

RP-3200

Multi-Channel Wideband RF Record and Playback



Capture up to 200 MHz of the GNSS spectrum in the field for replay in a controlled laboratory environment to advance your RF receiver validation and testing.

Averna
Instrumentation
Tools for:

**R&D, Validation/
Test and Support
Engineers/FAEs
working for OEMs,
ODMs and CMs in
the Semiconductor,
Automotive, Consumer
Electronics and
Telecom Infrastructure
markets developing
Navigation, Radio and
Video receivers.**

The RP-3200 Multi-Channel Wideband RF Record and Playback is a state-of-the-art, wideband recorder. With the RP-3200, you can process all GNSS signals in L1, L2 and L5 bands with four recording channels. Its 4x50 MHz-bandwidth recording capability allows you to capture GPS, GLONASS, Galileo and Compass signals, in addition to regional systems, synchronously and coherently.

You can then return to the lab with hours of real-world multi-GNSS signals in order to accelerate receiver design validation and testing. For a complete record-and-playback solution, pair the RP-3200 with Averna's URT-2200 RF Player.

RF Studio™

The RP-3200 comes preloaded with Averna's RF Studio, which is a workflow tool for making painless RF recordings, managing collected data, and analyzing or playing back collected RF environments. With RF Studio, you can have confidence that the intended signals were captured – all without the need for RF experts on site.

> Key Features

- **Frequency range** of 10 MHz to 2.7 GHz
- **Multi-channel wideband** (4x50 MHz) and high resolution of 0.1 Hz
- **Real-time graphical views** of the spectrum being recorded or played
- **Live update** of recording time and supports time-stamped comments during recording
- **File analyzer** to determine probability distribution of sample values (e.g., average, standard deviation, maximum value)
- **RF cropping tools** and extensive self-diagnostic tools
- **More than six hours** of recording with four channels (24+ hours with one channel @ 16-bit resolution)
- **Supports up to 48 TB** of storage per chassis and multiple chassis sync with a timing card
- **Swappable disk drives** for easy transfer of libraries

RF Input

Frequency	Player (URT-2200)	Recorder
Output Range	85 MHz to 2.7 GHz ^{1,2}	10 MHz to 2.7 GHz ^{1,2}
Resolution	0.1 Hz	0.1 Hz
Phase Noise @ 1 GHz	<-100 dBc/Hz @ 1 kHz offset <-105 dBc/Hz @ 10 kHz offset <-120 dBc/Hz @ 100 kHz offset	<-100 dBc/Hz @ 1 kHz offset <-110 dBc/Hz @ 10 kHz offset <-120 dBc/Hz @ 100 kHz offset
Noise Floor	-154 dBm/Hz	-155 dBm/Hz (-172 dBm/Hz) ³
Internal Reference	0.1 × 10 ⁻⁶ , initial accuracy ±0.5 × 10 ⁻⁹ , ageing per day ±0.5 × 10 ⁻⁹ , over temperature range	

Amplitude @ Power	Player (URT-2200)
Output Range	-140 dBm to +10 dBm P.E.P. ⁴
Resolution	0.1 dB
Accuracy	+/- 1.0 dB (>100 dBm) typical +/- 2.0 dB (<100 dBm)
Gain Res., RF Playback	0.1 dB
Harmonics	-30 dBc @ 0 dBm typical
L.O. Leakage ⁵	300 MHz to < 5.5 GHz, <-45 dBc 5.5 GHz to 6.6 GHz, <-41 dBc

Baseband	Player (URT-2200)
50 MHz real-time BW (1 dB)	
Sample Rate	62.5 MS/s
Dynamic Range	80 dB SFDR
Streaming Rate	250 MB/sec./channel
Output Resolution	16-bit

Baseband	Recorder
Bandwidth	10 MHz max. < 120 MHz carrier freq. 20 MHz max. < 330 MHz carrier freq. 50 MHz max. > 330 MHz carrier freq.

RF Recorder (Combined with LNA/Pre-Amp)	
Dynamic Range	80 dB minimum
Maximum Input Power	+5 dBm (LNA bypassed)
Noise Figure (with LNA)	2 dB maximum
Pre-Amp / LNA Gain Range	> 50 dB
In-Band Spurious	-70 dBc
DC Bias (for active antenna)	100 mA @ 5V maximum

Synchronization, Timing and Inter-Channel Performance	
Specifications are defined typical at 25° +/- 5°C. Test condition pre-amp gain at 55 dB with 9 effective bits of quantization. Specification applies over entire frequency range. For more information on definition of specification and methodology, request Avera's application note on timing and synchronization for GNSS Record & Playback.	

Timing Offset Between Channels	2 ns maximum; 1 ns typical
Initial Amplitude Tracking	1 dB typical
Amplitude Tracking Variation ⁶	0.5 typical
Cumulative Phase Error Effect on Positioning ⁷	<2 mm/hour
10 MHz REF Input (50Ω)	1 per channel x SMA female Level 0/+10 dBm, Max.: +15 dBm
10 MHz REF Output (50Ω)	4x SMA female Level, Max.: +7 dBm ± 2 dB

RF Connectors	
RF Input (50Ω)	N-female per channel
RF Output (50Ω)	SMA-female per channel

Environmental

Warm-up Time	
30 minutes	
Weight (Maximum)	
PXI Rackmount ⁸	20.5 kg (45.1 lbs)
Zarges Case (PXI + RF Tray)	51 kg (110 lbs)
Zarges Case (HDD + PS)	55 kg (121 lbs)
Size (H x W x D)	
Rackmount	18 cm x 46 cm x 47 cm (7 in x 18 in x 18.5 in)
Zarges Case	35 cm x 53 cm x 79 cm (13 in x 21 in x 31 in)
Temperature	
Operating	+5°C to +45°C (+41°F to +113°F)
Storage	-20°C to +75°C (-4°F to +167°F)
Relative Humidity (Operating)	
10% to 90% (non-condensing)	
RAID HDD Storage	
8.9 cm (3.5 in) hot-swappable drive bays	
12 x 8.9 cm (3.5 in) 2 TB SATA 2.0 hard-disk drives	
Power	
Power Input (AC)	120 or 240V IEC 60320-C14 Power connector inlet IEC 60320-C13 to NEMA 5-15 P, 3 m (9.8 ft) North American power cord included IEC 60320-C13 to CEE 7/7, 3 m (9.8 ft) European power cord included
Power Input (DC)	13.5 V typical (11.5 V minimum; 15 V maximum)
Power Consumption	1 channel <400 W 3 channels <500 W
Calibration	
1 year	
Warranty	
3 years	
Ethernet	
1 x 10/100/1000 Mbps RJ-45 LAN port	
Peripheral	
4 x USB 2.0/1.1 Type A peripheral ports (front)	
Display	
1 x DBHD-15 F VGA port	
Compliance	
UL pending	
CE Class A pending	
FCC 47 part 15 Class A pending	
European Directive 98/336/EEC Class A (Emissions) pending	
European Directive 2002/95/EC (WEEE) pending	

¹ With internal Pre-Amplifier @ 50 MHz bandwidth² Extended to 85 MHz with reduced bandwidth³ With internal Pre-Amplifier⁴ Limited to 0 dBm by application software⁵ 0 dB attenuation, without LNA, -30 dBm reference level⁶ Over 5 hours⁷ For L1-L2 precision receiver (using post-processing analysis of pseudo range)⁸ Includes removable rack ears and handles

We are a leading NI Platinum Alliance Partner and have over 50 certified NI LabVIEW™, NI TestStand™, and LabWindows™/CVI™ architects, developers, and instructors on staff.



CANADA ■ UNITED STATES ■ MEXICO ■ JAPAN

Toll-free in North America: +1 877-842-7577

Elsewhere: +1 514-842-7577

www.avera.com

