

Eye grapher TDECQ value is too high



Overview

Lower TDECQ indicates better optical signal quality and vertical eye opening. Verify TDECQ along with OMA, launch power, extinction ratio, receiver sensitivity, and link budget when selecting optical. If the SER value is smaller than the target SER value, Iterative Optimization is performed and the TDECQ measurement is made. Because modern high-speed links increasingly use PAM4 modulation (e., 50G, 100G, 200G, 400G), TDECQ has become the de facto key metric to ensure transmitter compliance and link reliability. In. The step-by-step process to perform a TDECQ measurement can depend on the specific oscilloscope vendor,¹ but the method is explicitly documented in clause 121 of IEEE 802. In summary: Acquire the pattern-locked waveform for the short stress pattern random quaternary (SSPRQ)² pattern with an. Adoption of high data rate transceivers like 400G has led to changes in how optical modules are tested. TDECQ — Transmitter and Dispersion Eye Closure. Can we use TDECQ to infer a better indication of transmitter performance?

Can TDECQ tell us anything about this area?

AWG output swing adjusted for different tap settings to keep optical ER at 4 dB as measured on the scope for all FIR settings. It's a power penalty metric that determines how much extra power is required at the receiver, from the transmitter, relative to an ideal.

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Find out exactly how your watch is performing without having to take it to a watchmaker by knowing how to read a timegrapher.

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TDECQ and SECQ vs Rx sensitivity: a review of previous presentations

The draft 3.0 definition of TDECQ limits sub-eye inequality by using thresholds which are referenced only to OMA_{outer} and average power. A simple model shows it is a good predictor of worst case

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:MEASure:EYE:TDEQ

For compliant PAM4 TDECQ measurements, add FlexDCA's TDECQ equalizer waveform signal processing operator as described below. This measurement does not support PAM6 or PAM8

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TDECQ Part II Manufacturing Test Recommendations | Keysight

Two factors have led the adoption of TDECQ in manufacturing test for PAM4 transmitters instead of the continued use of eye mask testing. First, the transmitter test requires the use of an FFE (Feed

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TDECQ Part 1: Making Accurate and Repeatable

TDECQ is the acronym used to describe “transmitter dispersion and eye closure quaternary”. This is a power penalty metric that describes how much extra power

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TDECQ measurements replace mask testing in PAM4

Optical PAM4 technology is going mainstream, being incorporated into Ethernet standards such as IEEE 802.3bs and 802.3cd (400G, 200G, 100G

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Understanding TDECQ: Key PAM4 Transmitter Quality

Understand TDCEQ, the critical PAM4 transmitter quality metric for modern optical modules. Learn how tdecq measures vertical eye closure and

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Completing the family of TDECQ-related specifications

Too far requires significant tap weights of the opposite sign to normal, could

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The Essentials for Quality TDECQ Measurements

Should a high-quality transmitter expect to approach a 0-dB TDECQ value? This could be true, but the answer is complicated. The bandwidth of the

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Are there any safe values for PPT, TDC and EDC limits

Are there any safe values for PPT, TDC and EDC limits or can they be cranked up to the max? Or maybe I should look just at the vcore? If so, how do I even

Oct 10, 2025

TDECQ, slowness, badness and overshoot (revised)

TDECQ, slowness, badness and overshoot (revised) Piers Dawe Mellanox Technologies

Jun 22, 2026

OSNR in P802.3CW D2.0

Since the consideration of TDECQ values in the range of 3.9 dB (higher than current in-force values of up to 3.4 dB), transmitters causing TDECQ – TECQ penalties in excess of 2.5 dB, became likely,

Apr 22, 2026

Transmitter and Dispersion Eye Closure for PAM-4

A higher-quality, more open eye diagram implies that more noise needs to be added to reach the target SER, which results in a better (i.e. lower) TDECQ value. The

Dec 15, 2025

TDEC for PAM4 ("TDECQ")

A reconstructed eye diagram is formed from the optimally equalized captured pattern. If a real time sampling scope is used, and the reference equalizer is implemented in the oscilloscope, then the

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TDECQ, optimizing the time center of eye

Therefore, the TDECQ method should be allowed to optimize the timing position when measuring transmitter eyes, to avoid penalizing or excluding transmitters which have open eyes which are offset

Mar 08, 2026

TRANSMITTER OPTIMIZATION, TDECQ AND INTER-OP

Can we use TDECQ to infer a better indication of transmitter performance? Can TDECQ tell us anything about this area? AWG output swing adjusted for different tap settings to keep optical ER at 4 dB as

Nov 16, 2025

Understanding TDECQ: Transmitter & Dispersion Eye

Learn about TDECQ (Transmitter and Dispersion Eye Closure Quaternary). Understand this critical metric for PAM4 transceivers and high

Mar 13, 2026

Eye doctor: Why too much equalization boost is bad for your serial link ...

Applying too little equalization (under-equalization) can prevent the signal from being recovered properly. However, applying too much equalization (over-equalization) can also be an issue because

Dec 24, 2025

TDA4VH-Q1: The Training value of DQ is not centered enough in the eye ...

Following the above question, the test found that at high temperatures, the eye diagram becomes relatively small, but the center position along the rising or falling direction of DQS is

Dec 30, 2025

Understanding TDECQ: Transmitter & Dispersion Eye

The lower the TDECQ value, the better the transmitter performance. TDECQ cannot be lower than 0 dB: since more noise must always be added to

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Collector Guide Interpreting Timegrapher Results

Collector Guide Interpreting Timegrapher Results By David Flett February 22, 2021 So you have finally found "the one" for sale - the watch you

May 28, 2026

Completing the family of TDECQ-related specifications

FR and 50GBASE-LR. — The required values of the “Stressed receiver sensitivity (OMA_{outer}) (max)” and “Stressed eye closure for PAM4 (SECQ)” are as given in Table 139-7 for 50GBASE-FR and

Jan 21, 2026

BER / Eye Diagram

My problem is how do i interpret and what conclusions can i take from the BER Analysis/Eye Diagram: How do i know that the values of Max Q Factor, Min BER, Eye Height,

Jun 24, 2026

How to Equalize: A Beginner's Guide to Setting and

Find out how to improve your headphones' sound by using the equalizer, where to start, what software to use, and what to keep an eye on.

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