

Reinventing
Telemetry™

QUASONIX

RACK-MOUNT RECEIVER ANALYZER

New 2nd
Generation



- **Versatile Rack-Mount Enclosure**
Compact 1U 19" rack-mount chassis provides a single-box receiver analyzer solution
- **Internal Signal Generator**
Includes two complete ARTM signal generators covering 200 MHz to 2500 MHz and 4.4 GHz to 5.25 GHz contiguously, with power levels from 0 dBm to -125 dBm
- **MultiPath Channel Emulator**
Provides 4-ray multipath emulation for static and dynamic multipath testing
- **Internal Bit Error Rate Testers (BERTs)**
Eight bit error rate testers with integrated synchronization detection/timing and bit clock frequency counters
- **Supports a Wide Range of Receiver and Combiner Performance Tests**
Comprehensive telemetry receiver test suite including bit error rate, noise figure, receiver latency, acquisition time, acquisition threshold, combiner/BSS break frequency, and PCM/FM modulation index tests
- **Fully Remote Controlled via USB Interface**
USB interface provides simple plug and play connection to any computer
- **Intuitive User Interface Runs on any Windows PC**
Easy to use graphical user interface provides manual control of all signal generator and BERT functions as well as highly customizable automated test scenarios
- **Exports All Test Results to Excel for Flexible Data Analysis**
Automated tests store all acquired data in .CSV files for post-test processing and analysis
- **Exposes Internal Signals for External Validation**
Transmit clock and data may be monitored or driven externally, and RF On/Off controls and lock detection signals are output to allow independent validation of test results

ISO 9001:2015 Certified

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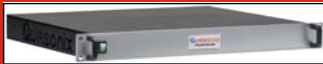
QSX-CATALOG-170201



RACK-MOUNT RECEIVER ANALYZER SPECIFICATIONS

Characteristic	Specification
<i>Signal Generator Section</i>	
RF Outputs	2, can be slaved
Power Level	0 dBm to -125 dBm, default range (set in 0.1 dB steps)
Output RF Frequency	200.0-2500.0 MHz, tunable in 1 kHz steps 4400.0-5250.0 MHz, tunable in 1 kHz steps
Modulation Formats	PCM/FM, SOQPSK, MHCPM, Carrier, BPSK, QPSK, OQPSK, STC
Bit Rates	0.001 Mbps to 46 Mbps (mode dependent)
Coding Options	Convolutional or LDPC (LDPC is compliant with IRIG 106-19, Appendix 2-D) IRIG and CCSDS randomization NRZ-L/M/S, BIΦ-L/M/S, RZ, DM-M/S, M2-M/S Basic PCM framing (sync pattern 16 to 33 bits, minor frame up to 16384 bits, major frame up to 256 words, with subframe ID insertion)
Generator Functions	Modulation index scaling Multipath fading (synchronized out-of-phase between RF channels) Multi-ray multipath channel simulation Calibrated additive white Gaussian noise
Clock and Data In/Out	TTL (BNC) Patterns: Mark (all 1s), Space (all 0s), ALT01, PN6, PN9, PN11, PN15, PN17, PN20, PN23, PN31, USER (2 to 32 bits)
<i>Receiver Input/Status Output Section</i>	
Clock and Data In	TTL (BNC) Supports up to eight (8) clock and data input pairs from receivers, demodulators, etc.
Input Codes	NRZ-L
Lock Detector Out	TTL (HDB-15)
RF On/Off Control Out	TTL (HDB-15)
<i>Environmental Section</i>	
Operating Temperature	0°C to +50°C
Non-operating Temperature	0°C to +70°C
Operating Humidity	0 to 95% (non-condensing)
Altitude	Up to 30,000 ft.
<i>Physical Section</i>	
Size	1U rack-mount chassis; 19" wide, 1.75" tall, 14-5/16" rack depth, 15-11/16" overall depth
Weight	12.0 lbs.
Connectors – per RF Channel	RF Out: N female I Clock, Q Clock, I Data, Q Data In: BNC female Combiner/BSS I Clock, Q Clock, I Data, Q Data In: BNC female Status Out: DB-15 High Density female
Connectors – per Chassis	TX Clock/Data In/Out: BNC female; USB-B for remote controlled user interface; AC power in
Power	25W @ 120 VAC

Specifications subject to change without notice



RECEIVER ANALYZER USER INTERFACE

The screenshot displays the Quasonix Receiver Analyzer (QX RA) software interface. The main window is titled 'QX RA' and shows the following sections:

- RF Generator:** Configures two channels (CH1 and CH2) with parameters like RF Level (-60.00 dBm), Frequency (2200.500 MHz), and RF On/Off status.
- Modulator:** Sets modulation parameters such as Mode (PCFM), Mod Index (0.700), LDPC, and Spectrum Inversion.
- BERT:** Configures Bit Error Rate Test parameters including Clock and Data Setup, BERT Setup (Single/Repeat), Error Limit (100000), and Time Limit (0:0:10).
- System:** Manages error rates and system settings like 'Set Channels to Error Rate' and 'Sync QX Receiver to RA'.
- BER Sweep Test:** A dedicated panel for running BER tests, including Test Limits (Time Limit: 0:0:10, Err Limit Bits: 100000), Sweep Type (Eb/N0, Freq, Bitrate), and Eb/N0/Freq ranges.
- Current Status:** Real-time monitoring of Last BER (0.0), Eb/N0 (7.00), RF Level (-70.00), Freq (2200.5), and Bitrate (10.000).
- Graphing:** A 'BER vs. Power Level dBm' graph showing BER on a logarithmic scale (0.00E+000 to 1.00E-001) versus Power Level (dBm) from -78 to -70. The graph includes data for Channel 1 I/Q, Channel 2 I/Q, BSS I/Q, and a Test Limit.

Features

- ⇒ Intuitive layout with all primary control and monitoring functionality for Channel 1 and Channel 2 in one window
- ⇒ Real time bit count, bit rate, bit errors, bit error rate, clock sync, and data inversion for each enabled channel
- ⇒ BER test with time limit, error limit, or both
- ⇒ Free Run, Single, and Repeat test modes for BERT
- ⇒ Auto Detect Analyzer on power up
- ⇒ Ability to Save and Load stored configurations
- ⇒ Selectable data directory
- ⇒ Test tabs include BER Sweep, Mod Index, Sync Time, Break Freq, AM, AGC, ACI; Tests collect and store data as .csv files
- ⇒ Digital Clock
- ⇒ Real-time graphing of results

System Requirements

- ⇒ Windows XP or newer OS
- ⇒ Microsoft .NET Framework

RACK-MOUNT RECEIVER ANALYZER REAR PANEL LAYOUT





RECEIVER ANALYZER PERFORMANCE

The Receiver Analyzer makes receiver characterization fast and easy. Automated testing allows precise measurement over many parameters and rapid acquisition of extremely large data sets. Saved data files facilitate result aggregation, analysis, presentation, and archival. From basic noise figure and bit error rate performance to dynamic signal handling, such as acquisition time and combiner break frequency, the Receiver Analyzer will truly show how your receivers measure up.

