
40GBASE-CR4 and 100GBASE-CR10 802.3ba Draft 2.1 cable assembly specifications

Chris DiMinico
MC Communications
cdiminico@ieee.org

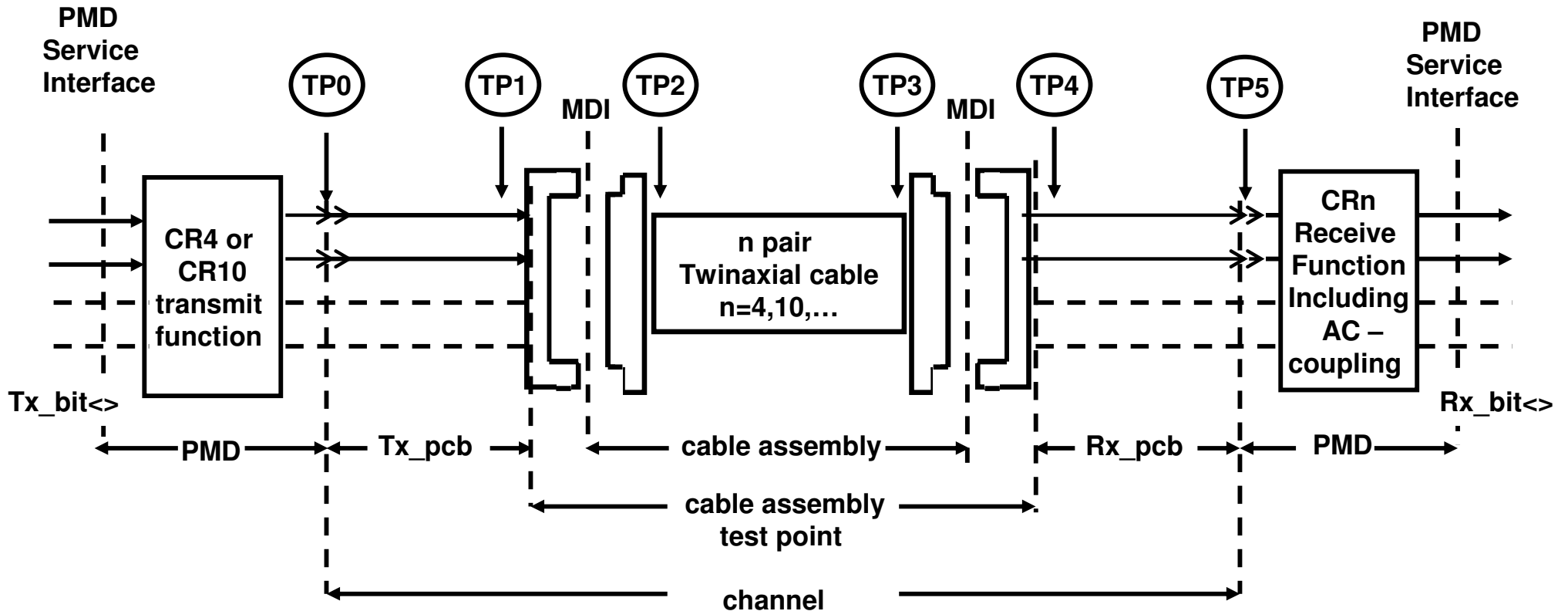
Summary

- **Provide supportable component losses (e.g., cable loss per meter and mated connector loss) for determination of channel insertion loss budgets for component-up cable assembly reach considerations.**
- **Confirmation of support of 802.3ba cable assembly specifications.**

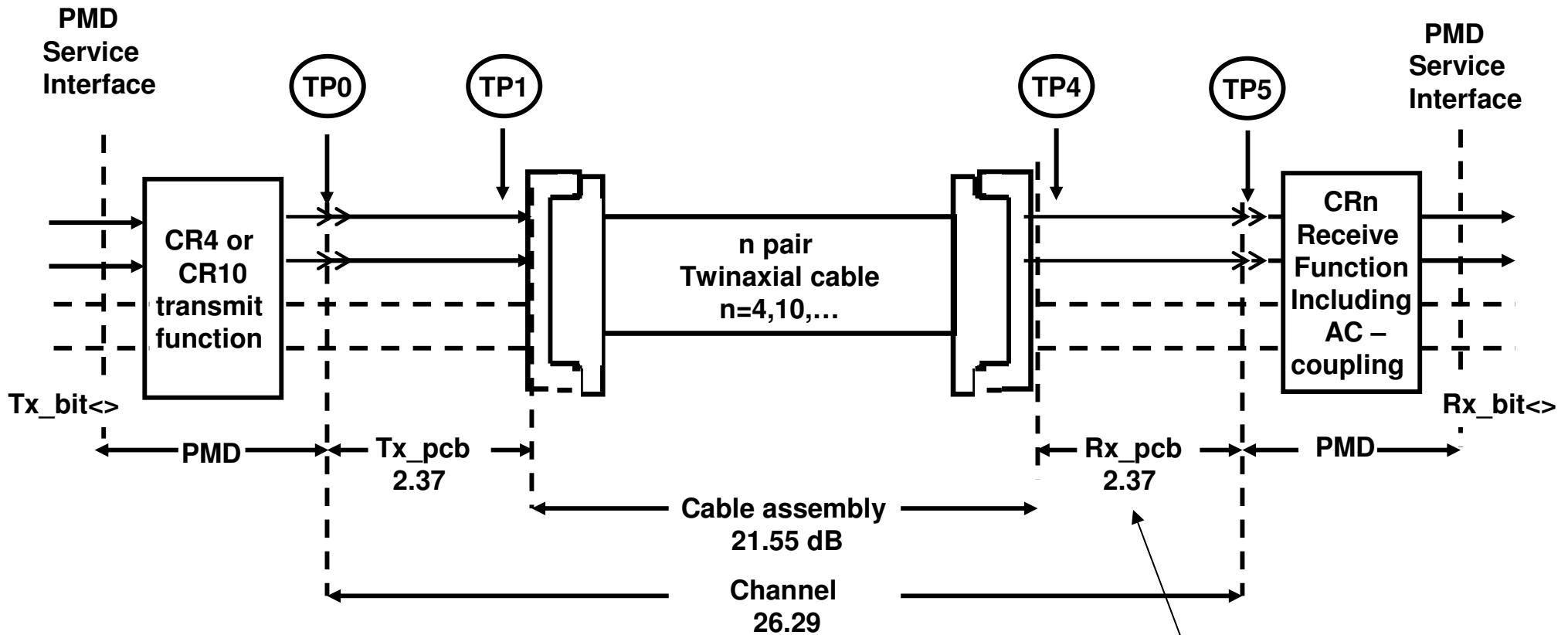
Supporters

- **Chris DiMinico - MC Communications**
- **Galen Fromm, Jay Neer - Molex**
- **Nathan Tracy, Mike Cina - Tyco**
- **Greg McSorley - Amphenol**
- **Vittal Balasubranian - FCI**
- **Atul Sharma - Volex**
- **Ron Nordin - Panduit**
- **Gourgen Oganessyan - Quellan**
- **Marc Dupuis - Madison Cable/Tyco**
- **Jim McGrath - Cinch Connectors**
- **Henning Hansen - LEONI Cables & Systems LLC**

802.3ba Cu link diagrams



802.3ba Cu link insertion loss



Channel maximum IL at 5.15625 GHz = 21.55 dB + (2*2.37 dB) = 26.29 dB

Supportable component IL values

Supportable component IL values

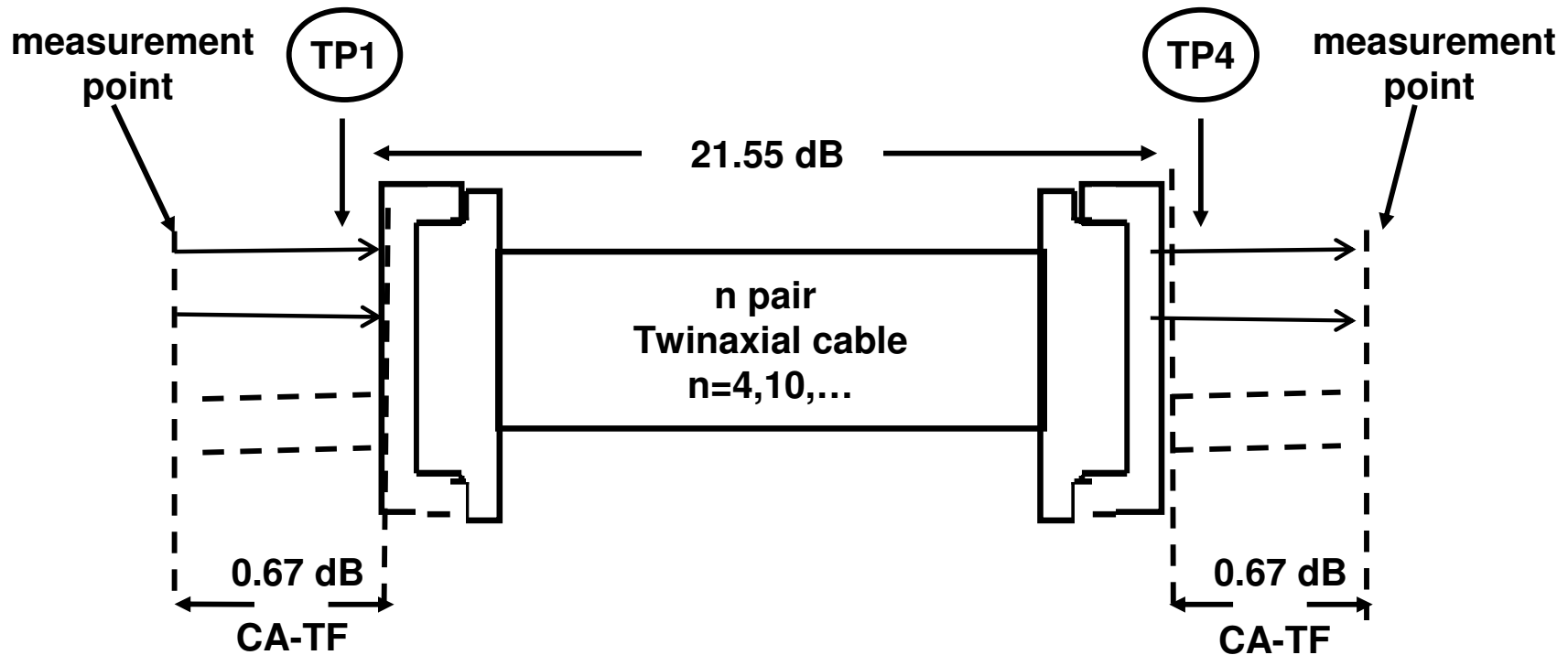
- Cable: 24 AWG 4-pair – 1.9 dB/meter
- Mated connector: host receptacle and plug (paddle card/wire termination) - 1.2 dB per end

Component-up IL budget calculation

- 10 m cable assembly = $(10\text{m} \times 1.9\text{dB/m}) + (2 \times 1.2\text{dB}) = 21.4 < 21.55 \text{ dB}$
- Channel = $21.4 \text{ dB} + 4.74 \text{ dB} = 26.14 < 26.29 \text{ dB}$

- L meter cable assembly = $(L\text{m} \times 1.9\text{dB/m}) + (2 \times 1.2\text{dB}) = \text{cable assembly} < 21.55 \text{ (dB)}$
- channel = $L \text{ meter cable assembly (dB)} + 4.74 \text{ dB} = \text{channel dB} < 26.29 \text{ dB}$

802.3ba cable assembly measurement point



Note 1: CA-TF cable assembly test fixture

Note 2: CA-TF is de-embedded from insertion loss measurements for channel IL characterization

Note 3: D2.0 ballot comment to align test points with measurement point

802.3ba cable assembly specifications

Description	Value
Maximum insertion loss at 5.15625 GHz	21.55 dB
Insertion loss deviation at 5.15625 GHz	Min= -1.73 dB Max= +1.73 dB
Maximum insertion loss to crosstalk ratio (ICR) at 5.15625 GHz	23.04 dB
Minimum return loss at 5.15625 GHz	5.69 dB
Minimum MDNEXT loss	Limited by ICR
Minimum MDFEXT loss	Limited by ICR
Minimum power sum crosstalk loss	Limited by ICR

Conclusions

- **Supportable component losses provided (e.g., cable loss per meter and mated connector loss) for determination of channel insertion loss budgets for component-up cable assembly reach considerations.**
- **Confirmation of support of 802.3ba cable assembly specifications.**