

SubWAVE+

Indoor GPS with precision



Indoor Location For Subway & more

Inside tunnels or subway stations, and more generally in many covered or underground places, regular GPS signal cannot be received due to very important signal fading between the outside and the inside hampering the functioning of the location function of TETRA receivers and user's smartphone.

But today's life requires efficiency, security and confidence.

Outside, we are used to be helped by many GPS-based devices, for our personal life, and for our professional life.

When we penetrate inside a place where GPS does not work

any more, we lose all the benefit GPS has brought us since the last 15 years.

That is why Syntony created SubWAVE+. Designed to bring precise GPS positioning for GPS-denied zones, it answers to any geolocation need, for public as for professional, with 100% of GPS compatible devices without application installation or driver upgrade.

Corner cases. SubWAVE+ emits a signal similar to standard GPS, making all existing and future chipset work: SubWAVE+ is the only solution worldwide which has this capacity.

✓ From 3 up to 6 RF output

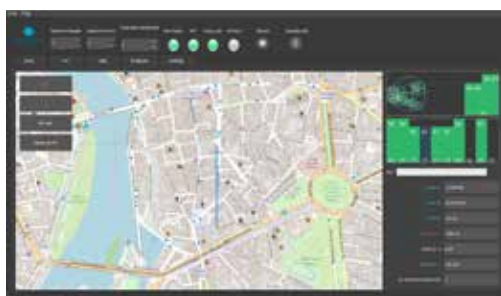
✓ Extensive options

- ✓ Full time and location control
- ✓ PVT definition for each zone with positioning precision along the leaky feeder
- ✓ Emission power for each zone
- ✓ Synchronization control with outdoor GPS at $\ll 1$ microsec
- ✓ Alarm monitoring
- ✓ GPS redundancy
- ✓ Front LED error status
- ✓ Extractable SSD drive for higher performance and easy maintenance
- ✓ High reliability
- ✓ Easy Maintenance

A future-proof investment. The core of SubWAVE+ is its software, ensuring full compatibility and operability regardless of new constellations, satellites and codes arising in the future. Most functional upgrades will then be software-only.

Affordable TCO. Hardware maintenance, calibration, and support at affordable prices make SubWAVE+ a profitable investment offering a quick ROI.

SubWAVE+ is delivered in a 4U 19 inches form factor to be integrated inside a 19 inches cabinet



SubWAVE+

Specifications

SIMULATION

Possible Constellations & Signals

GPS	L1 C/A; L1 C (data & pilot);
GALILEO	E1B & C; E5A & B (data & pilot); E6
GLONASS	G1 & G2
BEIDOU	B1 & B2

Performance

Nb of satellites	6 per RF channel
RF Channels	Up to 6 independent
Pseudorange Accuracy	<1mm
Positioning Accuracy	Up to 1 m

GENERAL

Connectivity

RF Output Connector	N female
Int. 10MHz Reference Output	BNC female
Ext. 10MHz Reference Input	BNC female
Network Connector	RJ45
Media Connector	USB

Hardware Specifications

Size	4U 19 inches
Weight	18 kg
Input Voltage Range	100 to 240 V AC +/-10%
Input Frequency Range	50 to 60 Hz +/- 5%
Power Consumption	200W
Operating Temp. Range	+5°C to +35°C
Storage Temp. Range	-20°C to +55°C

Line Demux

Size	12x10x5cm
Power source	External
RF Connector	N female

RF FRONT END

RF Output

Frequency Range	1100MHz to 1610MHz and from 2400 to 2500MHz
RF Bandwidth	120MHz
RF Power (@50 Ohm)	From -30 to -170dBm
Output VSWR	< 1.3
Supported VSWR	∞ (permanent)

RF Quality

Level Resolution	+/- 0.1dB
Level Precision	+/- 0.5dB
Harmonic Spurious	< -65dBc min
Non-harmonic Spurious	< -55dBc (SF dependent)
RMS Jitter	104fs
Group Delay Variation	< 15ns @ BW = 55MHz
Group Delay Stability	< 10ps/°C @ BW = 55MHz

Synthesizer - Internal 10MHz Reference

Signal	Sinus
Stability	5x10 ⁻⁹ from +10°C to +40°C
Aging	0.5ppb/day and 50ppb/year 2x10 ⁻¹²
Allan Variance (1s)	2x10 ⁻¹²

Synthesizer - Internal 10MHz Reference Output

Signal	Sinus
Impedance	50 Ohm
Level	6dBm

SubWAVE+
rear side



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