# Reliability Test Report

**M/A-Com Part Number:** MABA-009600-CF48A0  
**Part Type:** Transformer  
**Platform:** Soldered SOT Carrier  
**Test Laboratory:** SOS-CSTC Standards Technical Services Co. LTD. Shenzhen China.  

**M/A-Com Part Numbers Qualified by Similarity:** All Soldered SOT Carriers  

## RELIABILITY TEST SUMMARY:

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<th>RESULT</th>
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<td>ML-STD-883 Method 2009.9</td>
<td>Per visual spec</td>
<td>2.0.1</td>
<td>30</td>
<td>PASS</td>
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<td></td>
<td>Solvent Resistance</td>
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<td>Perform at room temp</td>
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<td>30</td>
<td>PASS</td>
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<td></td>
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<td>Test Condition D</td>
<td>2.0.1</td>
<td>30</td>
<td>PASS</td>
<td>Section 1.3</td>
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<td>N/A</td>
<td>35°C, 95%RH, 168Hrs</td>
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<td>Bake (10 Units)</td>
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<td>150°C, 100Hrs</td>
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<td>Section 2.2</td>
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<td>Solderability</td>
<td>ML-STD-883 Method 2003.8</td>
<td>Dip &amp; Look</td>
<td>PASS</td>
<td>Section 2.3</td>
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<td>Solderability Visual</td>
<td>ML-STD-883 Method 2003.8</td>
<td>Photos</td>
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<td><strong>TEST GROUP 3</strong></td>
<td>Electrical Test</td>
<td>N/A</td>
<td>MABA-009000-CF48A0 Test File</td>
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<td>Hi Temp Life</td>
<td>ML-STD-883 1008.2 COND.A</td>
<td>100°C, 500Hrs</td>
<td>2.0.3</td>
<td>76</td>
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<td>Thermal Shock</td>
<td>ML-STD-883 1011.9 COND.A</td>
<td>0°C to 100°C, 100 cycles</td>
<td>2.0.3</td>
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<td><strong>TEST GROUP 4</strong></td>
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<td>10</td>
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<td>Section 4.2</td>
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<td>Solder Temp Shock</td>
<td>ML-STD-750D Method 2031.2</td>
<td>260°C for 10Seconds</td>
<td>2.0.4</td>
<td>10</td>
<td>N/A</td>
<td>Test not required for SMT parts</td>
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<tr>
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<td>IR/CONVECTION OVEN Profile</td>
<td>N/A</td>
<td>230°C for 30seconds</td>
<td>2.0.4</td>
<td>10</td>
<td>PASS</td>
<td>Section 4.1</td>
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<td></td>
<td>Electrical Test</td>
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<td>MABA-009000-CF48A0 Test File</td>
<td>PASS</td>
<td>Section 4.2</td>
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<tr>
<td><strong>TEST GROUP 6</strong></td>
<td>Salt Atmosphere</td>
<td>ML-STD-883 1009.9 COND.A</td>
<td>24Hrs</td>
<td>2.0.5</td>
<td>5</td>
<td>PASS</td>
<td>Section 6.1</td>
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<td>Visual</td>
<td>ML-STD-883 1009.9 COND.A</td>
<td>Failure Criteria</td>
<td>PASS</td>
<td>Section 6.1</td>
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<td></td>
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<td><strong>TEST GROUP 6</strong></td>
<td>Electrical Test</td>
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<td>MABA-009000-CF48A0 Test File</td>
<td>2.0.6</td>
<td>38</td>
<td>PASS</td>
<td>Section 6.3</td>
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<td></td>
<td>Pressure Cooker</td>
<td>JESD22-A-102-C</td>
<td>121°C, 15PSI, 96Hrs</td>
<td>PASS</td>
<td>Section 6.1</td>
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<td></td>
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<td></td>
<td>Temp./Humidity</td>
<td>JESD22-A-101-B</td>
<td>85°C, 85%RH, 500Hrs</td>
<td>PASS</td>
<td>Section 6.2</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Electrical Test</td>
<td>N/A</td>
<td>MABA-009000-CF48A0 Test File</td>
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<td>Section 6.3</td>
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<tr>
<td><strong>TEST GROUP 7</strong></td>
<td>Lead Material &amp; Plating</td>
<td>Cross Section &amp; XRF</td>
<td>Substrate Part Drawing</td>
<td>PASS</td>
<td>Section 7.1</td>
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<td>Glass Transition Temp (TG)</td>
<td>ASTM D7028</td>
<td>TG TEST</td>
<td>PASS</td>
<td>Section 8.3</td>
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<tr>
<td><strong>TEST GROUP 8 &amp; 9</strong></td>
<td>Electrical Test</td>
<td>N/A</td>
<td>MABA-009000-CF48A0 Test File</td>
<td>2.0.7</td>
<td>50</td>
<td>PASS</td>
<td>Section 8.3</td>
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<tr>
<td></td>
<td>Vibration</td>
<td>ML-STD-202 Method 201 Condition A</td>
<td>Freq: 10Hz to 55Hz, Displacement 1.524mm Swept Speed 1mmincycle Orientation X,Y,Z axes Duration 2Haxis</td>
<td>PASS</td>
<td>Section 8.1</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Mechanical Shock</td>
<td>ML-STD-202 Method 213B Condition A</td>
<td>Shock Wave Shape: Half Sine Acceleration: 50g Pulse duration: 11ms Shock Times: 3 oli each X,Y,Z</td>
<td>PASS</td>
<td>Section 8.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Electrical Test</td>
<td>N/A</td>
<td>MABA-009000-CF48A0 Test File</td>
<td>PASS</td>
<td>Section 8.3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Test Group 1

1.1 Dimensional Analysis:

1.1.1 Test Purpose:
These measurements are to verify that the units meet the dimensional specifications outlined in the data sheet.

1.1.2 Test Method/Specification:
Refer to dimensional section of MABA 009600-CF48A0 data sheet

See Figure 1.1A

![Figure 1.1A - MABA 009600-CF48A0 specification.](image)

1.1.3 Measurement Results:
Sample(s) Description: MABA 009600-CF48A0

Quantity: 30 PCS

All 30 samples measured meet the data sheet dimensional specifications. The measurement result for 5 sample units can be seen in Figure 1.1B.

<table>
<thead>
<tr>
<th>Nominal</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4.25</td>
<td>5.45</td>
<td>1.48</td>
<td>3.49</td>
<td>3.69</td>
<td>Pass</td>
</tr>
<tr>
<td>2</td>
<td>4.25</td>
<td>5.53</td>
<td>1.48</td>
<td>3.52</td>
<td>3.75</td>
<td>Pass</td>
</tr>
<tr>
<td>3</td>
<td>4.24</td>
<td>5.54</td>
<td>1.48</td>
<td>3.49</td>
<td>3.64</td>
<td>Pass</td>
</tr>
<tr>
<td>4</td>
<td>4.24</td>
<td>5.43</td>
<td>1.48</td>
<td>3.49</td>
<td>3.62</td>
<td>Pass</td>
</tr>
<tr>
<td>5</td>
<td>4.25</td>
<td>5.49</td>
<td>1.48</td>
<td>3.50</td>
<td>3.65</td>
<td>Pass</td>
</tr>
</tbody>
</table>

![Figure 1.1B – Dimensional results](image)
1.2 Solvent Resistance Test:

**SGS Report Reference: SZRL06006J/2009–Section 1.**

1.2.1 Test Purpose:
The purpose of this test is to verify that the markings will not become illegible on the component parts when subjected to solvents.

1.2.2 Test Method/Specification:

1.2.3 Appearance Inspection:
Appearance inspection performed before and after test.

1.2.4 Sample(s) Inspection before Test:
Sample(s) Description: MABA 009600-CF48A0
Quantity: 2 PCS (11#, 12#)
Appearance Inspection: No visual damage was found on samples before test. See Photo 1.2A.

1.2.5 Test Procedure:
Lab Environmental Conditions: Ambient temperature: 25±3ºC, Relative humidity: 55±20%RH.

1.2.6 Test Result(s):
Standard’s failure criteria:
After subjection to the test, evidence of damage to the device and any specified markings which are missing in whole or in part, faded, smeared, blurred, or shifted (dislodged) to the extent that they cannot be readily identified from a distance of at least 15.0 cm (6 inches) with normal room lighting and without the aid of magnification or with a viewer having a magnification no greater than 3X shall constitute a failure.

Appearance Inspection: No visual damage was found on samples after test. See Photo 1.2B.

<table>
<thead>
<tr>
<th>Sample Item</th>
<th>Sample No.</th>
<th>Appearance after test</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>MABA 009600-CF48A0</td>
<td>11#</td>
<td>No visible damage</td>
<td>Pass</td>
</tr>
<tr>
<td></td>
<td>12#</td>
<td>No visible damage</td>
<td>Pass</td>
</tr>
</tbody>
</table>

![Photo 1.2A - Samples Before Test](image1)

![Photo 1.2B - Samples After Test](image2)
1.3 Terminal Fatigue Testing:


1.3.1 Test Purpose:
This test is designed to check the capabilities of the device solder pads to withstand a delamination (peel) stress of specified tension and time.

1.3.2 Test Method/Specification:
Refer to Mil-STD-883G Method 2004.5 condition D.

Test Condition:
- A tension of 0.227 kg (8 ounces), unless otherwise specified, shall be applied, without shock, to each lead to be tested in a direction parallel to the axis of the lead and maintained for 30 seconds minimum.

1.3.3 Appearance Inspection:
Appearance inspection performed before and after test.

1.3.4 Sample(s) Inspection before Test:
Sample(s) Description: MABA 009600-CF48A0
Quantity: 5 PCS (160#~164#)
Appearance Inspection: No visual damage was found on samples before test. See Photo 1.3B.

1.3.5 Test Procedure:

Test Equipment:

Name: Joint Strength Tester
Brand: DAGE
Model: 4000 Series TPXY

Lab Environmental Conditions: Ambient temperature: 25±3ºC, Relative humidity: 55±20%RH.

1.3.6 Test Result(s):
Standard’s failure criteria:
When examined using 10X magnification after removal of the stress, any evidence of breakage, loosening, or relative motion between the lead (terminal) and the device body shall be considered a failure. When a seal test in accordance with method 1014 is conducted as a post test measurement following the lead integrity test(s), meniscus cracks shall not be cause for rejection of devices which pass the seal test.
<table>
<thead>
<tr>
<th>Sample Item</th>
<th>Sample No.</th>
<th>Appearance after test</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>MABA 009600-CF48A0</td>
<td>160#</td>
<td>No visible damage</td>
<td>Pass</td>
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<td></td>
<td>161#</td>
<td>No visible damage</td>
<td>Pass</td>
</tr>
<tr>
<td></td>
<td>162#</td>
<td>No visible damage</td>
<td>Pass</td>
</tr>
<tr>
<td></td>
<td>163#</td>
<td>No visible damage</td>
<td>Pass</td>
</tr>
<tr>
<td></td>
<td>164#</td>
<td>No visible damage</td>
<td>Pass</td>
</tr>
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</table>

Photo 1.3B: Samples Before Test

Photo 1.3C: Sample After Test
Test Group 2

2.1 Steam Age Test:


2.1.1 Test Purpose:
The test aim is to verify the samples’ ability to resist the environment conditions.

2.1.2 Test Method/Specification:
Refer to client’s requirements.
- Test Temperature: 35ºC
- Test Humidity: 95%RH
- Test Duration: 168 hours

2.1.3 Appearance Inspection:
Appearance inspection performed before and after test.

2.1.4 Sample(s) Inspection before Test:
Sample(s) Description: MABA 009600-CF48A0
Quantity: 10 PCS (28# - 37#)
Appearance Inspection: No visual damage was found on samples before test. See Photo 2.1B.

2.1.5 Test Procedure:

Test Equipment:

Name: Temp & Humidity Chamber
Model: ETH-B0-100
Equipment No. : POLY-I-242

Lab Environmental Conditions: Ambient temperature: 25±3ºc, Relative humidity: 55±20%RH

2.1.6 Test Result(s):
Appearance Check: No visual damage was found on samples after test. See Photo 2.1C.
2.2 Bake Test:


2.2.1 Test Purpose:
The test aim is to verify the samples’ ability to resist the environment conditions.

2.2.2 Test Method/Specification:
Refer to client’s requirements.
- Test Temperature: 150ºC
- Test Duration: 100 hours

2.2.3 Appearance Inspection:
Appearance inspection performed before and after test.

2.2.4 Sample(s) Inspection before Test:
Sample(s) Description: MABA 009600-CF48A0
Quantity: 10 PCS (18# - 27#)
Appearance Inspection: No visual damage was found on samples before test. See Photo 2.2B.

2.2.5 Test Procedure:

Test Equipment:

Name: Thermal Shock Chamber
Model: TS300
Equipment No.: SZREL-010

Lab Environmental Conditions: Ambient temperature: 25±3ºC, Relative humidity: 55±20%RH

2.2.6 Test Result(s):
Appearance Check: No visual damage was found on samples after test. See Photo 2.2C

Photo 2.2A - Samples Under Test

Photo 2.2B Samples Before Test

Photo 2.2C Samples After Test
2.3 Solderability Test:

2.3.1 Test Purpose:
The purpose of this test is to verify the solderability of the samples subjected to the steam age and bake testing outlined in sections 2.1 & 2.2.

2.3.2 Test Method/Specification:
- Dip and Look solderability Test.
- Solder Temperature 245°C ± 5°C
- Solder: SN60
- Immersion rate: 1” per second ± 0.25” per second
- Dwell Time: 5 seconds ± 0.5 second.

2.3.3 Appearance Inspection:
Appearance inspection performed before and after test.

2.3.4 Sample(s) Inspection before Test:
Sample(s) Description: MABA 009600-CF48A0
Quantity:
10 PCS after Steam age test.
10PCS after Bake test.

Appearance Inspection: No visual damage was found on samples before test.
See Photo 2.3A.

2.3.5 Test Result(s):
Appearance Check: Samples checked using magnification of 10-15x.
All samples meet the criteria for acceptable solderability.
The solder coverage is >95%
See Photo 2.3B
Test Group 3:

3.1: High Temperature Life Stabilization Bake Test:


3.1.1 Test Purpose:
The purpose of this test is to determine the effect on microelectronic devices of storage at elevated temperatures without electrical stress applied.

3.1.2 Test Method/Specification:
Refer to Mil-STD-883G Method 1008.2 condition A.
- Test Temperature: 100ºC
- Test Duration: 500 hours

3.1.3 Appearance Inspection:
Appearance inspection performed before and after test.

3.1.4 Sample(s) Inspection before Test:
Sample(s) Description: MABA 009600-CF48A0
Quantity: 76 PCS
Appearance Inspection: No visual damage was found on samples before test. See Photo 3.1B.

3.1.5 Test Procedure:

Test Equipment:

**Name:** Ramp Temperature Cycling Chamber

**Model:** WK-800/70/25

**Equipment No.:** SZREL-009

Lab Environmental Conditions: Ambient temperature: 25±3ºC, Relative humidity: 55±20%RH

3.1.6 Test Result(s):
Appearance Check: No visual damage was found on samples after test. See Photo 3.1C.

3.2: Thermal Shock Test:

3.2.1 Test Purpose:
The purpose of this test is to determine the resistance of the part to sudden exposure to extreme changes in temperature and the effect of alternate exposures to these extremes.

3.2.2 Test Method/Specification:
Refer to Mil-STD-883G Method 1011.9 condition A.
- Low Temperature: 0°C.
- High Temperature: 100 °C.
- Dwell Time: 10 minutes.
- Test Cycles: 100.
- Total duration: about 34 hours.

3.2.3 Appearance Inspection:
Appearance inspection performed before and after test.

3.2.4 Sample(s) Inspection before Test:
Sample(s) Description: MABA 009600-CF48A0
Quantity: 76 PCS (after Hi temp Life Stabilization Bake Test).
Appearance Inspection: No visual damage was found on samples before test. See Photo 3.2C.

3.2.5 Test Procedure:
Test Equipment:
Name: Thermal Shock Chamber
Model: TS300
Equipment No.: SZREL-010
Lab Environmental Conditions: Ambient temperature: 25±3°C, Relative humidity: 55±20%RH

3.2.6 Test Result(s):
Appearance Check: No visual damage was found on samples after test. See Photo 3.2D.
3.3: Functional Test:

3.3.1 Initial Functional Test Results
The 76 units were functionally tested for Insertion loss before being subjected to High Temperature Life Stabilization Bake and Thermal Shock outlined in sections 3.1 & 3.2. All 76 units passed to specification.

The initial test results are plotted in Figure 3.3A below.

![Figure 3.3A – Test Plots before Temperature Testing.](image)

3.3.2 Functional Test Results After Temperature testing
The 76 units were functionally re-tested after High Temperature Life Stabilization Bake and Thermal Shock.

All 76 units continue to pass specification.

The test results after Temperature testing are plotted in Figure 3.3B below.

![Figure 3.3B – Test Plots after Temperature Testing.](image)
4.1 Convection Oven Profile:

4.1.1 Test Purpose:
The purpose of this test is to determine the resistance of the part to high temperature experienced during Convection Oven reflow.

4.1.2 Test Method/Specification:
Refer to client’s reflow requirements.
- Test Temperature: 230°C
- Test Duration: 30seconds.
See Figure 4.1A

4.1.3 Appearance Inspection:
Appearance inspection performed before and after test.

4.1.4 Sample(s) Inspection before Test:
Sample(s) Description: MABA 009600-CF48A0
Quantity: 10 PCS
Appearance Inspection:
No visual damage was found on samples before test.
See Photo 4.1B.

4.1.5 Test Procedure:
Test Equipment:
7 Zone Convection Reflow Oven.
4.1.6 Test Result(s):
Appearance Check: No visual damage was found on samples after test. See Photo 4.1C.

![Photo 4.1B Samples Before Test](image1) ![Photo 4.1C Samples After Test](image2)

4.2: Functional Test After Reflow:

4.2.1 Functional Test Results after Convection Reflow
The 10 finished good units were functionally tested for Insertion Loss after the Convection oven reflow outlined in section 4.1.

All 10 units pass functional specification after reflow. The test results after Convection oven reflow are plotted in Figure 4.2A below.

![Figure 4.2A – Test Plots after Reflow.](image3)
**Test Group 5:**

**5.1 Salt Atmosphere Test:**

5.1.1 Test Purpose:
This test provides a controlled corrosive environment which has been utilized to produce relative corrosion resistance information for specimens of metals and coated metals exposed in a given test chamber.

5.1.2 Test Method/Specification:
Refer to Mil-STD-883G Method 1009.8 condition A.
- Concentration of salt solution: 0.5%~3.0% NaCl (m/m)
- Chamber temperature: 35°C
- PH of salt solution at (35±2) °C: 6.5~7.2
- Exposure period: 24h

5.1.3 Appearance Inspection:
Appearance inspection performed before and after test.

5.1.4 Sample(s) Inspection before Test:
Sample(s) Description: MABA 009600-CF48A0
Quantity: 5 PCS
Appearance Inspection: No visual damage was found on samples before test. See Photo 5.1A.

5.1.5 Test Procedure:
Test Equipment:
- **Name:** Salt Spray Chamber
- **Model:** CEEC-YW-150
- **Equipment No.** : 070042

Lab Environmental Conditions: Ambient temperature: 25±3°C, Relative humidity: 55±20%RH

5.1.6 Test Result(s):
Standard’s failure criteria:
- a) Corrosion defects over more than 5 percent of the area of the finish or base metal of any package element other than leads such as lid, cap, or case.
- b) Leads missing, broken, or partially separated.
- c) Specified markings, which are missing in whole or in part, faded, smeared, blurred, shifted, or dislodged to the extent that they are not legible.

Appearance Inspection: No visual damage was found on samples before test. See 5.1B

<table>
<thead>
<tr>
<th>Sample Item</th>
<th>Sample No.</th>
<th>Appearance after test</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>MABA 009600-CF48A0</td>
<td>114#/</td>
<td>No visible damage</td>
<td>Pass</td>
</tr>
<tr>
<td>115#/</td>
<td></td>
<td>No visible damage</td>
<td>Pass</td>
</tr>
<tr>
<td>116#/</td>
<td></td>
<td>No visible damage</td>
<td>Pass</td>
</tr>
<tr>
<td>117#/</td>
<td></td>
<td>No visible damage</td>
<td>Pass</td>
</tr>
<tr>
<td>118#/</td>
<td></td>
<td>No visible damage</td>
<td>Pass</td>
</tr>
</tbody>
</table>

*Photo 5.1A Sample Before Test. Photo 5.1B Sample After Test.*
**Test Group 6:**

**6.1 Pressure Cooker Test:**


6.1.1 Test Purpose:
This test is performed to evaluate the moisture resistance integrity of non-hermetic packaged solid state devices using moisture condensing or moisture saturated steam environments.

6.1.2 Test Method/Specification:
Refer to JESD22-A-102-C and client’s requirements.
- Vapor pressure: 15 PSI
- Test Temperature: 121ºC
- Test Duration: 96 hours

6.1.3 Appearance Inspection:
Appearance inspection performed before and after test.

6.1.4 Sample(s) Inspection before Test:
Sample(s) Description: MABA 009600-CF48A0
Quantity: 38 PCS
Appearance Inspection: No visual damage was found on samples before test.

6.1.5 Test Procedure:

Test Equipment:

**Name:** Pressure Cooker Tester  
**Brand:** KSON  
**Model:** PCT-S/S022

Lab Environmental Conditions: Ambient temperature: 25±3ºC, Relative humidity: 55±20%RH.

6.1.6 Test Result(s):
Appearance Check: No visual damage was found on samples after test.  
See Photo 6.1B.
6.2 Temp/Humidity Test:


6.2.1 Test Purpose:
This test is performed for the purpose of evaluating the reliability of non-hermetic packaged solid-state devices in humid environments.

6.2.2 Test Method/Specification:
Refer to JESD22-A-101-B and client’s requirements.
- Test Temperature: 85ºC
- Test Humidity: 85%RH
- Test Duration: 500 hours

6.2.3 Appearance Inspection:
Appearance inspection performed before and after test.

6.2.4 Sample(s) Inspection before Test:
Sample(s) Description: MABA-009600-CF48A0
Quantity: 38 PCS (after Pressure Cooker Test)
Appearance Inspection: No visual damage was found on samples before test. See Photo 6.2B.

6.2.5 Test Procedure:

Test Equipment:
- **Name:** Triple Temp & Humidity Chamber
- **Brand:** GIANT FORCE
- **Model:** GTH-162TR-SP/MAA0605-012

Lab Environmental Conditions: Ambient temperature: 25±3ºC, Relative humidity: 55±20%RH.

6.2.6 Test Result(s):
Appearance Check: No visual damage was found on samples after test. See Photo 6.2C.
6.3: Functional Test:

6.3.1 Initial Functional Test Results:
The 38 units were functionally tested for Insertion loss before being subjected to Pressure Cooker and Temp/Humidity testing outlined in sections 6.1 & 6.2. All 38 units passed to specification. The initial test results are plotted in Figure 6.3A below.

![Figure 6.3A – Test Plots before Pressure Cooker and Temp/Humidity testing.](image)

6.3.2 Functional Test Results After Pressure & Humidity testing:
The 38 units were functionally re-tested after Pressure Cooker and Temp/Humidity testing. All 38 units continue to pass specification. The test results after Temperature testing are plotted in Figure 6.3B below.

![Figure 6.3B – Test Plots after Pressure Cooker and Temp/Humidity testing.](image)
7.1 Lead Material & plating:

7.1.1 Test Purpose:
Measurements performed to verify that the lead plating thickness and composition meet specification.

7.1.2 Test Method/Specification:
Refer to SOT carrier material drawing 1000025621-CTR000 for plating specification.

- Plating Composition:
  - Ni: 30 ±2%
  - Sn: 70±2%

7.1.3 Sample(s) Inspection before Test:
Sample(s) Description: MABA 009600-CF48A0
Quantity: 3 PCS
Appearance Inspection: No visual damage was found on samples before test.

7.1.4 Test Procedure: XRF analysis.

7.1.5 Test Results:
Lead plating on all samples meet the required composition specifications.
See Figure 7.1A

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**Photo 7.1A - Material Declaration form - Pin plating composition.**

**Test Group 8 & 9:**
8.1 Vibration:

*TTS Report Reference: WDZ0709—Section 1.*

8.1.1 Test Purpose:
This test is performed to evaluate the resistance of the part to vibration.

8.1.2 Test Method/Specification:
Refer to MIL-STD-202, Method 201, Condition A.

- Freq: 10Hz to 55Hz
- Displacement 1.524mm
- Swept Speed: 1min/cycle
- Orientation X,Y,Z axes
- Duration 2H/axis

8.1.3 Appearance Inspection:
Appearance inspection performed before and after test.

8.1.4 Sample(s) Inspection before Test:
Sample(s) Description: MABA 009600-CF48A0
Quantity: 50 PCS
Appearance Inspection: No visual damage was found on samples before test. See Photo 8.1C.

8.1.5 Test Procedure:

Test Equipment:

**Name:** Vibration System

**Model:** V850-440

*Photo: 8.1A – Units under vibration*
Lab Environmental Conditions: Ambient temperature: 25±3°C, Relative humidity: 55±20%RH.

8.1.6 Test Result(s):
Appearance Check: No visual damage was found on samples after test. See Photo 8.1D.
8.2 Mechanical Shock:


8.2.1 Test Purpose:
This test is performed to evaluate the resistance of the part to mechanical shock.

8.2.2 Test Method/Specification:
Refer to MIL-STD-202, Method 213B, Condition A
- Shock Wave Shape: Half Sine
- Acceleration: 50g
- Pulse duration: 11ms
- Shock Times: 3 on each ±X, ±Y, ±Z,

8.2.3 Appearance Inspection:
Appearance inspection performed before and after test.

8.2.4 Sample(s) Inspection before Test:
Sample(s) Description: MABA 009600-CF48A0
Quantity: 50 PCS (after Vibration Test)
Appearance Inspection: No visual damage was found on samples before test.

8.2.5 Test Procedure:
Test Equipment:
Name: Mechanical Shock Tester
Model: DP-1200-60
Equipment No: TTS-YQ-094

Photo: 8.2A – Units under mechanical shock
Lab Environmental Conditions: Ambient temperature: 25±3°C, Relative humidity: 55±20%RH.

8.2.6 Test Result(s):
Appearance Check: No visual damage was found on samples after test. See Photo 8.2C.
8.3: Functional Test:

8.3.1 Initial Functional Test Results:
The 50 units were functionally tested for Insertion loss before being subjected to Vibration & Mechanical Shock testing outlined in sections 8.1 & 8.2. All 50 units passed to specification.

The initial test results are plotted in Figure 8.3A below.

![Figure 8.3A – Test Plots before Vibration & Mechanical Shock.](image)

8.3.2 Functional Test Results After Vibration & Mechanical Shock:
The 50 units were functionally re-tested after Vibration & Mechanical Shock testing. All 50 units continue to pass specification.

The test results after Vibration & Mechanical Shock are plotted in Figure 8.3B below.

![Figure 8.3B – Test Plots after Vibration & Mechanical Shock testing.](image)