Editorial status of shielding in draft

IEEE P802.3ch MultiGigabit Automotive Ethernet PHY Task Force Ad Hoc

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Comment

The overview and the draft indicate that clause 149 operates over a single balanced pair of conductors. As in other standards, this may include either cabling or a backplane link segment. However, in several portions of the link segment specification, the requirements are written so that ONLY a separate cabling link segment can be used. This is in conflict with the overview and purpose. A slight adjustment to the wording, and a conditional on the PICS will make it clear that requirements such as coupling attenuation and shielding attenuation are only intended to apply to cabling link segments.

Overview of 802.3ch d3p0

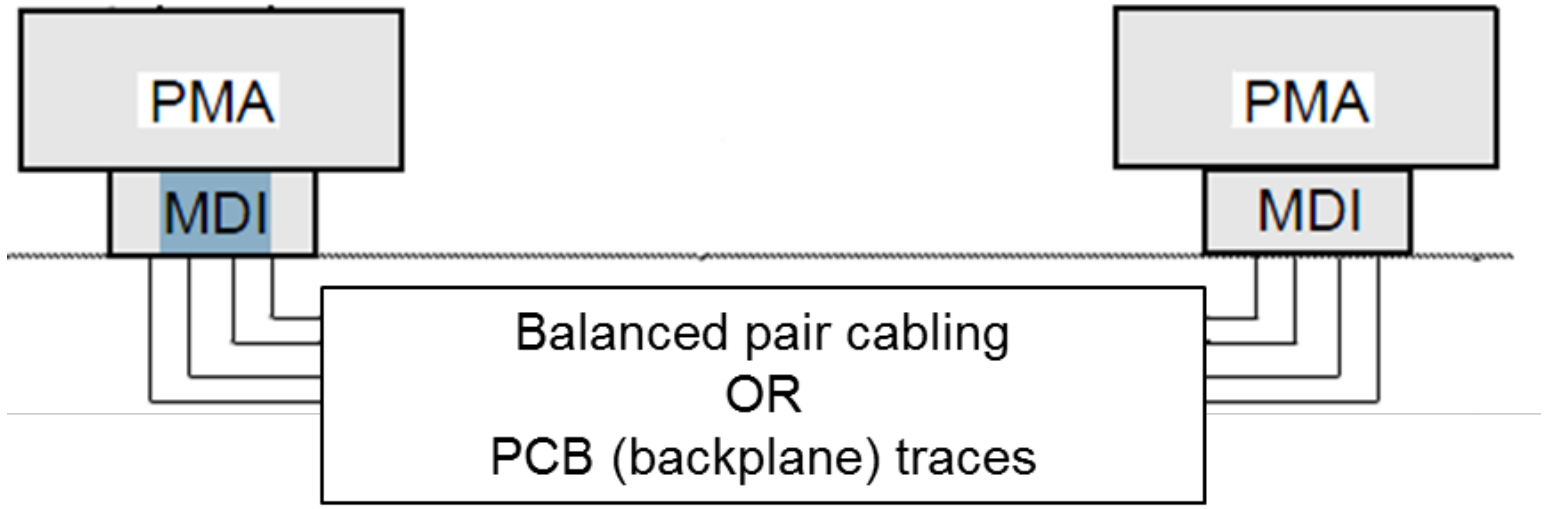
The 2.5GBASE-T1, 5GBASE-T1, and 10GBASE-T1 PHYs are intended to be operated over a single balanced pair of conductors. The link segment specifications defined in 149.7 were derived from automotive requirements, but may also be used for non-automotive applications. The conductors supporting the operation of the 2.5GBASE-T1, 5GBASE-T1, and 10GBASE-T1 PHYs are defined in terms of performance requirements between the Medium Dependent Interfaces allowing implementers to provide their own conductors to operate the 2.5GBASE-T1, 5GBASE-T1, and 10GBASE-T1 PHYs as long as the normative requirements included in 149.7 are met.

(NO CHANGES NEEDED)

Link Segment

1.4.309 link segment: The point-to-point full-duplex medium connection between two and only two Medium Dependent Interfaces (MDIs).

- Source – IEEE Std 802.3-2018



Conflicting Text in Link Segment Specification

- In order to facilitate testing of shielded cable parameters, text in 149.7 and subclauses conflicts and appears to require shielding:

  – 2.5GBASE-T1, 5GBASE-T1, and 10GBASE-T1 are designed to operate over a single shielded balanced pair of conductors that meet the requirements specified in this subclause. The single shielded balanced pair of conductors supports an effective data rate of 2.5 Gb/s, 5 Gb/s, and 10 Gb/s in each direction simultaneously. The term *link segment* used in this clause refers to a single shielded balanced pair of conductors operating in full duplex.

Fixing Text in Link Segment Specification

- In order to facilitate testing of shielded cable parameters, text in 149.7 and subclauses conflicts and appears to require shielding:

  – 2.5GBASE-T1, 5GBASE-T1, and 10GBASE-T1 are designed to operate over a single ~~shielded~~ balanced pair of conductors that meet the requirements specified in this subclause. The single ~~shielded~~ balanced pair of conductors supports an effective data rate of 2.5 Gb/s, 5 Gb/s, and 10 Gb/s in each direction simultaneously. The term *link segment* used in this clause refers to a single ~~shielded~~ balanced pair of conductors (cable or backplane) operating in full duplex.

Further specifications can only be satisfied with external cabling due to testing requirements

149.7.1.4 Coupling attenuation

In order to limit the noise at the receiver as well as emissions, when tested using the IEC 62153-4-7 triaxial tube in tube method as specified in Annex 149A, the MultiGBASE-T1 link segment shall...

149.7.1.5 Screening attenuation

The minimum screening attenuation for a link segment is 45 dB for all frequencies between 30 MHz and Fmax MHz. Screening attenuation is tested as specified in IEC 62153-4-7 using triaxial tube-in-tube method.

Easily qualified to reflect the desired cases...

149.7.1.4 Coupling attenuation

In order to limit the noise at the receiver as well as emissions, when tested using the IEC 62153-4-7 triaxial tube in tube method as specified in Annex 149A, where shielded balanced pair cabling is used, the MultiGBASE-T1 link segment shall...

149.7.1.5 Screening attenuation

The minimum screening attenuation for a link segment is 45 dB for all frequencies between 30 MHz and Fmax MHz. Where shielded balanced pair cabling is used, the ,screening attenuation is tested as specified in IEC 62153-4-7 using triaxial tube-in-tube method.

MDI connector definition needs tweaking

149.8.1 MDI connectors

The mechanical interface to the shielded balanced cabling is a 2-pin connector with a shield.

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PICS need qualifying for installation options

*INS used in most other clauses to reflect installation

*INS	Installation / cable	38.10	Items marked with INS include installation practices and cable specifications not applicable to a PHY manufacturer.	O	Yes [ ] No [ ]

In 149.11.3: insert row for *INS after row for *EEE:

*INS	Installation / cable	149.7	Items marked with INS include installation practices and cabling specifications and not applicable to a PHY manufacturer.	O	Yes [ ] No [ ]

In 149.11.4.5: Change status of row for LSC5 to "M:INS“

*may require additional status changes...

Thank You!