

Easy, Fast, High-Sensitivity PAM4 TDECQ Measurement

PAM4 Analysis Software MP2110A-095
BERTWave MP2110A



Data traffic volumes continue to increase driven by demand for flat-rate video streaming and other cloud services. As a result, 100 Gbit/s transmission equipment optical interfaces are starting to transition to 200 GbE and 400 GbE offering more capacity. These 200 GbE and 400 GbE transmission formats are adopting the PAM4*1 technology as a substitute for the previous NRZ technology.

The MP2110A-095 software option adds PAM4 signal analysis functions to the MP2110A sampling oscilloscope. Since it also supports PAM4 signal measurements including TDECQ*2 as well as NRZ signals, it is the ideal all-in-one solution for evaluating the quality of optical modules at speeds from 25 Gbps to 400 Gbps.

Features

Easy

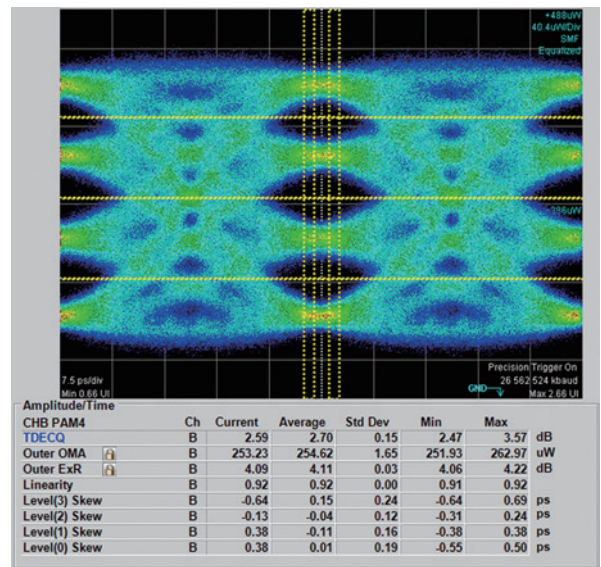
Support for TDECQ-equalizer*3 optimized TDECQ measurements makes it easy to obtain high-reproducibility measurements correlated with other makers' oscilloscopes, without requiring difficult settings.

Fast

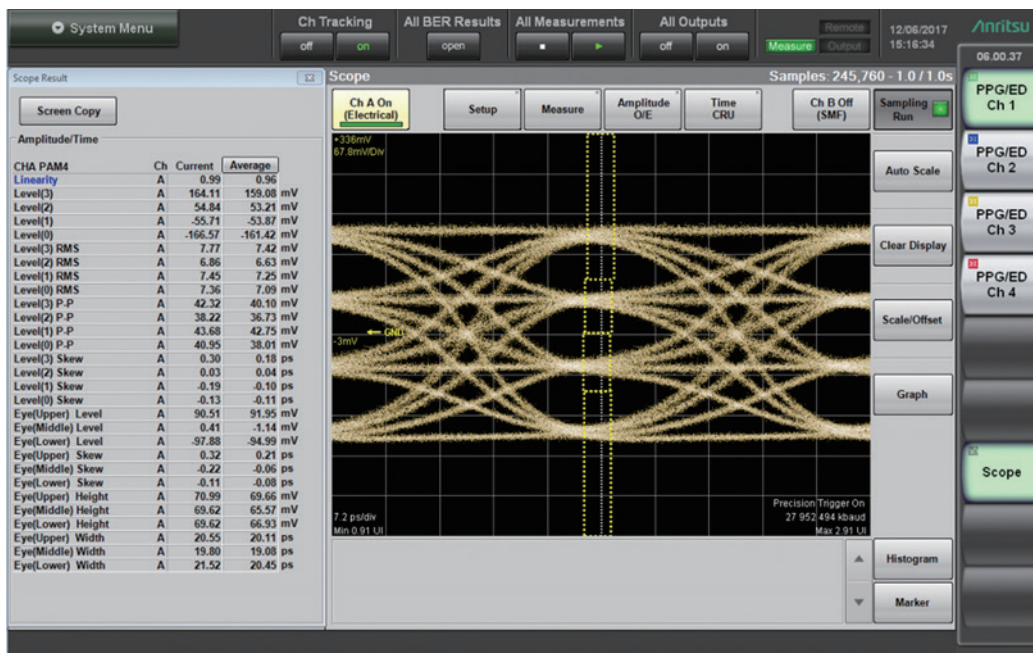
The fast sampling speed of 250 ksample/s*4 cuts measurement times to help improve productivity.

High Sensitivity

The low-noise (3.4 μW) high-sensitivity O/E module supports accurate measurement of narrow Eye opening PAM4 signals to help improve line yields.



*1: PAM4 (Pulse Amplitude Modulation): Method for improving transmission capacity using fourth-order amplitude modulation
 *2: TDECQ (Transmitter and Dispersion Eye Closure for PAM4): Typical measurement index expressing PAM4 optical signal quality; equivalent to NRZ Eye Mask test and specified by IEEE802.3
 *3: TDECQ Equalizer: Reference equalizer used at TDECQ measurement specified by IEEE802.3
 At Feed Forward Equalization (FFE), requires calculation of FFE Tap value to optimize TDECQ measured value for input waveform
 *4: In Eye mode



With display of up to 32 selectable measurement items, the large number of PAM4 measurement results can be displayed on one screen. In addition, all measurement results, including those not on-screen, can be captured by remote commands. And pre- and post-TDECQ equalized results can also be captured by just one measurement.

Specifications

PAM4 Measurements	Average Power (dBm, μ W) TDECQ (dB)* Outer Extinction Ratio (dB)* Outer OMA (μ W)* Linearity Levels 0/1/2/3 Level P-P RMS 0/1/2/3 Level Skews (0/1/2/3) Eye Levels (Upper/Middle/Lower) Eye Heights (Upper/Middle/Lower) Eye Widths (Upper/Middle/Lower) Eye Skews (Upper/Middle/Lower) *: Optical signal only
Filters	26.5625 Gbaud 19.34 GHz 26.5625 Gbaud TDECQ 13.3 GHz SM 26.5625 Gbaud TDECQ 12.6 GHz MM (IEEE802.3cd Draft 2.0) * Future 53 Gbaud support
TDECQ Equalizer	No. of Taps: Selectable from 5, 7, 9 Tap Width: 1 UI (T-spaced)
Bands	Optical Channel: 35 GHz (SMF)/25 GHz (MMF) Electrical Channel: 40 GHz
Optical Noise	3.4 μ W rms (typ.)

Ordering Information

Please specify the model, 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.

Model	Name
MP2110A-095	PAM4 Analysis Software
MP2110A-395	PAM4 Analysis Software Retrofit

* This can only be installed in the MP2110A-x21/x22/x23/x25/x26/x32/x33/x35/x36 sampling oscilloscopes.
 The customer can perform the retrofit without returning the instrument to Anritsu.