**TEST SUMMARY**

This document describes the test results of a mated surface mount right angle (RA) zSFP+ connector, which contains 20 circuits and 2 serial links for high speed data transfer. The connector was tested using 4-port Vector Network Analyzer (VNA) up to 40GHz. The hardware, test procedure and test results are summarized in this document.

This connector supports 10 Gbps Ethernet and 16 Gbps Fiber Channel applications with the ability to support 25/28 Gbps applications.

**APPLICABLE PART NUMBERS:**
170382-0001

**Test Information**

<table>
<thead>
<tr>
<th>CONNECTOR TYPE: RA zSFP+, Surface Mount</th>
<th>FREQUENCY: 10 MHz – 40 GHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>COAXIAL CONNECTOR TYPE: 2.92 SMA</td>
<td>STEP SIZE: 10 MHz (4000 points)</td>
</tr>
<tr>
<td>CTV REV: A (Host); B (Module)</td>
<td>IF BANDWIDTH: 1 kHz</td>
</tr>
</tbody>
</table>

**THIS SUPPORT DOCUMENT IS ASSOCIATED WITH, AND IS APPLICABLE TO MEASUREMENTS CONDUCTED ON A CONNECTOR TEST VEHICLE (CTV) ONLY.**

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Connector Test Vehicle (CTV):

High-speed performance data and limits presented below are based on frequency domain measurements obtained from a reference board to board (Host and Edge) Connector Test Vehicle (CTV). The detailed information on reference board construction and expected performance are provided in the next section. The available pairs, crosstalk map, and measurement directions are also described.

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**Test Summary**

**RA zSFP+, Surface Mount**

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**DOCUMENT NUMBER:** TS-170382-0001

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Edge Card Information

- Material: Megtron6
- SMA: 2.92MM
- Thickness: 1.0mm (+0.1)
- Layers: 6
- 1X different trace length: 85mm
- Differential Trace width/space: 0.14/0.254/0.14 mm (0.394 mm pitch)

Host Board Information

- SMA: 2.92MM
- Material: Megtron6
- Thickness: 2.54mm
- Layers: 8
- 1X differential trace length: 30 mm
- Trace width/space: 5.5/10/5.5 mils (15.5mil pitch)
Testing Procedure

Calibration
All measurements described in this report were collected using a 4 port VNA. The VNA is set up such that ports 1 & 3 constitute differential pair 1 and ports 2 & 4 constitute differential pair 2. Prior to testing, a calibration is conducted up to the frequency of interest and with the preferred interval (number of points). Additionally, 2x calibration traces were measured, where “x” denotes the length of the trace connecting the coaxial connector to the connector pins. Results from measurement of the calibration traces and connector are summarized in the following pages.

THRU Measurements
All THRU measurements are collected by launching the signal (differential pair 2) from the edge card and collecting the received signal (differential pair 1) on the host card.

Crosstalk Measurements
Only Near End crosstalk (NEXT) is measured on one victim pair (RX pair) on both Host side and edge side following the table below for assignment.

<table>
<thead>
<tr>
<th>Terminals (Host Board)</th>
<th>Diff Pairs (Host Board)</th>
<th>Diff Pair (Edge Card)</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>1 (Victim)</td>
<td>2</td>
<td>RX Signal Path</td>
</tr>
<tr>
<td>13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>3(NEXT)</td>
<td>4</td>
<td>TX Signal Path</td>
</tr>
<tr>
<td>19</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table: Diff pair assignment and crosstalk aggressor/victim assignment illustration

Host side NEXT Crosstalk is measured with differential pair 1 connected to the victim on the host card. Aggressor is connected to differential pair 2 on the host card too; Edge side NEXT Crosstalk is measured with differential pair 1 connected to the victim on the edge card. Aggressor is connected to differential pair 2 on the edge card too.

NOTES:
- For NEXT measurements, inject signal from host card board on the victim pair and measure signal on host card-board aggressor; terminate all remaining ports to 50 ohms on the CTV. In doing so, only the crosstalk contribution of one aggressor is captured by each measurement.
FREQUENCY DOMAIN RESULTS
2x Calibration Traces

Insertion Loss: Blue (Host Board), Red (Edge Card)

Insertion Loss: Blue (Host Board), Red (Paddle Card)
Frequency Domain Results (Continued)

Insertion Loss: Victim (RX); Aggressor (TX)

Return Loss: Victim (RX); Aggressor (TX)
Near End Cross Talk (NEXT) on Victim (RX) pair
Victim (RX) on Host Board; Victim (RX) on Edge Board
Frequency Domain Results (Continued)

Common Mode RL (SCC11): Victim (RX); Aggressor (TX)

Mode Conversion IL (SCD21): Victim (RX); Aggressor (TX)
Time Domain Results

TDR: 18 ps rise time (10%-90%): Victim (RX); Aggressor (TX)

- Connector
- Host side
- Edge Card side
- Mating Interface