PSR Base Module

The PSR base unit of the SkyRadar Modular Radar Training System in an extension of the NextGen Radar Training system. It is based on a noise radar.

Description

Technically, the SkyRadar Base Module is based on a pulsed noise radar. It is operatable in Doppler and Pulse mode. The SkyRadar Base Module allows for experiments ranging from basic working principles like validating the radar equation to most complex radar scenarios. The system operates with the SkyRadar FreeScopes Software which provides many scopes (A-Scopes, B-Scopes, PPI), control interfaces and filters. The module allows for highest flexibility in the learning process, while providing high-resolution at close distance with an electro-magnetic emission of a small fraction of that of a mobile phone.

Features

- Operating Modes (enabled in the hardware)
  - Pulse
  - Moving Target Indication

- Scopes (enabled through FreeScopes)
  - A-Scope
  - B-Scope
  - Plan-Position-Indicator (PPI)

- Amplification
  - Amplification of raw signal (IQ signal) at receiver

- Amplification of filtered signal in the scopes

- Filters and Signal Treatment
  - Sensitivity Time Control (STC)
  - Signal Threshold and Limiter
  - Range Calibration and Extension
  - Cutting out selections of the signal range
  - Moving Target Detection and Indication
  - and more

SkyRadar Base Module - configuration with parabolic reflector
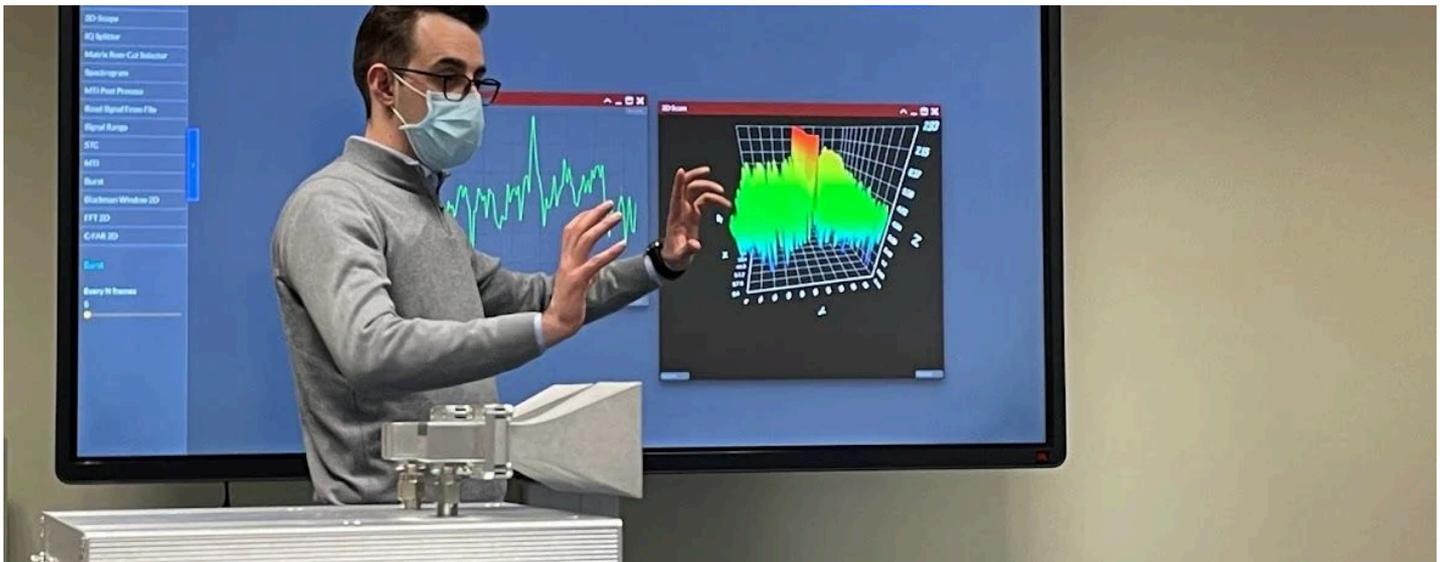
SkyRadar Base Module - configuration with reflector and rotary tripod

The FreeScopes applications in the PSR Base Module get active in a plug-and-play approach, as soon as the radar on its own, or in conjunction with the SkyRadar CloudServer are plugged in.

Topics

Selection of experiments:

- Experiments on Pulse
- Experiments on A-Scope, B-Scope and Plan-Position-Indicator (PPI)
- Calibrating a radar using amplification, filters and settings
- Experiments in a fixed position as well as through panning and rotation (rotary tripod required)
- Experiments on amplification of source as well as of the signals
- Clutter processing e.g., through Sensitive Time Control (STC)
- Moving Target Indication (MTI).

- Allows analyzing performance and false alarm tolerances through adjustment of the sensitivity.
- Adjustable decision threshold allowing for experiments on background noise.
- And many more.

Parts

The PSR Base Module consists of:

- one (1) mounted pair of horn antennas
- one (1) base unit, including
  - o   one (1) digital signal processing unit (DSP)
  - o   one (1) transceiver
- one (1) cable set.

Prerequisite

- Computer with latest HTML5 enabled browser. Current versions of Chrome, Firefox, MS Internet explorer, Opera and Safari are able to read HTML5.
- NextGen 8 GHz Pulse Radar
- SkyRadar FreeScopes

Extensions

- SkyRadar Rotary Tripod (recommended)
- SkyRadar Cloud Server (recommended)
- SMC System Monitoring and Control
- SkySim Radar Simulator

The SkyRadar PSR Base Module is accessible by an unlimited amount of concurrent users. Also the broad coverage of solutions useful in ICAO and EuroControl ATCO and ATSEP training programs as well as IATA qualifications makes SkyRadar the preferred choice of many aviation academies and IATA TrainAir Plus accredited institutions. Also, many universities and military academies use the PSR Base Module within their qualification, education, training or research programs.