

# GDARS™

4 channel GNSS RF  
record and playback system



## DESCRIPTION

The target of the GDARS™ project is to offer the GNSS community an advanced GNSS RF-bands record and playback instrument, combining the highest fidelity with first class flexibility and performances.

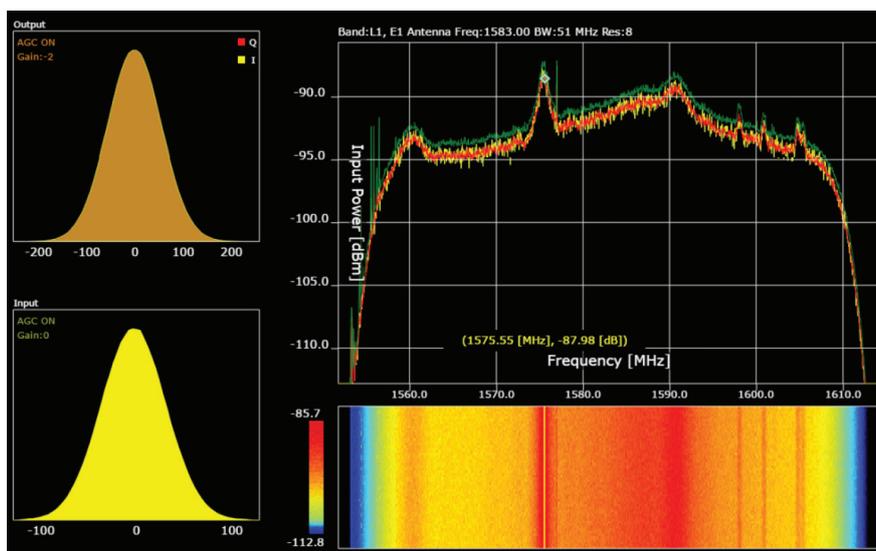
GDARS™ has the so-far unique capability to record or playback four channels configured simultaneously at their highest possible capacity, or alternatively, to give the user full freedom to independently manage them. Each channel can be configured in any GNSS band with up to 8 bit resolution and bandwidth up to 50MHz.

GDARS™ is designed to capture complex environments with a degree of fidelity suitable to ensure that playback results, obtained in the laboratory, truly represent the captured real world conditions. The user will then be able to perform laboratory tests by replaying the RF signals logged in real-world conditions.

GDARS™ can be controlled directly from the front panel touch screen or from a web browser that connects to the unit's built-in http server. The user can remotely control and monitor the unit over the Gigabit network connection.

### System main characteristics:

- 4 channel GNSS RF record and playback system
- E1, L2, E5ab, E6 supported, each one with up to 50 MHz bandwidth (record and playback)
- Over 50 dB of channel isolation
- +/-10 ns differential group delay (over the entire 50MHz bandwidth)
- Per channel 1..8 bit programmable resolution (I/Q)
- Very low down-conversion phase noise
- On board ultra-stable OCXO reference clock generator
- Synchronization to external PPS or 10 MHz reference
- Programmable record and playback sampling frequency/ bandwidth (4.. 50 MHz BW)
- Onboard 1..32 TB storage capacity
- External USB 3.1 gen 2 storage support
- Onboard touch screen for control and monitoring
- Remote system control and monitoring web interface
- Gigabit Ethernet interface



GDARS™ record screen overview of a single channel scenario, configured with 8 bit resolution and 50 MHz bandwidth. The left charts show the distribution of the input and output signals. The spectrum chart shows the real time, average and max-hold spectrums with one active marker.



## FEATURES

### Storage capacity

At its maximum throughput (4 channels, 8 bit quantization and 50 MHz Bandwidth) GDARS™ generates a data volume of 2 TB/h. Saphyrior offers different configuration options with storage capacities ranging from 1 to 32 TB.

### Software

GDARS™ can be controlled through a COM interface, allowing the user to control the instrument by third-party applications or from a script environment.

### Visualization

Among its various features and functionalities, GDARS™ offers real time, max-hold and average spectrum and their respective markers. GDARS™ also allows visualizing the spectrum evolution over time (spectrogram) or single-point (marker) timeline.

## SPECIFICATIONS

General	Value
Control	- Stand-alone (touchscreen) - Remotely through web server
Power consumption	12V - 110W
Temp. range	0 .. 60°C
Record resolution	1 .. 8 bit
Playback resolution	1 .. 8 bit
Record playback bandwidth	4 .. 50 MHz
Pass-band max ripple (equalized)	< 0.5 dB
Real time signal monitoring	2k pts power spectrum, Input quantization distribution
Data storage	Local HD (1 .. 32 TB) Ext. HD (through USB 3.1 gen 2)
RF Output	
Antenna out	1
Frequency ranges	Same as RF input frequency ranges
Bandwidth	4 .. 50 MHz
RF channels	4
Max RF group delay variation	< 20nsec
Phase Noise @ 1.4 GHz Center	As RF input phase noise
RF output gain control	0 .. 90 dB
Antenna out power range	-45 dBm to -135 dBm

RF Input	
Antenna inputs	1
Antenna Phantom Power	1.. 15 V; 200 mA
Frequency ranges	1163 .. 1218 MHz (E5ab,L5,G3) 1211 .. 1257 MHz (L2,G2) 1238 .. 1298 MHz (E6) 1560 .. 1616 MHz (E1,L1,G1,B1)
Bandwidth	4 .. 50 MHz
RF channels	4
Worst RF cross-channel isolation	> 50 dB
RF group delay variation	< 20 nS (50 MHz)
Phase Noise @ 1.4 GHz Center	@100Hz - 90 dBc/Hz @1kHz - 100 dBc/Hz @10kHz - 100 dBc/Hz @100kHz - 120 dBc/Hz @1MHz - 140 dBc/Hz
RF/IF Gain control range	0 .. 90 dB
Min RF input power	-85 dBm
External reference clock	
Frequencies	External PPS, External 10MHz
External sync range	± 0.7 ppb



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