





Keysight M8050A | High-Performance BERT, 120 GBaud

- Symbol Rates from 2 to 120 GBaud
- Support for Non-Return-To-Zero (NRZ), PAM3, PAM4, PAM6, and PAM8 Line Coding
- Next Generation 800G/1.6T Ethernet, USB4v2 and other Receiver & Transmitter Conformance Standards Supported



Keysight M8040A | High-Performance BERT, 64 GBaud

- Data Rates from 2 to 64 GBaud
- Support for Non-Return-To-Zero (NRZ), PAM3, PAM4 Line Coding
- IEEE 802.3 ethernet support for 100, 200, and 400 Gigabit



Keysight M8020A | High-Performance BERT, 16 or 32 Gb/s

- Data rates from 8.5/16 Gb/s for Pattern Generator and Error Detector
- Applications Include: PCI Express, USB, MIPI M-PHYTM, SATA/SAS, DisplayPort, SD UHS-II, Fibre Channel, Thunderbolt, 10 GbE, 100 GbE (optical and electrical), SFP+, CFP2/4 transceivers, CEI.

Also Available: Keysight M8062A | 32Gb/s BERT Front End for M8020A

- Extends Data Rate of the M8020A BERT to 32 Gb/s
- Built-In Jitter Injection and Calibrated (LFPJ, HF PJ, Clk/2, BUJ, RJ, SSC)
- Built-In Clock Recovery



Anritsu MP2110A | BERTWave Sampling Oscilloscope

- All-In-One Sampling Oscilloscope Plus BERT
- 4-Channel 25 GHz Sampling Oscilloscope Plus Clock-Recovery Unit
- Low-cost solution for Testing 10G to 800G Optical Modules
- SFP28, QSFP28, CFP2/4/8, SFP56, QSFP56, OSFP, QSFP-DD Modules Supported



Keysight M8054A | Interference Source Module, 1-slot AXIe, 32 GHz

- Signal Impairment Generation up to 64 GBaud
- Receiver Test for Devices with PCIe Gen 4/5, OIF CEI, SAS
- Channel Margin Test and Optical Receiver Stress Test IEEE 802.3bs, bj, by, cd, Fibre Channel



Keysight M8199B | Arbitrary Waveform Generator; 2-Channel, 128 Gsa/s

- Analog Bandwidth to 70 GHz (90 GHz @ -10 dB)
- 2 and 4-Channel Models with 128 Gsa/s and 256 Gsa/s
- Perfect for higher-order QAM modulation at 160 GBaud and Above



Keysight M8194A | Arbitrary Waveform Generator; 4-Channel, 120 Gsa/s

- 45 GHz Bandwidth with 400G and 1 Terabit Applications
- 8 -Bit Resolution with 512 kSa Waveform Memory
- Use with 81195A Optical Modulation Generator Software



Keysight M8195A | Arbitrary Waveform Generator; 4-Channel, 65 Gsa/s

- 25 GHz Bandwidth for Wideband SATCOM, Radar, and Optical Applications
- Controllable from M8070A BERT Software for MIPI C-PHY and D-PHY Signals
- 16 Gsa Extended Memory Capable of Generating PRBS7, PRBS10, PRBS11, PRBS15 up to PRBS31 Patterns



Keysight M8190A | Arbitrary Waveform Generator; 2-Channel, 12 Gsa/s

- Analog Bandwidth of 5 GHz
- 14-Bit Resolution to 8 Gsa/s, 12-Bit Resolution to 12 Gsa/s
- Up to 2 Gsa Arbitrary Waveform Memory with Advanced Sequencing
- 90 dBc Spurious Free Dynamic Range (SFDR) with DC and AC Amplifiers



Tektronix AWG70002B | Arbitrary Waveform Generator; 2 Channel at 25 GSa/s

- 10-bit Vertical Resolution, 16 GS Waveform Memory Per Channel
- Generate Wideband RF Signals Up To 20 GHz
- Suitable for Radar with Options for Pulsed Waveforms and Impairments



Tektronix AWG5208 | Arbitrary Waveform Generator; 8 Channel, 4 GHz

- 2-Port and 4-Port Versions with Configurable Test Sets
- Up to 4 Sources Available
- High Dynamic Range 147 dB with Receiver Attenuators
- Internal Pulse Modulators and Pulse Generators
- Wide Range of Software Options Available for Rental



Keysight 81160A | Pulse/Function/Arbitrary Noise Generator; 2-Channel

- Pulses to 330 MHz, Sinewaves to 500 MHz Sine, 2.5 GSa/s Arbitrary Waveforms
- Applications Include Automotive Ethernet 1G Rx Compliance
- 14-Bit Resolution with Programmable Rise/Fall Times
- High Voltage Amplifier Output (10Vpp/100 Ω)



Keysight M8197A | Multi-Channel Synchronization Module; for M8195A

- Synchronize up to 4 M8195A Modules or 16 Independent Channels
- Create Phase-Coherent I/Q Signal Pairs, MIMO and Multi-Lane Serial Applications



NI PXIe-5451 | PXI Waveform Generator; 2-Channel, 145 MHz

- 16-Bit Resolution
- Advanced Synchronization and Data Streaming Capabilities
- DSP Features for Pulse Shaping, Interpolation Filters, and Oscillator Control



Keysight 81134A | Pulse Pattern Generator; 2-Channel, 3.35 GHz

- 12 MSa Memory-Based Pattern Generation
- Applications Include Jitter Generation with RZ/NRZ/R1 Data Formats
- PRBS with CCITT/ITU Formats to 2-31



Keysight B2912B | Precision Source Measure Unit, 2-Channel

- Four-Quadrant Sourcing and Measurement Capability
- 10 fA Resolution, 210 V, 3 A DC, 10.5 A Pulse
- Digitizes 100k Measurements per Second



Keithley 2450 | Graphical Digitizing SourceMeter

- Four-Quadrant Sourcing and Measurement Capability
- 200 V/1 A DC, 10 nA to 1 A
- High-Resolution Graphical Touchscreen



Rohde & Schwarz NGU411 | Four-Quadrant Source Measure Unit

- -20 V to 20 V, 20 W
- 500 kS/s for Voltage and Current
- Battery Simulation Software Available
- Graphical Touchscreen



NI PXIe-4147 | PXI Source Measure Unit; 4-Channel, 8 V/3 A

- 4-Quadrant, 4-Channel SMU in PXIe Format
- High-Speed Sequencer for Synchronizing with other SMUs and PXIe Instruments
- 100 fA/100 nV Resolution



- Keysight PZ2100A** | Precision Source Measure Unit Mainframe
- Four Slots for 5 SMU Module Options
 - Scalable to 20 Channels
 - Choose from High-Resolution SMU, High-Speed SMU, Precision SMU, High-Density SMU, and 5-Channel Precision SMU



- Keysight CX3324A** | Device Current Waveform Analyzer; 1 GSa/s, 4-Channel
- Technology Marries Precision Scope with High-Sensitivity DMM
 - High-Resolution/High-Speed Sampling @ 14-Bit 1 GSa/s or 16-Bit 75 MSa/s
 - Applications Include Low-Power IoT Devices, Chipset Device Characterization, Power Delivery, and Power Rail Testing



- Keysight B1500A** | Semiconductor Device Analyzer Mainframe
- Modules support IV Measurements, Capacitance Measurements, Pulsed IV and Transient IV Measurements
 - B1511A Module: 100V/100mA Four-Quadrant Operation
 - B1520A Module: Capacitance Measurement, AC Impedance with 1 kHz to 5 MHz Source and 25 VDC Bias



- Keithley 2651A** | High Power System SourceMeter SMU
- Four-Quadrant Sourcing and Measurement Capability
 - 50 A/40 V/2000 W
 - Connect two units in Series or Parallel for 100 A or 80 V Operation

Source Measure Units

Model	OEM	Description	Type	Power	Quadrants	Channels
N6784A	Keysight	4-Quadrant General-Purpose Source Measure Unit	Module	±20 V, ±1 A or ±6 V, ±3 A/20 W	4	1
N6785A	Keysight	SMU for Battery Drain Analysis	Module	20V,±4Aor15V,±5Aor10V,±6.7Aor6V,±8A/80W	2	1
N6782A	Keysight	2-Quadrant Source Measure Unit for Functional Test	Module	20 V, ±1 A or 6 V, ±3 A/20 W	2	1
B2912B	Keysight	Precision Source Measure Unit	Benchtop	±210 V, ±3 A/10.5 A pulse, 6½ Digit Resolution	4	2
B2902B	Keysight	Precision Source-Measure Unit	Benchtop	±210 V, ±3 A/10.5A Pulse, 5½ Digit Resolution	4	2
B2962B	Keysight	Low Noise Power Source, 6½ Digit	Benchtop	± 210V, ±3A/32W	4	2
NGU201	Rohde & Schwarz	2-Quadrant Source Measure Unit	Benchtop	20 V, ±8 A/60 W	2	1
NGU401	Rohde & Schwarz	4-Quadrant Source Measure Unit	Benchtop	±20 V, ±8 A/60 W	4	1
NGU411	Rohde & Schwarz	4-Quadrant Source Measure Unit	Benchtop	±20 V, ≤ 10 V, ±2 A > 10 V, ±1 A/20 W	4	1
2470	Keithley	SourceMeter SMU Instrument	Benchtop	±1000 V, ±1 A/20 W	4	1
2461	Keithley	High-Current SourceMeter SMU	Benchtop	±100 V, ±10 A/1000 W	4	1
2450	Keithley	SourceMeter SMU Instrument	Benchtop	±200 V, ±1 A/20 W	4	1
2651A	Keithley	High Power System SourceMeter SMU Instrument	Benchtop	±40 V, ±50 A/2000 W	4	1
2657A	Keithley	High Power System SourceMeter SMU Instrument	Benchtop	±3000 V, ± 120 mA/180W	4	1
6430	Keithley	Sub Femtoamp Remote Source Meter	Benchtop	±200V, ±100 mA/2.2W	4	1
2400	Keithley	SourceMeter SMU Instrument	Benchtop	±200 V, ±1 A/20 W	4	1
PXIe-4147	NI	PXI Source Measure Unit; PXIe, 4-Channel	PXIe	±8 V, 3 A/24 W	2	4
PXIe-4139	NI	PXI Source Measure Unit; PXIe, 1-Channel	PXIe	±60 V, ±3 A, ±10 A Pulsed/40 W	4	1
PXIe-4142	NI	PXI Source Measure Unit; PXIe, 4-Channel	PXIe	±24 V, 150 mA/3.6 W	2	4



- Keysight N1000A DCA-X** | Wide-Bandwidth Oscilloscope Mainframe
- Mainframe Supports Modules Greater than 100 GHz with up to 16 Channels.
 - 4-Channel 25 GHz Sampling Oscilloscope Plus Clock-Recovery Unit
 - Replaces 86100C/D and Supports Legacy Modules



- Keysight N1060A** | Precision Waveform Analyzer Module; 2-Channel, 50/85 GHz
- High Bandwidth to > 90 GHz, residual jitter as low as 45 fs
 - Adjustable Clock Recovery Peaking and Loop Bandwidth
 - Supported Communication Data Rates from 125 MBd to 64 GBd



- Anritsu MP2110A** | BERTWave Sampling Oscilloscope
- All-In-One Sampling Oscilloscope Plus BERT
 - 4-Channel 25 GHz Sampling Oscilloscope Plus Clock-Recovery Unit
 - Low-cost solution for Testing 10G to 800G Optical Modules
 - SFP28, QSFP28, CFP2/4/8, SFP56, QSFP56, OSFP, QSFP-DD Modules Supported



- Keysight N1030A** | Single Channel Optical Module; 65 GHz
- 1250 to 1600 nm Nominal Wavelength, Factory Calibrated 1310, 1550 nm
 - Reference Receivers for 25 Gb/s Ethernet, 400GBASE-SR16, 32G Fibre Channel & More



- Keysight N1040A** | Dual Electrical Channel Module; 33/60 GHz
- High Bandwidth to > 60 GHz, residual jitter as low as 90 fs
 - Lower Cost Module with up to 8 Channels per Mainframe



- Keysight N1055A** | Remote Sampling Head Module; 2/4 Port, 35/50 GHz
- Fully Integrated TDR/TDT/S-Parameter Measurement System
 - Multiple S-Parameters up to 16 Simultaneous Ports
 - TDR Step Times as Fast as 6 ps



- Keysight N1032A** | Single Channel Optical Module; 90/120 GHz
- 120 GHz Optical Bandwidth with Jitter as Low as 90 fs
 - Perfect for Analyzing 112 GBd (224 Gbps) Optical Signals
 - Supports NRZ and PAM4 Applications



- Keysight N1092A** | Single Channel Oscilloscope, DCA-M; 45 GHz
- Direct Connection with USB to PC. No Mainframe Required.
 - 1250 nm to 1600 nm for 45 GHz Channel
 - Fast Throughput with 250 kHz sample rate
 - Accurate high data rate analysis with <200 fs jitter



- Keysight N1094A** | Dual Channel Oscilloscope, DCA-M; 50 GHz
- Direct Connection with USB to PC. No Mainframe Required.
 - 1250 nm to 1600 nm for 45 GHz Channel
 - Fast Throughput with 250 kHz sample rate
 - Accurate high data rate analysis with <200 fs jitter



- Keysight N1076B** | Electrical Clock Recovery Module
- Provides Standards-Compliant Clock Recovery Capability on Electrical NRZ and PAM4 Signals from 125 MBd up to 64 GBd
 - Includes Adjustable Loop Bandwidth and Selectable Peaking



- Keysight UXR0334B** | Infiniium UXR Real-Time Oscilloscope; 4 Channels, 33 GHz
- Up to 2G Memory with 256 GS/s on All Channels
 - Low Noise Inputs: 129 μ V (rms) Noise with 10 GHz of Bandwidth
 - Includes InfiniiSim Basic De-embedding, PrecisionCable, and PrecisionProbe as Standard Options
 - 70% Faster Application Speeds vs UXR A



- Keysight UXR0254AP** | Infiniium UXR Real-Time Oscilloscope; 4 Channels, 25 GHz
- Up to 2G Memory with 256 GS/s on All Channels
 - 1mm Input Connectors on 4 Phase-Coherent Channels
 - AP Version License Key Upgradeable to 110 GHz
 - Real-time Digital Down Conversion with 2.16 GHz Bandwidth
 - Applications: USB4 v2, PCIe Gen5/6, DDR4/5, Phase Noise



- Tektronix MSO68B** | Mixed Signal Oscilloscope; 8 Channel to 10 GHz
- Frequency Range: 1, 4, 6, 8, 10 GHz Models
 - Low Noise Inputs: < 1.25 mV of Noise at 50 mV/div at 10 GHz
 - Built-In FFT Spectrum Analysis on all Channels
 - 50 GS/s on 2-Channels, 25 GS/s on 4-Channels



- Rohde & Schwarz RTP164** | High Performance Digital Oscilloscope; 4 Channel, 16 GHz
- Sample Rate: 40 GS/s with 2G Record Length
 - Real Time De-Embedding with S-Parameters in Hardware
 - Software Options for: USB3.2, 10G Ethernet, MIPI D-PHY, DDR3/4, Automotive Ethernet



- Tektronix DPS75004SX** | ATI Performance Oscilloscope System, 33/50 GHz
- 2 Channels @ 50 GHz 200 GS/s, or 4 x 33 GHz 100 GS/s
 - > 25 GHz Edge Trigger
 - Software Available for PCIe Gen 5/6 Debugging and Compliance Testing



- Keysight MXR608B** | Infiniium MXR-Series Real-Time Oscilloscope; 8 Channels, to 6 GHz
- Sample Rate: 16 GS/s on 8 Channels, 200M Record Length per Channel
 - 10-Bit ADC with 16-Bits in High Resolution Mode
 - Low Noise: 1mV/div 43 μ V, Low Jitter: 120 fs rms
 - Real Time Spectrum Analysis on 8 Scope Channels
 - Faster Application Speeds vs MXR A



Tektronix DPS75904SX | ATI Performance Oscilloscope System, 33/50 GHz

- 2 Channels @ 50 GHz 200 GS/s, or 4 x 33 GHz 100 GS/s
- For Datacom Standard: 100GBASE KR-4, CR-4, 25 Gb Phy KR, CR for 100G
- Software Available for PCIe Gen 5/6 Debugging and Compliance Testing



Tektronix MSO58B | Mixed Signal Oscilloscope; 8-Channel

- Frequency Range: 350, 500 MHz, 1, 2 GHz Models
- Record Length: 500 M
- Built-In FFT Spectrum Analysis on all Channels
- Serial Decode Trigger Support for: I2C, SPI, USB 2.0, Ethernet, CAN, LIN,
- Perform RF Measurements: Channel Power, ACPR, OBW



Rohde & Schwarz RTO2064 | Digital Oscilloscope; 4 Channels, 6 GHz

- Record Length: 2 G sample @ 20 GS/s
- Digital Triggering on 16-Bit High-Definition Signals
- Real Time De-embedding with S-Parameters in Hardware



Rohde & Schwarz MXO58 | Digital Oscilloscope; 8 Channels

- Frequency Ranges: 100, 200, 350, 500 MHz, 1, 2 GHz
- 500 Mpts Memory Standard on 8 Channels
- 12-Bit ADC for High Vertical Resolution and Digital Triggering
- 45k FFT/s on 4 Simultaneous Displays



Keysight EXR608A | Infiniium EXR-Series Real-Time Oscilloscope; 8 Channels, to 6 GHz

- Sample Rate: 16 GS/s 100 Mpts Record Length Upgradeable to 400 Mpts
- 10-Bit ADC with 16-Bits in High Resolution Mode
- Upgradeable Bandwidth from Available Stock



Keysight MSOS804A | Infiniium S-Series Digital Oscilloscope; 4-Channels, 8 GHz

- Sample Rate: 20 GS/s with 100 M/Chan, upgradeable up to 400 M/Chan
- 10-Bit ADC with 16-Bits in High Resolution Mode
- 260 μ V Full Bandwidth Noise Floor



Keysight E5055A | SSA-X Signal Source Analyzer, 10 MHz to 8 GHz

- Fast Cross Correlation Measurements
- Phase Noise: -169 dBc/Hz @ 1 GHz Carrier (10 kHz Offset)
- Software Options Include: Pulsed Analysis, Spectrum Analysis
- Two Built-in Isolated DC Voltage Channels



Rohde & Schwarz FSWP26 | Phase Noise Analyzer; 1 MHz to 26.5 GHz

- Full-featured Phase Noise Analyzer and Spectrum Analyzer
- Phase Noise: -166 dBc/Hz @ 1 GHz Carrier (10 kHz Offset)
- Low Phase Noise Internal LO, Needs No External Sources
- Cross-Correlation Measurements for 25 dB Improved Sensitivity



Rohde & Schwarz FSWP50 | Phase Noise Analyzer; 1 MHz to 50 GHz

- Full-featured Phase Noise Analyzer and Spectrum Analyzer
- Phase Noise: -166 dBc/Hz @ 1 GHz Carrier (10 kHz Offset)
- Low Phase Noise Internal LO, Needs No External Sources
- Phase Noise @ 50 GHz: -138 dBc/Hz (10 kHz Offset)



Rohde & Schwarz FSPN26 | Phase Noise Analyzer and VCO Tester; 1 MHz to 26.5 GHz

- Cross-Correlation and High-Speed for VCOs, OXCOs, DROs
- Phase Noise: -163 dBc/Hz @ 1 GHz Carrier (10 kHz Offset)
- Offset Frequency Range: 1 μ Hz to 1 GHz.

COMING SOON

The New mmWave SSA-X Series Phase Noise

NEW! Keysight E5058A SSA-X Phase Noise Analyzer

The SSA-X Series now extends to mmWave with the addition of 26.5, 44 and 54 GHz models to the Series. Typical enhanced low phase noise performance of -148 dBc/Hz @26.5 GHz with 10 kHz offset and -143 dBc/Hz @ 50 GHz with 10 kHz offset. With optional VNA ports and spectrum analysis, this full-featured instrument will make significant improvements in 5G and SATCOM mmWave workflows.





- Keysight N4375D** | Lightwave Component Analyzer; Single- Mode, 26.5 GHz
- Guaranteed Responsivity to 26.5 GHz.
 - Extended Calibration Support for Advanced Test Setups
 - Built-in Optical Power Meter with User-selectable Transmitter Power



- Quantifi Photonics IQRX-1005-FA-EPIQ** | High Performance Coherent Optical Receiver
- Dual Polarization
 - Supports PSK, QAM and Custom Modulation Formats
 - Single-Ended RF 1.85mm Outputs



- Keysight E5061B** | ENA Series Network Analyzer/Impedance Analyzer, 100 kHz to 3 GHz
- 3 GHz Network Analyzer and Impedance Analyzer in One Unit
 - Gain-Phase Test Port, 5 Hz to 30 MHz for Impedance Measurements
 - Compatible with Keysight Component Measurement Fixtures



- Keysight E4991B** | Impedance Analyzer; 1 MHz to 3 GHz
- Built-in DC Bias to ± 40 V
 - Measures: $|Z|$, $|Y|$, L_s , L_p , C_s , C_p , R_s (R), R_p , X , G , B , D , Q , θ_z , Γ_y , $|\Gamma|$, Γ_x , y , θ_r



- Keysight 8163B** | Lightwave Multimeter Mainframe
- Consists Of Two Slots for Hosting Power Modules, Return Loss Modules, Compact Tunable Lasers, or Fixed Laser Sources
 - Includes Built-In Applications: Return Loss, Passive Component Test, Stability, and Logging



- Keysight 8164B** | Lightwave Measurement System Mainframe
- 1 Slot for a Tunable Laser Source
 - 4 slots for Power Modules, Return Loss Modules, Compact Tunable Lasers, or Fixed Laser Sources
 - Built-in Applications: Passive Component Test, Stability, Logging



- Keysight E4990A** | Impedance Analyzer, 20 Hz to 120 MHz
- 25 m Ω to 40 M Ω Wide Impedance Measurement Range
 - Measurement Parameters: $|Z|$, $|Y|$, θ , R , X , G , B , L , C , D , Q , Complex Z , Complex Y , V_{ac} , I_{ac} , V_{dc} , I_{dc}
 - Built-in DC bias range: 0 V to ± 40 V, 0 A to ± 100 mA



- Keysight E4980A** | Precision LCR Meter; 20 Hz to 2 MHz
- 0.05% Basic Accuracy
 - Optional DC Bias to ± 40 V
 - Wide Range of Test Fixtures



- Keysight 81491A** | Reference Transmitter
- 33 GHz Electro-Optical Bandwidth
 - Can Serve as E/O Converter
 - NRZ and PAM4 Signals to 32 GBaud
 - 1310 & 1550 nm Single Mode Fiber, 850 nm Multimode Fiber



- Keysight 81492A** | Reference Transmitter
- 40 GHz Electro-Optical Bandwidth
 - Can Serve as E/O Converter
 - NRZ and PAM4 Signals to 56 GBaud
 - 1310 & 1550 nm Single Mode Fiber



- Rohde & Schwarz LCX200** | SLCR Meter, 4 Hz to 500 kHz
- Frequency Extendable to 1 MHz or 10 MHz
 - Test Signal Range: 100mV to 10V, with current of up to 200 mA
 - Measurement Parameters: C_p , C_s , L_p , L_s , D , Q , G , R_p , R_s , R_{dc} , R , X , Z , Y , θ_d , θ_r , B , M , N



- GW Instek LCR-8210** | High-Frequency LCR Meter; 10 Hz to 10 MHz
- Models Available from 1 MHz to 5, 10, 20, 30 MHz
 - Internal DC Bias Voltage ± 12 V
 - Measurement Parameters: Z , L_s/L_p , C_s/C_p , R_s/R_p , Q , D , Y , G , X , θ_d/θ_r , B , R_{dc}

