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

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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 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 = (10m*1.9dB/m)+(2*1.2dB) = 21.4 < 21.55 dB
• Channel=21.4 dB + 4.74 dB = 26.14 < 26.29 dB

• L meter cable assembly = (Lm*1.9dB/m)+(2*1.2dB) = cable assembly < 21.55 (dB)
• channel= L meter cable assembly (dB) + 4.74 dB = channel dB < 26.29 dB
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

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Maximum insertion loss at 5.15625 GHz</td>
<td>21.55 dB</td>
</tr>
<tr>
<td>Insertion loss deviation at 5.15625 GHz</td>
<td>Min= -1.73 dB</td>
</tr>
<tr>
<td></td>
<td>Max= +1.73 dB</td>
</tr>
<tr>
<td>Maximum insertion loss to crosstalk ratio (ICR) at 5.15625 GHz</td>
<td>23.04 dB</td>
</tr>
<tr>
<td>Minimum return loss at 5.15625 GHz</td>
<td>5.69 dB</td>
</tr>
<tr>
<td>Minimum MDNEXT loss</td>
<td>Limited by ICR</td>
</tr>
<tr>
<td>Minimum MDFEXT loss</td>
<td>Limited by ICR</td>
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<tr>
<td>Minimum power sum crosstalk loss</td>
<td>Limited by ICR</td>
</tr>
</tbody>
</table>
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.