FWS-2273

With 2.5” SATA SSD

Environment Test Report

Report NO: 17I020010

Summary	☐ **Pass** ☐ **Fail** ☑ **Pass with Deviation** **Comment: There are two temperature points lack the Tc or Tj specifications, so we cannot determine.**

Issue date	QE Manager	Test Engineer
2017-08-02	**KJ Wang**	**Jerry Chen**

Test item list

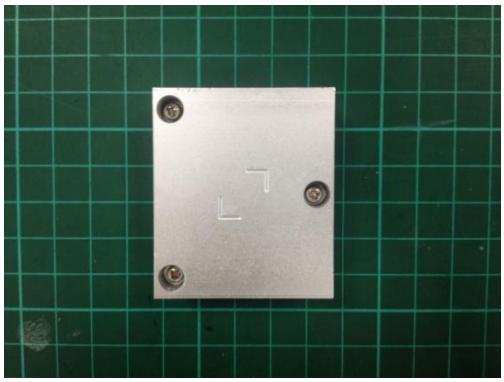
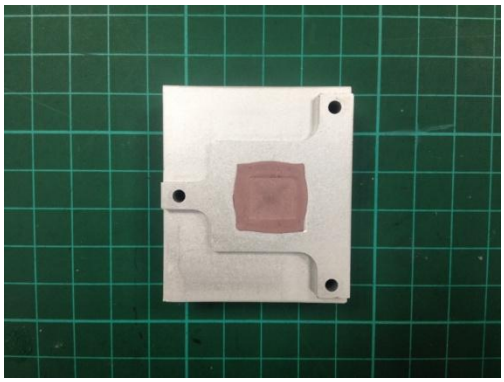
Testing Result

Num	Test item list	Result	Remark
1	High temperature operation 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	Spec
1	**Fanless System**	FWS-2273 / Ver. A0.1
2	**Main Board**	NMB-2273 / Ver. A0.1
3	**BIOS Ver.**	NMB-2273 R0.0 (N273AM00) (06/16/2017)
4	**CPU Type**	Intel Celeron N3350 / 1.10GHz
5	**Memory**	Transcend 8GB DDR3L 1600 SO I / SEC K4B4G0846D
6	**2.5” SATA3 SSD**	Transcend / SSD420K 128GB / TS128GSSD420K
7	**Test Software**	Windows 10 / Run PassMark BurnIn test 8.1 Pro / PassMark Rebooter V1.3
8	**Adapter:**	FSP / FSP040-RHAN2 / 12V, 3.33A

Photos

System	SSD Kit
	
CPU Heat Sink	
	

High Temperature Operation test

Test Date: 08-02-2017

Test Product: FWS-2273

Test Site: AAEON QEDept.

Test Standard: Refer toIEC 68-2-2 Testing procedures

Test Bd: Dry Heat Test (Operation)

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)

Model: THS-D7TS-100+LN2

Date of Calibration: 09/10/2016
Due date of Calibration: 09/09/2017
Serial Number: A0004

Temperature Measurement:

40 Channel Thermal Recorder: (YOKOGAWA Inc,)

Model: DA100-13-1D

Date of Calibration: 09/10/2016
Due date of Calibration: 09/09/2017
Serial Number: 12A323190

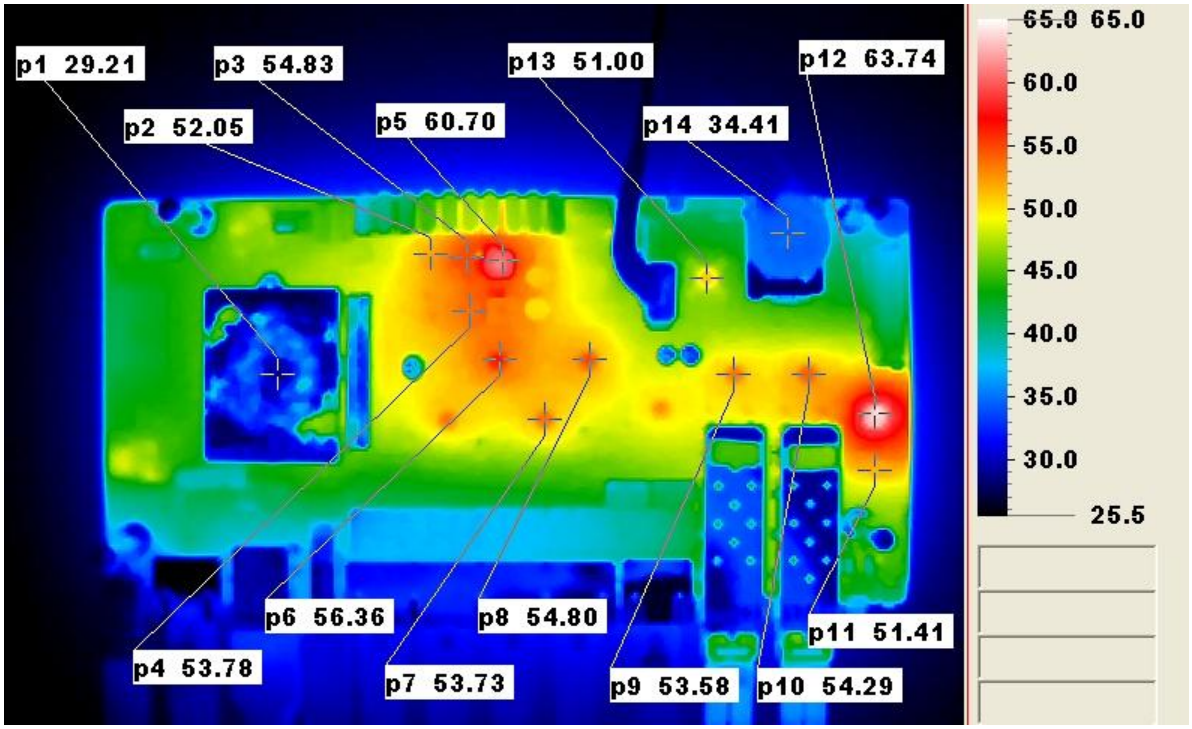
Testing Item:

1. Test Temperature: 40℃
2. Test Times: 6Hrs
3. Test Software: Windows 10 / Run PassMark Burn In Test 8.1 Pro
4. Test Environment Curve:

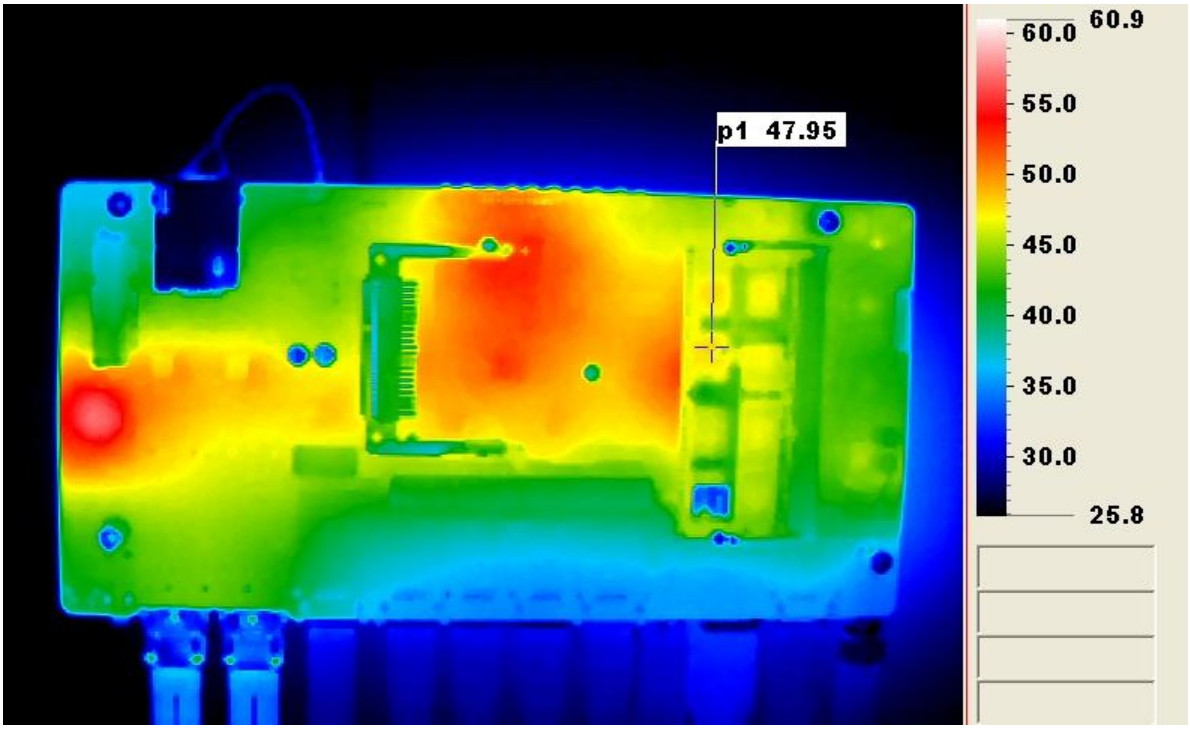
High Temperature Operation test

IR Thermal Photos

Front Side



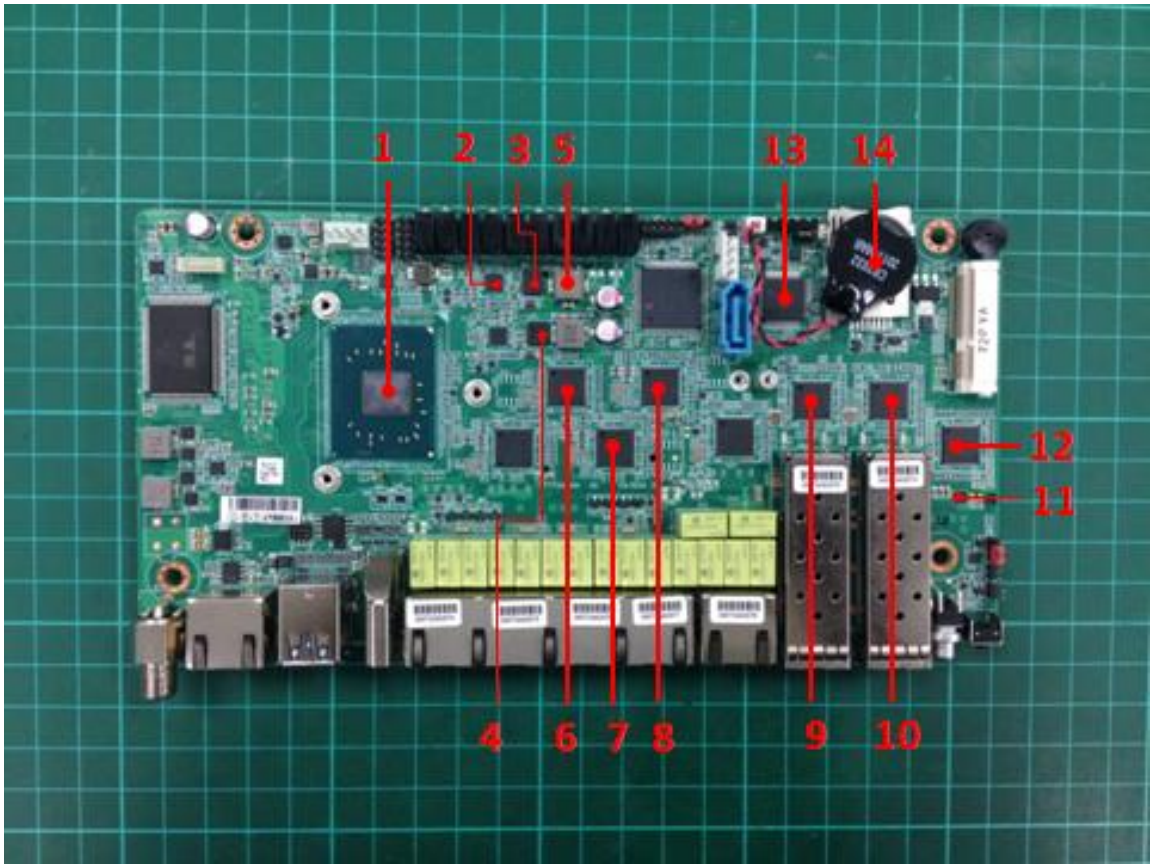
Rear Side

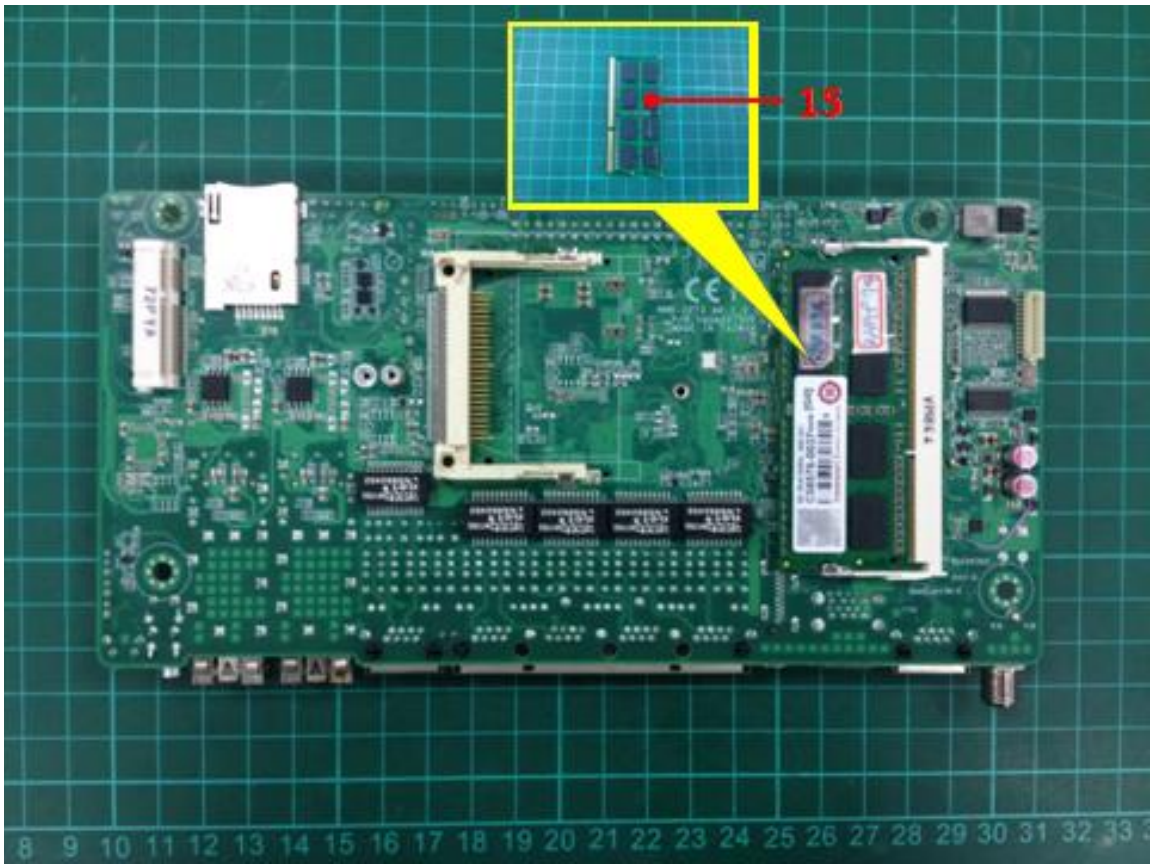


High Temperature Operation test

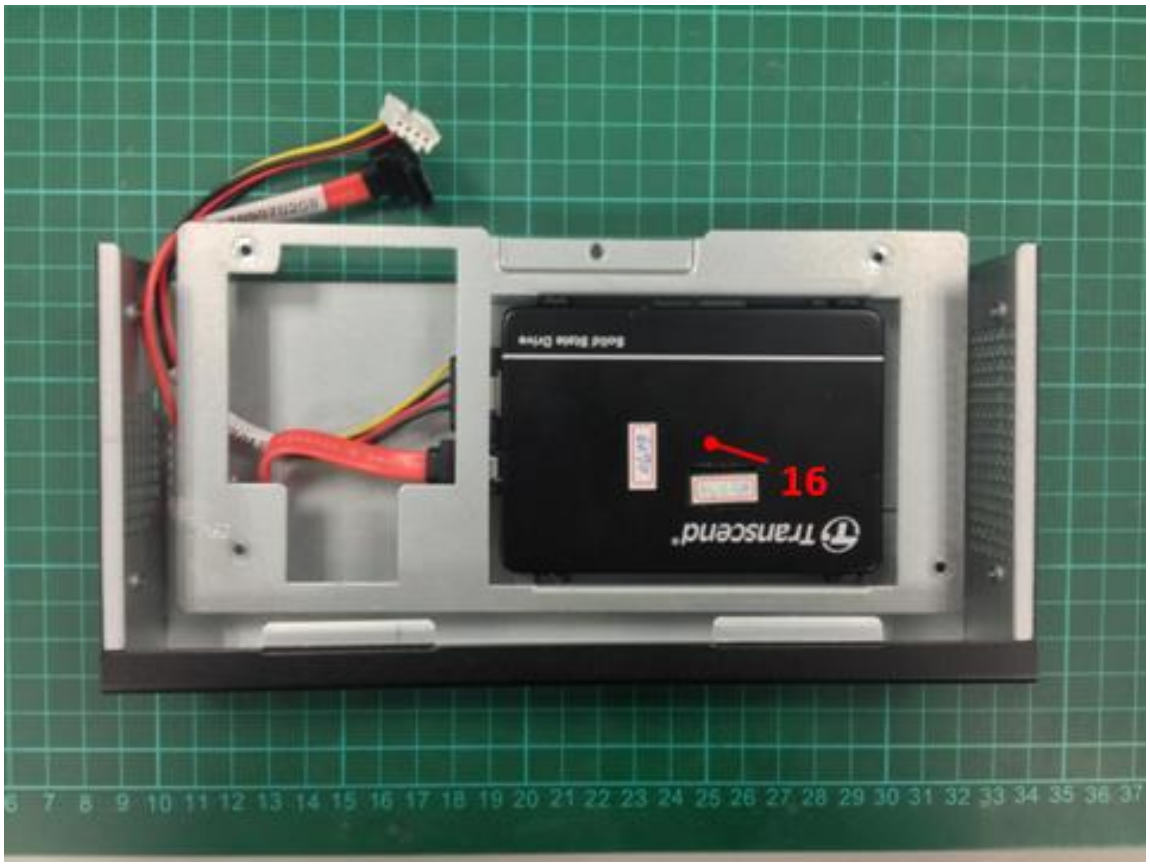
Terminal Recorder:

Measuring Thermal Couple Position：

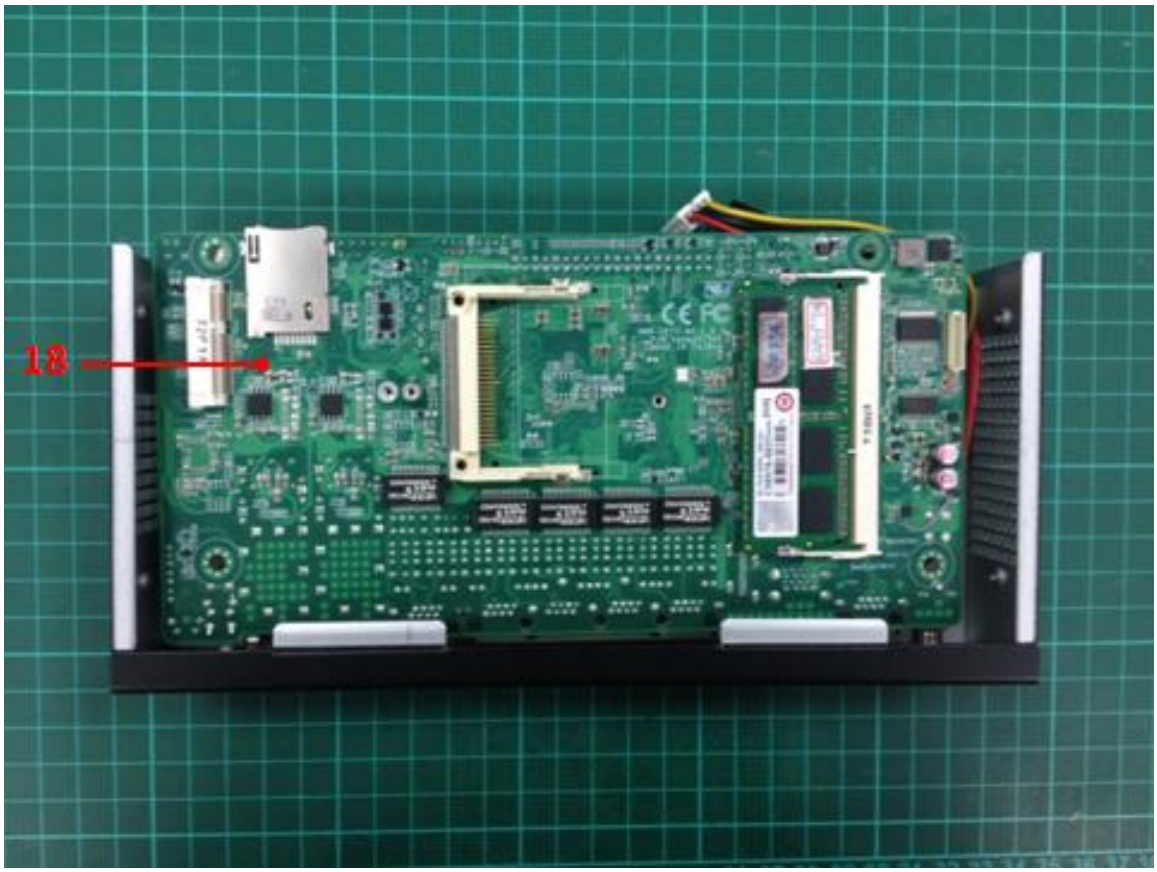




High Temperature Operation test



High Temperature Operation test



High Temperature Operation test

Thermal profile data:

FWS-2273 (With 0.5m/sec airflow)

Point / Position / DescribeTemp. Stage(℃)	Spec Tc(*1)	TAT(*2) 40	TPT(*3) 25	Note
M/B: NMB-2273 / Ver. A0.1				
01. U23 - CPU Intel Celeron N3350 / 1.10GHz	109	61.1	46.1	
02. U9 - RICHTEK.RT3601EAGQW	N/A	67.2	52.2	**Note 5**
03. Q9 - FAIRCHILD.FDMS3664S	125	70.2	55.2	
04. Q15 - FAIRCHILD.FDMS3664S	125	71.1	56.1	
05. L3 - NEC/TOKIN.MPC0740LR42C	N/A	77.9	62.9	**Note 5**
06. U20 - Intel.I211AT	85	72.7	57.7	
07. U28 - Intel.I211AT	85	68.7	53.7	
08. U21 - Intel.I211AT	85	72.2	57.2	
09. U25 - Intel.I210IS	95	69.5	54.5	
10. U24 - Intel.I210IS	95	72.7	57.7	
11. Q34 - EMB20N03V	150	65.1	50.1	
12. U27 - ASMEDIA.ASM1184	95	77.9	62.9	
13. U12 - JMD330.APCI-TGCD	100	70.7	55.7	
14. BAT - Hitachi Maxell CR2032H	85	57.6	42.6	
15. Memory - Transcend 8GB DDR3L 1600 SO I	85	62.3	47.3	
16. SSD - Transcend / SSD420K 128GB / TS128GSSD420K	70	48.7	33.7	
17. Control Box Inside Air Temperature - 1	N/A	56.3	41.3	
18. Control Box Inside Air Temperature - 2	N/A	55.3	40.3	
19. Control Box External Surface Temperature	N/A	48.9	33.9	
20. Chamber Air Temperature	N/A	40	25	

Note(*):
1. "Tc" indicates the component's case maximum temperature value specified in its datasheet.
2. "TAT" indicates the actual measured temperature in chamber.
3."TPT"indicates the predicted temperature by offset from TAT.
4. 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.
It is strongly recommended to add thermal dissipation design for better reliability.
- Pass : Tm < Tc-5℃; The measured value is with safety margin.
5. Defect NO.: **I170702LABE02**

Sample Configuration & Quantity Under Test:

Quantity: 1 (FWS-2273)

Test Result:

No issues were found during the high temperature operation test.

Temp./humidity power on/off test

Test Date: 07-26 ~ 28-2017

Test Site: AAEON QE Dept.

Test Standard: Refer to IEC 68-2-30 Testing procedures
Test Db: Damp Heat Test
Refer to IEC 68-2-1 Testing procedures
Test Ad: Cold Test

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D7TS-100+LN2
Date of Calibration: 09/10/2016
Due date of Calibration: 09/09/2017
Serial Number: A0004

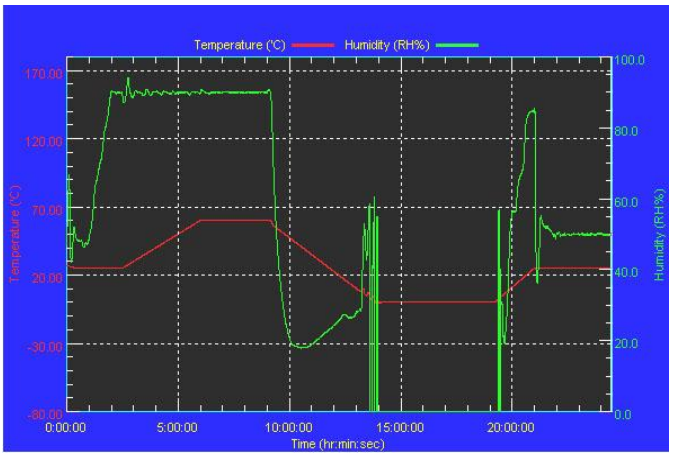
Temperature & Humidity Power On/Off Test:

1. Test High Temp./Humidity: 60℃@90%RH
2. Test Low Temperature: 0℃
3. Test Time: 24Hours / Cycle
4. Test Cycle: 2 Cycles
5. Test Software: Windows 10 / Run PassMark Rebooter V1.3

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:

	Actual	Successful	Failure rate	Test Result
Power On/Off	1146/times	1146/times	0 %	Pass

Note: 1. Failure rate need to under 0%.

2. Power on/off fixture setting: on - 2.5 minutes /

PassMark Rebooter setting: shutdown countdown - 30 seconds.

Temperature cycle operation test

Test Date: 07-28~ 31-2017

Test Product: FWS-2273

Test Site: AAEON QEDept.

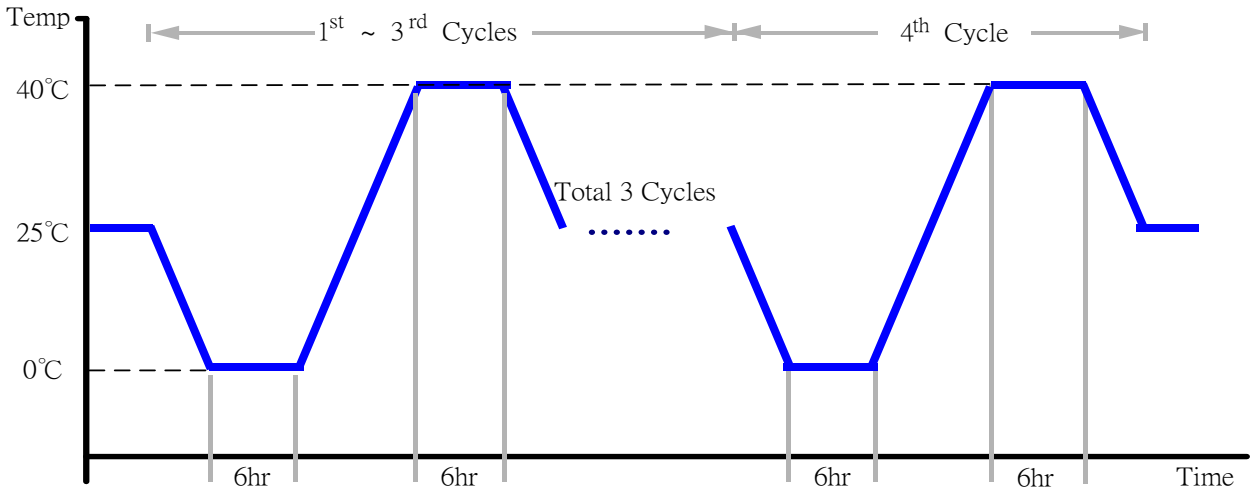
Test Standard: Refer to IEC68-2-14 Testing procedures
Test N: Change of temperature Test

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D7TS-100+LN2
Date of Calibration: 09/10/2016
Due date of Calibration: 09/09/2017
Serial Number: A0004

Test Condition:

1. Test Low Temperature: 0℃
2. Test High Temperature: 40℃
3. Test dwell time: 6Hrs
4. Temperature slope: 2℃/min
5. Test cycle: 4 cycles
6. Test Software: Windows 10 / Run PassMark Burn In Test 8.1 Pro
7. Test Environment Curve:



Sample Configuration & Quantity Under Test:
Quantity: 1 (FWS-2273)

Test Result:

No issues were found during the temperature operation cycle test.

High temperature storage test

Test Date: 07-24 ~ 26-2017

Test Product: FWS-2273

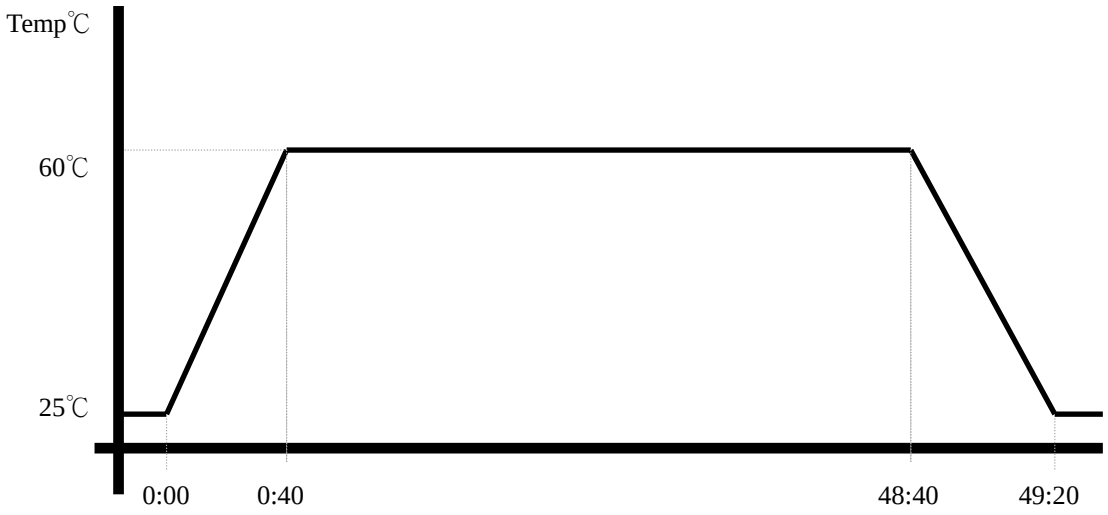
Test Site: AAEON QE Dept.

Test Standard: Refer toIEC 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: 09/10/2016
Due date of Calibration: 09/09/2017
Serial Number: A0004

Testing Item:

1. Test Temperature: 60℃
2. Test Times: 48Hrs
3. Test Environment Curve:



Sample Configuration & Quantity Under Test:
Quantity: 1 (FWS-2273)

Test Result:
No issue was found after the high temperature storage test.

Low temperature storage test

Test Date: 07-21 ~ 24-2017

Test Product: FWS-2273

Test Site: AAEON QE Dept.

Test Standard: Refer toIEC 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: 09/10/2016
Due date of Calibration: 09/09/2017
Serial Number: A0004

Testing Item:

1. Test Temperature: -20℃
2. Test Times: 48Hrs
3. Test Environment Curve:

Sample Configuration & Quantity Under Test:
Quantity: 1(FWS-2273)

Test Result:
No issue was found after the low temperature storage test.

Humidity test

Test Date: 07-19 ~ 21-2017

Test Product: FWS-2273

Test Site: AAEON QE Dept.

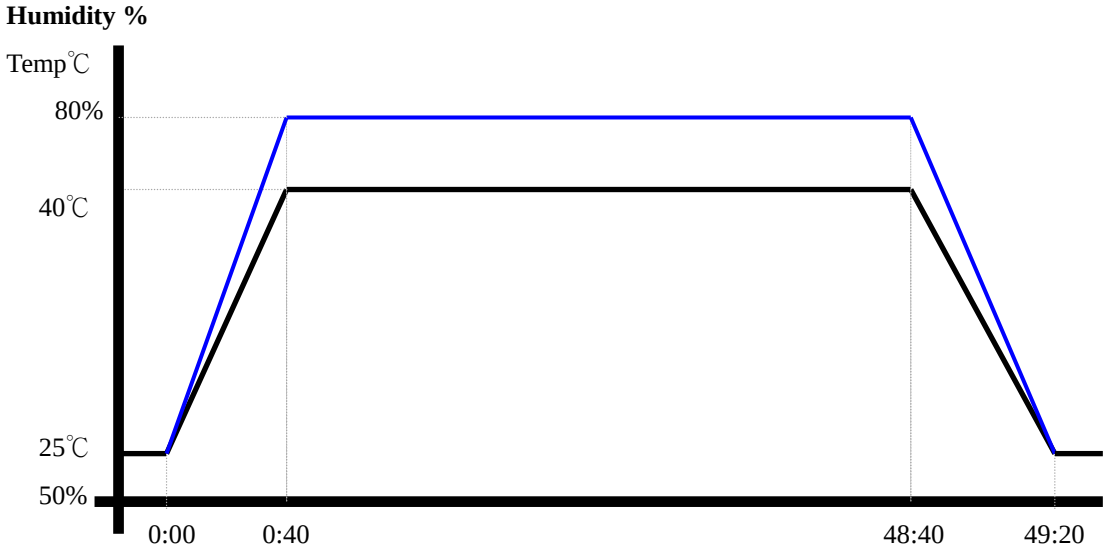
Test Standard: Refer toIEC 68-2-3 Testing procedures
Test Ca: Damp heat, steady state (Non-operation)

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D7TS-100+LN2
Date of Calibration: 09/10/2016
Due date of Calibration: 09/09/2017
Serial Number: A0004

Testing Item:

1. Test Temperature: 40℃
2. Test Humidity: 80%RH
3. Test Times: 48Hrs
4. Test Environment Curve:



Sample Configuration & Quantity Under Test:
Quantity: 1(FWS-2273)

Test Result:
No issue was found after the humidity storage test.

Cold start and hot start test

Test Date: 07-31~08-01-2017

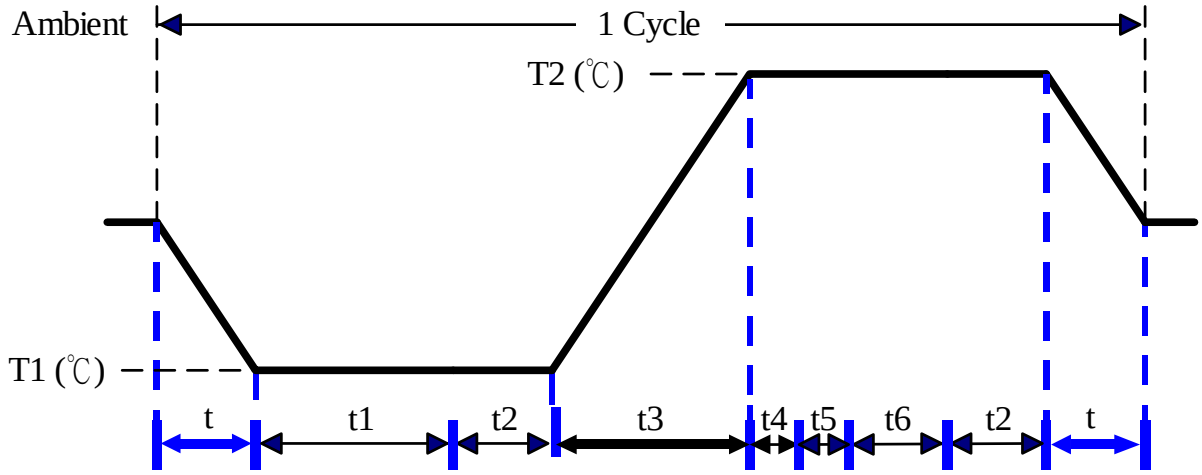
Test Product: FWS-2273

Test Site: AAEON QEDept.

Test Standard: Refer toIEC 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: 09/10/2016
Due date of Calibration: 09/09/2017
Serial Number: A0004

Test Condition:



Parameters	Description
T1	0℃
T2	40℃
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 PassMark Burn In Test
t5: Win 10 Software restart test 3 times
Test Software:Windows 10

Test Result:

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

b. No issueswere found during the hot start test.