MHz)
Dynamic range by third order intermodulation	not less than 70 dB
Ослабление побочных каналов приёма	not less than 75 dB
Level of heterodyne feedthrough to antenna input	not more than -105 dBm
Attenuation adjustment of HF attenuators	coarse 0...20 dB, step 10 dB fine 0...31 dB, step 1 dB
Consumed power from network 220 V/50 Hz from AC source 7.5 V	not more than 9 W not more than 5.6 W
Weight	not more than 1.06 kg
Overall dimensions	not more than 86×50×215 mm
Operating temperature range	-10°C ...+50°C



Compact receiver “Philin-VU/P”

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