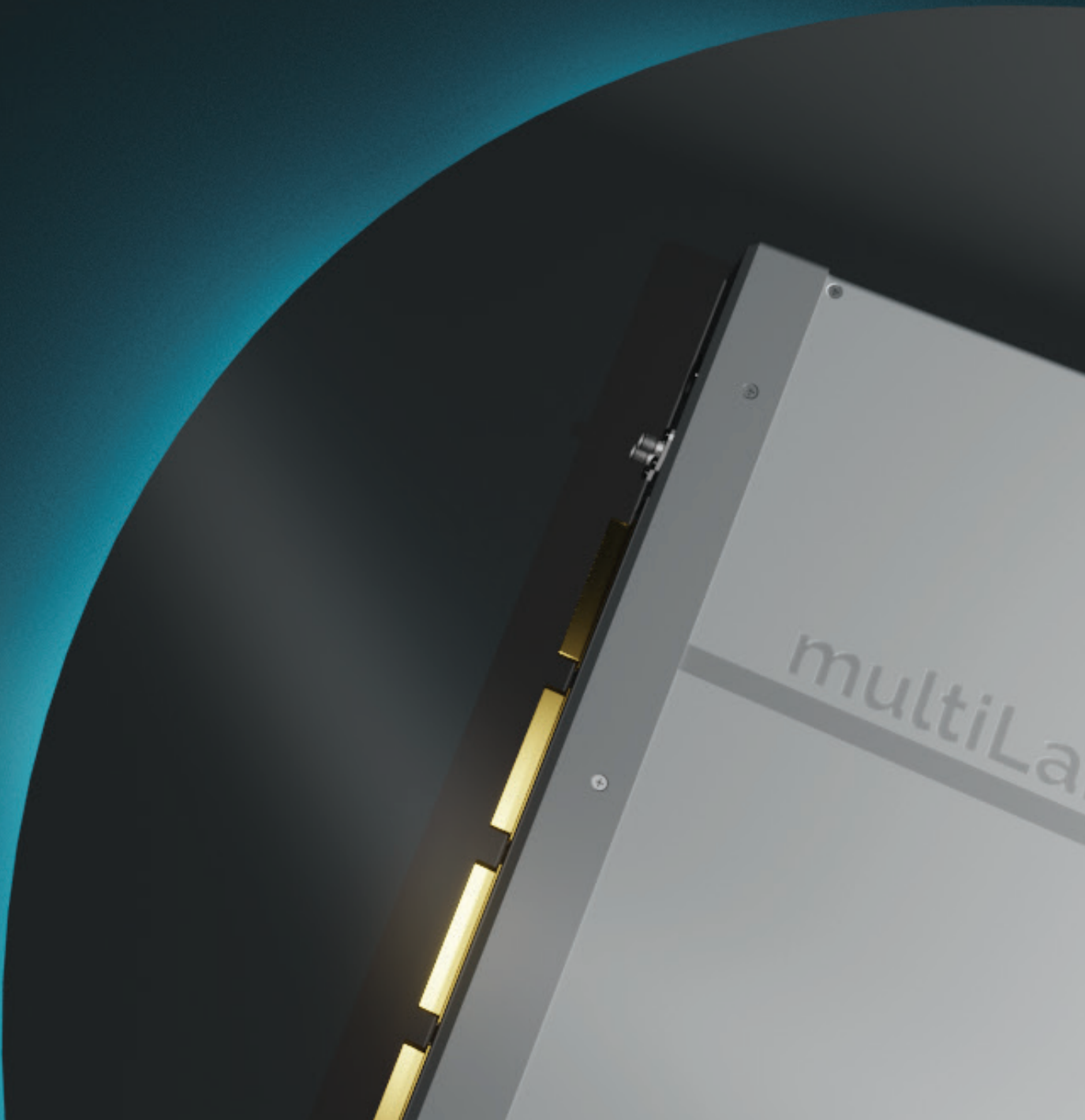




MEASUREMENT SOLUTIONS BROCHURE | 2025





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Innovation for the Next Generation

MultiLane high-speed test solutions have been accelerating industry evolution for over a decade. Specializing in hyper-scale, high-value validation, MultiLane offers a complete cycle support of data center test solutions encompassing IC and transceiver characterization, host line card test, and link testing.

Industry-leading solutions test from wafer to rack for developers, module vendors, interconnect and cable manufacturers, network installers, and data center operators with high performance, scalable equipment validating chips, active and passive copper, transceivers, and linear pluggable optics.

The MultiLane portfolio encompasses Bit Error Rate Testers (BERT), Time Domain Reflectometers (TDR), electrical and optical Digital Sampling Oscilloscopes (DSO), and Arbitrary Waveform Generators (AWG), for semiconductor wafer level testing, SerDes, TIAs, cable testing, and active interconnects.

200

More than 200
products released

500

Over 500
customers

Product Portfolio

Test solution instrumentation is a core value proposition at MultiLane, continuously improved by the feedback of tier-one networking and data center equipment vendors and operators. The High-Speed I/O market depends on the agility of vendors like MultiLane to ensure cutting-edge designs can be released quickly as appetites for increased bandwidth capacity remain insatiable.



MultiLane's agility enables us to quickly respond to customer needs with our domain expertise and proprietary technology. Our comprehensive product offerings include optical and electrical oscilloscopes, bit error rate testers, TDR cable testers, interconnect products, and comprehensive cable and transceiver test solutions, all with an emphasis on high-scale validation. This portfolio enables the adoption of new technologies that developers, manufacturers, and installers demand in this fast-paced industry. We understand the complexity of solutions required for physical-layer tests at these high speeds as well as the competitive economic realities of the sector. MultiLane specialists provide high-performance, high-value, scalable, solutions that meet and exceed customer expectations.

Featured Product - ML7008F-LFT Gen 2 224 Gbps/lane BERT

The second generation 224 Gbps/lane BERT, the ML7008F-LFT is designed to meet the most stringent testing requirements of the Terabit era and provide unparalleled validation including Real-Hardware FEC, Block Error Ratio (BLER), Link Training support for optimized BER performance, and a **leading SerDes ASIC chip with over 40 dB of equalization**. The ML7008F-LFT also features 16 Tx channels: 8 Tx and 8 DTx low- and high-power applications, respectively.

The ML7008F-LFT's unmatched capabilities enable comprehensive testing of both conventional optics and cables and optical components with no retimers, including Linear Pluggable Optics, Linear Receive Optics, Active Copper Cables, Passive DACs.

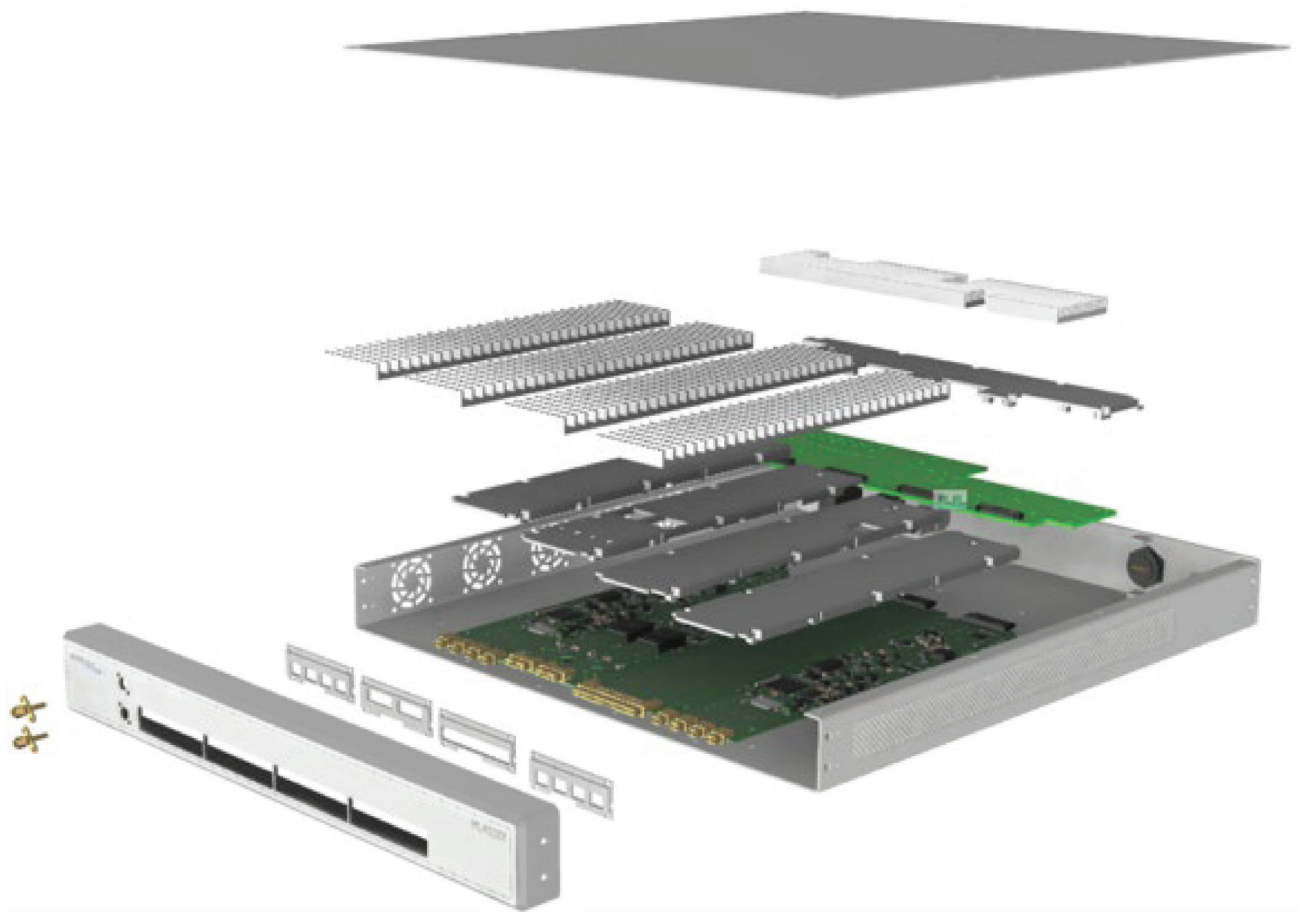
The BERT is available as a standalone ML7008F-LFT instrument, or a module for the MultiWave Test Platform (MWTP), the MW7008F-LFT, which can be scaled to 2 units per chassis for 16 channels and full bi-directional testing of any terabit cable and simultaneous validation of transceivers from different vendors. Multiple fully populated MWTP units can also be stacked together for even higher scale testing applications.



Next-Gen Measurement Solutions

MultiWave Test Platform

The MultiWave Test Platform (MWTP) provides the perfect balance of flexibility and ease of use. The expanded enclosure allows us to offer a series of models and options, placing up to 4 MultiLane instruments as MultiWave (MW) modules into a customer-specified MWTP. The resulting instrument allows for specific user-defined testing in a fixed package, ideal for lab, rack-and-stack, ATE, and production setups, offering a range of solutions for any testing and characterization needs.



MWTP Applications

- Post silicon Validation
- V&V Characterization
- End-of-Line Board-level test
- High-speed component and system manufacturing
- Field Failure Analysis
- High-density passive and active interconnect characterization & testing

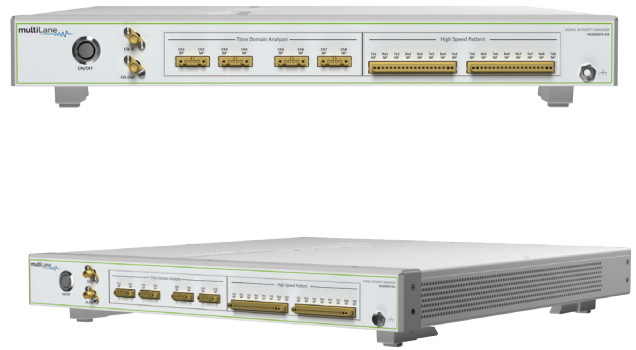
MultiWave Module Instruments

	Part Number	Description	Channels	Signal Format	Output Amplitude	Details
BERT	MW7008F-LFT	16 Tx and 8 Rx 224 Gbps/lane BERT	16 Tx 8 Rx	PAM4/NRZ	0-900mVpp for Tx 0-2400mVpp for DTx	- Up to 106.25 GBd 8 channels high voltage amplitude - Over 40 dB of equalization - Real Hardware FEC
	MW7004F-L	4-Lane 224 Gbps/lane BERT	4	PAM4/NRZ	0-800 mVpp	- Up to 120 GBd with 106.25 GBd; 120G bit/s; 53.125 GBd; 26.5625 Gbaud and 25.78125G bit/s - Up to 35 dB Rx equalization - Suitable for active and passive interconnect testing
	MW7008E-LFN	8-Lane 112 Gbps/lane Long Reach BERT	8	PAM4/NRZ	0-800 mVpp	34 dB loss equalization - Line rates for PCIe Gen 3, 5, 6, and 7, LPO, and automotive applications - SMPS connectors
DSO	MW6004-70-E	4-channel electrical DSO	4	67GHz	-	SMPX connectors
	MW6004-35-E	4-channel electrical DSO	4	33GHz	-	SMPM connectors
AWG	MW9004E	Differential Arbitrary Waveform Generator	4	PAM4/8/6 /NRZ	-	- Sampling rate up to 96GSa/s - AWG Mode: A wide variety of pre-programmed waveforms. - PPG Mode: NRZ and PAM4 - Analog bandwidth up to 30GHz
	MW9004F	Differential Arbitrary Waveform Generator	4	PAM4/8/6 /NRZ/ Custom Patterns	-	- Sampling rate up to 150GSa/s - AWG Mode: A wide variety of pre-programmed waveforms. - PPG Mode: NRZ and PAM4 - Analog bandwidth over 65GHz - all channels synchronizable and multi-module synchronizable

Ultra-High-Density Backplane Testing

ML8008FX-SIA – Signal Integrity Analyzer

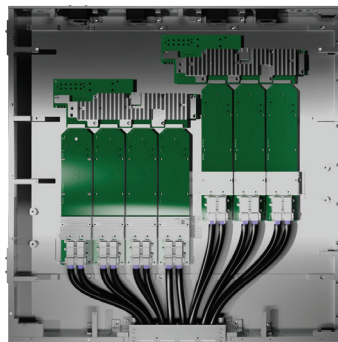
The ML8008FX-SIA Signal Integrity Analyzer is a high-throughput tester optimized for validating passive copper solutions such as switch-based flyover cables, DACs, and backplanes. It supports a wide range of signal integrity measurements, including Sdd21, intra-pair skew (IPS), crosstalk, and common-mode measurements. With automated differential S-parameter validation, multi-channel impedance profiling, and ultra-fast testing capabilities, the ML8008FX-SIA delivers reliable results for high-volume production with a low cost of ownership. Its rapid, high-throughput performance makes it an ideal solution for demanding manufacturing environments.



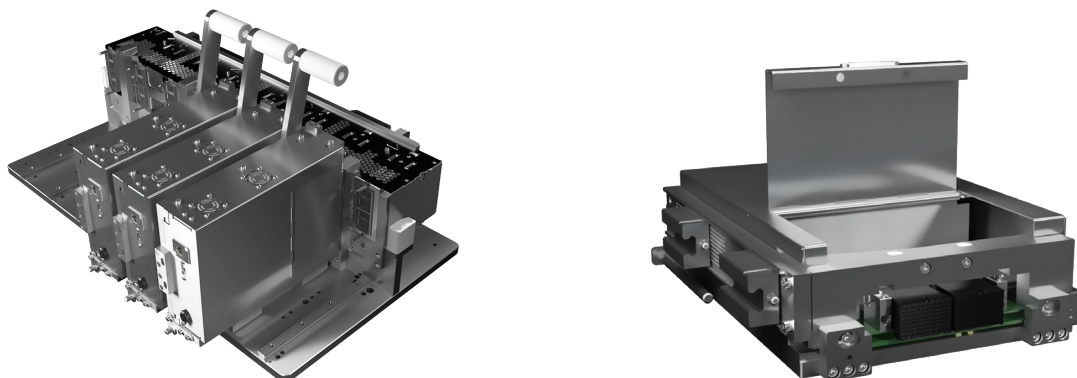
ML8008FX-SIA

Ultra-High-Density BERTs

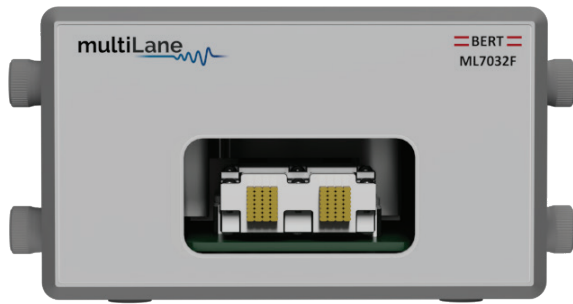
Built for final BER checks for all forms of copper interconnects including backplanes, midplanes, and cable harnesses, MultiLane ultra-high-density BERTs feature extremely high channel counts in comparatively small chassis to maximize testing speed and volume. Featuring 32- and 64-channel count BERTs for 112 Gbps/lane, and a 32-channel count BERT for 224 Gbps/lane, these BERTs can be tailored to any configuration and combined to validate any channel count; providing pass-fail metrics in end-of-line testing to ensure shipping in full confidence.



Multiple BERT units in a single enclosure (top) with multiple enclosures linked together testing a backplane (bottom)



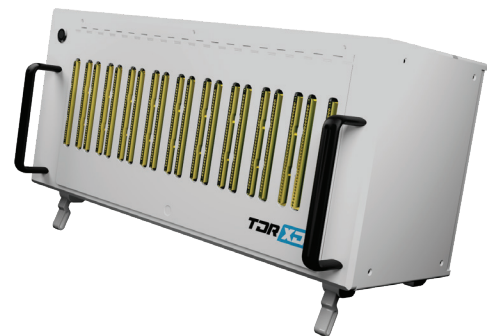
ML7064E-LX 64 channel 112 Gbps/lane BERT for 128 differential pairs/unit



ML7032F-LX-ULT 32 channel 224 Gbps/lane BERT for 64 differential pairs/unit

TDR-XD Extreme Density TDR Validation

Built to minimize testing cost per lane, TDR-XD builds on existing MultiLane expertise in providing high-density testing solutions by shrinking the rack and stack MWTP TDR platforms into a tightly-packed water-cooled chassis. Testing up to 160 differential pairs at once, TDR-XD provides the highest-density TDR validation in the industry. TDR-XD's highly condensed profile also allows for easier integration into many ATE/ICT vendor test systems.



TDR-XD condenses an over 9 RU test setup into an ultra-high-density, low-profile chassis

MultiLane Ultra-High-Density Instruments

	Part Number	Description	Channels	Data Format	Details
Instrument	ML8004FX-SIA	4-lane 224G Signal Integrity Analyzer	4	PAM4/NRZ	• Insertion Loss and Crosstalk Measurements • Impedance Profiling and IPS Measurements • Scalable for High-Density Applications
	ML8008FX-SIA	8-lane 224G Signal Integrity Analyzer	8	PAM4/NRZ	• Insertion Loss and Crosstalk Measurements • Impedance Profiling and IPS Measurements • Scalable for High-Density Applications
	ML8004EX-SIA	4-lane 112G Signal Integrity Analyzer	4	PAM4/NRZ	• Insertion Loss and Crosstalk Measurements • Impedance Profiling and IPS Measurements • Scalable for High-Density Applications
	ML8008EX-SIA	8-lane 112G Signal Integrity Analyzer	8	PAM4/NRZ	• Insertion Loss and Crosstalk Measurements • Impedance Profiling and IPS Measurements • Scalable for High-Density Applications
	ML7032F-LX-ULT	32-lane 224G BERT	32	PAM4/NRZ	• Tests up to 64 diffrential pairs • IUPXR interface
	ML7032E-LX	32-lane 112G BERT	32	PAM4/NRZ	• Tests up to 64 diffrential pairs • IUPXR interface
	ML7064E-LX	64-lane 112G BERT	64	PAM4/NRZ	• Tests up to 128 diffrential pairs • Uses customizable daughter cards with interposers
	TDR-XD	32-lane TDR	32	-	• SMPX 110GHz Smooth Bore Interface • 7ps rise time • 40 MSa/s Sampling Rate

Instruments

Bit Error Rate Testers

Bit error rate testers (BERTs) are a foundational block of high-speed communications testing. These instruments generate a digital test pattern, typically a pseudorandom binary sequence (PRBS) and/or square wave, which drives a device under test (DUT). Following the transmission through the link, the error detector in the BERT captures the signal. This setup can be used to evaluate the performance of a transmitter, receiver, or optical system. MultiLane supports general-purpose BERTs which connect through precision co-axial cables, as well as BERTs that present an MSA-compliant port for pluggables built directly into the instrument. The resulting signals' eye diagrams can be viewed by connecting a Digital Sampling Oscilloscope (DSO) to the setup.

A BERT needs to be tailored to the characteristics of the DUT.

Key considerations include:

- Baud rate
- Number of channels
- Modulation format (e.g., NRZ, PAM-4, etc.)
- Test pattern (e.g., PRBS15)
- Signal amplitude
- Port type (e.g., QSFP-DD)
- Form factor (e.g., portable, chassis, etc.)



ML7008F-LFT Key Features

- Leading SerDes ASIC chip with over 45dB of equalization
- Real-Hardware FEC
- Full bi-directional 1.6T traffic
- Block Error Ratio Measurements
- 8x DTx with amplitude swing up to 2400mVpp



ML7004F-L Key Features

- Up to 35 dB Rx equalization
- Data Rates: 120; 53.125; 26.5625 Gbaud/lane PAM4 and their derivatives
- Independent control of inner eye levels

The Latest in Terabit BERT Technology

Fitted with a top tier SerDes ASIC chip with over 40 dB of Rx equalization, the ML7008F-LFT 224 Gbps/lane BERT provides the most advanced BER testing in the industry. When placed in the MultiWave Test Platform, the ML7008F-LFT provides full bi-directional testing of any terabit cable and simultaneous validation of transceivers from different vendors, including passive DACs, redriver based Active Copper Cables (ACC) and Linear Pluggable Optics (LPO), and traditional DSP-based transceivers and Active Electrical Cables (AEC).



Bit Error Rate Testers

	Part Number	Description	Channels	Data Format	Output Amplitude	Details
General Purpose BERTs	ML7008F-LFT	16 Tx and 8 Rx 224 Gbps/lane BERT	16 Tx 8 Rx	PAM4/NRZ	0-900mVpp for Tx 0-2400mVpp for DTx	- Up to 106.25 GBd 8 channels high voltage amplitude - Over 40 dB of equalization - Real Hardware FEC
	ML7004F-L	4-Lane 224Gbps/lane BERT	4	PAM4/NRZ	0-800 mVpp	106.25; 53.125; 26.5625Gbaud/lane PAM4 40 dB loss equalization - SMPS connectors
	ML7008E-LFN	8-Lane 112Gbps/lane Long Reach BERT	8	PAM4/NRZ	0-800 mVpp	34 dB loss equalization 1 G to 66 G - Line rates for PCIe Gen 3, 5, 6, and 7, LPO, and automotive applications - SMPS connectors
	ML4079ELN	8-Lane 66Gbd NRZ PAM4, 800G BERT, 34dB equalizer with PCIe gen3-5-6-7, and low-rate testing capabilities	8	PAM4/NRZ	0-800 mVpp	34 dB loss equalization 1 G to 66 G - Line rates for PCIe Gen 3, 5, 6, and 7, LPO, and automotive applications - SMPS connectors
	ML4079EN	8-Lane, 58 GBc NRZ & PAM4, 800G BERT with noise injection	8	PAM4/NRZ	0-1200 mVpp	20-29G & 36-61G PAM4/NRZ - Random and Burst Noise Injection - Random and Sinusoidal Jitter Injection
	ML4079E	8-Lane, 58 GBd NRZ & PAM4, 800G BERT	8	PAM4/NRZ	0-700 mVpp	23-29 & 46-56 GBd PAM4/NRZ - Real Hardware FEC (KR4/KP4 Analysis) - Dense M-SMPM connectors
	ML4039EN	4-Lane, 58 Gbd PAM4, 400G BERT with Noise Injection	4	PAM4/NRZ	0-800 mVpp	23-29 & 46-56 GBd PAM4/NRZ - Real Hardware FEC (KR4/KP4 Analysis) - Noise Injection (Crosstalk Interference) - Standard 2.4 mm connectors
	ML4039E	4-Lane, 58 GBd PAM4, 400G BERT	4	PAM4/NRZ	0-800 mVpp	23-29 & 46-56 GBd PAM4/NRZ - Real Hardware FEC (KR4/KP4 Analysis) - Standard 2.4 mm connectors
	ML4039B	4-Lane, 1.12- 29 GBd NRZ & PAM4, (Gen 2), 200G BERT	4	PAM4/NRZ	0-800 mVpp	7 – 28.125 GBd PAM4 1.12–1.56, 2.24-28.125 Gbps NRZ - Standard 2.92 mm connectors

	Part Number	Description	Differential Channels	Data Format	Output Amplitude	Details
General Purpose BERTs	ML4079D	8-Lane, 29.5 Gbd NRZ & PAM4. 400G BERT	8	PAM4/NRZ	0-1200 mVpp	9-14.3 & 22-29.5 GBd PAM4 9-14.3 and 23.2-29.5 Gbps NRZ - FEC Emulation (KR4/KP4 Analysis) - Standard 2.92 mm connectors
	ML4039D	4-Lane, 29.5 GBd NRZ & PAM4, 200G BERT with FEC estimation	4	PAM4/NRZ	0-1200 mVpp	22-29.5 GBd PAM4 9-14.2 and 23.2-29.5 Gbps NRZ - FEC Emulation (KR4/KP4 Analysis) - Standard 2.92 mm connectors
	ML4039-BTP	Gbps NRZ, Stand Alone, 100G BERT	4	NRZ	200-800 mVpp	8.5-15 & 21-30 Gbps NRZ - Standard 2.92 mm connectors
	ML4039-JIT-BTP	Gbps NRZ, 100G BERT with Jitter Generation	4	NRZ	100-2000 mVpp	8.5-15 & 21-30 Gbps NRZ - Jitter/receiver tolerance - Standard 2.92 mm connectors

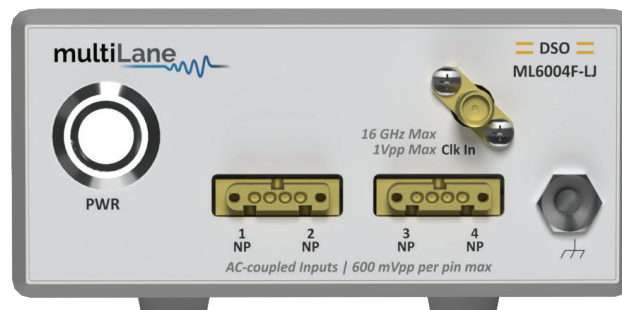
MW7008E-LFN

The MW7008E-LFN is an 8-channel, 800G BERT purpose-built for long reach applications including PCIe-Gen 3, 5, 6, and 7, automotive, transceiver and data center interconnect testing. The MW7008E-LFN features a wide range of line rate coverage, up to 34dB equalization, built-in AWGN noise injection, and ratio level mismatch (RLM), control, providing a single platform for testing up to 8x66 GBaud. The MW7008E-LFN includes transmitter equalization (3 or 7 taps FFE), and receiver equalization. The MW7008E-LFN can provide measurements for Signal-to-Noise Ratio (SNR), histogram measurements, and Real Time BER Measurements and FEC Measurements.



Oscilloscopes

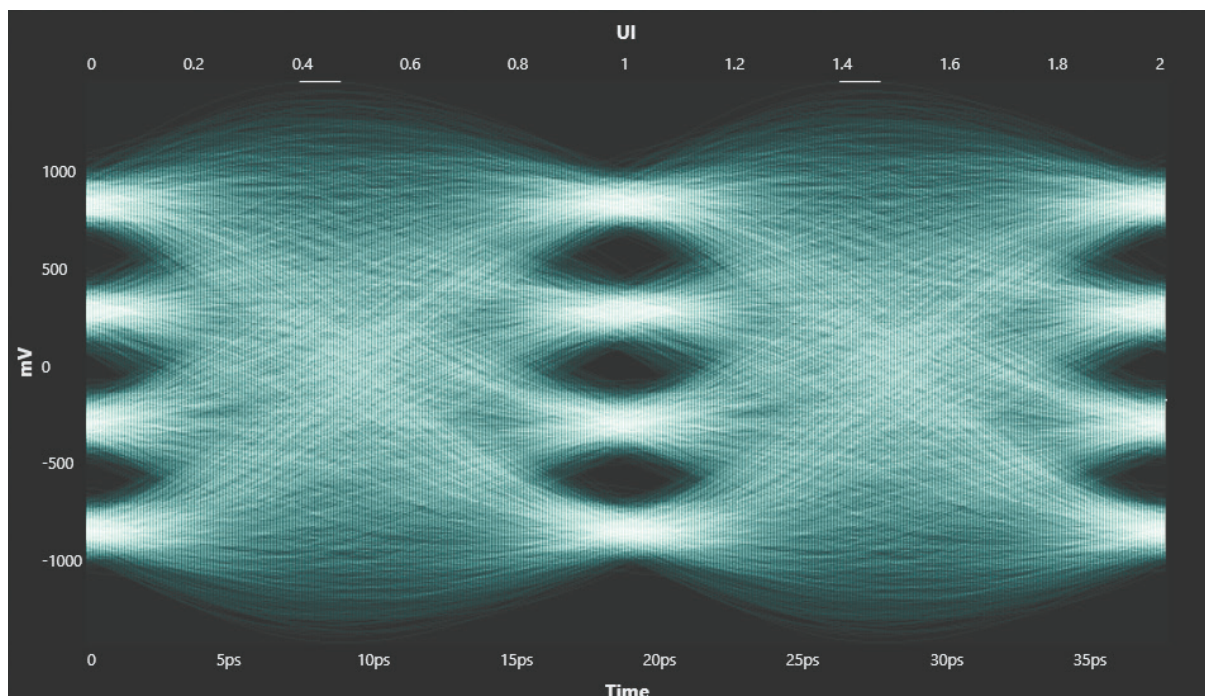
Digital sampling oscilloscopes (DSOs) are essential tools for the characterization of a variety of active or passive DUTs by providing a visual reference of the signal. They are often used in conjunction with a BERT, which injects the digital test pattern into the channel before reaching the MultiLane DSO, leveraging critical measurement capabilities like jitter and eye diagram analysis. MultiLane offers single and multi-channel optical and electrical systems to fit a wide variety of applications. MultiLane oscilloscopes can be fitted with built-in clock recovery modules to ensure a synchronous trigger for each measurement and eliminate excessive jitter from the signal.



ML6004F-LJ



ML6004-60-O



MultiLane Oscilloscopes

	Part Number	Description	Electrical bandwidth (GHz)	Optical bandwidth (GHz)	Details
DSO	MW6004-70-E	4-channel electrical DSO	67	NA	SMPX connectors
	MW6004-60-O	4-channel optical DSO	NA	60	Optical FC/UPC connectors
	MW6004-35-E	4-channel electrical DSO	33	NA	SMPM connectors
	ML6004-70-E	4-channel electrical DSO	67	NA	SMPX connectors
	ML6004-60-O	4-channel optical DSO	NA	60	Optical FC/UPC connectors
	ML6004-35-E	4-channel electrical DSO	33	NA	SMPM connectors
	ML6002-70-E	Dual channel Electrical DSO	67	NA	SMPX connectors
	ML4015F-2X-70-OPT-SM42	Dual Channel Electrical & Optical DSO	67	42	- Optical FC/UPC connector - Electrical Key connectors 1.85 mm
	ML4015F-2X-70-OPT-33	Dual Channel Electrical & Optical DSO	67	33	- Optical FC/UPC connector - Electrical Key connectors 1.85 mm
	ML4015E-35	Single channel Electrical DSO	33	NA	Electrical Key connectors 2.4 mm
	ML4015E-OPT-25	Single Channel Optical DSO	NA	25	Optical FC/UPC connector
	ML4015E-2X-35	Dual Channel Electrical DSO	33	NA	Electrical Key connectors 2.4 mm
	ML4015E-2X-35-OPT-SM42	Dual Channel Electrical & Optical DSO	33	42	- Optical FC/UPC connector - Electrical Key connectors 2.4 mm
	ML4015E-2X-35-OPT-33	Dual Channel Electrical & Optical DSO	33	33	- Optical FC/UPC connector - Electrical Key connectors 2.4 mm

Time Domain Reflectometry

Pulsar

MultiLane Pulsar is a 4-channel Time Domain Reflectometry analyzer that simplifies troubleshooting by providing full SI insights, enabling the detection of impedance mismatches, discontinuities, and skew measurements. Pulsar is designed with scalability for parallel measurements and optimized for high throughput, making it ideal for testing high-density ports.



ML8004-70-PLS



ML8004-35-PLS



Four ML8004-70-PLS testing a switch

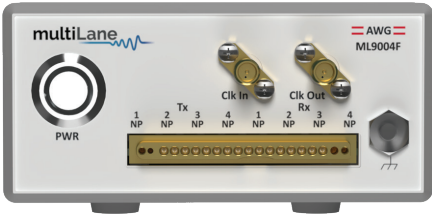


MultiLane Time Domain Reflectometers

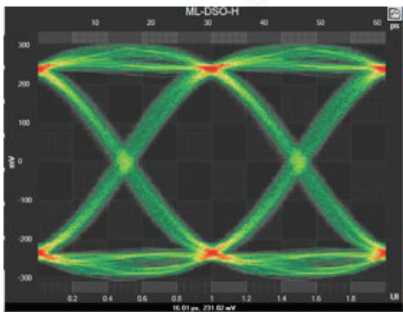
	Part Number	Description	Rise Time (ps)	Details
TDR	ML8004-70-PLS	Time Domain Reflectometer (TDR)	7 ps	- SMPX connectors 4-Channel differential TDR
	ML8004-35-PLS	Time Domain Reflectometer (TDR)	12 ps	- SMPM connectors 4-Channel differential TDR

Arbitrary Waveform Generators

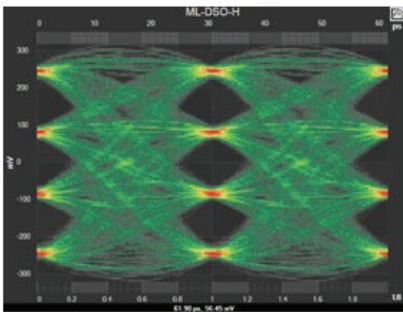
Arbitrary Waveform Generators (AWGs) are essential instruments for generating custom electrical waveforms in advanced testing environments. The ML9004F — our latest high-performance A WG —delivers a 150GSa/s sample rate with an analog bandwidth exceeding 65GHz. Designed for high-speed SerDes transceiver and amplifier validation, the ML9004F enables Rx jitter tolerance testing, signal integrity analysis, and compliance testing for cutting-edge standards such as PCIe, USB, MIPI, and coherent optical communications. This A WG is a powerful tool for 400G/800G ZR coherent module development and high-speed digital signal processing, offering BER and FER testing capabilities for next-generation applications.



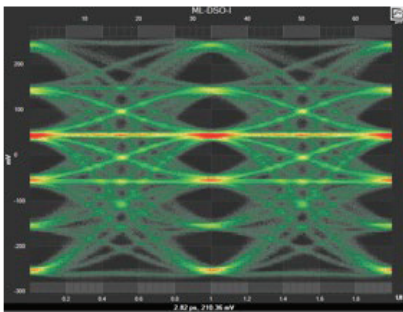
ML9004F



32.5G NRZ Signal



32.5G PAM4 Signal



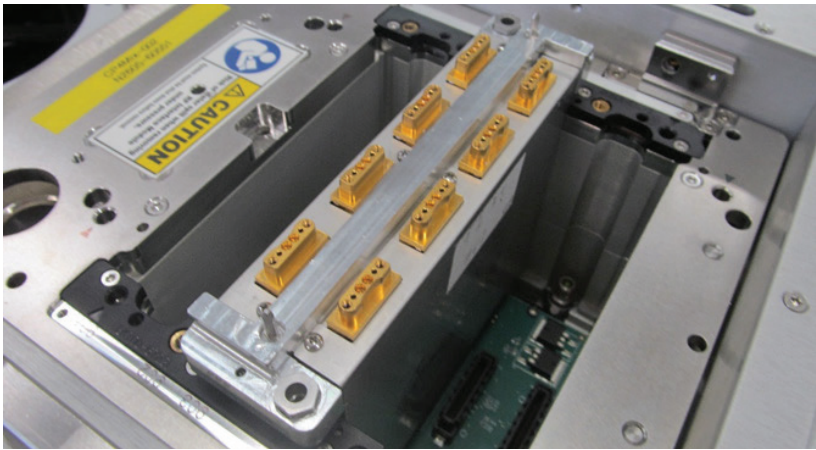
30G PAM6 Signal

MultiLane Arbitrary Waveform Generators

	Part Number	Description	Data Format	Details
AWG	ML9004E	4-channel Differential Arbitrary Waveform Generator	PAM4/8/6/NRZ	- Sampling rate up to 96GSa/s - Analog bandwidth up to 30GHz - SMPM connectors - PPG Mode: NRZ and PAM4 - AWG Mode pre-programmed waveforms: Square wave, triangular Wave, sinewave, multi-tone, linear chirp, log chirp, sawtooth, exponential rise, exponential decay, Sinc, Lorentz, Surge, Damped Oscillation, Stairs, Serial Data, half-sine, Distorted sinewave and Gaussian
	MW9004E	4-channel Differential Arbitrary Waveform Generator, 2 Dual Channel I/Q	PAM4/8/6/NRZ	
	ML9004F	4-channel Differential Arbitrary Waveform Generator	PAM4/8/6/NRZ	- Sampling rate up to 150GSa/s - Analog bandwidth per channel: 65GHz - SMPX connectors - PPG Mode: NRZ and PAM4 - AWG Mode pre-programmed waveforms: Square wave, triangular Wave, sinewave, multi-tone, linear chirp, log chirp, sawtooth, exponential rise, exponential decay, Sinc, Lorentz, Surge, Damped Oscillation, Stairs, Serial Data, half-sine, Distorted sinewave and Gaussian
	MW9004F	4-channel Differential Arbitrary Waveform Generator, 2 Dual Channel I/Q	PAM4/8/6/NRZ	

ATE Instruments

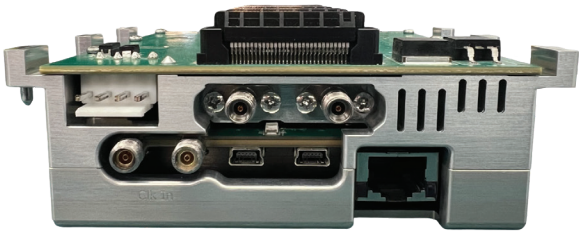
Advantest and MultiLane offer an integrated platform combining MultiLane's high-speed BERT, DSO scope, and AWG instruments with Advantest's V93000 ATE tester. This solution enhances semiconductor IC testing, supporting up to 32 differential lanes at 224 Gbps (PAM4) and 70 GHz bandwidth. The V93000 Smartest software and docking solutions are widely deployed and proven in production environments.



OT4025F DSO mounted in a system for wafer sort testing

Key Features

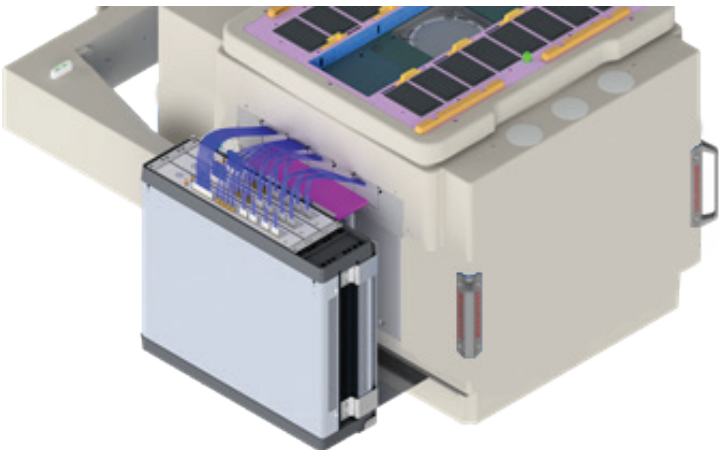
- Up to 224 Gbps at -speed device testing
- Up to 96 Channels
- Cabling solution minimizes insertion losses
- Water cooling features
- SMPX connectors covering a frequency range up to 110 GHz per lane
- Hard docking to wafer probes



OT6000 Backplane

MultiLane ATE Instruments

	Part Number	Description
ATE Instruments	OT6000	6 Slots Backplane 12V, 15A power supply clock cabling, UART and firmware upgrade interfaces Ethernet connectivity water cooling intake.
	OT4025F	4 channel 70GHz Digital Sampling Oscilloscope
	OT4039F	4 channel 224 Gbps (112 GBaud) BERT



OT93000 - MWTP system setup

The MWTP is designed to integrate with the OT93000 system, enhancing its testing capabilities with advanced features for better performance and flexibility. It houses BERTs, DSOs, and AWGs in the Twinning Frame under the load board, minimizing the signal path to improve signal integrity and test accuracy. The module offers a compact design, cost-effectiveness, versatile setup, reduced test time, and supports a wide range of ATE systems and instruments, all while being modular and adaptable for various configurations.

has context menu

Legacy Products

MultiLane continues to offer [legacy products](#) due to popular demand, while supplies lasts. Please inquire with your local sales representative about availability.

Revision No.	Last Modified
0.9	May 2026

multiLane



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