

# Serial Attached SCSI (SAS) Receiver Test Solution

Signal Quality Analyzer-R MP1900A

Serial Attached SCSI (SAS) is an interface specification for connecting storage devices to computers; it supports large-capacity requirements using high-speed serial transmission and is commonly used for business products, such as servers. Assured equipment operability is a key requirement of SAS, which demands accurate measurement of standards-defined items.

Using this MP1900A with an oscilloscope and automation software supports the Stressed receiver device jitter tolerance test required by SAS-4. Integration of the high-quality data output performance with the automation software facilitates high-reproducibility measurements to help lighten test workloads. As a result, customer equipment investment can be used more effectively by tasking just one MP1900A to perform both PCIe Gen4/5 and SAS-4 measurements related closely to server and storage development and manufacturing.

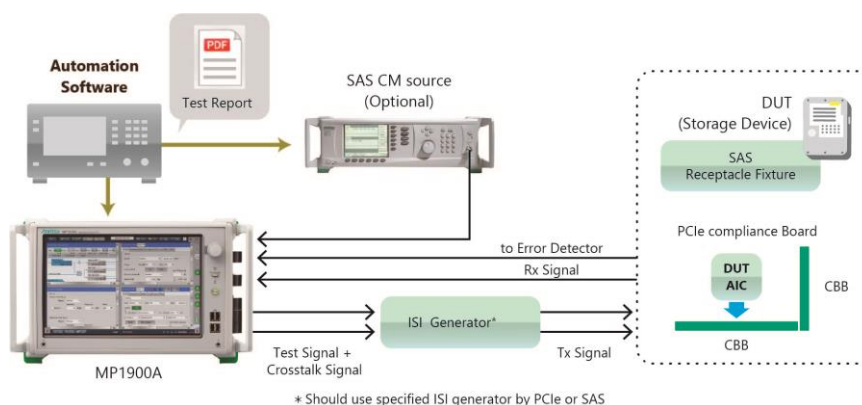
[Target Applications]

Serial Attached SCSI (SAS-3/SAS-4), and PCIe Gen3/4/5

## Features

- **2.4 Gbit/s to 32.1 Gbit/s Wideband Operation**

One equipment configuration supports SAS-4 (22.5 Gbit/s) and PCIe Gen5 (32 GT/s) receiver tests



- **Automation Solution by Combining Popular Oscilloscopes with MP1900A**

Lightens burden of complex test procedures by use with popular oscilloscopes at hand

- **High-Quality Output Waveforms (12 ps Tr/Tf, 115 fs rms Random Jitter), and High-Sensitivity Input (15 mV EH)**

Supports high-reproducibility receiver tests

## MP1900A BERT Typical Configuration

Model Name	Item	Specification
MU195020A • 21G/32G bit/s SI PPG	Bit rate	2.4 Gbit/s to 21 Gbit/s (~32.1 Gbit/s expandable option)
	No. of Channels	1 or 2 (option)
	Output Amplitude	0.2 Vp-p to 2.6 Vp-p (Differential)
	Emphasis Taps	10 Taps (MU195020A-011)
	Tr/Tf (20% to 80%)	12 ps (typical)
	Random Jitter	115 fs rms (typical)
MU195040A • 21G/32G bit/s SI ED	Bit rate	2.4 Gbit/s to 21 Gbit/s (~32.1 Gbit/s expandable option)
	No. of Channels	1 or 2 (option)
	Input Sensitivity	15 mV (28.1 Gbit/s, NRZ (Eye Height))
	CTLE (option)	Peak Frequency: 14, 80, 4 GHz; Gain: 0 to -12 dB

## Recommended Configuration for SAS/PCIe test

Model	Name	SAS	PCIe	Remarks
MP1900A	Signal Quality Analyzer-R	1	1	
MU181000B	12.5 GHz 4port Synthesizer	1	1	
MU181000B-002	SSC Extension		1	
MU181500B	Jitter Modulation Source	1	1	
MU195020A	21G/32G bit/s SI PPG	1	1	
MU195020A-001	32G bit/s Extension	1	1	Unnecessary for SAS3, PCIe Gen3/4
MU195020A-010	1ch Data Output	1	1	Support for crosstalk testing by 2ch PPG(-020, -021, -031) configuration
MU195020A-011	1ch 10Tap Emphasis	1	1	
MU195020A-040	1ch Variable ISI	1		
MU195050A	Noise Generator	1	1	
MU195040A	21G/32G bit/s SI ED	1	1	
MU195040A-001	32G bit/s Extension	1	1	Unnecessary for SAS3, PCIe Gen3/4
MU195040A-010	1ch ED	1	1	
MU195040A-011	1ch CTLE	1	1	
MU195040A-022	Clock Recovery	1	1	
-	ISI Source Generator	1	1	Depends on target DUT
-	Test Adapter	1	1	Depends on target DUT
MG3692C	2 GHz to 20 GHz Signal Generator	1		Need for SAS CM test
<Application software>				
GRL-SAS3-RXA <sup>*3*5</sup>	SAS3 Receiver Calibration and Test SW	1		For SAS-3 test
GRL-SAS4-RXA <sup>*3*5</sup>	SAS4 Receiver Calibration and Test SW	1		For SAS-4 test
GRL-SAS34-RXA <sup>*3*5</sup>	SAS4 and SAS3 Receiver Calibration and Test SW	1		SAS-3 and SAS-4
MX183000A-PL001	Jitter Tolerance Test		1	
MX183000A-PL021	PCIe Link Training <sup>*1</sup>		1	
MX183000A-PL025	PCIe 5 Link Training <sup>*2</sup>		1	
GRL-PCIE4-BASE-RXA <sup>*3*4</sup>	PCIe 3.0/4.0 Base Specification Rx Test Software license		1	PCIe 3.0/4.0 Base
GRL-PCIE4-CEM-RXA <sup>*3*4</sup>	PCIe 3.0/4.0 CEM Specification Rx Test Software license		1	PCIe 3.0/4.0 CEM
GRL-PCIE5-BASE-RXA <sup>*3*6</sup>	PCIe 5.0 Base Specification Rx Test Software license		1	PCIe 5.0 Base
GRL-PCIE5-CEM-RXA <sup>*3*6</sup>	PCIe 5.0 CEM Specification Rx Test Software license		1	PCIe 5.0 CEM

\*1: Supports PCIe 1.0 to 4.0

\*2: PCIe 5.0 support requires MX183000A-PL025 and MX183000A-PL021

\*3: Supported real-time oscilloscopes:

Keysight: Infinium Q-series/Z-series/V-series (25 GHz or more)<sup>\*4</sup> (33 GHz or more)<sup>\*5</sup> (50 GHz or more)<sup>\*6</sup>

Tektronix: DPO70000SX and DX series (25 GHz or more)<sup>\*4</sup> (33 GHz or more)<sup>\*5</sup> (50 GHz or more)<sup>\*6</sup>