BOXER-6951

With HDD

Environment Test Report

Report NO: 16P020003

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

Issue date	QE Manager	Test Engineer
2016-01-11	**KJ Wang**	**Ben Sun**

Test item list

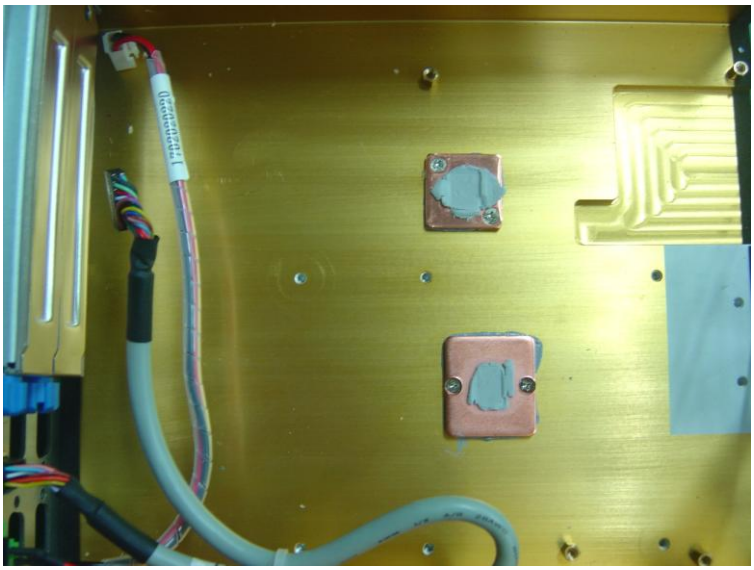
Testing Result

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	
7	Temp./humidity power on/off test	Pass	

Configuration of EUT

Num	Item	Spec
1.	System:	BOXER-6951 A0.1
	1. Main board	PBA-QM77 D0.1
	2. BIOS	R0.3
	3. CPU Type	Intel Ivy Bridge 2.2GHz
	4. Memory	Transcend DDR3-1600 8GB TS1GSK64V6H-I
	5. HDD	HGST 100GB
	6. Test Software	Windows 7 / Run BurnIn test 8.0 Pro
2.	Power Supply	FP084-DMAA1

CPU Heatsink



Temperature rise test

Test Date: 01-06~08-2016

Test Product: BOXER-6951

Test Site: AAEON QE Dept.

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

Temperature Measurement:

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

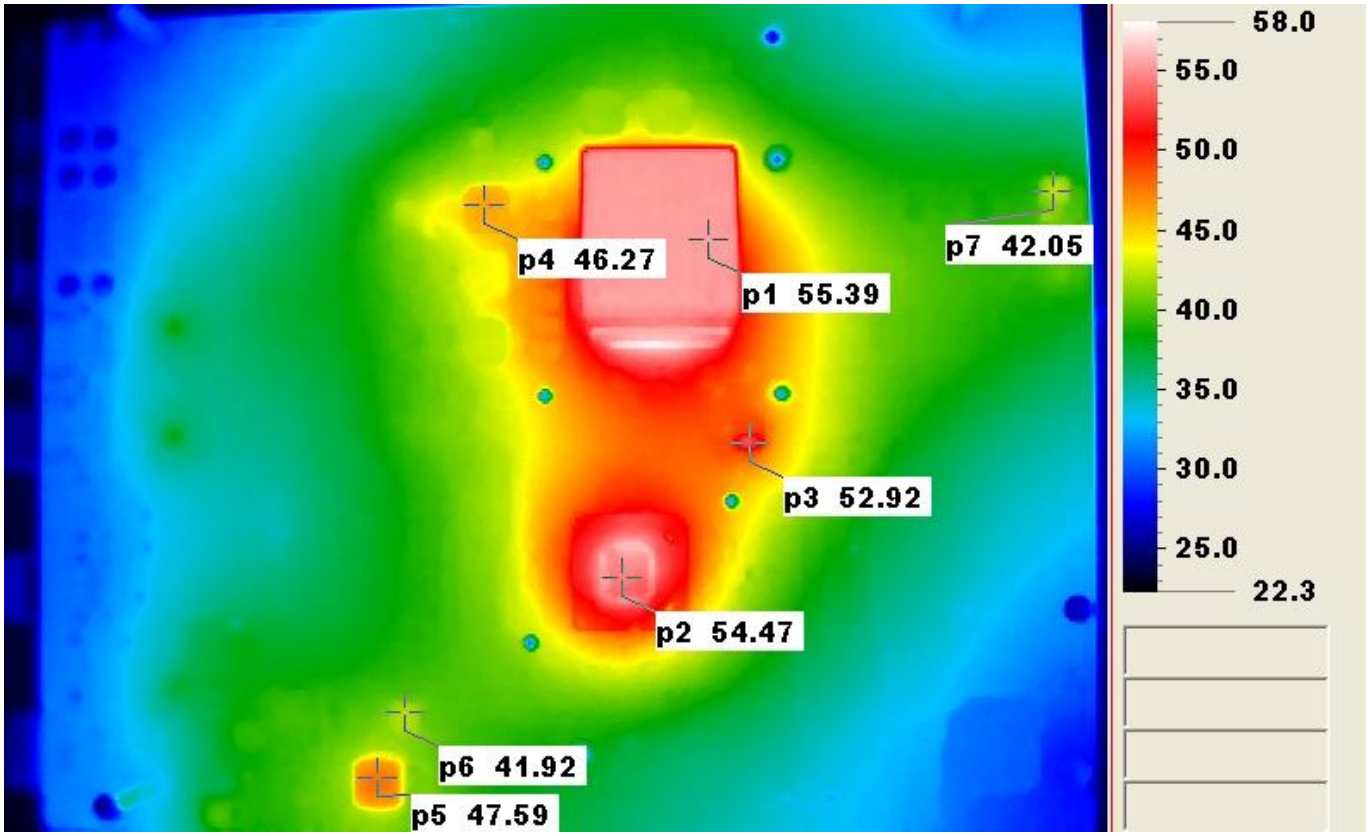
Test Condition:

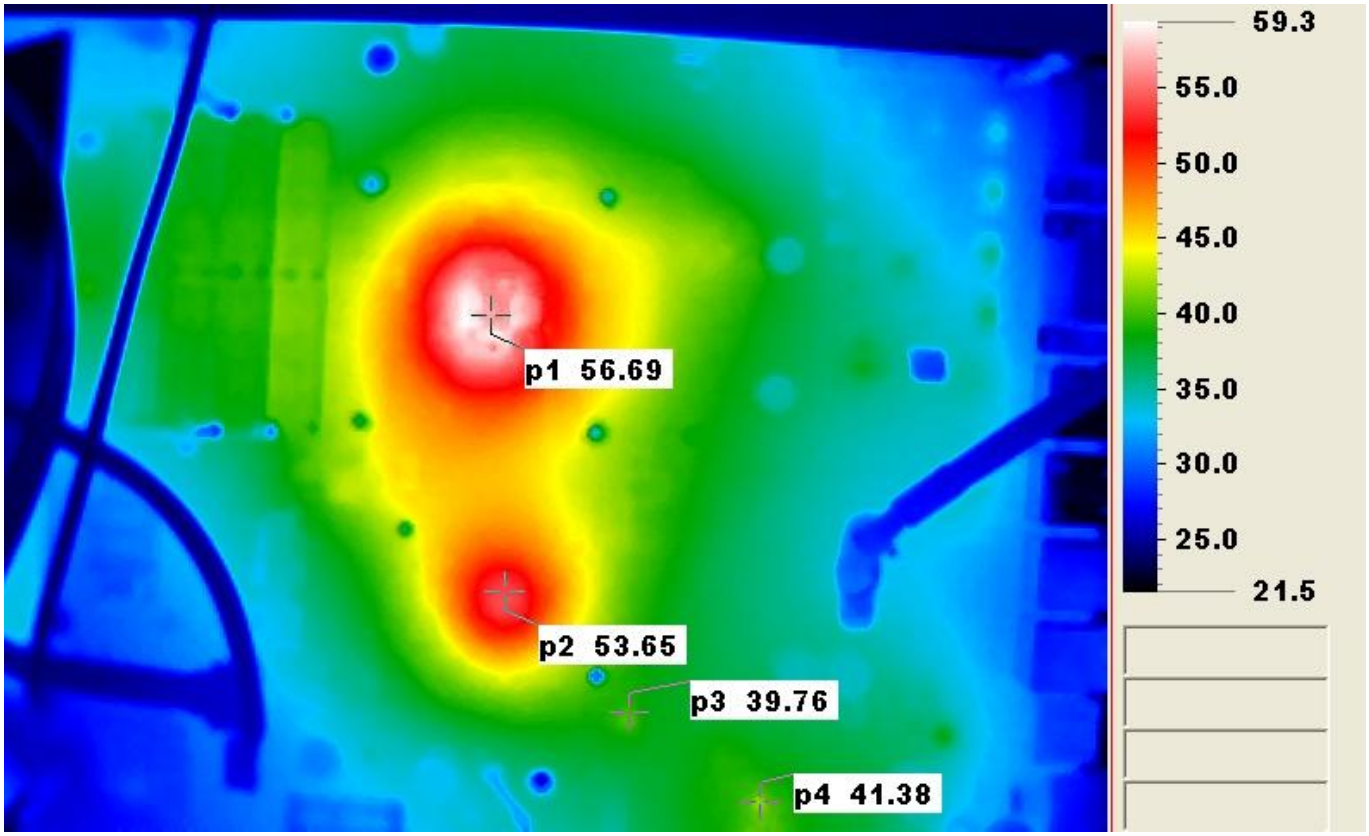
Ambient temperature: 50℃ with airflow 0.5m/s
Continuous running till thermal stability (within less than 1℃)

Test Software:

Windows 7 / Run PassMark Burn In Test 8.0 Pro

Terminal Recorder:

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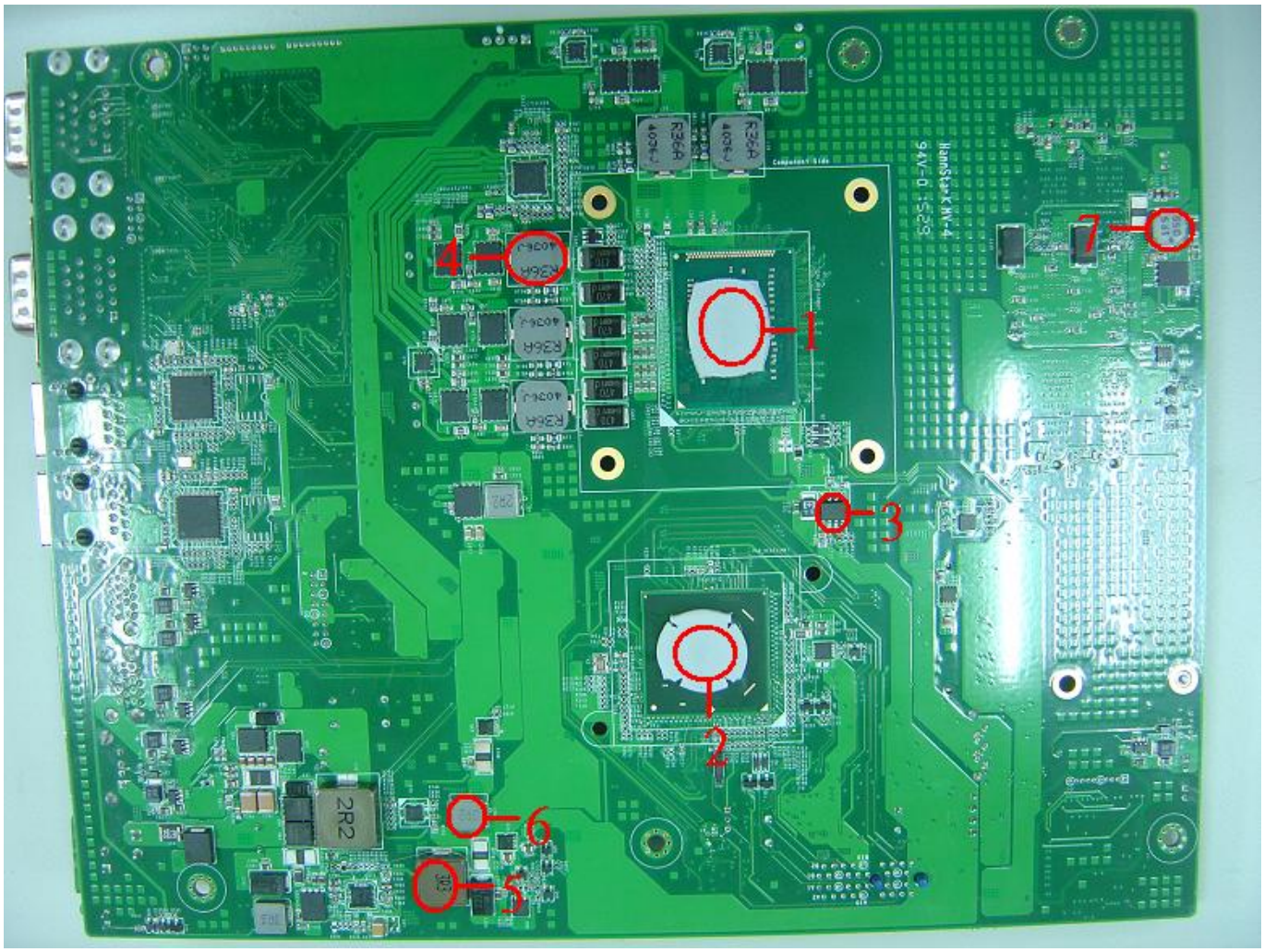
55.0
50.0
45.0
40.0
35.0
30.0
25.0
21.5
p1 56.69
p2 53.65
p3 39.76
p4 41.38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2
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4
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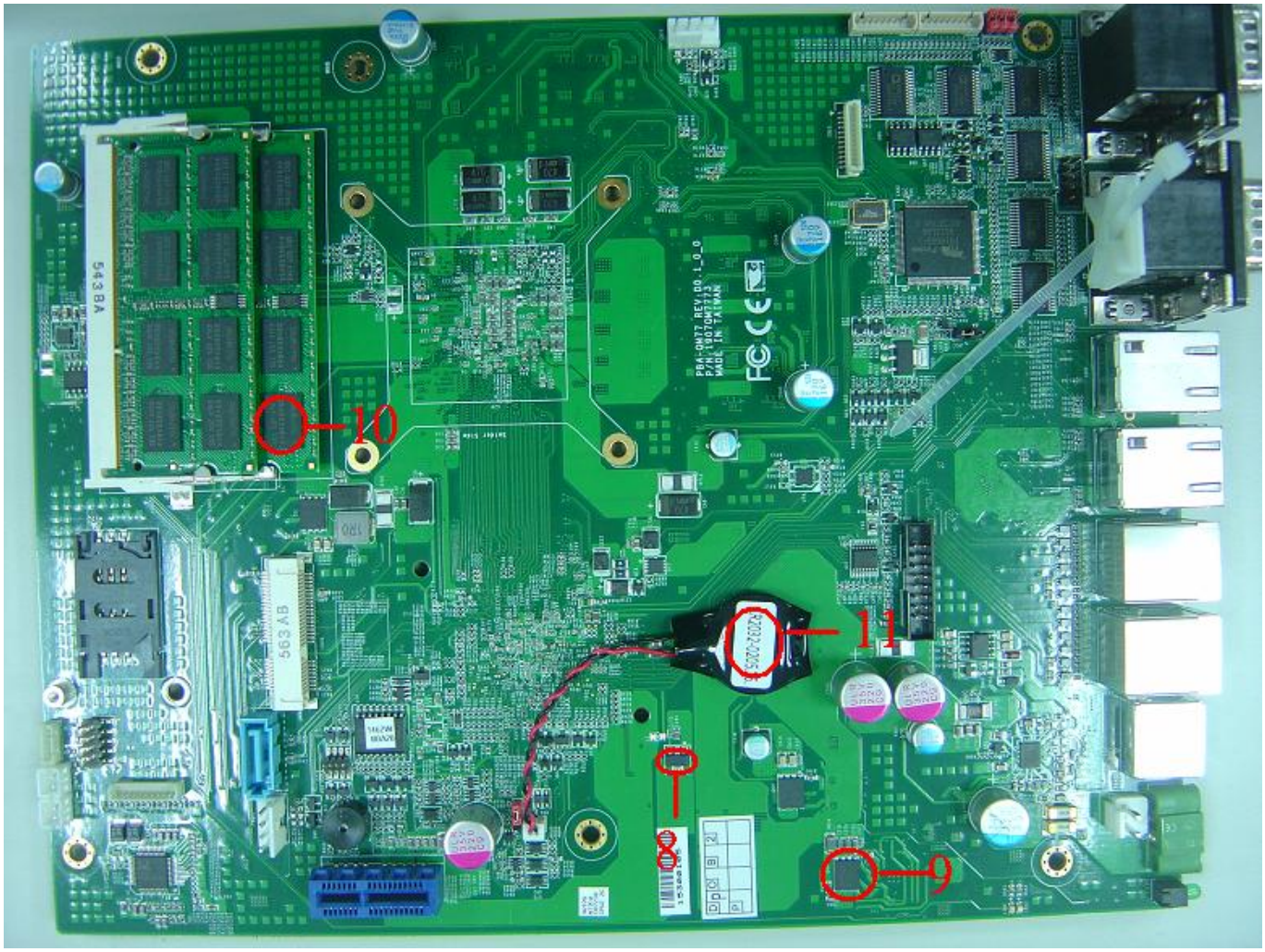
2R2


10
1
9

Thermal profile data:

BOXER-6951

Point	Position	Describe	Tc (*1) (℃)	TAT(*2)	TPT(*3)	Note
				50	25	
1	U1	(TF)INTEL CPU.Ivy Bridge 2.2GHz BGA1023 AV8063801276200 SR0VR.Celeron 1020E	105	62.6	37.6	
2	U4	(TF)IC.SMD.Chipset PCH.INTEL.BD82QM77 SLJ8A	108	59.8	34.8	
3	U81	(TF)IC.3A.0.23V.Low Dropout Linear Regulator.SOP 8P.SMD.ANPEC.APL5930-KAI-TRG	150	71.6	46.6	
4	L25	(TF)COIL.0.36uH.Irms=34A.20%.MD(11.5x10x4.0).2pin.R DC=0.76m Ohm.Panasonic.ETQP4LR36AFC	100	68.7	43.7	
5	L19	(TF)COIL.3.3uH.20%.SMD.11.5x10.5x4.0mm.DCR=10.8m ohm.Idc=10Amp.ZenithTek.ZPWM-1040MB-3R3M	100	70.0	45.0	
6	L24	(TF)COIL.2.2uH.20%.SMD.7.4x6.9x3.0mm.GOTREND.GS TD6030PE-2R2M	100	62.2	37.2	
7	L23	(TF)COIL.1.5uH.DCR=9.8mohm.Irms=9.6Amp.20%.7.0*6.6 *3.0mm.SMD.Panasonic.ETQP3W1R5WFN	100	61.3	36.3	
8	Q10	(TF)REG.CMOS LDO Regulator.SOT-89 3P.SMD.AME.AME8805AEFTZ	125	65.7	40.7	
9	Q49	(TF)DualN-Channel.Vds=30V.Vgs=(+/-)20V.Ids=12A.Rds=7 mohm.PG-TISON.SMD.Infineon.BSC0925ND	150	68.6	43.6	
10	DDR module	(TF)4GB.DDR3.204Pin SODIMM.1600.512M*8.Samsung chip.Transcend.TS512MSK64V6H	85	76.7	51.7	
11	BAT1	(TF)BATTERY.3V.MAXELL.CR2032M1S8-LF	85	63.7	38.7	
12		HDD Surface Temp	70	66.3	41.3	NOTE4
13		System Ta (inside)	N/A	59.7	34.7	
14		System surface temp	N/A	56.8	31.8	

Note(*):
1. "Tc" indicates the component's case maximum temperature value specified in its datasheet.
2. "TAT" indicates the actual measured temperature in chamber.
3. "TPT" indicates the predicted temperature by offset from TAT
4. 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.
5. Defect NO.

Sample Configuration & Quantity Under Test:

Quantity: 1 (BOXER-6951)

Test Result:

No issues were found during the temperature rise operation test.

Temperature cycle test

Test Date: 12-28 ~ 29-2015

Test Product: BOXER-6951

Test Site: AAEON QE Dept.

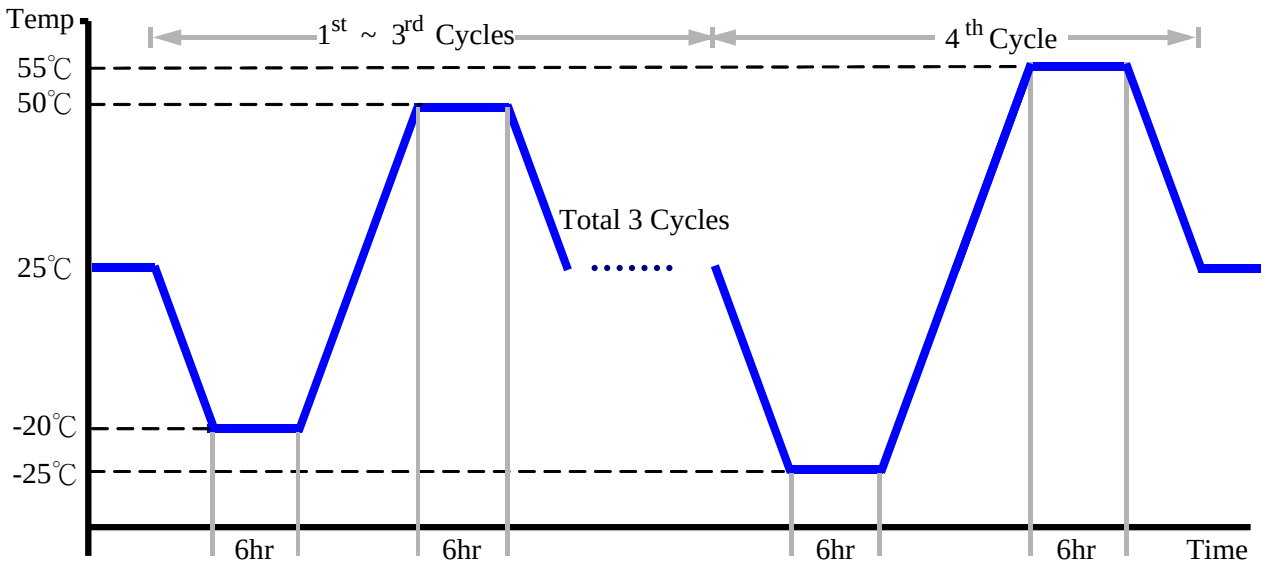
Test Standard: Refer to IEC68-2-14 Testing procedures
Test N: Change of temperature Test

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-6951)

Test Result:

No issues were found during the temperature operation cycle test.

High temperature storage test

Test Date: 12-30 ~ 31-2015

Test Product: BOXER-6951

Test Site: AAEON QE Dept.

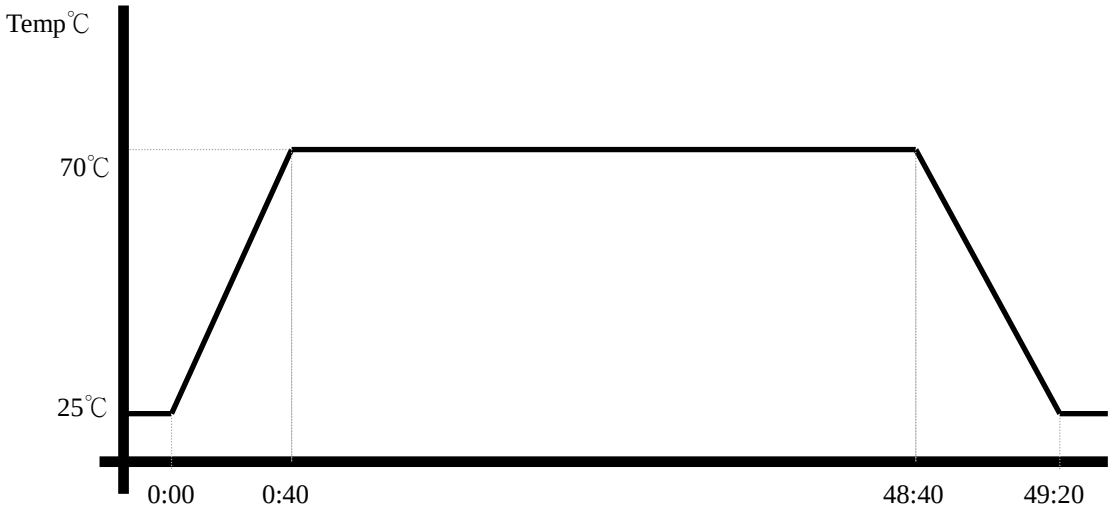
Test Standard: Refer to IEC 68-2-2 Testing procedures
Test Bb: Dry Heat Test (Non-operation)

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: 70℃
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-6951)

Test Result:

No issues were found after the high temperature storage test.

Low temperature storage test

Test Date: 01-01~02-2016

Test Product: BOXER-6951

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: -20℃
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-6951)

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

Humidity test

Test Date: 01-03~04-2016

Test Product: BOXER-6951

Test Site: AAEON QE Dept.

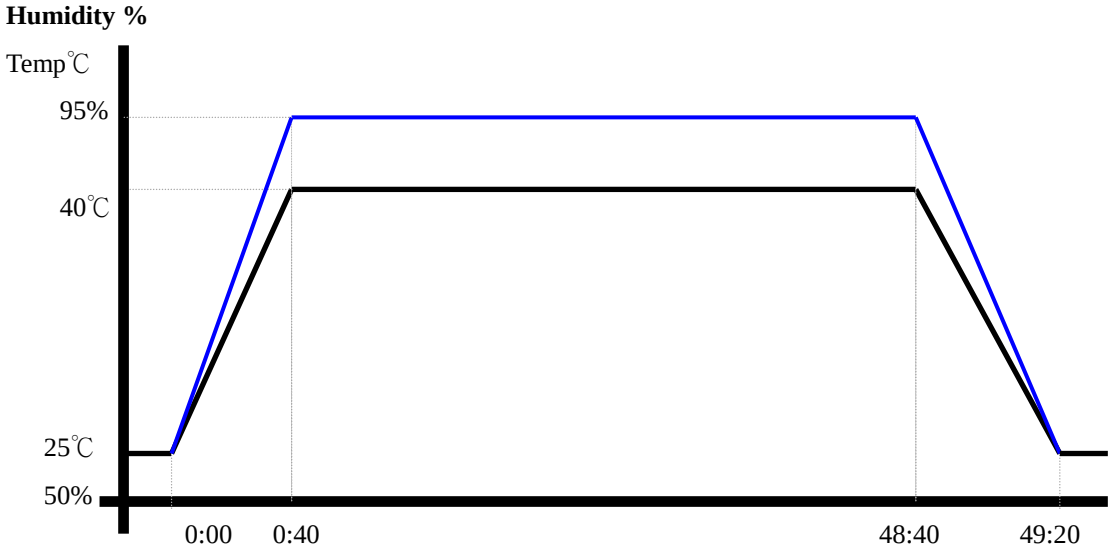
Test Standard: Refer to IEC 68-2-3 Testing procedures
Test Ca: Damp heat, steady state (Non-operation)

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-6951)

Test Result:

No issues were found after the humidity storage test.

Cold start and hot start test

Test Date: 01-05-2016

Test Product: BOXER-6951

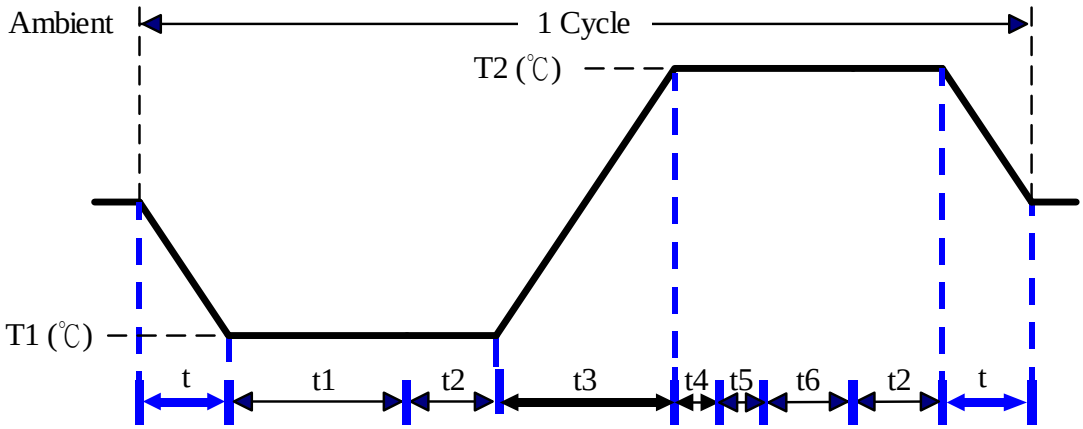
Test Site: AAEON QE Dept.

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 8.0
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.

Temp./humidity power on/off test

Test Date: 01-08 ~ 09-2016

Test Site: AAEON QE Dept.

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

Test Equipment:

P Programmable Temperature & Humidity Chamber (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 04/10/15
Serial Number: 9095KT

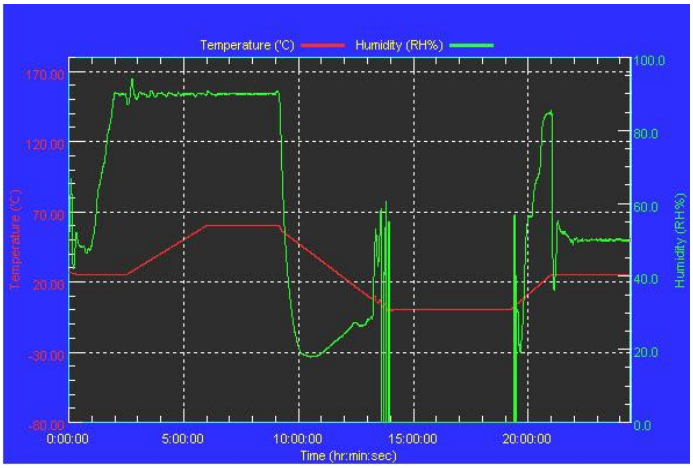
Temperature & Humidity Power On/Off Test:

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:

Test Method	Actual	Successful	Failure rate
Power On/Off	1361/times	1361/times	0 %

Note: 1. Failure rate need to under 0%.

2. Power on/off fixture setting: on - 35 sec / off - 5 sec