UP-EDGE-APL03

With eMMC

Environment Test Report

Report NO: 22UP020009

Summary	☑ **Pass** **Comment:**_____ ☐ **Fail** Note : There is/are ___ defect(s) not list in the report, please check it in the DTS Website.

Issue date	Deputy Manager	Test Engineer
2022-08-25	**Louie Lee**	**Rex Chang**

Test item list

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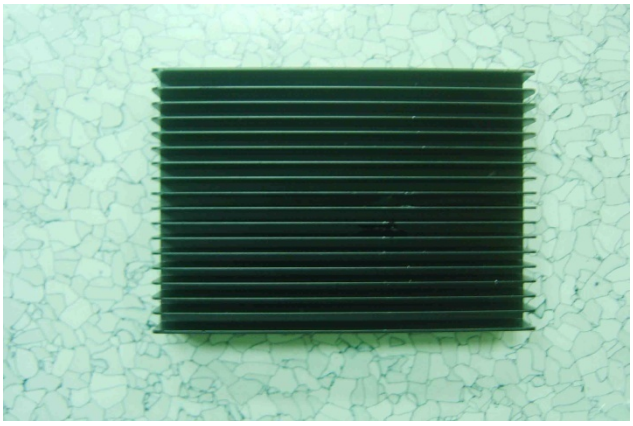
Testing Result

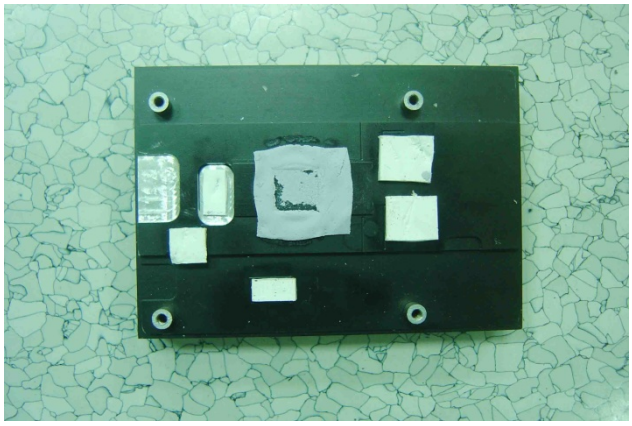
Num	Test item list	Result	Remark
1.	Temp./humidity power on/off test	Pass	
2.	Thermal profile test	Pass	
3.	Temperature cycleoperation test	Pass	
4.	High temperature storage test	Pass	
5.	Low temperature storage test	Pass	
6.	Humidity test	Pass	
7.	Cold start and hot start test	Pass	
8.	Memory Test	Pass	

Configuration of EUT

Num	Item	Spec
UP-EDGE-APL03		
1	M/B	UPN-APL03 A1.0_0_0
2	CPU	Intel Pentium Processor N4200 / 1.1GHz (F1-Stepping)
3	BIOS	UPAPBM06
4	Memory	Onboard 8GB / DDR4 / MicronMT53D512M32D2DS-053 WT:D
5	Storage	Onboard 64GB / eMMC 5.1 Flash / Sandisk SDINBDA4-64G-V
6	Test Software	Windows 10 / Run PassMark Burn In Test 9.0 Pro(1012)
7	Adapter	PS1065-120IB500 / 12V , 5A

Photos









Temp./humidity power on/off test

Test Date: 08-19 ~ 22-2022

Test Product: UP-EDGE-APL03

Test Site: AAEON QEDept.

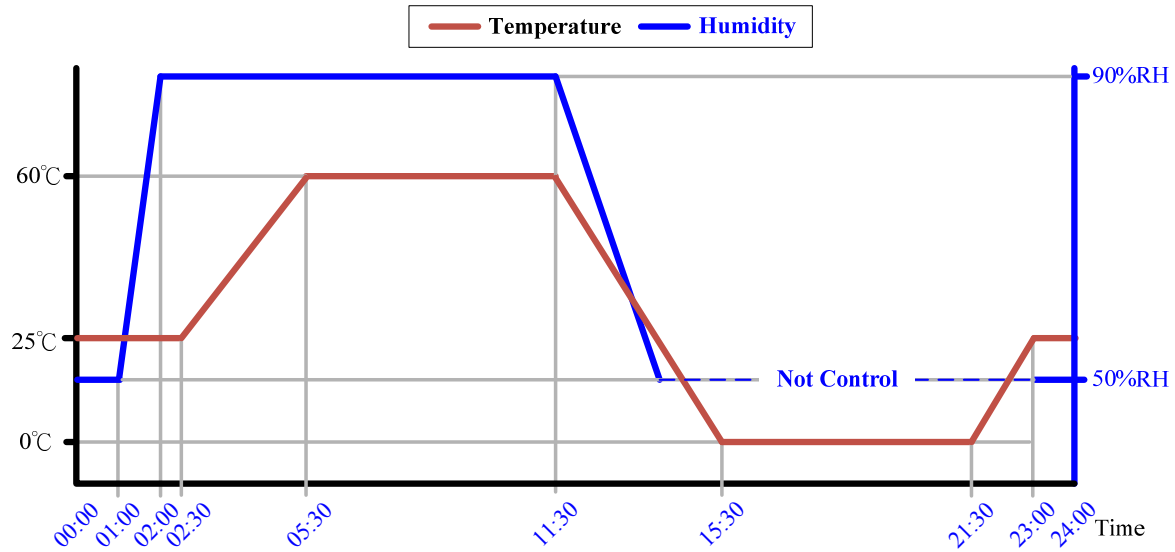
Test Standard: Refer to IEC 68-2-30 Testing procedures
Test Db: Damp Heat Test
Refer to IEC 68-2-1 Testing procedures
Test Ad: Cold Test

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 05/20/22
Due date of Calibration: 05/19/23
Serial Number: 6488KT

Temperature & Humidity Power On/Off Test:

1. AT Mode
2. Test High Temp./Humidity: 60℃@90%RH
3. Test Low Temperature: 0℃
4. Test Time: 24Hours / Cycle
5. Test Cycle: 2 Cycles
6. Test Software: UEFIMode / Run Bootuprecordprogram
7. Test Environment Curve:



Test Result:

Test Method	Actual	Successful	Failure rate	Test Result
Power On/Off	3843/times	3843/times	0 %	Pass

Note: 1. Failure rate need to under 0%. (0/2000 times)
2. Power on/off fixture setting: on –40sec / off - 5 sec

Thermal profile test

Test Date: 08-25-2022

Test Product: UP-EDGE-APL03

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-B6T-150+LN2

Date of Calibration: 05/20/22

Due date of Calibration: 05/19/23

Serial Number: 9095KT

Temperature Measurement:

IR Scanner: Infrared Camera:

NEC Avio Infrared Technologies Co., Ltd.

Model: Thermo GEAR G100W2-D

Date of Calibration: 11/08/21

Due Date of Calibration: 11/07/22

Serial Number: 1051444

20 Channel Thermal Recorder: (OMRONInc,)

Model: ZR-RX45

Date of Calibration: 12/20/21

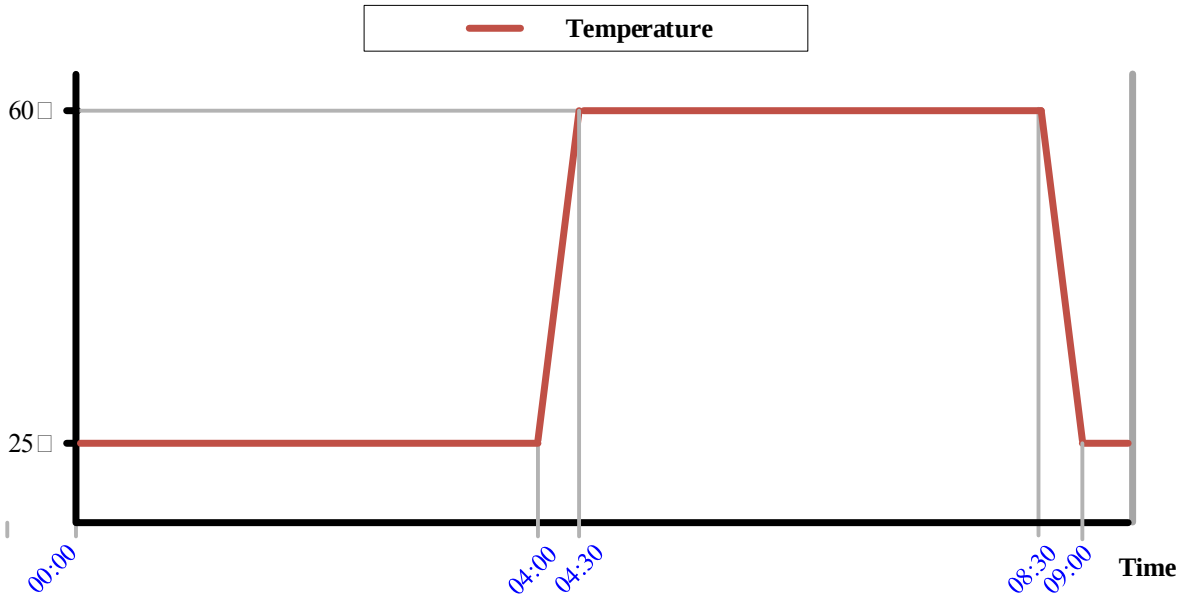
Due Date of Calibration: 12/19/22

Serial Number: H30481978

Test Condition:

1. Operation
2. Test by IR Scanner: 25.0℃ Room Temperature
3. Test by TAT Tool: 25.0℃ with 0.5m/s Air Flow
4. Test by TAT Tool and Thermal Recorder: 60℃with 0.5m/s Air Flow
5. TAT run TDPworkload + Burn in Test v9.0(RAM + COM + DISK + LAN + Sound) & USB Dummy Load
6. Test Times: 25℃/4Hrs, 60℃/4hrs
7. Test Environment Curve:

Thermal profile test



CPU temperature by Intel sensor record

CPU Freq. / Temp. Stage(℃)	Intel Pentium N4200 @ 1.1GHz	Note
Normal Tn(*1) = 25	Fn(*3) = 1.75GHz	DTS=52.9
SPEC. Ts(*2) = 60	Fs(*4) = 1.74GHz	DTS=91.7

Note(*):
1. **"Tn"** indicates the room temperature value in testing chamber.
2. **"Ts"** indicates the maximum operating temperature value specified in its datasheet.
3. **"Fn"** indicates under normal temperature environment, the operating freq. of the CPU.
4. **"Fs"** indicates under high temperature environment, the operating freq. of the CPU.
5. **Judgment Criteria:**

- Fail:
Fs < Fn * 70%; The CPU average freq. value is lower than Fn * 70%.

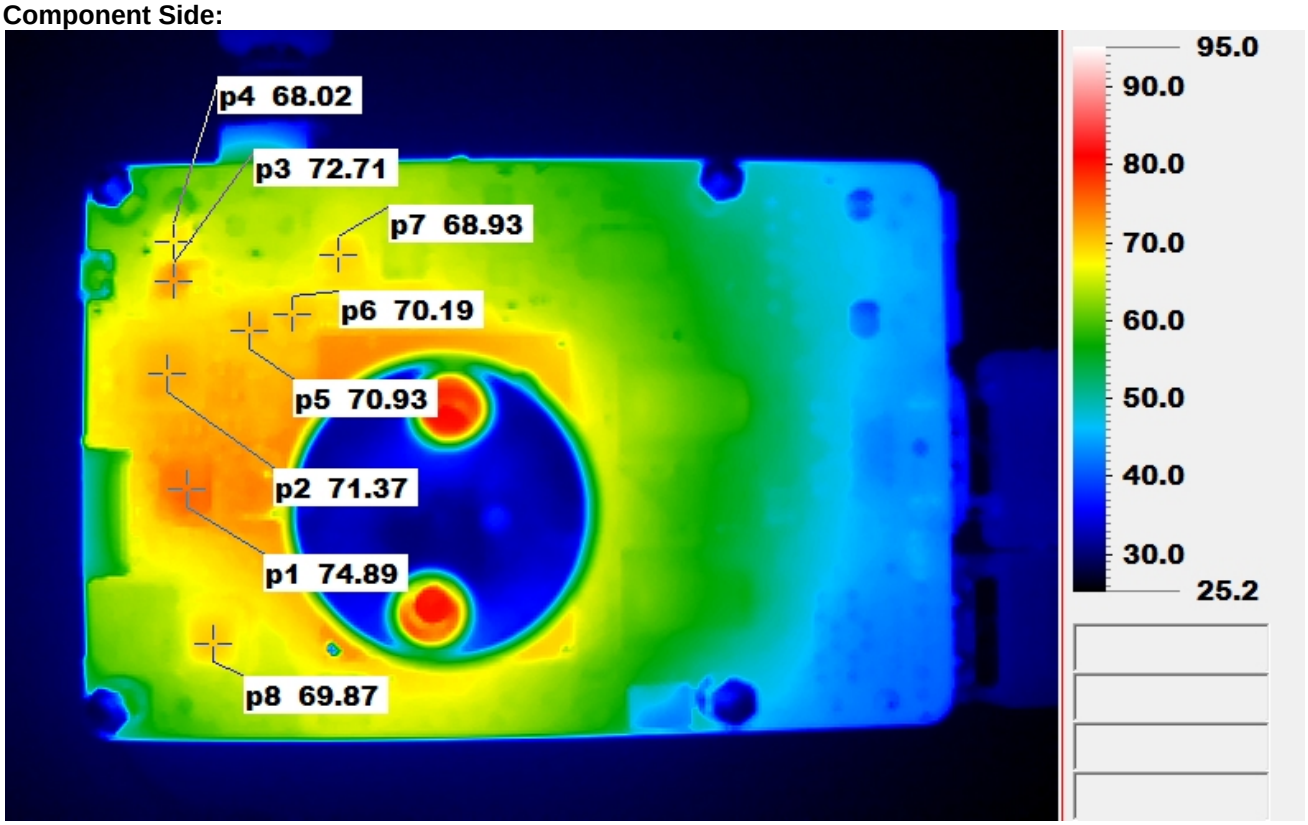
- Pass:
Fs > Fn * 70%; The CPU average freq. value is higher than Fn * 70%.

6. **Intel TAT tool:** use TDP loading test.

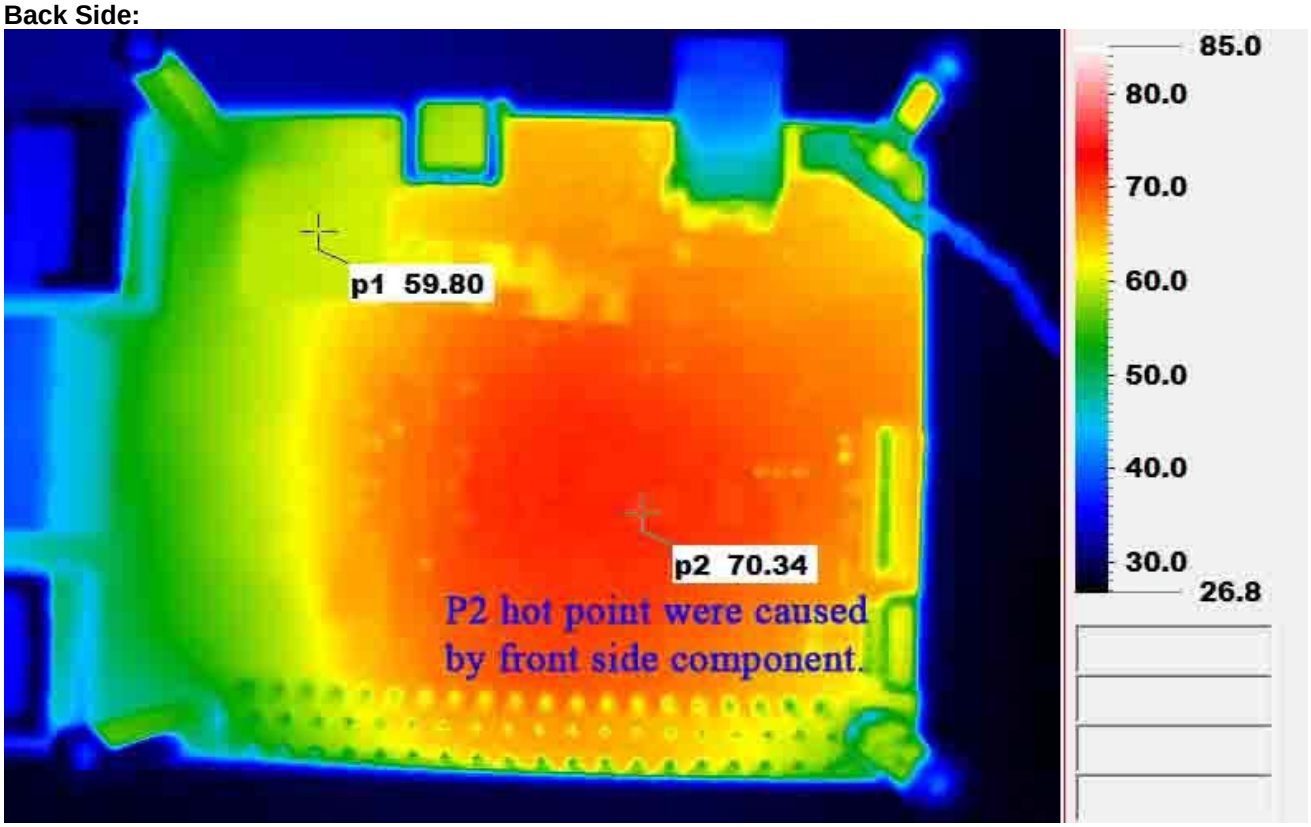
Thermal profile test

Measuring Thermal Couple Position：

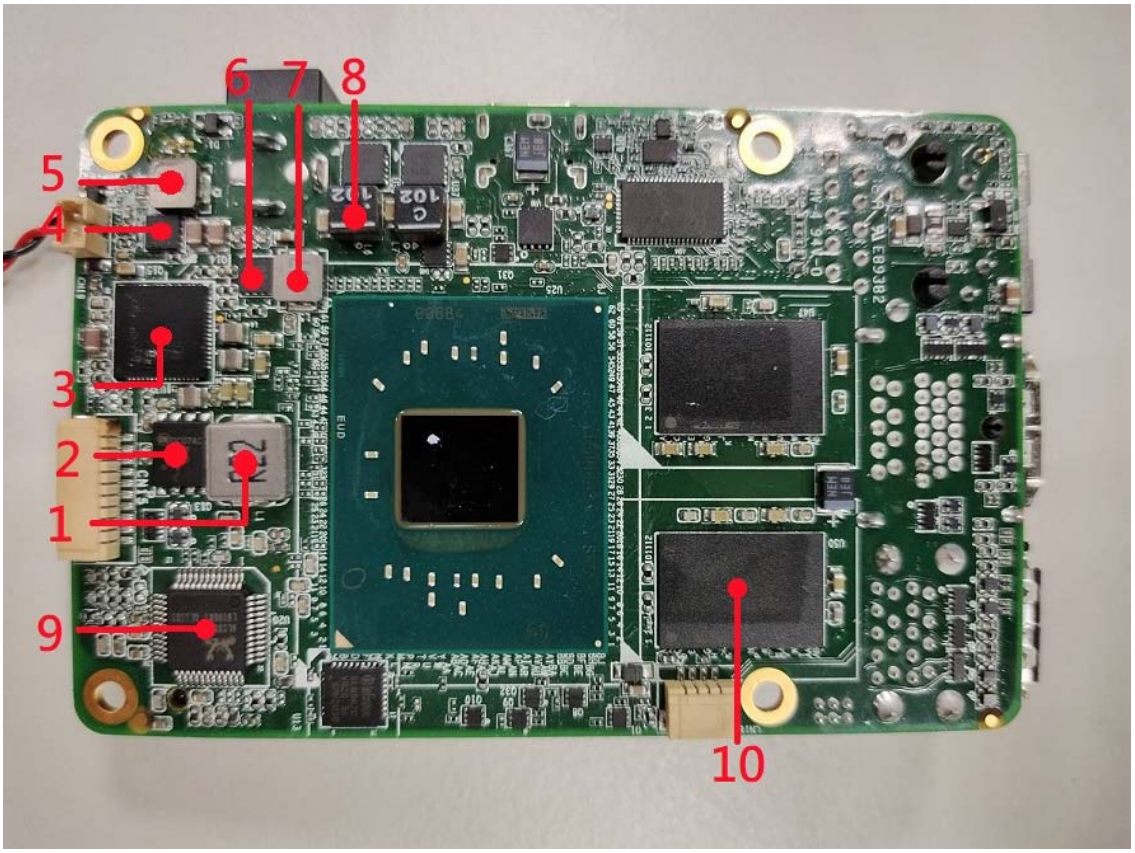
Component Side:

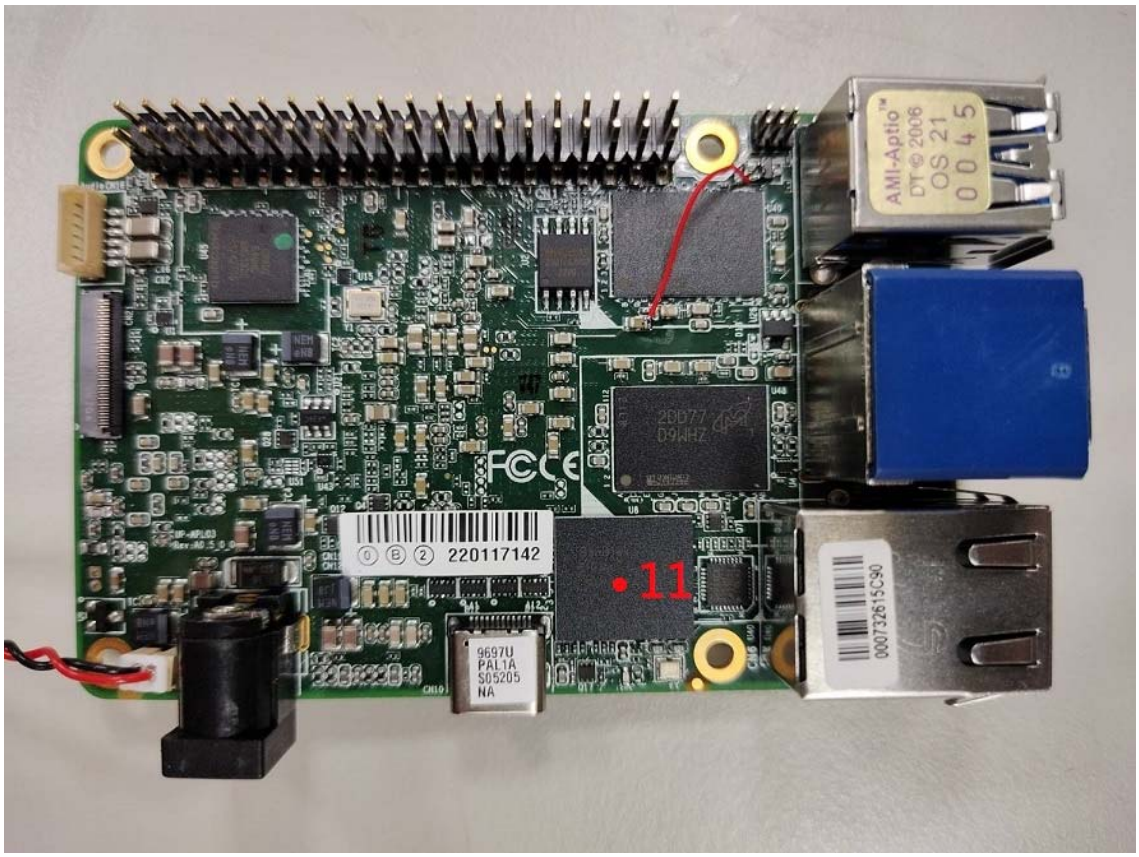


Back Side:

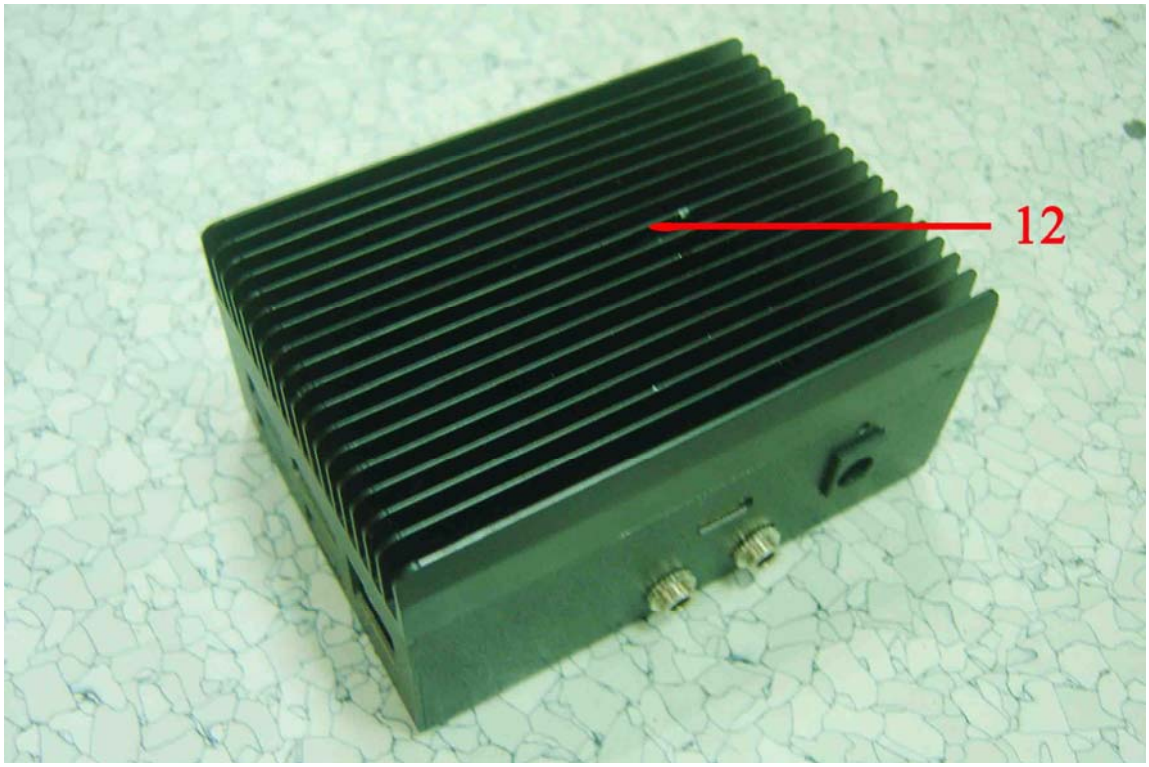


Thermal profile test





Thermal profile test



Thermal profile data:

UP-EDGE-APL03 (Under 60℃ with 0.5m/sec airflow)

Point	Temp. Stage(℃)	Spec Tc(*1)	Tm(*3) 60	Note
UP-APL03 A1.0				
01. (TF)COIL. 0.22u Zenithtek.ZPWM-6030M-R22M		125	79.8	
02. (TF)PWR.DUAL.N-MOSFET. FAIRCHILD.FDMS3664S		125	91.7	
03. (AOH)(TF) PMIC.Intel Apollo Lake.DDR TI.TPS650945A0RSKR.		100	82.1	
04. (TF)DUAL N-MOSFET. PDFN3X3S.SMD.NIKO-SEM.PE642DT		125	87.1	
05. (TF)COIL. 0.47uH. HDT.MPCA-0420-R47-M		125	87.2	
06. (TF)DUAL N-MOSFET. PDFN3X3S.SMD.NIKO-SEM.PE642DT		125	86.5	
07. (TF)COIL. 0.47uH. HDT.MPCA-0420-R47-M		125	86.1	
09. (TF)7.1+2 Channel High Definition.Audio Codec. REALTEK.ALC888S-VD2-GR		105	84.1	
12. System surface temperature		-	77.3	
Point	**Temp. Stage(℃)**	**Spec TA(*2)**	**Tm(*3) 60**	**Note**
08. (TF)COIL. 1uH. coilcraft XGL4030-102ME		165	84.1	
11. (TF)eMMC 5.1 Flash.64GB.3.3 Sandisk.SDINBDA4-64G-V		85	83.2	Note 4

Thermal profile test

Note(*):
1. **"Tc"** indicates the component's case maximum temperature value specified in its datasheet.
2. **"TA"** indicates the component's ambient temperature value specified in its datasheet
3. **"Tm"** indicates the actual measured temperature in chamber.
4. **Judgment Criteria:**

- Fail:

Tm >Tc; The measured value is over specification plus margin.
Tm >TA; The measured value is over specification plus margin.

- Margin:

Tc> Tm > Tc-5℃; The measured value is within specification with margin.
TA> Tm > TA-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.
Tm < TA-5℃; The measured value is with safety margin.

5. DTS NO.: N/A

Sample Configuration & Quantity Under Test:

Quantity: 1 (UP-EDGE-APL03)

Test Result:

No issues found during the thermal profile test.

Temperature cycle test

Test Date: 08-22~24-2022

Test Product: UP-EDGE-APL03

Test Site: AAEON QEDept.

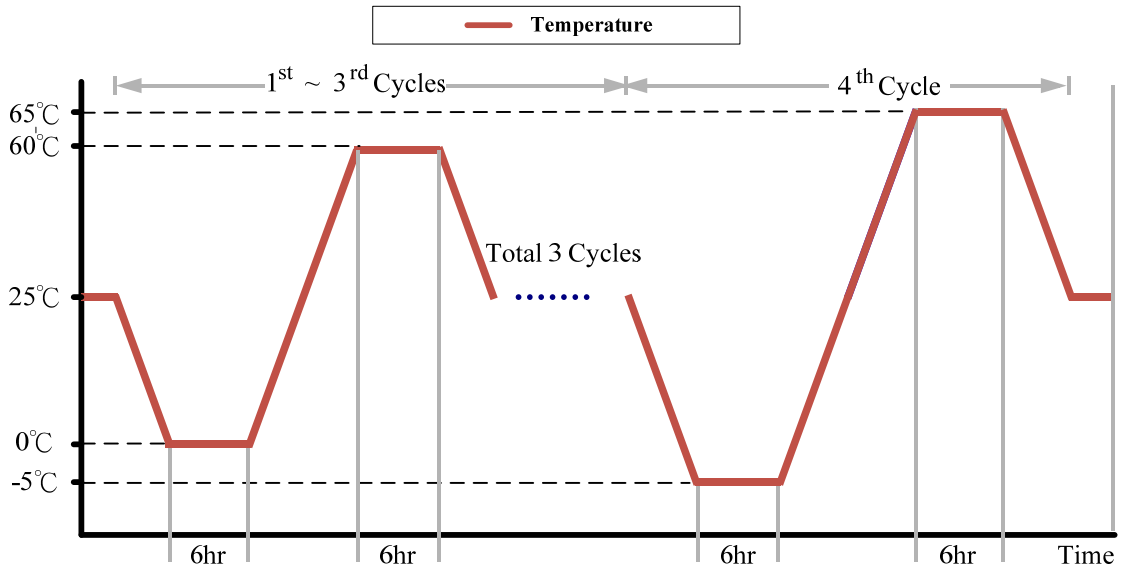
Test Standard: Refer to IEC68-2-14 Testing procedures
Test N: Change of temperature Test

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 05/20/22
Due date of Calibration: 05/19/23
Serial Number: 6488KT

Test Condition:

1. Operation
2. Test Low Temperature: 0℃ (1~3 cycles)
   -5℃ (4thcycle)
3. Test High Temperature: 60℃(1~3 cycles)
   65℃ (4thcycle)
4. Test dwell time: 6Hrs
5. Temperature slope: 2℃/min
6. Test cycle: 4 cycles
7. Test Environment Curve:



Sample Configuration & Quantity Under Test:
Quantity: 1 (UP-EDGE-APL03)

Test Result:

No issues found during the temperature operation cycle test.

High temperature storage test

Test Date: 08-17~ 19-2022

Test Product: UP-EDGE-APL03

Test Site: AAEON QE Dept.

Test Standard: Refer toIEC 68-2-2 Testing procedures
Test Bb: Dry Heat Test

Test Equipment:

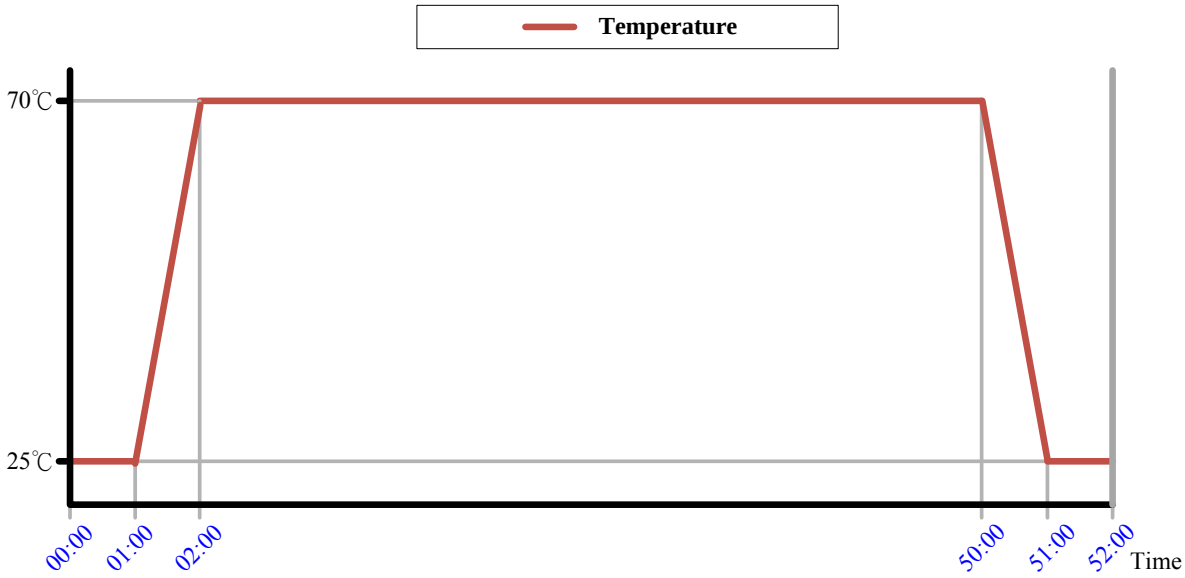
Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)

Model: THS-B6T-150+LN2

Date of Calibration: 05/20/22
Due date of Calibration: 05/19/23
Serial Number: 6488KT

Test Condition:

1. Non-operation
2. Test Temperature: 70℃
3. Test Times: 48Hrs
4. Test Environment Curve:



Sample Configuration & Quantity Under Test:

Quantity: 1 (UP-EDGE-APL03)

Test Result:

No issuesfound after the high temperature storage test.

Low temperature storage test

Test Date: 08-12 ~15-2022

Test Product: UP-EDGE-APL03

Test Site: AAEON QE Dept.

Test Standard: Refer toIEC 68-2-1 Testing procedures
Test Ab: Cold Test

Test Equipment:

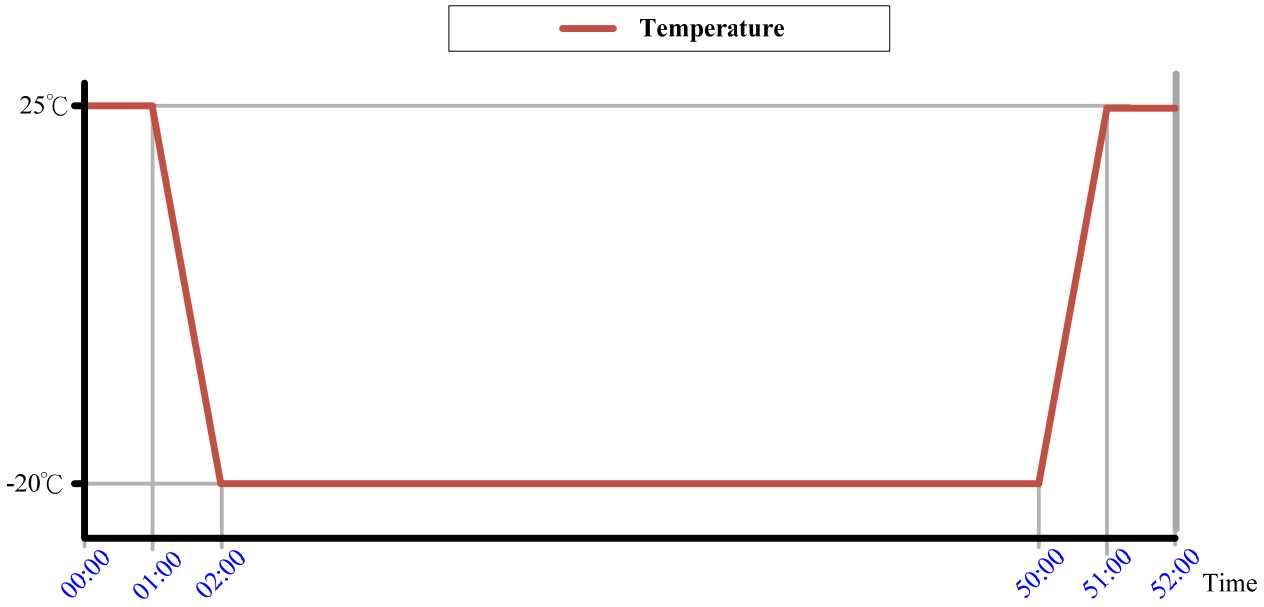
Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)

Model: THS-B6T-150+LN2

Date of Calibration: 05/20/22
Due date of Calibration: 05/19/23
Serial Number: 6488KT

Testing Item:

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



Sample Configuration & Quantity Under Test:

Quantity: 1(UP-EDGE-APL03)

Test Result:

No issuesfound after the low temperature storage test.

Humidity test

Test Date: 08-15 ~ 17-2022

Test Product: UP-EDGE-APL03

Test Site: AAEON QE Dept.

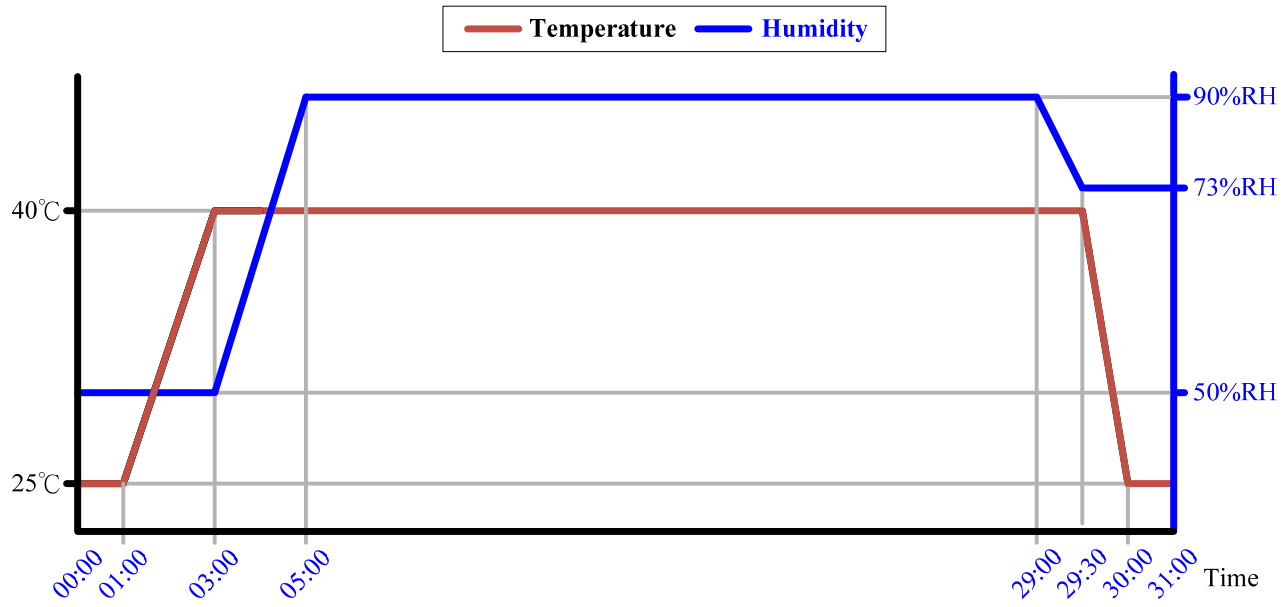
Test Standard: Refer IEC 68-2-78 Testing procedures
Test Cab: Damp heat, steady state

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 05/20/22
Due date of Calibration: 05/19/23
Serial Number: 6488KT

Testing Item:

1. Non-operation
2. Test Temperature: 40℃
3. Test Humidity: 90%RH
4. Test Times: 24Hrs
5. Test Environment Curve:



Sample Configuration & Quantity Under Test:
Quantity: 1(UP-EDGE-APL03)

Test Result:
No issuesfound after the humidity storage test.

Cold start and hot start test

Test Date: 08-11~12-2022

Test Product: UP-EDGE-APL03

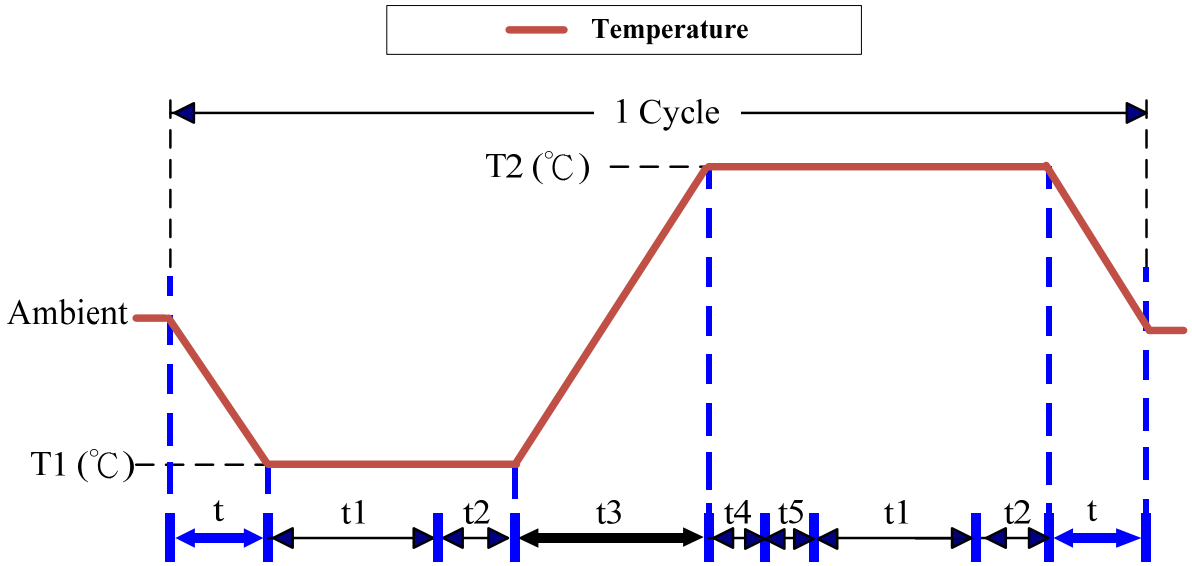
Test Site: AAEON QEDept.

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-B6T-150+LN2
Date of Calibration: 05/20/22
Due date of Calibration: 05/19/23
Serial Number: 6488KT

Test Condition:



Parameters	Description
T1	-5℃
T2	65℃
t1	4 hrs
t2	1 hrs
t4, t5	1hrs
t, t3	2℃/min
n (Cycle)	1

t = temprature slope
t , t1: Power Off
t2: Power on/off test 5 times (on 2 min / off 10 min)
t3, t4: Run PassMark Burn In Test
t5: Win 10 Software restart test 2 times
Test Software:Windows 10

Test Result:

a. No issues found during the cold start test.

b. No issuesfound during the hot start test.

Memory test

Test Date: 08-11-2022

Test Product: UP-EDGE-APL03

Test Site: AAEON QE Dept.

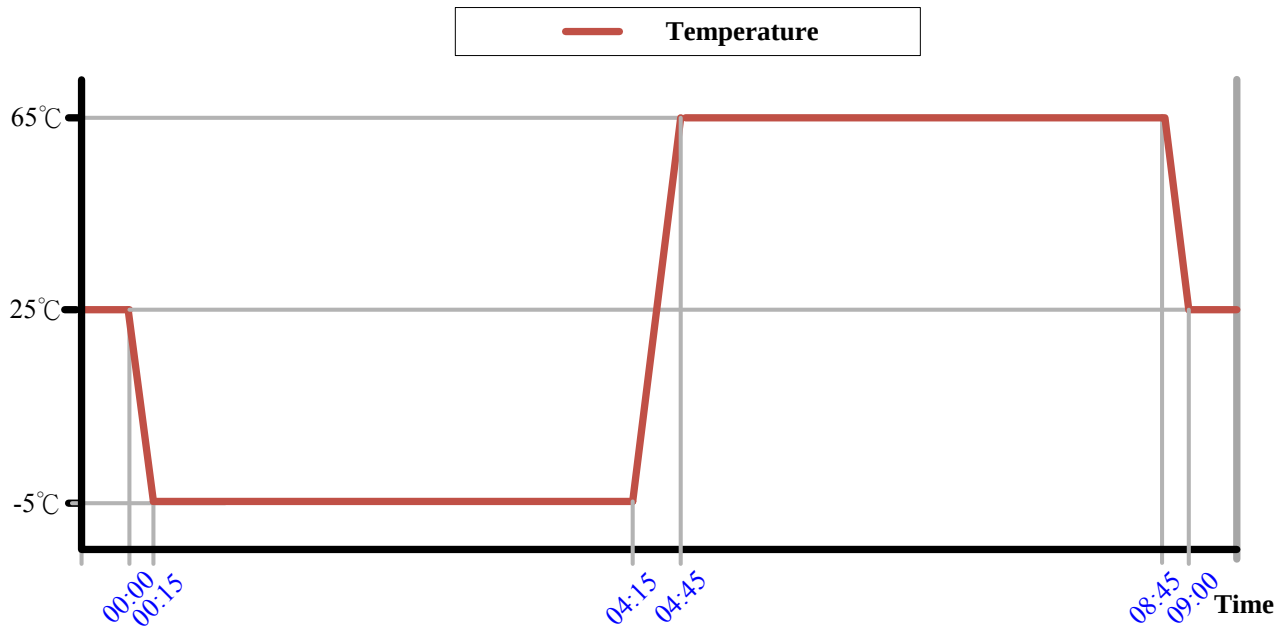
Test Standard: Refer toIEC 68-2-14 Testing procedures
Test N: Change of temperature Test

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 05/20/22
Due date of Calibration: 05/19/23
Serial Number: 6488KT

Temperature Cycle Test:

1. Test Low Temperature: -5℃
2. Test High Temperature: 65℃
3. Test dwell time: 4Hrs
4. Temperature slope: 2~3℃/min
5. Test cycle: 1 cycle
6. Test Software: Run MemTest86V8.2 Pro
7. Test Environment Curve:



Test Result:

No issues found during the memory test.