802.3by Task Group
Baseline Proposal
Cable Assembly Specifications

Chris DiMinico
MC Communications/Panduit
cdiminico@ieee.org

Purpose

- Baseline proposal for 802.3by cable assembly consistent with adopted objectives.

    - Define a single-lane 25 Gb/s PHY for operation over links consistent with copper twin axial cables, with lengths up to at least 3m.

    - Define a single-lane 25 Gb/s PHY for operation over links consistent with copper twin axial cables, with lengths up to at least 5m.

Supporters

- Adee Ran, Rich Mellitz – Intel
- Brad Booth – Microsoft
- Bob Wagner, Ron Nordin – Panduit
- Erdem Matoglu – Amphenol

Cable assembly naming

- CA-L = up to at least 5 meter cable assembly
- CA-S = up to at least 3 meter cable assembly
- Cable assembly with QSFP28 plug = QSFP-CA
- Cable assembly with SFP28 plug = SFP-CA
- Cable assembly with breakout = QSFP-x4SFP-CA

	QSFP-CA (QSFP28)	SFP-CA (SFP28)	QSFP-x4SFP-CA - breakout
CA-L	5m	5m	5m
CA-S	3m	3m	3m

- Note that except for CA-L and CA-S the cable assembly naming used here is explicit in plug types to avoid ambiguity in short hand notation in developing the standard but may not translate directly into optimal notation to be used in the standard.

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802.3by – Cable assembly – QSFP-CA-L

Use 802.3bj clause 92

92.10 Cable assembly characteristics
92.10.1 Characteristic impedance and reference impedance
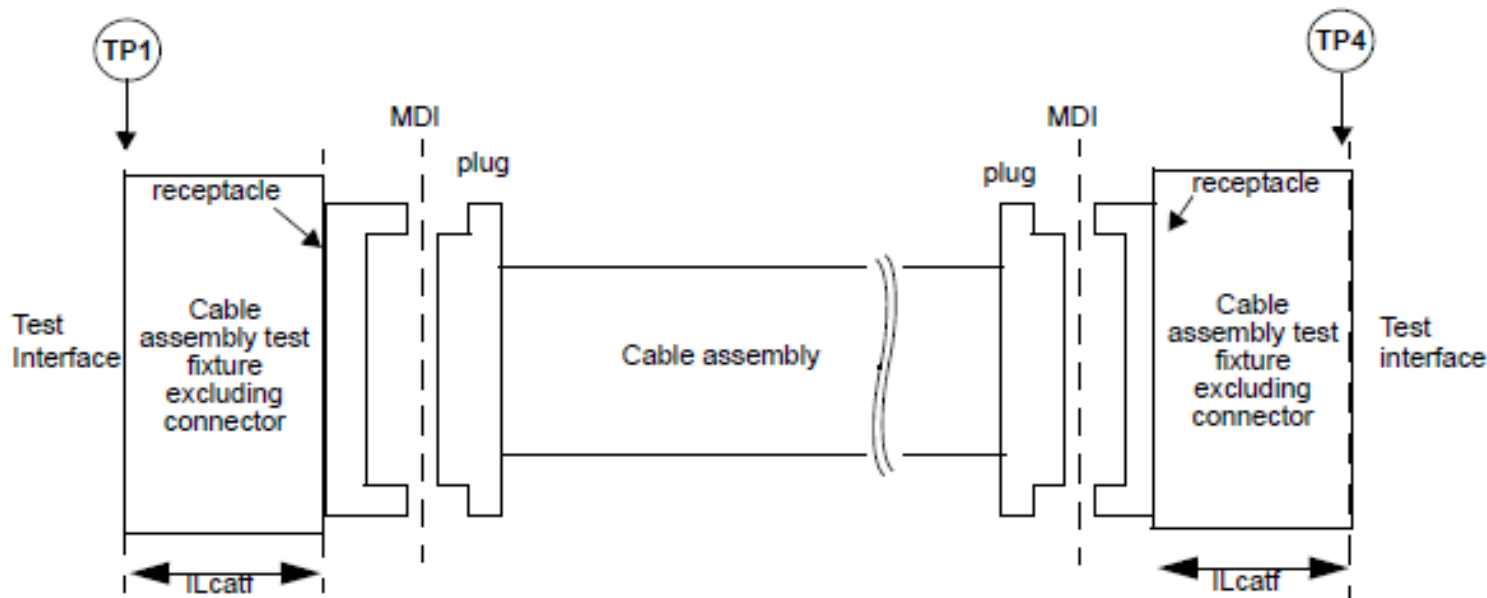92.10.2 Cable assembly insertion loss
92.10.3 Cable assembly differential return loss
92.10.4 Differential to common-mode return loss
92.10.5 Differential to common-mode conversion loss
92.10.6 Common-mode to common-mode return loss
92.10.7 Cable assembly Channel Operating Margin

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802.3by − Cable assembly − QSFP-CA-S

Use 802.3bj clause 92 with revisions to 92.10.2 to account for length dependent impairments. Implement 92.10.7 COM with appropriate parameter values.

92.10 Cable assembly characteristics
92.10.1 Characteristic impedance and reference impedance
92.10.2 Cable assembly insertion loss (TBD)
92.10.3 Cable assembly differential return loss
92.10.4 Differential to common-mode return loss
92.10.5 Differential to common-mode conversion loss
92.10.6 Common-mode to common-mode return loss
92.10.7 Cable assembly Channel Operating Margin

802.3by – Cable assembly – SFP-CA-L

Use 802.3bj clause 92. Implement 92.10.7 COM with appropriate crosstalk paths for plug type.

92.10 Cable assembly characteristics
92.10.1 Characteristic impedance and reference impedance
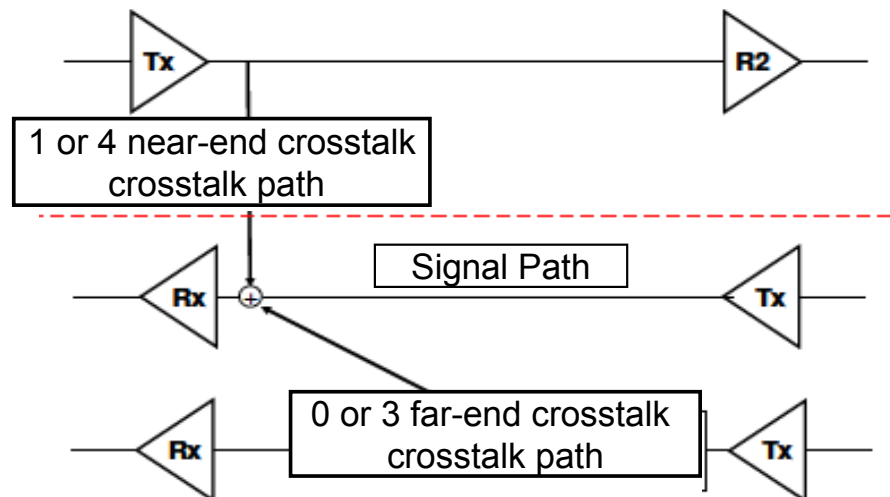92.10.2 Cable assembly insertion loss
92.10.3 Cable assembly differential return loss
92.10.4 Differential to common-mode return loss
92.10.5 Differential to common-mode conversion loss
92.10.6 Common-mode to common-mode return loss
92.10.7 Cable assembly Channel Operating Margin

892.3by – Cable assembly – SFP-CA-S

Use 802.3bj clause 92 with revisions to 92.10.2 to account for length dependent impairments. Implement 92.10.7 COM with appropriate parameter values and crosstalk paths for plug type.

92.10 Cable assembly characteristics
92.10.1 Characteristic impedance and reference impedance
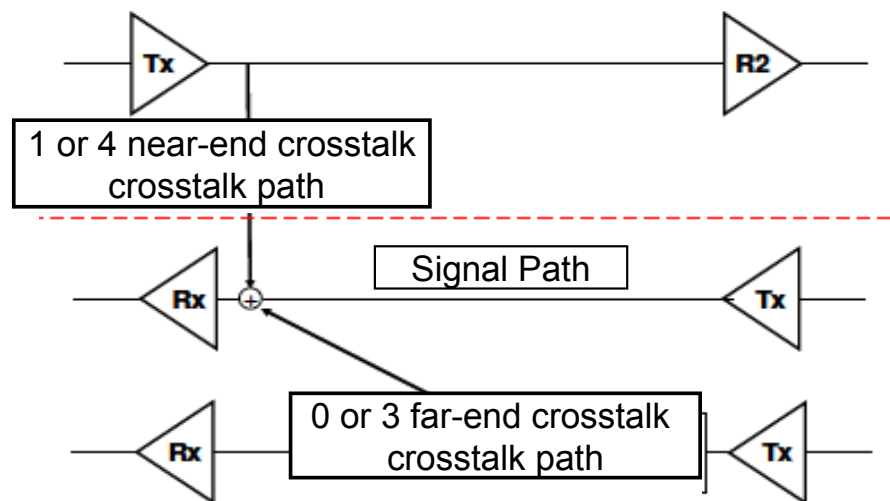92.10.2 Cable assembly insertion loss (TBD)
92.10.3 Cable assembly differential return loss
92.10.4 Differential to common-mode return loss
92.10.5 Differential to common-mode conversion loss
92.10.6 Common-mode to common-mode return loss
92.10.7 Cable assembly Channel Operating Margin

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25 Gb/s Ethernet – Cable assembly – QSFP-x4SFP-CA-L

Use 802.3bj clause 92. Implement 92.10.7 COM with appropriate crosstalk paths for plug type.

92.10 Cable assembly characteristics
92.10.1 Characteristic impedance and reference impedance
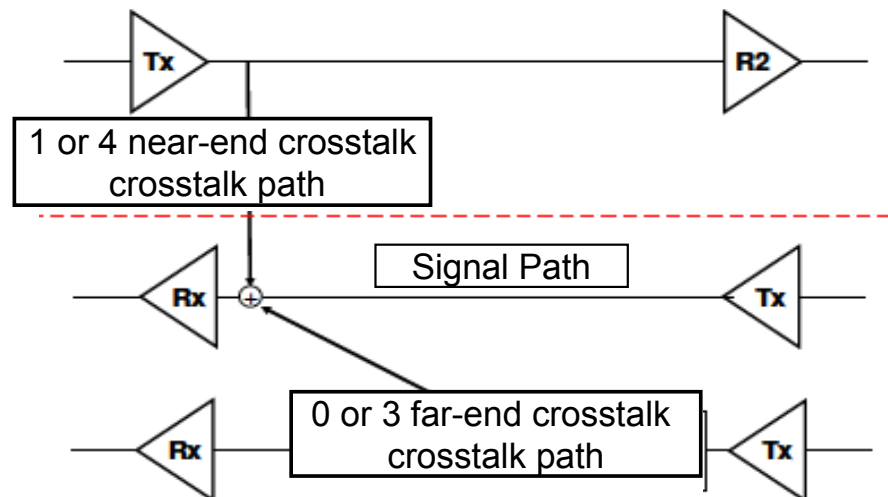92.10.2 Cable assembly insertion loss
92.10.3 Cable assembly differential return loss
92.10.4 Differential to common-mode return loss
92.10.5 Differential to common-mode conversion loss
92.10.6 Common-mode to common-mode return loss
92.10.7 Cable assembly Channel Operating Margin

25 Gb/s Ethernet – Cable assembly – QSFP-x4SFP-CA-S

Use 802.3bj clause 92 with revisions to 92.10.2 and 92.10.5 to account for length dependent impairments and implement COM with appropriate crosstalk paths for plug type.

92.10 Cable assembly characteristics
92.10.1 Characteristic impedance and reference impedance
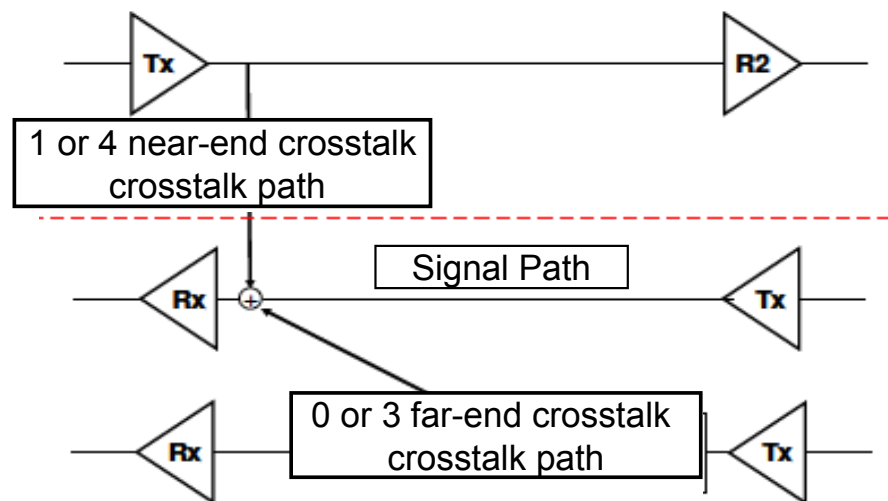92.10.2 Cable assembly insertion loss (TBD)
92.10.3 Cable assembly differential return loss
92.10.4 Differential to common-mode return loss
92.10.5 Differential to common-mode conversion loss
92.10.6 Common-mode to common-mode return loss
92.10.7 Cable assembly Channel Operating Margin

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Summary

- Baseline proposal for 802.3by cable assembly specifications consistent with adopted objectives.

- Proposal to use cable assembly naming convention;

    - CA-L = up to at least 5 meter cable assembly

    - CA-S = up to at least 3 meter cable assembly