FWS-2250

INTEL Atom E3826 1.46GHz CPU

Temperature/Humidity Test Report

Report NO: 14I020009

Summary	☑ **Pass** ☐ **Fail** Note : There is/are ___ defect(s) not list in the report, please check it in the DTS Website. ☐ **Pass with Deviation** **Comment: _____**

Issue date	Approval	Test Engineer
2014-05-09	**Tom Lin**	**Ben Sun**

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 variation operation test	Pass	
4	Cold start and hot start test	Pass	
5	High temperature storage test	Pass	
6	Low temperature storage test	Pass	
7	Humidity test	Pass	

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Configuration of EUT

Test Product: FWS-2250

Sample Configuration & Quantity Under Test:

1. CPU: Intel Atom E3826 1.46GHz
2. BIOS Ver.: FWS-2250 R0.B (K225AM 0B 01/03/2014)
3. Chipset: N/A
4. Memory: Transcend DDR3L 1333MHz 2G
5. USB Flash: Transcend CompactFlash 32GB
6. Test Software: Windows 8.1 / Run PassMark Burn In Test 7.1 Pro
7. ATX Power Supply: FSP040-DGAA1
8. CPU Cooler:

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Temp./humidity power on/off test

Test Date: 04-27 ~ 28-2014

Test Site: AAEON QE Dept.

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

Test Equipment:

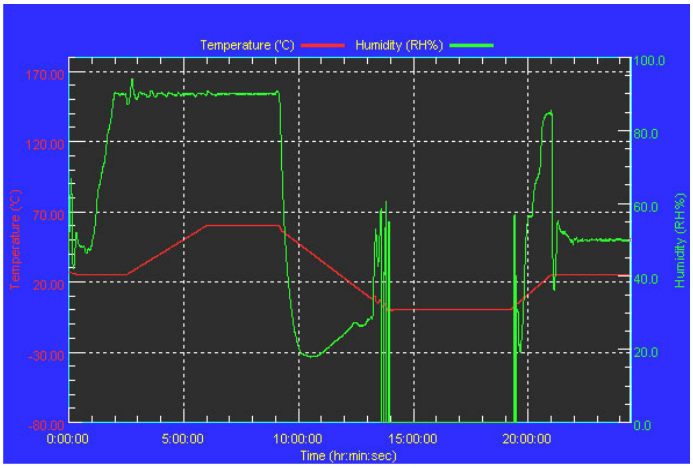
Programmable Temperature & Humidity Chamber (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 06/11/13
Serial Number: 9095KT

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	961/times	961/times	0 %
Note: Failure rate need to be 0%.			

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Temperature rise test

Test Date: 05-05-2014

Test Product: FWS-2250

Test Site: AAEON QE Dept.

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

Temperature Measurement:

40 Channel Thermal Recorder:

Model: DA100-13-1D

Date of Calibration: 2013/10/01

Serial Number: 12A323190

Test Condition:

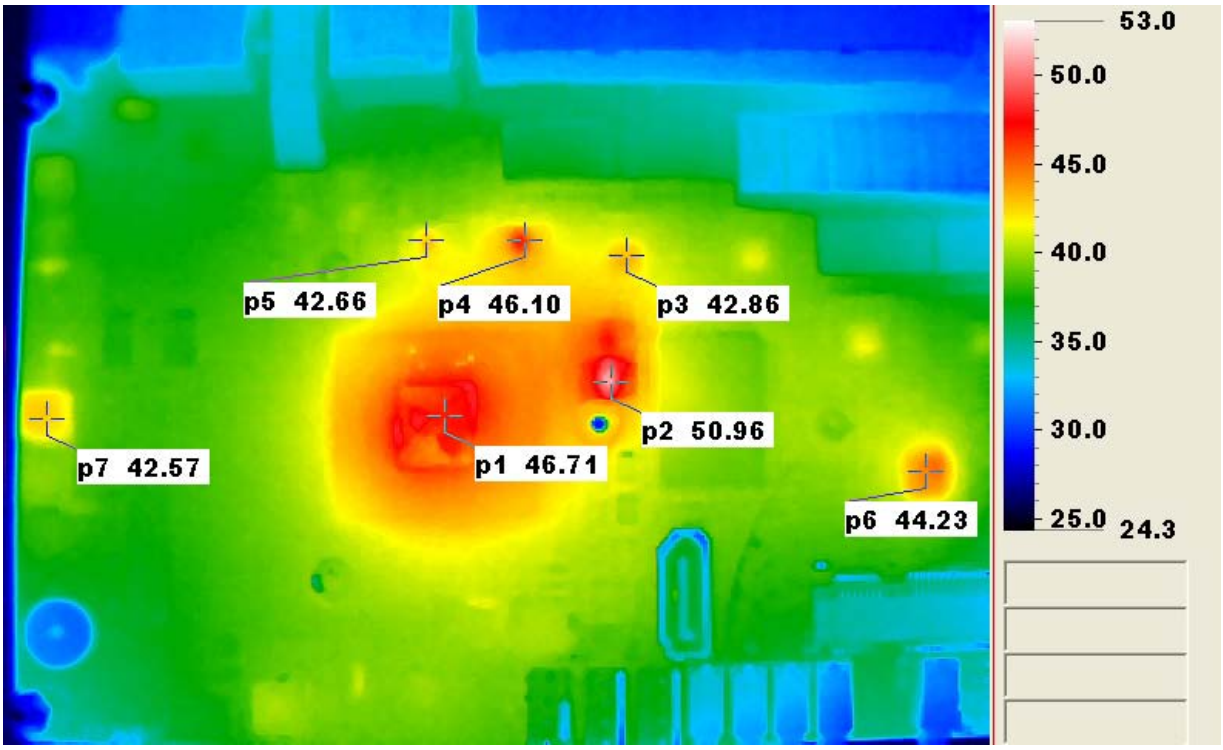
Ambient temperature: 40℃

Continuous running till thermal stability (within less than 1℃)

Test Software:

Windows 8.1 / Run PassMark Burn In Test 7.1 Pro

Terminal Recorder:



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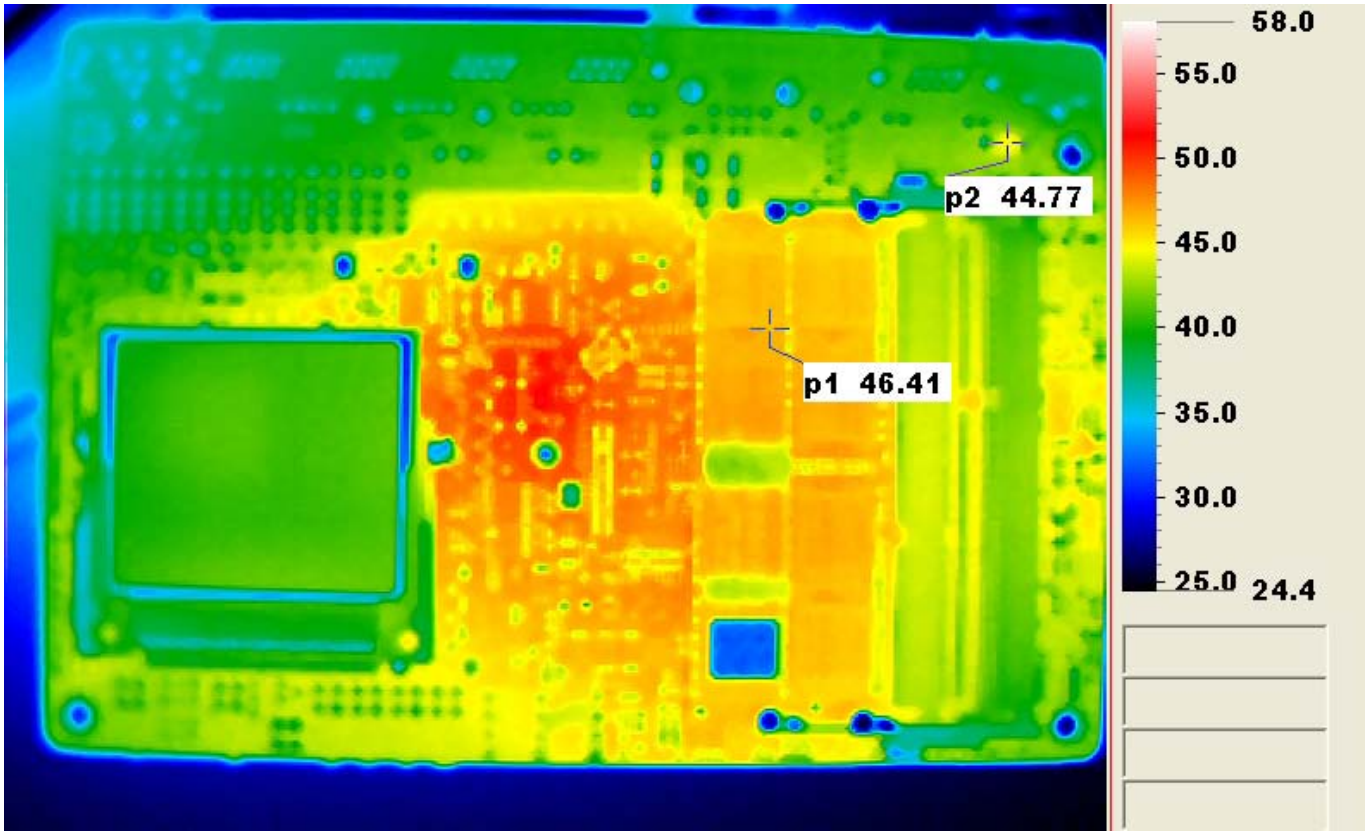

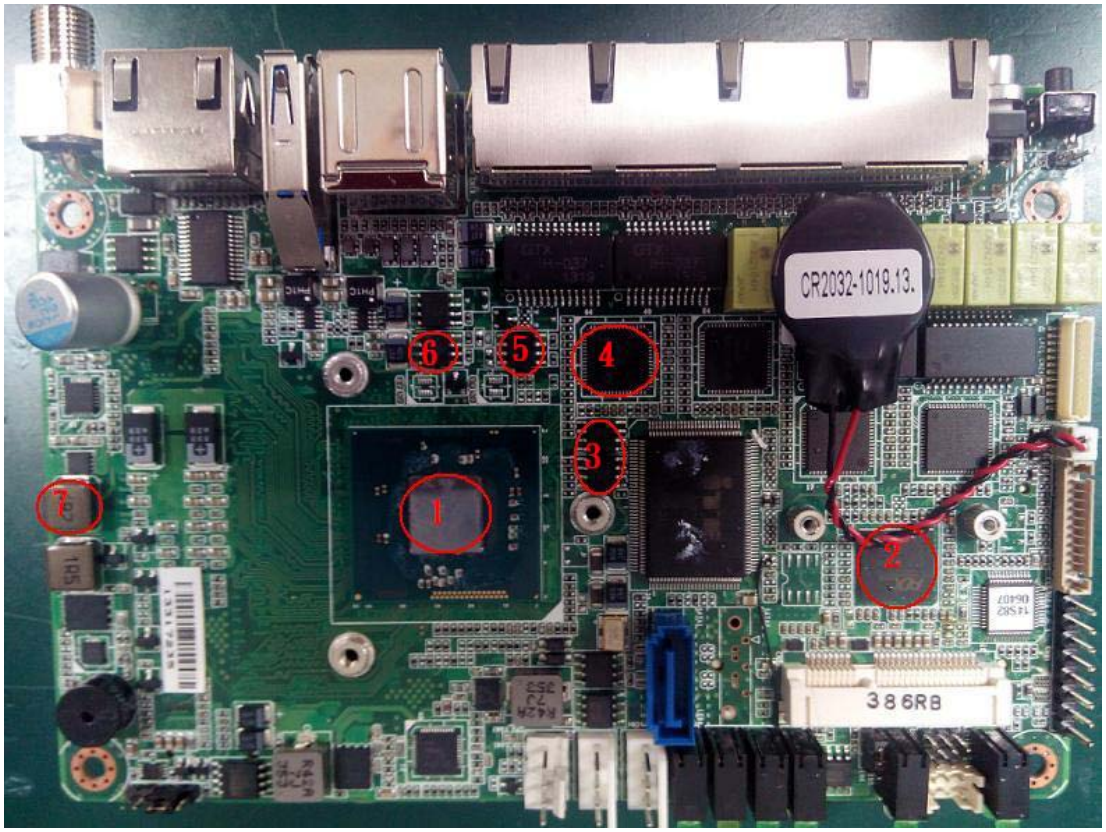

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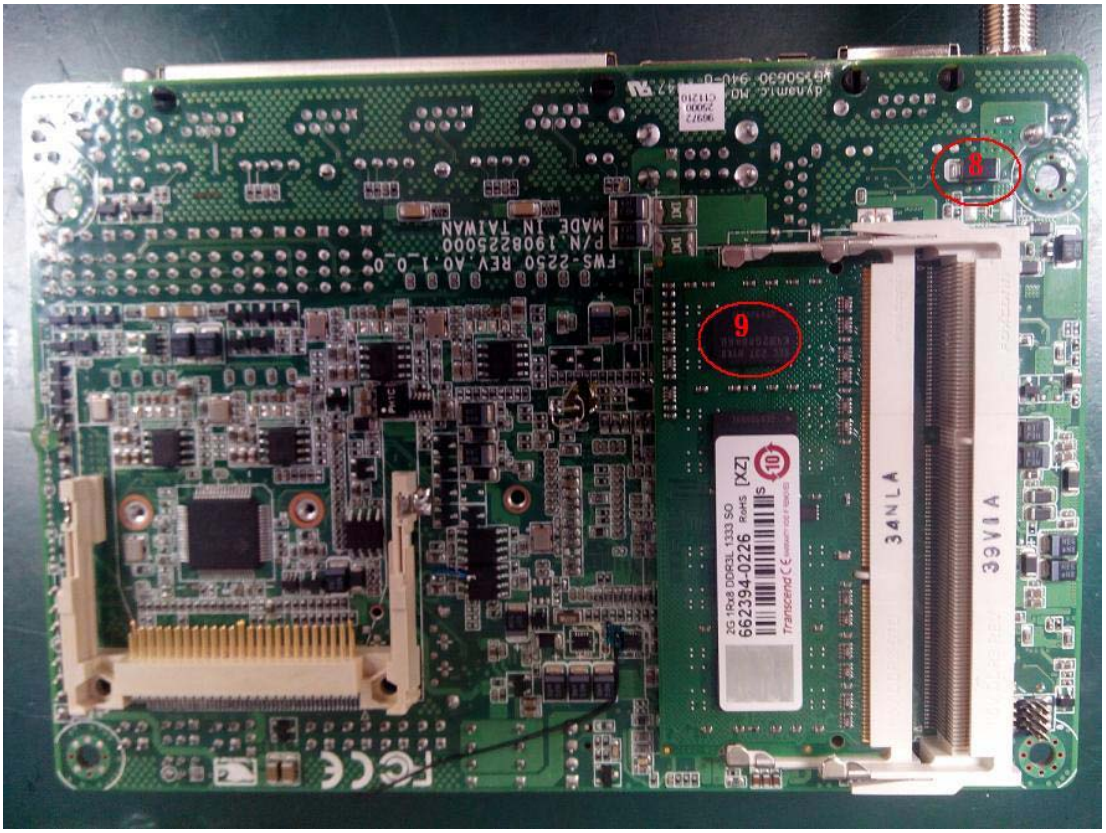

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Temperature rise test

Thermal profile data:

FWS-2250

Point / Temp. Stage(℃)	Spec	40	Note
01. INTEL CPU.VALLEYVIEW MOBILE.BGA1170P 5W	100	67.1	
02. PCIe-2.0 3port Switch.QFN-136.Thickness=0.9mm SMD.PLX.PEX-8603-AA50NIG	100	82.6	
03. Ultra Low Dropout LDO.SOP-8.SMD.YOBON.YB1283PSP8	100	76.5	
04. PCI-E GigaBit Ethernet Chipset.QFN 64P.SMD.Intel.I211AT	85	77.1	
05. Ultra Low Dropout LDO.SOP-8.SMD.YOBON.YB1283PSP8	100	72.9	
06. Ultra Low Dropout LDO.SOP-8.SMD.YOBON.YB1283PSP8	100	70.1	
07. COIL.4.7uH.20%.SMD.7.1*6.6*3.0mm DCR=37mohm.Idc=5.5Amp Zenithtek.ZPWM-6030M-4R7M	150	69.5	
08. D Schottky.VDC=40V.3A.SMD.DO-214AC Barrier Rectifiers Willas.SK34A	100	66.5	
09. Memory	100	70.8	
10. Chassis Surface Temperature - 1	N/A	56.5	
11. Chamber Air Temperature	N/A	40.3	

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.

Sample Configuration & Quantity Under Test:

Quantity: 1 (FWS-2250)

Test Result:

No issues were found during the temperature rise operation test.

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Temperature variation operation test

Test Date: 04-25 ~ 28-2014

Test Site: AAEON QE Dept.

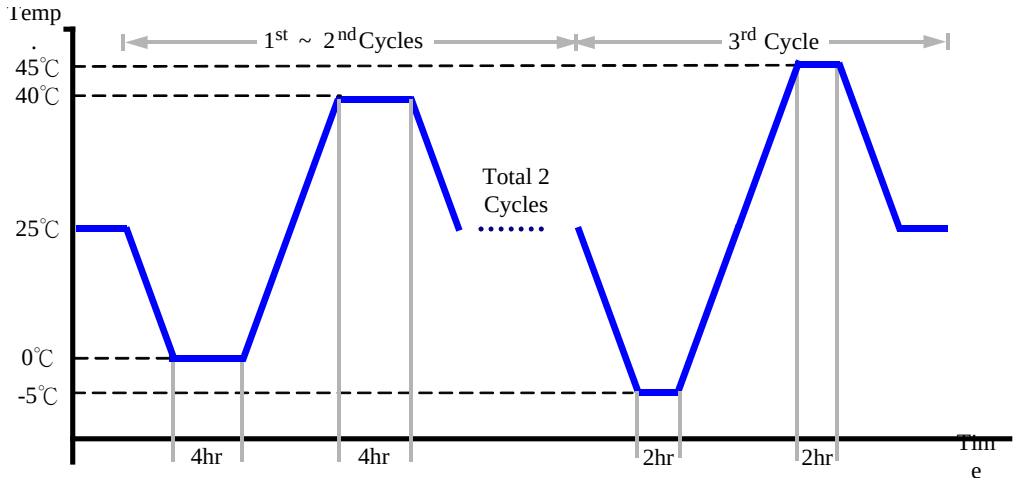
Test Standard: Refer to IEC 68-2-14 Testing procedures
Test N: Change of temperature Test

Test Equipment:

Programmable Temperature & Humidity Chamber (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 06/11/13
Serial Number: 9095KT

Temperature & Humidity Cycle Test:

1. Test Low Temperature: 0℃ (1~2 cycles)
   -5℃ (3rd cycle)
2. Test High Temperature: 40℃ (1~2 cycles)
   45℃ (3rd cycle)
3. Test dwell time: 4Hrs (1~2 cycles)
   2Hrs (3rd cycle)
4. Temperature slope: 2℃/min
5. Test cycle: 3 cycles
6. Test Environment Curve:



Test Result:

No issues were found during the temperature variation operation test.

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Cold start and hot start test

Test Date: 04-28 -2013

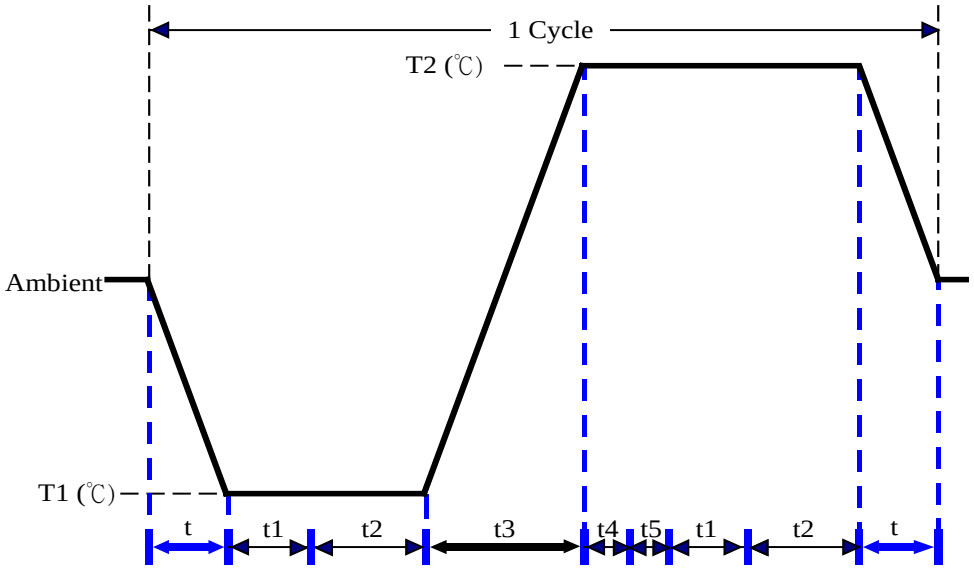
Test Site: AAEON QE Dept.

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: 06/11/13
Serial Number: 9095KT

Test Condition:



Parameters	Description
T1	-5℃
T2	45℃
t1	1 hrs
t2	2 hrs
t4, t5	30 min
t, t3	2℃/min
n (Cycle)	1

t,t3 = temprature slope
t, t1: Power Off
t2: Power on/off test 10 times (on 2 min / off 5min)
t3,t4: Run PassMark Burn In Test
t5: Windows 8.1 Software restart test 2 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.

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High temperature storage test

Test Date: 04-29 ~ 30-2013

Test Product: FWS-2250

Test Site: AAEON QE Dept.

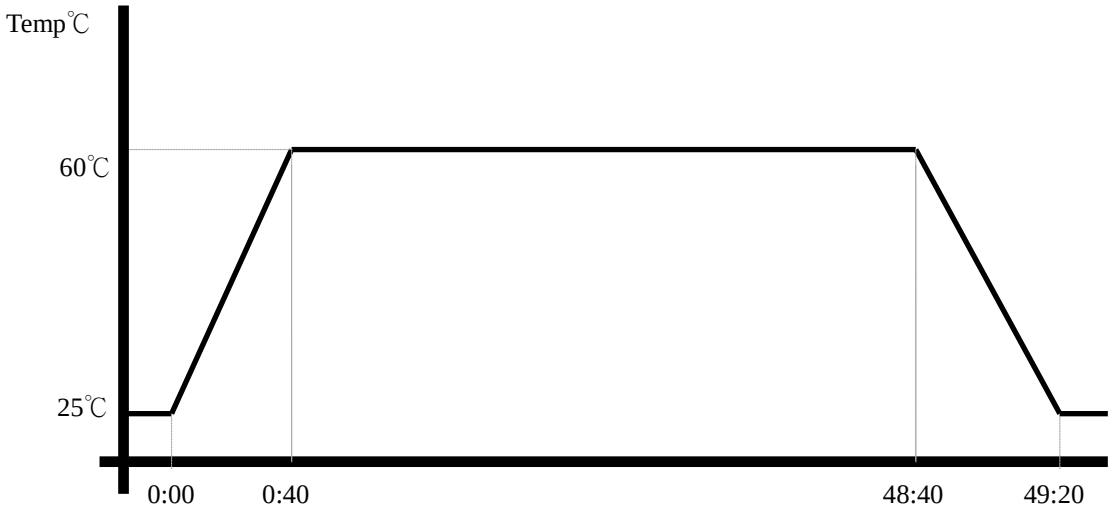
Test Standard: Refer to IEC 68-2-2 Testing procedures
Test Bb: Dry Heat Test (Non-operation)

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D4H+-100
Date of Calibration: 10/09/13
Serial Number: 2582

Testing Item:

1. Test Temperature: 60℃
2. Test Times: 48Hrs
3. Test Software: Windows 8.1 / Run PassMark Burn In Test 7.0 Pro
4. Test Environment Curve:



Sample Configuration & Quantity Under Test:

Quantity: 1 (FWS-2250)

Test Result:

No issues were found after the high temperature storage test.

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Low temperature storage test

Test Date: 05-5 ~ 06-2014

Test Product: FWS-2250

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: 10/09/13
Serial Number: 2582

Testing Item:

1. Test Temperature: -20℃
2. Test Times: 48Hrs
3. Test Software: Windows 8.1 / Run PassMark Burn In Test 7.0 Pro
4. Test Environment Curve:

Sample Configuration & Quantity Under Test:
Quantity: 1 (FWS-2250)

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

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Humidity test

Test Date: 05-07~8-2014

Test Product: FWS-2250

Test Site: AAEON QE Dept.

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

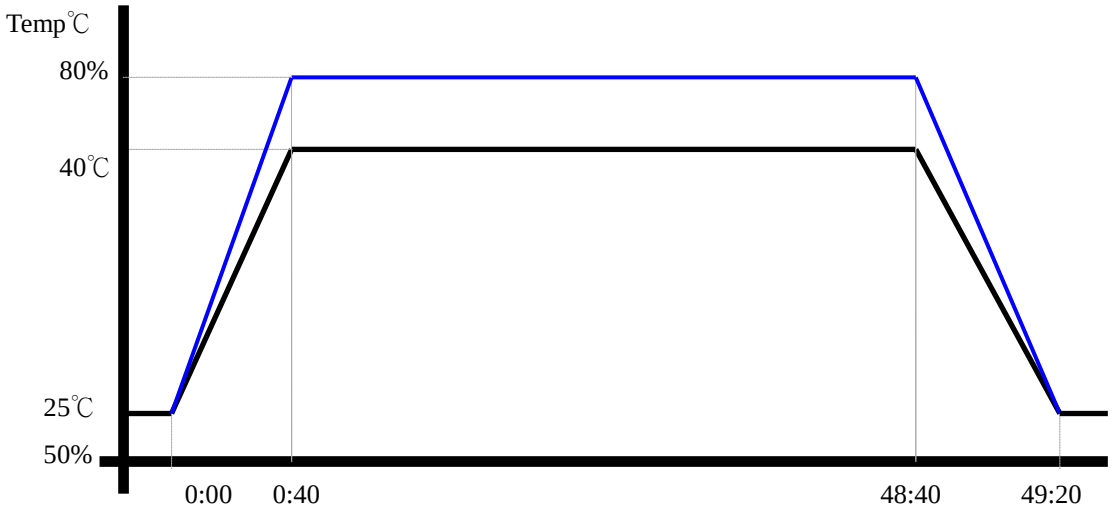
Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D4H+-100
Date of Calibration: 10/09/13
Serial Number: 2582

Testing Item:

1. Test Temperature: 40℃
2. Test Humidity: 80%RH
3. Test Times: 48Hrs
4. Test Software: Windows 8.1 / Run PassMark Burn In Test 7.0 Pro
5. Test Environment Curve:

Humidity %



Sample Configuration & Quantity Under Test:

Quantity: 1 (FWS-2250)

Test Result:

No issues were found after the humidity storage test.

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