M809256PA

OIF-CEI CEI-56G Pre-Compliance Receiver Test Application
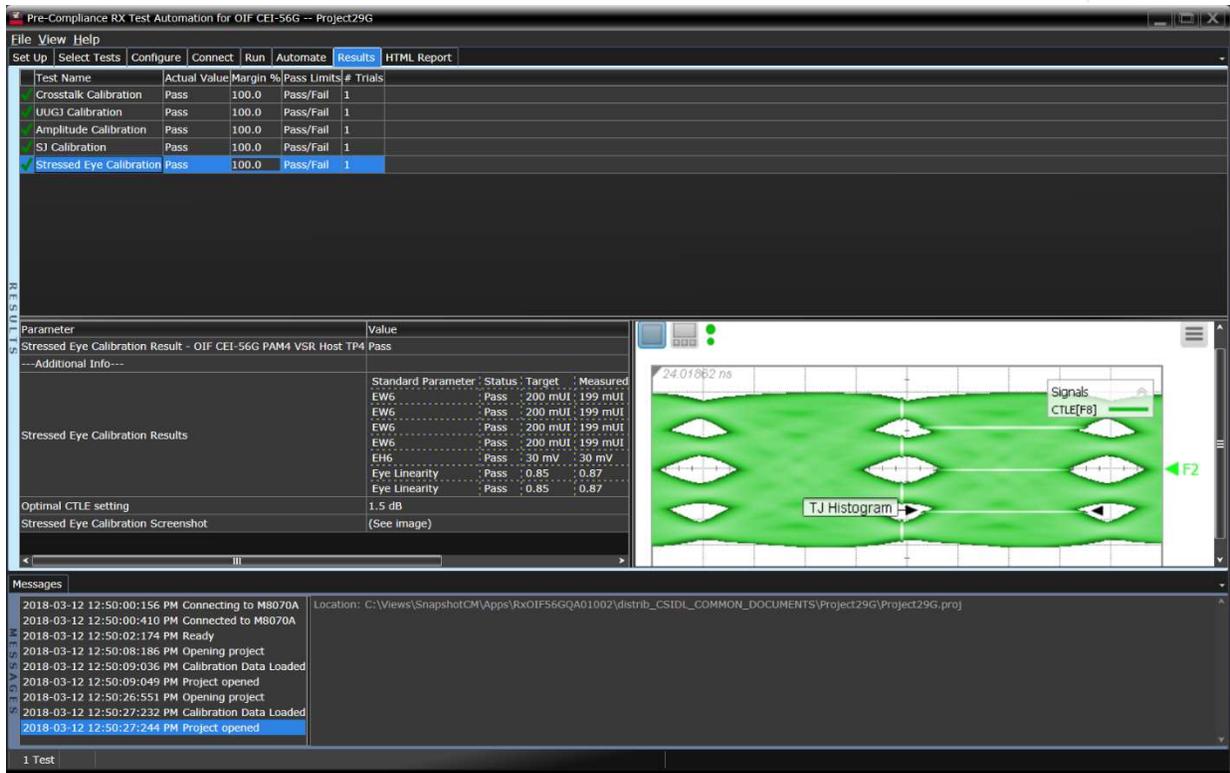
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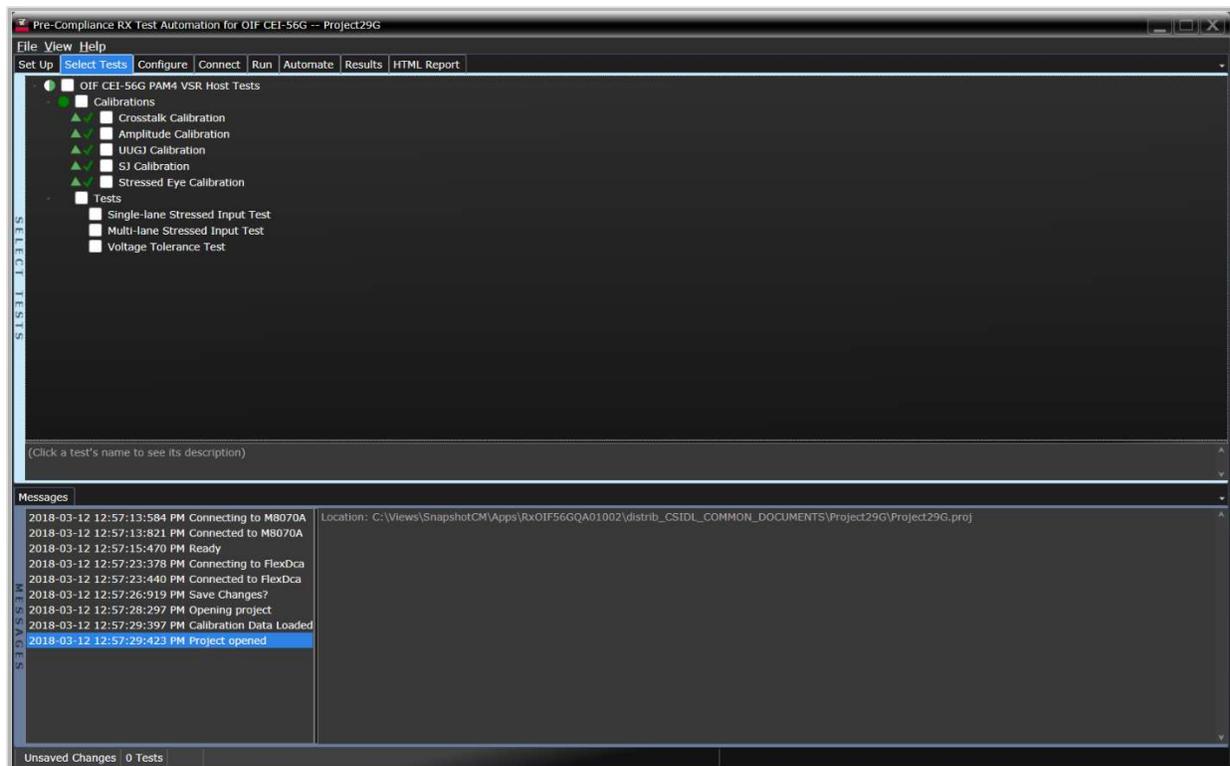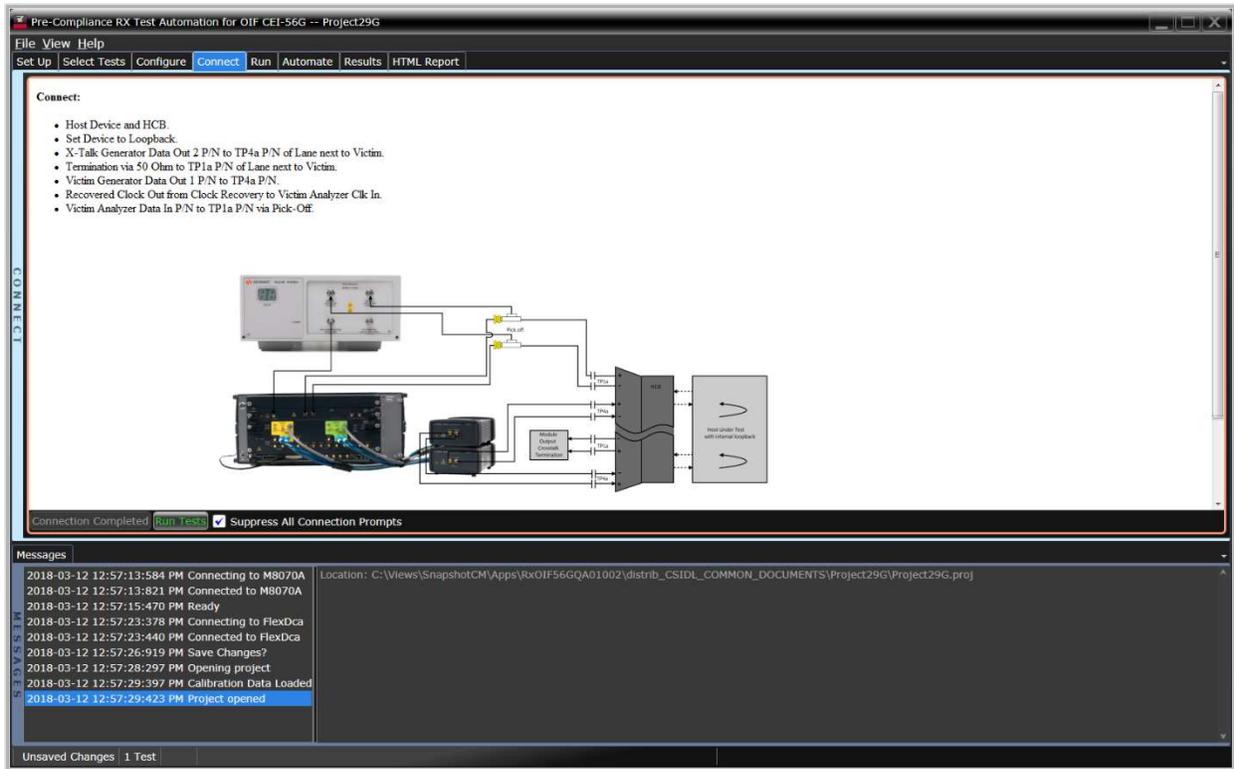
Key Features

- Supported Standards are CEI-56G-VSR PAM4 for host and module 18 to 29 GBaud
- Guided setup, automated stress signal calibration and pre-compliance measurement
- Same look and feel as TX compliance test SW
- CEI-56G-VSR PAM4 implemented according to draft 13, (crosstalk calibration at TP4 and TP1a according to draft 11)
- HTML test report
- Data Analytics Enabled
- M809256PA-1FP fixed node locked license includes 12 months of update service and support
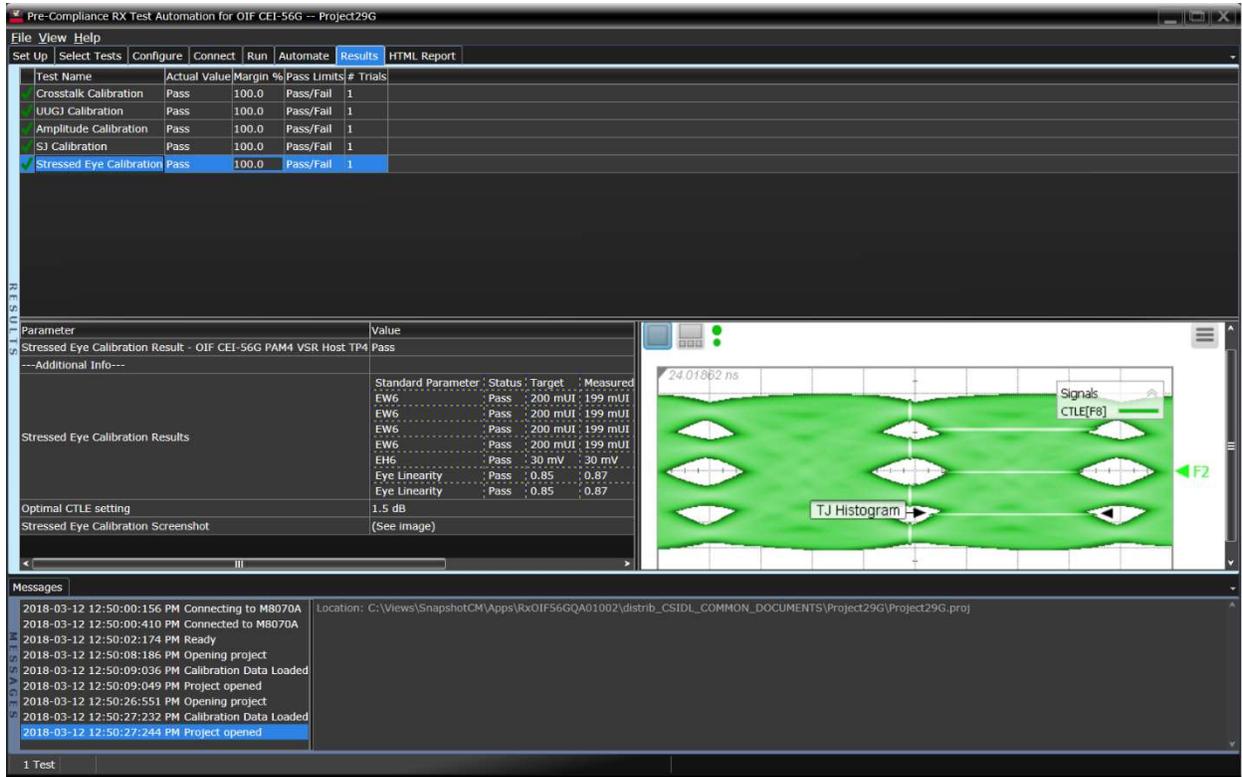
Description

The M809256PA receiver test application is designed to assist and simplify the stress signal calibration used for testing the inputs of OIF-CEI CEI-6G-VSR PAM4 capable hosts and modules. It reduces user interaction to a minimum and performs all required calibration routines and compliance testing automatically by remote controlling all required instruments.

The test application utilizes the same frame work for the graphical user interface like most of Keysight transmitter test applications reducing training time by providing a common look and feel. When a user is required to perform setup changes, the user is guided by diagrams as well as text to minimize errors.

OIF-CEI CEI-56G-VSR PAM4 defines the stress signal through a mated host compliance board (HCB) and module compliance board (MCB) connection. Both the receiver side as well as the transmitter side do have equalization capabilities. The definition of the stress signal assumes an optimized link. Therefore, the transmitter of the receiver test equipment as well as the receiver of the signal measurement device must be optimized for the given stress channel. This must be done iteratively for each test setup. The standard requires the transmitter equalization (TxEQ) to be kept as small as possible to increase the stress on the device under test's receiver (DUT RX). This process is very time consuming. The M809256PA Receiver test application performs this task automatically
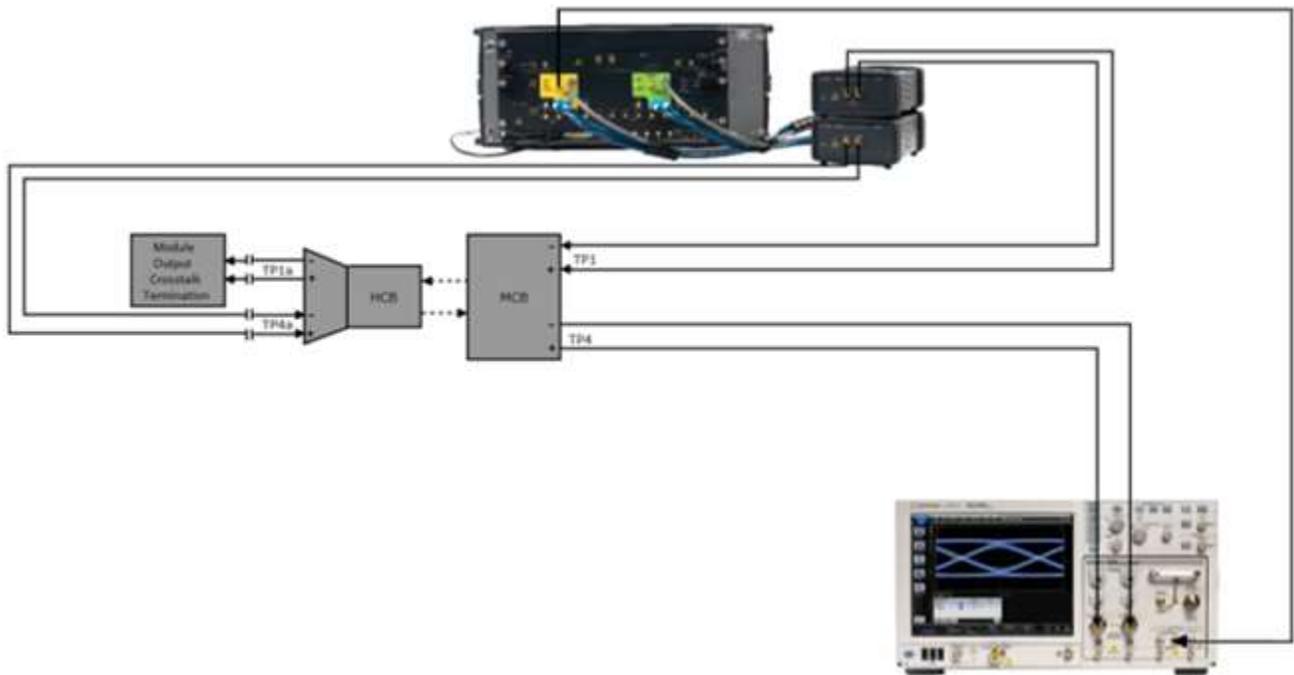
Results of the individual calibration steps and tests are presented in tabular form as well as graphical form where appropriate. Calibrations and test results can be stored in projects and recalled at a later point in time. The application can generate an HTML based test report.

Calibrations and Tests Covered by M809256PA Pre-Compliance Receiver Test Application

Connect:

- MCB and HCB
- X-Talk Generator Data Out 2 P/N to TPI P/N of MCB
- Termination via 50 Ohm to TPIaP/N of HCB
- Victim Generator Data Out 1 P/N to TP4aP/N of HCB
- Oscilloscope CVH1/CH2 to TP4 P/N of MCB
- Victim Generator Clk Out 1 to Aux Input of Oscilloscope

All calibration steps are automated. The test application prompts the user when user interaction is required for connecting the test setup. Detailed connection diagrams and instructions are provided by the test application.

- CEI-56G-VSR host and module
    - Calibrations are implemented according to OIF-CEI CEI-56G-VSR PAM4 draft 13 except for the crosstalk calibration at TP4 which is implemented according to draft 11.
        - Crosstalk amplitude and transition time
        - Victim lane amplitude
        - Victim lane UUGJ
        - Victim lane SJ
        - Stressed eye
    - Test is implemented according to IEEE 802.3bs draft 3.5
        - Stressed input
        - Voltage tolerance

Recommended Instrument Configurations for OIF-CEI CEI-56G-VSR PAM4 Receiver Test Setup

Accessories are not listed. HCB/MCB are not offered by Keysight but are required for this application as well as additional cables and accessories

M8040A 64 Gbaud High-performance BERT

○	M8040A-BU2	Bundle consisting of one M9505A 5-slot AXIe Chassis plus control module with USB option
○	M8045A-G32	Pattern Generator one Channel NRZ, Data Rate up to 32 GBaud (requires Remote Head, e.g. M8057A)
○	M8045A-0G2	Second Channel, Hardware and License (requires Remote Head, e.g. M8057A)
○	M8045A-0G3	Advanced Jitter Sources for Receiver Characterization, Module-wide License
○	M8045A-0G4	De-emphasis, Module-wide License
○	M8045A-0P3	PAM-4 Encoding up to 32 GBaud, Module-wide License
○	M8057A-FG	Remote Head for M8045A Pattern Generator, 1 Channel, two remote heads are needed
○	M8046A-A32	Analyzer, one Channel, Data Rate up to 32 GBaud, NRZ
○	M8046A-0P3	PAM-4 Decoding up to 32 GBaud
○	M8070A-0TP	System Software for M8000 Series of BER Test Solutions, Transportable, Perpetual License

N1076A Electrical Clock Recovery

○	N1076A-232	Supported input rates: 50 MBd to 32 GBd
○	N1076A-CR1	Clock Recovery Phase Matching Kit for N1076A Elec
○	N1076A-2P2	Microwave Pick-Off Tee 2.4mm connectors, matched pair
○	M8046A-802	Matched cable pairs, two matched cable pairs are required

86100D DCA-X Infiniium DCA-X Wide-Bandwidth Oscilloscope Mainframe

○	86100D-ETR	Enhanced trigger, 13 GHz BW, pattern and module trigger
○	86100D-PTB	Internal Precision Timebase

86108B Precision Waveform Analyzer

○	86108B-HBW	50 GHz Bandwidth, 2 Channel Electrical
○	86108B-232	Supported input rates: 50 Mb/s to 32 Gb/s
○	86108B-PT2	Two Phase Trimmers for external skew adjustment, 2.4 mm (optional)
○	86108B-CA2	Matched Cable Pair, 2.4mm - 2.4mm 24 inch (optional)
○	86108B-DC2	Two DC Block 2.4mm 16V 50KHz - 50 GHz (optional)

FlexDCA N1000-Series System software version 5.63 or above

○	86100D-200	Enhanced Jitter Analysis (JP03A/JP03B patterns)
○	86100D-201	Advanced Waveform Analysis (Software Equalizers, such as CTLE)
○	86100D-9FP	PAM-N Analysis Software (performs underlying PAM measurements)
○	86100D-SIM	InfiniiSim-DCA Waveform Transformation Toolset (embedding/de-embedding of cables or fixtures)

Remote Programming

The M809256PA IEEE 802.3bs Pre-Compliance Test Application is part of Keysight's Digital TestApps and can be programmed via ARSL, any .NET language or through the LabVIEW graphical programming interface. For more information see www.keysight.com/find/rpi

Data Analytics Enabled

This test application supports data transmission in support of the Keysight N884A Data Analytics Web Service Software. For more information see www.keysight.com/find/data-analytics.

Related Products

The N1085A PAM4 Measurements Application for Ethernet and OIF-CEI for the sampling oscilloscopes and the N6473A OIF-CEI 4.0 Compliance Application for Infinium real-time oscilloscopes offer automated transmitter testing for CEI-56G-VSR host or module, CEI-56G-MR and CEI-56G-LR outputs.

The N4917BSCA Optical Receiver Stress Test Application addresses test needs for optical input test of transceiver modules for 400GBASE-LR8/-FR8 as well as 200GBASE-LR4/-FR4/-DR4.

Learn more at: www.keysight.com

For more information on Keysight Technologies' products, applications or services, please contact your local Keysight office. The complete list is available at:
www.keysight.com/find/contactus

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