How to derive the receiver sensitivity from waterfall curves for 802.3dj applications

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Introduction

While previously for KP4 applications the BER requirement of 2.4×10^{-4} was used to derive the receiver sensitivity from the waterfall curves, in draft 1.1 of P802.3dj the BER requirement has been replaced by a **block error ratío** requirement for which it is unclear how to apply that to the waterfall curves.

The adopted (comment #205 to D1.0) new **block error ratio specification** was based upon ran_3dj_04a_2405.

At the dj meeting in Vancouver, November 2024, contribution rodes_3dj_01a_2411 was presented containing the results of receiver testing, including waterfall curves, at 200Gb/s PAM4 for applications with and without inner FEC (FECi). Some waterfall curves shown are reproduced on the next slide.

Questions which receiver sensitivity should be concluded from the reported curves remained unanswered, also in informal communications with the author of the presentation.

Example waterfall curves
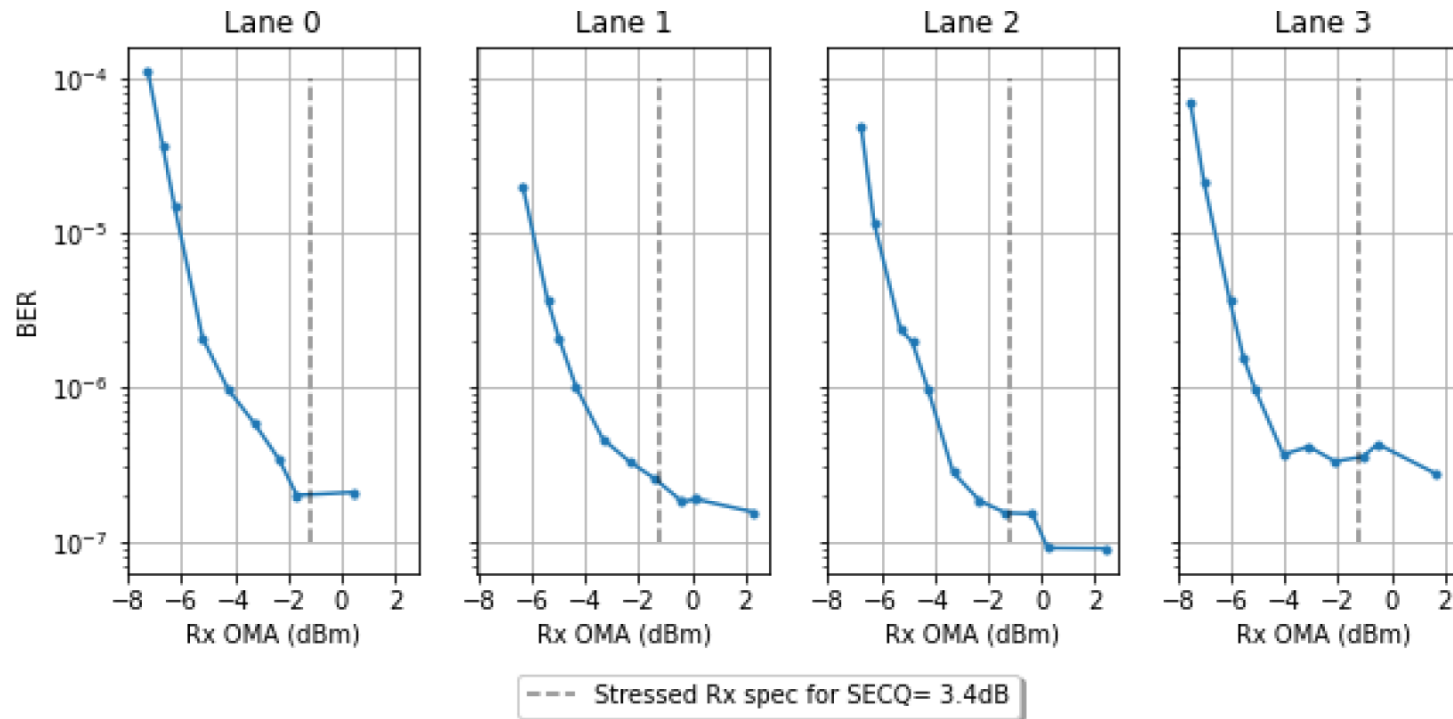
Curves reported in
https://www.ieee802.org/3/dj/public/24_11/rodes_3dj_01b_2411.pdf

The authors propose to discuss how to conclude the value of receiver sensitivity for PMDs specified with **block error ratio** from waterfall curves towards a common approach for practical testing of optical modules.

Thanks!