FWS-2271

With 2.5'' SATA HDD

Environment Test Report

Report NO: 17I020001

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 2 components in the absence of Tc and Tj specification, So we are unable to determine.**

Issue date	QE Manager	Test Engineer
2017-01-04	KJ Wang	Rex Chang

Test item list

Testing Result

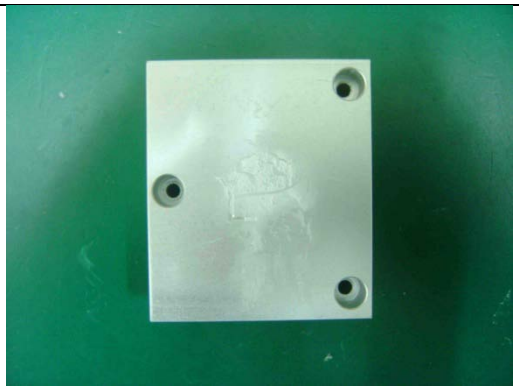
Num	Test item list	Result	Remark
1.	Temp./humidity power on/off test	Pass	
2.	Temperature rise test	Pass	
3.	Temperature cycleoperation test	Pass	
4.	High temperature storage test	Pass	
5.	Low temperature storage test	Pass	
6.	Humidity test	Pass	
7.	Cold start and hot start test	Pass	

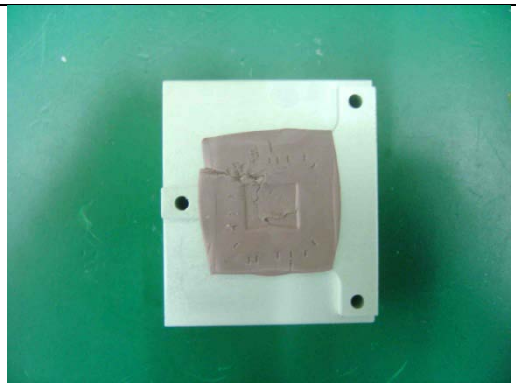
Configuration of EUT

Num	Item	Spec
FWS-2271		
1	CPU Board	NMB-2271 Ver. A0.2
2	CPU	Intel N4200 / 1.10GHz
3	BIOS	R0.3 (K271AM03)(11/22/2016)
4	Memory	Innodisk 8GB / DDR3 1600 / SEC K4B4G0846E
5	2.5’’SATA HDD	TOSHIBAMK32G6GSX/ 320GB
6	Test Software	Windows 10 / Run PassMark Burn In Test 8.1 Pro From HDD
7	Adapter	DELTA DPS-40AB-11 / 12V; 3.33A

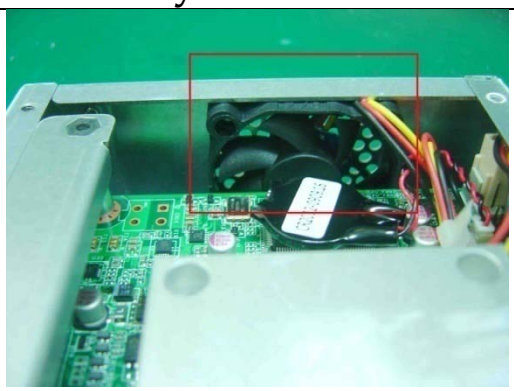
Photos

Heat Sink





System Fan



HDD Kit

Temp./humidity power on/off test

Test Date: 12-28 ~ 29-2016

Test Product: NMB-2271 A0.2

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: 04/15/16

Due date of Calibration: 04/14/17

Serial Number: A0639

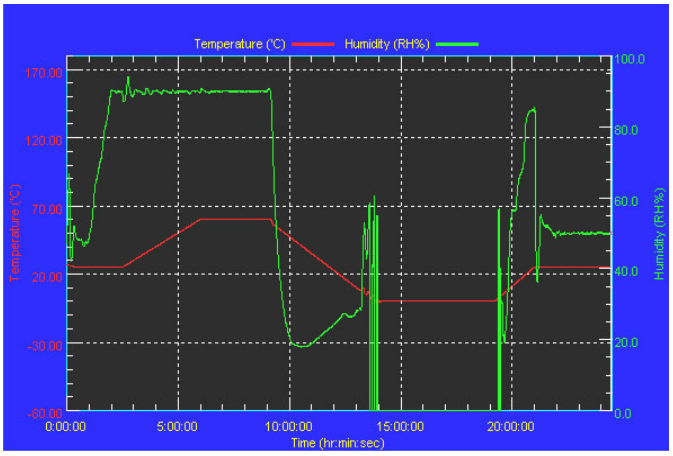
Temperature & Humidity Power On/Off Test:

1. Test High Temp./Humidity: 60℃@90%RH
2. Test Low Temperature: 0℃
3. Test Time: 24Hours / Cycle
4. Test Cycle: 1 Cycles
5. Test Software: DOS Mode / Run Boot Up Record Program ver 1.41

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	1182/times	1182/times	0 %	Pass

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

2. Power on/off fixture setting: on - 37sec / off - 37 sec

Temperature rise test

Test Date: 01-04-2017

Test Product: FWS-2271

Test Site: AAEON QE Internal Lab.

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

Temperature Measurement:

40 Channel Thermal Recorder:
YOKOGAWA Inc,
Model: DA100-13-1D
Date of Calibration: 09/10/16
Due date of Calibration: 09/09/17
Serial Number: 12A323190

Test Condition:

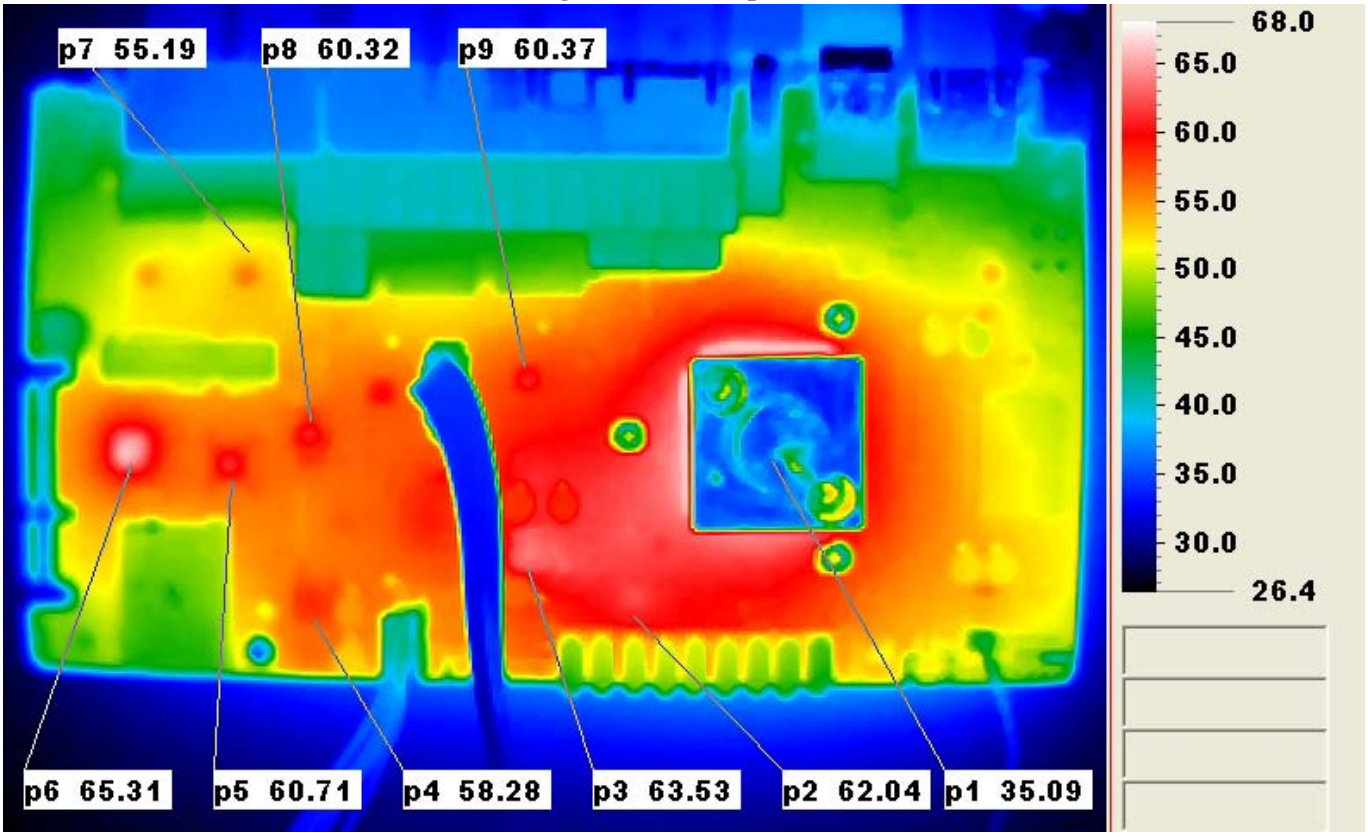
Ambient temperature: 40℃
Continuous running till thermal stability (within less than 1℃)

Test Software:

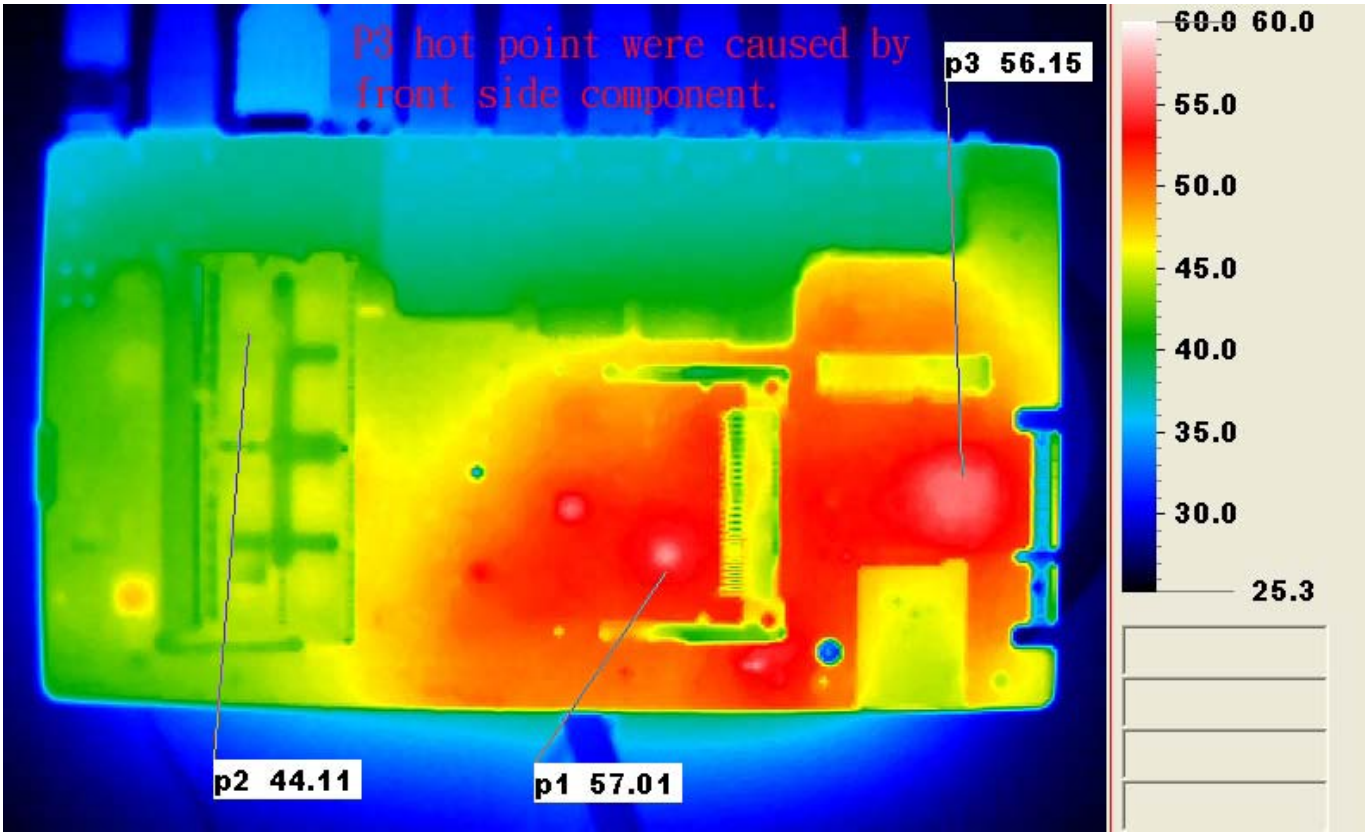
Windows 10 / Run PassMark Burn In Test 8.1 Pro

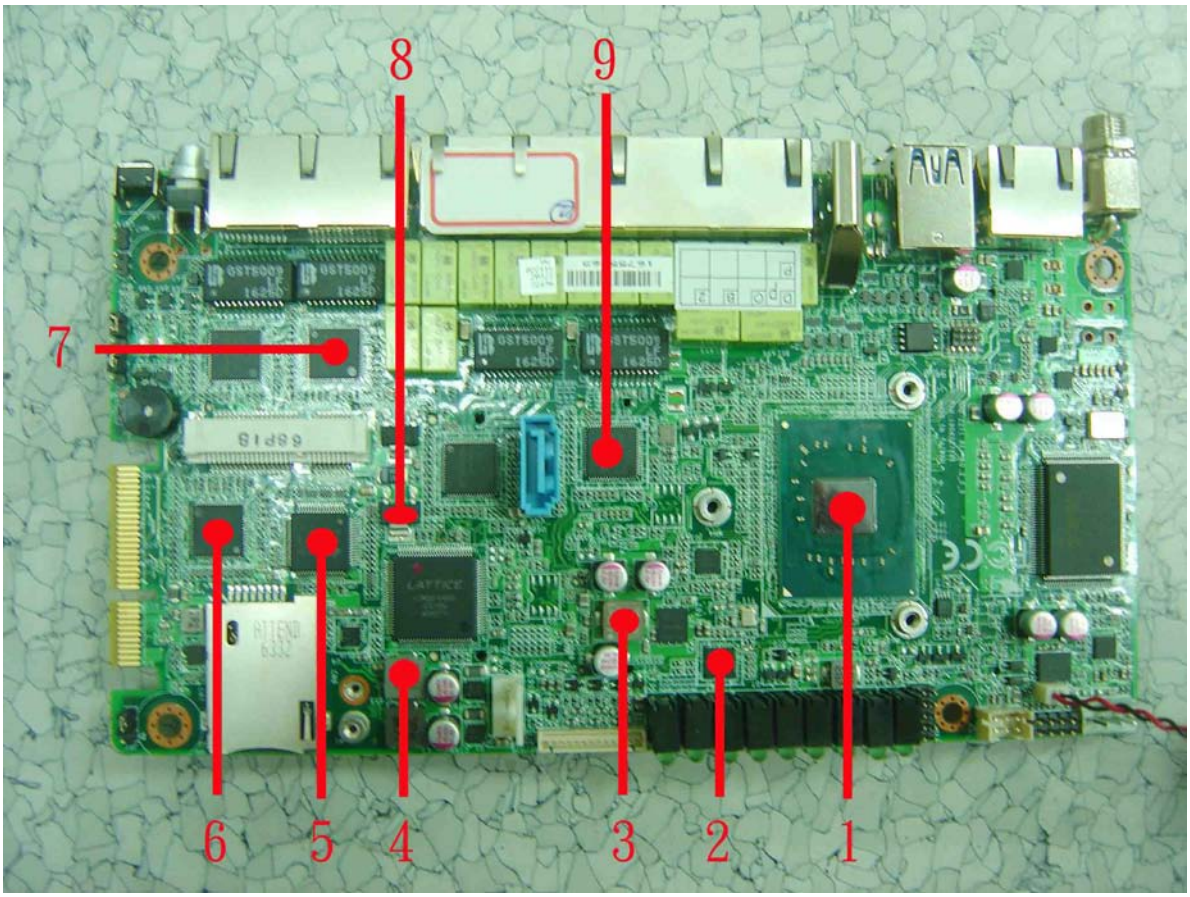
Terminal Recorder:

Measuring Thermal Couple Position：

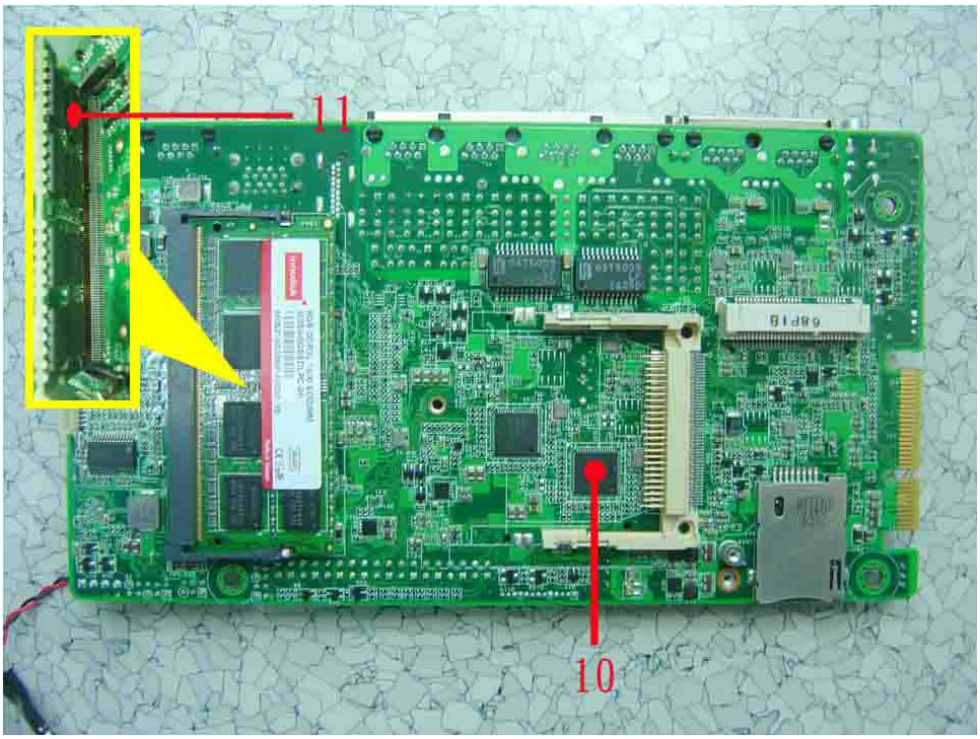


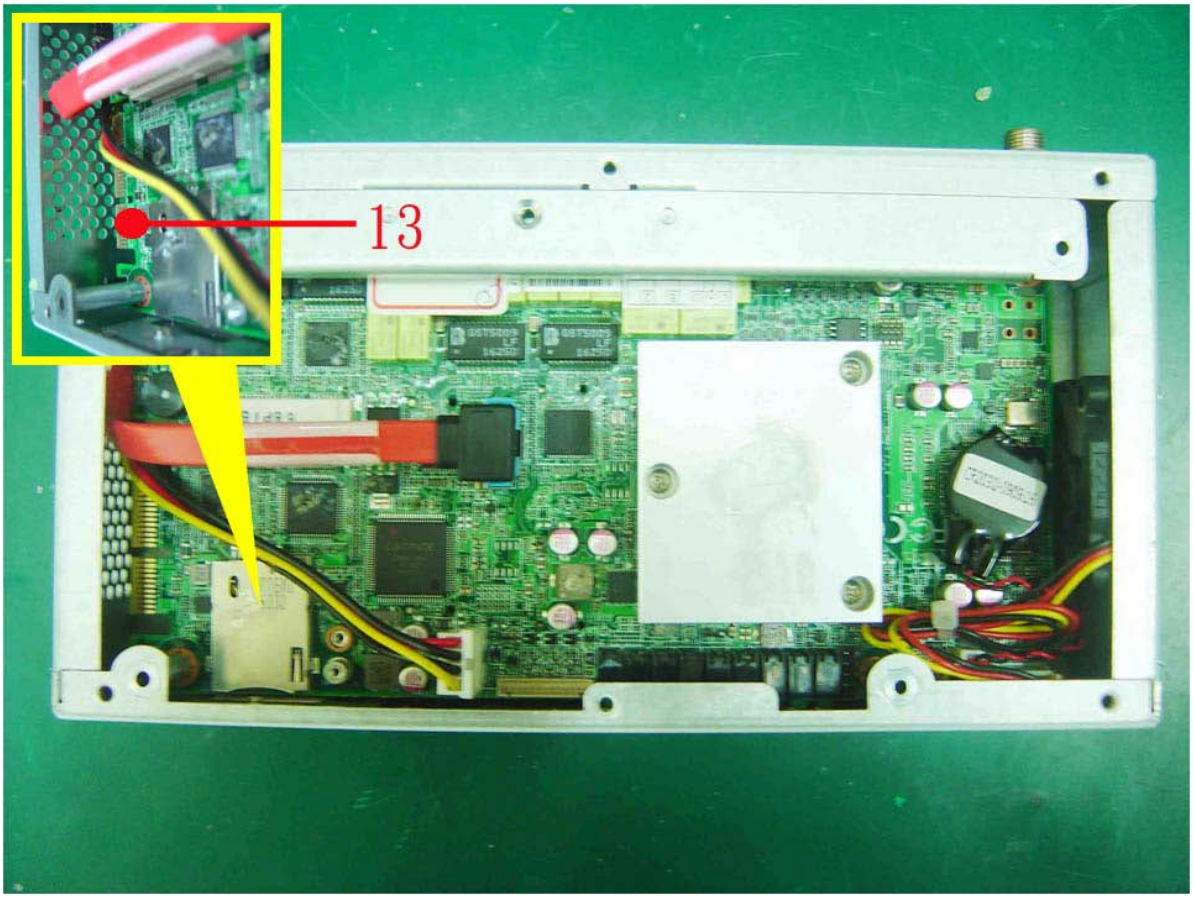
Temperature rise test



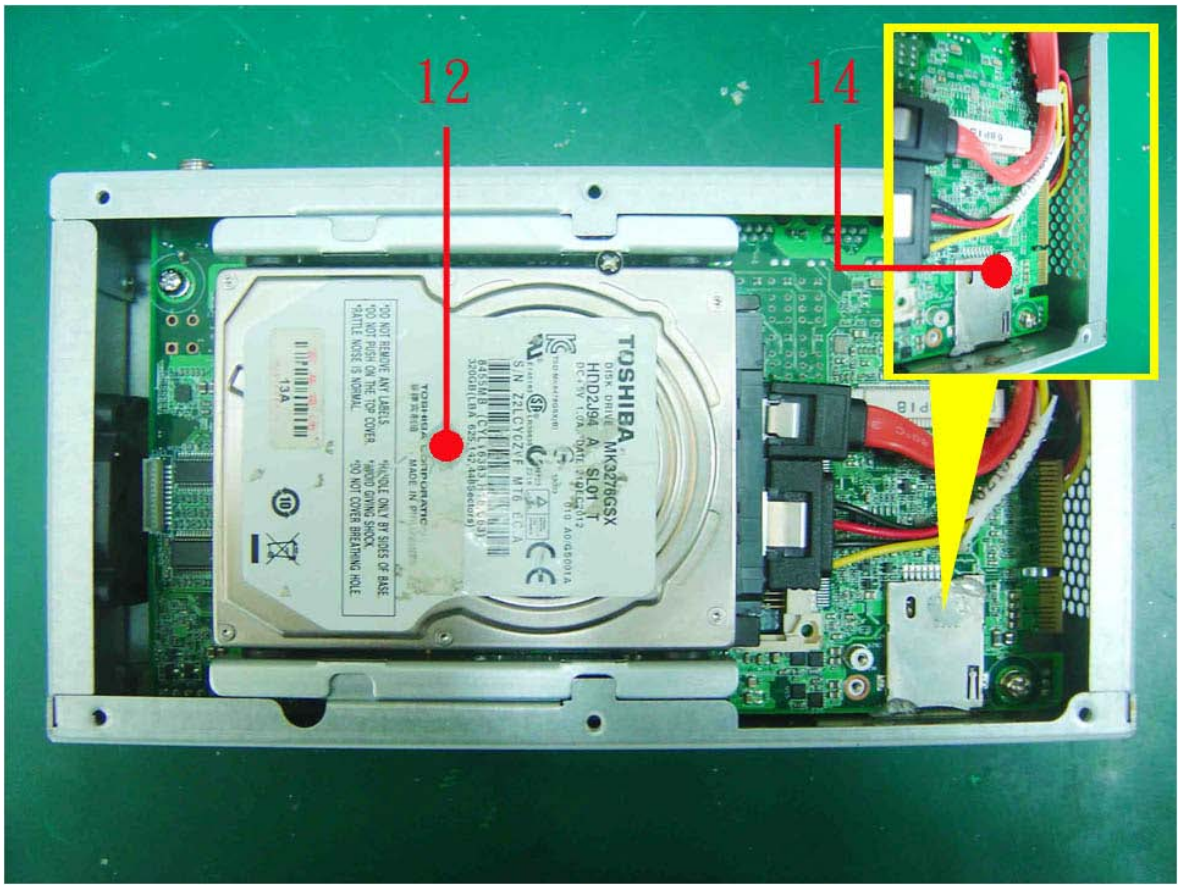


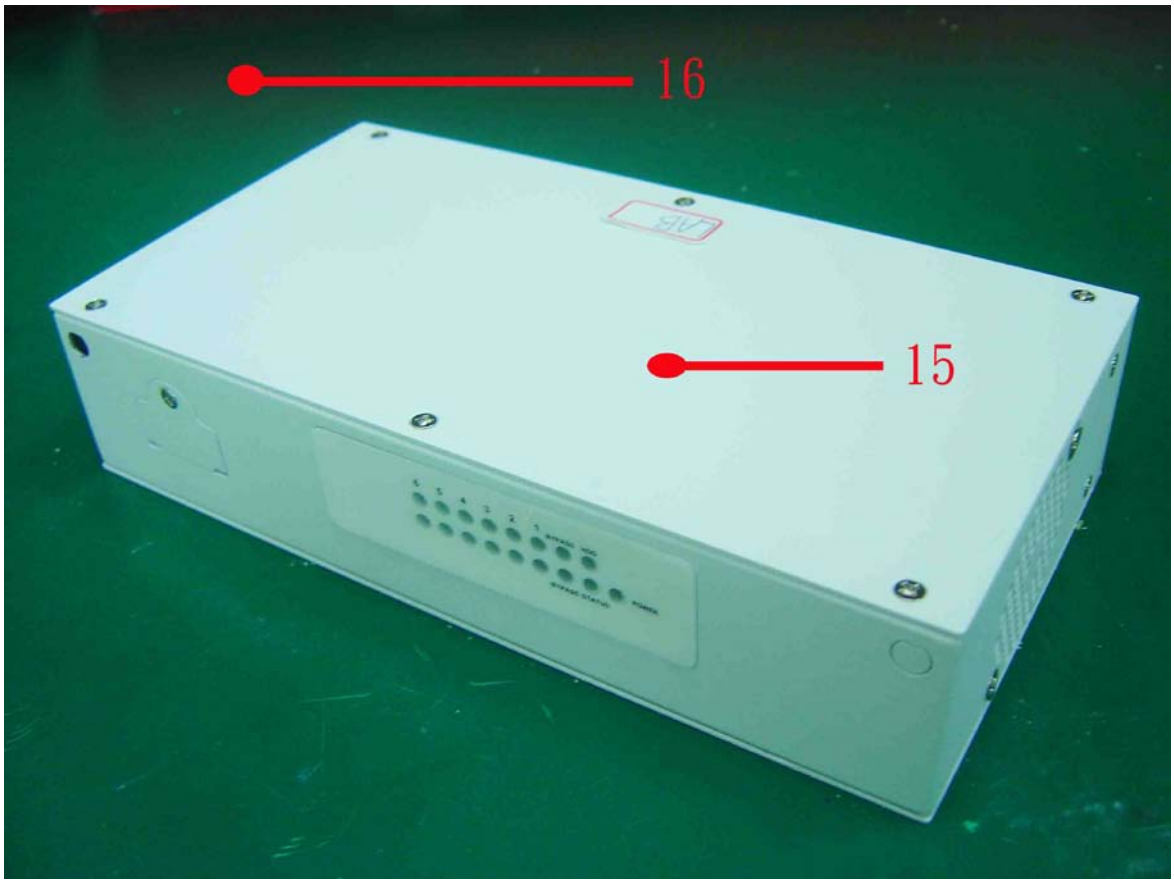
Temperature rise test





Temperature rise test





Temperature rise test

Thermal profile data:

FWS-2271

Point / Temp. Stage(℃)	Spec Tc(*1)	TAT(*2) 40	TPT(*3) 25	Note
PBA-SKU6 Ver. A0.2				
01. U13 - INTEL CPU. Apollo Lake.Pentium N4200.1.10GHz.	105	64.8	49.8	
02. U47 – Display Port to VGA Converter. Chrontel.CH7517A-BF	150	58.9	43.9	
03. L4 - COIL.0.42uH.DCR=1.55mohm.IDC=22A. NEC/TOKIN.MPC0740LR42C	125	62.3	47.3	
04. L2 - COIL.3.3uH.Idc=6.5A.DCR=18mohm.CYNTEC.PCMB063T-3R3MS	125	60.2	45.2	
05. U8 - LATTICE.LCMXO2-640HC-4TG100C.Red Point	N/A	**61.6**	46.6	**Note 4**
06. U7- IC.SATA to IDE/ATA. Jmicron.JMD330-TGAA1D	N/A	**66.3**	51.3	**Note 4**
07. U18 - IC.PCI-E GigaBit Ethernet Chipset. Intel.WGI211AT	85	57.5	42.5	
08. Q17 - Linear Requlator.NS.LM1117MPX-1.8	125	63.3	48.3	
09. U15 - IC.PCI-E GigaBit Ethernet Chipset. Intel.WGI211AT	85	55.8	40.8	
10. U35- IC.PCI-E GigaBit Ethernet Chipset. Intel.WGI211AT	85	61.6	46.6	
11. Memory	70	61.8	46.8	
12. HDD	60	48.9	33.9	
13. Control Box Inside Air Temperature - 1	N/A	45.3	30.3	
14. Control Box Inside Air Temperature - 2	N/A	44.1	29.1	
15. Control Box External Surface Temperature	N/A	49.6	34.6	
16. Chamber Air Temperature	N/A	40.0	25.0	

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.:**W160804LABE01**

Sample Configuration & Quantity Under Test:

Quantity: 1 (FWS-2271)

Test Result:

No issues were found during the temperature rise operation test.

Temperature cycle test

Test Date: 12-30-2016 ~ 01-03-2017

Test Product: FWS-2271

Test Site: AAEON QEDept.

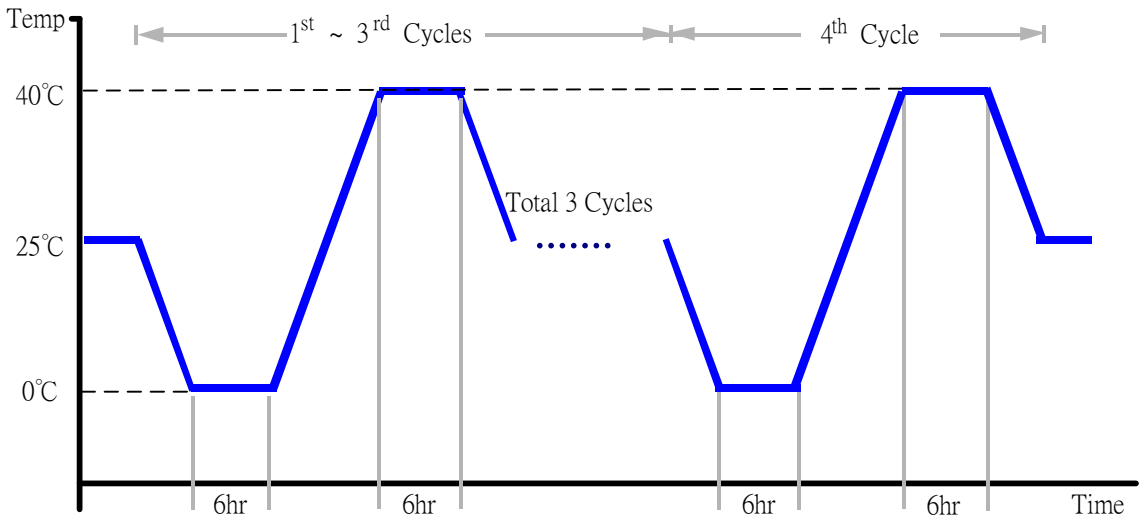
Test Standard: Refer to IEC68-2-14 Testing procedures
Test N: Change of temperature Test

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D7TS-100+LN2
Date of Calibration: 04/15/16
Due date of Calibration: 04/14/17
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-2271)

Test Result:

No issues were found during the temperature operation cycle test.

High temperature storage test

Test Date: 12-26~ 28-2016

Test Product: FWS-2271

Test Site: AAEON QE Dept.

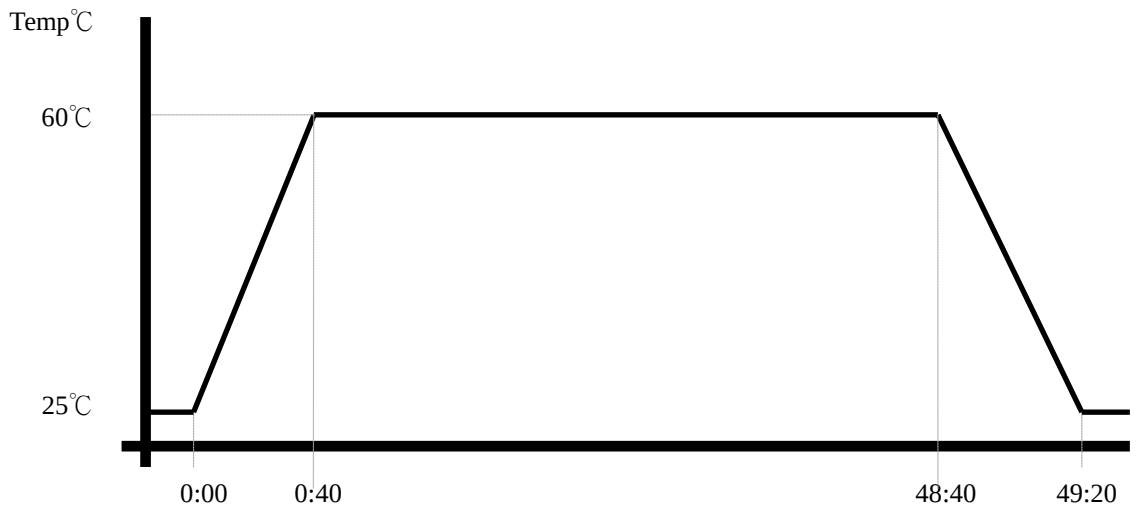
Test Standard: Refer toIEC 68-2-2 Testing procedures
Test Bb: Dry Heat Test (Non-operation)

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D7TS-100+LN2
Date of Calibration: 04/15/16
Due date of Calibration: 04/14/17
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-2271)

Test Result:

No issue was found after the high temperature storage test.

Low temperature storage test

Test Date: 12-21~23-2016

Test Product: FWS-2271

Test Site: AAEON QE Dept.

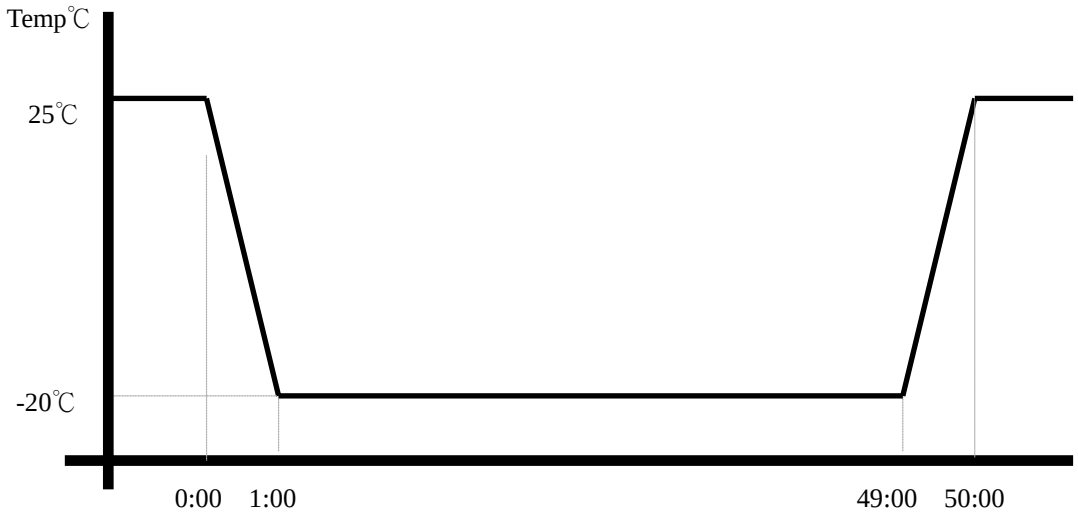
Test Standard: Refer toIEC 68-2-1 Testing procedures
Test Ab: Cold Test (Non-operation)

Test Equipment:

Programmable Temperature & Humidity Chamber (K.SON. INS. TECH. CORP.)
Model: THS-D7TS-100+LN2
Date of Calibration: 04/15/16
Due date of Calibration: 04/14/17
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-2271)

Test Result:

No issue was found after the low temperature storage test.

Humidity test

Test Date: 12-23 ~ 26-2016

Test Product: FWS-2271

Test Site: AAEON QE Dept.

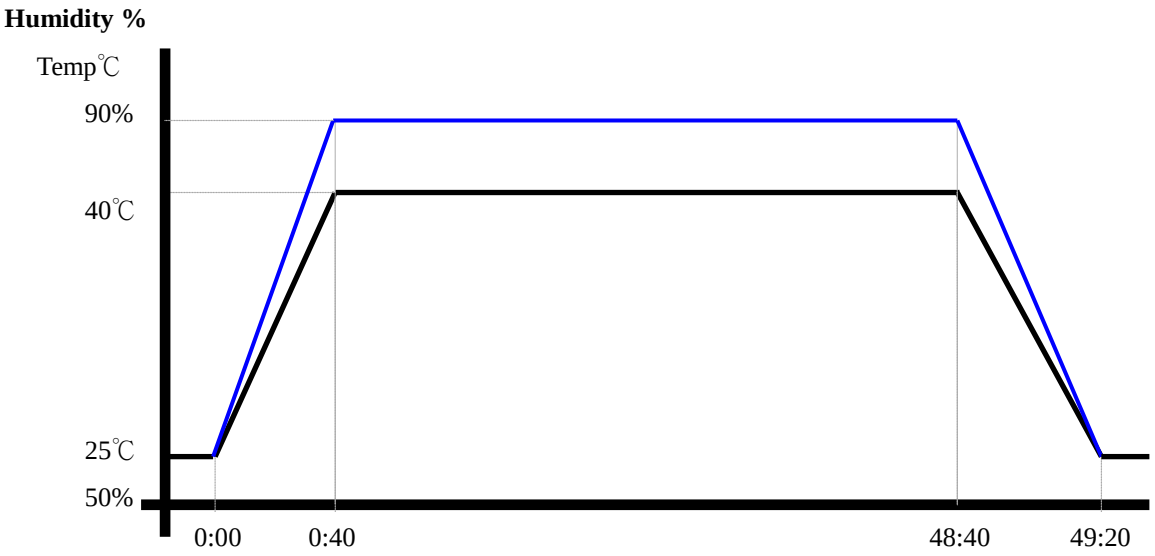
Test Standard: Refer toIEC 68-2-3 Testing procedures
Test Ca: Damp heat, steady state (Non-operation)

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D7TS-100+LN2
Date of Calibration: 04/15/16
Due date of Calibration: 04/14/17
Serial Number: A0639

Testing Item:

1. Test Temperature: 40℃
2. Test Humidity: 90%RH
3. Test Times: 48Hrs
4. Test Environment Curve:



Sample Configuration & Quantity Under Test:

Quantity: 1(FWS-2271)

Test Result:

No issue was found after the humidity storage test.

Cold start and hot start test

Test Date: 12-29~30-2016

Test Product: FWS-2271

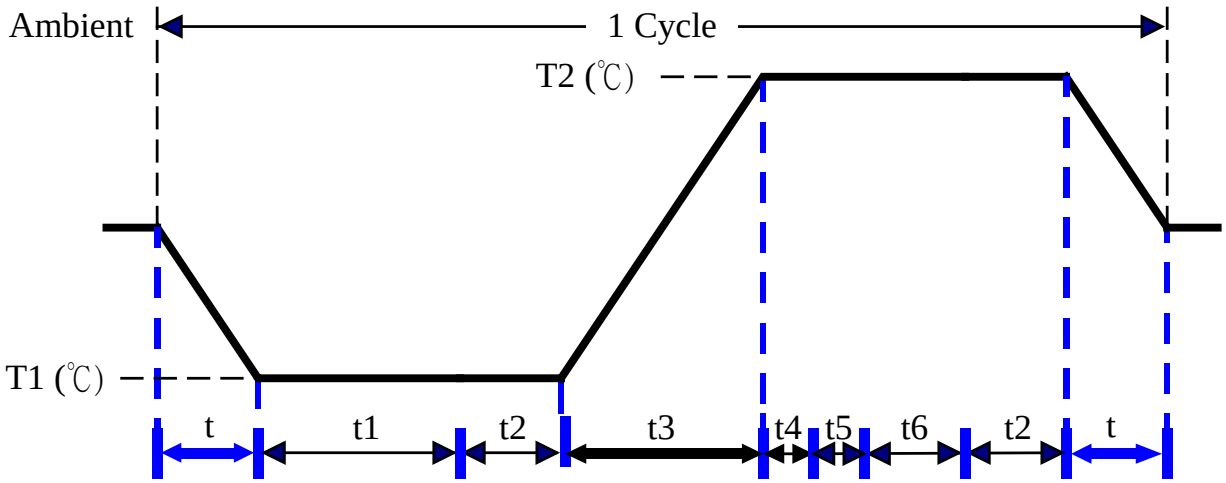
Test Site: AAEON QEDept.

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: 04/15/16
Due date of Calibration: 04/14/17
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.