P802.3cn optical reflection limits (updated)

Pete Anslow, Ciena

IEEE P802.3cn Task Force, Long Beach, January 2019

Introduction

Baselines have been adopted for:
50GBASE-ER
200GBASE-ER4
400GBASE-ER8

This presentation looks at the expected MPI penalty that these PMDs would have using the C program used to generate the plots in anslow_01_0517_smf

This is based on the calculations in the spreadsheet in king_02a_0116_smf.7z in order to extend the Monte Carlo analysis to a larger number of samples.
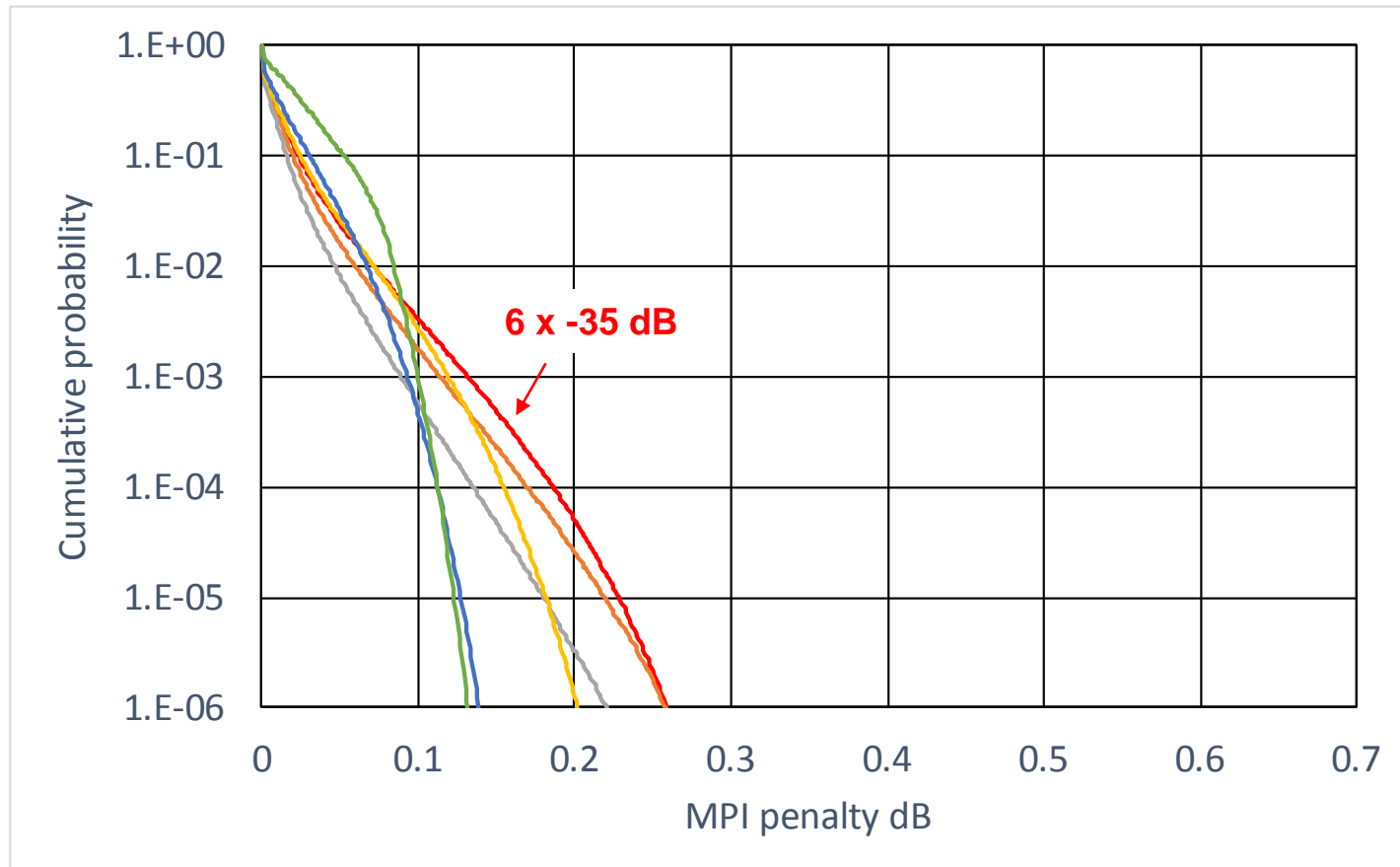
The initial values of the reflectances on page 3 are the same as those for 400GBASE-LR4 and the extinction ratio and channel loss values are taken from the baselines.

The results on page 4 are then re-calculated for the highest integer reflectance value for the penalty to remain below that for 6 x -35 dB.

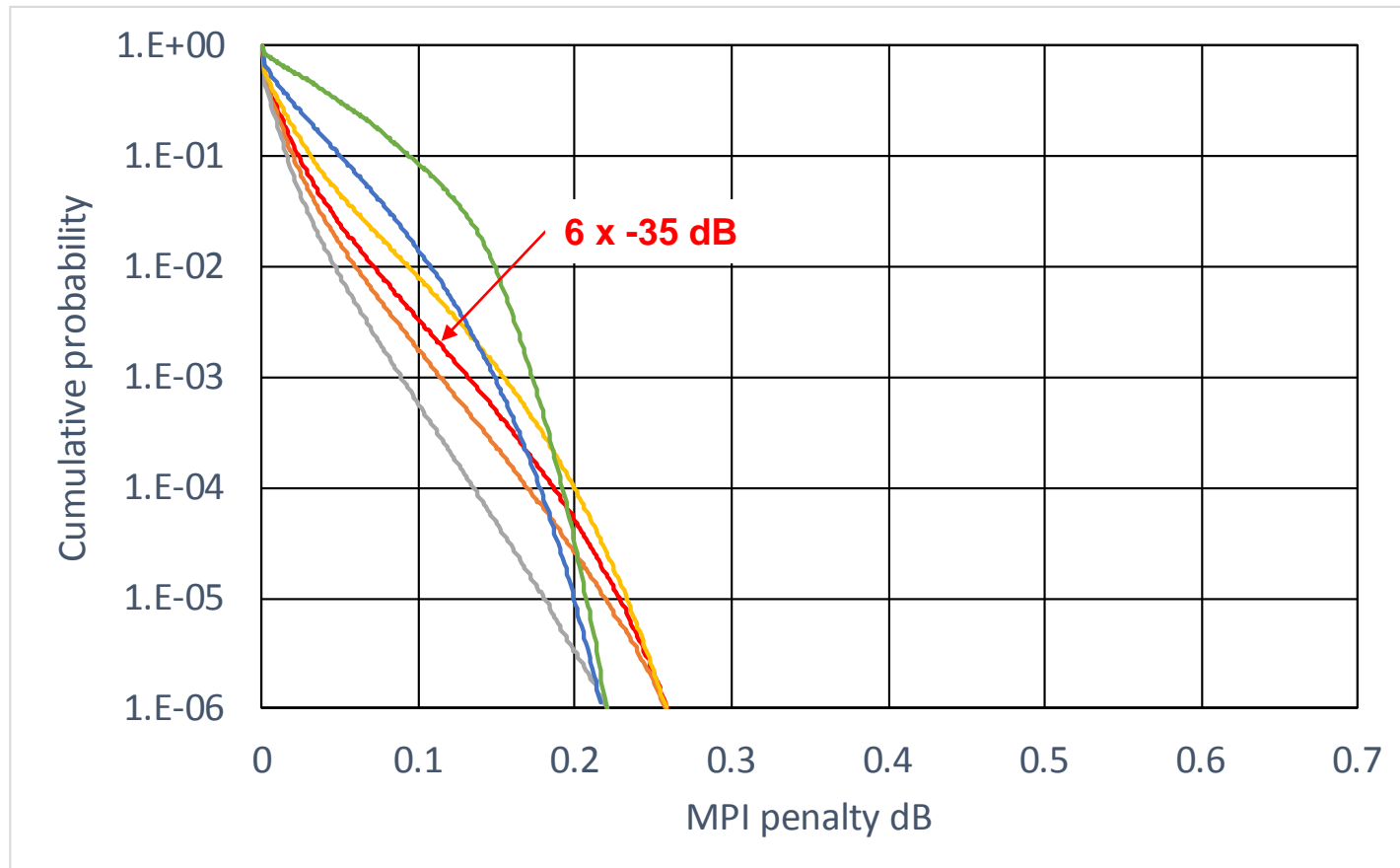# ER, ER4, ER8, 6 dB ER initial simulations

**BER 2.4E-4
ER 6 dB**

-26	-39	-39	-39	-39	-39	-39	-39	-39	-39	-39	**18**	**-26**
-26	-37	-37	-55	-37	-37	-37	-37	-55	-37	-37	**18**	**-26**
-26	-35	-55	-55	-35	-35	-35	-35	-55	-55	-35	**18**	**-26**
-26	-33	-55	-55	-55	-33	-33	-55	-55	-55	-33	**18**	**-26**
-26	-29	-55	-55	-55	-55	-55	-55	-55	-55	-29	**18**	**-26**
-26	-55	-55	-55	-55	-55	-22	-55	-55	-55	-55	**18**	**-26**

6 x -35 dB

3

ER, ER4, ER8, 6 dB ER updated simulations

BER 2.4E-4
ER 6 dB

-26	-39	-39	-39	-39	-39	-39	-39	-39	-39	-39	**18**	**-26**
-26	-37	-37	**-55**	-37	-37	-37	-37	**-55**	-37	-37	**18**	**-26**
-26	-35	**-55**	**-55**	-35	-35	-35	-35	**-55**	**-55**	-35	**18**	**-26**
-26	**-32**	**-55**	**-55**	**-55**	**-32**	**-32**	**-55**	**-55**	**-55**	**-32**	**18**	**-26**
-26	**-27**	**-55**	**-55**	**-55**	**-55**	**-55**	**-55**	**-55**	**-55**	**-27**	**18**	**-26**
-26	**-55**	**-55**	**-55**	**-55**	**-55**	**-19**	**-55**	**-55**	**-55**	**-55**	**18**	**-26**

4

Proposal 1

Change the assumed values for the maximum discrete reflectance for 200GBASE-ER4 and 400GBASE-ER8 as shown below:

Table 122–19—Maximum value of each discrete reflectance

Number of discrete reflectances above −55 dB	Maximum value for each discrete reflectance		
	200GBASE-FR4 or 400GBASE-FR8	200GBASE-LR4 or 400GBASE-LR8	200GBASE-ER4 or 400GBASE-ER8
1	−25 dB	−22 dB	−19 dB
2	−31 dB	−29 dB	−27 dB
4	−35 dB	−33 dB	−32 dB
6	−38 dB	−35 dB	−35 dB
8	−40 dB	−37 dB	−37 dB
10	−41 dB	−39 dB	−39 dB

Proposal 2

Change the assumed values for the maximum discrete reflectance for 50GBASE-ER as shown below:

Table 139–14—Maximum value of each discrete reflectance

Number of discrete reflectances above −55 dB	Maximum value for each discrete reflectance		
	50GBASE-FR	50GBASE-LR	50GBASE-ER
1	−25 dB	−22 dB	−19 dB
2	−31 dB	−29 dB	−27 dB
4	−35 dB	−33 dB	−32 dB
6	−38 dB	−35 dB	−35 dB
8	−40 dB	−37 dB	−37 dB
10	−41 dB	−39 dB	−39 dB

Proposal 3

Using the same principles as were used for the reflection calculations in the P802.3bs project and using the maximum discrete reflectances proposed in this contribution, set the:

Optical return loss tolerance (max) = 15 dB

$RIN_{15}OMA$ (max) = -132 dB/Hz

Transmitter compliance channel optical return loss = 15 dB

Fiber optic cabling (channel) Optical return loss (min) = 19 dB

for 50GBASE-ER, 200GBASE-ER4, and 400GBASE-ER8.

Thanks!