FWS-2252

Environment Test Report

Report No: 15I020020

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

Test Result Summary				
	Critical	Major	Minor	Enhancement
Defect Found	0	0	0	0
Defect Unsolved	0	0	0	0

Issue date	Approval	Issued by
2015-11-16	**KJ Wang**	**Jerry Chen**

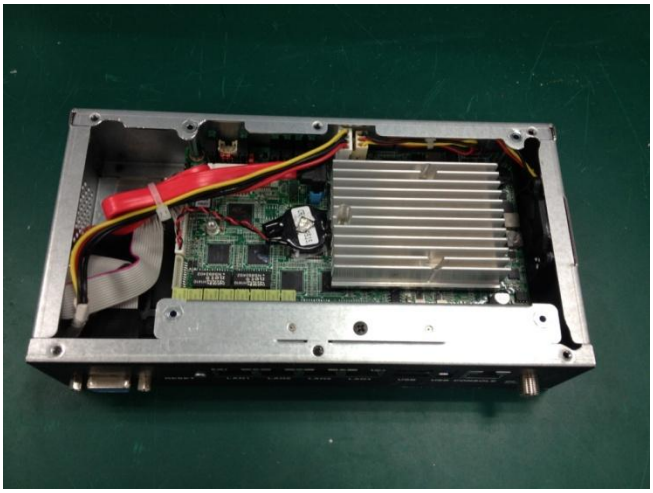
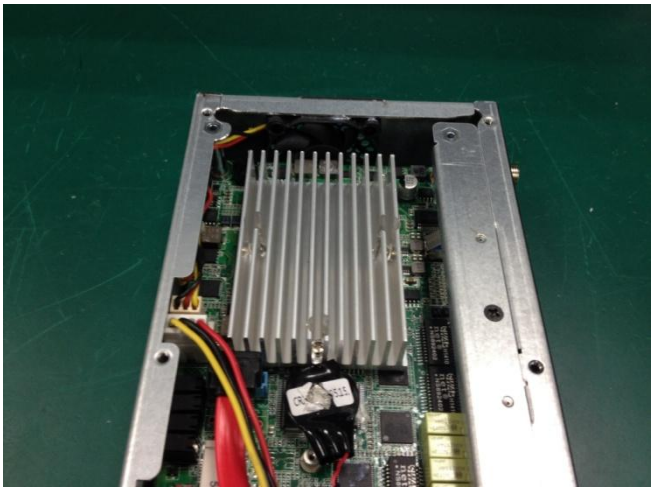
Test item list

Testing Result

Num	Test item list	Result	Remark
1	Temperature rise test	Pass	
2	Temp./humidity power on/off 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	Device Information
1.	Model Name	FWS-2252
2.	M/B Name	FWS-2252 Ver. A1.1
3.	BIOS / Version	FWS-2250 R1.6 (K225AM16) (05/19/2015) x64
4.	CPU	Intel Celeron® J1900 1.99GHz
5.	Memory Type	Innodisk 4GB DDR3 1600 SODIMM (SEC / K4B4G0846D)
6.	2.5” SATA SSD	Innodisk 2.5” SATA SSD 3MG2-P 128GB
7.	USB Flash	Transcend 8GB (For DOS Mode Power On/Off Test)
8.	Test Software	Windows 7 / Run PassMark Burn In Test 8.0 Pro
9.	Adapter	FSP / FSP040-DGAA1 12V 3.33A MAX

CPU Heat Sink	System Fan
	

Temperature rise test

Test Date: 11-12 ~ 13-2015

Test Product: FWS-2252

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: 09/10/2015
Serial Number: 12A323190

Test Condition:

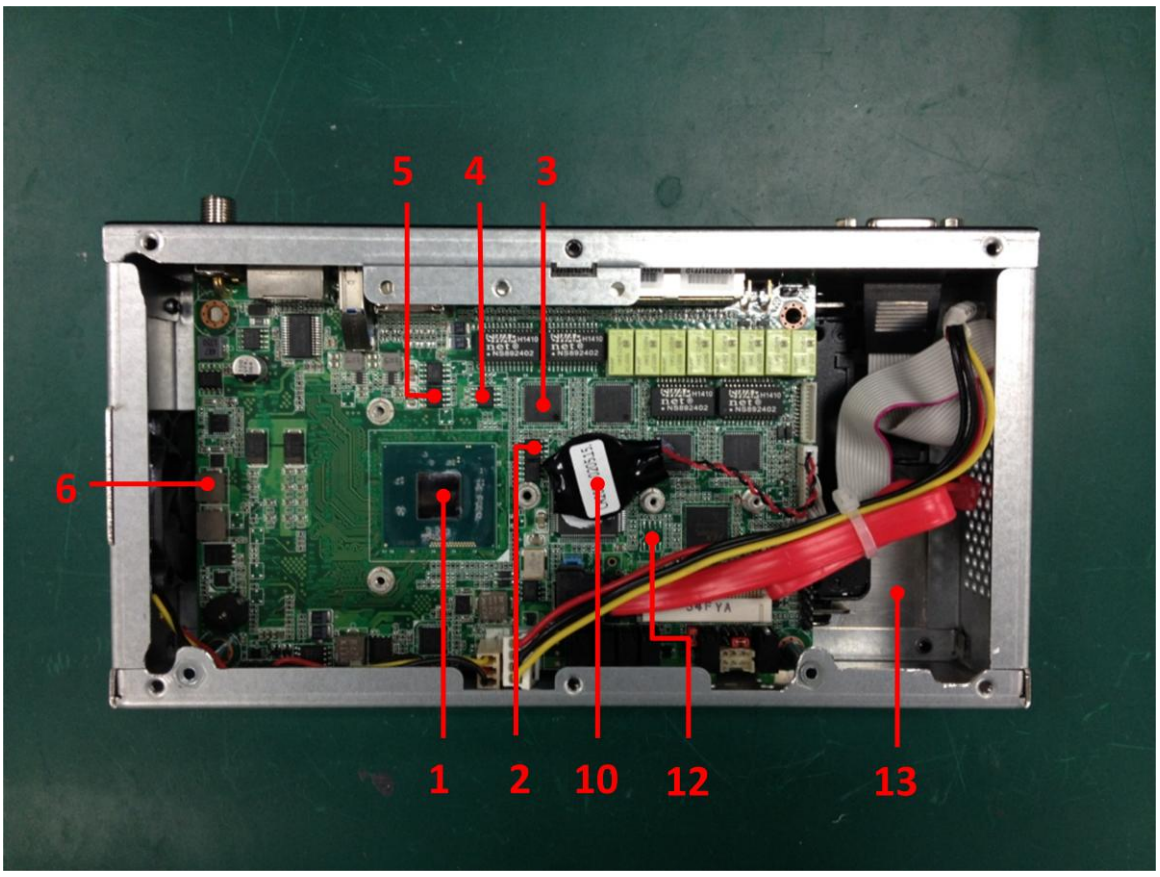
Ambient temperature: 40℃
Continuous running till thermal stable (within less than 1℃)

Test Software:

Windows 7 / Run PassMark Burn In Test 8.0 Pro

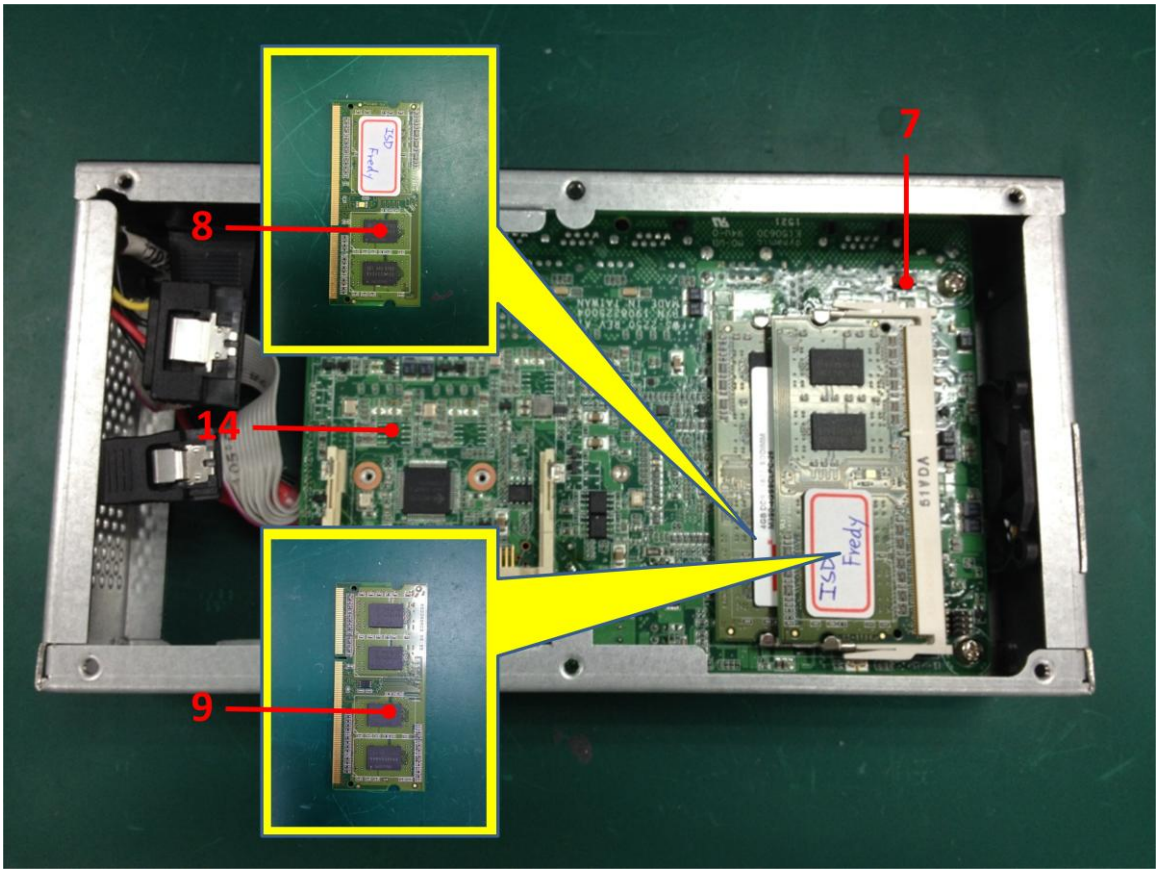
Terminal Recorder:

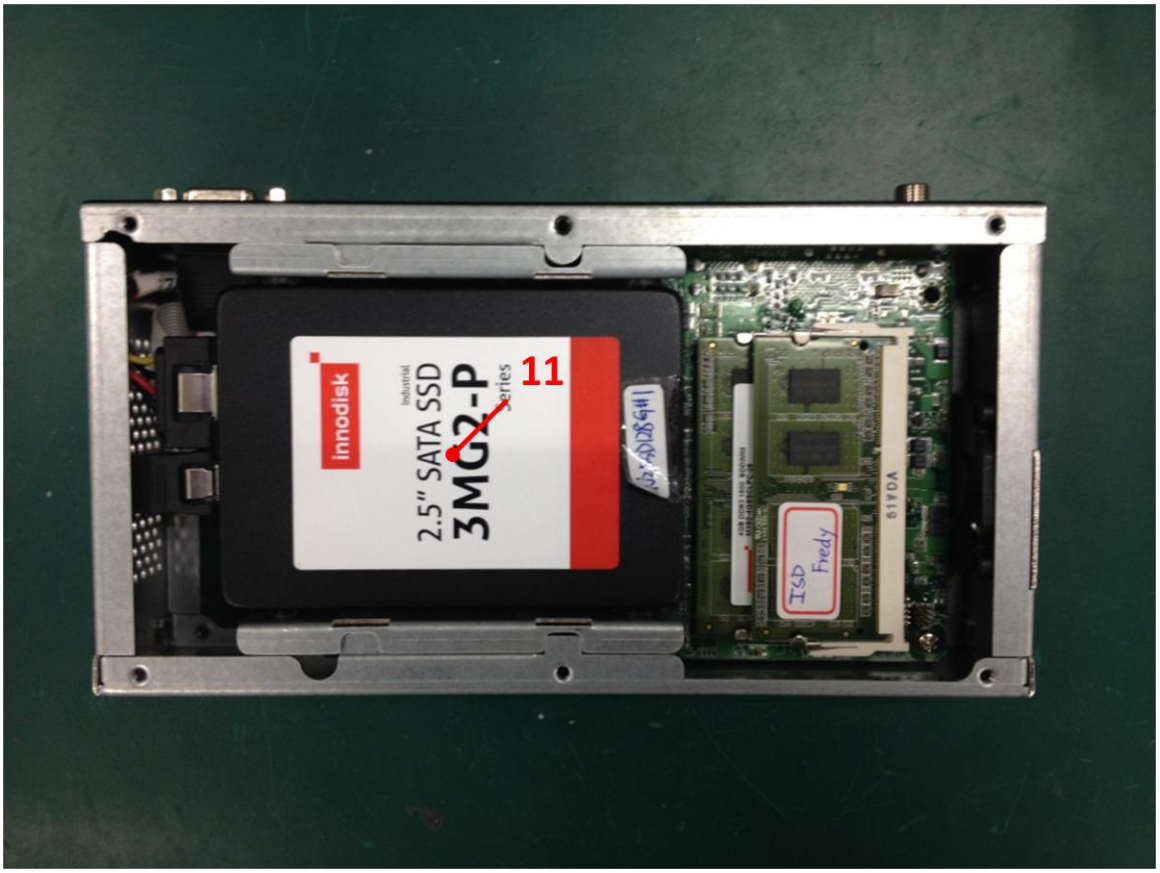
Top



Temperature rise test

Bottom





Temperature rise test

Temperature rise test

Thermal profile data:

Point / Temp. Stage(℃)	Spec	40	25	Note
FWS-2252				
01. U1 - Intel® Celeron® J1900 1.99GHz	105	62.7	47.7	
02. U44 - Ultra Low Dropout LDO.SOP-8.SMD.YOBON.YB1283PSP8	100	62.9	47.9	
03. U19 - PCI-E GigaBit Ethernet Chipset.QFN 64P.SMD.Intel.I211AT	85	61.4	46.4	
04. U41 - Ultra Low Dropout LDO.SOP-8.SMD.YOBON.YB1283PSP8	100	60	45	
05. U39 - Ultra Low Dropout LDO.SOP-8.SMD.YOBON.YB1283PSP8	100	59.3	44.3	
06. L13 - COIL.4.7uH.20%. Zenithtek.ZPWM-6030M-4R7M	150	61.7	46.7	
07. D15 - D Schottky.VDC=40V.3A. Barrier Rectifiers Willas.SK34A	100	57.5	42.5	
08. Memory-1 - innodisk 4GB DDR3 1600 SODIMM	85	61.5	46.5	
09. Memory-2 - innodisk 4GB DDR3 1600 SODIMM	85	59.8	44.8	
10. Battery - Battery.3V.MAXELL.CR2032M1S8-LF	85	52.7	37.7	
11. SSD - innodisk 2.5" SATA SSD 3MG2-P 128GB	70	44.4	29.4	
12. Control Box Inside Air Temperature-1	N/A	50.6	35.6	
13. Control Box Inside Air Temperature-2	N/A	41	26	
14. Control Box Inside Air Temperature-3	N/A	42.4	27.4	
15. Control Box External Surface Temperature	N/A	46	31	
16. Chamber Air Temperature	N/A	40	25	

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 plus margin.
- **Margin** : Tc > Tm > Tc-5℃; 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-5℃; The measured value is with safety margin.

4. Defect NO.

Sample Configuration & Quantity Under Test:

Quantity: 1 (FWS-2252)

Test Result:

No issues were found during the temperature rise operation test.

Temp./humidity power on/off test

Test Date: 11-06 ~ 09-2015

Test Site: AAEON QE Dept.

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

Test Equipment:

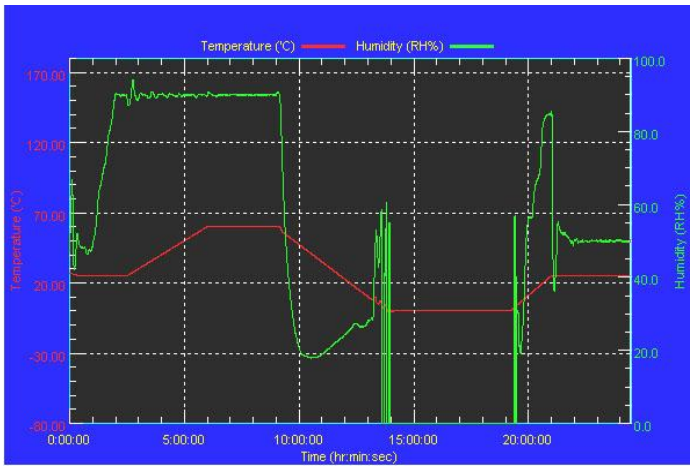
Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D7TS-100+LN2
Date of Calibration: 09/10/2015
Serial Number: A0004

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	1069/times	1069/times	0 %
Note: Failure rate need to under 0%.			

Temperature cycle test

Test Date: 11-09 ~ 11-2015

Test Product: FWS-2252

Test Site: AAEON QE Dept.

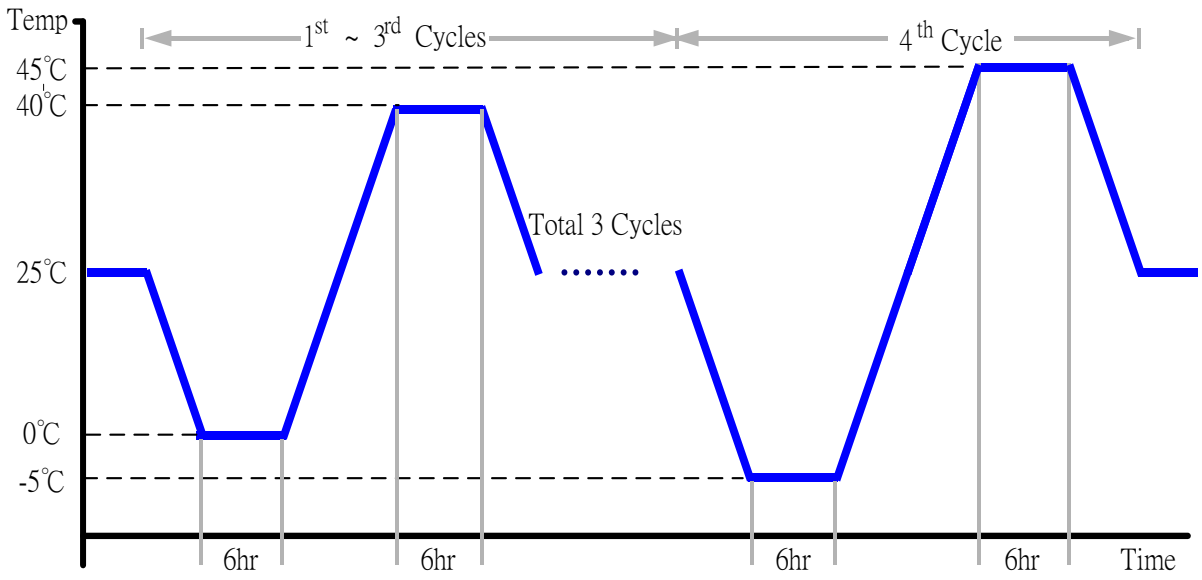
Test Standard: Refer to IEC68-2-14 Testing procedures
Test N: Change of temperature Test

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D7TS-100+LN2
Date of Calibration: 09/10/2015
Serial Number: A0004

Test Condition:

1. Test Low Temperature: 0℃ (1~3 cycles)
   -5℃ (4th cycle)
2. Test High Temperature: 40℃ (1~3 cycles)
   45℃ (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 (FWS-2252)

Test Result:

No issues were found during the temperature operation cycle test.

High temperature storage test

Test Date: 11-04 ~ 06-2015

Test Product: FWS-2252

Test Site: AAEON QE Dept.

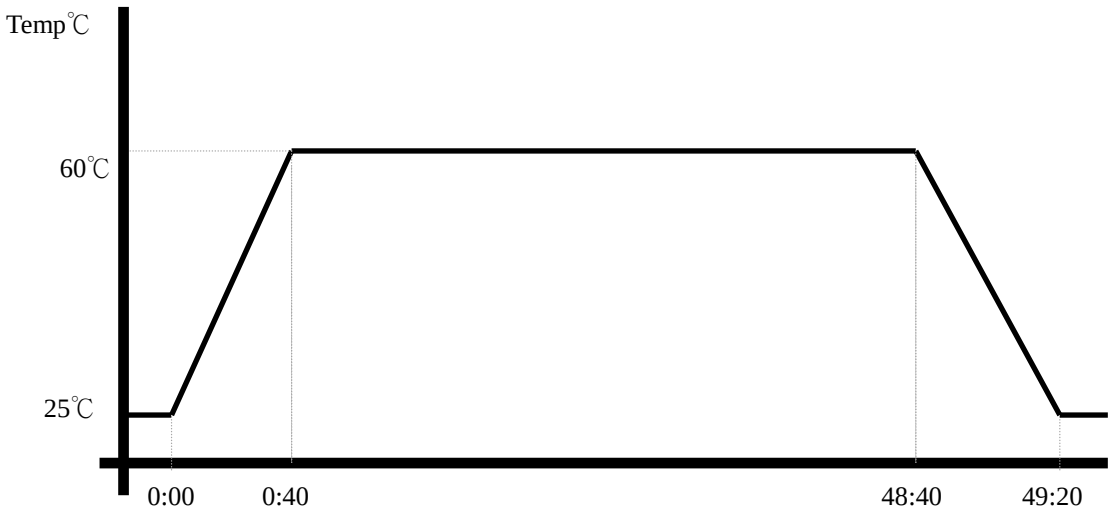
Test Standard: Refer to IEC 68-2-2 Testing procedures
Test Bb: Dry Heat Test (Non-operation)

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D7TS-100+LN2
Date of Calibration: 09/10/2015
Serial Number: A0004

Testing Item:

1. Test Temperature: 60℃
2. Test Times: 48Hrs
3. Test Software: Windows 7 / Run PassMark Burn In Test 8.0 Pro
4. Test Environment Curve:



Sample Configuration & Quantity Under Test:
Quantity: 1 (FWS-2252)

Test Result:

No issues were found after the high temperature storage test.

Low temperature storage test

Test Date: 11-02 ~ 04-02-2015

Test Product: FWS-2252

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-D7TS-100+LN2
Date of Calibration: 09/10/2015
Serial Number: A0004

Testing Item:

1. Test Temperature: -20℃
2. Test Times: 48Hrs
5. Test Software: Windows 7 / Run PassMark Burn In Test 8.0 Pro
3. Test Environment Curve:

Sample Configuration & Quantity Under Test:
Quantity: 1 (FWS-2252)

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

Humidity test

Test Date: 10-30 ~ 11-02-2015

Test Product: FWS-2252

Test Site: AAEON QE Dept.

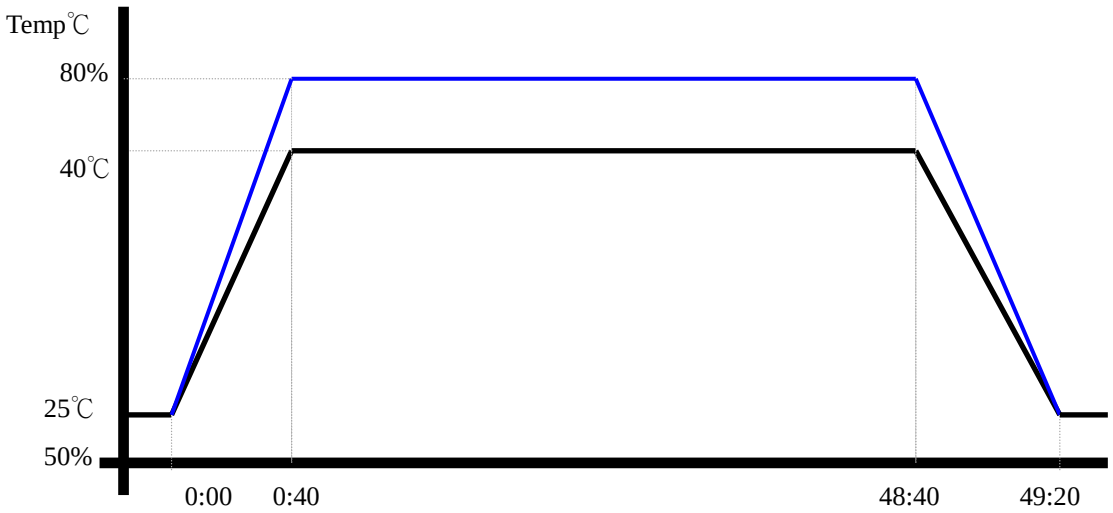
Test Standard: Refer to IEC 68-2-3 Testing procedures
Test Ca: Damp heat, steady state (Non-operation)

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D7TS-100+LN2
Date of Calibration: 09/10/2015
Serial Number: A0004

Testing Item:

1. Test Temperature: 40℃
2. Test Humidity: 80%RH
3. Test Times: 48Hrs
4. Test Software: Windows 7 / Run PassMark Burn In Test 8.0 Pro
4. Test Environment Curve:



Sample Configuration & Quantity Under Test:
Quantity: 1 (FWS-2252)

Test Result:

No issues were found after the humidity storage test.

Cold start and hot start test

Test Date: 11-11 ~ 12-2015

Test Product: FWS-2252

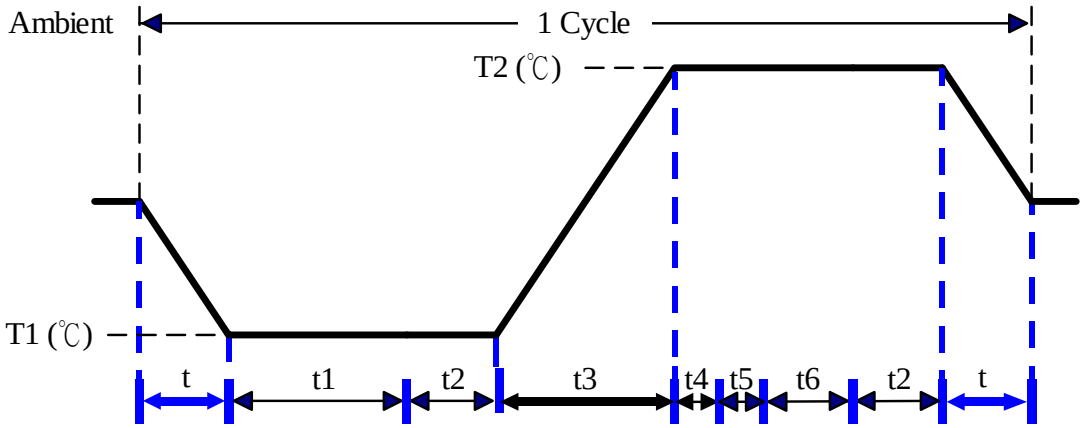
Test Site: AAEON QE Dept.

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-D7TS-100+LN2
Date of Calibration: 09/10/2015
Serial Number: A0004

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 iPerf test
t5: Win 7 Software restart test 3 times
Test Software: Win 7

Test Result:

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

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