AEC-6643
Environment Test Report

Report NO: 13P020009

Summary	☐ **Pass** ☐ **Fail** ☑ **Pass with Deviation** **Comment:** After compared with component datasheet, there were 2 components' surface temperature located in marginal pass criteria.

Issue date	Approval	Test Engineer
2013-07-08	**Tom Lin**	**Willy Shih**

Test item list

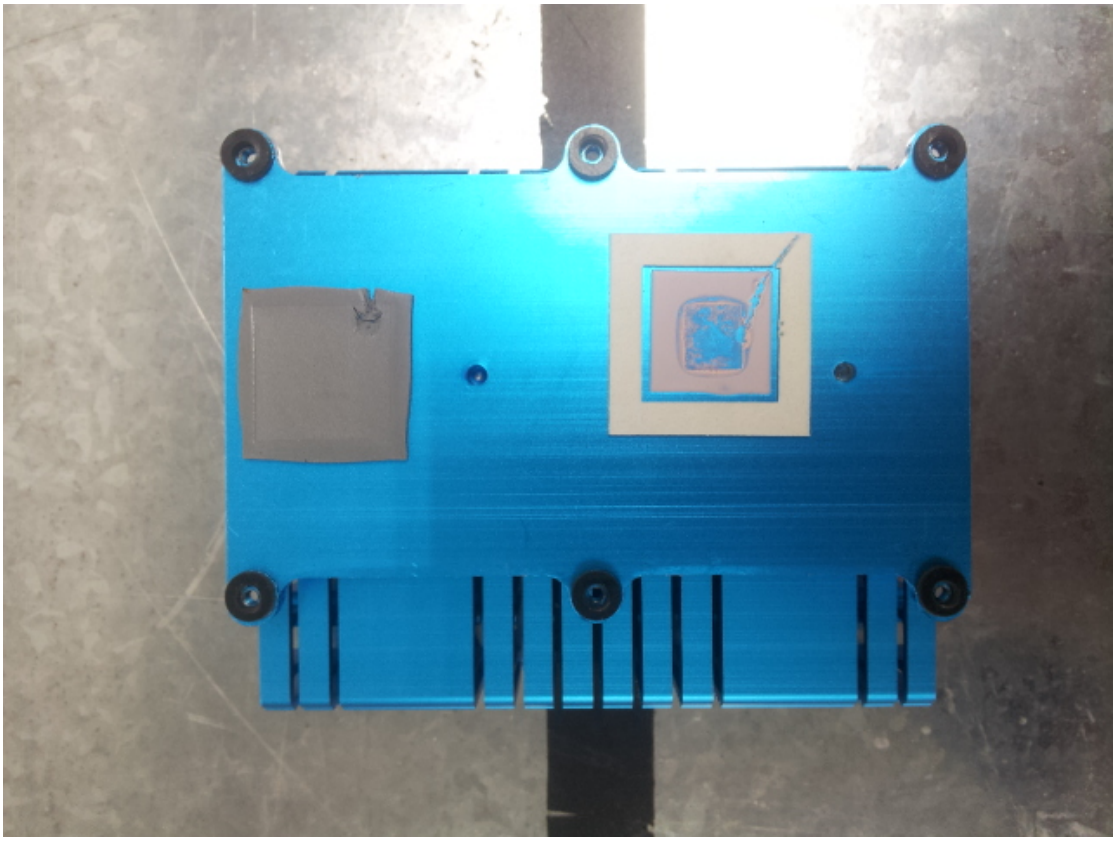
Testing Result

Num	Test item list	Result	Remark
1	Temperature rise test	Pass with Deviation	
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	

Num	Item	Spec
1	CPU	Intel Atom D2550 B3 Processor 1.86GHz
2	BIOS	AEC-6643A R1.0(6643AM10)
3	Chipset	Intel NM10
4	Memory	DSL DDR3 1066 2GB (ELPIDA J1108BDSE) *2
5	HDD	TOSHIBA 2”5 MK1060GSC 100G
6	Test Software	Windows 7 / Run PassMark Burn In Test 7.0 Pro
7	Heat Sink	As below pic

Configuration of EUT

Heat Sink



Temperature rise test

Test Date: 07-05-2013

Test Product: AEC-6643

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: 10/08/12
Serial Number: 12A323190

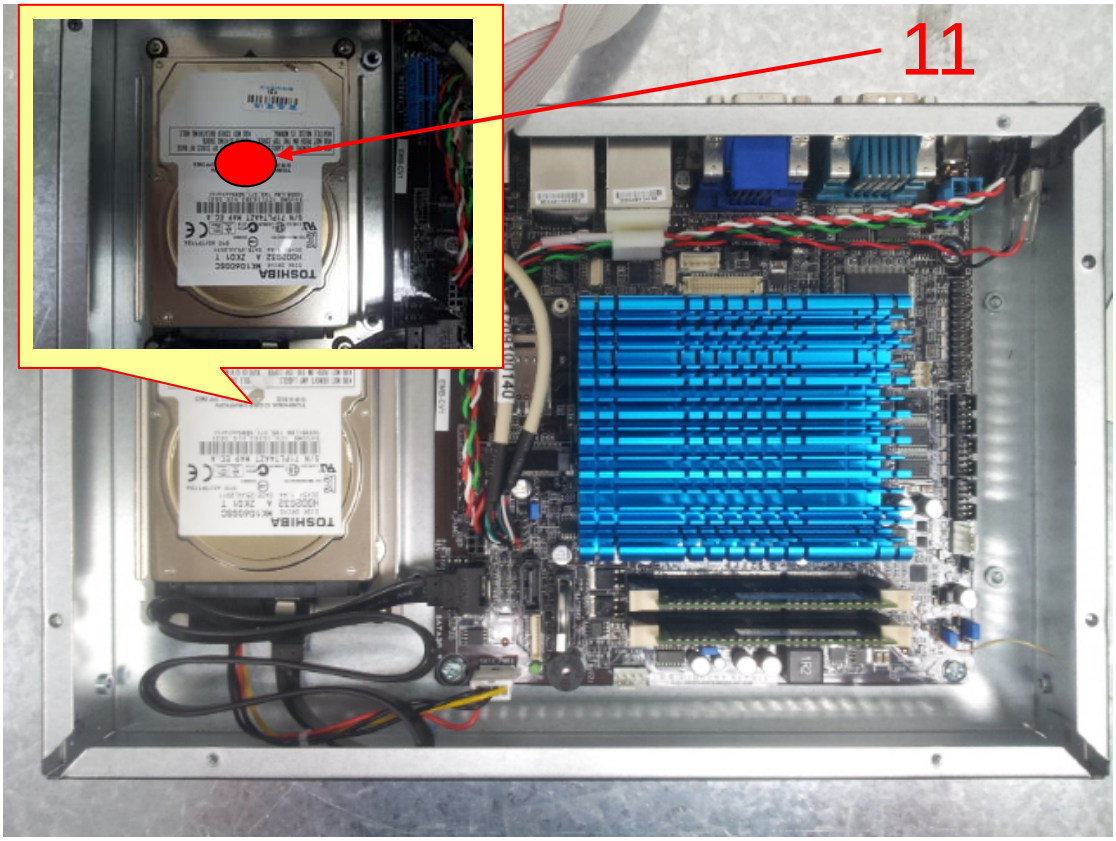
Test Condition:

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

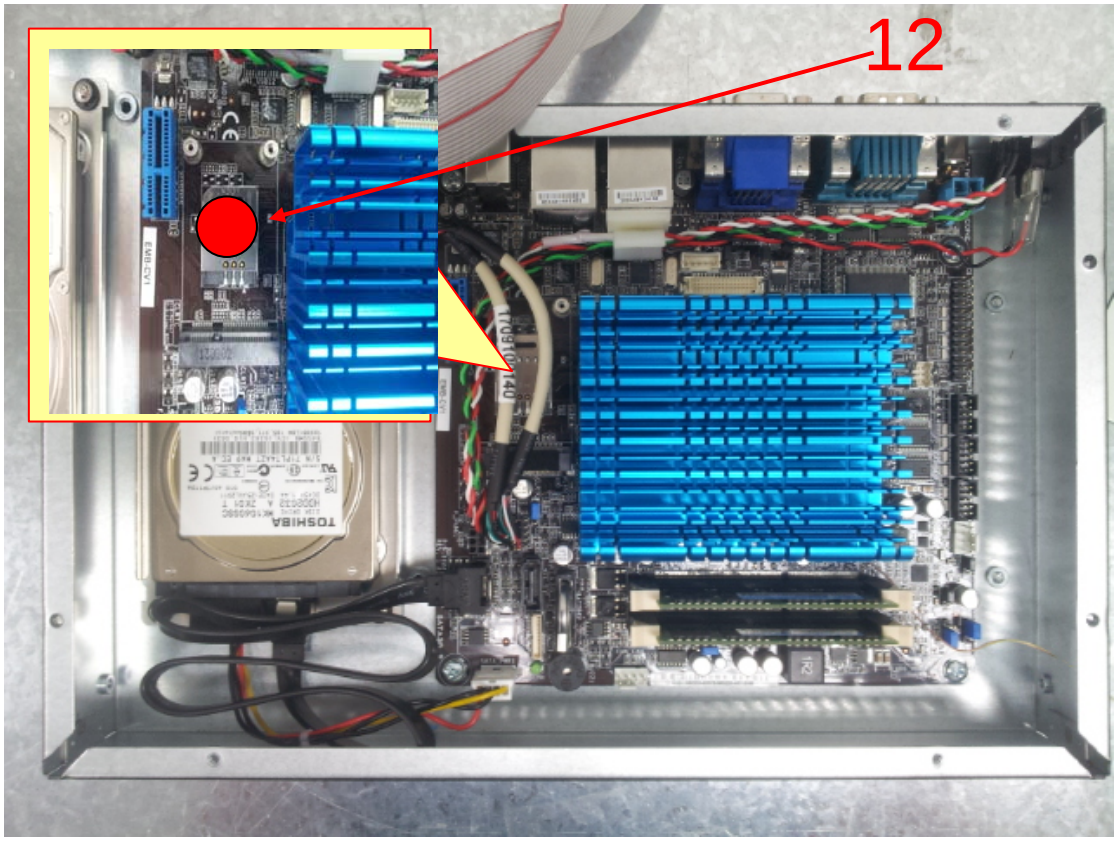
Test Software:

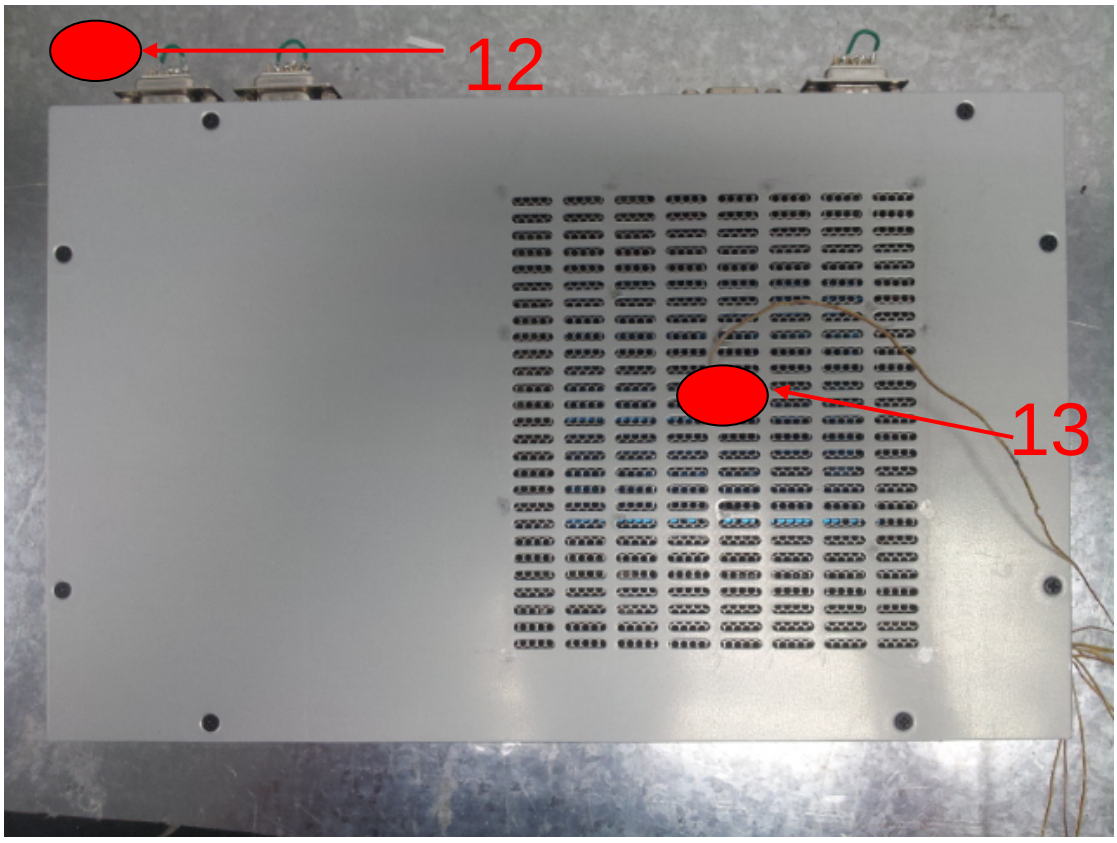
Windows 7 / Run PassMark Burn In Test 7.0 Pro

Terminal Recorder:



Temperature rise test





Temperature rise test

Thermal profile data:

ACP-1103

Point	Position	Describe	Tc (*1) (℃)	Tm (*2) Measured Under		Note
				25℃	40℃	
1.	AU1	C.S VT1708S EUP (CD) LQFP48 VIA TAIWAN/CU-WIRE [HF].SMD	100	55.2	70.2	
2.	LU1	(TF)IC.PCI-express.Gigabit Ethernet.REALTEK.RTL8111E-VL-CG	100	52.3	67.3	
3.	SU1	(TF)IC.SMD.NM10 Express Chipset.INTEL.CG82NM10.SLGXX	115	68.3	83.3	
4.	U1	(TF)INTEL Cedarview CPU.2.13Ghz.D2700.	100	73.9	88.9	
5.	OU11	(TF)IC.SMD.SSOP RS232 Driver ESD 15KV.AD.ADM213EARSZ	100	60.7	75.7	
6.	PL4	INDUCTOR 2.2UH/8A CYNTEC/PCMB063T-2R2MS [HE].SMD	125	64.2	79.2	
7.	PQ404	(TF)PWR.SMD.3P.N-Channel MOSFET.NIKO-SEM.P0903BDL	125	68.4	83.4	
8.	Memory	DSL DDR3 1066 2GB (ELPIDA J1108BDSE)	95	78.6	93.6	Note 4
9	Memory	DSL DDR3 1066 2GB (ELPIDA J1108BDSE)	95	76.3	91.3	Note 4
10	Box inside Air Temperature	N/A	N/A	45.8	60.8	
11	HD	TOSHIBA 2”5 MK1060GSC 100GB	85	41.8	56.8	
12	Chamber Air Temperature	N/A	N/A	23.6	38.6	
13	Housing surface temp	N/A	N/A	48.7	63.7	

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+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. Defect No. P130414QEP01

Sample Configuration & Quantity Under Test:

Quantity: 1 (AEC-6643)

Test Result:

No issues were found during the temperature rise operation test.

Temperature cycle test

Test Date: 06-24 ~ 28-2013

Test Product: AEC-6643

Test Site: AAEON QE Dept.

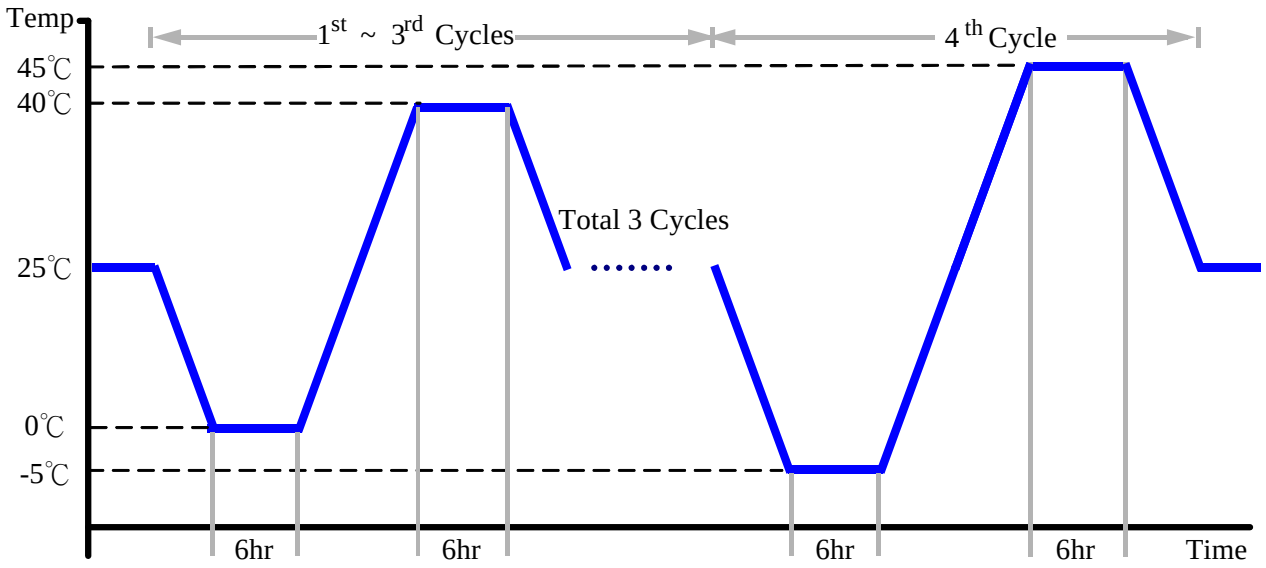
Test Standard: Refer to IEC68-2-14 Testing procedures
Test N: Change of temperature Test

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D4H+-100
Date of Calibration: 10/10/12
Serial Number: 2582

Test Condition:

1. Test Low Temperature: 0℃ (1~3 cycles)
   -5℃ (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 (AEC-6643)

Test Result:

No issues were found during the temperature operation cycle test.

High temperature storage test

Test Date: 06-26 ~ 28-2013

Test Product: AEC-6643

Test Site: AAEON QE Dept.

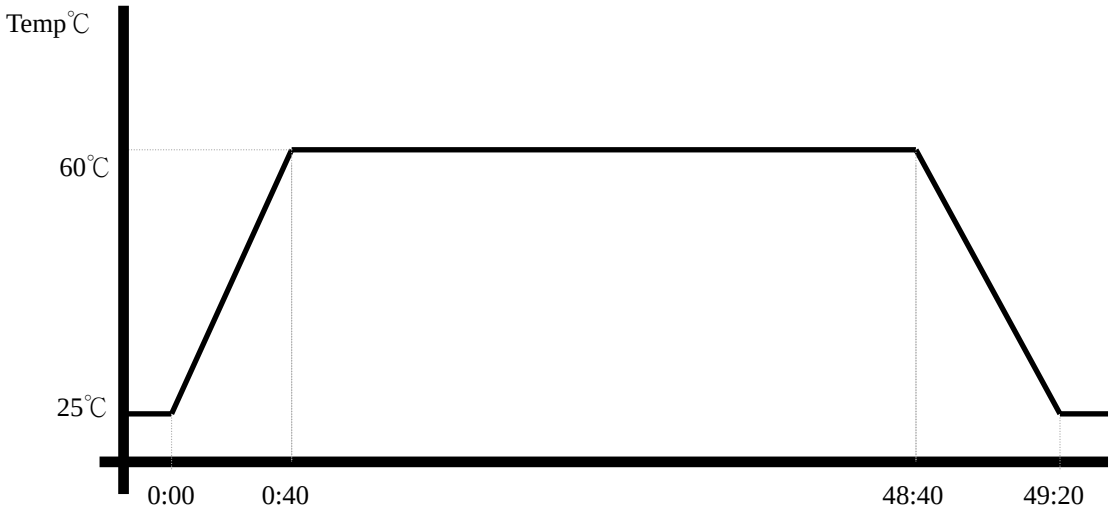
Test Standard: Refer to IEC 68-2-2 Testing procedures
Test Bb: Dry Heat Test (Non-operation)

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D4H+-100
Date of Calibration: 10/10/12
Serial Number: 2582

Testing Item:

1. Test Temperature: 60℃
2. Test Times: 48Hrs
3. Test Software: Windows 7 / Run PassMark Burn In Test 7.0 Pro
4. Test Environment Curve:



Sample Configuration & Quantity Under Test:

Quantity: 1 (AEC-6643)

Test Result:

No issues were found after the high temperature storage test.

Low temperature storage test

Test Date: 07-01 ~ 03-2013

Test Product: AEC-6643

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-D4H+-100
Date of Calibration: 10/10/12
Serial Number: 2582

Testing Item:

1. Test Temperature: -10℃
2. Test Times: 48Hrs
3. Test Software: Windows 7 / Run PassMark Burn In Test 7.0 Pro
4. Test Environment Curve:

Sample Configuration & Quantity Under Test:
Quantity: 1 (ACP-1103)

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

Humidity test

Test Date: 06-28-2013 ~ 07-01-2013

Test Product: AEC-6643

Test Site: AAEON QE Dept.

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

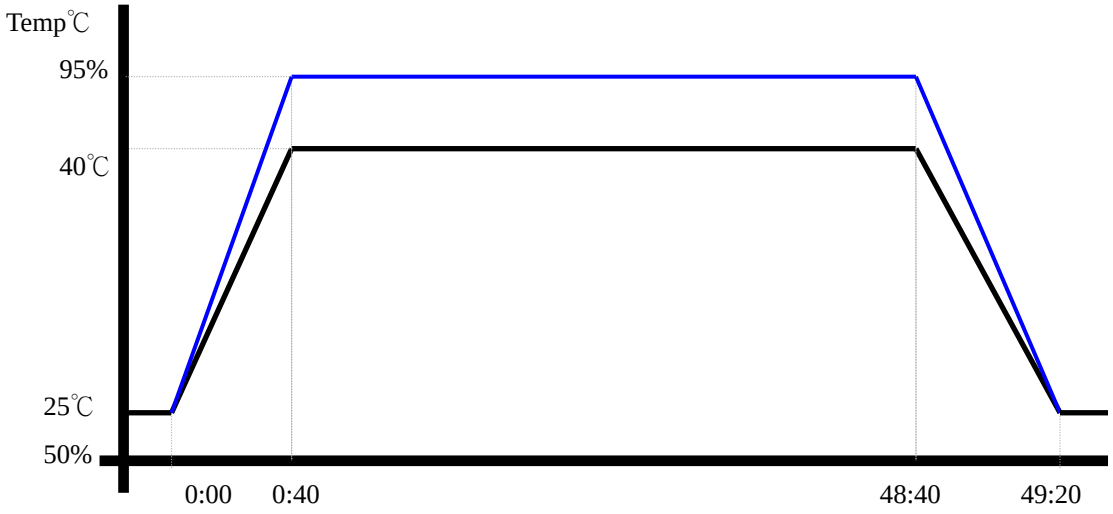
Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D4H+-100
Date of Calibration: 10/10/12
Serial Number: 2582

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 7.0 Pro
5. Test Environment Curve:

Humidity %



Sample Configuration & Quantity Under Test:

Quantity: 1 (AEC-6643)

Test Result:

No issues were found after the humidity storage test.

Cold start and hot start test

Test Date: 07-03~ 04-2013

Test Product: AEC-6643

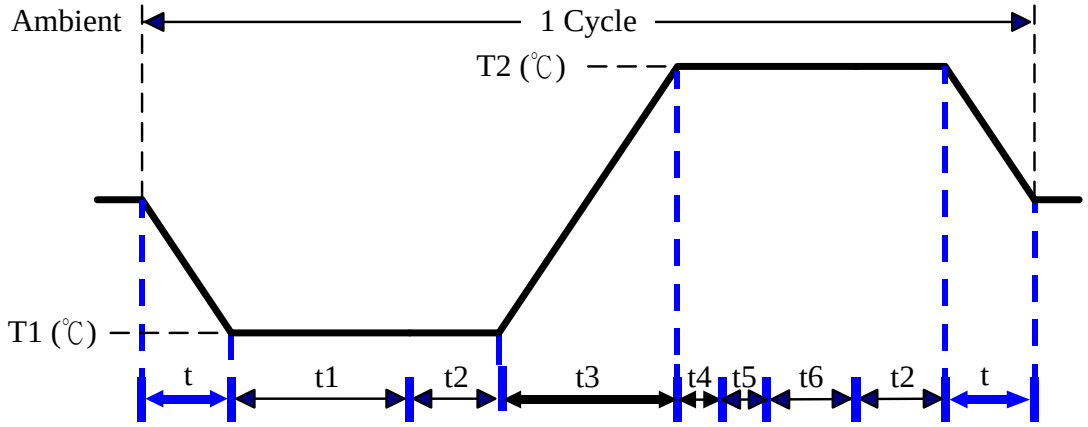
Test Site: AAEON QE Dept.

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-D4H+-100
Date of Calibration: 10/10/12
Serial Number: 2582

Test Condition:



Parameters	Description
T1	-5℃
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 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.