1.0 SCOPE

This Test Summary covers the signal integrity performance of Speedstack 7mm SMT CEB Rev B (customer evaluation board). The measured data includes the de-embedding of 50mm of single-ended, 50-ohm trace on the receptacle connector board and 50mm of single-ended, 50-ohm trace on the plug connector boards. These traces are shown later in this report.

This document uses measured, de-embedded connector data to demonstrate connector performance.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND PART NUMBER(S)

171446-0115 Speedstack Plug, 3mm height with 2mm of wipe
171450-0106 Speedstack Receptacle, 4mm height
CONNECTION CHART

<table>
<thead>
<tr>
<th>Row</th>
<th>Pin on Receptacle PCB</th>
<th>Channel Label</th>
<th>Pin on Plug PCB</th>
<th>Plug Pad Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>A2R</td>
<td>Diff1+</td>
<td>A2P</td>
<td>1.65mm standard</td>
</tr>
<tr>
<td>A</td>
<td>A3R</td>
<td>Diff1-</td>
<td>A3P</td>
<td>1.65mm standard</td>
</tr>
<tr>
<td>A</td>
<td>A5R</td>
<td>Diff2+</td>
<td>A5P</td>
<td>1.45mm</td>
</tr>
<tr>
<td>A</td>
<td>A6R</td>
<td>Diff2-</td>
<td>A6P</td>
<td>1.45mm</td>
</tr>
<tr>
<td>B</td>
<td>B1R</td>
<td>SE1</td>
<td>B1P</td>
<td>1.65mm standard</td>
</tr>
<tr>
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<td>B3R</td>
<td>Diff4+</td>
<td>B3P</td>
<td>1.65mm standard</td>
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<tr>
<td>B</td>
<td>B4R</td>
<td>Diff4-</td>
<td>B4P</td>
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<tr>
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<td>B6R</td>
<td>Diff5+</td>
<td>B6P</td>
<td>1.45mm</td>
</tr>
<tr>
<td>B</td>
<td>B7R</td>
<td>Diff5-</td>
<td>B7P</td>
<td>1.45mm</td>
</tr>
</tbody>
</table>

BOARD SNAPSHOT
FREQUENCY DOMAIN RESULTS
Differential Insertion Loss; SDD21
- A2,A3 de-embed trace effects  A5,A6 de-embed trace effects

Differential Return Loss
- A2,A3 de-embed trace effects  A5,A6 de-embed trace effects
FREQUENCY DOMAIN RESULTS
Near-end Differential Crosstalk, trace effects de-embedded
  Diagonal (A5R,A6R from B3R,B4R) 2nd Diagonal (A2R,A3R from B6R,B7R)

Far-end Differential Crosstalk, trace effects de-embedded
  Diagonal (A5R,A6R from B3P,B4P) 2nd Diagonal (A2P,A3P from B6P,B7P)
Differential Power Sum Crosstalk (for reference only) trace effects de-embedded

Integrated Crosstalk Noise (ICN) calculated from IEEE 802.3ba-2010 85.10.9.5 Mated test fixtures (scaled to 28GHz)

| PSFEXT (5 FEXT aggressors) | 28Gbps ICN = 1.1mV |
| PSXT (typical: 2 adj FEXT, vert FEXT, diag FEXT1, diag FEXT2) | 28Gbps ICN = 1.0mV |

![Graph showing magnitude vs frequency](image-url)
FREQUENCY DOMAIN RESULTS

Common Mode Insertion Loss, SCC21
- A2,A3 de-embed trace effects
- A5,A6 de-embed trace effects

Common Mode Return Loss, SCC11
- A2,A3 de-embed trace effects
- A5,A6 de-embed trace effects
Differential-to-Common Mode Thru Conversion Loss, SCD21
- $A_2, A_3$ de-embed trace effects  $A_5, A_6$ de-embed trace effects

Differential-to-Common Mode Reflected Conversion Loss, SCD11
- $A_2, A_3$ de-embed trace effects  $A_5, A_6$ de-embed trace effects
TIME DOMAIN RESULTS

Differential TDR Response
- Rise-time of 9ps (20-80%) at connector launch to provide high resolution of performance

Common Mode TDR Response
- Rise-time of 9ps (20-80%) at connector launch to provide high resolution of performance
3.0 FIXTURES AND TEST EQUIPMENT

Plug and Receptacle PCB Information

Material: Nelco 4000-13si
Thickness: 1.57mm Layers: 8
High-Speed Signals on Layer 2, Referenced to Layer 1 & 3

0.1542mm dielectric thickness between layers 1 and 2
0.2032mm dielectric thickness between layers 2 and 3

50 mm differential length from co-axial launch to Speedstack connector, 100 ohms
0.15mm mils trace, 0.17mm mils space

Artwork available upon request

The Rev B Plug board has improved ground structure, compared to Rev A.
CALIBRATION INFORMATION

In order to measure the Speedstack CEB channel, a calibration at the end of 2.92mm connector cables was done from 10MHz to 40GHz.

Measured, straight-line trace loss for 2xcal, 100mm differential trace: J2,4 to J3,5.

![Magnitude vs Frequency Graph]