Supporting Content for Comment 317 SCMR Limit Adjustment

Week of September 15th

Authors: Jason Ellison, Howard Heck, Megha Shanbhag, Nathan Tracy

EVERY CONNECTION COUNTS

Agenda

1. Problem introduction
2. Supporting data
3. Proposed solution

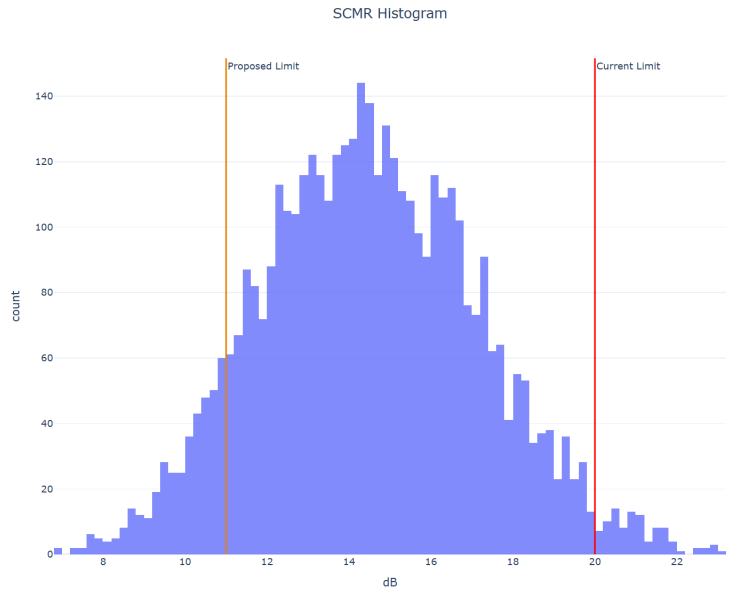
Problem Statement

- **SCMR**, a new normative parameter 200GBASE-CR1, 400GBASE-CR2, and 800GBASE-CR4 devices, was introduced in D2.1.
- SCMR was extracted from 624 differential pairs from 39 cable assemblies. The total distribution of all SCMR metrics from all cables is shown to the right.
- This data is from cables that are operating successfully in the field.
- The failure rate was 96.3% with the current limit (only considering SCMR_CH).

Table 179–14—Cable assembly characteristics summary

Description	Reference	Value	Unit
Insertion loss at 53.125 GHz, *ILdd* (max) CA-A CA-B CA-C CA-D	179.11.2	 19 24 29 34	 dB dB dB dB
Insertion loss at 53.125 GHz, *ILdd* (min)	179.11.2	16	dB
Minimum cable assembly ERL[a]	179.11.3	8.25	dB
Differential-mode to common-mode return loss, *RLcd*	179.11.4	Equation (179–20)	dB
Mode conversion insertion loss	179.11.5	Equation (179–21) and Equation (179–22)	dB
Common-mode to common-mode return loss, *RLcc*	179.11.6	Equation (179–12)	dB
Minimum COM	179.11.7	3	dB
Channel signal to common-mode ratio, $SCMR_{CH}$ (min)	179.11.8	20	dB
NOTE—The expected cable assembly reach is 0.5 m for CA-A, 1 m for CA-B, 1.5 m for CA-C, and 2 m for CA-D. Compliant cable assemblies may be longer. The length of a cable assembly does not imply compliance to specifications.			

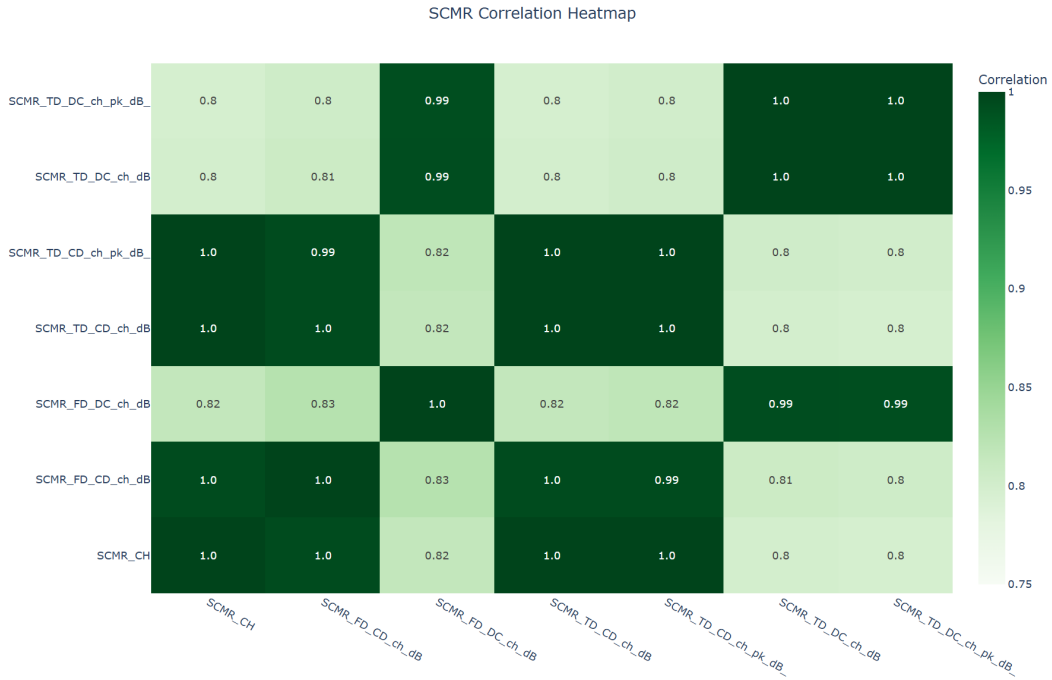
[a] Cable assemblies with a COM greater than 4 dB are not required to meet minimum ERL.



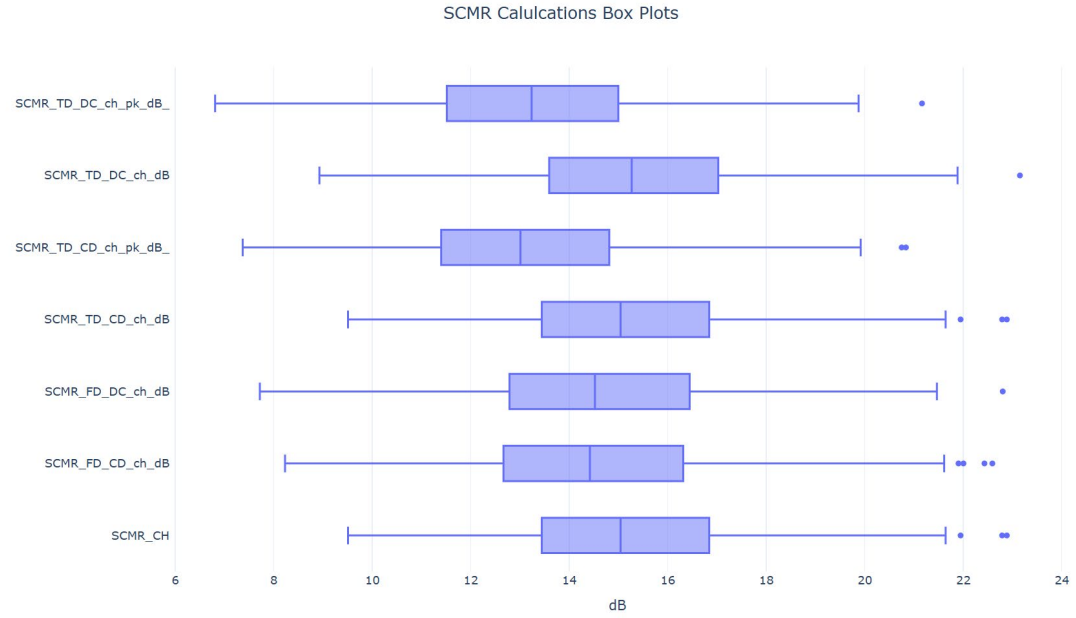
Supporting Data

com_ieee8023_4p10_SCMR.m was used to calculate SCMR and seven SCRM values area available for this analysis.

The SCMR values are all highly correlated.



For the proposed limit, SCMR_CH was used as a representative estimate, as it appears to be less influenced by the extremes observed in the higher and lower trending results.



Proposed Solution

- Proposal: change the minimum SCMR from 20 dB to 11 dB
- Moving the value to 11 reduces the failure rate of production level components from 96.3% to 3.7%.