ACS-1U01-H81B
Environment Test Report

Report NO: 15IP020012

Summary	☐ **Pass** ☐ **Fail** ☑ **Pass with Deviation** Comment: There is 1 temperature point marginal passed, the function is normal.

Issue date	Approval	Test Engineer
2015-07-31	**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	CPU	Intel Core i7-4790S Processor 3.20GHz
2	CPU Board	EMB-H81B R2.0
3	BIOS	EH81BM20
4	Memory	Apacer DDR3L 2GB PC3-10600 CL9
5	HDD	HGST HTS725050A7E630 2.5” 500GB
6	Test Software	Windows 8 / Run PassMark Burn In Test 8.0 Pro
7	Adapter	FSP150-AAA

CPU COOLER

Temperature rise test

Test Date: 07-30-2015

Test Product: ACS-1U01-H81B

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

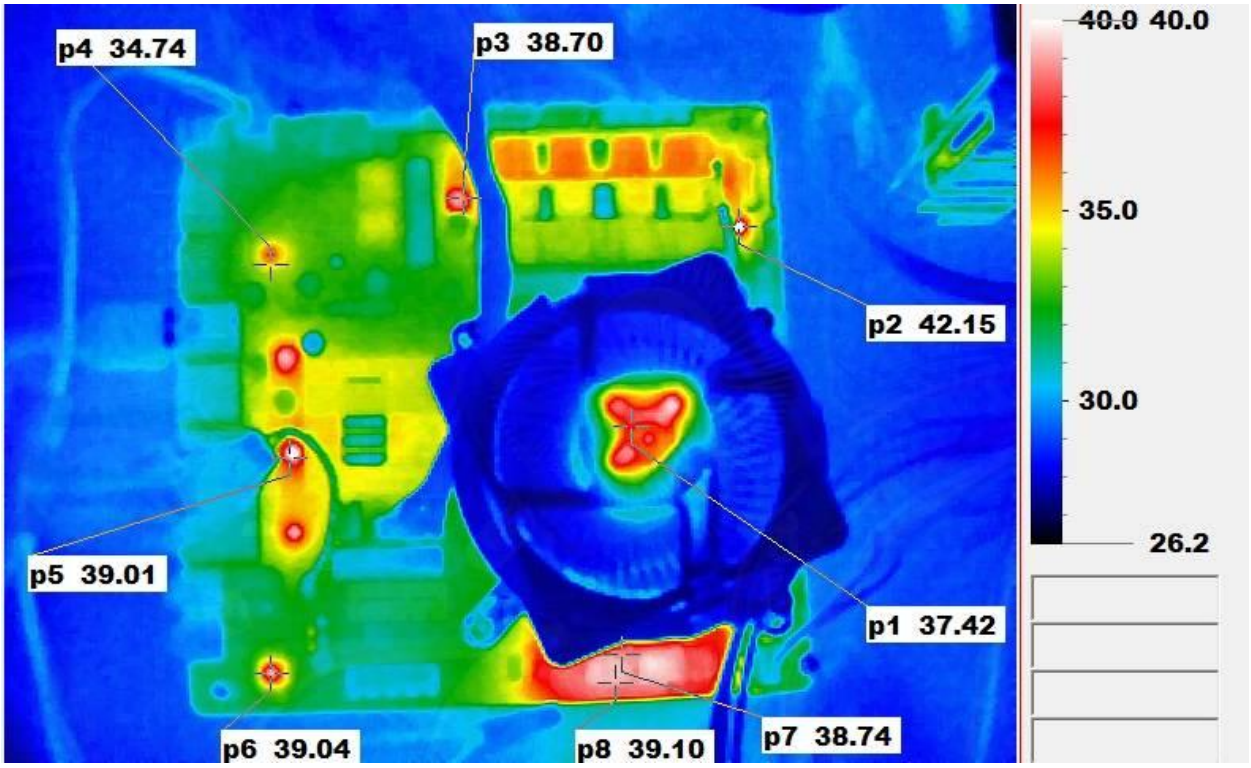
Test Condition:

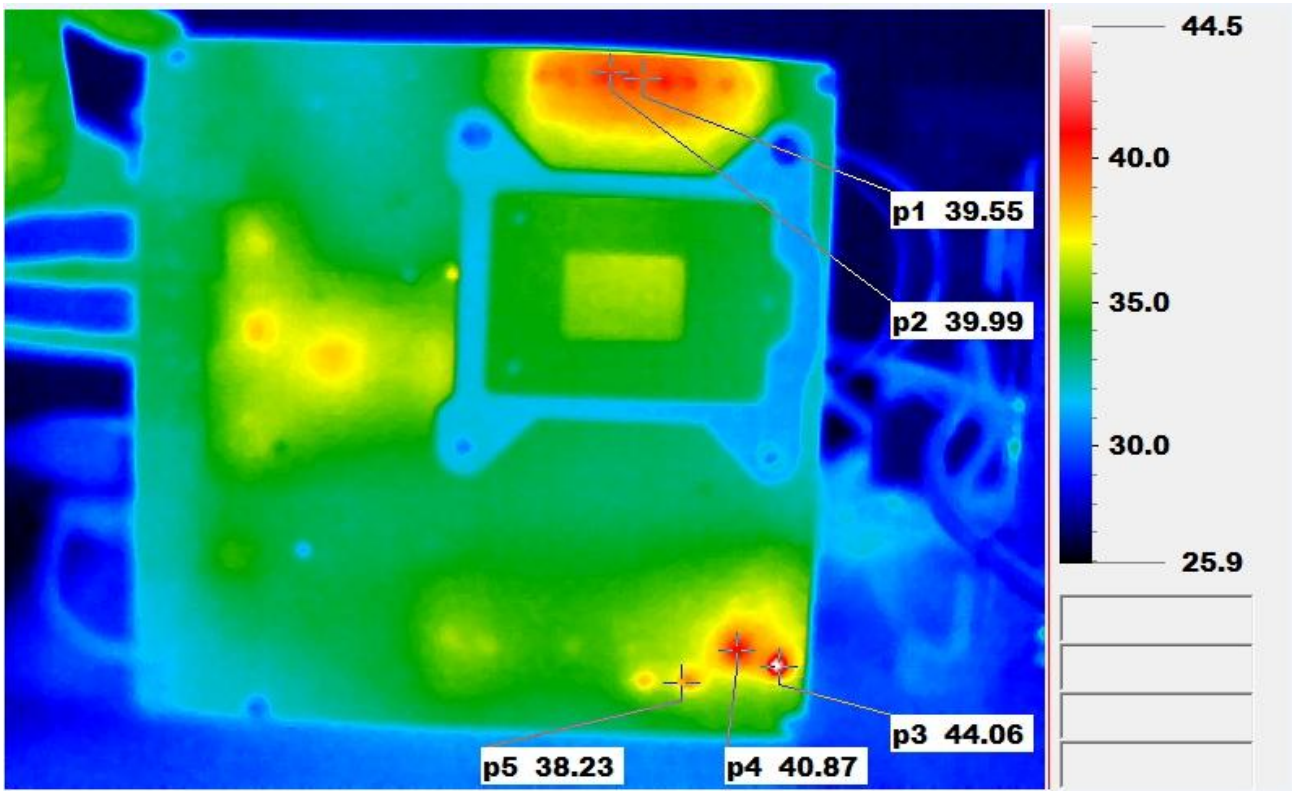
Ambient temperature: 50℃
Continuous running till thermal stability (within less than 1℃)

Test Software:

Windows 8 / Run PassMark Burn In Test 8.0 Pro

Terminal Recorder:

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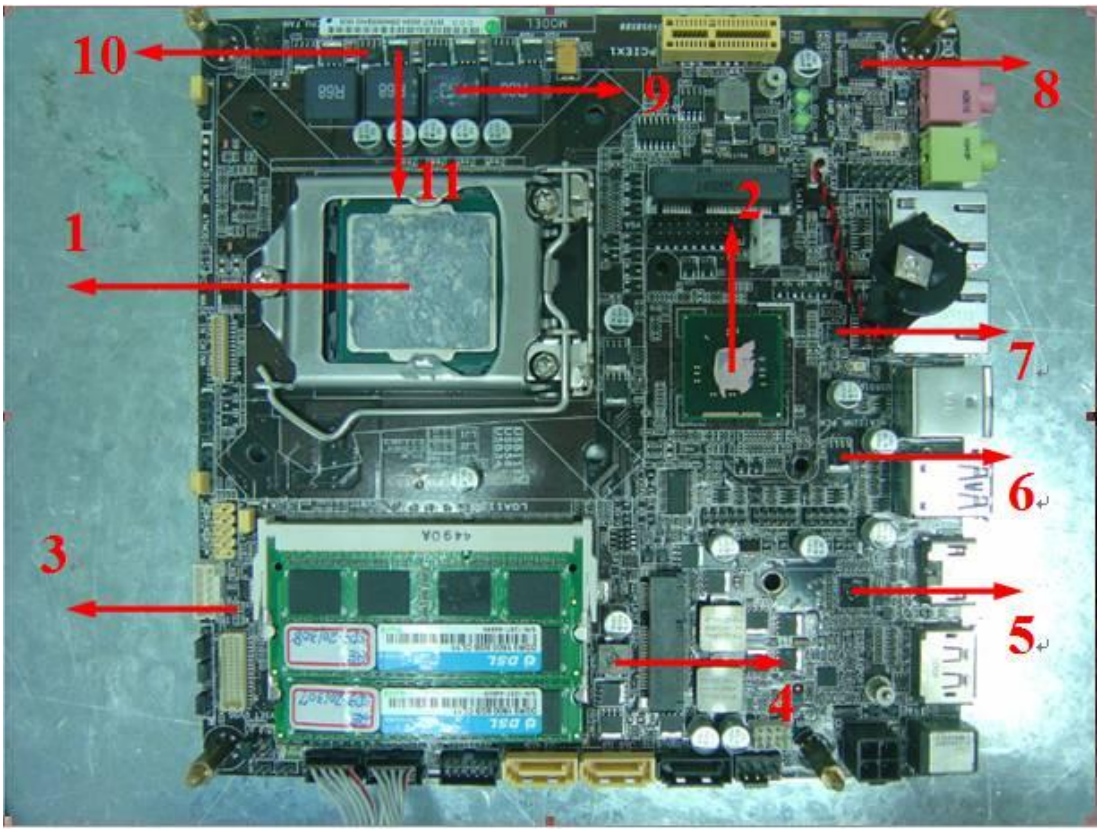
35.0
30.0
25.9
p1 39.55
p2 39.99
p3 44.06
p4 40.87
p5 38.23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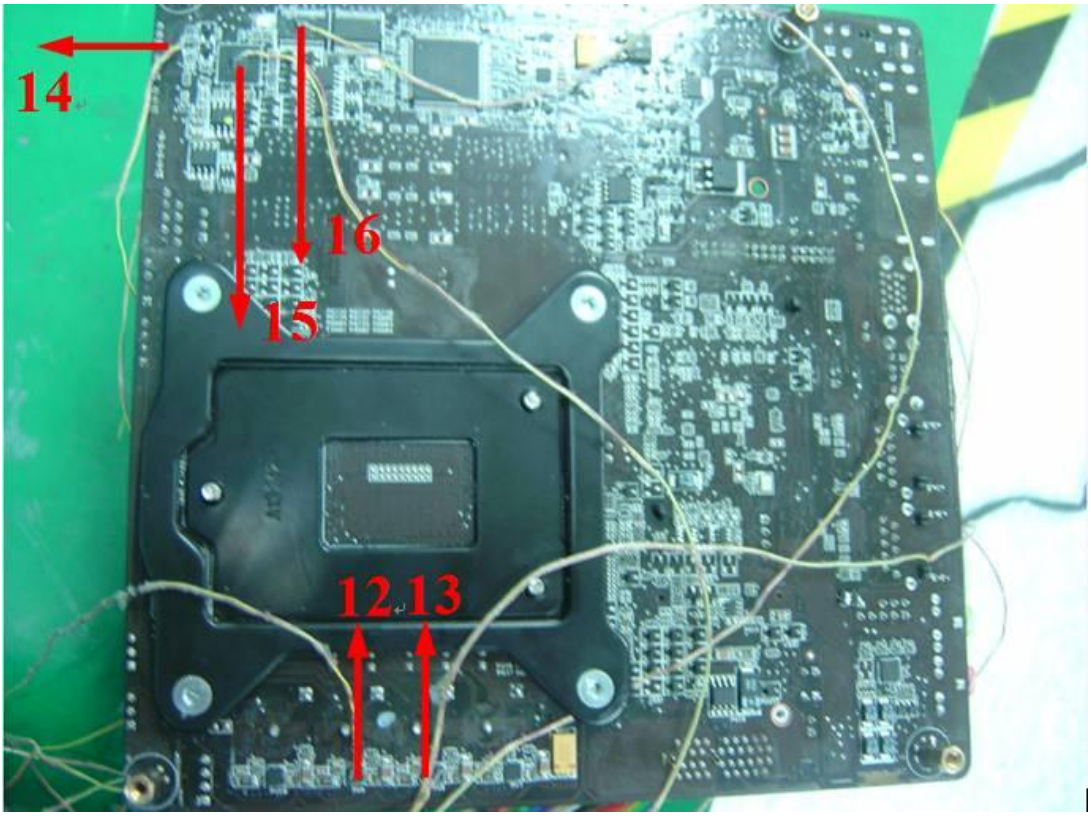
14
16
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12
13

Temperature rise test

Thermal profile data:

Point	Position	Describe	Tc (℃)	Tm (50℃)	Note
1	CPU	Intel i7-4790S	71.35 ℃	68.6	Note 3
2	PCH	Intel PCH DH82Q87 (SR173)	104 ℃	69.0	
3	LPU1	GMT G9141T11U	100 ℃	90.3	
4	PL4	Cyntec PCMB063T-1R5MS	125 ℃	75.5	
5	U11	Asmedia ASM1442K (A1)	85 ℃	69.2	
6	PQ29	NXP PH6030DLB	90 ℃	68.1	
7	L2U1	Realtek RTL8111G-CG	85 ℃	71.8	
8	AU1	Realtek Audio Codec ALC887-VD2-CG	85 ℃	65.9	
9	PL6	Chung Shuo CS1112-R68-I43UL	125 ℃	95.6	
10	PQ44	NXP PH2530AL	90 ℃	80.5	
11	CR2032	KTS BCR2032H7.2AM1UB(Battery)	70 ℃	61.0	
12	PU9	Richtek RT9610AZQW	100 ℃	75.0	
13	LU4	ADI AD5247BKSZ10-RL7	125 ℃	58.9	
14	LU1	Chrontel CH7511B-BF	85 ℃	66.3	
15	BU3	AD ADM213EARSZ	100 ℃	63.9	
16		DIMMP-1	95 ℃	66.6	
17		HDD	70 ℃	58.1	

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. :

Sample Configuration & Quantity Under Test:

Quantity: 1 (ACS-1U01-H81B)

Test Result:

No issues were found during the temperature rise operation test.

Temperature cycle test

Test Date: 07-28 ~ 29-2015

Test Product: ACS-1U01-H81B

Test Site: AAEON QE Dept.

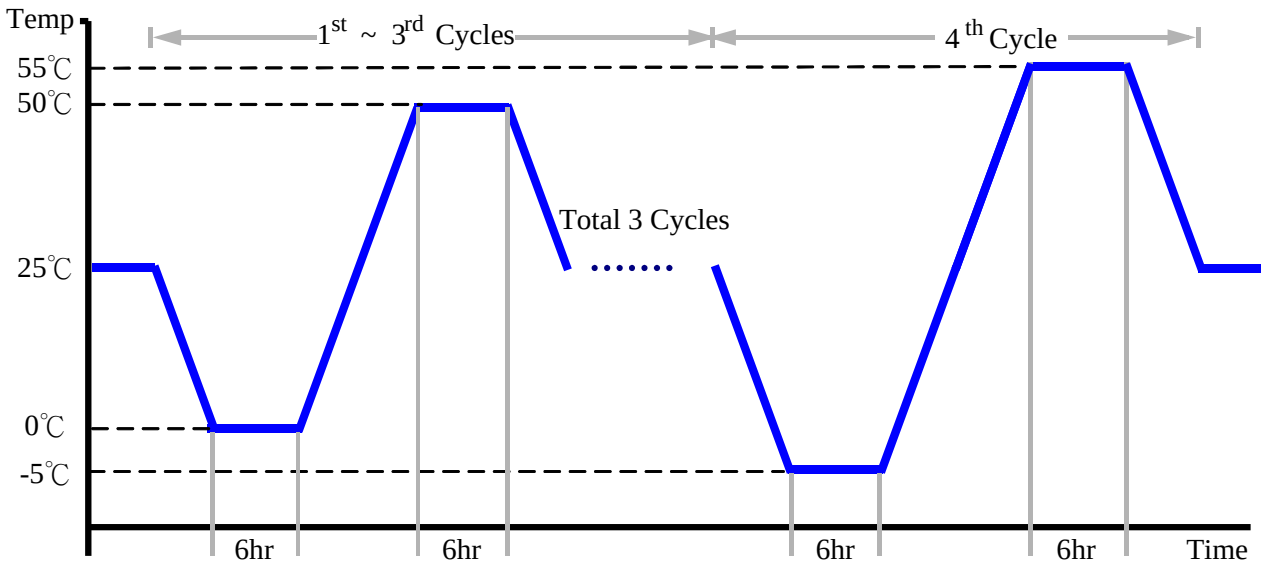
Test Standard: Refer to IEC68-2-14 Testing procedures
Test N: Change of temperature Test

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D4H+-100
Date of Calibration: 09/30/14
Serial Number: 2582

Test Condition:

1. Test Low Temperature: 0℃ (1~3 cycles)
   -5℃ (4th cycle)
2. Test High Temperature: 50℃ (1~3 cycles)
   55℃ (4th 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 (ACS-1U01-H81B)

Test Result:

No issues were found during the temperature operation cycle test.

High temperature storage test

Test Date: 07-20 ~ 21-2015

Test Product: ACS-1U01-H81B

Test Site: AAEON QE Dept.

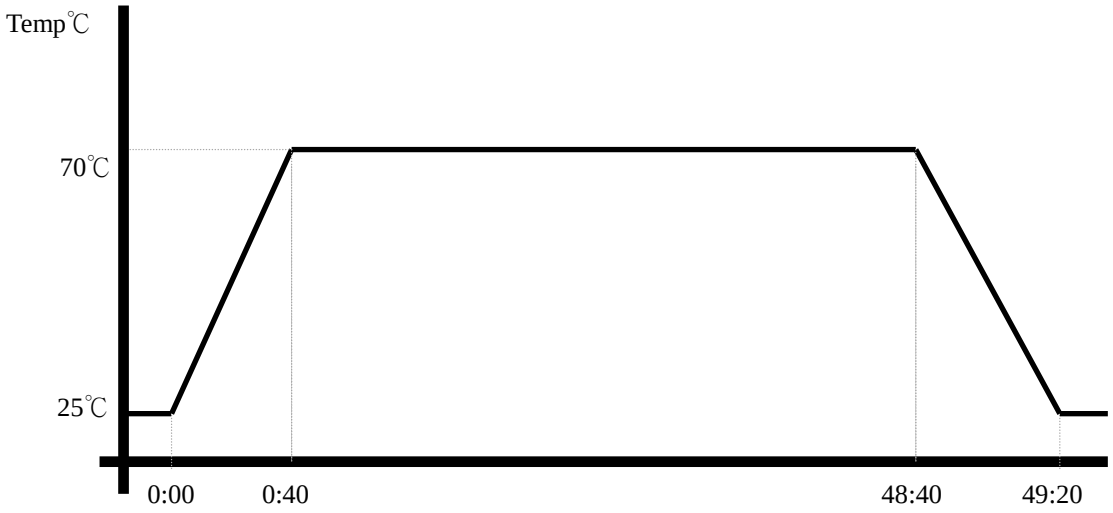
Test Standard: Refer to IEC 68-2-2 Testing procedures
Test Bb: Dry Heat Test (Non-operation)

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D4H+-100
Date of Calibration: 09/30/14
Serial Number: 2582

Testing Item:

1. Test Temperature: 70℃
2. Test Times: 48Hrs
3. Test Software: Windows 8 / Run PassMark Burn In Test 8.0 Pro
4. Test Environment Curve:



Sample Configuration & Quantity Under Test:

Quantity: 1 (ACS-1U01-H81B)

Test Result:

No issues were found after the high temperature storage test.

Low temperature storage test

Test Date: 07-22 ~ 23-2015

Test Product: ACS-1U01-H81B

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: 09/30/14
Serial Number: 2582

Testing Item:

1. Test Temperature: -20℃
2. Test Times: 48Hrs
3. Test Software: Windows 8 / Run PassMark Burn In Test 8.0 Pro
4. Test Environment Curve:

Sample Configuration & Quantity Under Test:
Quantity: 1 (ACS-1U01-H81B)

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

Humidity test

Test Date: 07-24~25-2015

Test Product: ACS-1U01-H81B

Test Site: AAEON QE Dept.

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

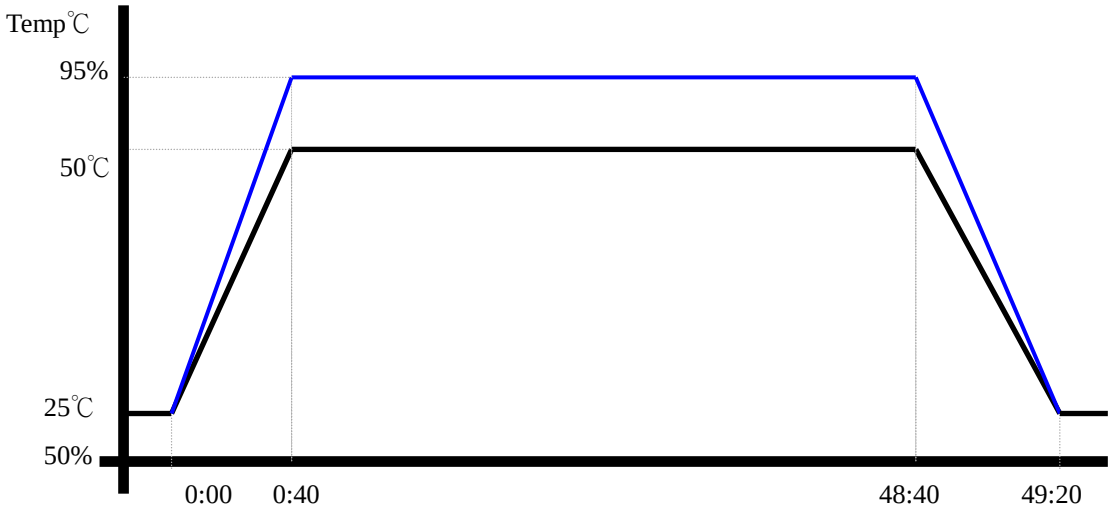
Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D4H+-100
Date of Calibration: 09/30/14
Serial Number: 2582

Testing Item:

1. Test Temperature: 50℃
2. Test Humidity: 95%RH
3. Test Times: 48Hrs
4. Test Software: Windows 8 / Run PassMark Burn In Test 8.0 Pro
5. Test Environment Curve:

Humidity %



Sample Configuration & Quantity Under Test:

Quantity: 1 (ACS-1U01-H81B)

Test Result:

No issues were found after the humidity storage test.

Cold start and hot start test

Test Date: 07-27~ 28-2015

Test Product: ACS-1U01-H81B

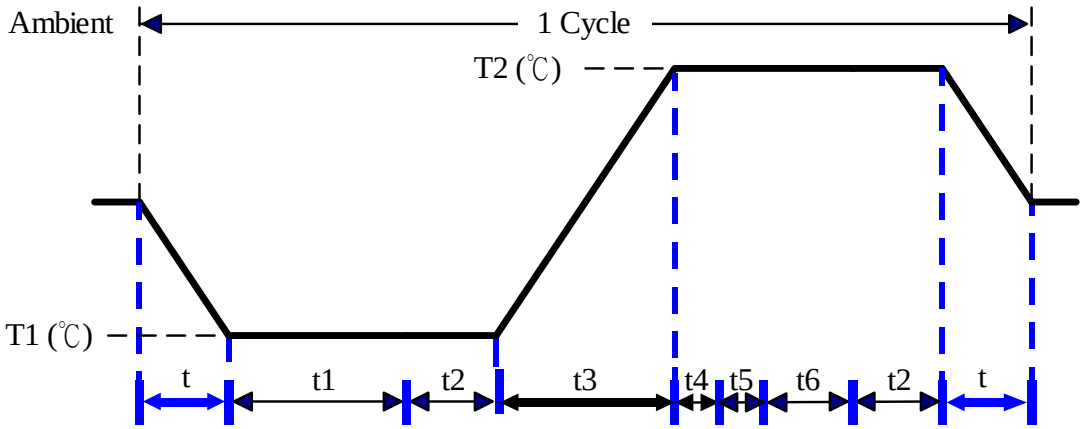
Test Site: AAEON QE Dept.

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: 09/30/14
Serial Number: 2582

Test Condition:



Parameters	Description
T1	-5℃
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 8 Software restart test 3 times
Test Software: Windows 8

Test Result:

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

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