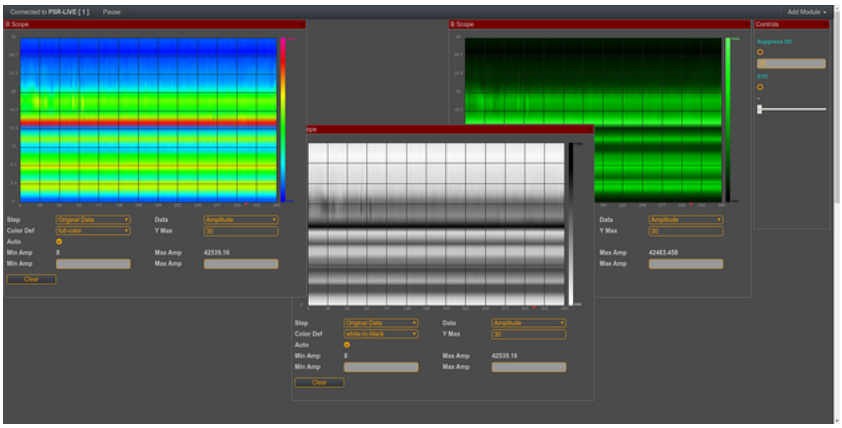
PSR Base Unit - Data Sheet

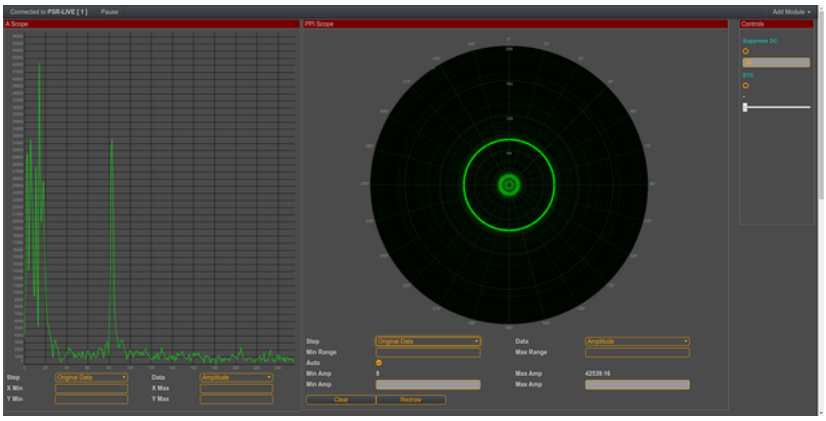
General Features

At the heart of the system, the server card controls a so-called noise radar operated in pulse mode. The transmitter can emit very short pulses through the antenna and monitor the reflected pulses. The pulses are reflected of fixed objects (buildings, trees…) and moving objects (cars, people…) which pass the antenna beam.
The signals are digitally processed using a Digital Signal Processor (DSP), data is visualized through the analysis and visualization software SkyRadar FreeScopes.

General Features

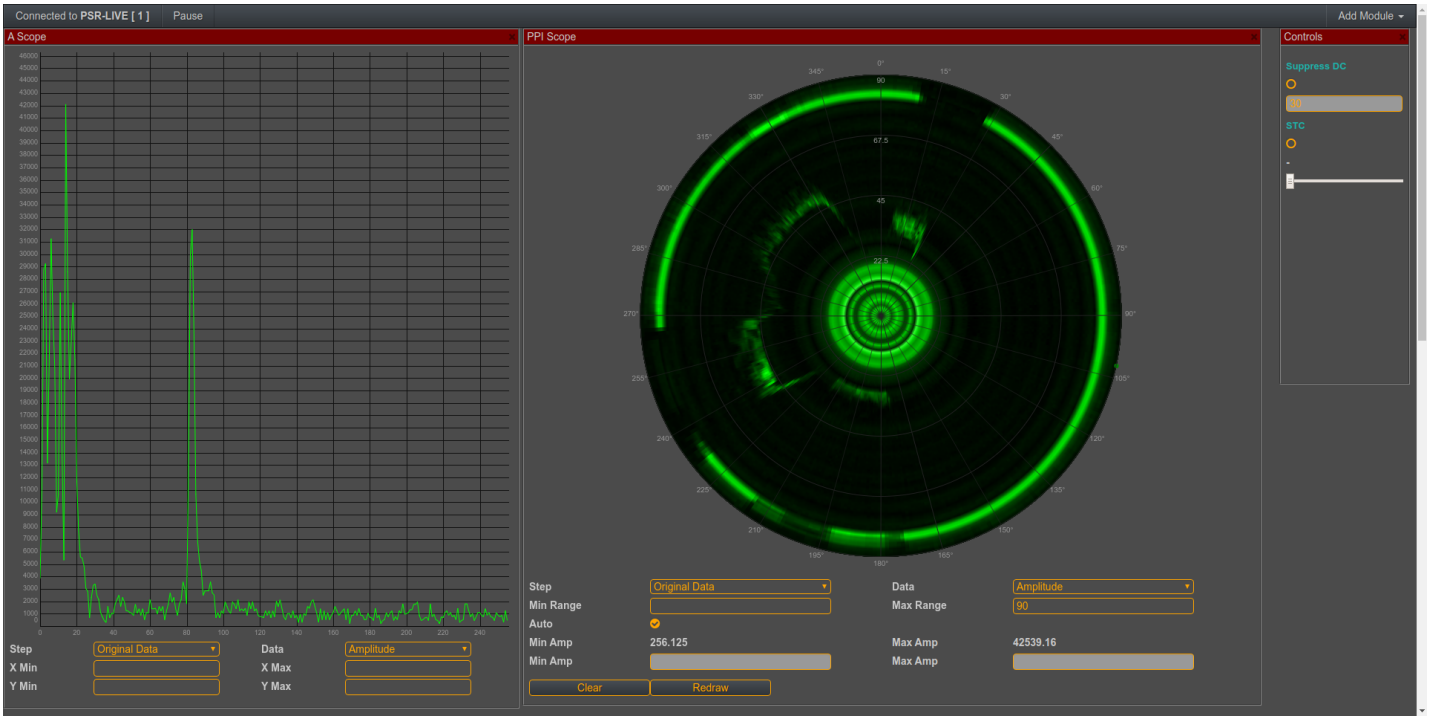
- Active radar, designed for perfectly save indoors and outside operation (transmitter output power significantly lower as such of a mobile phone.
- The following operating modes can be technically enabled in the hardware
  - Pulse Mode
- Antenna
  - Double Horn Antenna
  - Default operation 24 GHz
  - a Parabolic reflector can be added to focus the antenna beam
- Powerful and fast radar image processor.
- All measurements are performed in real time. No sub-sampling or substitution techniques.
- Optimized for detection of real targets in a 3-dimensional space within laboratories or outside, remote controlled drones. No limiting target table or rail system required.





System Features

Power Requirements	12V, 5V
Output Density at the antenna	-2 dbm / 630 µW
Maximum Range with parabolic reflector	more than 40 m
Sampling Rate of I/Q Data	internal 1 - 4 MBits/s
Dimensions	without horn antennas: 141mm x 143mm x 195mm; with horn antennas: 141mm x 143mm x ~240mm
Net Weight	500g - 750g



Range extension, factor	**1.00**	**1.33**	**2.00**	**4.00**
Carrier frequency	4 Ghz	3 Ghz	2 Ghz	1 GHz
Resolution	3.75 cm	10.00 cm	30.00 cm	100.00 cm
at a distance of	9.60 m	12.80 m	19.20 m	38.40 m
Tracking rate	8 ms	8 ms	8 ms	8 ms

Transmitter Features

Supply Voltage	**24V**
Supply Current	300 mA
Operating Temperature	-20 ... + 60 °C

Table: General operative characteristics of the Transceiver

Carrier Frequency	24 Ghz	24,125 GHz	24,250 Ghz
Transmitter Output Power:	-6dBm	-2 dBm	+2 dBm
Transmitter Output Power:	0,25 mW		1,58 mW
Spectral Width	20 GHz	...	28 GHz
Spectral Density	-30 dBm	-30 dBm	-30 dBm
Frequency Drift vs Temperature	-0,3 Mhz / °C	-0,3 Mhz / °C	-0,3 Mhz / °C
Spurious emission	-30 dBm	-30 dBm	-30 dBm

Table : Operative characteristics of the Transmitter (subsection of the Transceiver)

Receiver Features

Antenna Gain	17 dBi
Receiver Sensitivty	– 91 dBm
Overall Sensitivity	-106 dBc

Table : Operative characteristics of the Receiver (subsection of the Transceiver)

Delivery and Export Regulations based on European Law

SkyRadar produces products to train the civil use of radar equipment. We actively take that mission to makes this world a better and safer place. We do not provide goods which are in conflict of the dual use regulation (unless with specific written consent of the European Regulation Bodies and if the purpose is a peaceful one). SkyRadar has received a general export permit 40066564 dated 22.08.2011.

SkyRadar emphasizes that the COUNCIL REGULATION (EC) No 428/2009 and its amendments are the only authentic legal reference and that the information in this document does not constitute legal advice.

According Paragraph 6A008, goods are subject to the above stated Regulation, when they comply to the following criteria:

Criteria	**Explanation why SkyRadar does not comply to these criteria**
a. Operating at frequencies from 40 GHz to 230 GHz and having any of the following: ...	The system operates at 24 GHz and operates with max 1.8 mW far below the critical threshold
b. A tunable bandwidth exceeding ± 6,25 % of the 'centre operating frequency'	The bandwidth is below 1% of the centre operating frequency
c. Capable of operating simultaneously on more than two carrier frequencies	The system operates with one carrier frequency
d. Capable of operating in synthetic aperture (SAR), inverse synthetic aperture (ISAR) radar mode, or sidelooking airborne (SLAR) radar mode	The base module itself does not include SAR, iSAR or SLAR features.

e. Incorporating electronically scanned array antennae	The system does not work with electronically scanned array antennae. It operates either with 2 horn antennae.

The dual use regulation, in particular paragraph 6A008 does not control "Displays or monitors used for air traffic control (ATC)", as done by SkyRadar FreeScopes.

Section l.1 of paragraph 6A008 addresses "Automatic target tracking" providing, at any antenna rotation, the predicted target position beyond the time of the next antenna beam passage. This paragraph however does not "control conflict alert capability in ATC systems". Only that is done by the SkyRadar FreeScopes software. Target tracking in terms of trajectory projection, as done by military systems is explicitly excluded and not part of the system.

Paragraph 6A108 concerns Radar systems and tracking systems, other than those specified in entry 6A008. It covers Radar and laser radar systems designed or modified for use in space launch vehicles specified in 9A004 or sounding rockets specified in 9A104. This is not applicable to the SkyRadar training equipment.