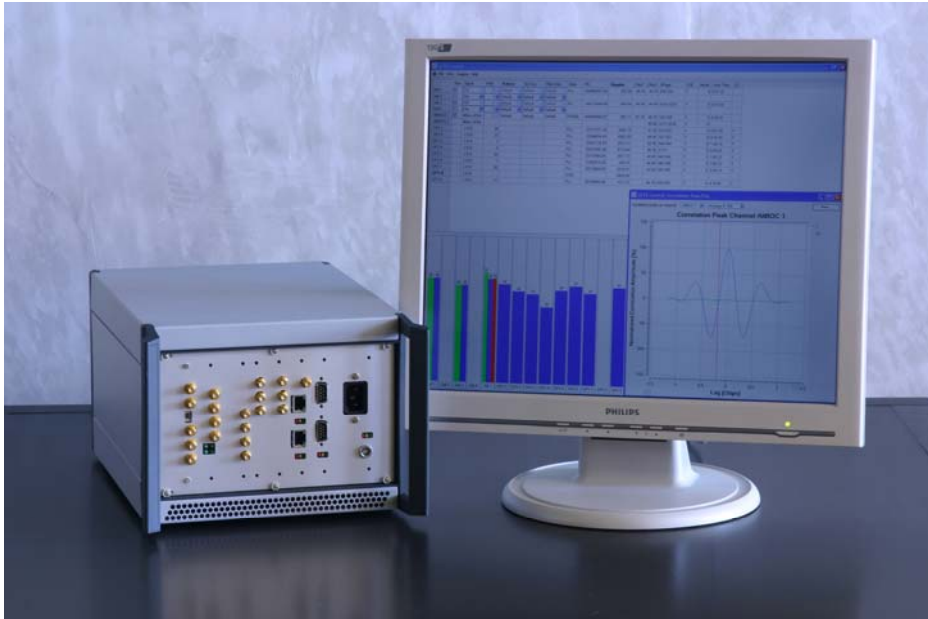


GeNeRx1 GPS/Galileo Receiver

GeNeRx1 is a combined GPS/Galileo receiver that can be flexibly configured to simultaneously track Galileo as well as GPS satellites in multi-frequency mode. All Galileo frequencies and modulations are supported. As with all Septentrio receivers, an intuitive Graphical User Interface, which gives full and easy access to all settings and measurements of the receiver, accompanies GeNeRx1.



GPS/Galileo Receiver

GeNeRx1 is a 54-channel dual-constellation multi-frequency receiver that is capable of tracking GPS L1, L2 and L5 and Galileo L1, E5a, E5b, E5 (AltBOC) and E6 signals, and provides detailed measurements and data for all tracked signals. GeNeRx1 can operate in dual constellation GPS/Galileo mode as well as in Galileo-only mode.

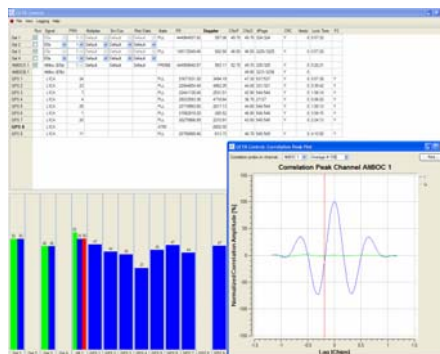
A PVT output based on dual-frequency GPS measurements is provided.

Support for All Galileo Signals

In its current version, GeNeRx1 contains 6 generic and 1 AltBOC Galileo channels on top of 48 GPS channels. Each generic channel can track the pilot and data component of all currently defined BOC(m,n) and BPSK signals. These 6 channels can be fully flexibly assigned to different Galileo and GPS satellites. GeNeRx1 also allows tracking of the promising ultra-low noise AltBOC signal.

Intuitive User Interface

As always with Septentrio receivers, an intuitive and extensive GUI accompanies the Receiver. It allows to configure, control or upgrade GeNeRx1 and provides visualization of measurements, including real-time correlation peak monitoring. Finally it includes tools for logging all receiver outputs as well as IF (Intermediate Frequency) samples.



Versatile and Performant Tool for Galileo Developments

The large flexibility in signal types - including tracking support of BOC sine or cosine modulations, QPSK or interplex multiplexing - and the configurability of the tracking behaviour, including pilot/data or data-only tracking, allows extensive evaluation and experimentation with the new Galileo signals. A host of data is output for the different signals in tracking, including pseudorange, carrier phase, Doppler, C/No, lock-time, raw navigation symbols and navigation pages, as well as real-time correlation peak samples and IF samples, offering an invaluable tool for anyone who wants to work on real Galileo signals from day 1.

The receiver is compliant with the Galileo System Test Bed Version 2 (GSTB-V2) satellites, and allows upgrading to the Galileo IOV constellation as the constellation expands.

GENEX1 TECHNICAL SPECIFICATION

FEATURES

- 6 generic + 1 AltBOC Galileo tracking channels
- All-in-view 48-channel dual-frequency GPS receiver (PolaRx2) included
- Multi frequency GPS L1/L2/L5 code/carrier and Galileo L1/E5/E6 code/carrier tracking
- Flexible channel allocation and tracking configuration
- Tracking of various modulation types for Galileo signals, incl. Sine and Cosine BOC types, QPSK and interplex multiplexing modes
- Pilot+Data or Data-only tracking
- GPS+Galileo and Galileo-only tracking mode
- Raw data output (code, carrier phase, Doppler, C/N_0 , navigation data)
- Real-time correlation peak monitoring
- IF sample logging
- 1 Hz raw measurement and position output rate (position data : GPS only)
- 1 PPS output
- 5 or 10 MHz reference input
- 10 MHz reference output
- 2 RF input connectors allowing combination of signals from 2 different antennas or from an antenna and a simulator
- Bi-directional serial port (RS232), baudrate up to 115 kbps and two ethernet LAN interfaces are included
- Proprietary ASCII output format for all Galileo data
- Highly compact and detailed Septentrio Binary Format (SBF) output for GPS-only and GPS-PVT data
- 15 LEDs for power, receiver and tracking status, position fix and communication identification
- Mounted in portable housing (42 HP/4U)
- Includes intuitive GUI and detailed operating and installation manual

SUPPORTED SIGNALS

- GSTB-V2 Space Segment - Navigation Signal-in-Space ICD version 3.0 of 29-Nov-2004
- GPS L1/L2 SIS ICD (IRN-200C-004) of 12-Apr-2000
- GPS L5 SIS ICD (ICD-GPS-705) of 02-Dec-2002

Signal bandwidth

E1L1E2 ¹	40 MHz
E6	40 MHz
E5	55 MHz
L2 (GPS)	25 MHz

Modulations

Galileo

E5a	BPSK(10)	Data + Pilot
E5b	BPSK(10)	Data + Pilot
E5	AltBOC(15,10)	E5a+E5b together
E6BC	BPSK(5)	Data + Pilot
L1BC	BOC(1,1)	Data + Pilot
	BOC(2,2)	Data + Pilot
	BOC(2,1)	Data + Pilot

GPS

L1	BPSK(1)	Data only (C/A)
L2	BPSK(10)	Data only (P(Y))
L5	BPSK(10)	Data+Pilot

PERFORMANCE

Tracking Performance^{2,3}

Code Tracking Noise

Galileo

L1 BOC(1,1)-s	8 cm
E6 BPSK(5)	6 cm
E5a/E5b BPSK(10)	6 cm
E5 AltBOC	1.5 cm

GPS

L1 C/A	152 cm
L2 P(Y)	10 cm
L5	4 cm

Carrier phase Tracking Noise

E5 carrier phase	1 mm
L2 carrier phase	1 mm
E6 carrier phase	1.1 mm
L1 carrier phase	1.3 mm

Tracking Sensitivity (C/NO Threshold)

Tracking	25 dB-Hz
Acquisition	37 dB-Hz

Re-acquisition time < 5 sec (all signals)

Position accuracy^{2,6,7}

	Vertical	Horizontal
Standalone	1.9 m	1.1 m
SBAS	1.2 m	0.7 m
DGPS	1.1 m	0.6 m
RTK	2 cm + 2ppm	1 cm + 1ppm

Time accuracy^{2,6,7}

1PPS	20 nsec
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Update rate 1 Hz

PHYSICAL AND ENVIRONMENTAL

Size	235 x 315 x 205 mm
Input voltage	11-28 VDC or 110-220 VAC

Antenna LNA Power Output

Output voltage	5.5 V
Maximum current (RF _{in} /Aux _{in})	250 mA

Power consumption 20 W

Operating temperature 0 to +35 °C

Humidity 5% to 95% (non condensing)

Connectors

Antenna	SMA
Ref in/out	SMA
1PPS	SMA
Power	AC Mains/LEMO
Com 1 & 2	DB9
Ethernet	RJ45

ANTENNA

Antennas are not included. Up to 2 antennas can be connected, whose signals are combined inside the receiver. One antenna can be a standard GPS dual-frequency antenna.

Information on Galileo Reference Antennas is available upon request

1 Same Front-end for GSTB-V2 and GPS-L1

2 1 σ level

3 C/NO = 45 dB-Hz

4 90%

5 95%

6 Performance depends on environmental conditions

7 GPS only

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SSNDS 06/2006

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