BOXER-6404
Environment Test Report

Report NO: 15P020014

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

Issue date	Approval	Test Engineer
2015-06-29	**KJ Wang**	**Ben Sun**

Test item list

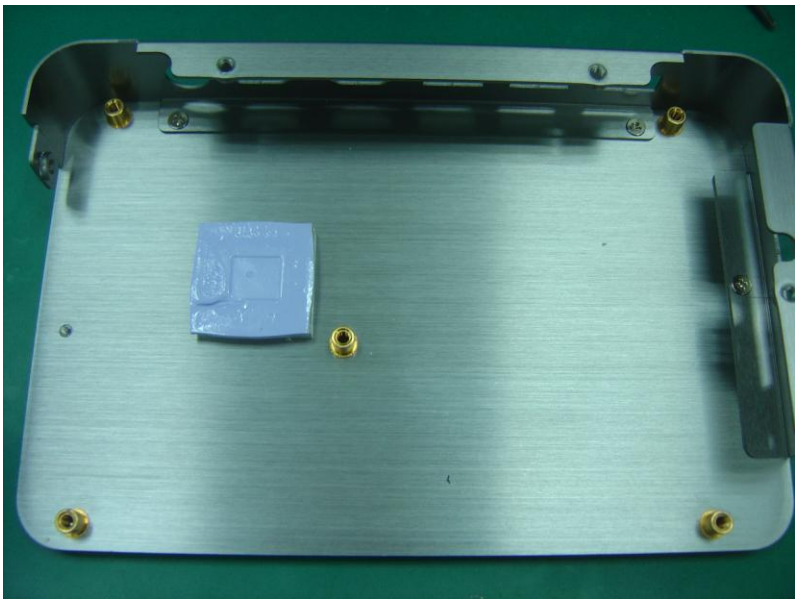
Testing Result

Num	Test item list	Result	Remark
1	Temperature rise test	Pass	
2	Temperature cycle operation test	Pass	
3	High temperature storage test	Pass	
4	Low temperature storage test	Pass	
5	Humidity test	Pass	
6	Cold start and hot start test	Pass	

Configuration of EUT

Num	Item	Spec
1.	System:	BOXER-6404 A1.0
	1. Main board	GENE-BT04 A0.1
	2. BIOS	GENE-BT04 R0.5(GBT4BM05)
	3. CPU Type	Intel J1900
	4. Memory	Innodisk DDR3L 1600 8GB
	5. CFast	Innodisk CFast 3ME 32GB
	7. Test Software	Windows 7 / Run BurnIn test 8.0 Pro
2.	Power Supply	FSP060-DIBAN2

CPU Heatsink



Temperature rise test

Test Date: 06-28-2015

Test Product: BOXER-6404

Test Site: AAEON QE Dept.

Test Standard: Refer to EN 61131-2(94), UL508 (94)

Temperature Measurement:

40 Channel Thermal Meter

Model: OMRON ZR-RX45

Date of Calibration: 2014/12/12

Serial Number: H30481978

Test Condition:

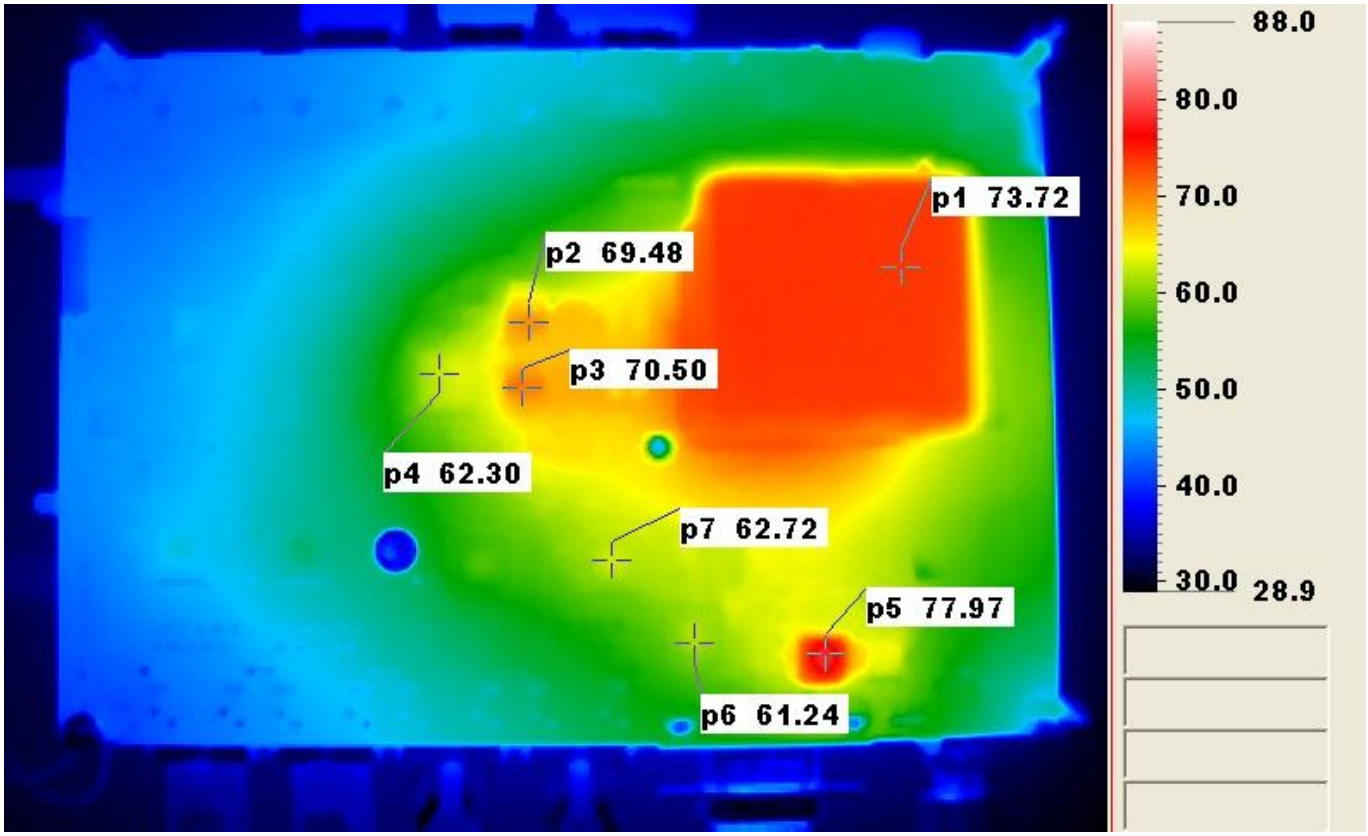
Ambient temperature: 50℃ with airflow 0.5m/s

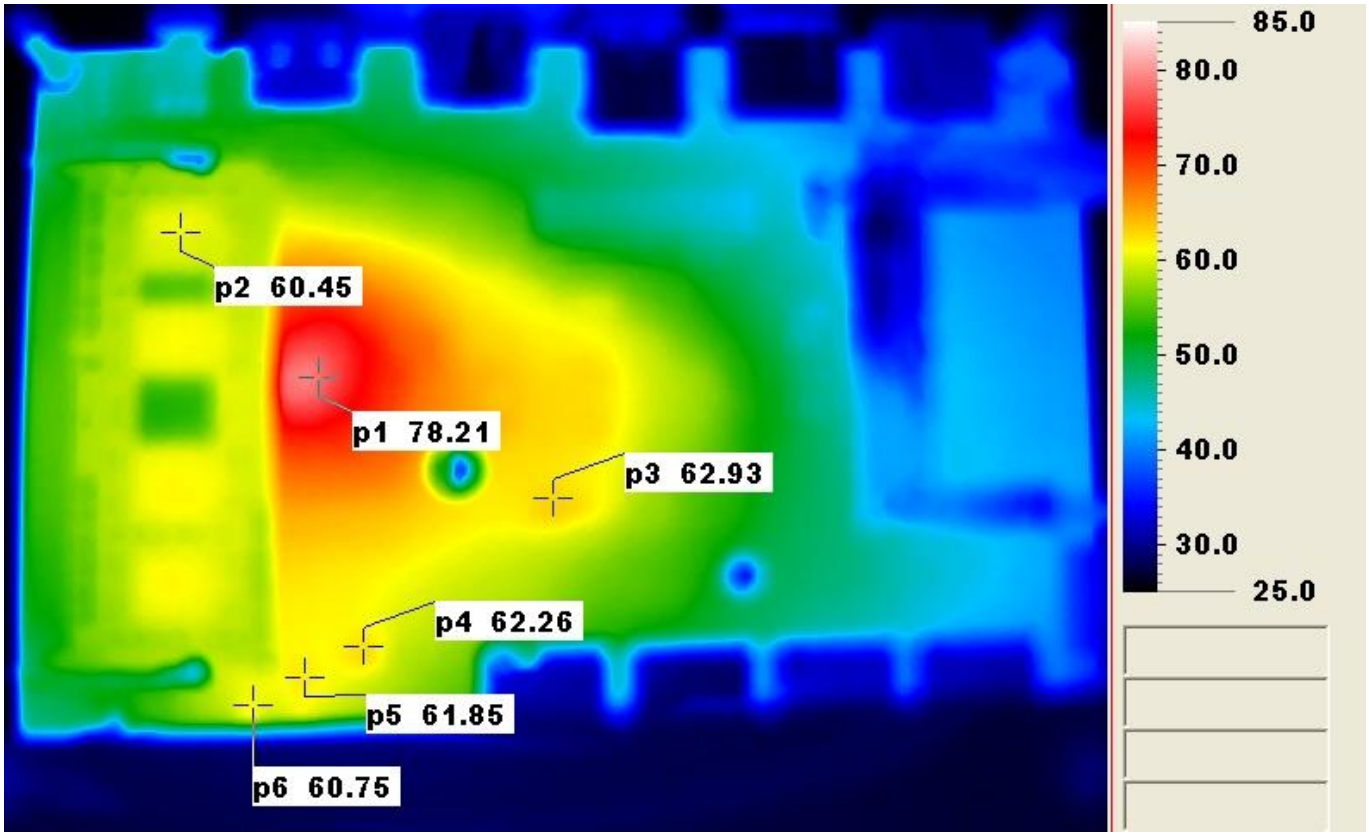
Continuous running till thermal stability (within less than 1℃)

Test Software:

Windows 7 / Run PassMark Burn In Test 8.0 Pro

Terminal Recorder:

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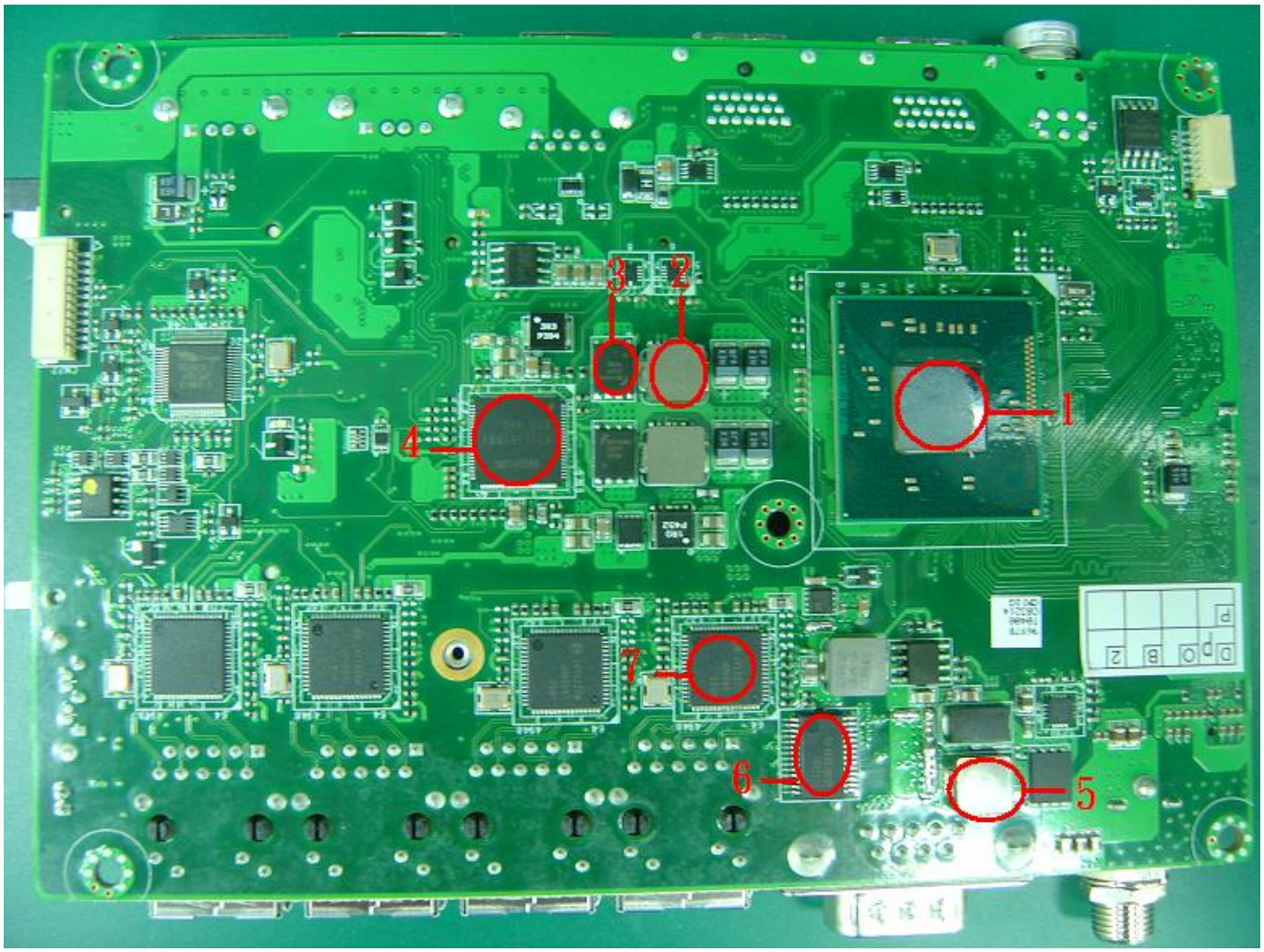
80.0
70.0
60.0
50.0
40.0
30.0
25.0
p2 60.45
p1 78.21
p3 62.93
p4 62.26
p5 61.85
p6 60.75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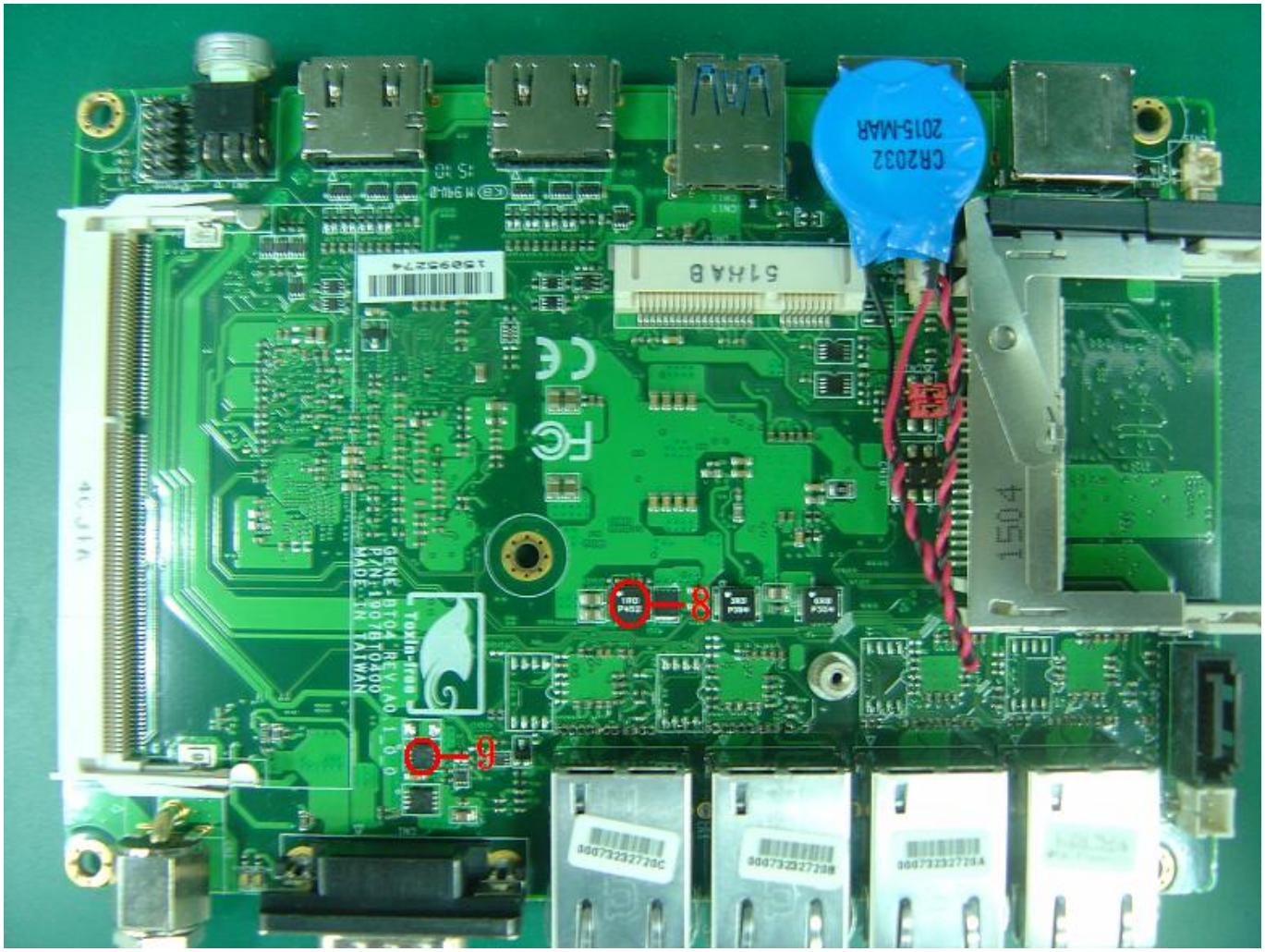
8
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Thermal profile data:

BOXER-6404

Point	Position	Describe	Tc (*1) (℃)	Tm (*2) Measured Under 50℃	Note
1	U29	Intel® Celeron® Processor J1900	105	75.8	
2	L8	(TF)COIL.0.33uH.DCR=3.9mohm.Idc=20Amp.20%.SMD.7.1x6.6x3.0mm.ZenithTek.ZPWM-6030M-R33M	150	79.7	
3	Q33	(TF)PWR.DUALSMD.N-MOSFET.PQFN8.FAIRCHILD.FDMS3664S	125	81.6	
4	U27	(TF)IC.PMIC.for Intel Valleyview.ROHM.BD9596MWV	125	81.6	
5	L1	TF)COIL.1uH.DCR=6.7mohm.Idc=14Amp.20%.SMD.7.3*6.8*3mm.HDTPower.MPC-7066CZ-1R0-M	150	89.7	
6	U17	(TF)IC.RS232 Driver/Receiver.15KV ESD.SSOP 28P.SMD.TI.TRS213IDBR	125	77.9	
7	U23	(TF)IC.PCI-E GigaBit Ethernet Chipset.QFN 64P.SMD.Intel.WGI211AT	85	78.3	
8	L3	(TF)COIL.1uH.DCR=24mohm.Idc=4.5Amp.20%.SMD.4.45*4.05*2.0mm.Zenithtek.ZPWM-4020M-1R0M	150	80.4	
9	Q5	(TF)PWR.SMD.MLP 3.3x3.3.P-channel MOSFET.FAIRCHILD.FDMC4435BZ	125	79.2	
10		DIMM	85	79.8	
11		RTC Battery	70	62.7	
12		CFast	70	61.5	

Note(*):
1. **"Tc"** indicates the component's case maximum temperature value specified in its datasheet.
2. **"Tm"** indicates the measured Tc value under working environmental temperature within product specification.
3. Judgment Criteria:
- **Fail** : Tm > Tc; The measured value is over specification.
- **Margin Pass** : Tc > Tm > Tc-5℃; The measured value is within specification with margin.
  It is strongly recommended to add thermal dissipation design for better reliability.
- **Pass** : Tm < Tc-5℃; The measured value is with safety margin.

4. Defect NO.

Sample Configuration & Quantity Under Test:

Quantity: 1 (BOXER-6404)

Test Result:

No issues were found during the temperature rise operation test.

Temperature cycle test

Test Date: 06-26 ~ 27-2015

Test Product: BOXER-6404

Test Site: AAEON QE Dept.

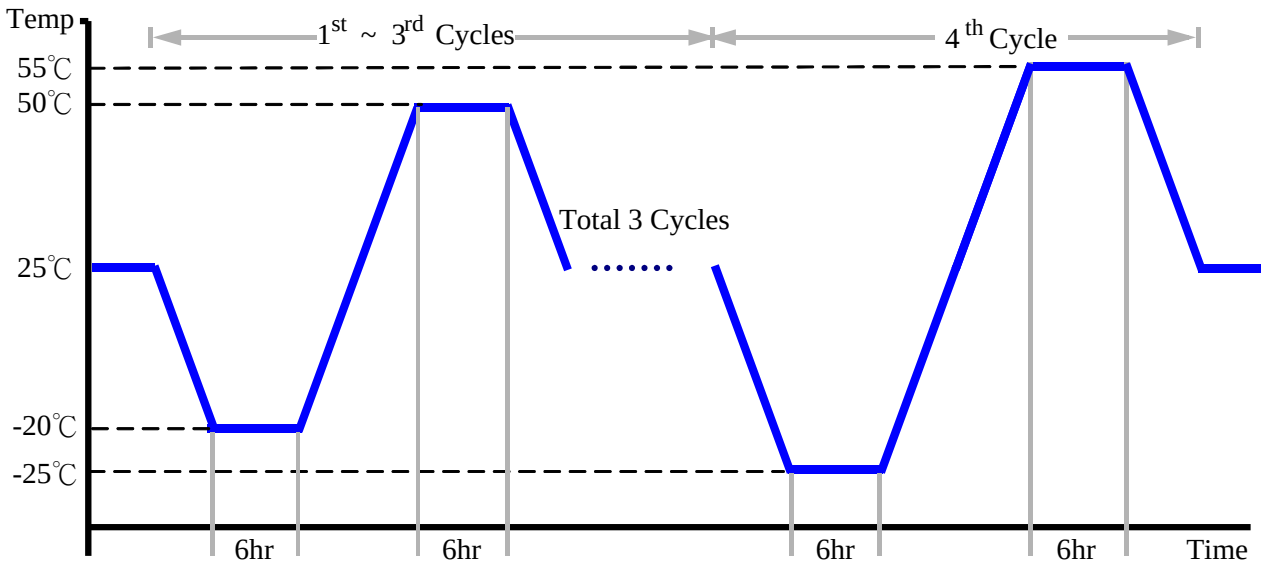
Test Standard: Refer to IEC68-2-14 Testing procedures
Test N: Change of temperature Test

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150-LN2
Date of Calibration: 04/27/15
Serial Number: 6488KT

Test Condition:

1. Test Low Temperature: -20℃ (1~3 cycles)
   -25℃ (4^{th} cycle)
2. Test High Temperature: 50℃ (1~3 cycles)
   55℃ (4^{th} cycle)
3. Test dwell time: 6Hrs
4. Temperature slope: 2℃/min
5. Test cycle: 4 cycles
6. Test Environment Curve:



Sample Configuration & Quantity Under Test:

Quantity: 1 (BOXER-6404)

Test Result:

No issues were found during the temperature operation cycle test.

High temperature storage test

Test Date: 06-24 ~ 25-2015

Test Product: BOXER-6404

Test Site: AAEON QE Dept.

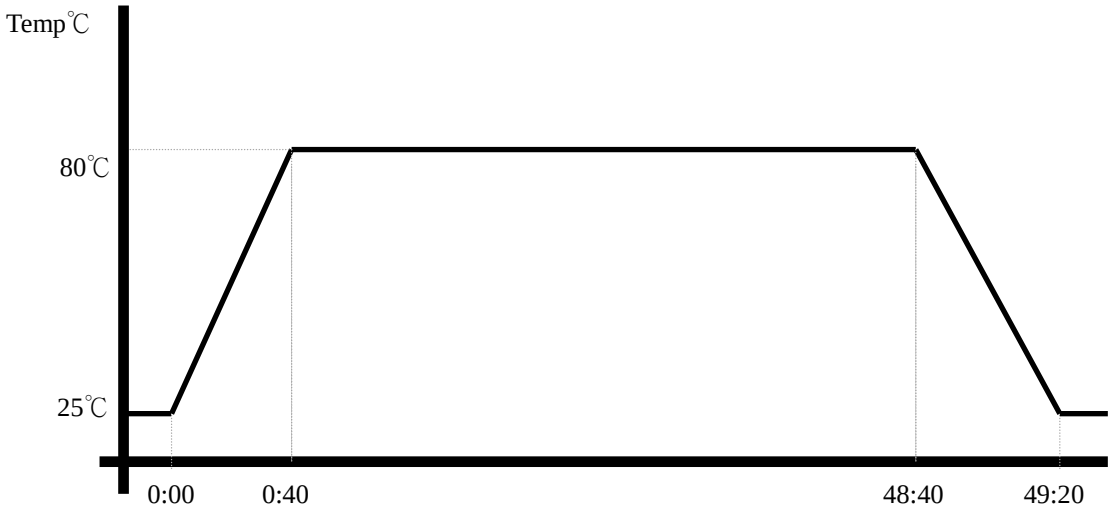
Test Standard: Refer to IEC 68-2-2 Testing procedures
Test Bb: Dry Heat Test (Non-operation)

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150-LN2
Date of Calibration: 04/27/15
Serial Number: 6488KT

Testing Item:

1. Test Temperature: 80℃
2. Test Times: 48Hrs
3. Test Software: Windows 7 / Run PassMark Burn In Test 8.0 Pro
4. Test Environment Curve:



Sample Configuration & Quantity Under Test:

Quantity: 1 (BOXER-6404)

Test Result:

No issues were found after the high temperature storage test.

Low temperature storage test

Test Date: 06-22~23-2015

Test Product: BOXER-6404

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: 04/27/15
Serial Number: 6488KT

Testing Item:

1. Test Temperature: -30℃
2. Test Times: 48Hrs
3. Test Software: Windows 7 / Run PassMark Burn In Test 8.0 Pro
4. Test Environment Curve:

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

Test Result:
No issues were found after the low temperature storage test.

Humidity test

Test Date: 06-19~20-2015

Test Product: BOXER-6404

Test Site: AAEON QE Dept.

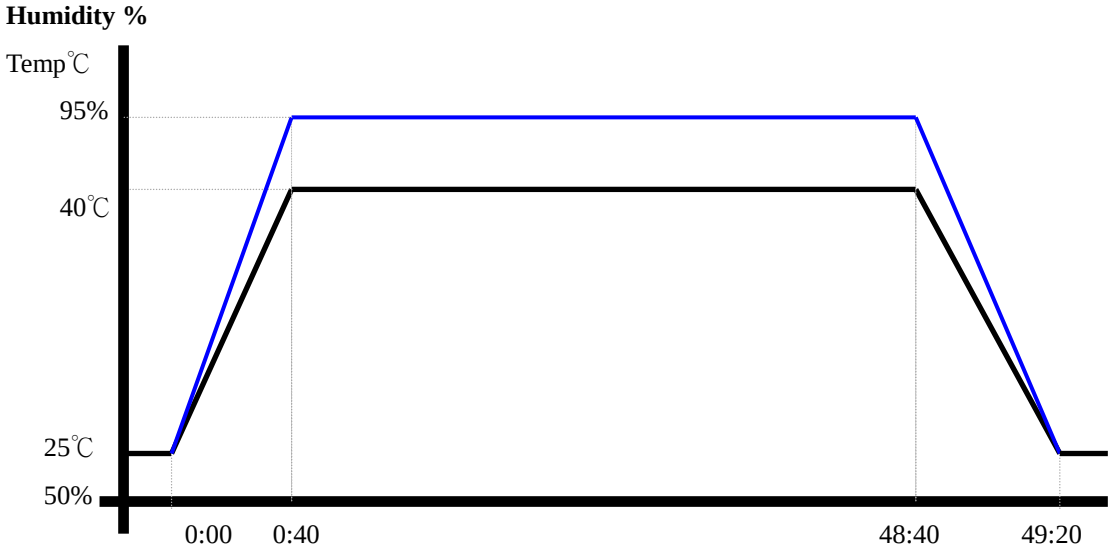
Test Standard: Refer to IEC 68-2-3 Testing procedures
Test Ca: Damp heat, steady state (Non-operation)

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150-LN2
Date of Calibration: 04/27/15
Serial Number: 6488KT

Testing Item:

1. Test Temperature: 40℃
2. Test Humidity: 95%RH
3. Test Times: 48Hrs
4. Test Software: Windows 7 / Run PassMark Burn In Test 8.0 Pro
5. Test Environment Curve:



Sample Configuration & Quantity Under Test:

Quantity: 1 (BOXER-6404)

Test Result:

No issues were found after the humidity storage test.

Cold start and hot start test

Test Date: 06-17~ 18-2015

Test Product: BOXER-6404

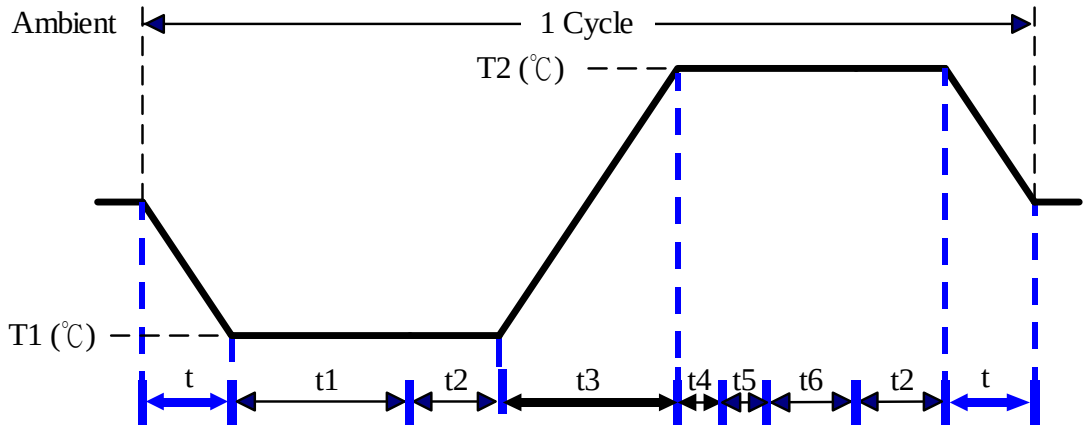
Test Site: AAEON QE Dept.

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: 04/27/15
Serial Number: 6488KT

Test Condition:



Parameters	Description
T1	-25℃
T2	55℃
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 burn in test 7.0
t5: Win 7 Software restart test 3 times
Test Software: Windows 7

Test Result:

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

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