Apacer Technology Inc. **Qual Report**

SX23D-300
Environment Test Report

Test Start : 2021,2,19
Test End : 2021,3,31

Tested by:

Chain Yang

Approved by:

Danny TC Chen

Ver 1.2

March 31, 2021

Apacer Technology Inc. Qual Report

1. Low Temperature/Humidity 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 SX23D-300

1.4 Testing Equipment

KSON THS-A6T-150 Temperature/Humidity chamber

1.5 Testing Software

Running PassMark Burn-In Test Tool V8.1 Pro

1.6 Testing Location

Apacer QT Reliability & Environment Test Lab

1.7 Testing Specification

Operating Test(MIL-STD-810G,Method 502.5,Procedure II)

Test Item	Temperature (°C)	Humidity (%)	Time	Remark
Function Test	25	50	10 minutes	-
Function Test	25->20	50->5	2 hours	-
Function Test	20	5	2 hours	-
Function Test	20->-40	5->-	1 hour	-
Function Test	-40	-	96 hours	-
Function Test	-40->25	-->50	1hour 5minutes	-
Function Test	25	50	2 hours	-

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
			Sample No. 1	
Operation	-40°C	96 hours	Pass	-

1.10 Testing Photo

2. High Temperature/Humidity 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 SX23D-300

2.4 Testing Equipment

KSON THS-A6T-150 Temperature/Humidity chamber

2.5 Testing Software

Running PassMark Burn-In Test Tool V8.1 Pro

2.6 Testing Location

Apacer QT Reliability & Environment Test Lab

2.7 Testing Specification

Operating Test (MIL-STD-810G,Method 501.5,Procedure II)

Test Item	Temperature (ºC)	Humidity (%)	Time	Remark
Function Test	25	50	10 minutes	-
Function Test	25->85	50	2 hours	-
Function Test	85	50	94 hours	-
Function Test	85	50->95	2 hours	-
Function Test	85	95	2 hours	-
Function Test	85->25	95->50	2 hours	-
Function Test	25	50	2 hours	-

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/Humidity	Testing Time	Result	Remark
			Sample No. 1	
Operation	85ºC/50~95%RH	96 hours	Pass	-

2.10 Testing Photo

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. Put the component (DUT) into chamber and the motherboard is outside.
3. Program the test profile and turn on the chamber based on specification.
4. After test, inspect the component (DUT) and compare it to pretest data and physical condition.
   If any physical issue or malfunction happened,this should be recorded and reported.

3.3 Testing Component (DUT)

1pc SX23D-300

3.4 Testing Equipment

KSON THS-A6T-150 Temperature/Humidity chamber

3.5 Testing Software

Running PassMark Burn-In Test Tool V8.1 Pro

3.6 Testing Location

Apacer QT Reliability & Environment Test Lab

3.7 Testing Specification

Non-Operating Test(MIL-STD-810G,Method 502.5,Procedure I)

Test Item	Temperature (ºC)	Time	Remark
System Off	25	10 minutes	-
System Off	25->-55	1 hour 20minutes	-
System Off	-55	96 hours	-
System Off	-55->25	1 hour 20minutes	-
System Off	25	2 hours	-

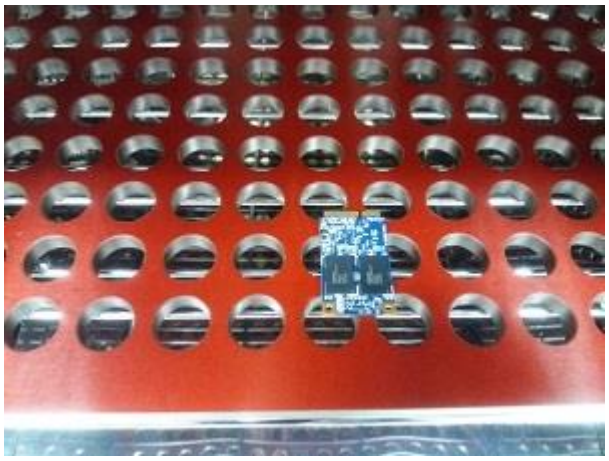
3.8 Testing Criteria

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
			Sample No. 1	
Non-Operation	-55ºC	96 hours	Pass	-

3.10 Testing Photo



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. Put the component (DUT) into chamber and the motherboard is outside.
3. Program the test profile and turn on the chamber based on specification.
4. After test, inspect the component (DUT) and compare it to pretest data and physical condition.
   If any physical issue or malfunction happened,this should be recorded and reported.

4.3 Testing Component (DUT)

1pc SX23D-300

4.4 Testing Equipment

KSON THS-A6T-150 Temperature/Humidity chamber

4.5 Testing Software

Running PassMark Burn-In Test Tool V8.1 Pro

4.6 Testing Location

Apacer QT Reliability & Environment Test Lab

4.7 Testing Specification

Non-Operating Test(MIL-STD-810G,Method 501.5,Procedure I)

Test Item	Temperature (°C)	Time	Remark
System Off	25	10 minutes	-
System Off	25->100	1 hour 15minutes	-
System Off	100	96 hours	-
System Off	100->25	1 hour 15minutes	-
System Off	25	2 hours	-

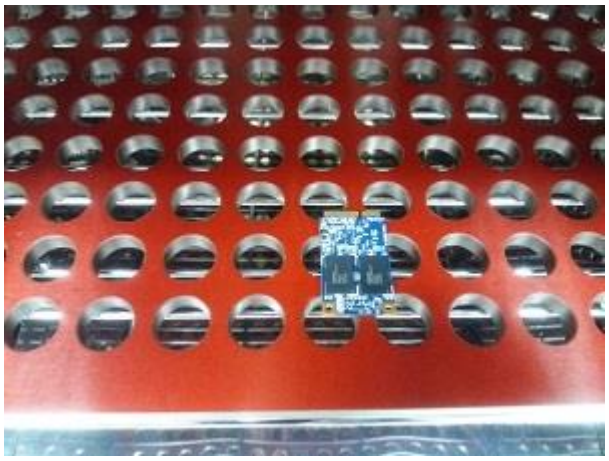
4.8 Testing Criteria

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
			Sample No. 1	
Non-Operation	100°C	96 hours	Pass	-

4.10 Testing Photo



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/Power Box are outside.
4. Program the test profile and turn on the chamber based on specification.
5. Keep the component (DUT) off -40C 30 minutes.
6. Power on the motherboard and run Passmark for 30minutes then 10 minutes off.
7. Repeat step6 for another 99 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 SX23D-300

5.4 Testing Equipment

KSON THS-A6T-150 Temperature/Humidity chamber

5.5 Testing Software

Running Cold Start Test by Passmark and Power Box

5.6 Testing Location

Apacer QT Reliability & Environment Test Lab

5.7 Testing Specification

Operating Test

Test Item	Temperature (ºC)	Time	Remark
System Off	25	10 minutes	-
System Off	25->-40	1 hour 5minutes	-
System Off	-40	30minutes	-
Function Test	-40	30 minutes	repeat 100 times
System Off	-40	10 minutes	
System Off	-40->25	1 hour 5minutes	-

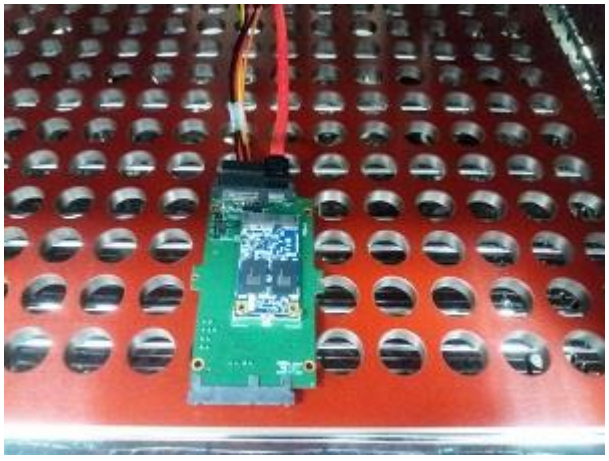
5.8 Testing Criteria

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
			Sample No. 1	
Operation	-40ºC	30 minutes	Pass	100 times

5.10 Testing Photo



6. High Temperature/High Humidity Test(PASS)

6.1 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.

6.2 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.

6.3 Testing Component (DUT)

1pc SX23D-300

6.4 Testing Equipment

KSON THS-A6T-150 Temperature/Humidity chamber

6.5 Testing Software

Running PassMark Burn-In Test Tool V8 Pro

6.6 Testing Location

Apacer QT Reliability & Environment Test Lab

6.7 Testing Specification

Operating Test(MIL-STD-810G,Method 507.5,Procedure II)

Step No.	Test Item	Temperature (ºC)	Humidity (%)	Time	Remark
1	Function Test	25	50	10 minutes	-
2	Function Test	30	95	2 hours 15minutes	-
3	Function Test	60	95	2 hours	-
4	Function Test	60	95	6 hours	-
5	Function Test	30	95	8 hours	
6	Function Test	30	95	8 hours	Repeat step3~6 for a total 10 cycles
7	Function Test	25	50	2 hours	-

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

6.8 Testing Criteria

1. No crack
2. No easily removed button
3. No transfigure,deformity
4. No stiffness or squeak for buttons when pressed
5. No warp or rust for metal parts
6. No slack(e.g. screw loose)
7. No cracks to cushion(especially after drop test)
8. No severe damage to carton box

6.9 Testing Result

Testing Condition	Temperature		Testing Time	Result	Remark
	Temperature	Humidity(%)		Sample No. 1	
Operation	30ºC,60ºC	95	244 hours	Pass	-

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

6.10 Testing Photo/Profile