Comment Resolution for Shared Ground Topic (comment i-55, i-61, i-66, i-67)

Kent Lusted, Intel Corporation, P802.3ck Vice-Chair Matt Brown, Huawei, 802.3ck Editor-in-Chief

Comment Overview

C/ 162 SC 162.11 P181 # 1-55 Ran, Adee Cisco Systems, Inc. Comment Type Comment Status D ground connection

The text says "For 100GBASE-CR1, 200GBASE-CR2, and 400GBASE-CR4, the lanes are AC-coupled. The AC-coupling shall be within the cable assembly". It can be questioned which contacts are AC-coupled in the cable. Figure 162-2 shows signal shields and link shield in addition to the differential pairs, and there is no distinction, so can the shields also be AC-coupled? Are they even required to be connected on both ends?

My understanding is that in practice the shields are DC-coupled and provide a ground connection between both ends. This has importance in preventing the ground voltage from bouncing at either end and creating unexpected common-mode differences between Tx and Rx pairs (because common-mode voltage is referenced to ground).

This should be stated explicitly. The suggested remedy is to add it to 162.11 which seems to be a convenient place, but other places or phrasing are possible. It may be required to add some specifications to the MDI as well.

SuggestedRemedy

Insert a paragraph after the one starting with the quoted text (lines 11-16) with the following

"The signal shield and link shield are connected to the corresponding contacts in the MDI plug connectors on both ends of the cable assembly".

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Insert a paragraph after the one starting with the guoted text (lines 11-16) with the following text: The signal shields are connected to the corresponding contacts in the MDI plug connectors on both ends of the cable assembly.".

Resolve 55, 61, 66, and 67 together.

Resolve 55, 61, 66, and 67 together.

C/ 120F SC 120F.1 P238 L2 Ran, Adee Cisco Systems, Inc. Comment Type TR Comment Status D around connection

The link block diagram does not show a ground connection, and there is no requirement anywhere in annex 120F that the devices on both ends of the link have a common ground connection.

If there is no common ground, or ground connection is poor, the Tx common-mode specifications may become meaningless, because the common-mode voltage on each device is defined with different grounds.

If a ground connection is added in this figure, it should also be noted that each arrow represents a differential pair, or alternatively draw two lines in each direction, as done in Figure 163-2.

SuggestedRemedy

Add an additional line in each direction to represent a differential pair, and add a ground connection between the devices to the diagram.

Change the paragraph on P237 L40-42, inserting a sentence about the ground connection, as follows:

"The 100GAUI-1, 200GAUI-2, or 400GAUI-4 C2C bidirectional link is described in terms of a C2C transmitter, a C2C channel, and a C2C receiver, which have a shared ground connection. Figure 120F-2 depicts a typical C2C application."

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Proposed changes to the figure is cumbersome and may imply a parti New text pointing out the common ground is sufficient.

Add text that a common ground is expected with editorial license. For task force discussion.

Resolve 55, 61, 66, and 67 together.

C/ 120G SC 120G.1 P256 L16 # 1-67 Ran, Adee Cisco Systems, Inc. Comment Type TR

Comment Status D ground connection The link block diagram does not show a ground connection, and there is no requirement

anywhere in annex 120G that the devices on both ends of the link have a common ground

If there is no common ground, or ground connection is poor, the output common-mode specifications and input common-mod tolerance may become meaningless, because the common-mode voltage on each device is defined with different grounds.

If a ground connection is added in this figure, it should also be noted that each arrow represents a differential pair, or alternatively draw two lines in each direction, as done in Figure 163-2.

SuggestedRemedy

Add an additional line in each direction to represent a differential pair, and add a ground connection between the devices to the diagram.

Change the first sentence in the paragraph on P256 L7-14, inserting a sentence about the ground connection, as follows:

"The C2M link is described in terms of a host C2M component, a C2M channel with associated differential-mode to differential-mode insertion loss (ILdd), and a module C2M component, which have a shared ground connection."

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

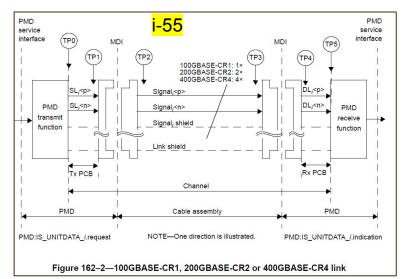
Proposed changes to the figure is cumbersome and may imply a particular implementation. New text pointing out the common ground is sufficient.

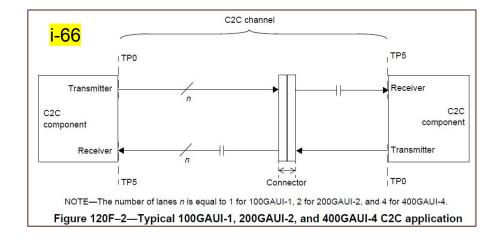
Add text that a shared ground is expected with editorial license.

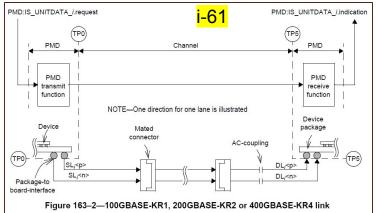
For task force discussion. Resolve 55, 61, 66, and 67 together.

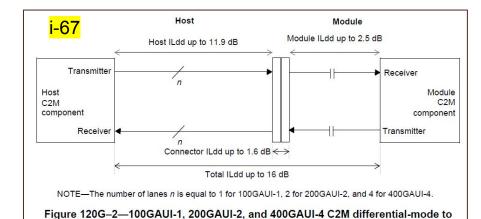
SC 163.8.1 Ran. Adee Cisco Systems, Inc. Comment Type TR Comment Status D ground connection The link block diagram does not show a ground connection, and there is no requirement anywhere in clause 163 that the PMDs on both ends of the link have a common ground connection. If there is no common ground, or ground connection is poor, the Tx common-mode specifications may become meaningless, because the common-mode voltage on each device is defined with different grounds. SuggestedRemedy Add a ground connection between the PMDs to the diagram. Add a sentence below the diagram stating that the specifications in this clause only apply to systems with shared ground between the two PMDs. Proposed Response Response Status W PROPOSED ACCEPT IN PRINCIPLE. Proposed changes to the figure is cumbersome and may imply a particular implementation. New text pointing out the common ground is sufficient. Add text that a common ground is expected with editorial license. For task force discussion.

Figures for Reference









differential-mode insertion loss budget at 26.56 GHz