FWS-2272

With eMMC + SATA DOM

Environment Test Report

Report NO: 17I020018

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: There are 5 componentsin the absence of Tc and Tj specification, Sowe are unable to determine.**

Issue date	QE Manager	Test Engineer
2017-10-27	KJ Wang	Rex Chang/JunoCheng

Test item list

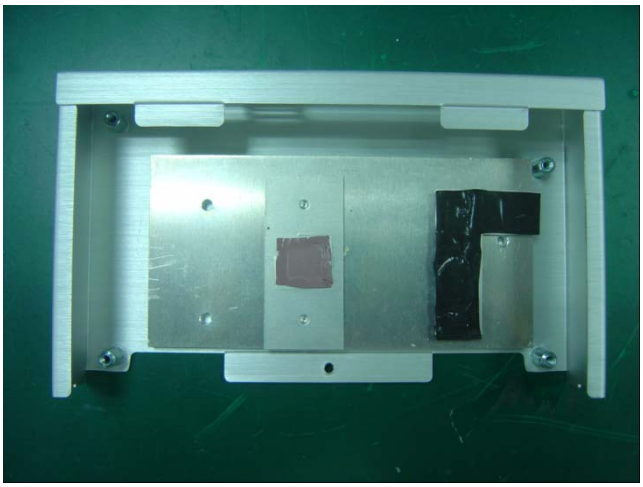
Testing Result

Num	Test item list	Result	Remark
1.	Temp./humidity power on/off test	Pass	
2.	High Temperature Operation test	Pass	
3.	Temperature cycleoperation 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
FWS-2272		
1	CPU Board	NMB-2272 Ver. A1.0
2	CPU	Intel N3350 / 1.10GHz
3	BIOS	R0.5 (K272AM05)(09/19/2017)
4	Onboard Memory	LPDDR4 2GB / Samsung K4F8E304HB-MGCJ
5	SATA DOM	Innodisk 8 GB
6	Onboard eMMC	16GB Hynix.H26M52208FPR (with Windows 10 O.S.)
7	Test Software	Windows 10 / Run PassMark Burn In Test 8.1 Pro from eMMC
8	Adapter	FSP040-DGAA1 / 12V; 3.33A Max

Heat Sink



Temp./humidity power on/off test

Test Date: 10-27 ~ 26-2017

Test Product:FWS-2272 A1.0

Test Site: AAEON QEDept.

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

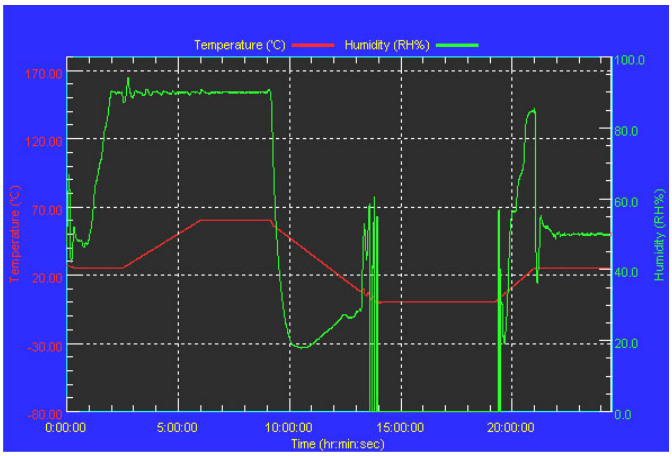
Test Equipment:
Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D7TS-100+LN2
Date of Calibration: 04/21/17
Due date of Calibration: 04/20/18
Serial Number: A0639

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 PassMarkRebooter v1.3 Build: 1004

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	Test Result
Power On/Off	1147/times	1147/times	0 %	Pass

Note: 1. Failure rate need to under 0%.
2. Power on/off fixture setting: on - 120sec / off - 30 sec

High Temperature Operation test

Test Date:10-25-2017

Test Product:FWS-2272

Test Site: AAEON QE Dept.

Test Standard: Refer to IEC 68-2-2 Testing procedures

Test Bd: Dry Heat Test (Operation)

Test Equipment:

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

Model: THS-D7S-100+L N2

Date of Calibration: 05/10/17
Due date of Calibration: 04/10/18

Serial Number: 3898

Temperature Measurement:

40 Channel Thermal Recorder:

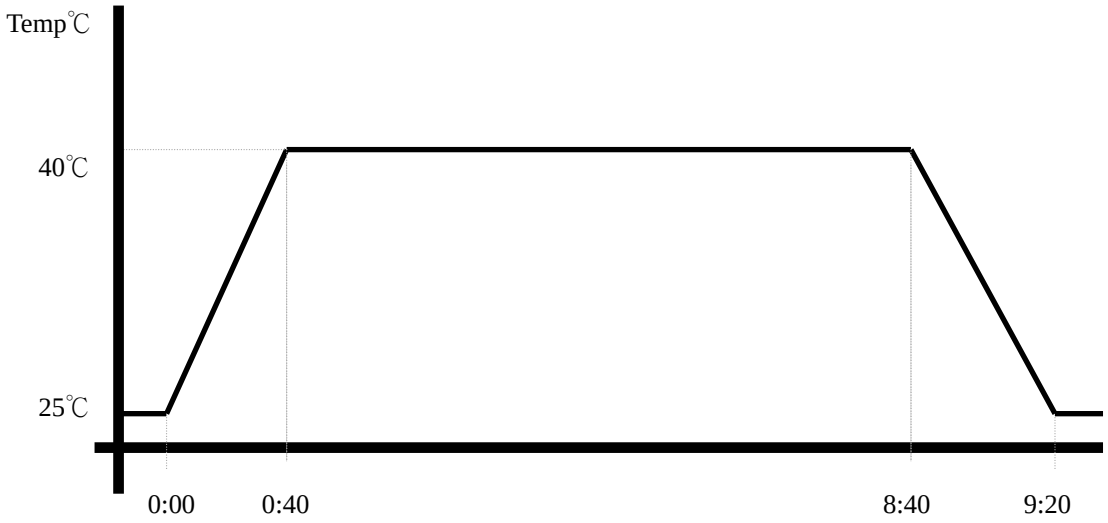
YOKOGAWA Inc,

Model: DA100-13-1D

Date of Calibration: 08/09/17
Due date of Calibration: 07/09/18
Serial Number: 12A323190

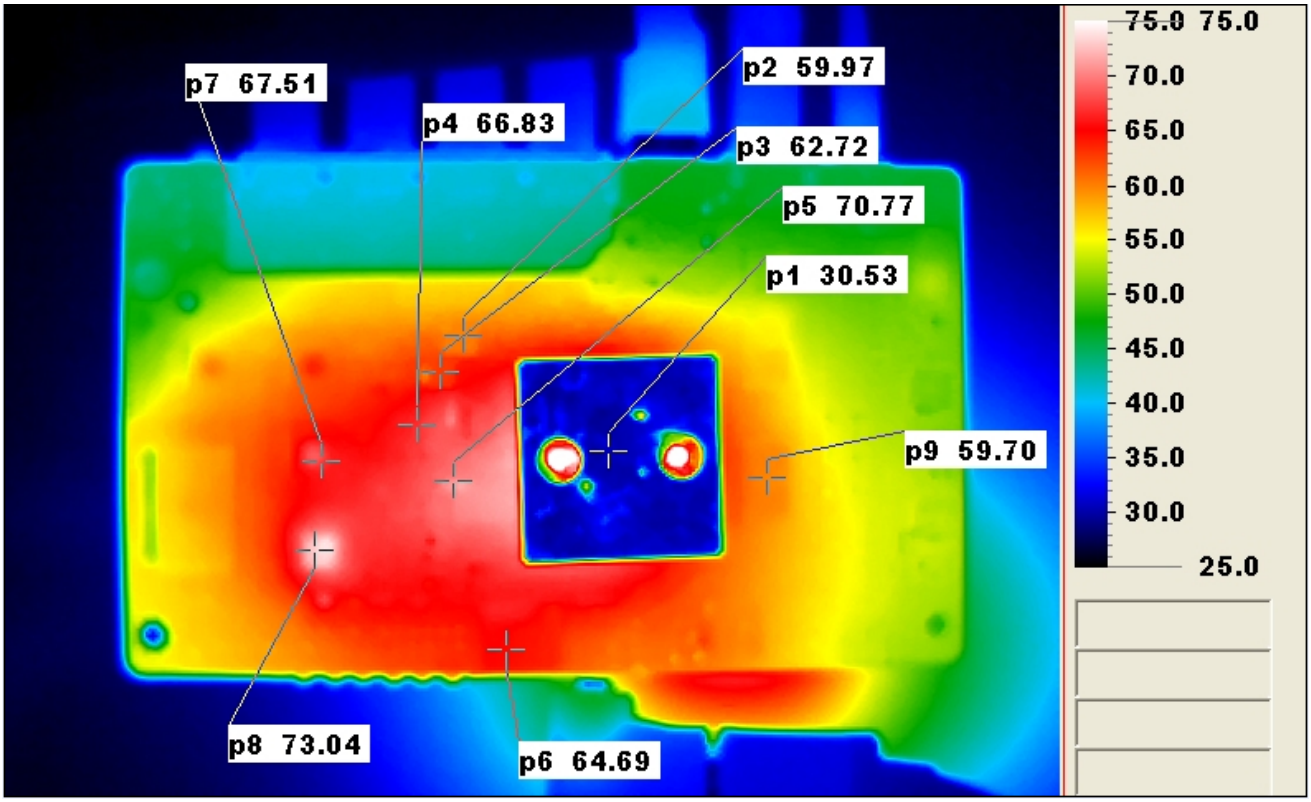
Testing Item:

1. Test Temperature: 40℃
2. Test Times: 8Hrs
3. Test Software: Windows 10 / Run PassMark Burn In Test 8.1 Pro
4. Test Environment Curve:



High Temperature Operation test

Front side :



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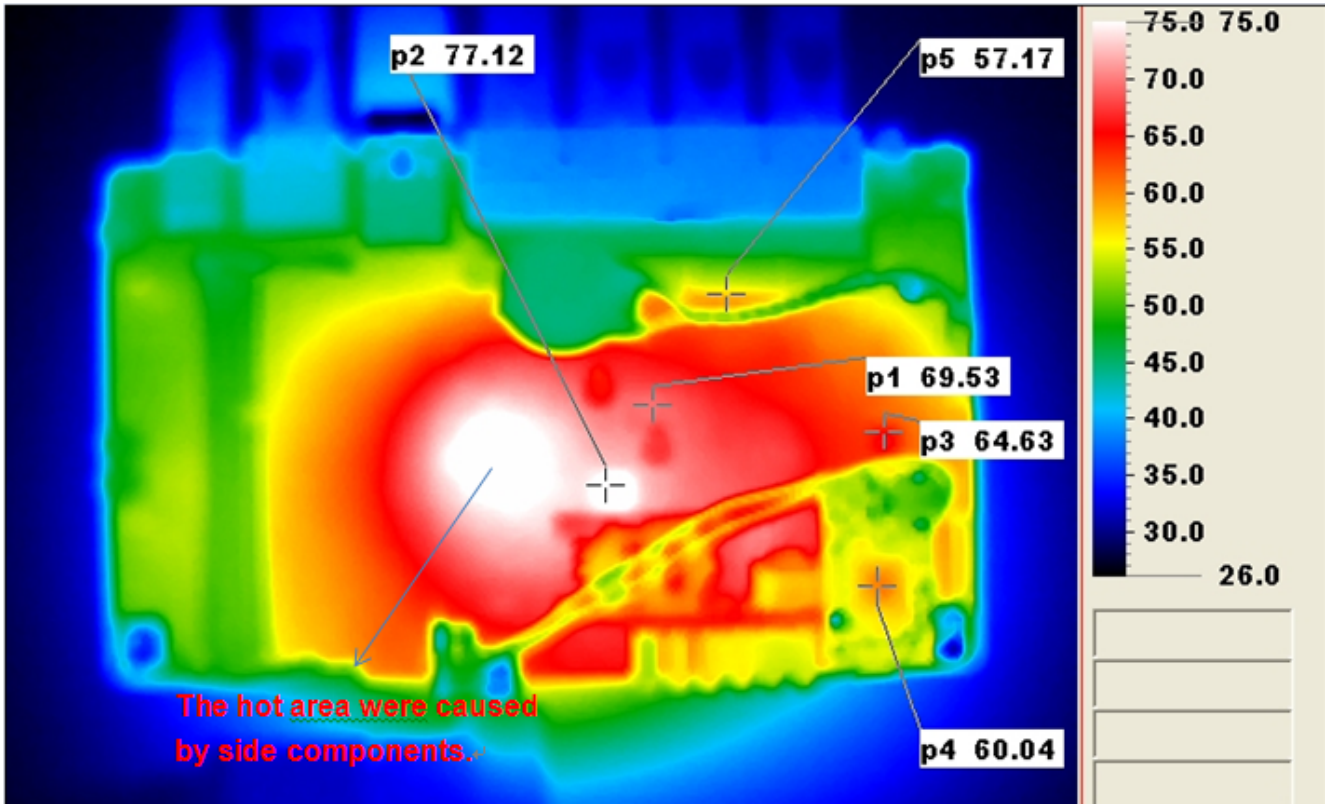
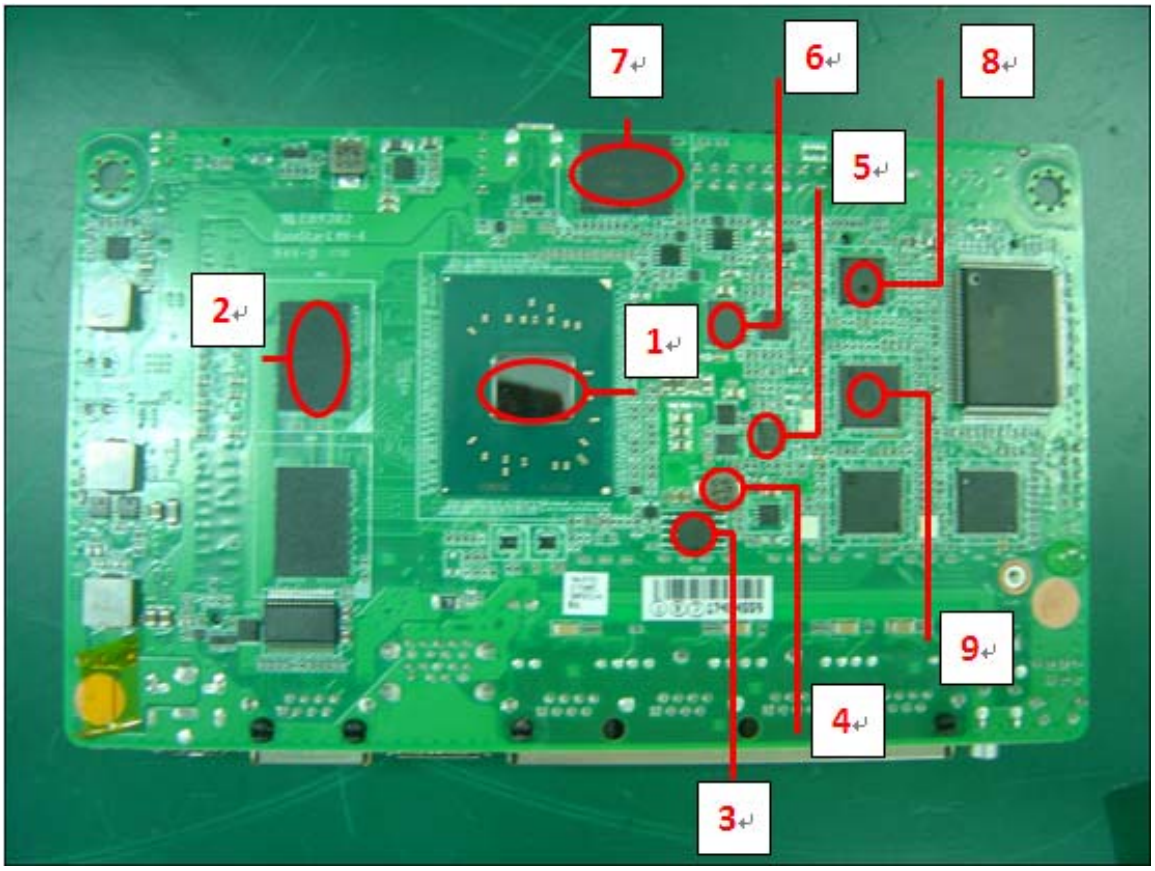
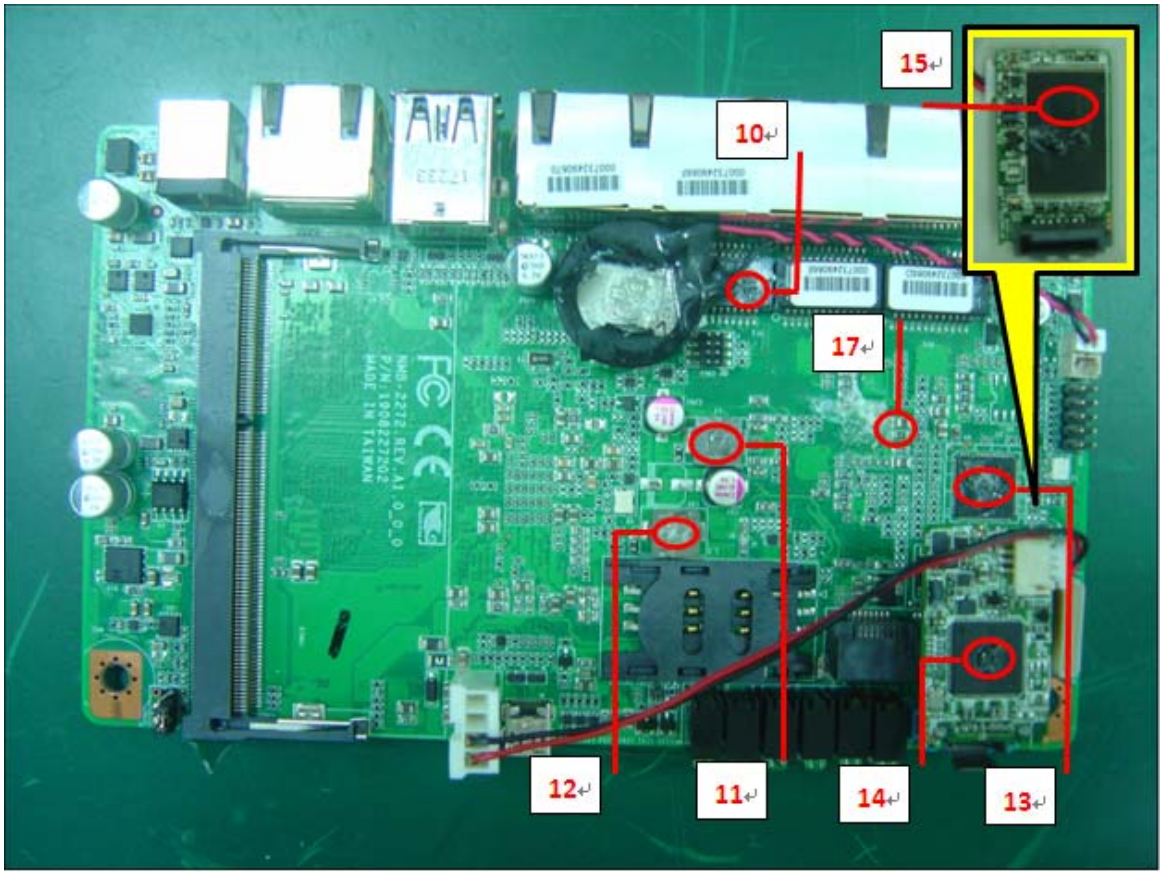


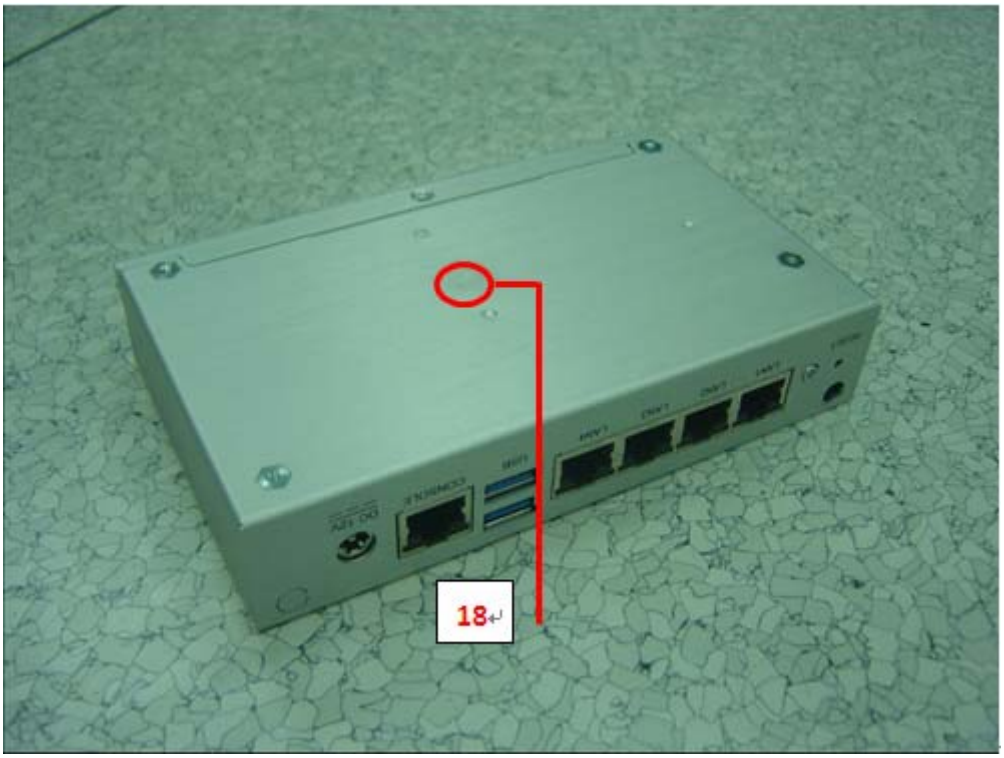
High Temperature Operation test

Terminal Recorder:





High Temperature Operation test



High Temperature Operation test

Thermal profile data:

FWS-2272(With 0.5m/sec airflow)

Point Temp. Stage(℃)	Spec Tc(*1)	TAT(*2) 40	TPT(*3) 25	Note
01. U27Apollo Lake-I N3350 @1.10 GHz	109	63.3	48.3	
02. U17K4F8E304HB-MGCJ	85	64.1	49.1	
03. U34Winbond.W25Q128FWSIQ	NA	64.6	49.6	
04. L5CYNTEC.PCMB053T-2R2MS	NA	65.5	50.5	
05. U29RICHTEK.RT3601EAGQW	100	69.2	54.2	
06. Q40infineon.BSC0921ND	125	70.6	55.6	
07. U17Hynix.H26M52208FPR	NA	65.1	50.1	
08. U23ASMEDIA.ASM1182	100	66.0	51.0	
09. U23Intel.I211AT	85	64.2	49.2	
10. TF3BOTHHAND.GST5009LF	70	57.2	42.2	
11. L1 CYNTEC.PCMG063T-R68MS	125	69.5	54.5	
12. L3 NEC/TOKIN.MPC0740LR42C	125	69.4	54.4	
13. U5 Intel.I211AT	85	70.9	55.9	
14. SATA DOM (Top)	NA	64.6	49.6	
15. SATA DOM (Back side)	NA	73.9	58.9	
16. Battery Maxell CR2032	85	54.4	39.4	
17. Control BoxInsidelSurface Temperature	NA	59.8	44.8	
18. Control BoxExternal Surface Temperature	NA	54.3	39.3	

Note(*):
1. **"Tc"** indicates the component's case maximum temperature value specified in its datasheet.
2. **"TAT"** indicates the actual measuredtemperatureunder product specification.
3. **"TPT"**indicates the predicted temperature under 25℃ working environmental.
4. Judgment Criteria:
- Fail **:** Tm > Tc; The measured value is over specification.
- Margin Pas: 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. :I170701LABD03

Sample Configuration & Quantity Under Test:

Quantity: 1(FWS-2272)

Test Result:

No issues were found during the temperature rise operation test.

Temperature cycle test

Test Date:10-24 ~10-22-2017

Test Product:FWS-2272

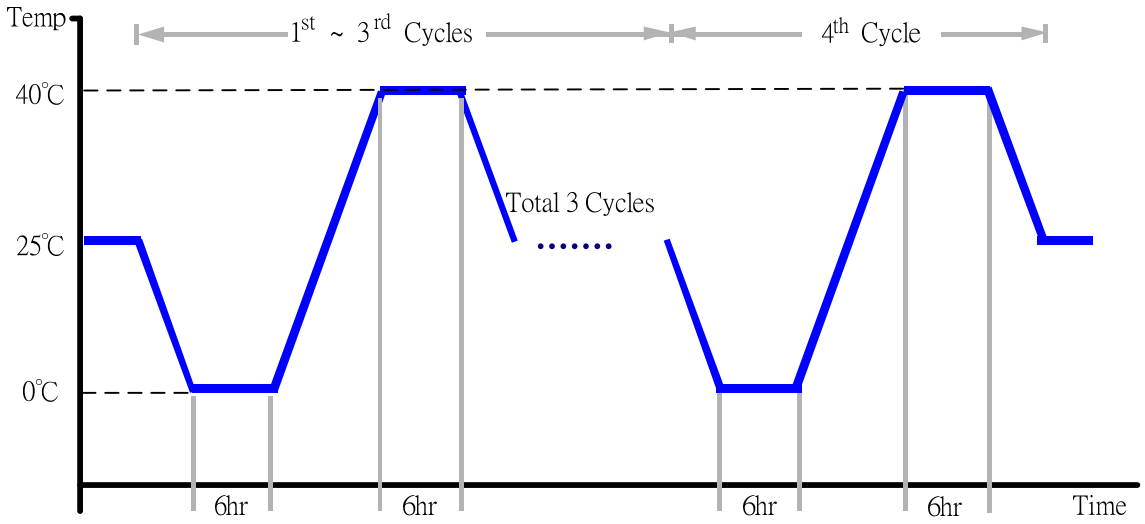
Test Site: AAEON QEDept.

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: 04/21/17
Due date of Calibration: 04/20/18
Serial Number: A0639

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-2272)

Test Result:

No issues were found during the temperature operation cycle test.

High temperature storage test

Test Date:10-22~ 20-2017

Test Product:FWS-2272

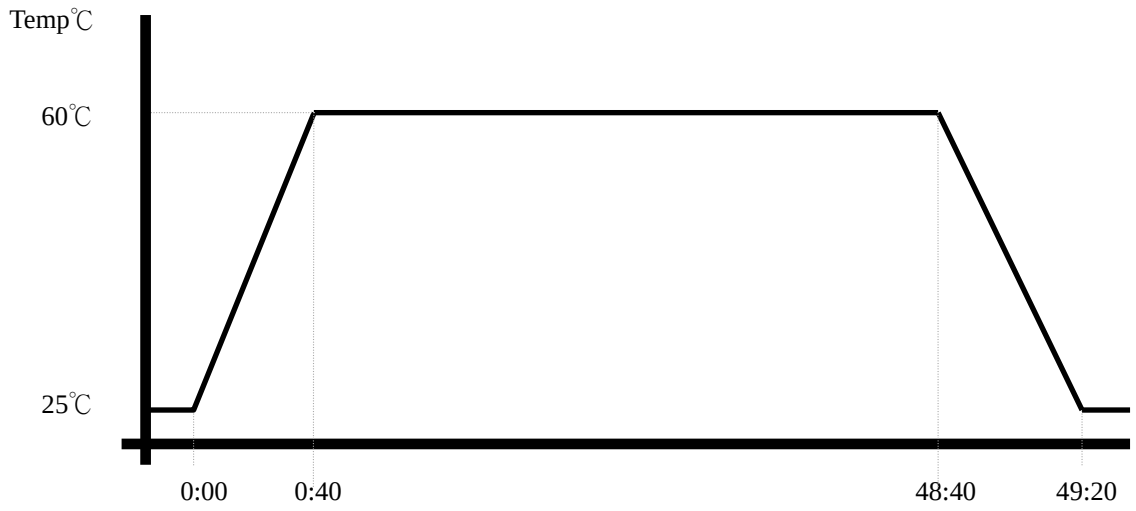
Test Site: AAEON QE Dept.

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: 04/21/17
Due date of Calibration: 04/20/18
Serial Number: A0639

Testing Item:

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



Sample Configuration & Quantity Under Test:
Quantity: 1 (FWS-2272)

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

Low temperature storage test

Test Date:10-20~18-2017

Test Product:FWS-2272

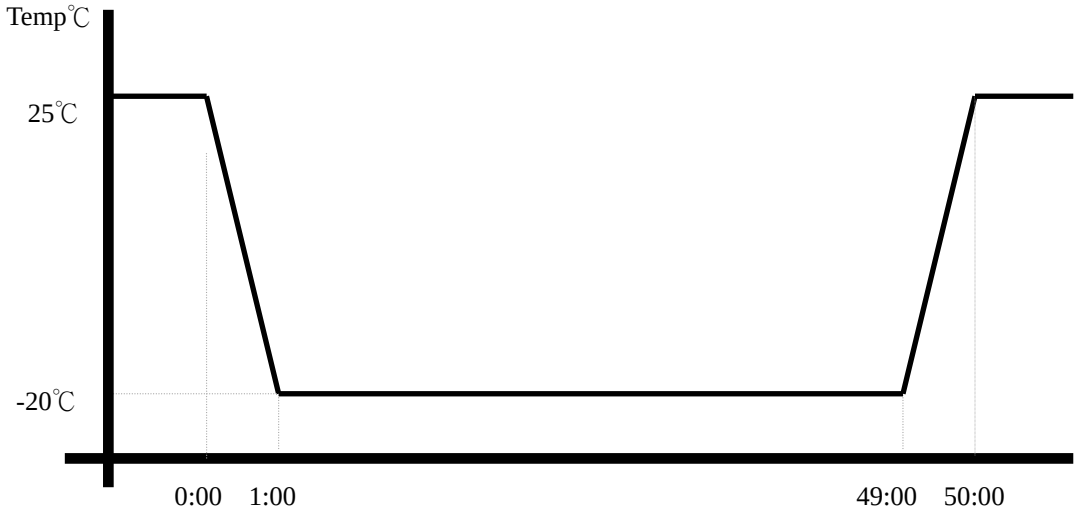
Test Site: AAEON QE Dept.

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: 04/21/17
Due date of Calibration: 04/20/18
Serial Number: A0639

Testing Item:

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



Sample Configuration & Quantity Under Test:
Quantity: 1(FWS-2272)

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

Humidity test

Test Date:10-18 ~ 16-2017

Test Product:FWS-2272

Test Site: AAEON QE Dept.

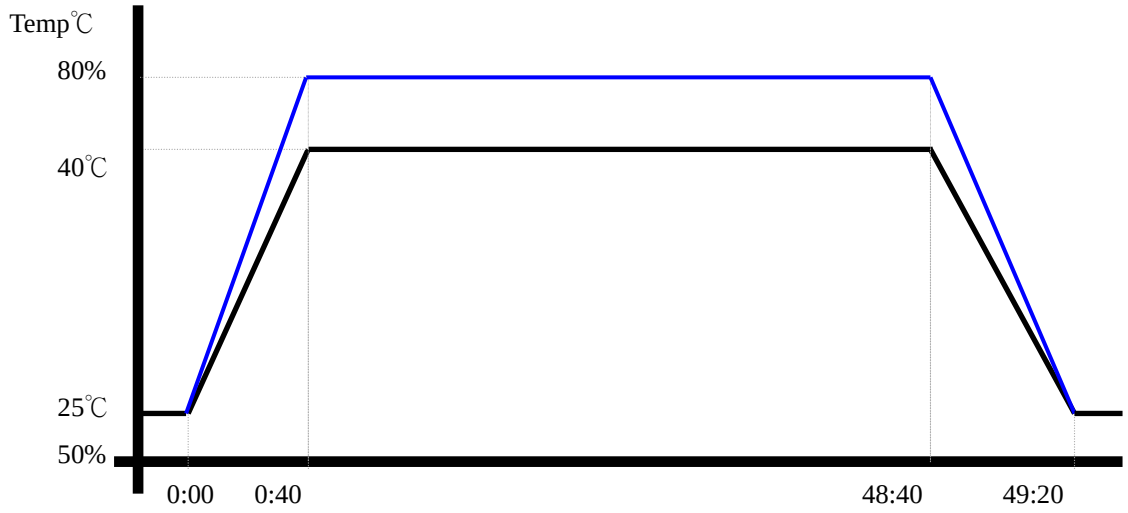
Test Standard: Refer toIEC 68-2-3 Testing procedures
Test Ca: Damp heat, steady state (Non-operation)

Test Equipment:
Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D7TS-100+LN2
Date of Calibration: 04/21/17
Due date of Calibration: 04/20/18
Serial Number: A0639

Testing Item:

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

Humidity %



Sample Configuration & Quantity Under Test:
Quantity: 1(FWS-2272)

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

Cold start and hot start test

Test Date:10-16~15-2017

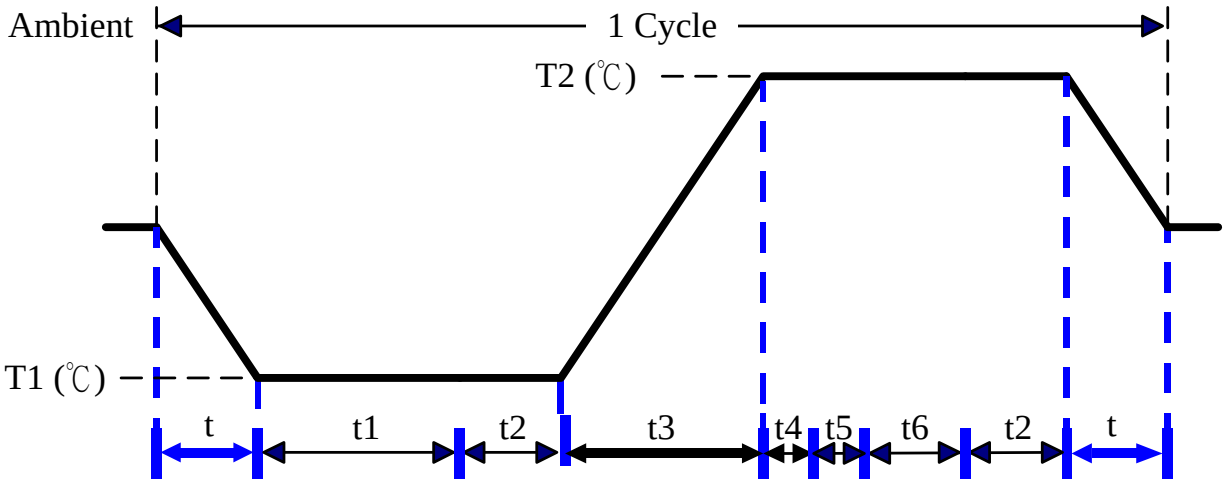
Test Product:FWS-2272

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: 04/21/17
Due date of Calibration: 04/20/18
Serial Number: A0639

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 2 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.