Quick Start Guide

Anritsu envision:ensure

Adjustable ISI MU196020A-040

Signal Quality Analyzer-R

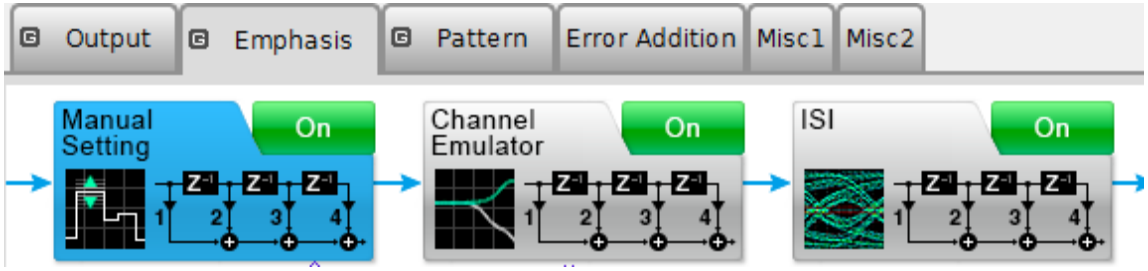
MP1900A Series

Outline

The Signal Quality Analyzer-R MP1900A series with the Adjustable ISI MU196020A-040 PAM4 PPG option uses a pattern generation source to generate signals emulating transmission path loss defined by 200GbE/400GbE, CEI-56G/112G, etc. The flexible control of the ISI stress signal according to the transmission path loss makes it easy to configure a receiver test system with good reproducibility.

[Target Applications]
200GbE/400GbE Backplanes, Cables, CEI-56G, 112G, High-Speed Interconnects

Outline of Emphasis and ISI Functions

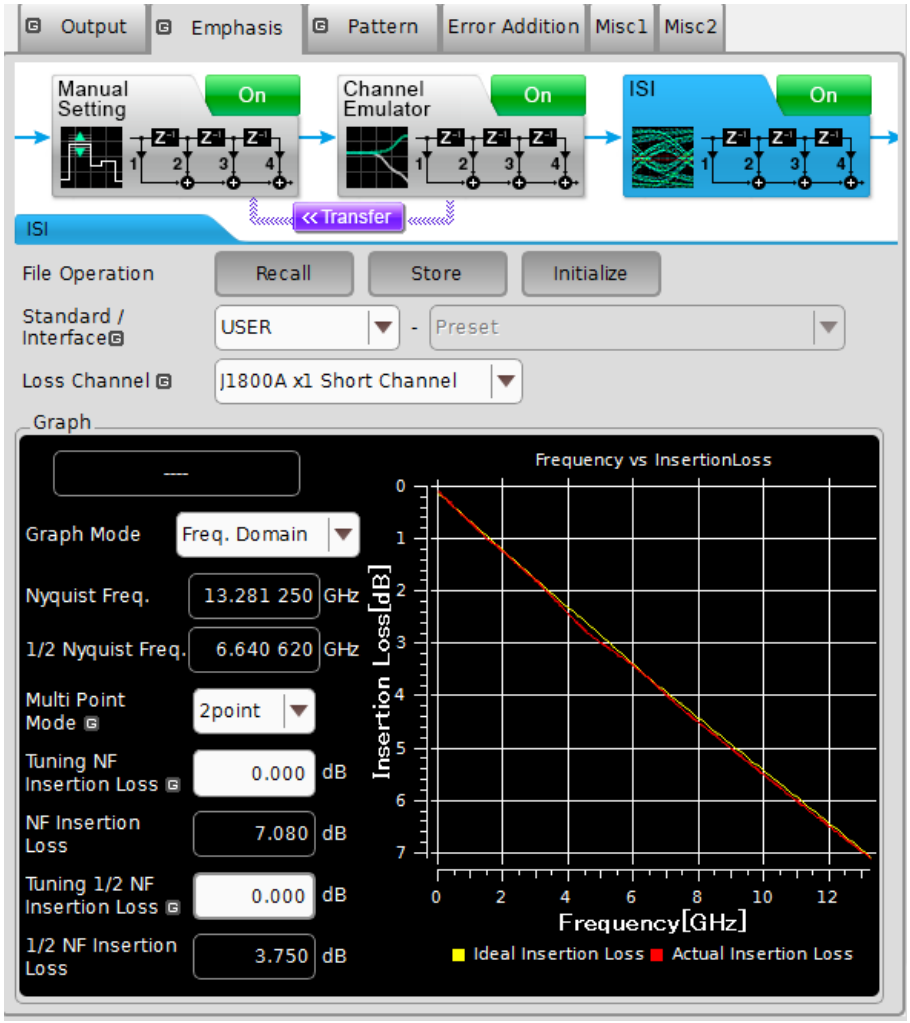


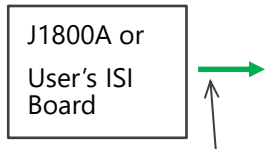
Function	Required Option	Outline
4 Tap Emphasis Manual Setting	MU196020A-011	Controls 1 Post and 2 Pre cursor Emphasis
ISI	MU196020A-011, -040	Sets Nyquist frequency and its loss to generate signal with emulated loss from PPG data output
Channel Emulator		Generates signal with emulated S-Parameter data insertion loss from PPG data Additionally, generates signal with compensated insertion loss

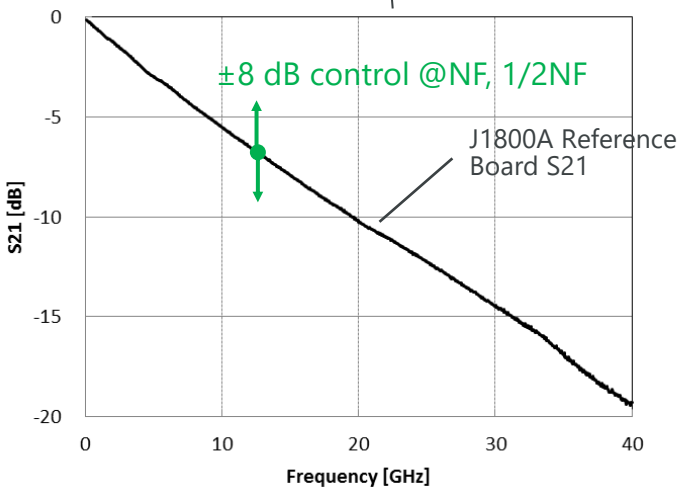
ISI Function

ISI Function

Connecting the ISI Board (J1800A or customer's reference board) to the PPG output supports ±8 dB (0.01 dB steps) control of the board loss at the Nyquist and 1/2 Nyquist frequency.







ISI Function　Equipment and Setup

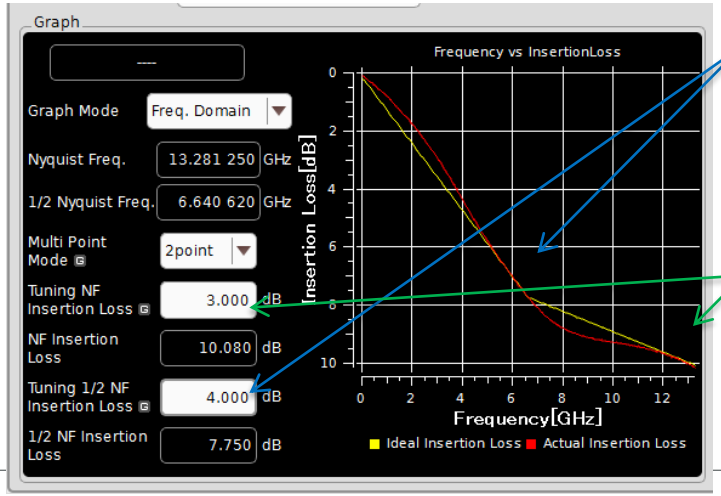
- Required Equipment

Model	Name	Qty	Remarks
MP1900A	Signal Quality Analyzer-R	1	
MU196020A	PAM4 PPG	1	Requires Opt-011, -040
MU181000B	12.5GHz 4Port Synthesizer	1	
MU181500B	Jitter Modulation Source	1	
J1789A	Coaxial Standard Electrical Length Cable (0.4 m, V-connector)	4	
J1800A	ISI Board V	1	

- Setup

ISI Function Usage Method (1/2)

- Connect the MU196020A, J1800A, and oscilloscope with cables as per the setup method.
- Set the Baud rate, signalling method (NRZ or PAM4), and amplitude at the Output tab.
- Set the ISI checkbox at the PPG Emphasis tab to On.
- Select Standard/Interface to CEI-56G or CEI-112G and set others to USER.
- Select the ISI Board connected externally to the PPG. (Select J1800x1 when connecting as in the previous slide. Refer to Slide 5 for the J1800A S21 performance.)
- When controlling Nyquist Frequency (NF) loss, set 1 Point for Multi Point Mode; when controlling NF and 1/2 NF, set 2 Point for Multi Point Mode.
- Set the loss for the externally connected ISI Board loss at Tuning NF Insertion Loss. The total loss is displayed at NF Insertion Loss.



1/2NF Insertion Loss Setting

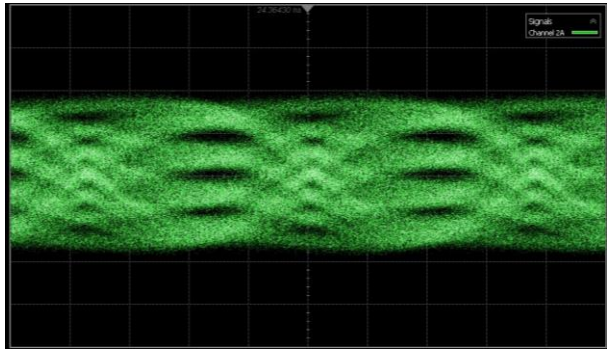
NF Insertion Loss Setting

ISI Function Usage Method (2/2)

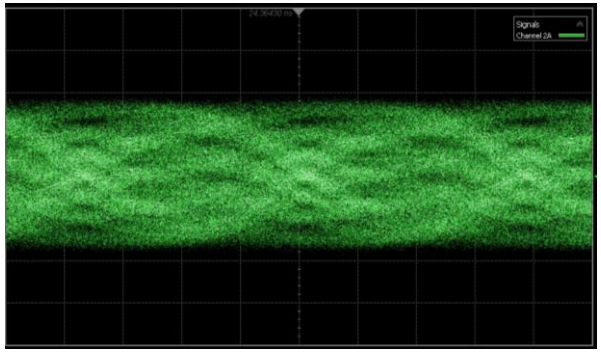
- Set the Manual Setting checkbox at the Emphasis tab to On and adjust the Emphasis for the target Eye opening (height and width) while observing the waveform with the oscilloscope.
- After confirming that the target Eye is open, connect the signal source to the DUT Rx and perform BER measurement.

Typical waveforms for 26-Gbaud PAM4 signal when changing NF Insertion Loss Setting to 4 dB, 6 dB, 8 dB (using J1800A connected as shown in Slide 6).

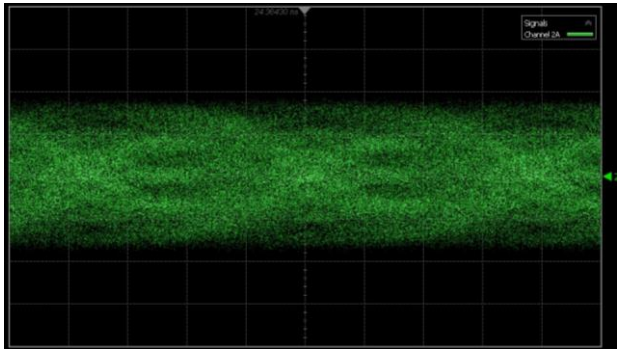
4 dB



6 dB



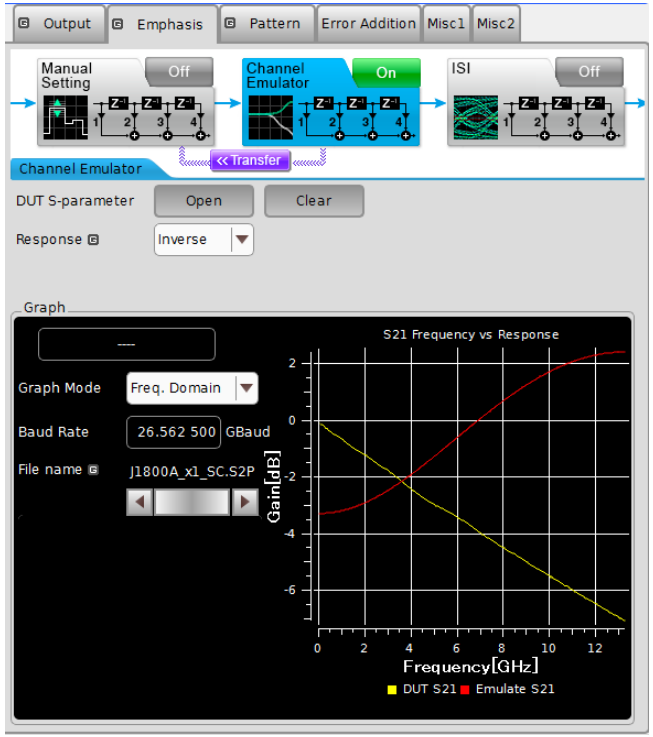
8 dB

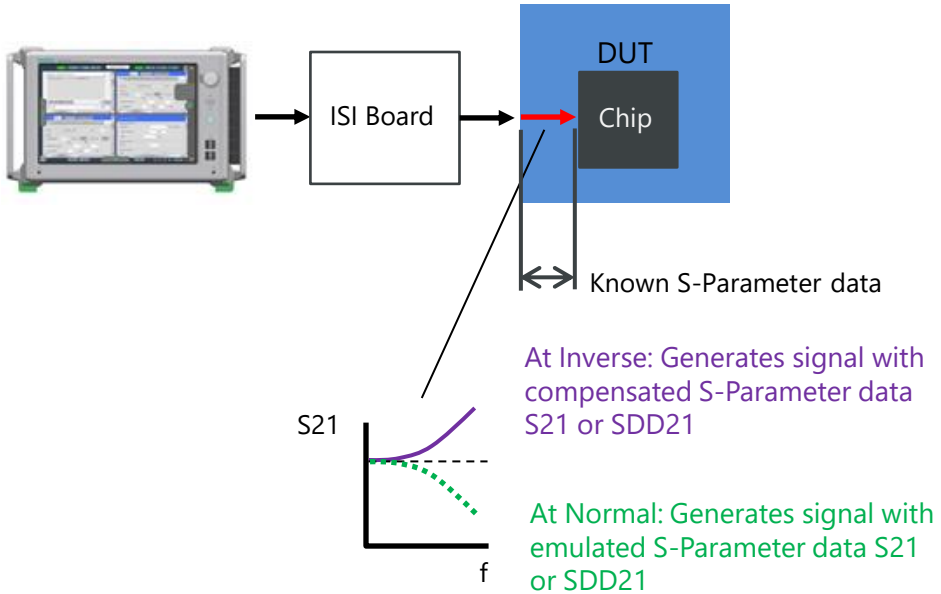


Channel Emulator Function

Channel Emulator Function

This function can generate a signal with emulated transmission path loss using known S-Parameter data in the same way as the ISI function.
At the ISI stress test, this is useful for adding/compensating the transmission path loss difference at signal calibration and measurement when signal calibration is impossible for the actual measurement points, etc.
Use this function as a set with the ISI Board and ISI function; it emulates the known S-Parameter performance of the chip input section from the DUT connector and is used for calibrating the chip input section signal.





Channel Emulator Usage Equipment and Setup

- Required Equipment

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MU196020A	PAM4 PPG	1	Requires Opt-011, -040
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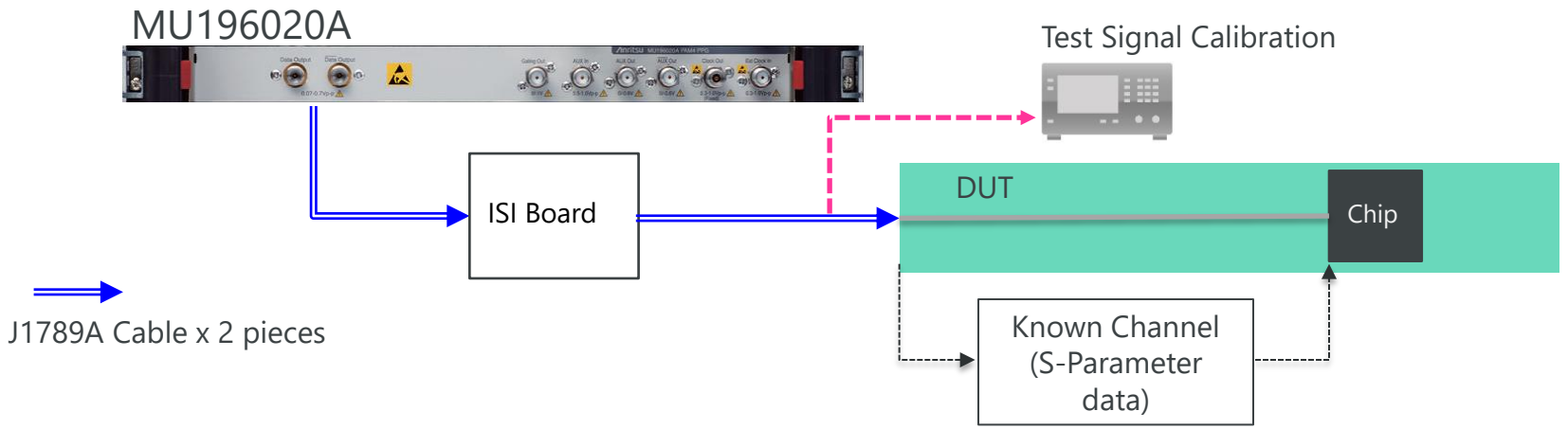
MU181500B	Jitter Modulation Source	1	
J1789A	Coaxial Standard Length Cable (0.4 m, V-connector)	4	
J1800A	ISI Board	1	

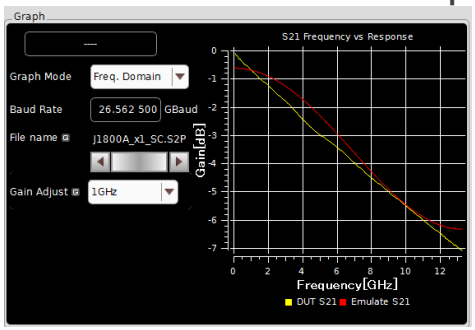
- Setup



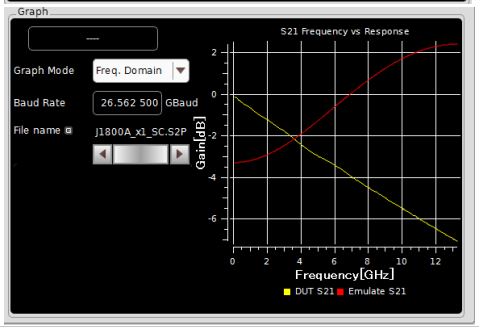
Channel Emulator Function　Usage Method

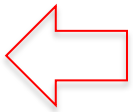
- Connect the MU196020A, ISI Board, and oscilloscope with cables as per the setup method.
- Calibrate the signal using the ISI function.
- Provide the channel to emulate and the S-Parameter data for the parts.
- Set the Channel Emulator checkbox at the PPG Emphasis tab to On.
- Use the Open button to open the S-Parameter data.
- When the signal is calibrated as the DUT connector target performance, perform compensation by setting the transmission path between the connector and chip to Inverse.
- Connect the signal source to the DUT Rx and perform BER measurement.

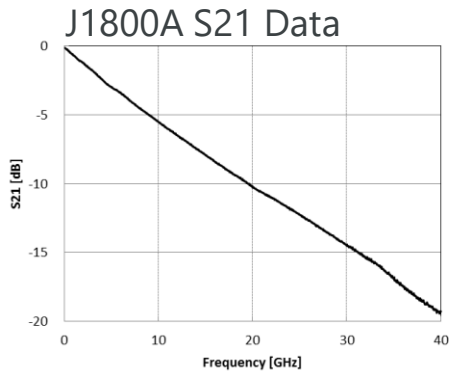
Example with J1800A S-Parameter file open and Normal selected



Example with Inverse selected







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