AEC-6950
Environment Test Report

Report NO: 14P020007

Summary	☐ **Pass** ☐ **Fail** ☑ **Pass with Deviation** **Comment: <u>One temperature point need improving</u>**

Issue date	Approval	Test Engineer
2014-03-13	**Tom Lin**	**Juno Cheng**

Test item list

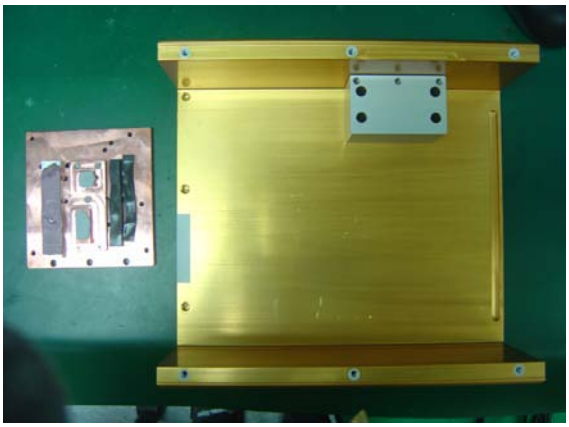
Testing Result

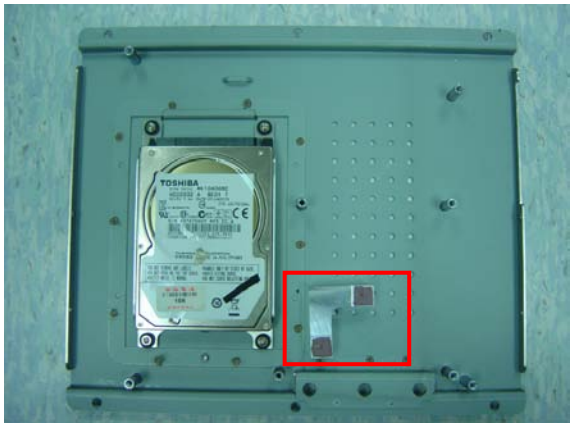
Num	Test item list	Result	Remark
1	Temp./Humidity power on/off test	Pass	
2	Temperature rise test	Pass	
3	Temperature cycle operation test	Pass	
4	High temperature storage test	Pass	
5	Low temperature storage test	Pass	
6	Humidity test	Pass	
7.	Cold start and hot start test	Pass	

Configuration of EUT

Num	Item	Spec
1	CPU Board	COM-QM77 B1.0
2	BIOS	AEC-6950 R0.4(A950AM04)(07/10/2013)
3	CPU	Intel Core i7-3517UE (4M Cache, up to 2.80 GHz.)
4	Memory	Transcend DDr3L 1600 8G *2 (SAMSUNG SEC 231 HYKO K4B4G0746B)
5	2.5” HDD	Toshiba MK1060GSC / 100GB
6	Test Software	Windows 7 / Run PassMark Burn In Test 7.1 Pro
7	Adapter	FSP120-AAB 19V/6.32A

Heat Sink And Thermal Pad





Temp./humidity power on/off test

Test Date: 03-11 ~ 13-2014

Test Product: AEC-6950 A1.0

Test Site: AAEON QE Dept.

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

Test Equipment:

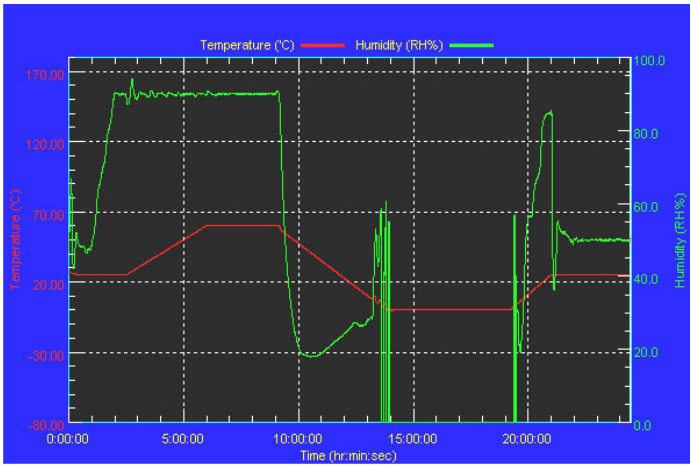
Programmable Temperature & Humidity Chamber (K.SON. INS. TECH. CORP.)
Model: THS-D4H+-100
Date of Calibration: 10/01/13
Serial Number: 2582

Temperature & Humidity Power On/Off Test:

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	1121/times	1121/times	0 %
Note: Failure rate need to 0%.			

Temperature rise test

Test Date: 03-10 ~11-2014

Test Product: AEC-6950

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: 10/01/13
Serial Number: 12A323190

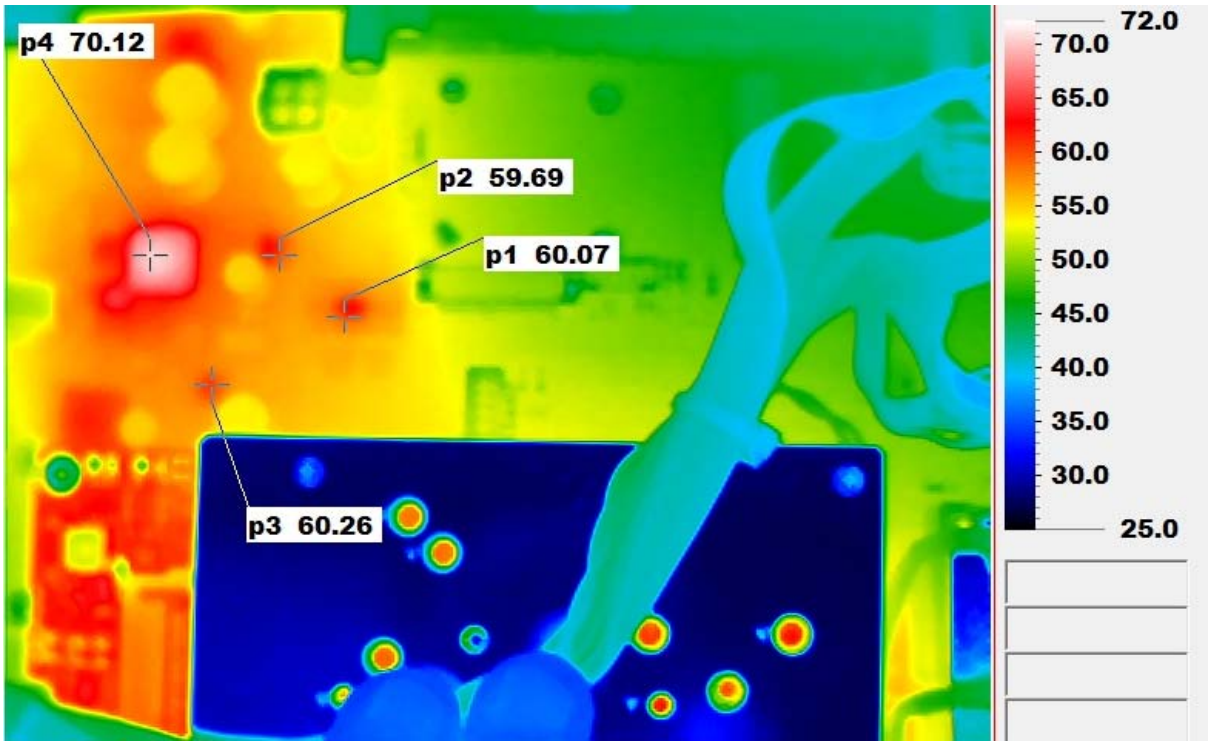
Test Condition:

Ambient temperature:50℃
Continuous running till thermal stability (within less than 1℃)

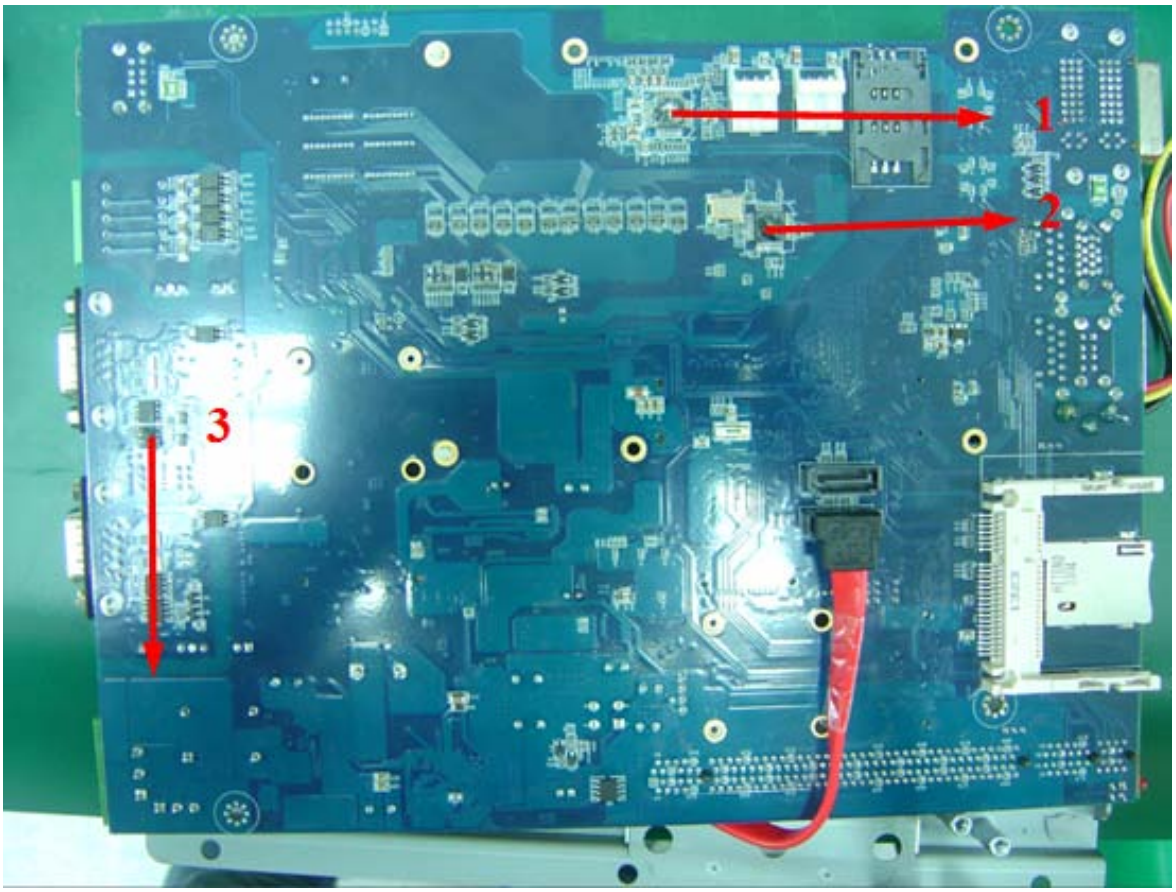
Test Software:

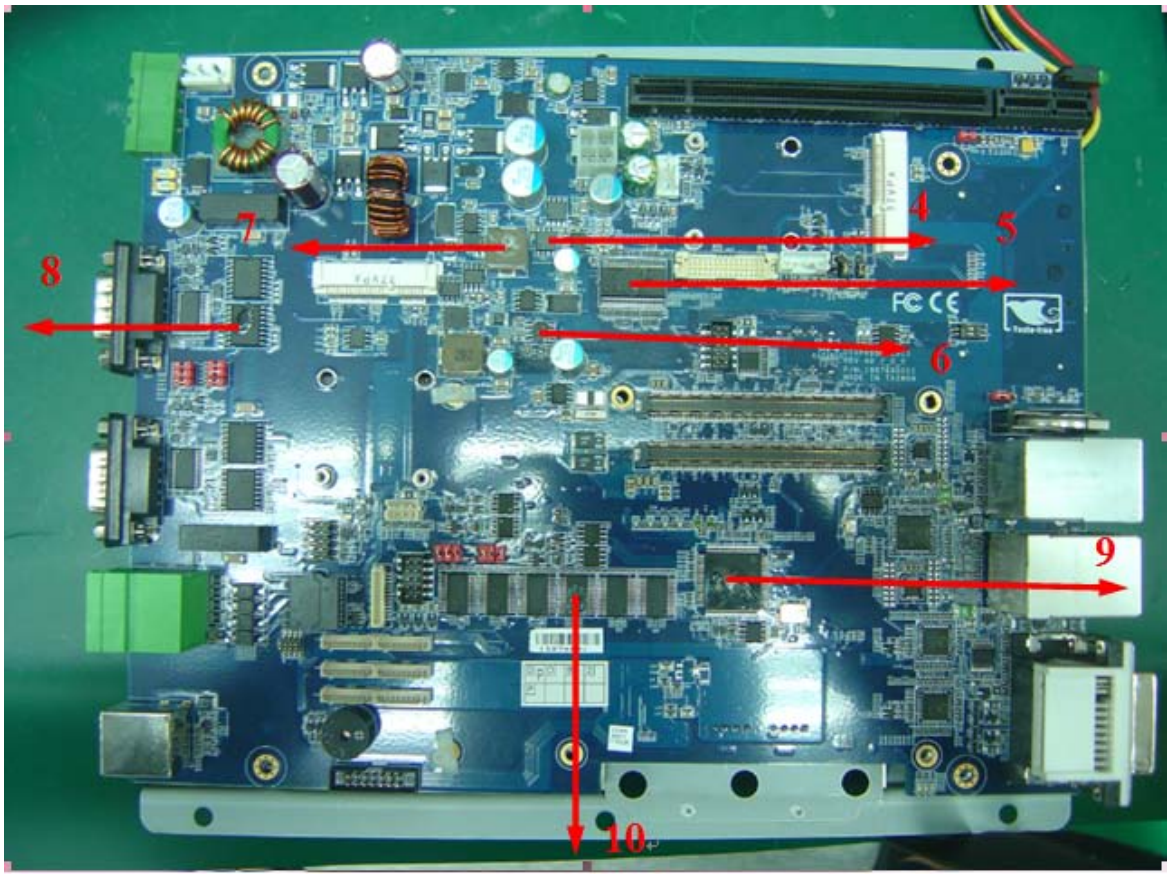
Windows 7 / Run PassMark Burn In Test 7.1 Pro

Terminal Recorder:

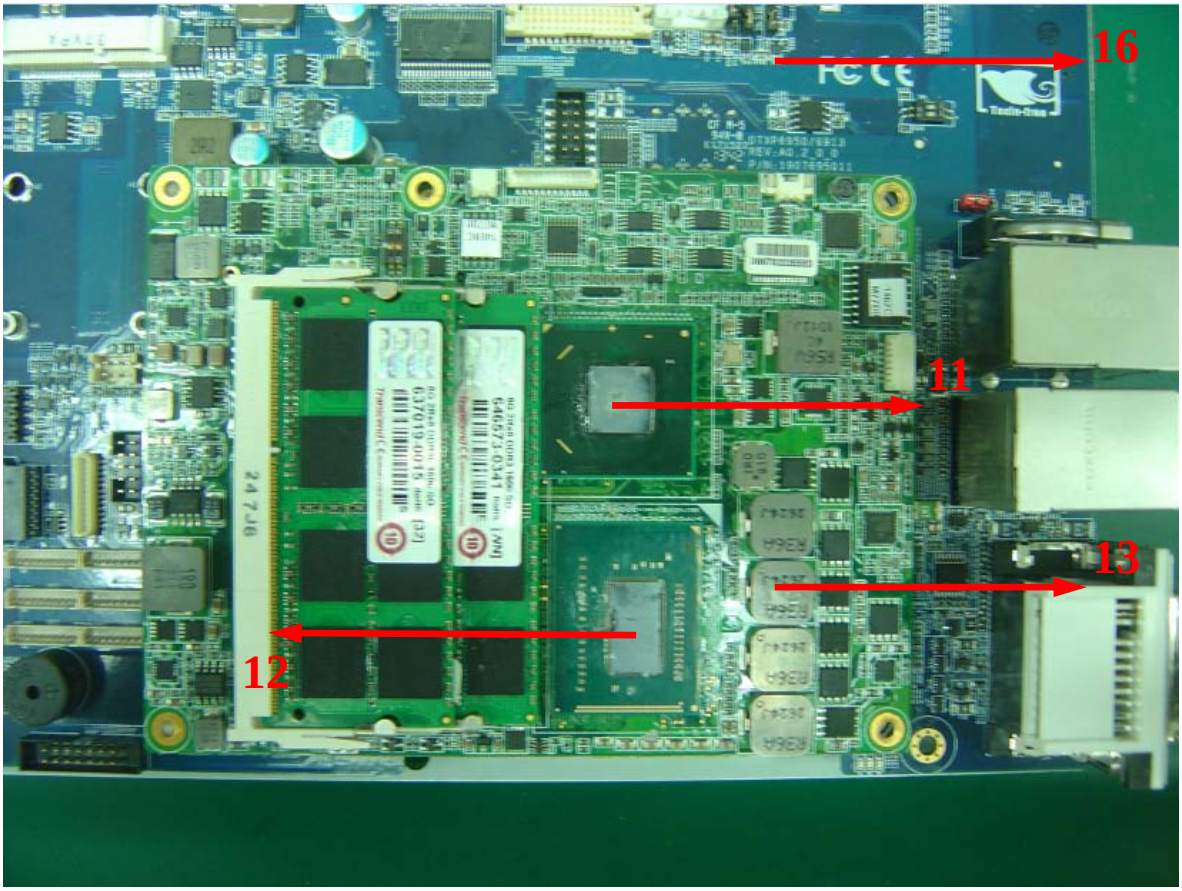


Temperature rise test





Temperature rise test



Temperature rise test

Thermal profile data:

Point	Position	Describe	Tc (*1) (℃)	Tm (*2) Measured Under		Note
				25℃	50℃	
1	U33	(TF)IC.SMD.REALTEK.ALC892-CG	85	48.7	73.7	
2	U35	(TF)IC.SMD.LQFP 48P.LPC to 4 UART.FINTEK.F81216DG	85	48.4	73.4	
3	U40	TF)IC.SMD.SO8.RS-485 Transceiver.Analog.ADM485ARZ	100	35.9	74.1	
4	U1	(TF)IC.SMD. Differential Buffer.ICS.ICS9DB108BFLF	115	63.6	88.6	
5	U74	(TF)IC.SMD. Controller.Richtek.RT9214PS	107.5	65.6	90.6	
6	U75	(TF)IC.SMD.Controller.Richtek.RT9214PS	107.5	65.6	90.6	
7	L16	(TF)COIL.1.5u.ZenithTek.ZPWM-1040MB-1R5M	125	75.9	100.9	
8	U82	(TF)IC.SMD. Devices.ADUM1412ARWZ	115	52.0	77.0	
9	U34	(TF)IC.Super I/O.LQFP128P.SMD.Fintek.F81866D-I	100	64.1	89.1	
10	U52	TF)IC.SMD.SSOP RS232 Driver ESD 15KV.AD.ADM213EARSZ	100	44.3	69.3	
COM-QM77B						
11	U10	(TF)IC.SMD.Chipset PCH.INTEL.BD82QM77 SLJ8A	108	57.7	82.7	
12	U1	(TF)INTEL Ivy Bridge CPU.I7-3615QE.2.3GHz.BGA	105	72.6	97.6	
13	L18	(TF)COIL.0.36uH. Panasonic.ETQP4LR36AFC	130	54.0	79.0	
14	RAM	Memory chipset - 1	95	65.1	90.1	
15		HDD	85	58.9	83.9	Note3
16		Control box internal temp	N/A	46.4	71.4	
17		Control box external temp	N/A	43.0	68.0	

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. :P130309QED01

Sample Configuration & Quantity Under Test:

Quantity: 1 (AEC-6950)

Test Result:

No issues were found during the temperature rise operation test.

Temperature cycle test

Test Date: 03-08 ~ 10-2014

Test Product: AEC-6950

Test Site: AAEON QE Dept.

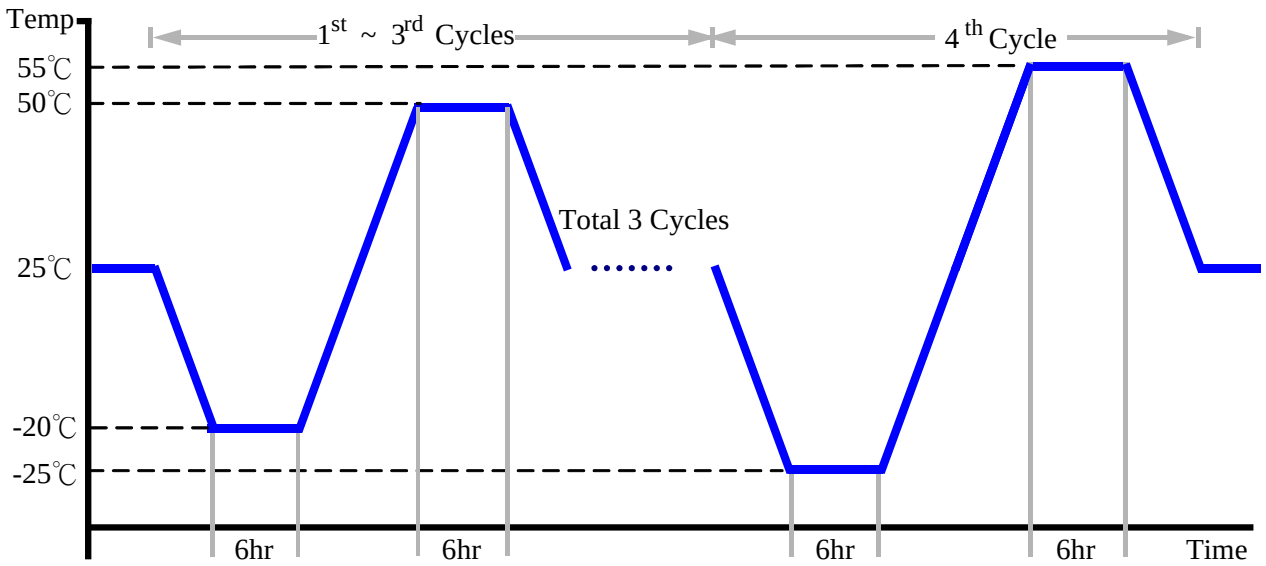
Test Standard: Refer to IEC68-2-14 Testing procedures
Test N: Change of temperature Test

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D4H+-100
Date of Calibration: 10/01/13
Serial Number: 2582

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 (AEC-6950)

Test Result:

No issues were found during the temperature operation cycle test.

High temperature storage test

Test Date: 03-06 ~08-2014

Test Product: AEC-6950

Test Site: AAEON QE Dept.

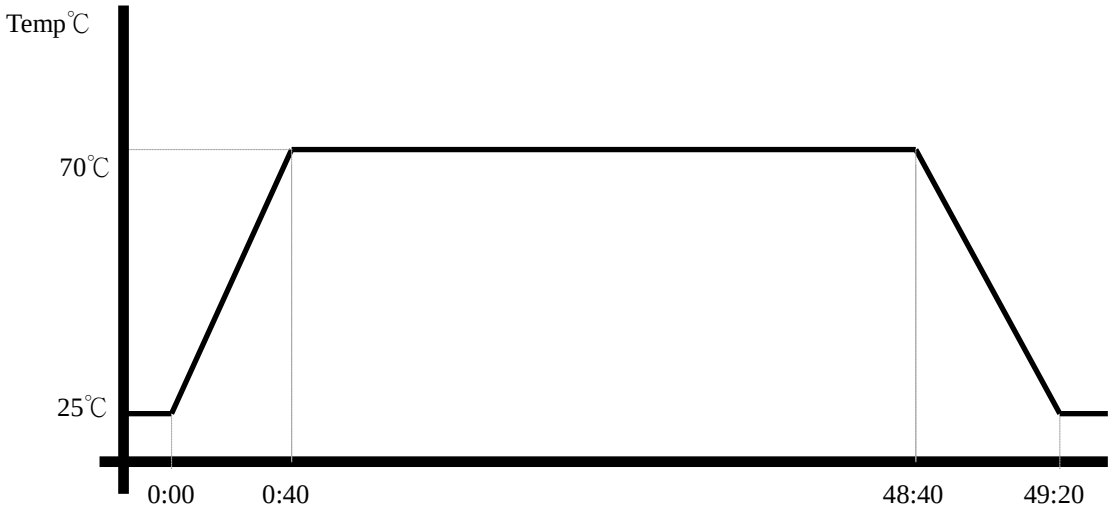
Test Standard: Refer to IEC 68-2-2 Testing procedures
Test Bb: Dry Heat Test (Non-operation)

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D4H+-100
Date of Calibration: 10/01/13
Serial Number: 2582

Testing Item:

1. Test Temperature: 70℃
2. Test Times: 48Hrs
3. Test Software: Windows 7 / Run PassMark Burn In Test 7.1 Pro
4. Test Environment Curve:



Sample Configuration & Quantity Under Test:

Quantity: 1 (AEC-6950)

Test Result:

No issues were found after the high temperature storage test.

Low temperature storage test

Test Date: 03-04 ~ 06-2014

Test Product: AEC-6950

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: 10/01/13
Serial Number: 2582

Testing Item:

1. Test Temperature: -20℃
2. Test Times: 48Hrs
3. Test Software: Windows 7 / Run PassMark Burn In Test 7.1 Pro
4. Test Environment Curve:

Sample Configuration & Quantity Under Test:
Quantity: 1 (AEC-6950)

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

Humidity test

Test Date: 03-02~04-2014

Test Product: AEC-6950

Test Site: AAEON QE Dept.

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

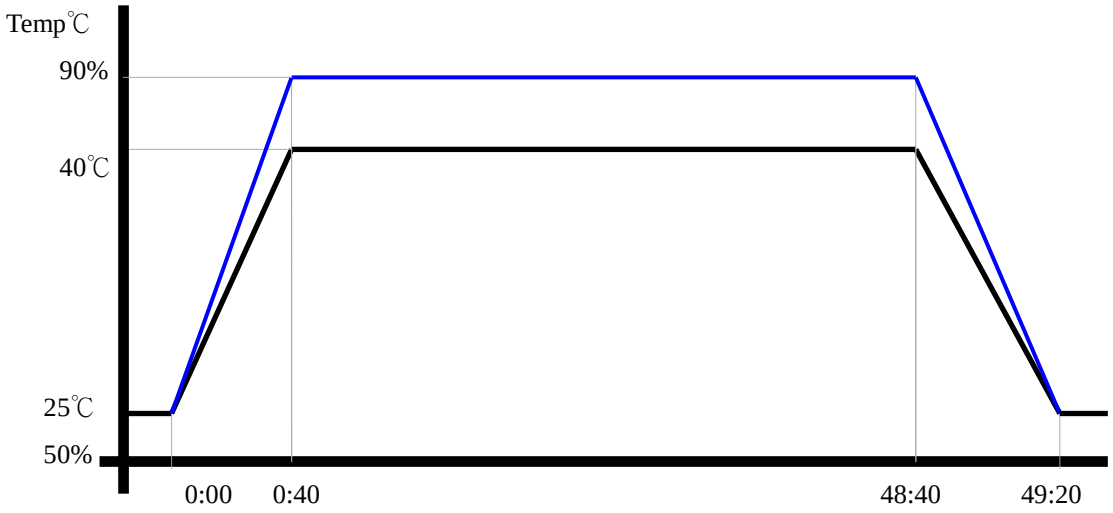
Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D4H+-100
Date of Calibration: 10/01/13
Serial Number: 2582

Testing Item:

1. Test Temperature: 40℃
2. Test Humidity: 90%RH
3. Test Times: 48Hrs
4. Test Software: Windows 7 / Run PassMark Burn In Test 7.1 Pro
5. Test Environment Curve:

Humidity %



Sample Configuration & Quantity Under Test:

Quantity: 1 (AEC-6950)

Test Result:

No issues were found after the humidity storage test.

Cold start and hot start test

Test Date: 02-27~ 03-01-2014

Test Product: AEC-6950

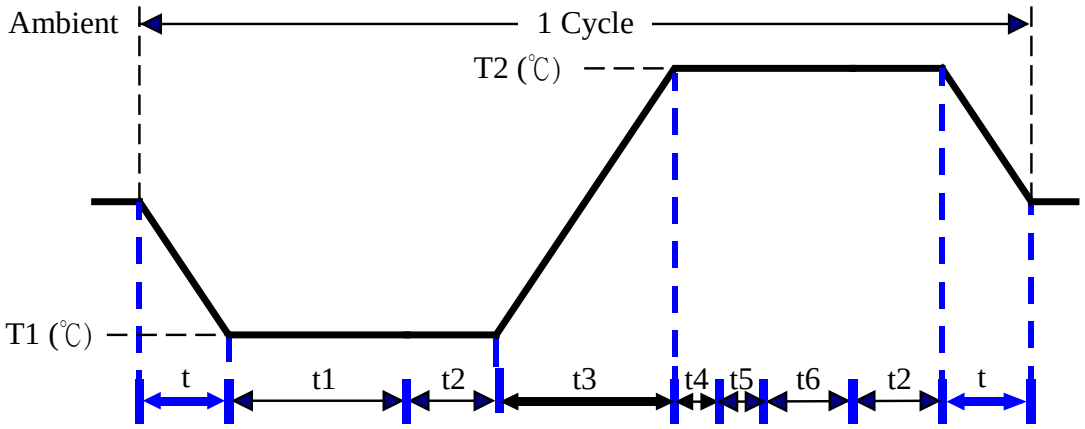
Test Site: AAEON QE Dept.

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: 10/01/13
Serial Number: 2582

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.