

PCI Express Gen4/5 Receiver Test Solution

Signal Quality Analyzer-R MP1900A



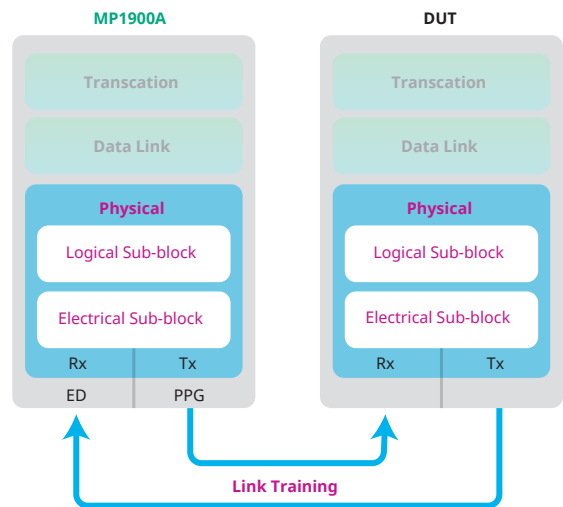
The Signal Quality Analyzer-R MP1900A series is a high-speed BER test solution for R&D of PCI Express and high-speed devices. Combined installation in one box with jitter and noise generator, high-quality waveform PPG with integrated 10Tap emphasis, high input sensitivity ED with clock recovery and variable CTLE and Link negotiation function required by PCI Express receiver test, the MP1900A supports high-reproducibility jitter and noise tolerance tests making design and verification efficient.

[Target Applications]

PCI Express and high speed interfaces (USB3.1, Thunderbolt 3, 100 GbE/400 GbE)

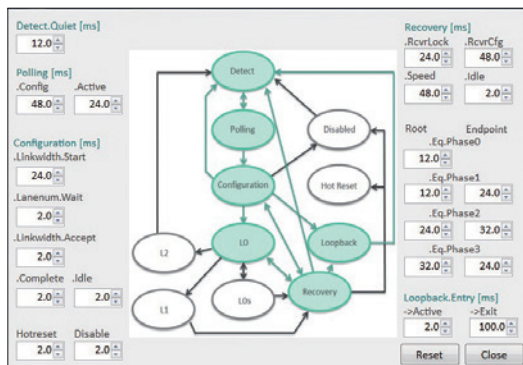
Features

- Protocol aware and 1 box Receiver test solution for PCI Express Gen1 to 5
- High speed BERT from 2.4 Gbit/s to 32.1 Gbit/s
- Low intrinsic jitter, high-quality output waveform, and high-sensitivity input
- Link Training/Equalization and LTSSM Analysis
- Support Common/Separate Clock Architecture
- Skip ordered sets and 8B/10B, 128B/130B encoding
- Maximum 10Tap Emphasis function
- 12 dB CTLE and clock recovery functions
- Integrated noise (CMI and DMI) and jitter (SJ, RJ, BUJ and SSC) injection
- Event Trigger Function for Tx/Rx Link Equalization Test



Supports physical layer measurements of add-in cards and system boards

- Tx/Rx Link Equalization Response Test
- Rx Link Equalization Test
- Receiver Jitter Tolerance Test

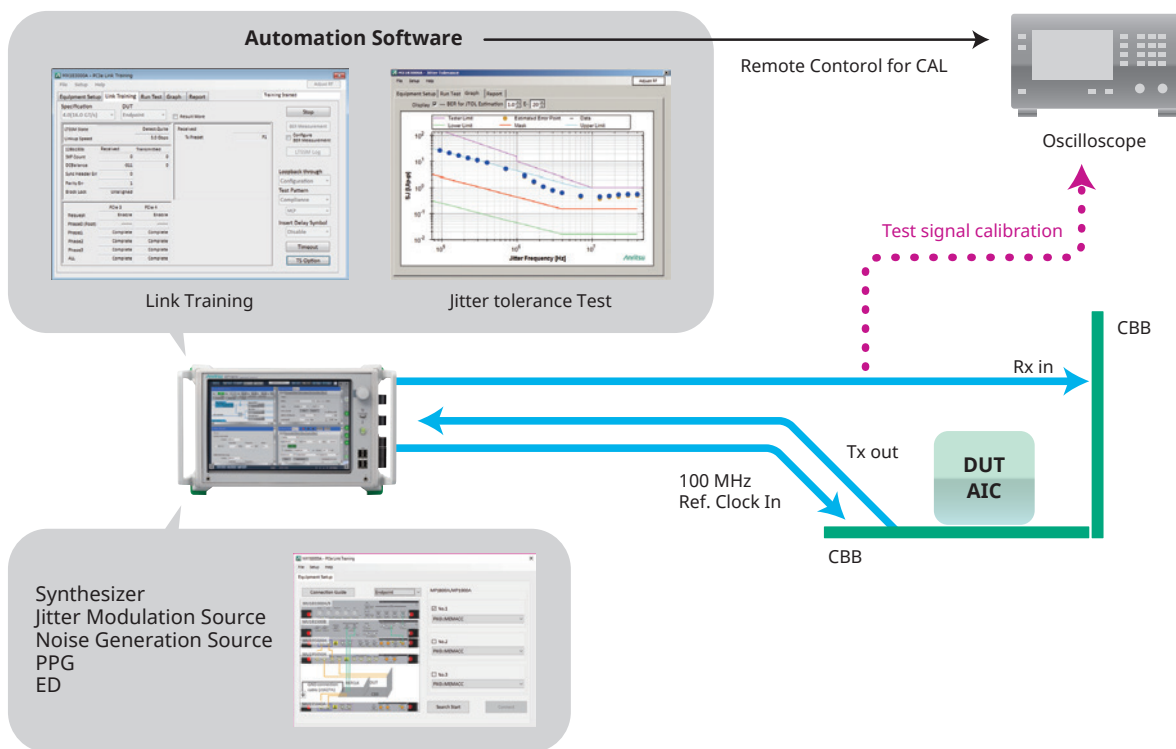


Link Training State transitions

Time [ns]	ΔTime [ns]	State	Speed[GHz]	Detect Freq	Error Count	Use Preset	Preset	Pre-cur	Cur sor	Pass-count	Detail
0	0	INITIAL	16.0								00 00 00 00 00 00 00 00 00 00
17200	17200	DETECT_QUITE	16.0								00 01 00 00 00 00 00 00 00 00
12017200	12000000	DETECT_ACTIVE	16.0								00 02 00 05 64 10 07 00 00 00
12017296	16	POLLING_ACTIVE_3S1	16.0								00 11 00 05 04 10 07 00 00 00
16017296	4000000	INITIAL	16.0								00 00 00 03 1A 00 07 00 00 00
16017312	16	DETECT_QUITE	16.0								00 01 00 03 3A 00 07 00 00 00
40017312	12000000	DETECT_ACTIVE	16.0								00 02 00 02 0E 20 07 00 00 00
40017320	16	POLLING_ACTIVE_3S1	16.0								00 11 00 03 00 10 07 00 00 00
72017320	3200000	INITIAL	16.0								00 00 00 02 2A 00 07 00 00 00
72017344	16	DETECT_QUITE	16.0								00 01 00 07 05 01 07 00 00 00
84017344	12000000	DETECT_ACTIVE	16.0								00 02 00 06 00 11 07 00 00 00
84017360	16	POLLING_ACTIVE_3S1	16.0								00 11 00 03 00 10 07 00 00 00
100017360	2400000	INITIAL	16.0								00 00 00 04 3F 10 07 00 00 00
100017376	16	DETECT_QUITE	16.0								00 01 00 04 7F 10 07 00 00 00
120017376	12000000	DETECT_ACTIVE	16.0								00 02 00 03 62 05 07 00 00 00
120017392	16	POLLING_ACTIVE_3S1	16.0								00 11 00 03 00 10 07 00 00 00
144017392	2400000	INITIAL	16.0								00 00 00 01 39 10 07 00 00 00
144017400	16	DETECT_QUITE	16.0								00 01 00 01 29 40 07 00 00 00
156017400	12000000	DETECT_ACTIVE	16.0								00 02 00 00 0C A0 07 00 00 00
156017424	16	POLLING_ACTIVE_3S1	16.0								00 11 00 00 0C A0 07 00 00 00
180017424	2400000	INITIAL	16.0								00 00 00 05 03 60 07 00 00 00
180017440	16	DETECT_QUITE	16.0								00 01 00 05 03 60 07 00 00 00
192017440	12000000	DETECT_ACTIVE	16.0								00 02 00 04 08 C0 07 00 00 00

LTSSM Log

PCI Express Receiver Test Outline



Typical Specifications

21G/32G bit/s SI PPG MU195020A

Bit Rate	2.4 Gbit/s to 21 Gbit/s 2.4 Gbit/s to 32.1 Gbit/s (MU195020A-001)
Number of Channels	1 or 2
Output Amplitude	0.2 Vp-p to 2.6 Vp-p (Differential)
Emphasis Taps (MU195020A-011)	10Tap
Tr/Tf (20 to 80%)	12 ps (typ.)

Noise Generator MU195050A

CMI Frequency	0.1 GHz to 6 GHz
DMI Frequency	2 GHz to 10 GHz

21G/32G bit/s SI ED MU195040A

Bit Rate	2.4 Gbit/s to 21 Gbit/s 2.4 Gbit/s to 32.1 Gbit/s (MU195040A-001)
Number of Channels	1 or 2
Input Amplitude	0.1 Vp-p to 2 Vp-p (Differential)
Input Sensitivity	13 mV (Eye Height 21 Gbit/s) (typ.)
Clock Recovery (MU195040A-022)	2.4 Gbit/s to 32.1 Gbit/s, support SSC input
CTLE (MU195040A-011)	0 to -12 dB

PCIe Link Training MX183000A-PL021

Link Training	Yes
JTOL Auto Measurement	Yes (MX183000A-PL001)

Ordering Information

Please specify the model/order number, name and quantity when ordering. The names listed in the chart below are Order Names. The actual name of the item may differ from the Order Name. Contact your sales representative for more details.

Model/Order No.	Name
MP1900A	Signal Quality Analyzer-R
MU195020A	21G/32G bit/s SI PPG
MU195020A-001	32G bit/s Extension
MU195020A-010	1ch Data Output
MU195020A-011	1ch 10Tap Emphasis
MU195040A	21G/32G bit/s SI ED
MU195040A-001	32G bit/s Extension
MU195040A-010	1ch ED
MU195040A-011	1ch CTLE
MU195040A-022	Clock Recovery

Model/Order No.	Name
MU195050A	Noise Generator
MX183000A-PL021	PCIe Link Training
MX183000A-PL011	PCIe Link Sequence
MX183000A-PL001	Jitter Tolerance Test
MU181500B	Jitter Modulation Source
MU181000B	12.5 GHz 4 port Synthesizer
MU181000B-002	SSC Extension

The contents of this leaflet may change without prior notice.