Apacer Technology Inc. **Qual Report**

SM(U S)130-25
Environment Test Report

Project Start : 2017, 08,21
Project End : 2017,09,18

Project Leader :

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Approved by:

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Ver 1.0

Sep. 18, 2017

Apacer Technology Inc.

Qual Report

1. Low Temperature Operating Test(PASS)

1.1 Testing Objective

To meet the varied temperature requirements from the different areas because products may be subjected to varied operation temperature condition. The product must be tested to verify its temperature endurance.

1.2 Testing Procedure

1. Inspect the component (DUT) to establish operation pretest criteria and physical condition.
2. Connect the component (DUT) to the motherboard and verify its functionality for baseline.
3. Put the component (DUT) into chamber and the motherboard is outside then power on the motherboard.
4. Program the test profile and turn on the chamber based on specification.
5. Inspect the component (DUT) and compare it to pretest data and physical condition.
   If any physical issue or malfunction happened during the testing ,this should be recorded and reported.

1.3 Testing Component (DUT)

1pc SM130-25 2TB

1.4 Testing Equipment

KSON THS-A6T-150 Temperature/Humidity chamber

1.5 Testing Software

Running PassMark Burn-In Test Tool V8 Pro

1.6 Testing Location

Apacer QT Reliability & Environment Test Lab

1.7 Testing Specification

Operating Test

Test Item	Temperature (°C)	Humidity (%)	Time	Remark
Function Test	25	-	10 minutes	-
Function Test	-40	-	3 hour 15minutes	-
Function Test	-40	-	96 hours	-
Function Test	25	-	3 hour 15minutes	-
Function Test	25	-	2 hours	-

Notes : The temperature/humidity gradient should be less than 20 °C per hour, 20% per hour to prevent condensation.

1.8 Testing Criteria

1. Function works normally.
2. No crack on soldering,components.
3. No deformity on components.
4. No rust on metal parts.

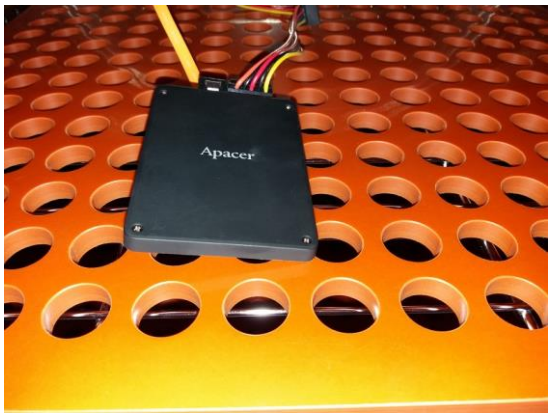
1.9 Testing Result

Testing Condition	Temperature		Testing Time	Result	Remark
	Temperature	Humidity		Sample No. 1	
Operation	-40°C	-	96 hours	Pass	-

Notes : The temperature/humidity gradient should be less than 20 °C per hours, 20% per hour to prevent condensation.

1.10 Testing Photo

-2TB



2. High Temperature Operating Test(PASS)

2.1 Testing Objective

To meet the varied temperature requirements from the different areas because products may be subjected to varied operation temperature condition. The product must be tested to verify its temperature endurance.

2.2 Testing Procedure

1. Inspect the component (DUT) to establish operation pretest criteria and physical condition.
2. Connect the component (DUT) to the motherboard and verify its functionality for baseline.
3. Put the component (DUT) into chamber and the motherboard is outside then power on the motherboard.
4. Program the test profile and turn on the chamber based on specification.
5. Inspect the component (DUT) and compare it to pretest data and physical condition.
   If any physical issue or malfunction happened during the testing ,this should be recorded and reported.

2.3 Testing Component (DUT)

1pc SM130-25 2TB

2.4 Testing Equipment

KSON THS-A6T-150 Temperature/Humidity chamber

2.5 Testing Software

Running PassMark Burn-In Test Tool V8 Pro

2.6 Testing Location

Apacer QT Reliability & Environment Test Lab

2.7 Testing Specification

Operating Test

Test Item	Temperature (ºC)	Humidity (%)	Time	Remark
Function Test	25	-	10 minutes	-
Function Test	85	-	3 hours	-
Function Test	85	-	96 hours	-
Function Test	25	-	3 hours	-
Function Test	25	-	2 hours	-

Notes : The temperature/humidity gradient should be less than 20 ºC per hour, 20% per hour to prevent condensation.

2.8 Testing Criteria

1. Function works normally.
2. No crack on soldering,components.
3. No deformity on components.
4. No rust on metal parts.

2.9 Testing Result

Testing Condition	Temperature		Testing Time	Result	Remark
	Temperature	Humidity		Sample No. 1	
Operation	85ºC	-	96 hours	Pass	-

Notes : The temperature/humidity gradient should be less than 20 ºC per hours, 20% per hour to prevent condensation.

2.10 Testing Photo

-2TB

3. Low Temperature Non-Operating Test(PASS)

3.1 Testing Objective

To meet the varied temperature requirements from the different areas because products may be subjected to varied operation temperature condition. The product must be tested to verify its temperature endurance.

3.2 Testing Procedure

1. Inspect the component (DUT) to establish operation pretest criteria and physical condition.
2. Connect the component (DUT) to the motherboard and verify its functionality for baseline.
3. Put the component (DUT) into chamber and the motherboard is outside then power on the motherboard.
4. Program the test profile and turn on the chamber based on specification.
5. Inspect the component (DUT) and compare it to pretest data and physical condition.
   If any physical issue or malfunction happened during the testing ,this should be recorded and reported.

3.3 Testing Component (DUT)

1pc SM130-25 2TB

3.4 Testing Equipment

KSON THS-A6T-150 Temperature/Humidity chamber

3.5 Testing Software

Running PassMark Burn-In Test Tool V8 Pro

3.6 Testing Location

Apacer QT Reliability & Environment Test Lab

3.7 Testing Specification

Non-Operating Test

Test Item	Temperature (°C)	Humidity (%)	Time	Remark
System Off	25	-	10 minutes	-
System Off	-40	-	3 hours 15minutes	-
System Off	-40	-	96 hours	-
System Off	25	-	3 hours 15minutes	-
System Off	25	-	2 hours	-

Notes : The temperature/humidity gradient should be less than 20 °C per hour, 20% per hour to prevent condensation.

3.8 Testing Criteria

1. Function works normally.
2. No crack on soldering,components.
3. No deformity on components.
4. No rust on metal parts.

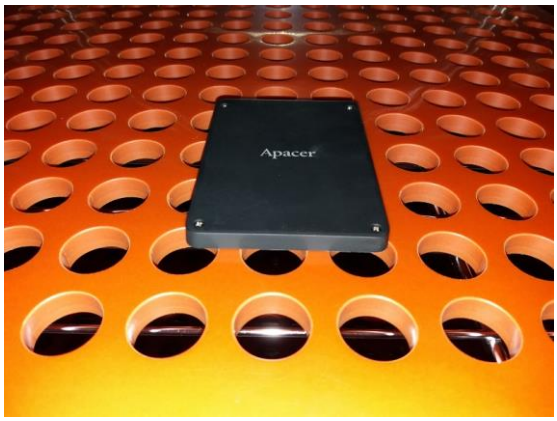
3.9 Testing Result

Testing Condition	Temperature		Testing Time	Result	Remark
	Temperature	Humidity		Sample No. 1	
Non-Operation	-40°C	-	96 hours	Pass	-

Notes : The temperature/humidity gradient should be less than 20 °C per hours, 20% per hour to prevent condensation.

3.10 Testing Photo

-2TB



4. High Temperature Non-Operating Test(PASS)

4.1 Testing Objective

To meet the varied temperature requirements from the different areas because products may be subjected to varied operation temperature condition. The product must be tested to verify its temperature endurance.

4.2 Testing Procedure

1. Inspect the component (DUT) to establish operation pretest criteria and physical condition.
2. Connect the component (DUT) to the motherboard and verify its functionality for baseline.
3. Put the component (DUT) into chamber and the motherboard is outside then power on the motherboard.
4. Program the test profile and turn on the chamber based on specification.
5. Inspect the component (DUT) and compare it to pretest data and physical condition.
   If any physical issue or malfunction happened during the testing ,this should be recorded and reported.

4.3 Testing Component (DUT)

1pc SM130-25 2TB

4.4 Testing Equipment

KSON THS-A6T-150 Temperature/Humidity chamber

4.5 Testing Software

Running PassMark Burn-In Test Tool V8 Pro

4.6 Testing Location

Apacer QT Reliability & Environment Test Lab

4.7 Testing Specification

Non-Operating Test

Test Item	Temperature (°C)	Humidity (%)	Time	Remark
System Off	25	-	10 minutes	-
System Off	100	-	3 hours 45minutes	-
System Off	100	-	96 hours	-
System Off	25	-	3 hours 45minutes	-
System Off	25	-	2 hours	-

Notes : The temperature/humidity gradient should be less than 20 °C per hour, 20% per hour to prevent condensation.

4.8 Testing Criteria

1. Function works normally.
2. No crack on soldering,components.
3. No deformity on components.
4. No rust on metal parts.

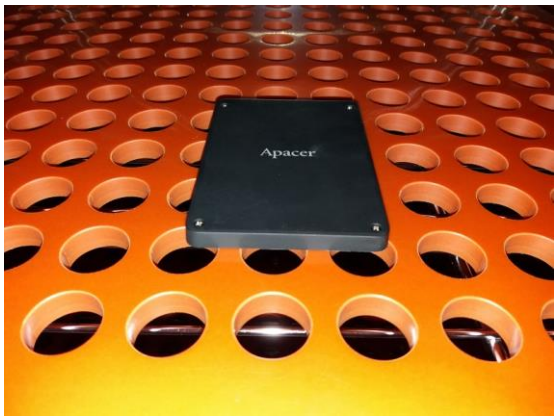
4.9 Testing Result

Testing Condition	Temperature		Testing Time	Result	Remark
	Temperature	Humidity		Sample No. 1	
Non-Operation	100°C	-	96 hours	Pass	-

Notes : The temperature/humidity gradient should be less than 20 °C per hours, 20% per hour to prevent condensation.

4.10 Testing Photo

-2TB



5. Cold Start Test(PASS)

5.1 Testing Objective

To meet the varied temperature requirements from the different areas because products may be subjected to varied operation temperature condition. The product must be tested to verify its cold start boot cycles.

5.2 Testing Procedure

1. Inspect the component (DUT) to establish operation pretest criteria and physical condition.
2. Connect the component (DUT) to the motherboard and verify its functionality for baseline.
3. Put the component (DUT) into chamber and the motherboard is outside.
4. Program the test profile and turn on the chamber based on specification.
5. Keep the motherboard power off -40C 4 hours.
6. Power on the motherboard 2 minutes then 1 minute off.
7. Repeat step6 for another 4 times.
8. After the test, inspect the component (DUT) and compare it to pretest data and physical condition.
   If any physical issue or malfunction happened during the testing ,this should be recorded and reported.

5.3 Testing Component (DUT)

1pc SM130-25 2TB

5.4 Testing Equipment

KSON THS-A6T-150 Temperature/Humidity chamber

5.5 Testing Software

Running Cold Start Test by manual

5.6 Testing Location

Apacer QT Reliability & Environment Test Lab

5.7 Testing Specification

Operating Test

Test Item	Temperature (°C)	Humidity (%)	Time	Remark
System Off	25	-	10 minutes	-
System Off	-40	-	1 hour 15minutes	-
System Off	-40	-	4 hours	-
Function Test	-40	-	2 minutes	
System Off	-40	-	1 minute	
System Off	-40	-	10 minutes	
System Off	25		3 hours 15minutes	-

Notes : The temperature/humidity gradient should be less than 20 °C per hour, 20% per hour to prevent condensation.

5.8 Testing Criteria

1. Function works normally.
2. No crack on soldering,components.
3. No deformity on components.
4. No rust on metal parts.

5.9 Testing Result

Testing Condition	Temperature		Testing Time	Result	Remark
	Temperature	Humidity		Sample No. 1	
Operation	-40°C	-	2 minutes	Pass	5 times

Notes : The temperature/humidity gradient should be less than 20 °C per hours, 20% per hour to prevent condensation.

5.10 Testing Photo

-2TB