BOXER-6403
Environment Test Report

Report NO: 14P020022

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

Issue date	Approval	Test Engineer
2014-12-22	**Vincent Chen**	**Ben Sun**

Test item list

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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	CPU	Intel Celeron J1900 1.99GHz)
2	CPU Board	BOXER-6403
3	BIOS	R0.8(B403AM08)(12/05/2014)
4	Memory	Innodisk DDR3L-1333 8GB
5	mSATA	Toshiba 64GB
6	Test Software	Windows 8.1 / Run PassMark Burn In Test 8.0 Pro

System Pic

Temperature rise test

Test Date: 12-19-2014

Test Product: BOXER-6403

Test Site: AAEON QE Dept.

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

Temperature Measurement:

40 Channel Thermal Recorder:
YOKOGAWA Inc,
Model: DA100-13-1D
Date of Calibration: 09/11/14
Serial Number: 12A323190

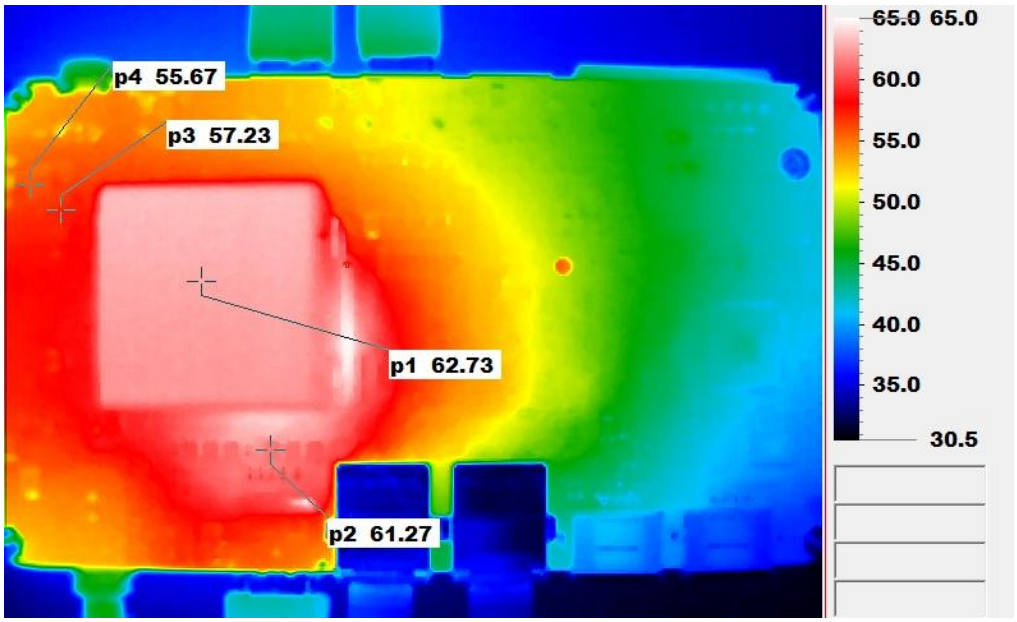
Test Condition:

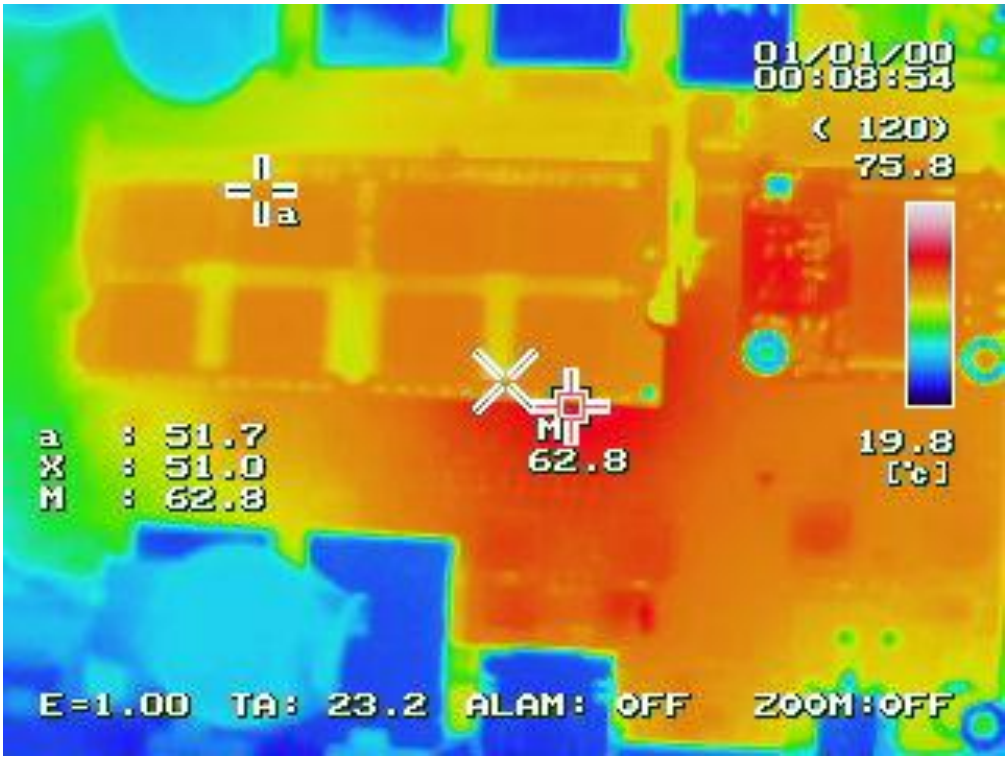
Ambient temperature: 40℃
Continuous running till thermal stability (within less than 1℃)

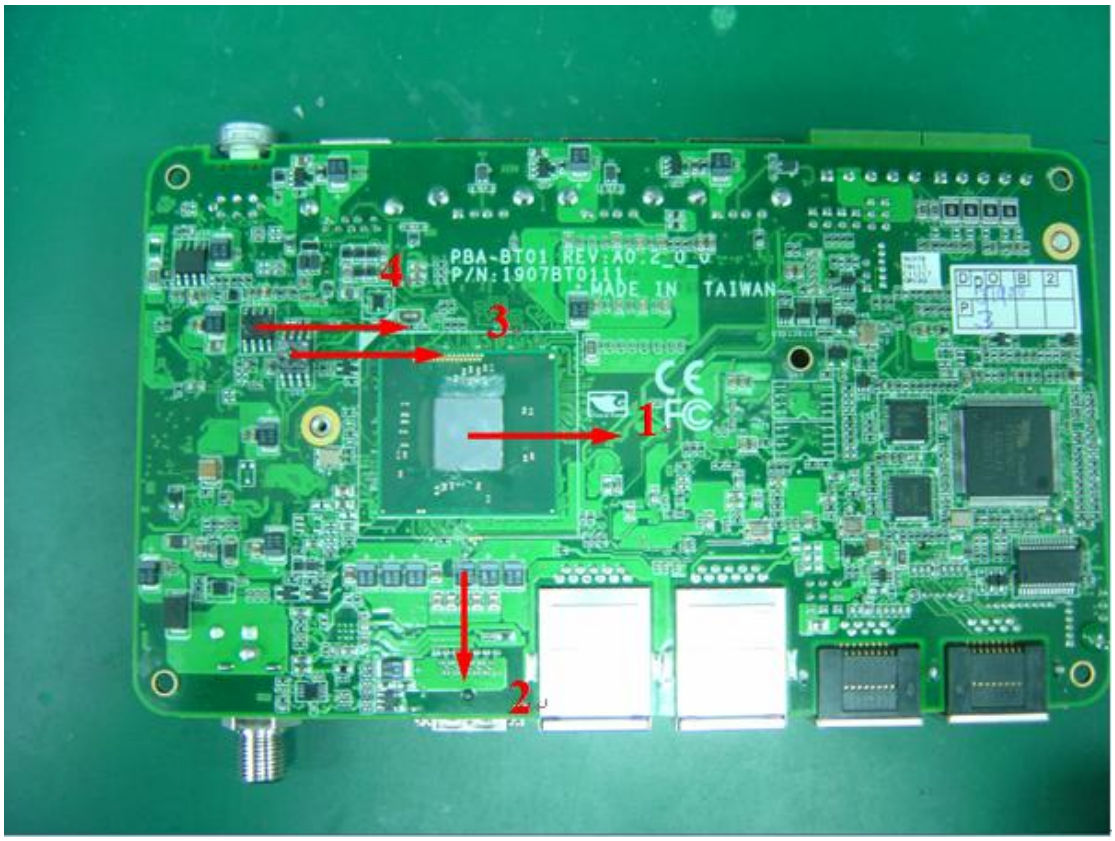
Test Software:

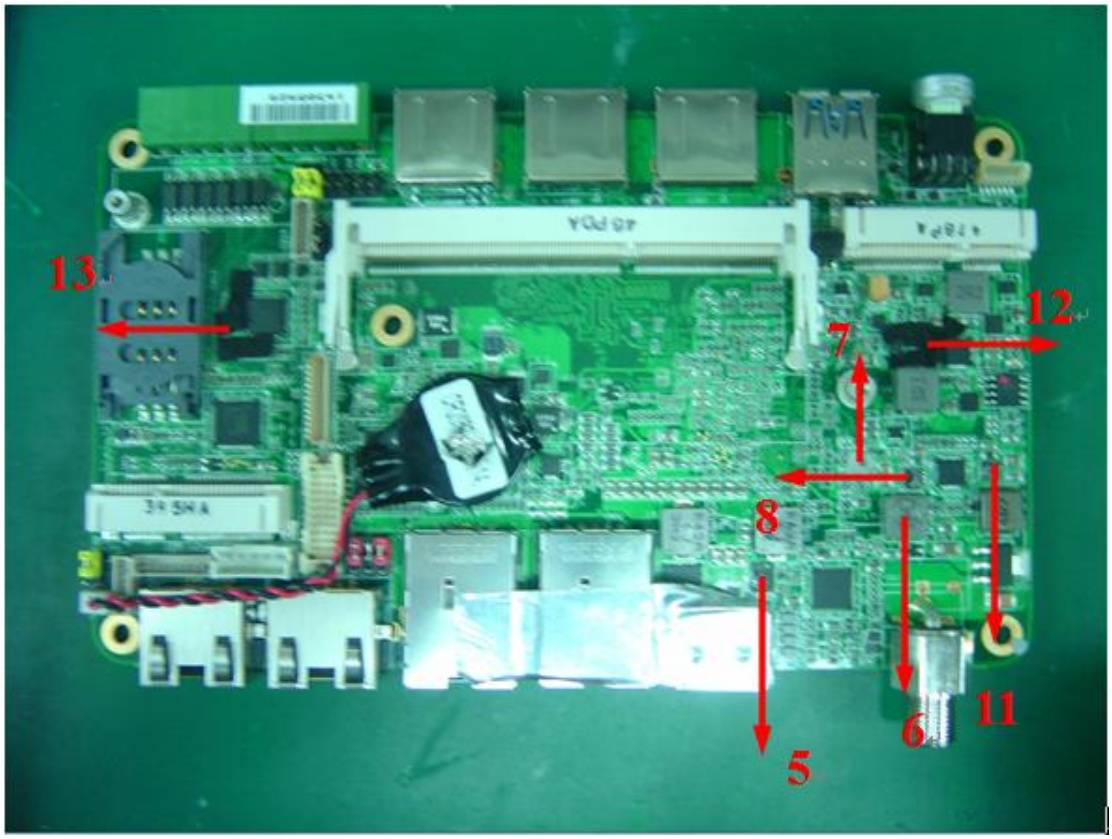
Windows 8.1 / Run PassMark Burn In Test 8.0

Terminal Recorder:




01/01/00
00:08:54
(120)
75.8
a
M
62.8
19.8
[°c]
a : 51.7
X : 51.0
M : 62.8
E=1.00 TA: 23.2 ALAM: OFF ZOOM:OFF


PBA-BT01 REV:A0.2_0_0
P/N:1907BT0111
MADE IN TAIWAN
1
2
3
4


13
12
7
8
6
11
5

Temperature rise test

Thermal profile data:

Point	Location	Describe	Tc (*1) (℃)	Tm (*2) Measured Under 40℃	Note
1	U50	Intel® Celeron™ J1900 1.99GHz	105	73.0	
2	C467	(TF)CAP.330uF.2.5V.20%.B2(3.5*2.8*1.9mm).SMD.9mohm.NEC-TOKIN.TEPSGB20E337M9-8R	105	70.8	
3	U45	(TF)IC.64 Mbit SPI Flash SOIC-8P 208mil.SMD Winbond W25Q64FVSSIG	85	69.1	
4	U41	(TF)IC.LDO Linear Regulator 0.23V 2A.SOP-8(Exposed Pad) SMD RICHTEK.RT9025-25PSP	120	71.1	
5	U24	TF)IC.Synchronous Buck NexFETTM.SON 8P.Power Stage SMD TI CSD97374Q4M	150	74.8	
6	L7	3.3UH	150	79.7	
7	Q13	EM6K1GT2R	150	73.3	
8	Q15	FDMC7200S	150	75.3	
9	BAT 1	RTC Battery	85	75.0	
10	DIMM12	DIMM	85	73.4	
11	Q14	FDMC7200S	150	72.3	
12		Ta (under mSATA)	N/A	74.3	
13		Ta (under 3G module)	N/A	67.6	

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.

Sample Configuration & Quantity Under Test:

Quantity: 1 (BOXER-6403)

Test Result:

No issues were found during the temperature rise operation test.

Temperature cycle test

Test Date: 12-09 ~ 10-2014

Test Product: BOXER-6403

Test Site: AAEON QE Dept.

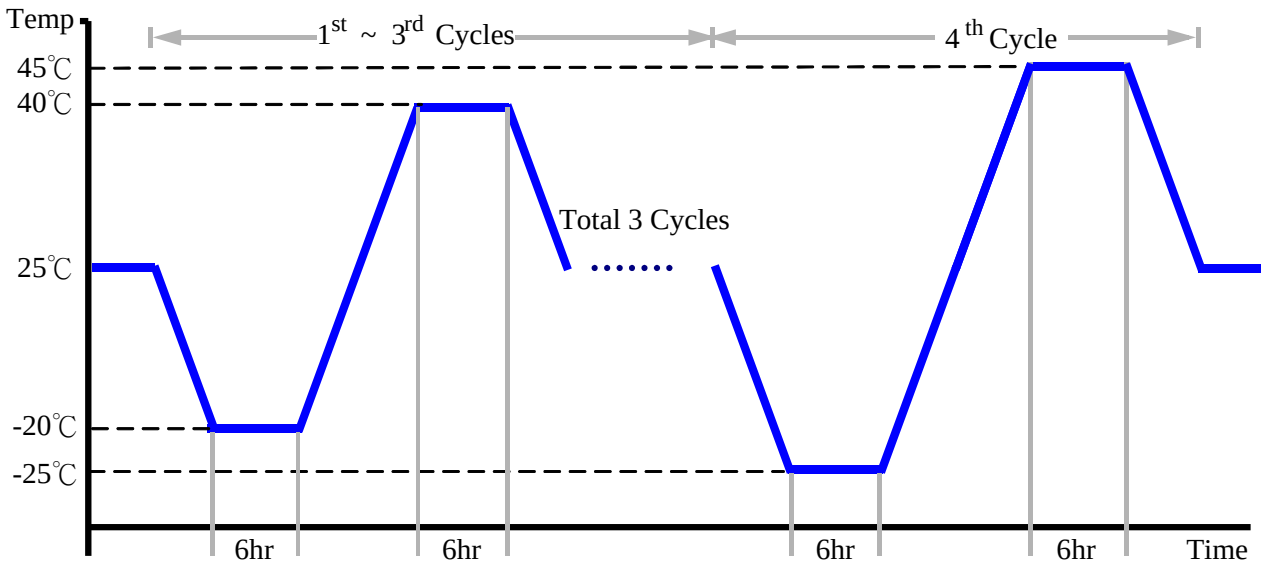
Test Standard: Refer to IEC68-2-14 Testing procedures
Test N: Change of temperature Test

Test Equipment:

Programmable Temperature & Humidity Chamber (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 09/01/14
Serial Number: 9095KT

Test Condition:

1. Test Low Temperature: -20℃ (1~3 cycles)
   -25℃ (4^{th} cycle)
2. Test High Temperature: 40℃ (1~3 cycles)
   45℃ (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-6403)

Test Result:

No issues were found during the temperature operation cycle test.

High temperature storage test

Test Date: 12-12 ~ 13-2014

Test Product: BOXER-6403

Test Site: AAEON QE Dept.

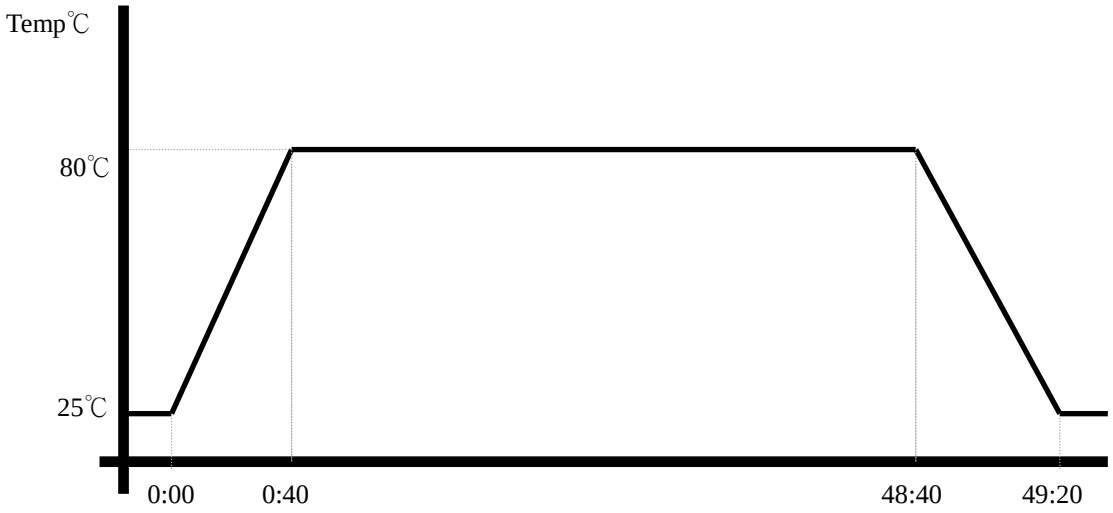
Test Standard: Refer to IEC 68-2-2 Testing procedures
Test Bb: Dry Heat Test (Non-operation)

Test Equipment:

Programmable Temperature & Humidity Chamber (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 09/01/14
Serial Number: 9095KT

Testing Item:

1. Test Temperature: 80℃
2. Test Times: 48Hrs
3. Test Software: Windows 8.1 / Run PassMark Burn In Test 8.0
4. Test Environment Curve:



Sample Configuration & Quantity Under Test:

Quantity: 1 (BOXER-6403)

Test Result:

No issues were found after the high temperature storage test.

Low temperature storage test

Test Date: 12-15 ~ 16-2014

Test Product: BOXER-6403

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: 09/01/14
Serial Number: 9095KT

Testing Item:

1. Test Temperature: -30℃
2. Test Times: 48Hrs
3. Test Software: Windows 8.1 / Run PassMark Burn In Test 8.0
4. Test Environment Curve:

Sample Configuration & Quantity Under Test:
Quantity: 1 (BOXER-6403)

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

Humidity test

Test Date: 12-17~18-2014

Test Product: BOXER-6403

Test Site: AAEON QE Dept.

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

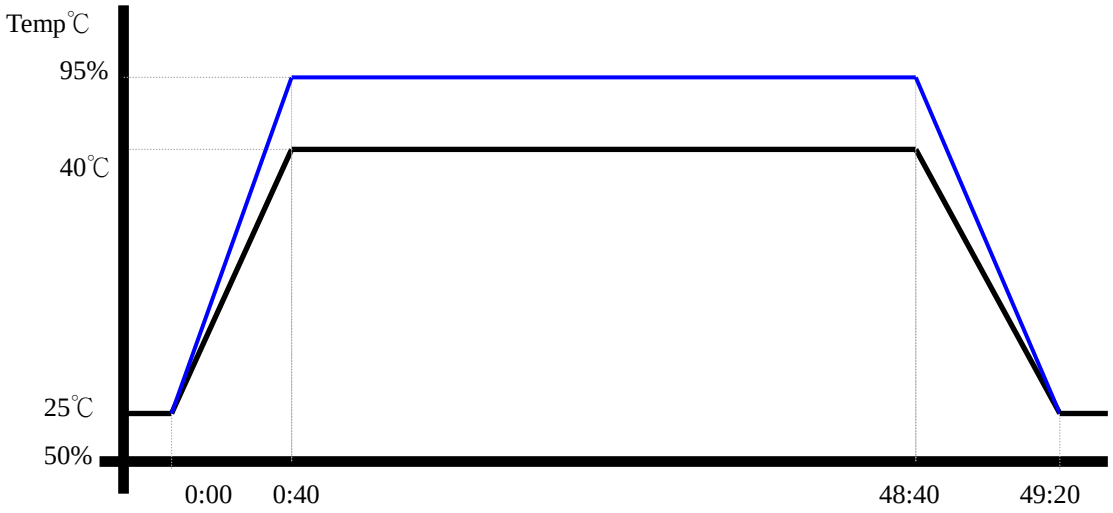
Test Equipment:

Programmable Temperature & Humidity Chamber (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 09/01/14
Serial Number: 9095KT

Testing Item:

1. Test Temperature: 40℃
2. Test Humidity: 95%RH
3. Test Times: 48Hrs
4. Test Software: Windows 8.1 / Run PassMark Burn In Test 8.0
5. Test Environment Curve:

Humidity %



Sample Configuration & Quantity Under Test:

Quantity: 1 (BOXER-6403)

Test Result:

No issues were found after the humidity storage test.

Cold start and hot start test

Test Date: 12-11-2014

Test Product: BOXER-6403

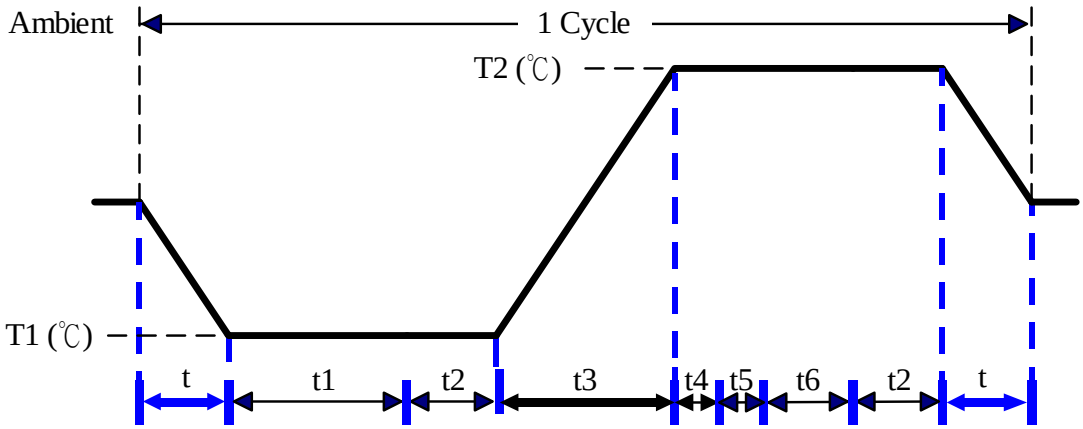
Test Site: AAEON QE Dept.

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: 09/01/14
Serial Number: 9095KT

Test Condition:



Parameters	Description
T1	-25℃
T2	45℃
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 8.1

Test Result:

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

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