AEC-6646B

With 2.5” SATA HDD

Environment Test Report

Report NO: 13P020015

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:** **Temperature at one component was estimated to be in marginal temperature point in comparison with component datasheet.**

Issue date	Approval	Test Engineer
2013-10-31	**Tom Lin**	**Jerry Chen**

Test item list

Testing Result

Num	Test item list	Result	Remark
1	Temperature rise test	Pass	
2	Temperature cycle operation test	Pass	
3	High temperature storage test	Pass	
4	Low temperature storage test	Pass	
5	Humidity test	Pass	
6	Cold start and hot start test	Pass	

Configuration of EUT

Item	Device Information		
SYSTEM PC Model / Ver.	AEC-6646B A1.0		
CPU Board	EMB-H61B A1.0		
BIOS / Version	AEC-6646B R1.0(6646BM10)(08/05/2013)		
CPU Type	Intel Core i3-3220 3.30GHz		
Memory Type	Transcend DDR3-1600 8GB (SEC XYK0-K4B4G0846B) x2		
HDD	Toshiba 2.5” SATA HDD (MK1060GSC) / 100GB		
Operating System	☒	Windows 7 Ultimate English 64 Bit	
DC Adapter	FSP084-DMAA1/ DC 12V/ 7.0A		

System picture:

Temperature rise test

Test Date: 10-29~30-2013

Test Product: AEC-6646B

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: 10/01/13
Serial Number: 12A323190

Test Condition:

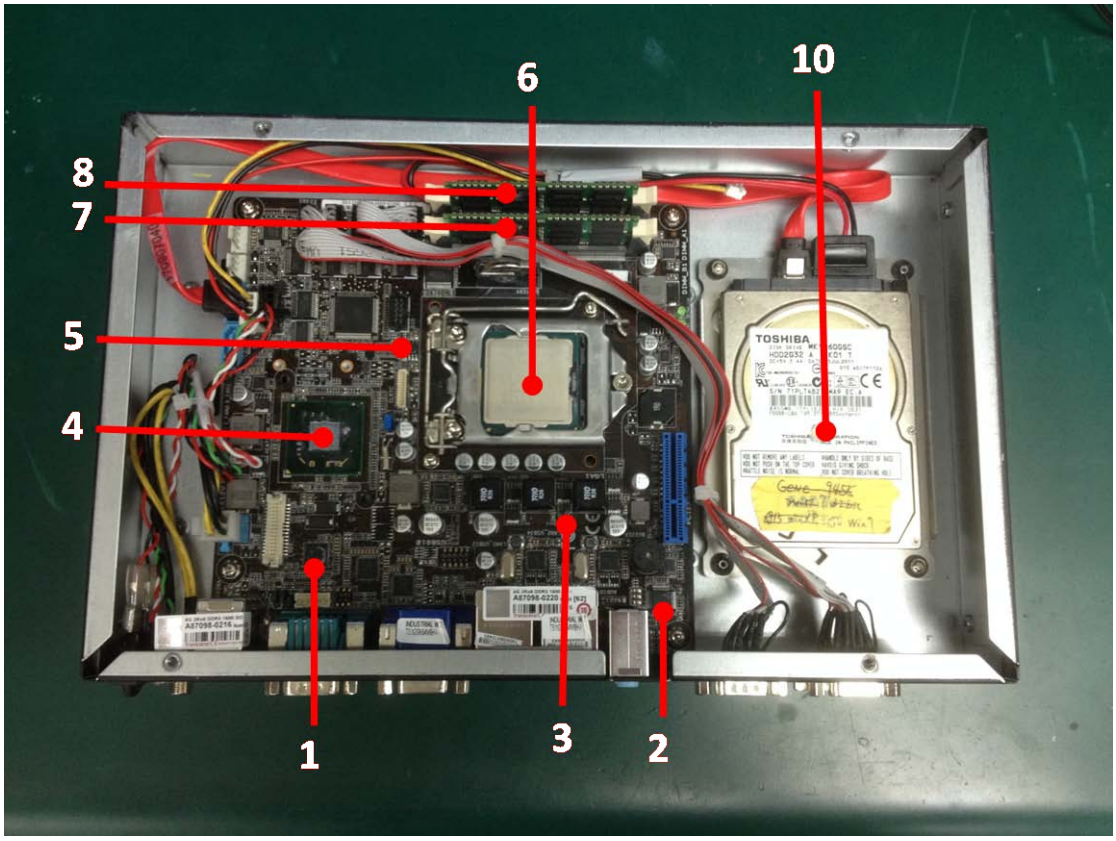
Ambient temperature: 40℃
Continuous running till thermal stable (within less than 1℃)

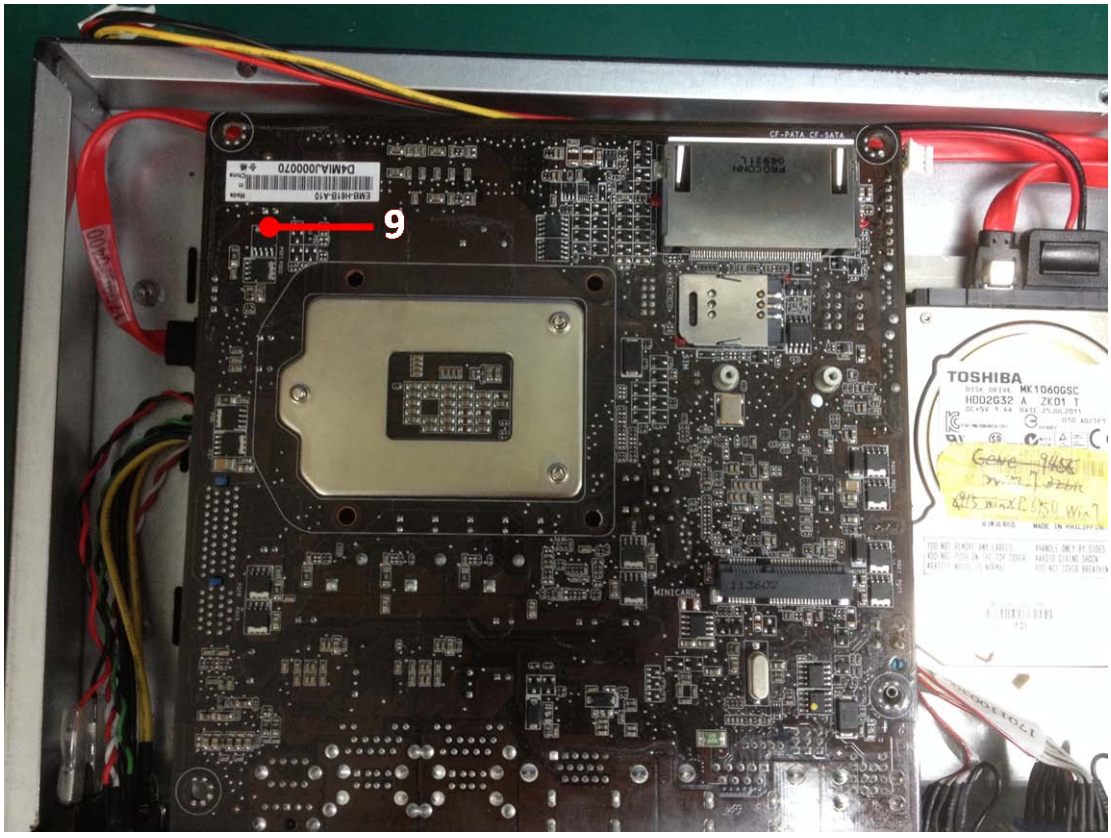
Test Software:

Windows 7 / Run PassMark Burn In Test 7.1 Pro

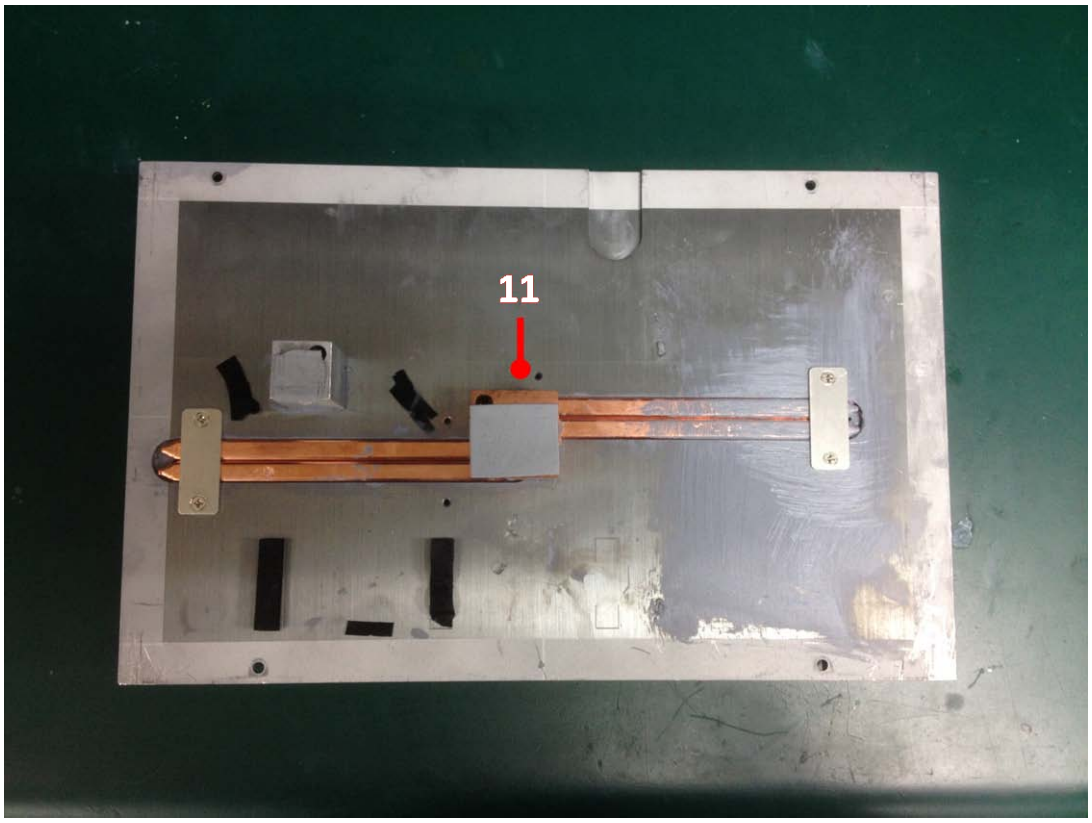
Terminal Recorder:

Temperature rise test





Temperature rise test



Temperature rise test

Thermal profile data:

Point / Temp. Stage(℃)	Spec	40	Note
01.U22 - (TF)DisplayPort to LVDS Converter.Chrontel.CH7511B-BF	100	68.7	
02.U9 - (TF) Audio Codec. output.SMD.Realtek.ALC887-VD2-CG	100.5	68.7	
03.PQ11 - (TF)PWR.N-MOSFET.NXP.PH7030AL	120	76	
04.U35 - (TF)IC.SMD.Platform Controller Hub.INTEL.BD82H61.SLJ4B	125	60.6	
05.U45 - (TF)Low Dropout.Linear Regulator.APEC.APE8955MP	100	79.5	
06. CPU - Intel Core i3-3220 3.30GHz	65.3	63.8	Note4
07. Memory-1 Transcend 8G DDR3 1600 (SEC XYKO-K4B4G0846B)	85	74.7	
08. Memory-2 Transcend 8G DDR3 1600 (SEC XYKO-K4B4G0846B)	85	73.4	
09. PQ22 - (TF)PWR.N-MOSFET.NXP.PH7030AL	120	72.3	
10. HDD - Toshiba 2.5” SATA HDD (MK1060GSC) / 100GB	85	60.5	
11. Control Box Inside Temperature	NA	64	
12. Control Box Surface Temperature	NA	57.2	
13. Chamber Air Temperature	NA	40	

Note(*):

1. "Tc" indicates the component's case maximum temperature value specified in its datasheet.

2. "Tm" indicates the measured Tc value under working environmental temperature within product specification.

3. 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.
  For FANLESS system application, 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.P130715QED01

Sample Configuration & Quantity Under Test:

Quantity: 1 (AEC-6646B)

Test Result:

No issues were found during the temperature rise operation test.

Temperature cycle test

Test Date: 10-25~ 28-2013

Test Product: AEC-6646B

Test Site: AAEON QE Dept.

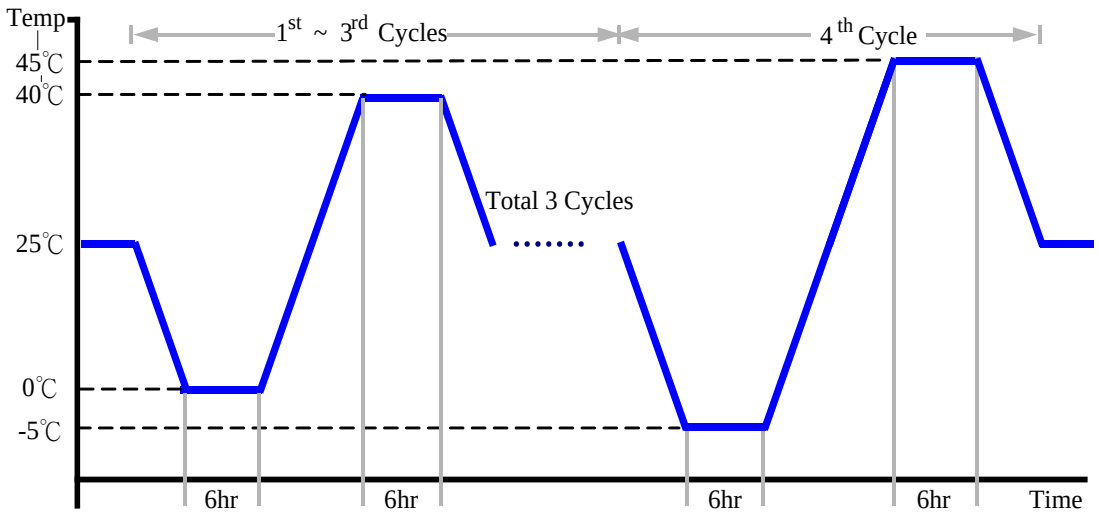
Test Standard: Refer to IEC68-2-14 Testing procedures
Test N: Change of temperature Test

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 2013/06/11
Serial Number: 9095KT

Test Condition:

1. Test Low Temperature: 0℃ (1~3 cycles)
   -5℃ (4th cycle)
2. Test High Temperature: 40℃ (1~3 cycles)
   45℃ (4th cycle)
3. Test dwell time: 6Hrs
4. Temperature slope: 2℃/min
5. Test cycle: 4 cycles
6. Test Environment Curve:



Sample Configuration & Quantity Under Test:

Quantity: 1 (AEC-6646B)

Test Result:

No issues were found during the temperature operation cycle test.

High temperature storage test

Test Date: 10-22 ~ 25-2013

Test Product: AEC-6646B

Test Site: AAEON QE Dept.

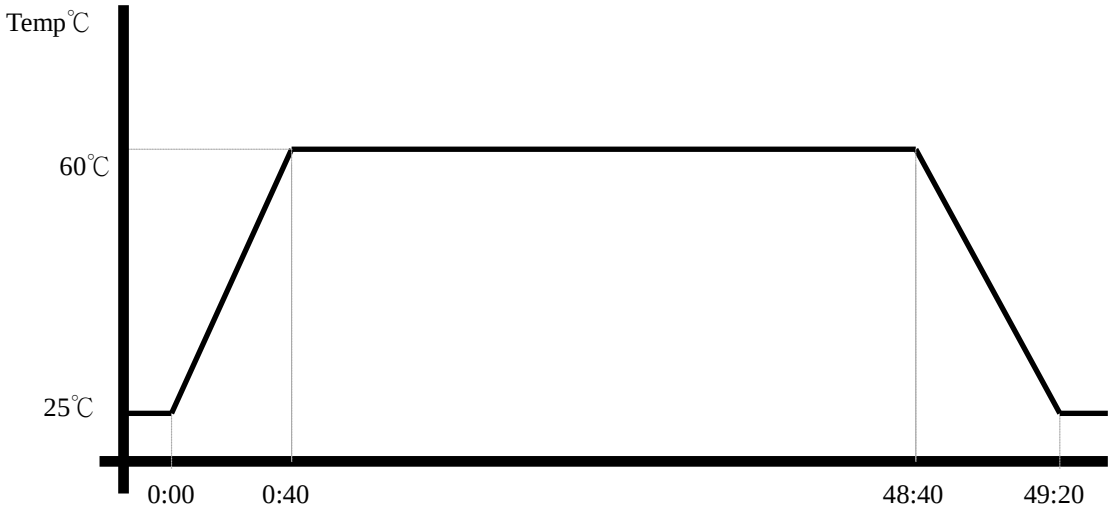
Test Standard: Refer to IEC 68-2-2 Testing procedures
Test Bb: Dry Heat Test (Non-operation)

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 2013/06/11
Serial Number: 9095KT

Testing Item:

1. Test Temperature: 60℃
2. Test Times: 48Hrs
3. Test Software: Windows 7 / Run PassMark Burn In Test 7.1 Pro
4. Test Environment Curve:



Sample Configuration & Quantity Under Test:
Quantity: 1 (AEC-6646B)

Test Result:

No issues were found after the high temperature storage test.

Low temperature storage test

Test Date: 10-18 ~ 21-2012

Test Product: AEC-6646B

Test Site: AAEON QE Dept.

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

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 2013/06/11
Serial Number: 9095KT

Testing Item:

1. Test Temperature: -10℃
2. Test Times: 48Hrs
3. Test Software: Windows 7 / Run PassMark Burn In Test 7.1 Pro
4. Test Environment Curve:

Sample Configuration & Quantity Under Test:
Quantity: 1 (AEC-6646B)

Test Result:
No issues were found after the low temperature storage test.

Humidity test

Test Date: 10-15 ~ 18-2013

Test Product: AEC-6646B

Test Site: AAEON QE Dept.

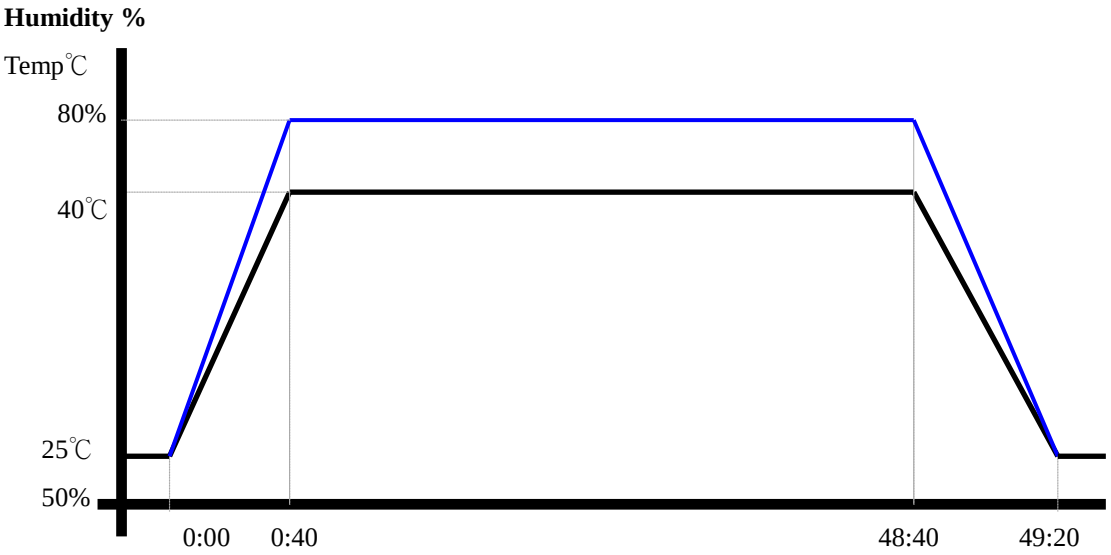
Test Standard: Refer to IEC 68-2-3 Testing procedures
Test Ca: Damp heat, steady state (Non-operation)

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 2013/06/11
Serial Number: 9095KT

Testing Item:

1. Test Temperature: 40℃
2. Test Humidity: 80%RH
3. Test Times: 48Hrs
4. Test Software: Windows 7 / Run PassMark Burn In Test 7.1 Pro
5. Test Environment Curve:



Sample Configuration & Quantity Under Test:
Quantity: 1 (AEC-6646B)

Test Result:

No issues were found after the humidity storage test.

Cold start and hot start test

Test Date: 10-28 ~29-2013

Test Product: AEC-6646B

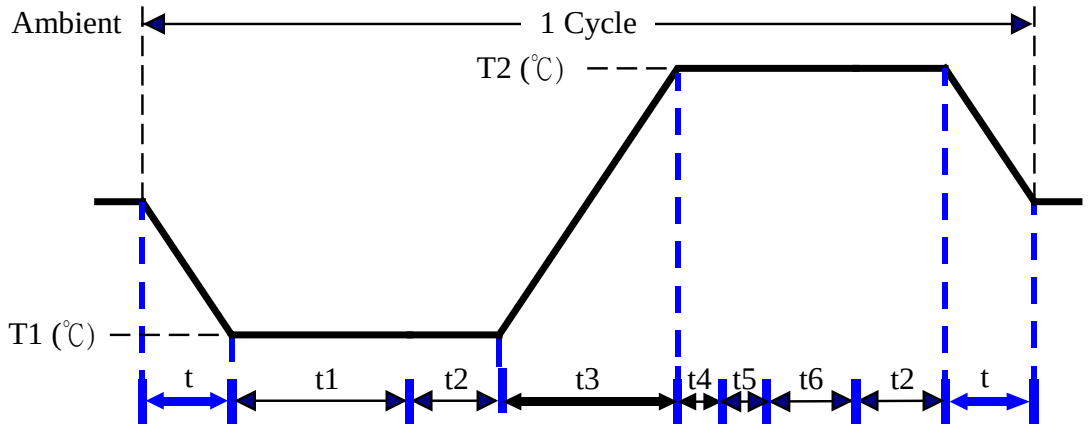
Test Site: AAEON QE Dept.

Test Standard: Refer to IEC 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: 2013/06/11
Serial Number: 9095KT

Test Condition:



Parameters	Description
T1	-5℃
T2	45℃
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 Burn In Test 7.0 Pro
t5: Win 7 Software restart test 3 times
Test Software: Windows 7

Test Result:

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

b. No issues were found during the hot start test.