



High-Speed Serial Data Test Solutions for AI Semiconductors and Data Center

Signal Quality Analyzer-R MP1900A

VectorStar Broadband Vector Network Analyzer ME7838 Series

Opto-Electronic Network Analyzer ME7848A

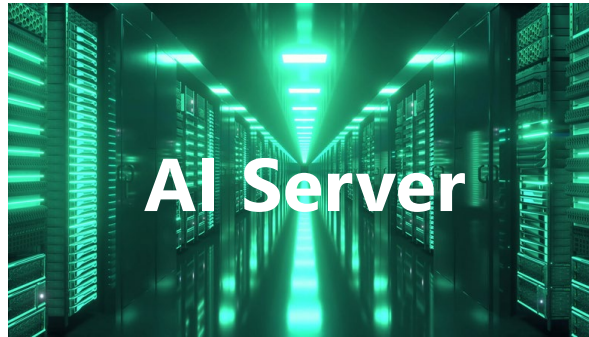
ShockLine 2-Port Performance VNA MS46522B

Signal Integrity Evaluation Importance in AI Applications



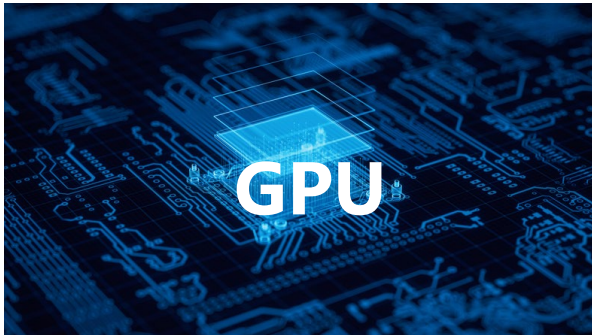
AI Model

AI Models are growing exponentially



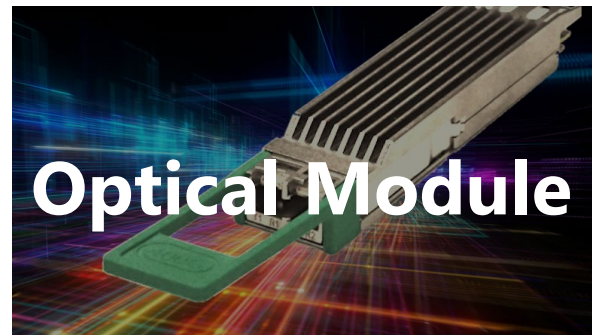
AI Server

AI servers expected to comprise around half of total server revenues by 2027



GPU

Demand for GPUs continues to skyrocket to meet large model training needs



Optical Module

Demand for AI drives continued growth in optical module market

Data traffic is growing rapidly due to the spread of AI in a wide range of industries, such as banking, healthcare, autonomous driving technologies, and many others.

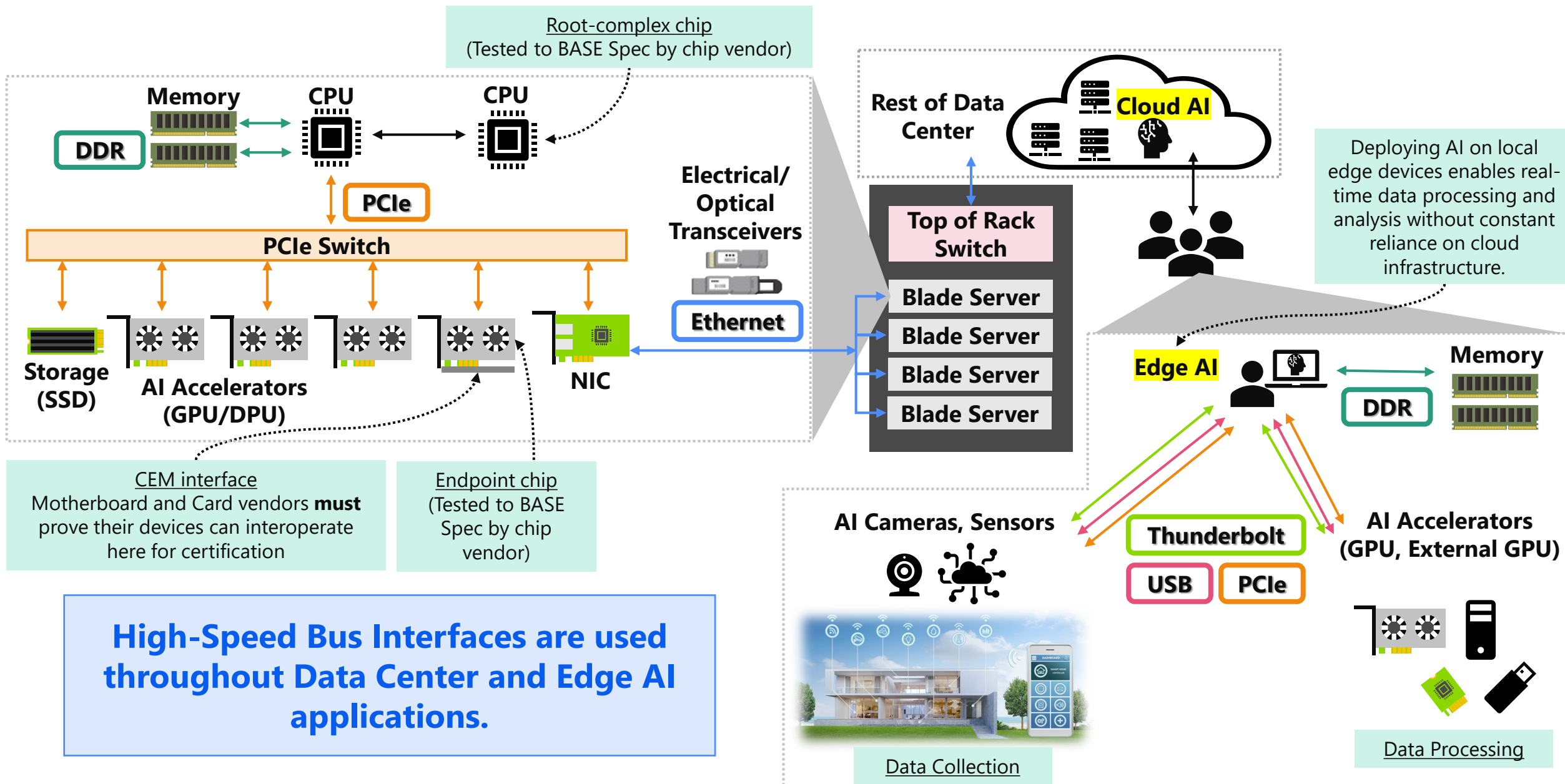
High-speed computing technologies support the widespread of AI, and evolutions of semiconductors and computing architecture, which support high-speed, large capacity, and low-latency data transfer, are important factors.

Related Links : [Data Center solution](#)
[High-Speed Digital System solution](#)

To meet the high-speed data requirements, signal integrity evaluation is one of the technical challenges in the semiconductor and computing developments.

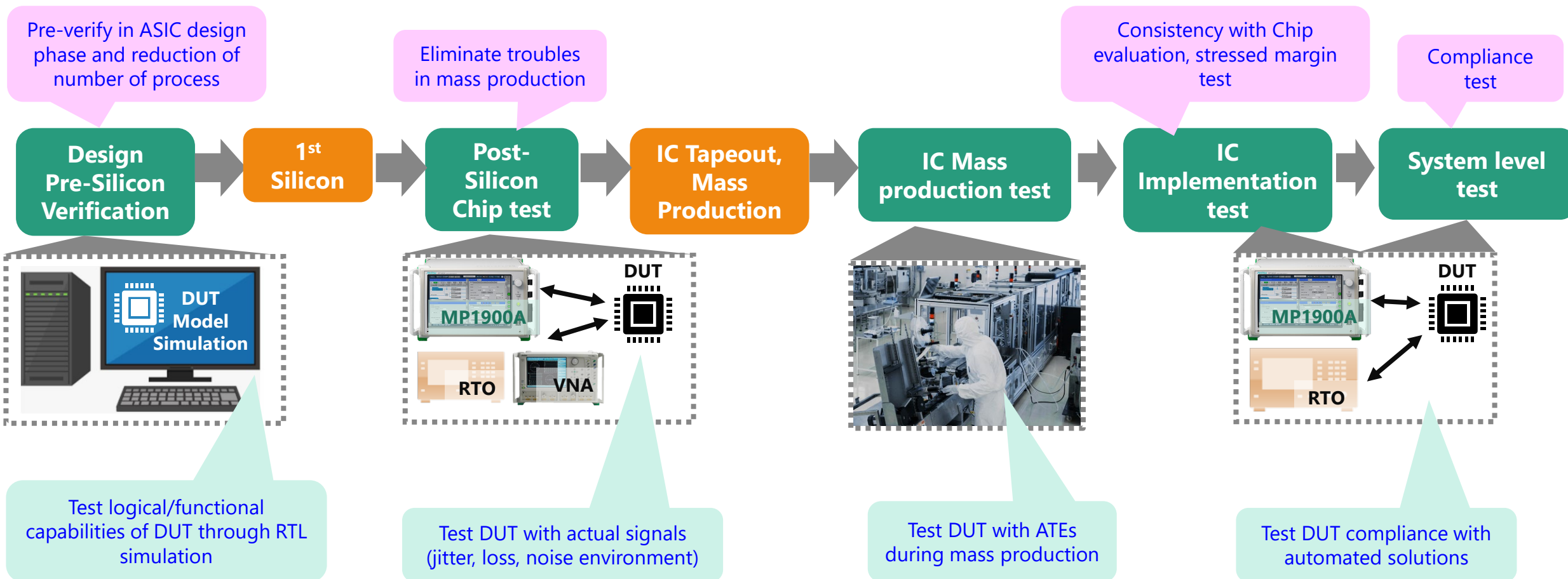
Related Links : [Signal Integrity](#)

Data Interfaces of Cloud and Edge AI



Test Points in the IC Development Process

Each of the development stages of prototype debugging, design verification, and compliance testing to commercial release requires evaluating the signal quality of the high-speed digital system. Signal quality is tested to improve product quality and feed-back of results to design is essential.



MP1900A Product Concept, Target Applications

The MP1900A series is a high-expandability, high-performance BERT supporting physical layer evaluations of high-speed interfaces. The all-in-one design covers early-stage R&D evaluations ranging from next-generation 400/800 GbE network interfaces to PCI Express, etc., bus interfaces.

Target Applications



For AI Data Centers

400G/800G

Backplane

Optical
Transceiver

PCI Express

DDR5

USB 3.2, USB4

Thunderbolt



For Edge AI

MP1900A

Signal Quality Analyzer-R



**All-in-One
Test Support**

MP1900A

PCIe Gen3/4/5/6 Receiver Test

Base Specification

- Stressed Eye Test

CEM Specification

- Transmitter initial Tx Equalization
- Transmitter Link Equalization response
- Receiver Link Equalization
- PLL Bandwidth

USB Type-C Receiver Test (USB4, Thunderbolt 3/4 DP1.4/2.1)

- Receiver Test
- SJ Margin Test
- Amplitude Margin Test

USB 3.2 Gen1/2 Receiver Test

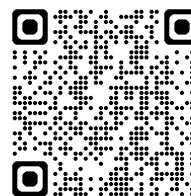
- Transmitter Eye Test
- Receiver Jitter Tolerance Test
- LFPS Test

Storage Receiver Test (SAS-3/-4)

- Receiver Jitter Tolerance Test

Jitter Tolerance Test

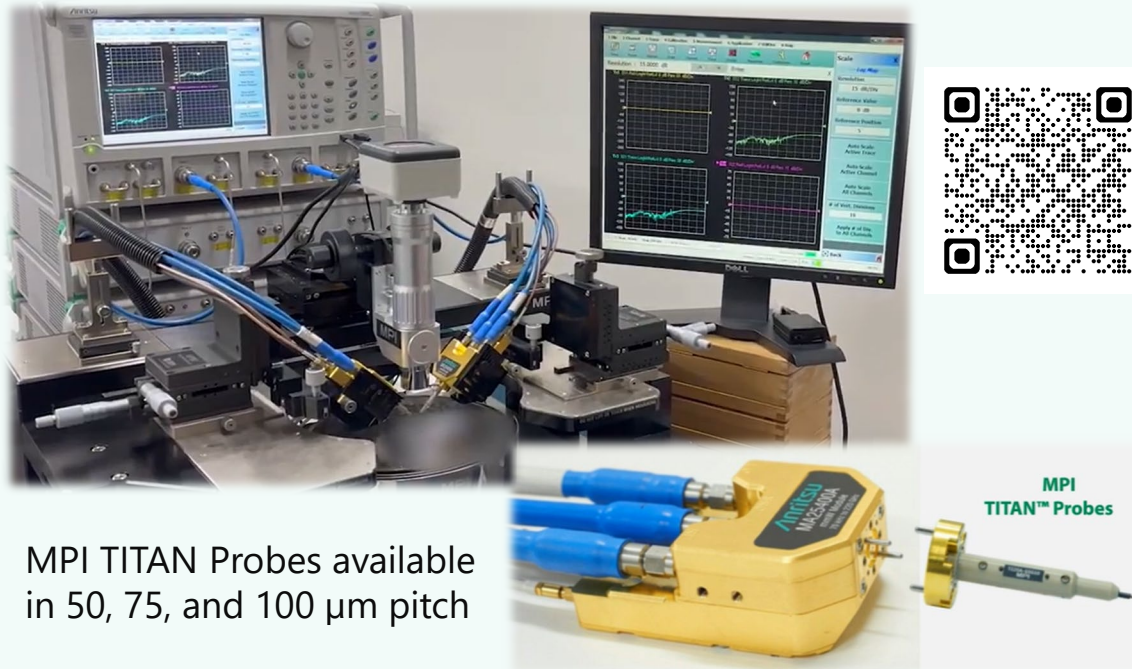
- SJ/RJ/BUJ Injection
- Low-rate estimated BER measurement



Quality Assurance of Material and Components for AI products

The Broadband Vector Network Analyzer ME7838 series and, 2-Port Performance VNA MS46522B, and Opto-Electronic Network Analyzer ME7848A assure the frequency characteristics of material and component used for high-speed data transmission of AI semiconductor products.

The Broadband Vector Network Analyzer collaborated with MPI Corporation probe station provides on-wafer test solutions enabling the frequency characteristics evaluation up to 220 GHz.



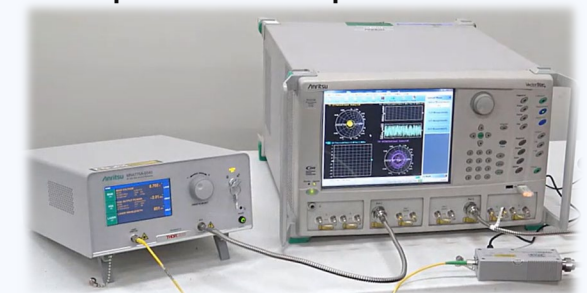
MPI TITAN Probes available in 50, 75, and 100 μm pitch

Related Links : [Device Modeling and Characterization](#)

The MS46522B is suitable for passive testing of devices up to 43.5 GHz such as direct attach cables (DAC), active electrical cables (ACC), and active copper cables (ACC).



The ME7848A is a set of optical to electrical converter (O/E), electrical to optical converter (E/O), and a vector network analyzer up to 110 GHz, enabling evaluate the frequency characteristics of optical components and optical modules.



Related Links : [Opto-Electronics](#)

MP1900A Signal Quality Analyzer-R

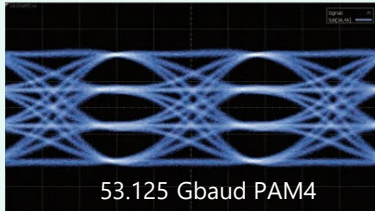
32G/64G NRZ/PAM4 BERT
Jitter Tolerance Test

800G/400G

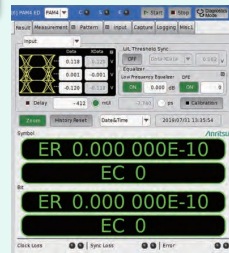
PCI Express

PAM4

DDR, USB



High quality
waveform PPG
Up to 128 Gbps
PAM4



High sensitivity input
Up to 112 Gbps
PAM4

MP2110A BERT Wave

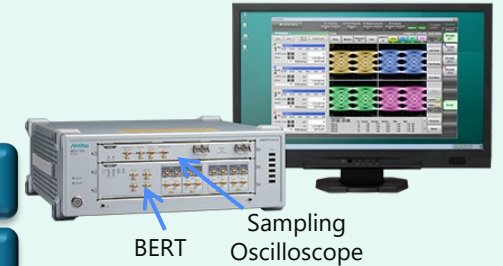
Optical/Electrical Eye analysis + BERT
26G/53G Clock Recovery

400G/800G
EYE Analysis

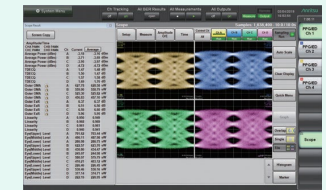
53G Clock
Recovery

-15 dBm
High sensitivity

250Sa/s high speed
measurement



4ch NRZ Mask margin measurement



4ch PAM4 TDECQ measurement

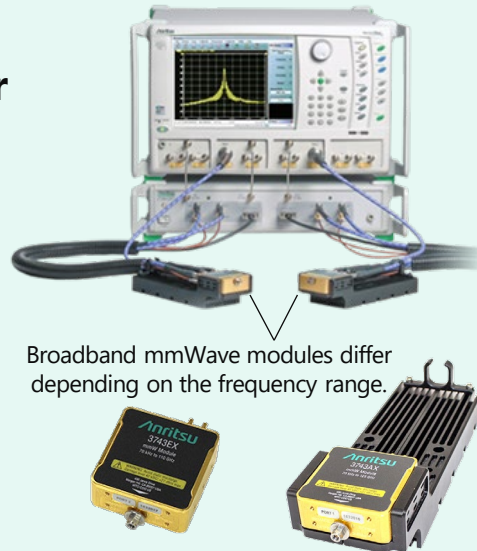
ME7838AX/EX/D/G

VectorStar™ Broadband Vector Network Analyzer

Frequency characteristics
measurements up to 220 GHz max.

70 kHz to 110/125/145/220 GHz

109 dB dynamic range at 110 GHz,
102 dB at 220 GHz



Broadband mmWave modules differ
depending on the frequency range.

MS4640B VectorStar™

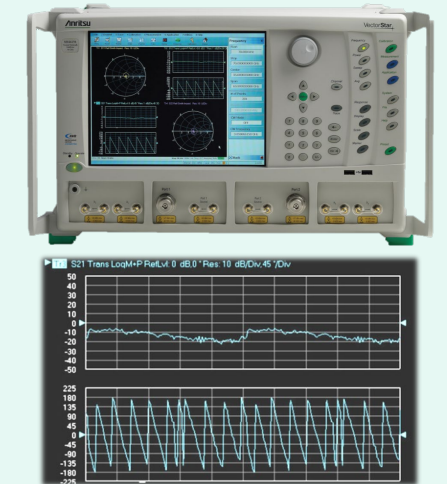
Vector Network Analyzer

Accurate frequency characterization of
high-speed data channels

70 kHz to 20/40/50/70 GHz

Superior dynamic range:
up to 140 dB

High compression point:
up to 15 dBm at 70 GHz

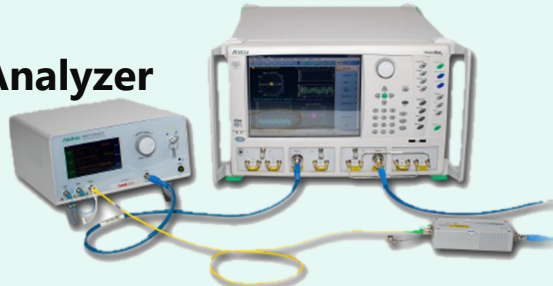


Log Magnitude and Phase Trace Display

ME7848A/E

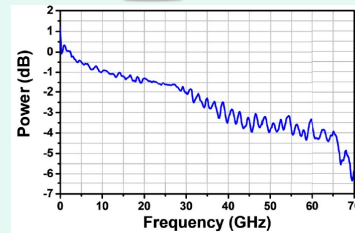
Opto-Electronic Network Analyzer

Characterizing silicon photonics and photonic integrated chip transmitters and receivers, modulators, lasers, photodetectors, and optical sub-assemblies



10 MHz to 40 GHz
in 850 nm wavelength

10 MHz to 70/110 GHz
in 1310/1550 nm wavelength

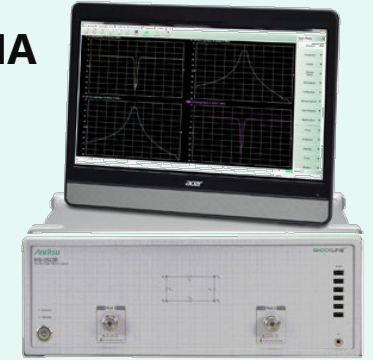


Typical Frequency Response of E/O

MS46522B

ShockLine™ 2-Port Performance VNA

An ideal vector network analyzer for passive device testing in the manufacturing components, cables



50 kHz to 8.5/20/43.5 GHz

Low harmonic of < -58 dBc
and spurious < -63 dBc

Power level sweep and
frequency sweep

MS9740A Optical Spectrum Analyzer

R&D/Manufacturing of optical devices

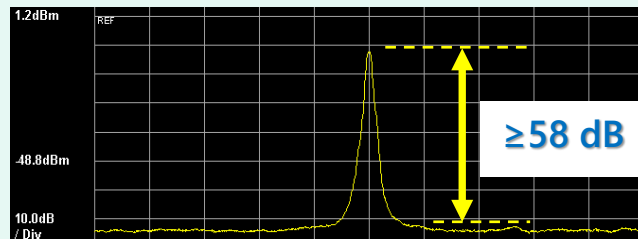


High dynamic range
 ≥ 58 dB

Fast sweeping time 0.3 s

Minimum Resolution 30 pm

Pulsed Light
Measurement



MT1040A Network Master Pro 400G Ethernet Analyzer

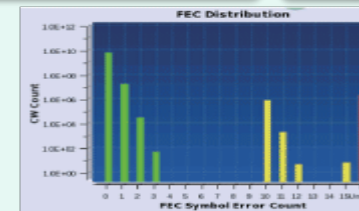
Ethernet tester (Frame, FEC test)

Two ports 400G

Support 10M to 400G

Support FEC Test

Direct module support
QSFP-DD, OSFP etc.



FEC analysis

Displays color-coded alarms
when threshold values exceeded

