FWS-7360

With 2.5” SATA HDD

Environment Test Report

Report NO: 18I090004

Test Cause
For ATRF No. QE180210 Request

Summary	☐ **Pass** ☐ **Fail** ☑ **Pass with Deviation** **Comment:** 1. Network test failed under the "PassMark BurnIn Test 8.1 Pro", the fail message show (Timeout waiting for packet), but change the LAN loading 100% to 99% and test again, no error message was found. Please refer the PASSMARK SOFTWARE as below: http://www.passmark.com/forum/showthread.php?2931-How-to-test-burnin-test-with-Network 2. There is VGA display card on the system, so not support the GPGPU, 3D Graphics test under the Burn In Test. 3. There are 3 temperature points (No.2, 5, 10,) lack the Tc specifications, so we are unable to determine.

Issue date	QE Manager	Test Engineer
2018-03-09	KJ Wang	Jerry Chen

Test item list

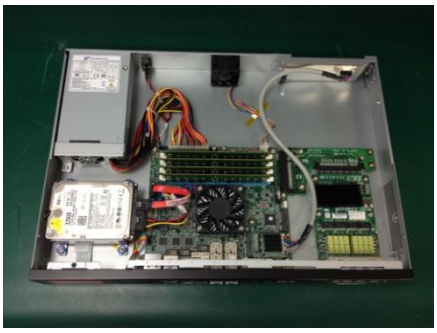
Testing Result

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	Spec
1	**Model Name**	FWS-7360 / Ver. A0.1
2	**Main Board**	NMB-7360 / Ver. A0.1
3	**BIOS Ver.**	FWS-7360 R0.2 (K736AM02) (02/09/2018)
4	**CPU Type**	Intel Atom CPU C3958 @ 2.00GHz
5	**Memory**	Innodisk 16GB DDR4 2666 REG *4 / chipset: SEC 746 K4A8G045WB BCTD
6	**2.5” SATA HDD**	WD / WD3200BUCT / 320GB *1
7	**Riser Card**	PER-R40X / Ver. A1.0
8	**LAN Module**	NIM-C13B / Rev. A0.1
9	**VGA display card**	PER-V09V / Rev. A1.0
10	**Test Software**	Windows 8 / Run PassMark BurnIn test 8.1 Pro
11	**Power supply:**	FSP / FSP100-50LG / 100W

Photos

System	Inside of System	CPU Cooler
		
2.5 SATA HDD	**LAN Module**	**VGA display card**
		

Temperature rise test

Test Date: 03-08 ~ 09-2018

Test Product: FWS-7360

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: 09/08/2017
Due date of Calibration: 09/07/2018
Serial Number: 12A323190

IR Scanner: Infrared Camera

NEC Avio Infrared Technologies Co., Ltd.

Model: Thermo GEAR G100W2-D

Date of Calibration: 11/23/2017
Due date of Calibration: 11/22/2018
Serial Number: 1051444

Test Condition:

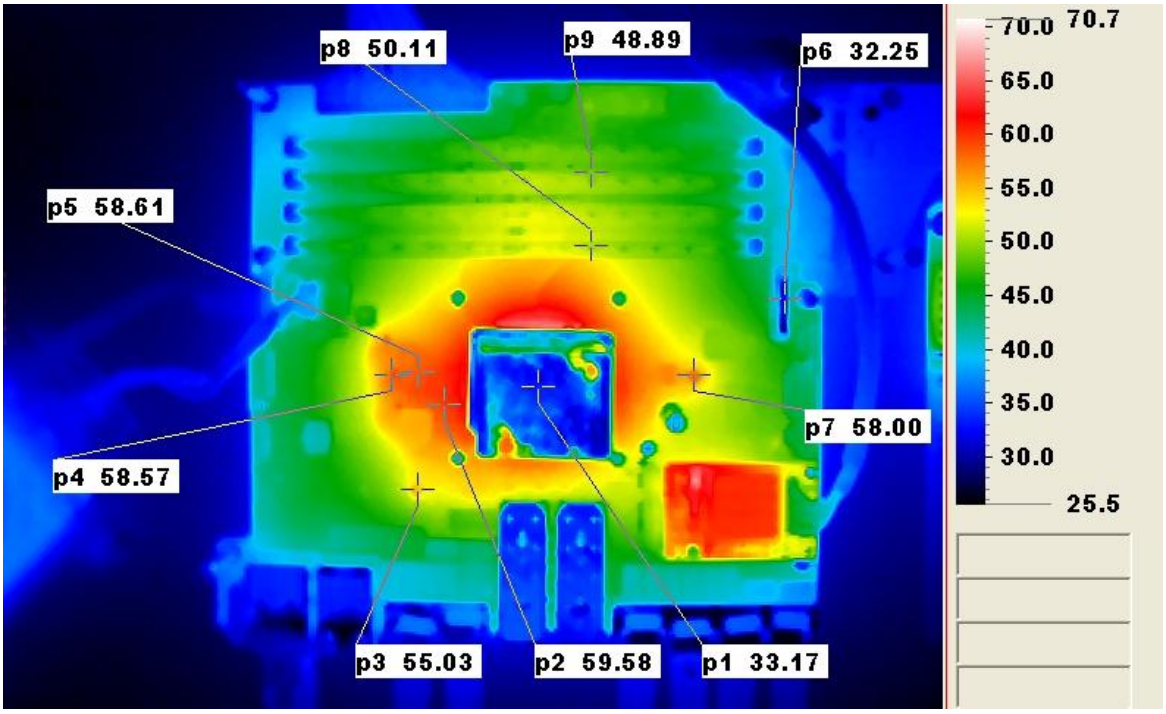
Ambient temperature: 40℃
Continuous running till thermal stable (within less than 1℃) / With Fan

Test Software:

Windows 8 / Run PassMark Burn In Test 8.1 Pro

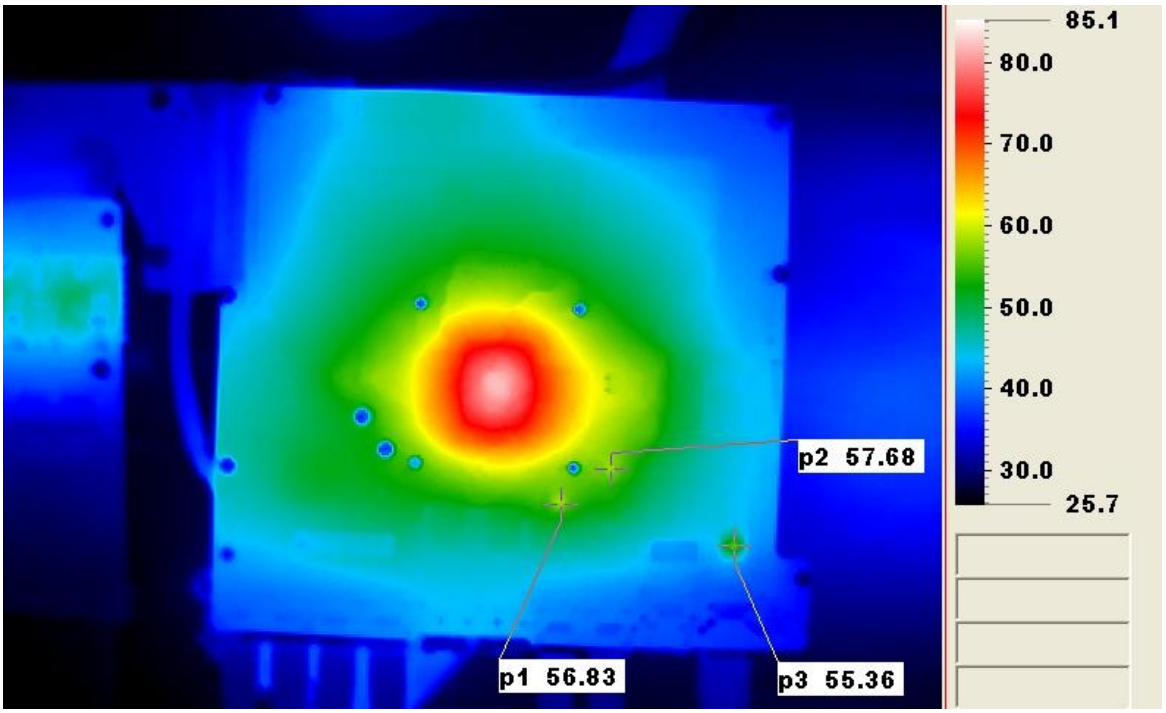
IR Thermal Photos

Front Side

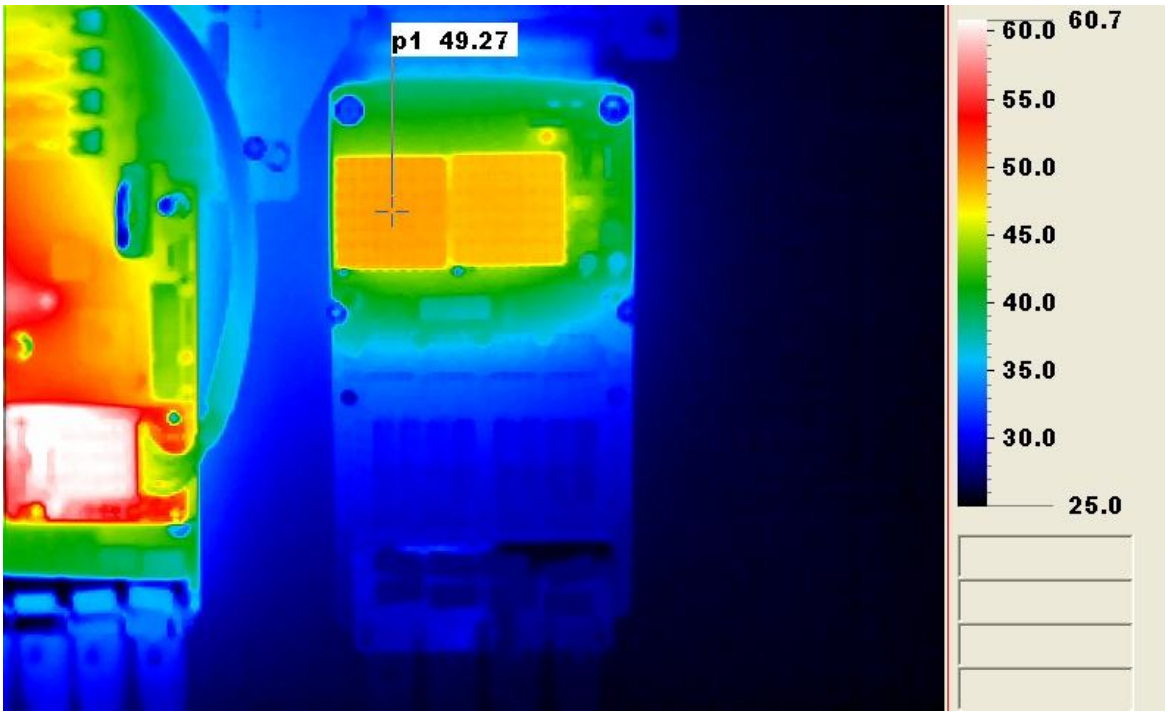


Temperature rise test

Rear Side



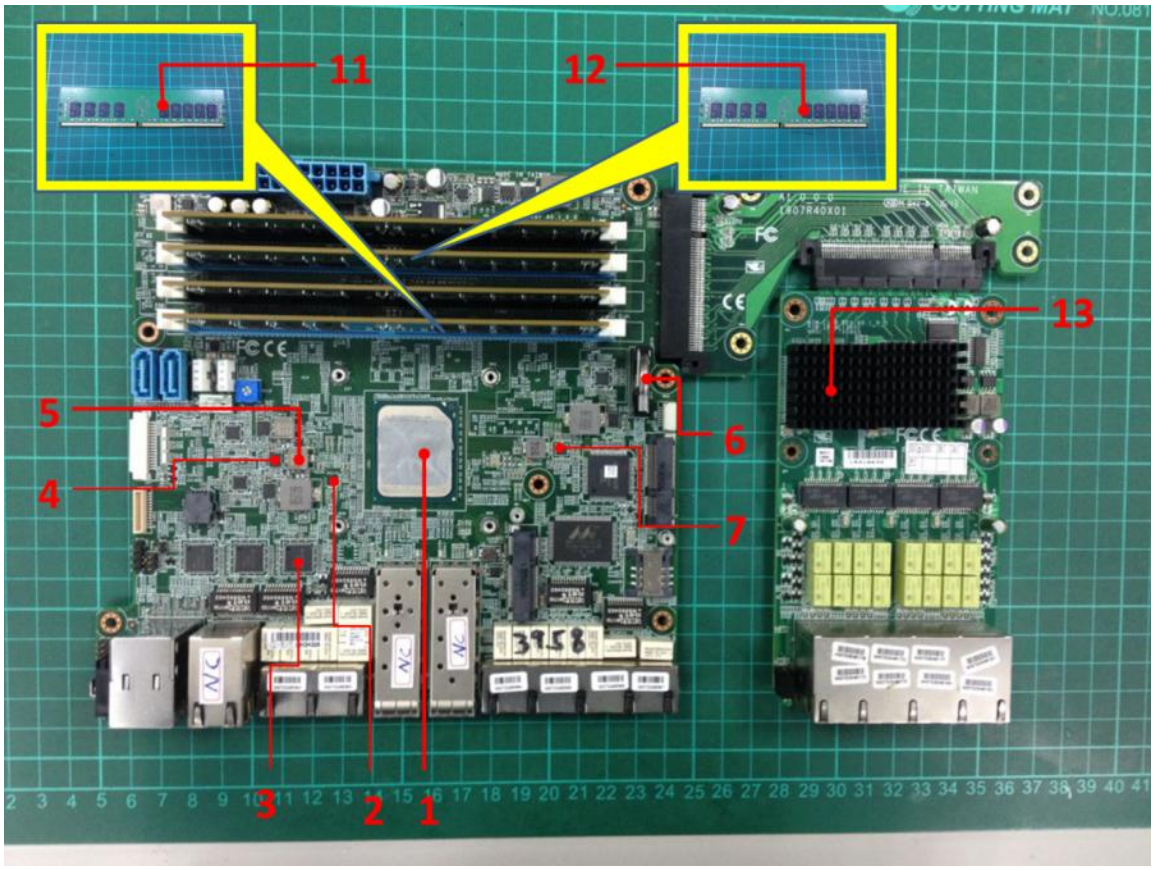
LAN Module



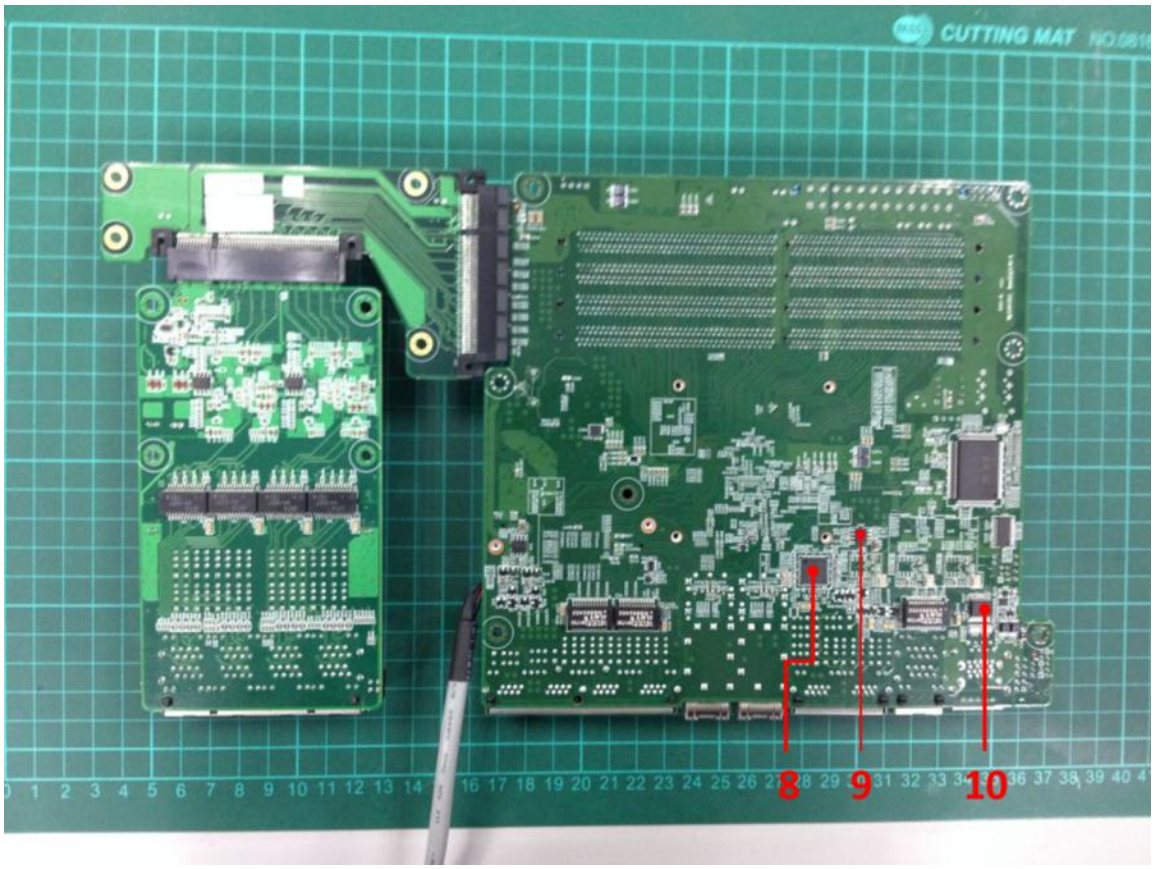
Terminal Recorder:

Front Side

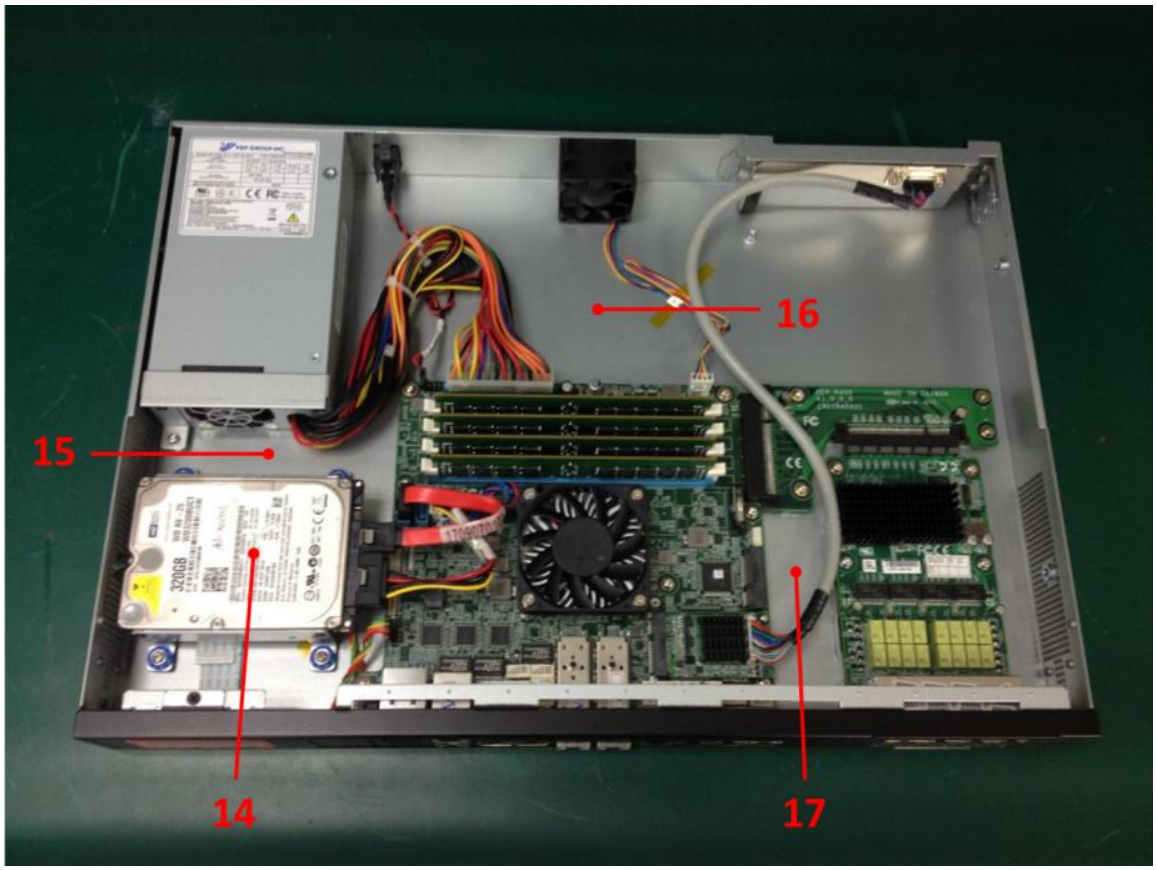
Measuring Thermal Couple Position：



Rear Side



Temperature rise test



Temperature rise test

Thermal profile data:

Point / Position / DescribeTemp. Stage(℃)	Spec Tc(*1)	TAT(*2) 40	TPT(*3) 25	Note
M/B: NMB-7360 / Ver. A0.1				
01. U11 - INTEL.Denverton.C3958.2.0GHZ.FCBGA1310.HW8076502444202.SR381	83	64.2	49.2	
02. C213 - KO-CAP.330uF.2.5V.BLACK.15mOhm .KEMET.T520B337M2R5ATE015	N/A	56.9	41.9	
03. U24 - IC.PCI-E GigaBit Ethernet Chipset.QFN 64P.SMD.Intel.I211AT	85	58.8	43.8	
04. U12 - IC.Synchronous Buck NexFETTM.SON.8P.Power Stage.TI.CSD97395Q4M	125	60.6	45.6	
05. L7 - COIL.0.42uH.DCR=1.55mohm.IDC=22A.NEC/TOKIN.MPC0740LR42C	N/A	57.5	42.5	
06. BAT1 - Lithium Battery.3V.220mAH.-20~+85℃.DIP.MAXELL.CR2032H	85	49.6	34.6	
07. U10 - IC.High Current Synchronous.Buck Converter.QFN-16.MPS.NB685GQ-Z	100	58.9	43.9	
08. U47 - IC.PCI-E GigaBit Ethernet Chipset.QFN 64P.Intel.I211AT	85	58.2	43.2	
09. U40 - IC.LDO Linear Regulator.0.23V.2A.SOP-8.RICHTEK.RT9025-25PSP	125	58.4	43.4	
10. U51 - IC.SMD SSOP.20Pin RS-232 Driver&Receivers.TI.GD75232DBR	N/A	62.7	47.7	
11. Memory-1 / Innodisk 16GB DDR4 2666 REG DIMM	85	55.9	40.9	
12. Memory-2 / Innodisk 16GB DDR4 2666 REG DIMM	85	58.5	43.5	
13. U5 - IC.PCI-E.GbE Controller.Qual Port.PBGA 256P.SMD.Intel.I350-AM4	100	55.1	40.1	
14. HDD - 2.5" SATA HDD / WD WD3200BUCT 320GB	60	43.1	28.1	
15. Control Box Inside Air Temperature - 1	N/A	40.3	25.3	
16. Control Box Inside Air Temperature – 2	N/A	48.7	33.7	
17. Control Box Inside Air Temperature – 3	N/A	42.3	27.3	
18. Control Box External Surface Temperature	N/A	46.1	31.1	
19. 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.:

Sample Configuration & Quantity Under Test:

Quantity: 1 (FWS-7360)

Test Result:

No issues were found during the high temperature operation test.

Temp./humidity power on/off test

Test Date: 03-02 ~ 05-2018

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: 09/08/2017
Due date of Calibration: 09/07/2018
Serial Number: A0004

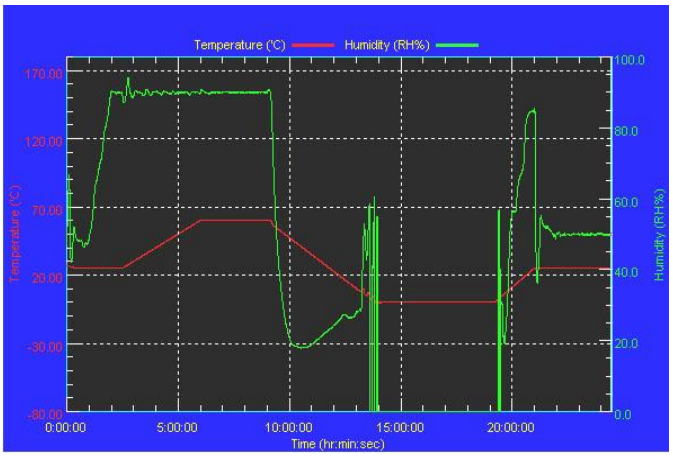
Temperature & Humidity Power On/Off Test:

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: 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:

	Actual	Successful	Failure rate	Test Result
Power On/Off	1945/times	1945/times	0 %	Pass

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

2. Power on/off fixture setting: on - 84 sec. / off - 5 sec.

Temperature cycle operation test

Test Date: 03-06 ~ 08-2018

Test Product: FWS-7360

Test Site: AAEON QEDept.

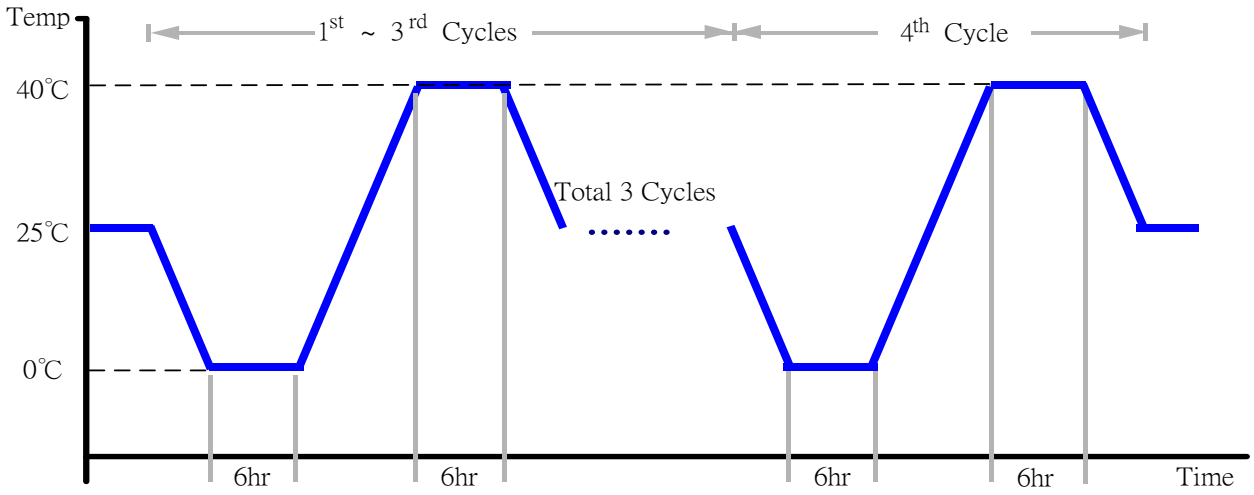
Test Standard: Refer to IEC68-2-14 Testing procedures
Test N: Change of temperature Test

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D7TS-100+LN2
Date of Calibration: 09/08/2017
Due date of Calibration: 09/07/2018
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 8 / Run PassMark Burn In Test 8.1 Pro
7. Test Environment Curve:



Sample Configuration & Quantity Under Test:
Quantity: 1 (FWS-7360)

Test Result:

No issues were found during the temperature operation cycle test.

High temperature storage test

Test Date: 02-23 ~ 26-2018

Test Product: FWS-7360

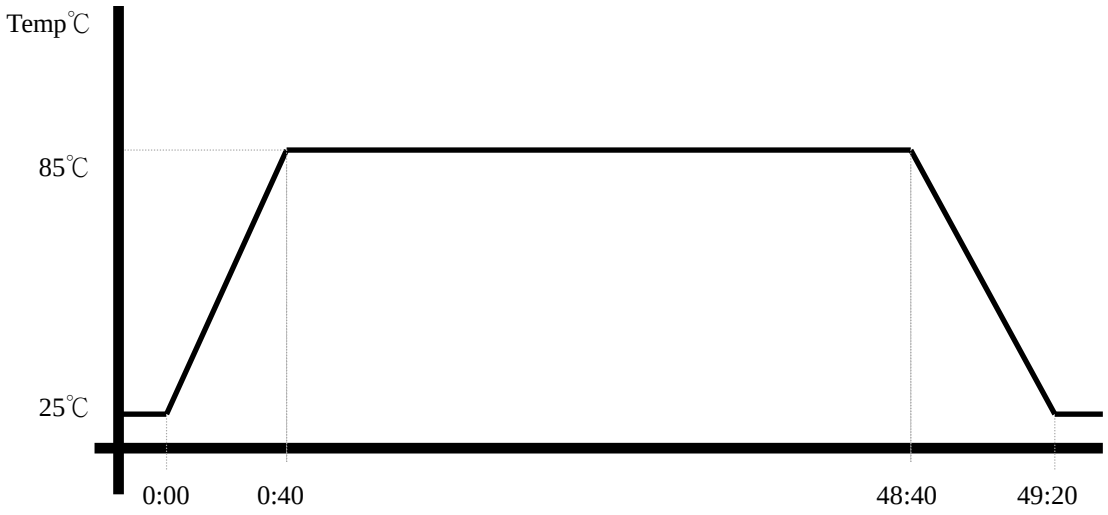
Test Site: AAEON QE Dept.

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: 09/08/2017
Due date of Calibration: 09/07/2018
Serial Number: A0004

Testing Item:

1. Test Temperature: 85℃
2. Test Times: 48Hrs
3. Test Environment Curve:



Sample Configuration & Quantity Under Test:
Quantity: 1 (FWS-7360)

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

Low temperature storage test

Test Date: 02-21 ~ 23-2018

Test Product: FWS-7360

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: 09/08/2017
Due date of Calibration: 09/07/2018
Serial Number: A0004

Testing Item:

1. Test Temperature: -40℃
2. Test Times: 48Hrs
3. Test Environment Curve:

Sample Configuration & Quantity Under Test:
Quantity: 1(FWS-7360)

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

Humidity test

Test Date: 02-26 ~ 03-01-2018

Test Product: FWS-7360

Test Site: AAEON QE Dept.

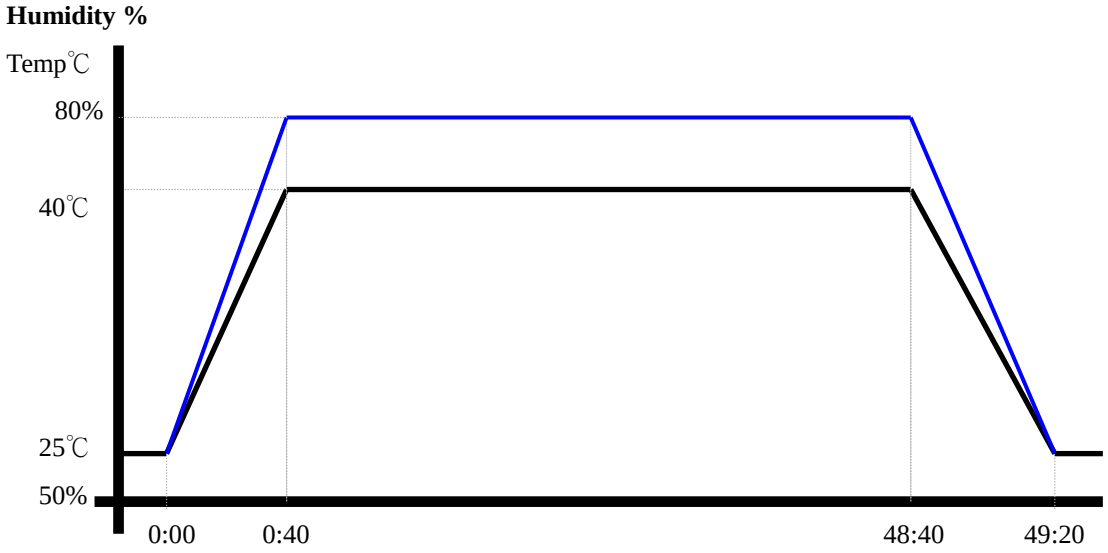
Test Standard: Refer toIEC 68-2-3 Testing procedures
Test Ca: Damp heat, steady state (Non-operation)

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D7TS-100+LN2
Date of Calibration: 09/08/2017
Due date of Calibration: 09/07/2018
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-7360)

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

Cold start and hot start test

Test Date: 03-05~06-2018

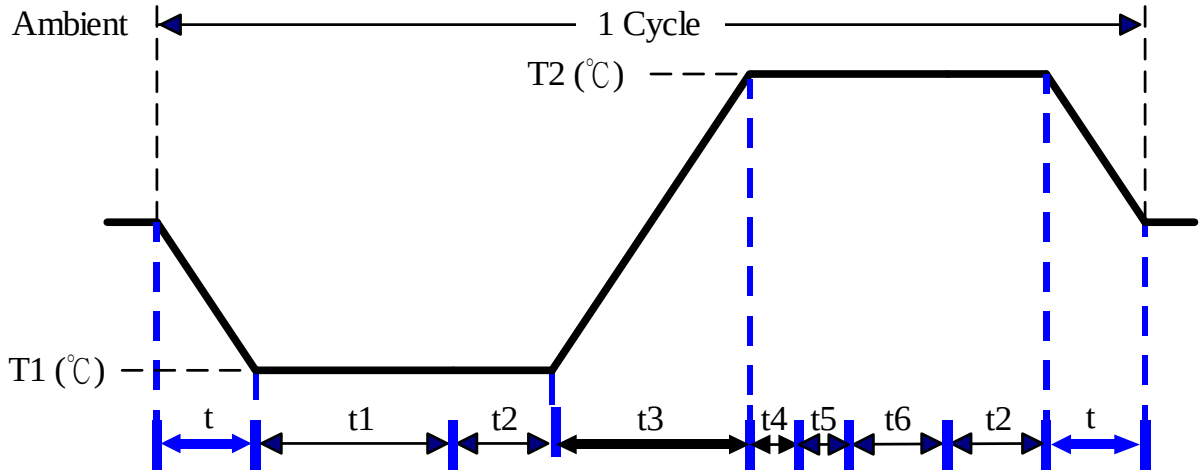
Test Product: FWS-7360

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: 09/08/2017
Due date of Calibration: 09/07/2018
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 8 Software restart test 3 times
Test Software:Windows 8

Test Result:

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

b. No issueswere found during the hot start test.