



LibertyGT

RF and EW Test Platform

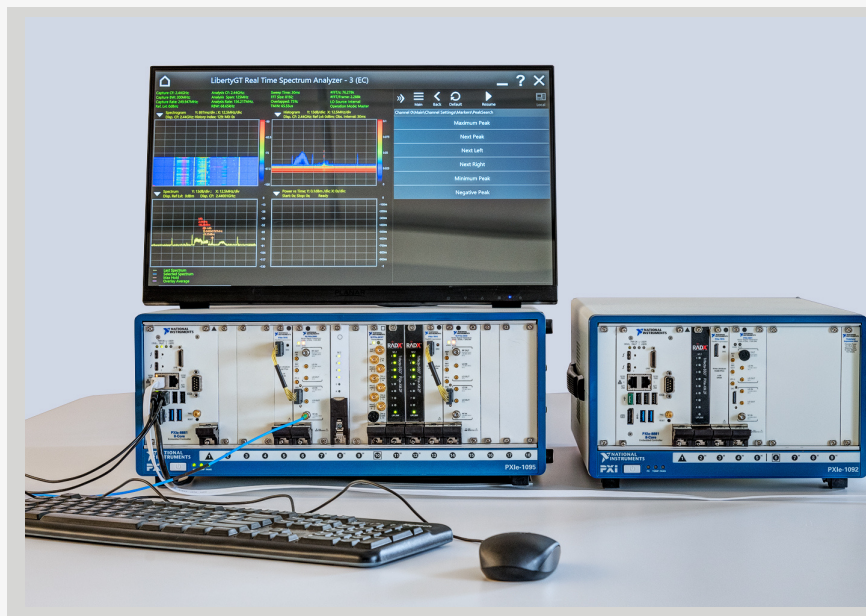
**LibertyGT: Bringing the Flexibility of
Synthetic Instrumentation to the
Evolving EW Landscape**

RTSA, RF Record, Playback, and Analysis for Radar and EW Applications

In today's rapidly evolving wireless landscape, modern radar, electronic warfare, and signal intelligence systems are generating, processing, and recording wide bandwidth signals at a broad range of frequencies. Test engineers need flexible tools that can provide adaptability in electronic warfare, 5G, and other new signal types so they can respond to emerging threats. The LibertyGT family of software-defined synthetic instruments (SDSI), based on PXIe modular hardware, brings a modular and flexible COTS solution to real-time RF testing for threat response applications

For Mission-Critical EW Applications

- Detecting, recording, and analyzing wideband frequency agile and small-amplitude Low Probability of Intercept (LPI) Signals via RTSA
- Synchronously recording wideband single and multi-channel signals of interest using gated triggers and/or GPS-based triggering for improved analysis throughput
- Playing back recorded, modified, and/or synthetic single and multi-channel synchronized wideband RF signals to test radars, jammers, receivers, navigation, 5G, and other EW systems



LibertyGT Solutions

Channelized Real-Time Spectrum Analyzers (RTSAs) employ advanced FPGA-based processing to deliver the fastest real-time performance in the industry and a unique, channelized architecture that elevates small-amplitude Low Probability of Intercept (LPI) signals above the noise floor by up to 30 dB. LibertyGT RTSAs support customizable triggering and integrated wideband recording capabilities to ensure transient and intermittent signals are not missed when analyzing or validating jammers, emitters, countermeasures, or other RF sensors or transceivers.

Record, Playback & Analysis (RPA) Systems are optimized for wideband RF recording and playback, with support for 1 to 16 (or more) independent or precision synchronized channels, each of which may be equipped with its own FPGA-based RTSA for gated triggering of record or playback based on detected signals.

LibertyGT Advantages

Performance

- Industry-leading RTSA performance of 320 nsec minimum duration signal 100% POI for detecting frequency-agile LPI signals
- Unique, channelized RTSA enhances detection of small amplitude LPI signals by up to 30 dB
- Precision 2 - 8+ CH multi-channel sync with inter-channel time and phase skew < 10ps and < 1 degree, respectively
- Available measurement frequencies of 6, 14, 18, 26.5, and 40 GHz

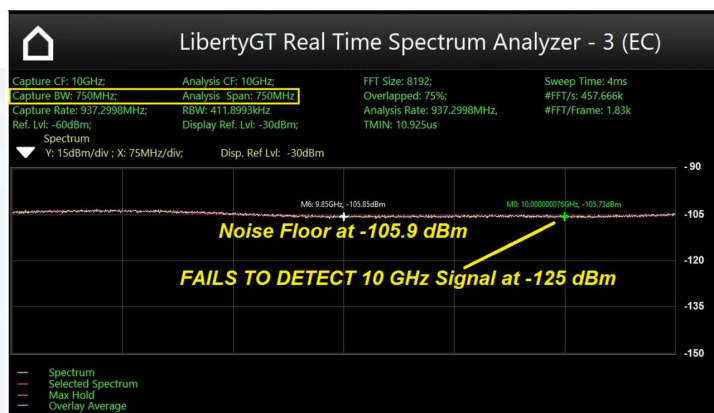


Modular, Flexible, Intuitive, Scaleable

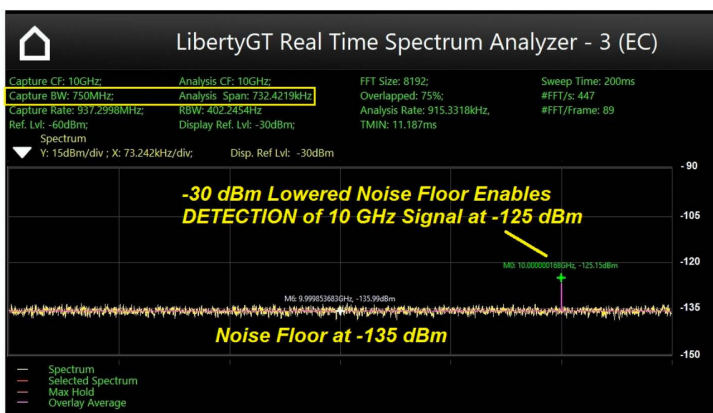
- Modular, compact, multi-function, software-defined architecture reduces the size, weight, and power (SWaP) over conventional box instruments by a factor of 2 to 10
- Spares, repairs, calibration, and technology insertion reduces Total Cost of Ownership (TCO) and mitigates EOL obsolescence issues
- Up to 128 TB of high-speed SSD RAID per chassis, eliminating the need for external data recorders
- User-friendly touchscreen GUI or TCP/IP GigE remote I/F
- Flexible frequency mask, GPS, and other advanced triggering for automated LPI signal detection, gating RF recording, and other actions

Key Specifications

	LibertyGT RTSAs	LibertyGT RF RPA Systems
Description	Advanced, Wideband, Channelized RTSA with Optional RF Capture and Record to Modular SSD RAID	Advanced, Multichannel, Wideband RF Record, Playback and Analysis System with Optional RTSA per Channel
Upper Frequency Ranges	6 GHz, 14 GHz, 18 GHz, 26.5 GHz, and 40 GHz	6 GHz, 14 GHz, 18 GHz, and 26.5 GHz
Real-Time Bandwidth Options	RX: Up to 160, 320, 800 MHz or 1000 MHz per CH	RX/TX: Up to 1 GHz per CH
RTSA	Standard LGT RTSA with 320 nsec Minimum Duration Signal 100% POI	Optional LGT RTSA with 320 nsec Minimum Duration Signal 100% POI
Channels Supported	1 or 2	1 to 8 (More upon Request)
Maximum FFTs/Sec	25M	25M
LibertyGT Standard Apps Included	LGT Framework with Remote I/F, API and Touchscreen I/F, RTSA, Spectrum Analyzer, RF Review and Analysis, File Conversion Utility	LGT Framework with Remote I/F, API and Touchscreen I/F, RF Setup & Control, RF Alignment / Synchronization, RF Capture and Record (per Channel), RF Playback, RF Review and Analysis
Optional Liberty GT Apps	RTSA Capture & Record Option, Advanced Triggers, GPS/IRIG-B Time Stamping, Standalone RF Capture and Record, Vector Signal Analyzer, Bit Error Rate Meter, Software Defined Receiver and Others	RTSA and Options for Each Channel, Spectrum Analyzer, Vector Signal Analyzer, Vector Signal Generator, Bit Error Rate Meter, Software Defined Receiver and Others



LibertyGT channelized RTSA with 750 MHz capture band and 750 MHz analysis band with 412 kHz RBW results in the noise floor at -105.9 dBm. Fails to detect signal at -125 dBm (LGT1410 with NI PXIe-5668, NI PXIe-7915, PXIe-5698 Disabled)



LibertyGT channelized RTSA with 750 MHz capture band and 732 kHz analysis band with 402 Hz RBW results in the noise floor at -135 dBm. Detects a signal near 10 GHz at -125 dBm (LGT1410 with NI PXIe-5668, NI PXIe-7915, PXIe-5698 Disabled)

LibertyGT Channelized RTSA with Independent Capture and Analysis Bands Can Effectively Lower the Noise Floor by Up to 30 dB to Reveal Previously Undetectable Small Amplitude LPI Signals

