Signal Integrity Test Report

3M™ External MiniSAS Cable Assemblies

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1.0 Scope

This data sheet summarizes test methods, test conditions and product performance for the 3M Ribbon Twin Axial External MiniSAS Cable Assemblies.

2.0 Product Tested

<table>
<thead>
<tr>
<th>Product:</th>
<th>Ribbon Twin Axial External MiniSAS Cable Assembly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Number:</td>
<td>8G26 series; Assemblies tested</td>
</tr>
<tr>
<td>S-parameters and NEXT:</td>
<td></td>
</tr>
<tr>
<td>8G26-0A-CW1-01-2.30</td>
<td></td>
</tr>
<tr>
<td>8G26-8A-CW1-01-5.00</td>
<td></td>
</tr>
<tr>
<td>BER channel simulation:</td>
<td></td>
</tr>
<tr>
<td>8G26-0A-CW1-01-1.00</td>
<td></td>
</tr>
<tr>
<td>8G26-8A-CW1-01-3.00</td>
<td></td>
</tr>
<tr>
<td>8G26-8A-CW1-01-5.00</td>
<td></td>
</tr>
</tbody>
</table>

3.0 General Conditions

3.1 Test Specimens

The test specimens shall be strictly in compliance with the design, construction details and physical properties detailed in the relevant technical specification sheet (See Section 2).

3.2 Standard Test Conditions

The test shall be done under the following conditions:

<table>
<thead>
<tr>
<th>Condition</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>15°C to 35°C</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>45% to 75%</td>
</tr>
<tr>
<td>Atmospheric pressure</td>
<td>650 to 800 mmHg</td>
</tr>
</tbody>
</table>
### Test Results Summary

<table>
<thead>
<tr>
<th>Items</th>
<th>Specification per SAS2.1 rev07</th>
<th>Test Method</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Signal Integrity (Passive Cable)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Differential insertion loss, SDD21</td>
<td>Per SAS2.1 section 5.5.4: Loss less than TCTF test load specified in section 5.6.3 (see figure 93)</td>
<td>SAS-2.1 rev 07 sections 5.5.4, 5.6.3 (figure 93) and Annex D.10</td>
<td>PASS</td>
</tr>
<tr>
<td>Differential reflection loss, SDD22</td>
<td>Meets SAS2.1 limit line: &lt; -10 dB up to 2.08 GHz &lt; -7.9+13.3 x log( f / 3 GHz) between 2.08 and 6 GHz</td>
<td>SAS-2.1 rev 07 sections 5.5.4 and Annex D.10</td>
<td>PASS</td>
</tr>
<tr>
<td>Differential-to-common mode conversion, SCD21</td>
<td>Meets SAS2.1 limit line: &lt; -18 dB up to 6 GHz</td>
<td>SAS-2.1 rev 07 sections 5.5.3 and Annex D.10</td>
<td>PASS</td>
</tr>
<tr>
<td>Differential to common mode reflection, SCD22</td>
<td>Meets SAS2.1 limit line: &lt; -26 dB up to 300 MHz &lt; -12.7+13.3 x log( f / 3 GHz) between 300 MHz and 4.78 GHz &lt; -10 dB between 4.78 and 6 GHz</td>
<td>SAS-2.1 rev 07 sections 5.5.3 and Annex D.10</td>
<td>PASS</td>
</tr>
<tr>
<td>SCD21 – SDD21; ( Differential-to-common mode conversion) minus ( Differential insertion loss)</td>
<td>Meets SAS2.1 limit line: &lt; -10 dB up to 6 GHz</td>
<td>SAS-2.1 rev 07 sections 5.5.3 and Annex D.10</td>
<td>PASS</td>
</tr>
<tr>
<td>Near End Crosstalk (NEXT)</td>
<td>Meets SAS2.1 limit line: &lt; -26 dB up to 6 GHz</td>
<td>SAS-2.1 rev 07 section 5.5.3</td>
<td>PASS</td>
</tr>
<tr>
<td>BER channel simulation (Stateye)</td>
<td>Minimum eye height : 84 mV (P-P) Maximum total jitter: 0.64 UI</td>
<td>SAS-2.1 rev 07 section 5.5.5</td>
<td>PASS</td>
</tr>
</tbody>
</table>
5.0 Testing
Test methods are based upon SAS-2.1 (T10/2125-D revision 07)

5.1 General

Visual (Appearance) — EIA-364-18A

Purpose
The purpose of this test is to visually examine and dimensionally inspect the connector in order to determine whether the cable assembly conforms to the applicable specification and detail documents not covered by performance requirements.

Test Method
The examination shall be made in accordance with EIA-364-18A. The visual examination shall include inspection of the following features as a minimum: craftsmanship, marking, materials, finish, standards, design and construction. The dimensional inspection shall be a check for compliance with the outline drawings of the detail specification.

5.2 Signal Integrity

Differential insertion loss, SDD21

Purpose
The purpose of this test is to verify the differential insertion loss (SDD21) meets the requirements specified in SAS-2.1.

Test Method
Differential insertion loss (SDD21) has been measured in accordance with standard SAS-2.1 rev 07.
Differential reflection loss, SDD22

*Purpose*

The purpose of this test is to verify the differential reflection loss (SDD22) meets the requirements specified in SAS-2.1.

*Test Method*

Differential reflection loss (SDD22) has been measured in accordance with standard SAS-2.1 rev 07.
Differential-to-common mode conversion, SCD21

Purpose
The purpose of this test is to verify the differential-to-common mode conversion (SCD21) meets the requirements specified in SAS-2.1.

Test Method
Differential-to-common mode conversion (SCD21) has been measured in accordance with standard SAS-2.1 rev 07.
**Differential to common mode reflection, SCD22**

**Purpose**
The purpose of this test is to verify the differential to common mode reflection (SCD22) meets the requirements specified in SAS-2.1.

**Test Method**
Differential to common mode reflection (SCD22) has been measured in accordance with standard SAS-2.1 rev 07.
SCD21 – SDD21

Purpose
The purpose of this test is to verify the SCD21-SDD21 calculation meets the requirements specified in SAS-2.1.

Test Method
The components of the SCD21-SDD21 calculation, differential to common mode conversion (SCD21) and differential insertion loss (SDD21), have been measured in accordance with standard SAS-2.1 rev 07.
Near End Crosstalk (NEXT)

**Purpose**
The purpose of this test is to verify the near end crosstalk (NEXT) meets the requirements specified in SAS-2.1.

**Test Method**
Near end crosstalk (NEXT) has been measured in accordance with standard SAS-2.1 rev 07.

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BER channel simulation

Purpose
The purpose of this test is to verify the BER channel simulation meets the requirements specified in SAS-2.1.

Test Method
The BER channel simulation has been conducted in accordance with standard SAS-2.1 rev 07.

1 meter (30 AWG)
Eye height: 492 mV - **PASS** (> 0.84 mV)
Jitter: 0.27 UI - **PASS** (< 0.64 UI)

3 meter (28 AWG)

Eye height: 360 mV - **PASS** (> 0.84 mV)
Jitter: 0.30 UI - **PASS** (< 0.64 UI)

5 meter (28 AWG)
Eye height: 228 mV - PASS (> 0.84 mV)
Jitter: 0.37 UI - PASS (< 0.64 UI)
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