BOXER-6404U

With mSATA

Environment Test Report

Report NO: 16P020017

Summary	☑ **Pass** ☐ **Fail** ☐ **Pass with Deviation** **Comment:** _____

Issue date	QE Manager	Test Engineer
2016-11-04	KJ Wang	Ben Sun

Test item list

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Testing Result

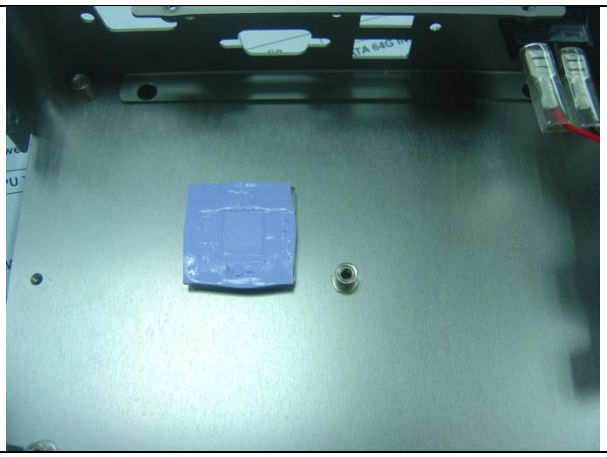
Num	Test item list	Result	Remark
1	Temp./humidity power on/off test	Pass	
2	High temperature operation test	Pass	
3	Temperature cycle operation test	Pass	
4	High temperature storage test	Pass	
5	Low temperature storage test	Pass	
6	Humidity test	Pass	
7	Cold start and hot start test	Pass	

Configuration of EUT

Num	Item	Spec
1.	**Fanless System**	BOXER-6404U
	1. Main Board	PBA-BT05 A0.1
	2. BIOS Ver.	R0.3 (B404IM03)
	3. CPU Type	Intel Atom J1900
	4. Chipset	Intel Bay Trail
	5. Wide Temp. Memory	Memphis DDR3L-1600
	6. mSATA	INNODISK 64GB
	7. Test Software	Windows 8 / Run PassMark BurnIn test 8.1 Pro
2.	**Adapter:**	FSP / FSP084-DIBAN2

Photos

Heat Sink



System

Temp./humidity power on/off test

Test Date: 10-18 ~ 19-2016

Test Site: AAEON QE Dept.

Test Standard: Refer to IEC 68-2-30 Testing procedures
Test Db: Damp Heat Test
Refer to IEC 68-2-1 Testing procedures
Test Ad: Cold Test

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 04/25/16
Serial Number: 6488KT

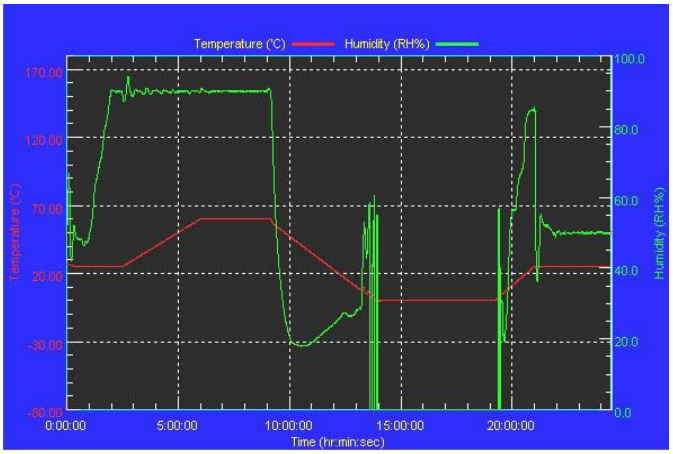
Temperature & Humidity Power On/Off Test:

1. Test High Temp./Humidity: 60℃@90%RH
2. Test Low Temperature: 0℃
3. Test Time: 24Hours / Cycle
4. Test Cycle: 1 Cycles
5. Test Software: DOS Mode / Run Boot Up Record Program ver 1.41

Testing Specification:

Step	Temperature (℃)	Humidity (%RH)	Duration (HH:MM)
1	25	50	00:30
2	25	50	00:30
3	25	90	01:00
4	25	90	00:30
5	60	90	03:30
6	60	90	03:00
7	0	0	04:50
8	0	0	05:23
9	25	50	01:47
10	25	50	03:00

Test Curve:



Test Result:

	Actual	Successful	Failure rate	Test Result
Power On/Off	1077/times	1077/times	0 %	Pass

Note: 1. Failure rate need to under 0%.
2. Power on/off fixture setting: on - 35 sec / off - 35 sec

High Temperature Operation test

Test Date: 11-02~04-2016

Test Product: BOXER-6404U

Test Site: AAEON QE Dept.

Test Standard: Refer to IEC 68-2-2 Testing procedures
Test Bd: Dry Heat Test (Operation)

Test Equipment:

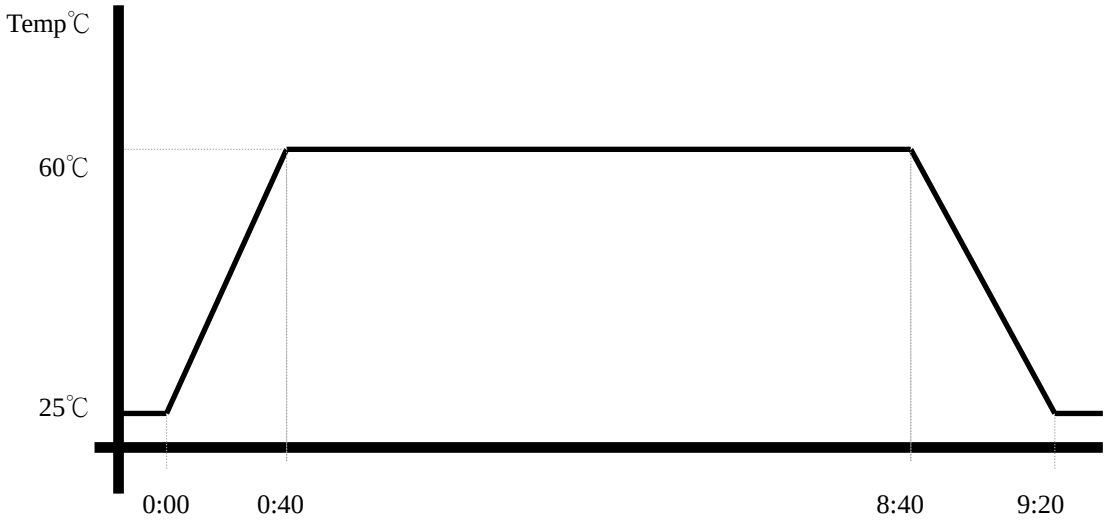
Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 04/25/16
Serial Number: 6488KT

Temperature Measurement:

40 Channel Thermal Recorder:
YOKOGAWA Inc,
Model: DA100-13-1D
Date of Calibration: 09/10/15
Serial Number: 12A323190

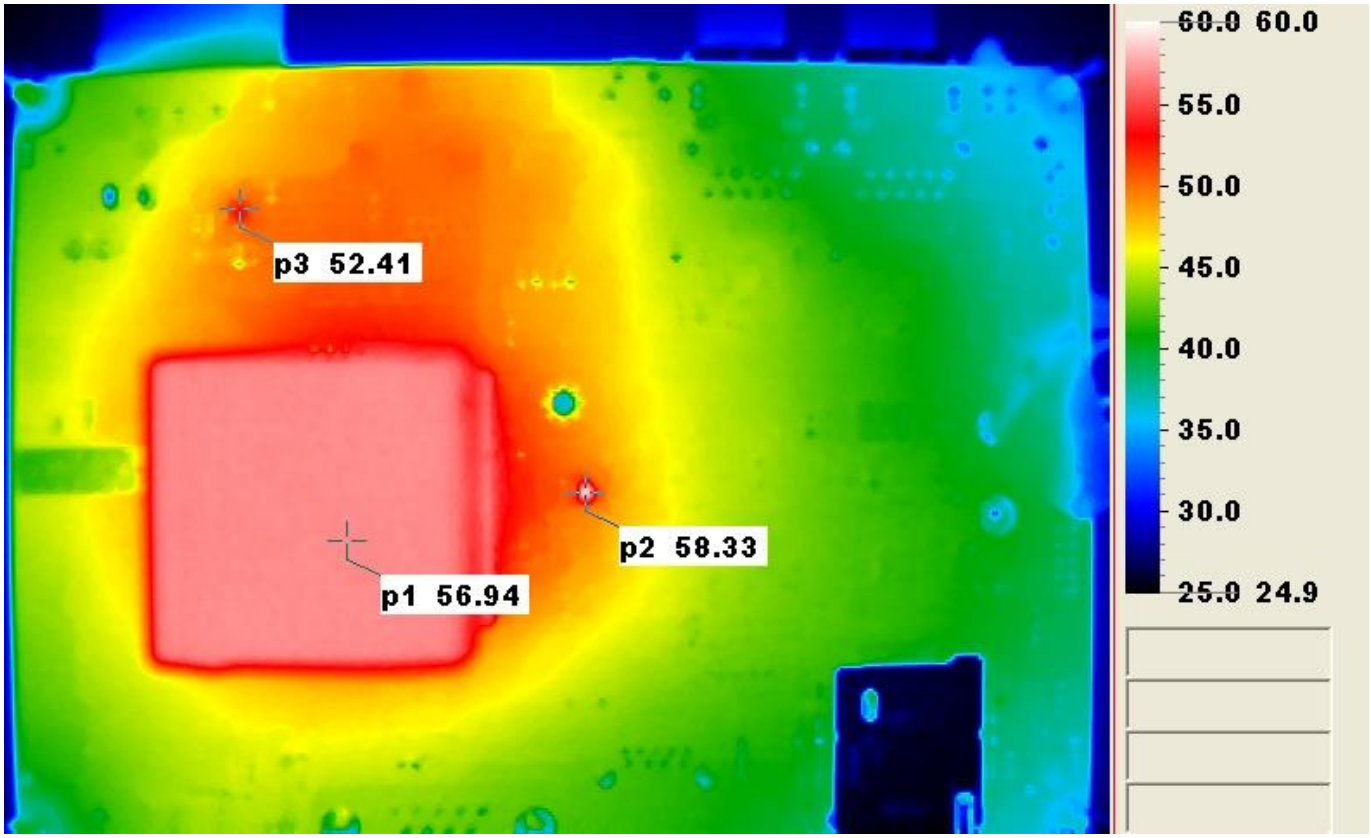
Testing Item:

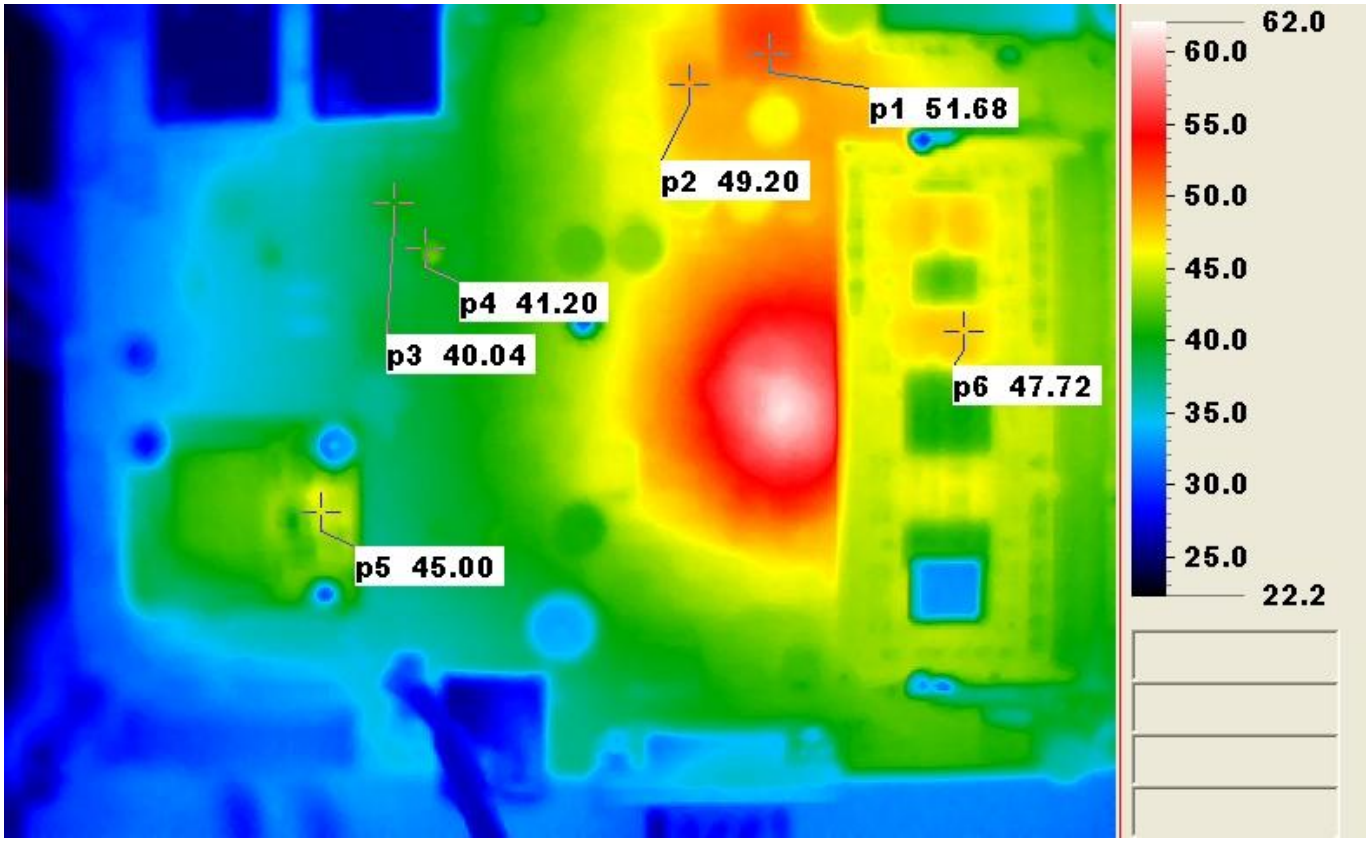
1. Test Temperature: 60℃
2. Test Times: 8Hrs
3. Test Software: Windows 8 / Run PassMark Burn In Test 8.1 Pro
4. Test Environment Curve:



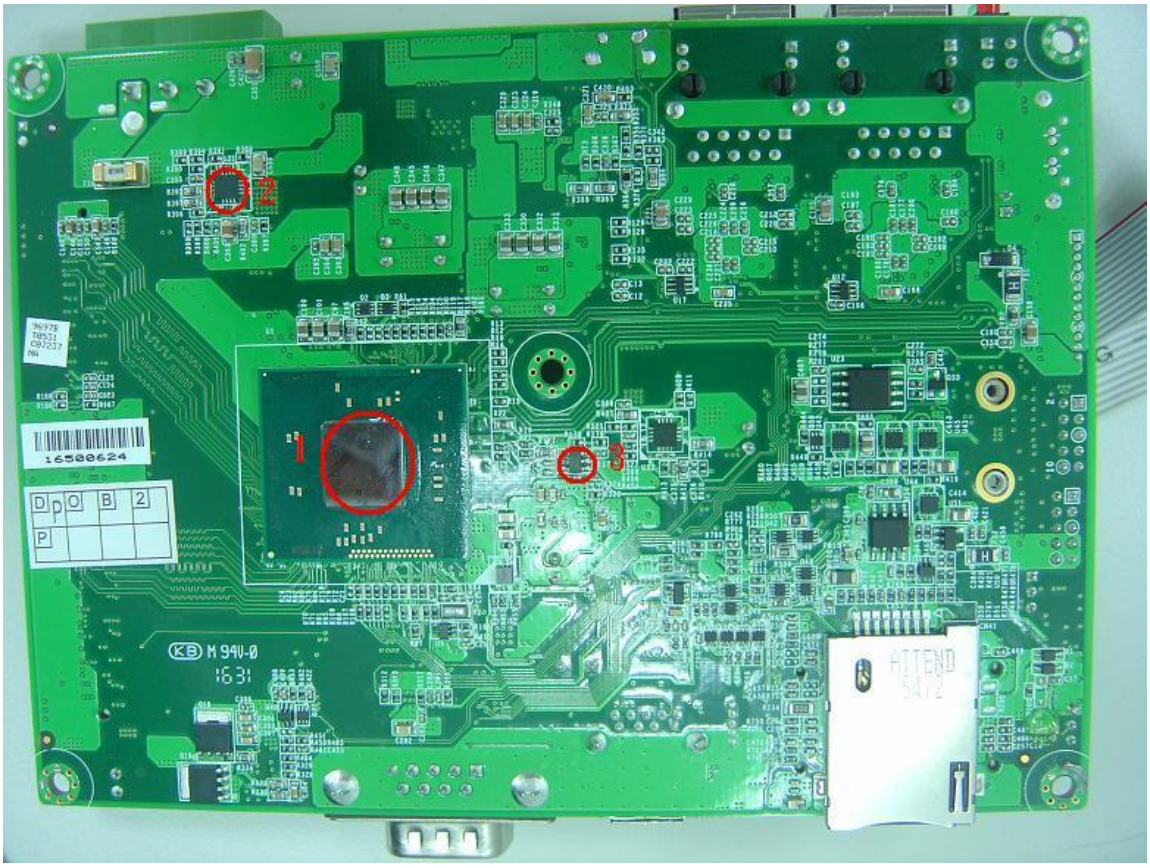
High Temperature Operation test

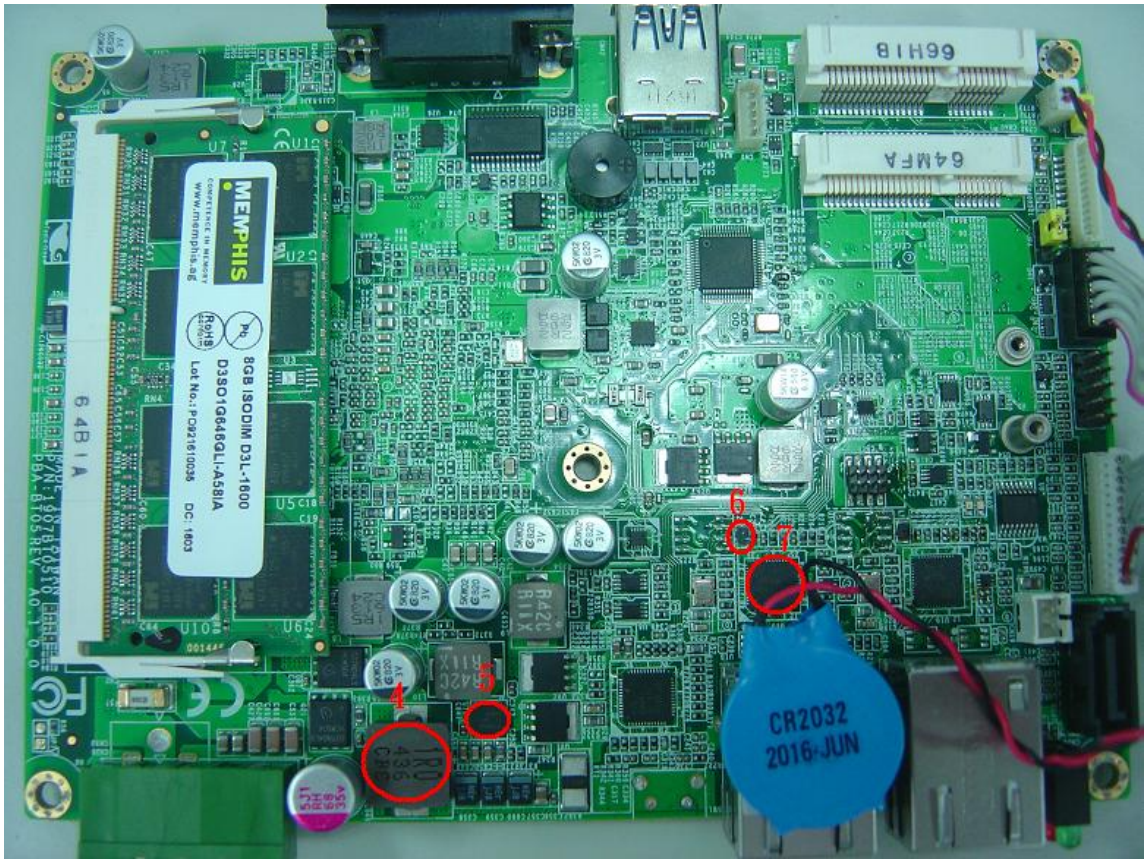
Terminal Recorder:





High Temperature Operation test





High Temperature Operation test

Thermal profile data:

BOXER-6404U (With 0.5m/sec airflow)

Point	Position	Describe	Tc (*1) (℃)	TAT(*2) 60.0℃	Note
1	U1	(TF)INTEL Bay Trail-D J1900 2GHz FCBGA1170 FH8065301615010 SR1UT	105	78.6	
2	U31	(TF)IC.Wide Input Voltage.Single Synchronous Step-Down.QFN 16P.SMD.TI.TPS53219ARGTR	100	83.5	
3	U8	(TF)IC.LDO.0.3V.300mA.SOT-23-5 5P SMD ANPEC APL5325BI-TRG	100	82.6	
4	L6	(TF)COIL.1uH.25A.2.3mohm.20%.SMD.11.5*10.3*4mm.CYNTEC.PCME104T-1R0MS2R307	100	86.1	
5	U75	(TF)IC.Synchronous Buck NexFETTM.SON.8P.Power Stage SMD.TI.CSD97395Q4M	125	83.7	
6	L2	(TF)INDUCTOR.4.7uH.10%.SMD.0805.DCR=0.43ohm.IDC=520mA.ZenithTek.ZWP-0805-4R7K	100	85.4	
7	U15	(TF)IC.PCI-express.Gigabit Ethernet Chip.QFN 48P.SMD.REALTEK.RTL8111E-VL-CG	100	77.0	
8		mSATA	85	80.7	NOTE3
9		RAM	95	81.0	

Note(*):

1. "Tc" indicates the component's case maximum temperature value specified in its datasheet.

2. "TAT" indicates the actual measured temperature under product specification.

3. Judgment Criteria:

- **Fail** : Tm > Tc+5℃; The measured value is over specification plus margin.
- **Margin** : Tc+5℃ > Tm > Tc-10℃; The measured value is within specification with margin. For FANLESS system application, it is strongly recommended to add thermal dissipation design for better reliability.
- **Pass** : Tm < Tc-10℃; The measured value is with safety margin.

4. RTC battery avoid to put on heat position. Please do not exceed battery temperature specification.

5. Defect NO. N/A

Sample Configuration & Quantity Under Test:

Quantity: 1 (BOXER-6404U)

Test Result:

No issues were found during the temperature rise operation test.

Temperature cycle test

Test Date: 10-28 ~ 30-2016

Test Product: BOXER-6404U

Test Site: AAEON QE Dept.

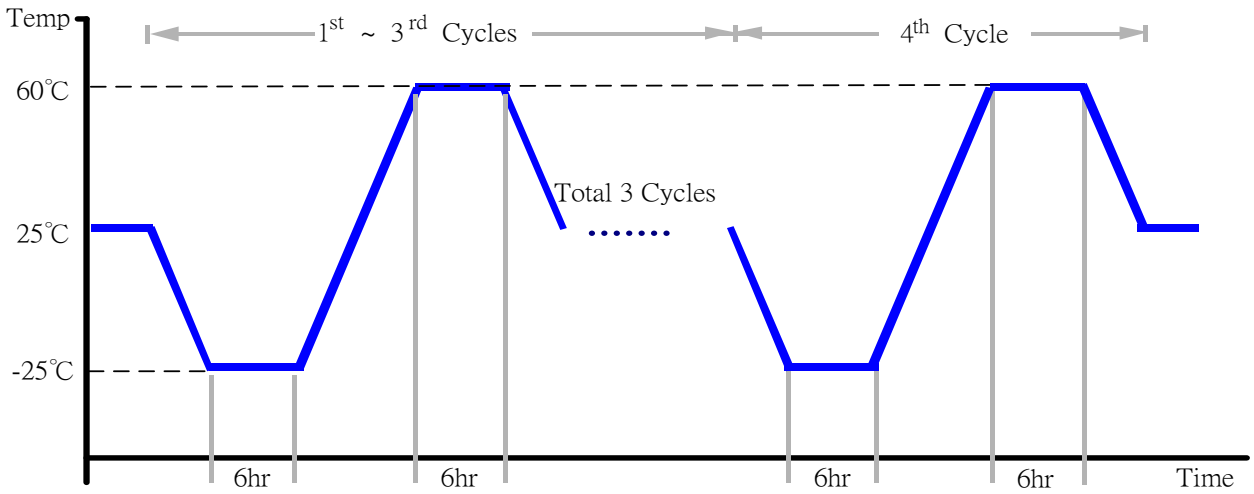
Test Standard: Refer to IEC68-2-14 Testing procedures
Test N: Change of temperature Test

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 04/25/16
Serial Number: 6488KT

Test Condition:

1. Test Low Temperature: -25℃
2. Test High Temperature: 60℃
3. Test dwell time: 6Hrs
4. Temperature slope: 2℃/min
5. Test cycle: 4 cycles
6. Test Software: Windows 8 / Run PassMark Burn In Test 8.1 Pro
7. Test Environment Curve:



Sample Configuration & Quantity Under Test:

Quantity: 1 (BOXER-6404U)

Test Result:

No issues were found during the temperature operation cycle test.

High temperature storage test

Test Date: 10-26 ~ 28-2016

Test Product: BOXER-6404U

Test Site: AAEON QE Dept.

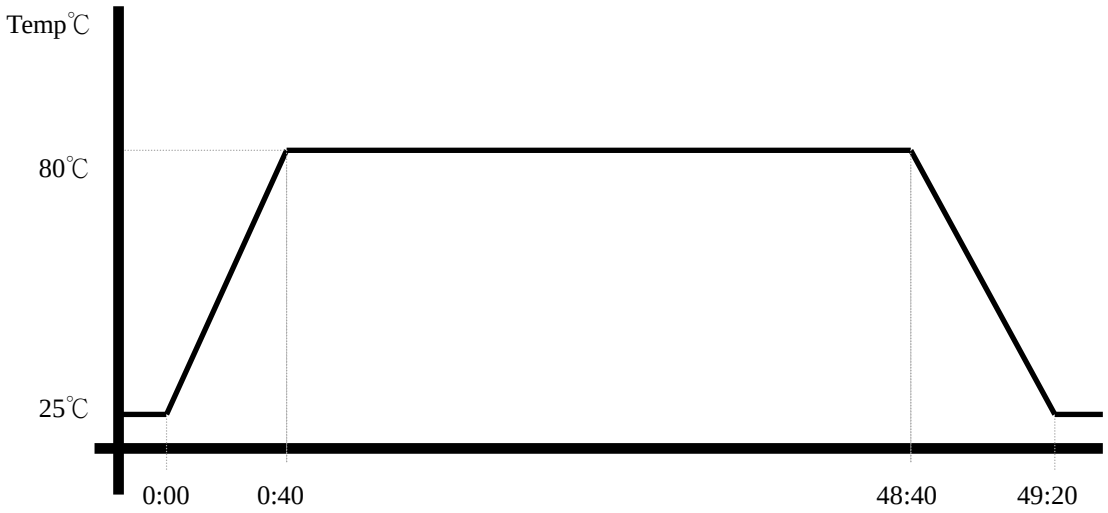
Test Standard: Refer to IEC 68-2-2 Testing procedures
Test Bb: Dry Heat Test (Non-operation)

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 04/25/16
Serial Number: 6488KT

Testing Item:

1. Test Temperature: 80℃
2. Test Times: 48Hrs
3. Test Environment Curve:



Sample Configuration & Quantity Under Test:
Quantity: 1 (BOXER-6404U)

Test Result:

No issue was found after the high temperature storage test.

Low temperature storage test

Test Date: 10-24 ~ 26-2016

Test Product: BOXER-6404U

Test Site: AAEON QE Dept.

Test Standard: Refer to IEC 68-2-1 Testing procedures
Test Ab: Cold Test (Non-operation)

Test Equipment:

Programmable Temperature & Humidity Chamber (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 04/25/16
Serial Number: 6488KT

Testing Item:

1. Test Temperature: -30℃
2. Test Times: 48Hrs
3. Test Environment Curve:

Sample Configuration & Quantity Under Test:

Quantity: 1 (BOXER-6404U)

Test Result:

No issue was found after the low temperature storage test.

Humidity test

Test Date: 10-21 ~ 22-2016

Test Product: BOXER-6404U

Test Site: AAEON QE Dept.

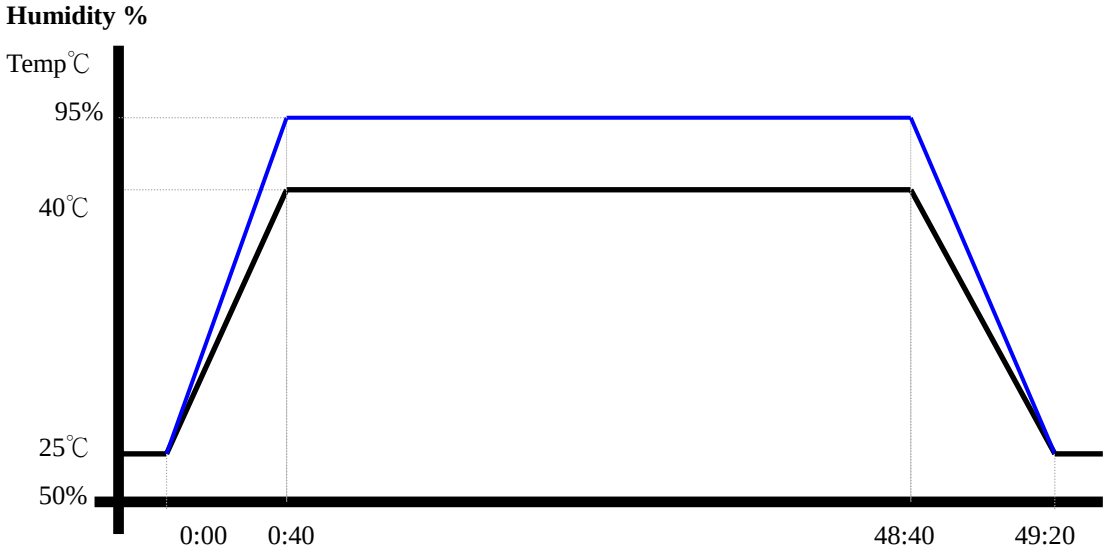
Test Standard: Refer to IEC 68-2-3 Testing procedures
Test Ca: Damp heat, steady state (Non-operation)

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 04/25/16
Serial Number: 6488KT

Testing Item:

1. Test Temperature: 40℃
2. Test Humidity: 95%RH
3. Test Times: 48Hrs
4. Test Environment Curve:



Sample Configuration & Quantity Under Test:
Quantity: 1 (BOXER-6404U)

Test Result:
No issue was found after the humidity storage test.

Cold start and hot start test

Test Date: 10-20 ~ 21-2016

Test Product: BOXER-6404U

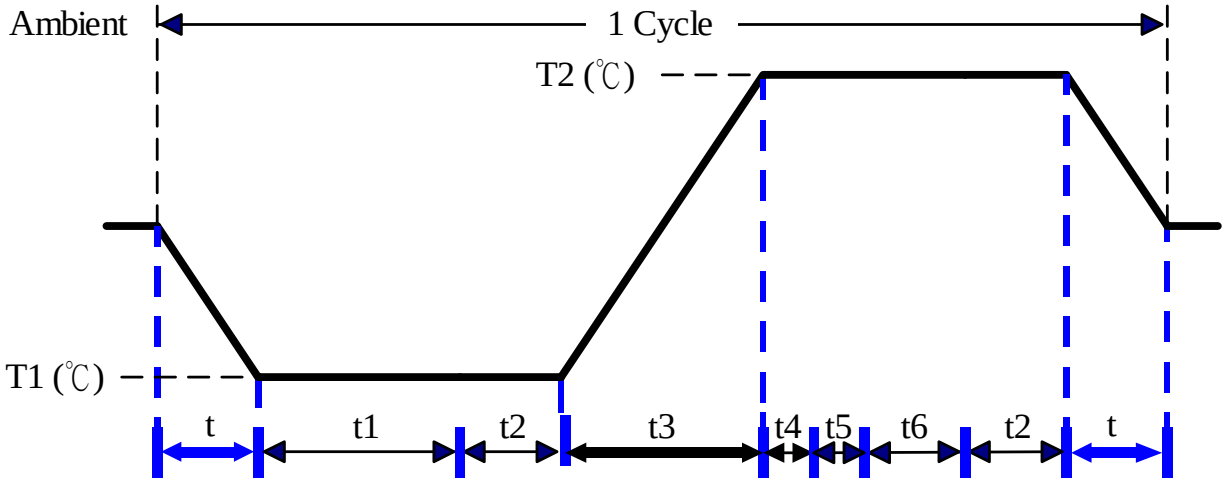
Test Site: AAEON QE Dept.

Test Standard: Refer to IEC 68-2-14 Testing procedures
Test N: Change of temperature Test

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 04/25/16
Serial Number: 6488KT

Test Condition:



Parameters	Description
T1	-25℃
T2	60℃
t1	4 hrs
t2, t6	2 hrs
t4, t5	1hrs
t, t3	2℃/min
n (Cycle)	1

t = temprature slope
t , t1, t6: Power Off
t2: Power on/off test 10 times (on 2 min / off 5min)
t3, t4: Run PassMark Burn In Test
t5: Win 8 Software restart test 2 times
Test Software:Windows 8

Test Result:

a. No issues were found during the cold start test.

b. No issues were found during the hot start test.