



Parameter Values for Micro-Reflection Limits

Contribution to IEEE 802.3cy

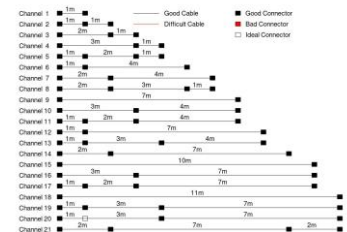
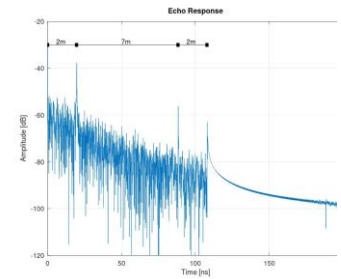
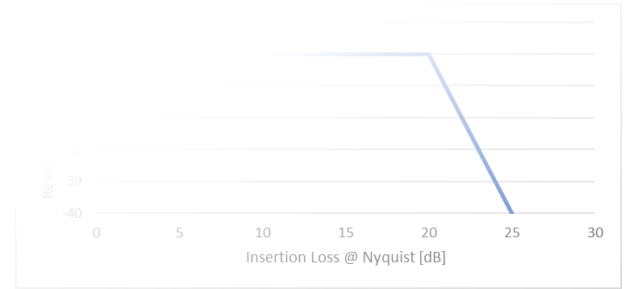
Ragnar Jonsson

Marvell

January 11, 2022

Introduction

- In the Telephonic Interim Meeting on March 30, 2021, the micro-reflection limit text from [jonsson_3cy_01a_03_30_21](#) was adopted
- Contribution [jonsson_3cy_01_08_10_21](#) suggests specific limits to use in the text
- Contribution [jonsson_3cy_01_12_21_21](#) had minor update, based on larger set of cable measurements
- This contribution proposes to adopt the values previously proposed in [jonsson_3cy_01_12_21_21](#)



Evaluation of the Proposed Parameters

- Contribution [jonsson 3cy 01b 09 28 21](#) provided MATLAB code for easier evaluation of the micro-reflection limits
- Several cable experts have used this MATLAB code to evaluate the REM metric for real cables
- Contribution [mueller 3cy 01 10 26 21](#) shared measurement results for real cables and concluded that the REM did not put prohibitive limits on the cable design
- Contribution [jonsson 3cy 01 12 21 21](#) proposed increasing N_{discard} to 16, based on investigation of larger set of cables

802.3cy micro-reflexions measurement results

Rosenberger

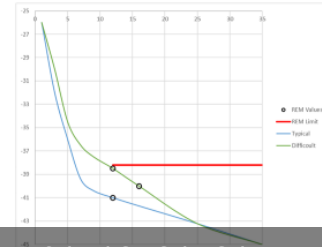
Summary

- The 10 m cable assembly with SPP cable in development status meets the REM requirements with the proposed parameters with some margin for inline connectors, temperature variation and ageing
- The proposal does not preclude using STP cable for shorter link segments

From [mueller 3cy 01 10 26 21](#)

Explanation of New Value

- Previously proposed value of $N_{\text{discard}}=12$ was based on REM calculations for simulated and measured cables
- We have done a detailed review of larger set of cable measurements
- In some cases, the echo response from the connectors might spread out over more bins than what had previously been observed
- Using $N_{\text{discard}}=16$ provides extra REM margin for the more challenging cable assembly



From [jonsson 3cy 01 12 21 21](#)

Values Proposed in [jonsson_3cy_01_12_21_21](#)

Parameter	Parameter Value	Parameter Description
Δf	2.5MHz	The sample frequency spacing for the frequency domain transfer function measurements
N	4096	Number of sampling points to use for the time domain representation of the echo impulse response
N_{seg}	4	Number of samples in each segment
$N_{discard}$	16	Number of largest segments to discard

- f_c is **4GHz**,
- REM_{max} is **-30dB** and
- REM_{offset} is **20dB**

Straw Poll

- I support adopting the micro-reflection parameters for 802.3cy as described in slide 4 of jonsson_3cy_01_11_22.pdf.

Motion

Move to adopt the micro-reflection parameters for 802.3cy as described in slide 4 of [jonsson_3cy_01_11_22.pdf](#), with editorial license

- M:
- S:



Essential technology, done right™