Meeting 10&11 Comment Discussion

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CM noise, IL, and RL

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Clause 162 TX RLCC wording Comments 156, 218

Cl 162   SC 162.9.3.5   P 150   L 50   # 156

Dudek, Mike   Marvell.

Comment Type   T   Comment Status D   CM RL/noise

The description here is not helpful. This is the common-mode to common mode return loss of the Tx. Also a value of 2dB hardly "limits" this affect it just helps and if it were really "required" it would need to be a much larger value.

SuggestedRemedy

Change the paragraph "Common-mode signal can be generated in the channel by conversion of a differential signal. Any commonmode signal returned into the channel can be converted back to a differential signal and result in differential noise into the receiver. To limit this effect, a minimum common-mode to common-mode return loss is required."
to "Common-mode signals can be returned to the transmitter by differential to common mode reflections of the cable or receiver. Any commonmode signal reflected back into the channel by the transmitter can be converted to a differential signal and result in differential noise into the receiver. To reduce this effect a minimum common-mode to common-mode return loss is specified."

Proposed Response   Response Status W

PROPOSED ACCEPT.

Cl 162   SC 162.9.3.5   P 150   L 50   # 218

Dawe, Piers   Nvidia

Comment Type   TR   Comment Status D   CM RL/noise

1. This paragraph complains about issues from mixed-mode conversion then claims that "a minimum common-mode to common-mode return loss is required". It's misinformation.
2. This is a standard, not an attempt at a textbook. We don't give any justifications for most other specs; there is no reason that this one should be different.
3. For those interested: this 2 dB CM LR spec is there to contain a gross build-up of CM voltage. It's ineffective in the context of mixed-mode where the specs are around 10-20 dB. But we don't need to discuss it in the draft.

SuggestedRemedy

Delete the paragraph

Proposed Response   Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Resolve using the response to comment #156.

162.9.3.5 Common-mode to common-mode return loss

Common-mode signal can be generated in the channel by conversion of a differential signal. Any common-mode signal returned into the channel can be converted back to a differential signal and result in differential noise into the receiver. To limit this effect, a minimum common-mode to common-mode return loss is required.

The common-mode to common-mode return loss shall be greater than or equal to 2 dB at all frequencies between 0.2 GHz and 40 GHz.

CR/KR/C2C TX AC CM noise Comments 151, 153, 141

CI 120F	*SC* 120.F.3.1	*P* 208	*L* 13	#	141

Ghiasi, Ali   Ghiasi Quantum/Inphi

Comment Type **TR**   *Comment Status* **D**   *TX CM AC noise*

30 mV AC common mode results in 1+ dB of COM penalty, there is no technical bases for using such large amount of AC common mode

SuggestedRemedy

Reduce TX AC common mode from 30 mV to 15 mV RMS

Proposed Response   *Response Status* **W**

PROPOSED REJECT.

The claim of 1 dB COM penalty in the comment is unsubstantiated. The comment does not provide sufficient evidence that the proposed change is necessary. It is not clear that the proposed new value is feasible.
Resolve with Clause 163 comment #153 and Clause 162 comment #151.
[Editor's note: CC: 162, 163, 120F]

CI 163	*SC* 163.9.2	*P* 176	*L* 43	#	153

Ghiasi, Ali   Ghiasi Quantum/Inphi

Comment Type **TR**   *Comment Status* **D**   *TX CM AC noise*

30 mV AC common mode results in 1+ dB of COM penalty, there is no technical bases for using such large amount of AC common mode

SuggestedRemedy

Reduce TX AC common mode from 30 mV to 15 mV RMS

Proposed Response   *Response Status* **W**

PROPOSED REJECT.

Resolve using the response to comment #141.

CI 162	*SC* 162.9.3	*P* 146	*L* 24	#	151

Ghiasi, Ali   Ghiasi Quantum/Inphi

Comment Type **TR**   *Comment Status* **D**   *TX CM AC noise*

30 mV AC common mode results in 1+ dB of COM penalty, there is no technical bases for using such large amount of AC common mode

SuggestedRemedy

Reduce TX AC common mode from 30 mV to 15 mV RMS

Proposed Response   *Response Status* **W**

PROPOSED REJECT.

Resolve using the response to comment #141.

Relates to the transmitter AC common-mode noise specification for CR, KR, and C2C.

Presentation ran_3ck_02_1020 provides some background.

CR/KR/C2C RX AC CM noise tolerance Comments 142, 152, 154, 155

CI 120F   SC 120F.3.2.3   P 213   L 18   # 142

Ghiasi, Ali   Ghiasi Quantum/Inphi

Comment Type   TR   Comment Status D   RX CM AC noise

Inteference tolerance must include AC common mode

SuggestedRemedy

Add step k to the list: Adjust stressor P/N skew if necessary to achive 17.5 mV AC RMS.

Proposed Response   Response Status W

PROPOSED REJECT.

The comment is proposing to add a new specification for the receiver, receiver CM AC noise tolerance and host not provided sufficient evidence that it is required.
Although the TX might generate this much noise, this noise may not all appear at the reciever.
Concerns with CM AC noise have been more with the conversion of CM to DM by the channel rather than tolerance by the receiver. This can be addressed by constraining the channel.
CM noise is not necessarily in whole or in part created by PN skew, so generating CM in the proposed way or applying directly at the receiver may not representative of the effects of CM noise; furthermore it will add additional differential stress.
The suggested remedy does not provide sufficient detail to implement, such as how the noise is generated and what characteristics is has.

Relates to the receiver AC common-mode noise tolerance specification for CR, KR, and C2C. This parameter is not part of the methodology in Draft 1.3.

CI 162   SC 162.9.4   P 151   L 37   # 152

Ghiasi, Ali   Ghiasi Quantum/Inphi

Comment Type   TR   Comment Status D   RX CM AC noise

Receiver specifications at TP3 must include max AC common mode

SuggestedRemedy

Add max AC commonm mode 17.5 mV to the table

Proposed Response   Response Status W

PROPOSED REJECT.

Resolve using the response to comment #142.

CI 163   SC 163.9.3   P 180   L 25   # 154

Ghiasi, Ali   Ghiasi Quantum/Inphi

Comment Type   TR   Comment Status D   RX CM AC noise

Receiver specifications at TP5a must include max AC common mode

SuggestedRemedy

Add max AC commonm mode 17.5 mV to the table

Proposed Response   Response Status W

PROPOSED REJECT.

CI 163   SC 163.9.3.3   P 182   L 20   # 155

Ghiasi, Ali   Ghiasi Quantum/Inphi

Comment Type   TR   Comment Status D   RX CM AC noise

Inteference tolerance must include AC common mode

SuggestedRemedy

Add step k to the list: Adjust stressor P/N skew if necessary to achive 17.5 mV AC RMS.

Proposed Response   Response Status W

PROPOSED REJECT.

Resolve using the response to comment #142.

Thanks

IEEE 802.3ck Task Force