

D2.2 Comment

Annex 162 (CA), 162A/B/C/D

Clause	Topic	Comments
162	CA RLcc	89(R)
162A	Host PCB ILdd	18, 19
162B	MTF ILdc/ILdc	138
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162C	MDI pins table	157
162D	CA types	140
1/162/162D	MDI labels/references	156, 158, 151, 153, 152, 154, 155, 161, 162

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Comments #89, 18, 19,

8023ck_D2p1_final_closedcomments.pdf

CI 162 SC 162.11.6 P 181 L 38 # 79

Dudek, Mike Marvell
Comment Type T Comment Status R CA RLcc

As was pointed out in the unsatisfied comment # 177 against draft 2.0 the existing specification for common mode return loss limit effectively doesn't exist once the test fixture loss exceeds 0.9dB. The rejection however had a valid point that there is a potential issue up to 4GHz where the loss is low.

SuggestedRemedy

Change the limit to 1.8dB from 0 to 4GHz, 2.2-0.1*f from 4GHz to 40GHz.

Response Response Status C

REJECT.

The commenter provided the following update to the suggested remedy.

1.8 0.5<= f(GHz) <= 4 GHz
1.4+0.1*f 4< f(GHz) <= 30 GHz

The revised specification may result in currently posted channels failing.

The comment and updated suggested remedy does not provide sufficient justification to support the change to the draft.

Further analysis and a consensus proposal is required.

CI 162A SC 162A.4 P 287 L 45 # 18

Wu, Mau-Lin MediaTek Inc.
Comment Type TR Comment Status D Host PCB ILdd

The recommended maximum IL for TX or RX PCB is 6.875 dB at 26.56 GHz, which is defined in (162A-1). However, the equation of (162A-1) is not correct. By quick check of the equation, $IL_{dd_PCBmax}(26.56) \approx 6.6$ dB, which is NOT 6.875 dB. According to the closed response of comment #18 in https://www.ieee802.org/3/ck/comments/draft1p3/8023ck_D1p3_final_closedcomments.pdf, the equation of (162A-1) shall be modified as " $0.9809*(0.471*\sqrt{f}+0.1194*f+0.002*(f^2))$ ". However, the equation of " $0.9809*(0.417*\sqrt{f}+0.1194*f+0.002*(f^2))$ " was adopted, instead, which is wrong.

SuggestedRemedy

Change (162A-1) from " $0.9809*(0.417*\sqrt{f}+0.1194*f+0.002*(f^2))$ " to " $0.9809*(0.471*\sqrt{f}+0.1194*f+0.002*(f^2))$ ". Redraw Figure 162A-1 accordingly if necessary.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change (162A-1) from " $0.9809*(0.417*\sqrt{f}+0.1194*f+0.002*(f^2))$ " to " $0.9809*(0.471*\sqrt{f}+0.1194*f+0.002*(f^2))$ ".
Figure 162A-1 uses correct equation.

CI 162 SC 162.11.6 P 189 L 38 # 89

Dawe, Piers Nvidia
Comment Type TR Comment Status D CA RLcc

As in previous comments: this common mode return loss spec RLcc becomes useless at the frequency when the MCB loss is 1.8/2 dB, which is only 8.5 GHz. We need a common mode return loss spec to stop large common-mode voltages building up through multiple low-loss reflections. The revised proposed remedy for D2.1 comment 79 seems OK: 1.8 dB $0.5 \leq f \leq 4$ GHz, $1.4 + 0.1*f$ dB $4 < f \leq 30$ GHz. The 30 GHz fmax allows margin for real-world coax-PCB transitions (although the mated compliance boards are specified ≥ 3 dB to 50 GHz); the cable itself should pass this comfortably because it is insulated from the test by the MCB loss.

SuggestedRemedy

Use a frequency-dependent mask 1.8 dB $0.5 \leq f \leq 4$ GHz, $1.4 + 0.1*f$ dB $4 < f \leq 30$ GHz. f is in GHz. Similarly for Tx, Table 162-11, 162.9.3.6.

Proposed Response Response Status W

PROPOSED REJECT.

This comment is a restatement of D2.1 comment #79.

The suggested remedy does not provide sufficient additional justification to support the change to the draft.

CI 162A SC 162A.4 P 289 L 1 # 19

Wu, Mau-Lin MediaTek Inc.
Comment Type TR Comment Status D Host PCB ILdd

The recommended maximum IL from TP0 to TP2 is 10.975 dB at 26.56 GHz, which is defined in (162A-3). However, the equation of (162A-3) is not correct. By quick check of the equation, $IL_{dd_HostMax}(26.56) \approx 10.54$ dB, which is NOT 10.975 dB. According to the closed response of comment #19 in https://www.ieee802.org/3/ck/comments/draft1p3/8023ck_D1p3_final_closedcomments.pdf, the equation of (162A-3) shall be modified as " $1.5658*(0.471*\sqrt{f}+0.1194*f+0.002*(f^2))$ ". However, the equation of " $1.5658*(0.417*\sqrt{f}+0.1194*f+0.002*(f^2))$ " was adopted, instead, which is wrong.

SuggestedRemedy

Change (162A-3) from " $1.5658*(0.417*\sqrt{f}+0.1194*f+0.002*(f^2))$ " to " $1.5658*(0.471*\sqrt{f}+0.1194*f+0.002*(f^2))$ ". Redraw Figure 162A-2 accordingly if necessary.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change (162A-3)

from " $1.5658*(0.417*\sqrt{f}+0.1194*f+0.002*(f^2))$ " to " $1.5658*(0.471*\sqrt{f}+0.1194*f+0.002*(f^2))$ ".

Figure 162A-2 uses correct equation.

Comment #138 - Mated Test Fixture

Cl 162B SC 162B.1.3.3 P 297 L 36 # 138
 Dawe, Piers Nvidia
 Comment Type T Comment Status D MTF ILdc/ILdc

If common-mode to differential-mode insertion loss is what we want to control, that's ILdc. However, we want to control both ILdc and llcd, as we have both RLcd and RLdc specs in 120G. There is an argument that they are the related, and specifying one is enough, but I'm not sure it always holds.

SuggestedRemedy

Specify both llcd and ILdc. It may be possible to specify one in one direction and the other in the other: Scd21 and Sdc12, or Sdc21 and Scd12, where 1 is an input (instrument connector that would be connected to a pattern generator) and 2 is an output. I haven't thought through which we need, or maybe we need all four. It is simpler to require all four.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
 This comment does not apply to the substantive changes between IEEE P802.3ck D2.2 and D2.1 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.
 However, the proposed change is an improvement to the draft.
 As pointed out by the comment both llcd and llcd of the MTF must be similarly constrained. Since ILcd12 and ILdc21 are reciprocal and ILcd21 and ILdc12 reciprocal, the insertion loss mode conversion can be constrained by measuring either llcd (or llcd) in both directions. The text as written was intended to require this but the wording could be improved.
 Also, the variable "llcd" should be "llcd" to correctly reflect the subclause title and text.
 Change: "measured at either test fixture test interface"
 To "measured in both directions"
 and
 Change variable name "llcd" to "llcd".

162B.1.3.3 Mated test fixtures common-mode to differential-mode insertion loss

The common-mode to differential-mode insertion loss of the mated test fixtures measured at either test fixture test interface shall meet the values determined using Equation (162B-6).

$$ILcd(f) \geq \begin{cases} 30 - (21/28)f & 0.01 \leq f < 20 \\ 15 & 20 \leq f \leq 50 \end{cases} \quad (162B-6)$$

Error ILcd should be ILdc

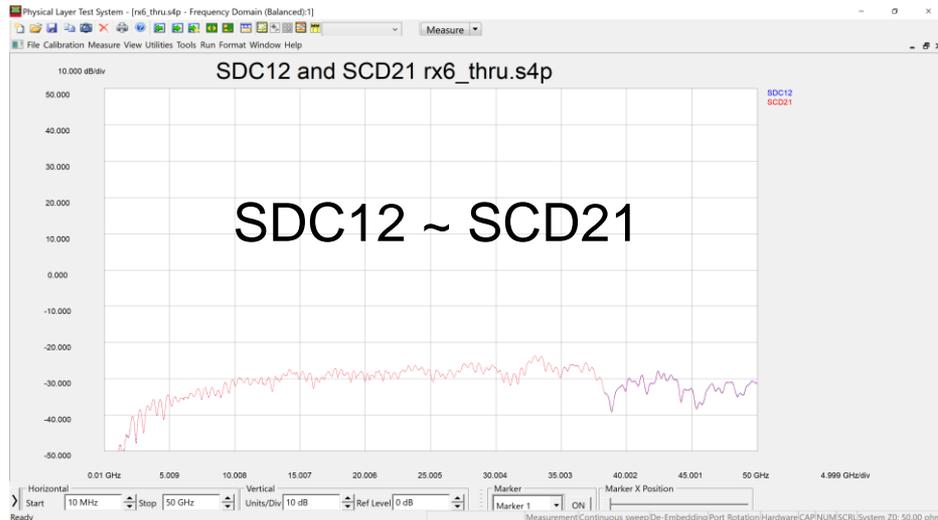
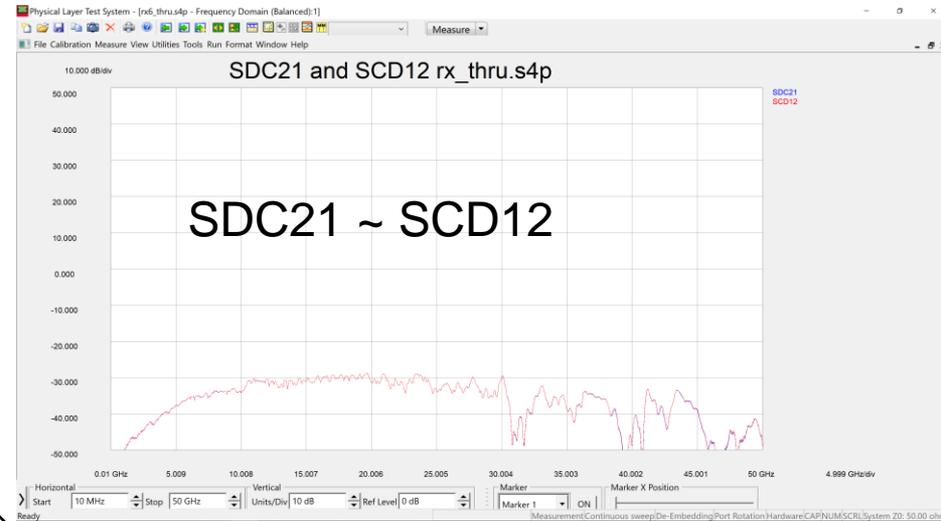
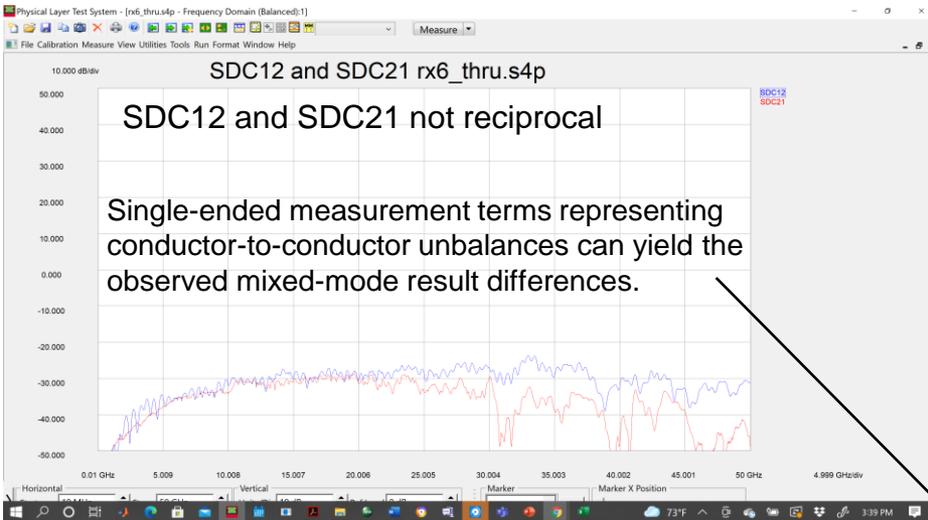
where

ILcd(f) is the common-mode to differential-mode insertion loss in dB at frequency f
 f is the frequency in GHz

- As these are test fixture specifications, SDC12, SDC21,SCD12, and SCD21 should be specified

MTF measurements

https://www.ieee802.org/3/ck/public/tools/cucable/kocsis_3ck_02_0719_MTFosfp.zip



Source: Curtis Donahue, Rhodes and Swartz

$$Sdc_{21} = \frac{S_{31} + S_{32} - S_{41} - S_{42}}{2} \quad Sdc_{12} = \frac{S_{13} + S_{14} - S_{23} - S_{24}}{2}$$

$$\frac{S_{31} + S_{32} - S_{41} - S_{42}}{2} = \frac{S_{13} + S_{14} - S_{23} - S_{24}}{2}$$

$$S_{32} - S_{41} = S_{14} - S_{23}$$

$$S_{32} + S_{23} = S_{14} + S_{41}$$

$$2 \times S_{32} = 2 \times S_{14}$$

$$S_{32} = S_{14}$$

Need a minimum of two measurements SDC12 and SDC21
 SCD12 and SCD21
 SDC12 and SCD12
 SDC21 and SCD21

Comment #138 - Mated Test Fixture

- Minimal changes to the draft
 - Correcting IL_{cd} to align with subclause description
 - Change "the mated test fixture measured at either test interface" to "the mated test fixture measured in both directions"

162B.13.3 Mated test fixtures common-mode to differential-mode insertion loss

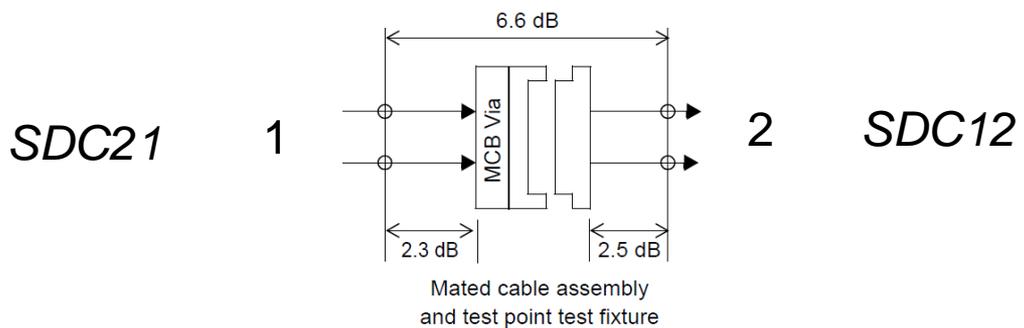
The common-mode to differential-mode insertion loss of the mated test fixtures measured at either test fixture test interface shall meet the values determined using Equation (162B-6).

$$IL_{cd}(f) \geq \begin{cases} 30 - (21/28)f & 0.01 \leq f < 20 \\ 15 & 20 \leq f \leq 50 \end{cases} \quad (162B-6)$$

where

$IL_{cd}(f)$ is the common-mode to differential-mode insertion loss in dB at frequency f

f is the frequency in GHz



Need a minimum of two measurements
SDC12 and SDC21

Comments #136,157, 140

CI 162B SC 162B.1.3.4 P 298 L 30 # 136

Dawe, Piers Nvidia
 Comment Type TR Comment Status D MTF RLcc

Just as for the cable RLcc spec: this 3 dB becomes useless when the MCB trace loss is half of 3 = 1.5 dB (16 GHz).

SuggestedRemedy

As for the cable RLcc spec but 1 dB lower to 30 GHz, easing up to 50 GHz: 12 -9f dB 0.01 <= f < 1, 3 dB 0.5<= f <= 4 GHz, 2.6+0.1*f dB 4< f <= 30 GHz, 9.5-1.3*f dB 30< f <= 50 GHz. f is in GHz.

Proposed Response Response Status W

PROPOSED REJECT.
 The comment and suggested remedy does not provide sufficient information or justification to support a change to the draft.

CI 162C SC 162C.1 P 306 L 10 # 157

Ghiasi, Ali Ghiasi Quantum/Inphi
 Comment Type TR Comment Status D MDI pins table

Per unsatisfied comment from D2.2.
 Table 162C-3 needs to be better organized

SuggestedRemedy

An improved and beter organized table will be submitted as ghiasi_3ck_01_0921.pdf

Proposed Response Response Status W

PROPOSED REJECT.
 The following related presentation was provided for consideration:
https://www.ieee802.org/3/ck/public/21_09/ghiasi_3ck_01_0921.pdf
 For task force discussion of cited presentation.

CI 162D SC 162D.1.1 P 317 L 6 # 140

Dawe, Piers Nvidia
 Comment Type E Comment Status D CA types

In table headers:
 "supportable PMDs
 Number"

SuggestedRemedy

Change to: Maximum number of PMDs (merge two cells vertically). Similarly in the following tables.
 If changing to "maximum", change "supportable" to "maximum" in the text and table captions too, and in 162C.1.

Proposed Response Response Status W

PROPOSED REJECT.
 This comment does not apply to the substantive changes between IEEE P802.3ck D2.2 and D2.1 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.
 The suggested change is not necessary.

Table 162D-2—100GBASE-CR1 cable assembly types and supportable number of PMDs

one end		other end		supportable PMDs
Receptacle/Plug	Number	Receptacle/Plug	Number	Number
SFP+	1	SFP+	1	1
SFP-DD	1	SFP+	2	2
DSFP	1	SFP+	2	2
QSFP+	1	SFP+	4	4
QSFP-DD800	1	SFP+	8	8
OSFP	1	SFP+	8	8
SFP-DD	1	SFP-DD	1	2
DSFP	1	DSFP	1	2
QSFP+	1	QSFP+	1	4
QSFP-DD800	1	QSFP-DD800	1	8
OSFP	1	OSFP	1	8

Comments 151, 152, 153, 154, 155

Cl 1 **SC 1.3** **P 32** **L 14** # **151**
 Ghiasi, Ali Ghiasi Quantum/Inphi
Comment Type **TR** **Comment Status** **D** *MDI labels*
 Per unsatisfied comment from D2.2 SFP-DD112 reference should be updated.
SuggestedRemedy
 Replace SFP-DD with SFP-DD112 which supports 100 Gb/s operation.

Proposed Response **Response Status** **W**
 PROPOSED ACCEPT IN PRINCIPLE.
 SFP112 and SFP-DD112 terms are not used in normative references. See response to comment #155.

Cl 1 **SC 1.3** **P 32** **L 53** # **155**
 Ghiasi, Ali Ghiasi Quantum/Inphi
Comment Type **TR** **Comment Status** **D** *MDI reference*
 Per unsatisfied comment from D2.2 add reference for SFP112.
SuggestedRemedy
 SFP-DD MSA SFP-DD/SFP-DD112/SFP112 Hardware Specification for SFP112 AND SFP DOUBLE DENSITY PLUGGABLE TRANSCEIVER, Rev 5.0, September 2021 (<http://sfp-dd.com/>).
Proposed Response **Response Status** **W**
 PROPOSED REJECT.
 The specification referenced in the suggested remedy is not a publicly available document.

Cl 1 **SC 1.3** **P 32** **L 53** # **152**
 Ghiasi, Ali Ghiasi Quantum/Inphi
Comment Type **TR** **Comment Status** **D** *MDI reference*
 Per unsatisfied comment from D2.2 SFP-DD112 reference should be updated.
SuggestedRemedy
 New reference: SFP-DD MSA SFP-DD/SFP-DD112/SFP112 Hardware Specification for SFP112 AND SFP DOUBLE DENSITY PLUGGABLE TRANSCEIVER, Rev 5.0, September 2021 (<http://sfp-dd.com/>).
Proposed Response **Response Status** **W**
 PROPOSED REJECT.
 The specification referenced in the suggested remedy is not a publicly available document.

Cl 1 **SC 1.3** **P 32** **L 14** # **153**
 Ghiasi, Ali Ghiasi Quantum/Inphi
Comment Type **TR** **Comment Status** **D** *MDI labels*
 Per unsatisfied comment from D2.2 need to add reference for SFP112
SuggestedRemedy
 Replace SFP-DD with SFP-DD112 which supports 100 Gb/s operation.
Proposed Response **Response Status** **W**
 PROPOSED REJECT.
 SFP112 and SFP-DD112 terms are not used in normative references. See response to comment #155.

Cl 1 **SC 1.3** **P 32** **L 53** # **154**
 Ghiasi, Ali Ghiasi Quantum/Inphi
Comment Type **ER** **Comment Status** **D** *MDI reference*
 Per unsatisfied comment from D2.2 SFP-DD112 reference should be updated.
SuggestedRemedy
 SFP-DD MSA SFP-DD/SFP-DD112/SFP112 Hardware Specification for SFP112 AND SFP DOUBLE DENSITY PLUGGABLE TRANSCEIVER, Rev 5.0, September 2021 (<http://sfp-dd.com/>).
Proposed Response **Response Status** **W**
 PROPOSED REJECT.
 The specification referenced in the suggested remedy is not a publicly available document.

Comments 156, 158, 161, 162

Cl 162 SC 162.11.7.2 P 194 L 18 # 156
 Ghiasi, Ali Ghiasi Quantum/Inphi
 Comment Type ER Comment Status D MDI labels

Per unsatisfied comment from D2.2.
 Modules in table 162-21 must be updated with ones actually supporting 100 Gb/s operation

SuggestedRemedy

Update SFP+ with SFP112
 SFP-DD with SFP-DD112
 QSFP+ with QSFP112
 changes applies to clauses 162, 162C and 162D

Proposed Response Response Status W

PROPOSED REJECT.
 SFP112 and SFP-DD112 terms are not used in normative references. See response to comment #155.
 For QSFP, resolve using the response to comment #162.

Cl 162D SC 162D.1 P 316 L 21 # 158
 Ghiasi, Ali Ghiasi Quantum/Inphi
 Comment Type TR Comment Status D MDI labels

Table 162D-1, 162D-2, 162D-3, and 162D-4 should be updated with MDI that actually operate at 53.1 GBd, currently what is specified are MDIs that either operate at 10.3 GBd or 25.78 GBd

SuggestedRemedy

Please replace SFP+ with SFP112
<http://sfp-dd.com>
 SFP-DD with SFP-DD112
<http://sfp-dd.com>
 QSFP+ with QSFP112 for reference see
<http://www.qsfp-dd.com/wp-content/uploads/2021/05/QSFP-DD-Hardware-Rev6.01.pdf>

Proposed Response Response Status W

PROPOSED REJECT.
 Resolve using the response to comment #156.

Cl 1 SC 1.3 P 32 L 53 # 162
 Ghiasi, Ali Ghiasi Quantum/Inphi
 Comment Type TR Comment Status D MDI reference

Per unsatisfied comment from D2.2 QSFP112 reference should be updated. The reference for QSFP112 missing

SuggestedRemedy

New reference: QSFP-DD/QSFP-DD800/QSFP112 Hardware Specifications are available from (<http://www.qsfp-dd.com>)

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change:
 "QSFP-DD800 MSA QSFP-DD Specification for 800G operation, Rev 1.0, March 6, 2020"
 To:
 "QSFP-DD/QSFP-DD800/QSFP112 Hardware Specification – Rev 6.01 May 20,2021"

Add the following footnote:
 "QSFP-DD, QSFP-DD800, and QSFP112 specifications are available from QSFP-DD MSA (<http://www.qsfp-dd.com>)"

Given the reference change above change "QSFP+" to "QSFP112".

Implement with editorial license.

Cl 1 SC 1.3 P 32 L 53 # 161
 Ghiasi, Ali Ghiasi Quantum/Inphi
 Comment Type ER Comment Status D MDI reference

Per unsatisfied comment from D2.2 QSFP-DD800 reference should be updated. The reference for QSFP-DD800 now absolute

SuggestedRemedy

New reference: QSFP-DD/QSFP-DD800/QSFP112 Hardware Specifications are available from (<http://www.qsfp-dd.com>)

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
 Resolve using the response to comment #162.

Comments #136

CI 162B SC 162B.1.3.4 P 298 L 30 # 136

Dawe, Piers Nvidia MTF RLcc
 Comment Type TR Comment Status D

Just as for the cable RLcc spec: this 3 dB becomes useless when the MCB trace loss is half of 3 = 1.5 dB (16 GHz).

Suggested Remedy

As for the cable RLcc spec but 1 dB lower to 30 GHz, easing up to 50 GHz: 12 -9f dB 0.01 <= f <1, 3 dB 0.5<= f <= 4 GHz, 2.6+0.1*f dB 4 < f <= 30 GHz, 9.5-1.3*f dB 30 < f <= 50 GHz. f is in GHz.

Proposed Response Response Status W

PROPOSED REJECT.
 The comment and suggested remedy does not provide sufficient information or justification to support a change to the draft.

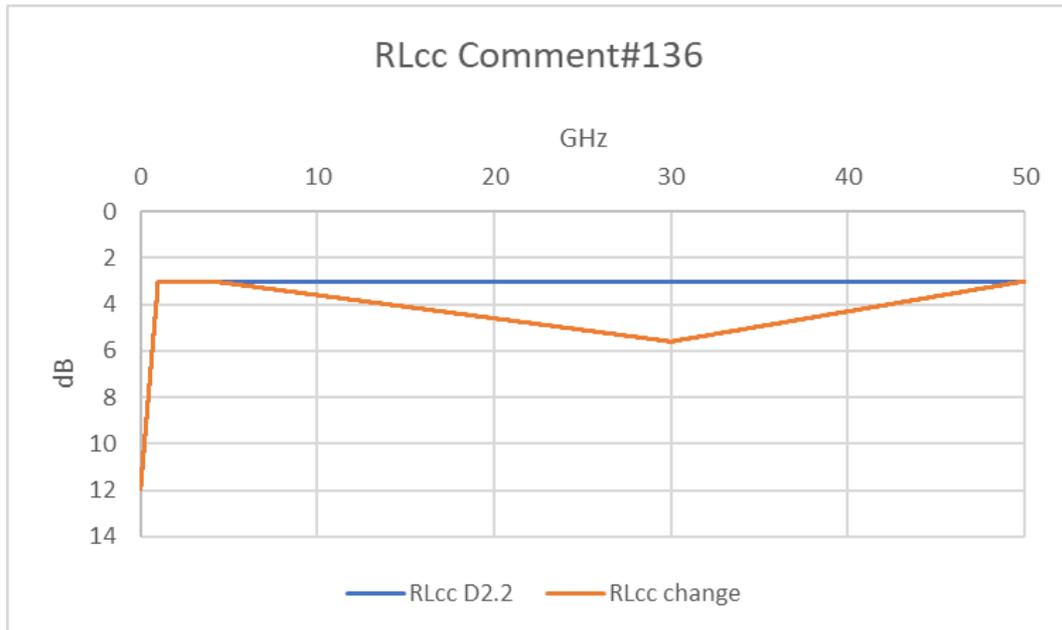
162B.1.3.4 Mated test fixtures common-mode to common-mode return loss

The common-mode to common-mode return loss of the mated test fixtures measured at each test fixture test interface shall meet the values determined using Equation (162B-7).

$$RL_{cc}(f) \geq \begin{cases} 12 - 9f & 0.01 \leq f < 1 \\ 3 & 1 \leq f \leq 50 \end{cases} \quad (162B-7)$$

where
 RLcc(f) is the common-mode to common-mode return loss in dB at frequency f
 f is the frequency in GHz

The mated test fixtures common-mode to common-mode return loss is illustrated in Figure 162B-5.



12 -9f 0.01 <= f <1
 3 1 <= f <4 GHz
 2.6+0.1f 4 <= f < 30 GHz
 9.5-0.13f 30 <= f <= 50 GHz