LGT1211B Benchtop ATS

The RADX® LibertyGT® 1211B (LGT1211B) is a modular, COTS, multifunction, programmable, benchtop Automated Test System (ATS) that supports a wide range of real-time RF and microwave stimulus, Test and Measurement (T&M) applications. Featuring a unique, real-time modular Software Defined Synthetic Instrument (SDSI®) architecture, intuitive touchscreen interface and industry leading programmability, one LGT1211B can replace over a dozen “boxed” T&M Instruments and test system components to significantly reduce T&M system Size, Weight and Power (SWaP) and Total Cost of Ownership (TCO), while dramatically improving measurement throughput.

Developed in collaboration with National Instruments® and selected by Frost & Sullivan for a 2014 Global New Product Innovation Award, the LGT1211B seamlessly supports applications from 100 kHz to 6 GHz with “in-the-box” upgrades that can extend the measurement upper frequency range to 26.5 GHz.

The LGT1211B sets a new standard for cost-effective, high-throughput, multifunction, parametric test of commercial and military radios, avionics, wireless communications and other RF and microwave systems where the combination of programmability, flexibility, performance, throughput, long life cycle support and low TCO is of paramount importance. The LGT1211B, when fully configured, provides the following capabilities for apps from 100 kHz to 6 GHz:

- Ergonomic, Touch Screen Interface with Primary and Auxiliary 1080p HD Display Support
- Windows7 64-bit Operating System with Test Executive Functionality
- Real-Time Spectrum Analyzer (RTSA)
- Real-Time RF Vector Signal Generator (RTVSG)
- Real-Time RF Vector Signal Analyzer (RTVSA)
- RF Power Meter
- 2-Channel Digital Storage Oscilloscope (DSO)
- Bit Error Rate Tester
- Integrated Radio Tester with RF Receiver and Signal Generator, Spectrum Analyzer, Mod/Demod and Audio Functions
- Frequency Counter and Error Meter
- 2-Channel Audio Analyzer
- Arbitrary Waveform Generator
- Digital Multi-Meter (DMM)
- Open Architecture Application Programming Interface (API)
- Standard RF Alignment App
- Commercial Performance Verification Test (PVT)
- Open Source, Python-Based Test Procedure Set (TPS) Framework, Database and Scripting App
- Standard VISA TCP/IP-Based Remote Interface
- Unit Under Test (UUT) Control App
- Optional 10 MHz 50 PPB Precision Reference for Enhanced Accuracy and Phase Noise Performance
- Optional Low Noise Amplifier (LNA)
- Optional RF Step Attenuator
- Optional Radio Test Emulator (RTE) for TPS Development
- Optional 26.5 GHz RTVSA
- Optional Advanced TPS Framework
- Optional IVI Compliant Remote Interface
- Optional High Density UUT Interface
- Optional External IQ Modulator
LGT1211B ATS Key Features and Benefits

- **Modular, COTS ATS Solution**
  - Seamless Stimulus and Measurement Support from 100 kHz to 6 GHz (Measurement Upgradable to 26.5 GHz)
  - RADX Patented and Patent-Pending Real-Time Measurement Science Firmware and Software (MSFS)
  - Extensive Set of NI PXIe RF Stimulus and Measurement Modules
  - NI LabVIEW®, LabVIEW FPGA, and TestStand™ Software Foundation
  - RADX Patented, 18-Slot PXIe Benchtop Enclosure with Hinged Front Panel, Front-to-Back Filtered Air Cooling and 1080p Touchscreen Display optimized for flexibility and module level field serviceability

- **Real-Time, Concurrent Performance**
  - RADX patented real-time MSFS that provides optimal use of FPGA and compute resources to eliminate data gaps on critical RF measurements while maximizing measurement throughput through concurrent processing.

- **Intuitive & User Friendly**
  - State-of-the-Art Touchscreen UI with Primary & Auxiliary 1080p Displays

- **Programmable, Open Architecture, & 3rd Party Friendly**
  - Standard Local Test Program Set (TPS) Framework with Open Source, Python-based Scripting API enables cost effective TPS development and TPS re-use
  - Compatible with 3rd Party TPS programming tools: LabVIEW, TestStand, C, C++, C# & Java
  - Optional IVI Compliant Driver Set for Traditional ATE Applications

- **RF Interface Unit (RFIU)**
  - LGT1211B RFIU provides a repeatable and reproducible RF interface for UUTs, System Cal and Alignment from 100 kHz to 6 GHz
  - Standard Signal Conditioning to increase System Dynamic Range
  - Optional Low Noise Amplifier for Detection of Small Signals
  - Optional RF Step Attenuator

- **Extremely Cost Effective**
  - LGT1211B SDSI Architecture eliminates multiple, “boxed instruments” by leveraging high performance NI PXIe modules with RADX MSFS and TPS Framework to maximize TPS portability and re-use to minimize Life Cycle Costs (LCC) and reduce Size, Weight & Power (SWaP)
  - SDSI Architecture eliminates EOL Lifetime Buys by synthesizing instruments and Apps on qualified replacement modules
  - RADX MSFS Bundle Provides Comprehensive Measurement & Functionality at Value Prices
  - Modular PXIe Architecture and Patent-Pending RADX PXIe Enclosure enables field-level replacement, reconfiguration, upgrades and tech insertion at the module level for optimal TCO

LGT1211B ATS: Real-Time MSFS, Intuitive UI and Open Architecture API

The LGT1211B features an extensive suite of tightly integrated RADX Real-Time Measurement Science Firmware and Software (MSFS) modules that includes patented and patent-pending real-time SDSI technology exclusively licensed to RADX by BAE Systems®. The LGT1211B real-time MSFS utilizes the system’s FPGA processing to eliminate the measurement data gaps found in non-real-time signal analyzers and radio testers that affect measurement fidelity on spread spectrum and other advanced, digitally modulated signals.

LGT1211B MSFS Apps feature intuitive user interfaces optimized for the system’s 1080p touchscreen display. Every LGT1211B App and Instrument includes a comprehensive Application Programming Interface (API). These APIs, coupled with the LGT1211B’s Open Source TPS Framework, enables users to easily develop, share, and re-use TPSs that can automatically sequence hundreds of measurements and store the results for pass/fail and detailed diagnostics. The combination of the LGT1211B’s MSFS and TPS Framework with advanced NI PXIe modules and NI LabVIEW® and TestStand™ software enables the LGT1211B to deliver the most comprehensive and cost effective benchtop ATS capability available in the market today.
LGT1211B ATS for Comprehensive, Integrated Radio and Wireless Communications System Testing

The LGT1211B is designed to provide comprehensive, multi-function support for a wide range of wireless communications, RF and microwave stimulus, test and measurement functions from 100 kHz to 6 GHz — **right out of the box**. The LGT1211B may be ordered directly from RADX and customer specific configurations are available. The LGT1211B is available with the following capabilities— all of which are subject to change and tech refreshment.

### LGT1211B PXIe Enclosure with Hinged Front Panel & 1080p HD Touchscreen
- RADX Patent Pending Design
- NI PXIe-1085 18-Slot PXI/PXIe 12 GB/sec Backplane & Card Cage (Optional 24 GB/sec Backplane)
- Modular, Autosensing, Int'l Power Supply: 100-240VAC, 50-60Hz, 6-12A with 15A CB
- Front-to-Back Filtered Air Cooling
- Optional Precision 10 MHz +/- 50 PPB Reference for Enhanced Phase Noise Perf
- Rack Mount Kit
- Hinged Front Panel for Serviceability
- 1080p HD Touchscreen LCD Display
- 1080p HD Aux Display via Display Port
- Dimensions: 8.75" (222.3 mm) H x 19" (482.6 mm) W x 22.0" (558.8 mm) D
- Operating Weight: 56 Pounds (25.4 kg)
- Includes 1 Year Std. HW RTF Warranty

### RF Interface Unit (RFIU) with Front (FP) and Rear Panel (RP) I/O for Repeatable UUT I/F, Cal & Alignment

<table>
<thead>
<tr>
<th>FEATURE</th>
<th>PANEL</th>
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<tbody>
<tr>
<td>Half Duplex Transmit/Receive I/O or Dedicated RF Output</td>
<td>FP</td>
</tr>
<tr>
<td>2-CH Audio Frequency I/O</td>
<td>FP</td>
</tr>
<tr>
<td>2-CH DSO Input with Ext. Triggering</td>
<td>FP</td>
</tr>
<tr>
<td>DMM Input</td>
<td>FP</td>
</tr>
<tr>
<td>Analog External Modulation and Demodulation Input &amp; Output</td>
<td>FP/RP</td>
</tr>
<tr>
<td>Internal 10 MHz Ref or 10 MHz Ref Input with 10 MHz Ref Output</td>
<td>RP</td>
</tr>
<tr>
<td>SINAD/BER Input</td>
<td>FP/RP</td>
</tr>
<tr>
<td>BER Digital Data I/O</td>
<td>RP</td>
</tr>
<tr>
<td>Flux Capacitor I/O with Optional Time Dilation Support</td>
<td>RP</td>
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### LGT1211B NI PXI/PXI Modules (RADX or Customer Provided)
- NI PXIe-8135 Embedded Controller with Removable HDD and Win 7 64-bit License
- NI PXIe-5644R Vector Signal Transceiver (VST) for 80 MHz – 6 GHz for RTSA, RTVSA and RTVSG
- NI PXIe-7976R FlexRIO with NI 5782 Transceiver with Reconfigurable FPGA Capability for Real-Time Apps and 100 kHz - 100 MHz RTSA, RTVSA & RTVSG
- NI PXI-5160 2-Ch, 10-bit, 2.5 GSPS Digitizer/DSO with 2 GB On-Board Memory and Probe Kit
- NI PXI-4461 Multifunction Digital Acquisition Module for Audio Analyzer
- NI PXI-4065 DMM and Probe Kit

### LGT1211B Measurement Science Firmware & Software (MSFS) Basic Operating Environment (BOE)
- MS Windows 7 64-bit OS, LabVIEW, LabVIEW FPGA and TestStand (for Alignment & Cal) Binary Runtime Licenses
- LGT1211B Touchscreen UI & RFIU I/F (per App, Instrument or Module)
- Open Architecture API for All Apps, Instruments & Functions
- Open Source Python-Based Test Program Set (TPS) Framework App with Database
- Standard VISA TCP/IP Remote Interface
- Commercial Performance Verification Test (PVT) App (per App, Instrument or Module)
- USB Software Media, Binary Software License, License Key and Documentation
- Includes 1 Year of Software Maintenance

### LGT1211B 100 kHz – 6 GHz MSFS Apps, Instruments & Modules
- Real-Time RF Vector Signal Analyzer
- Real-Time RF Vector Signal Generator
- Real-Time RF Spectrum Analyzer
- RF Power Meter Module
- RF Counter & Error Module
- Standard Internal Real-Time Mod/Demods:
  - Analog Mod/Demod: AM, FM, PM, SSB
  - Digital Mod/Demod: BPSK, QPSK/QOQ, MSK/GMSK, FSK 2/4/8/16/32/64, PSK 4/8/16/32/64, QAM 16/32/64/128/256 & ASK 2/4/8/16/32/64
- 2-Channel Digital Storage Oscilloscope (DSO) App
- Digital Multimeter (DMM) App
- Bit Error Rate Tester App
- BER Tester Module
- BER Pattern Generator Module
- BER Pattern Receiver Module
- Real-Time 2-Channel Audio Analyzer App
- Audio Frequency [AF] Sig Gen Module
- AF Digitizer Module
- AF Counter Module
- AF Level Meter Module
- SINAD and THD Meter Module
- UUT Control App Example
- Radio Test Emulator UUT Example
- Includes 1 Year of Software Maintenance

### LGT1211B Included Accessories
- 8 GB DDR3 & 500+ GB Removable SSD for NI PXIe-8135
- USB Keyboard with Trackpad
- Radio Test Emulator (RTE) System Software (for Customer Purchased RTE)
- Includes 1 Year Std. HW RTF Warranty
- Double Wall Shipping Container

### Key LGT1211B Options
- Real-Time 10 Hz – 14 GHz or 26.5 GHz RTVSA App (Requires NI PXIe-5666R)
- IVI Compliant Remote I/F
- Real-Time Digitizer & Signal Capture App
- Alignment Accessory Kit Including NIST Traceable Power Meter and Cables
- Radio Test Emulator System (Includes Windows 8 PC, NI USRP 2920 & Accessories—Software Sold Separately)
- NI PXIe-5442 Arbitrary Waveform Generator & RADX App
- NI PXIe-5122 & RADX App for Ext IQ Mod
- High Density UUT I/F with 168-Pin ZIF Connector (FP), Cable Assembly & Switching, SIO, GPIB & MIL-STD-1553B UUT Control I/F & App Interface
- Pelican Transit Case
- Extended Warranty
- Customer Specific Models, Mods/Demods, MSFS & TPS available (Contact RADX)
- Calibration Certs & Service for NI PXI/PXIe Modules Available from NI

### Designed to Comply with Key Safety, EMI/EMC and Environmental Standards (Certifications Pending)
- FCC A, CE, UL, IEC 60068-2.1 & 2
- MIL-PRF-28800F Class 3 including Class 3 Low Temp & Class 2 High Temp Limits
- LGT1211B Export Information
  - System: ECCN S9A92, LE NLR
  - MSFCS: ECCN 3D991, LE NLR

### LGT1211B Fully Integrated Systems
- Includes RADX Purchased and Integrated NI PXI/PXI Modules
- Assembled & Tested by RADX and Core Systems USA (ISO9001:2008)
- Includes 1 Year RTF System HW Warranty and 1 Year Software Maintenance

### LGT1211B “Kits” for Value Added Distributor, VAR or Customer Integration
- LGT1211B Kit Includes LGT1211B PXIe Enclosure, NI PXIe-7976R and NI 5782, MSFS & Accessories
- Other NI PXI/PXI Modules Purchased by Customer for Consignment to RADX or Customer Integration
- Optional (Fee-Based) Integration Assistance at RADX or at Customer Site

### LGTE-RF 12 or 24 GB/sec, 18-Slot PXIe Touchscreen Enclosures
- For OEMs, Sys. Integrators & End Users

For more info visit [www.radxtech.com/lgt1211b](http://www.radxtech.com/lgt1211b), email RADX Sales at info@radxtech.com or call +1 (619) 677-1849 x 1
LGTE-RF 18-Slot, 12 or 24 GB/Sec PXIe Touchscreen Enclosure for System Integrators, Value Added Resellers and End Users

RADX has developed a version of the LibertyGT 1211B PXIe touchscreen enclosure for instrumentation System Integrators (SIs), Value Added Resellers and End Users. The LGTE-RF includes patent-pending features from the LGT1211B that enables DIY integration of high-performance, touchscreen, PXIe-based RF instrumentation applications:

- Filtered Front to Back Cooling
- Integrated Full HD 1080p Touchscreen with Display Port and USB I/F
- Standard Rear and Front Panel I/O for NI PXIe-8135 (and other) ECs
- Modular, International Power Supply
- 1 Year RTF Warranty (warranted to be compatible with NI PXIe-1085)
- Hinged Front Panel for Easy Access to PXIe Modules for Reconfiguration, Repair and Replacement
- User Definable Front and Rear I/O Panels and Rack Mount Kit
- Internal Cable Plenum for Routing RF Signals to/from Rear I/O Panel

Contact RADX for more details on the LGTE-RF1.1

About RADX

RADX Technologies, Inc., is a DSP-focused tech start-up that provides cost-effective, high-performance, COTS products, technologies, software, solutions and services to end-users, OEMs and system integrators at multiple levels of integration. As both a National Instruments Silver Alliance Partner with RF and Wireless Specialty Alliance Partner designation and a Xilinx Alliance Partner, RADX has a solid team of experts with decades of experience developing advanced FPGA, multi-core, and GPU-based DSP COTS solutions for consumer, commercial, aerospace, and defense applications in Software Defined Synthetic Instrumentation (SDSI), Software Defined Radio (SDR), Cognitive Radio (CR) and other high-performance communications-related applications.