EMB-Q87A

Thermal Image Analysis Report

Summary	☐ **Pass** ☐ **Fail** ☑ **Pass with Deviation** **Comment: Three temperature points need improving**

Test Result Summary				
	Critical	Major	Minor	Enhancement
Defect Found	0	0	0	3
Defect Unsolved	0	0	0	3

Issue date	Approval	Test Engineer
2014 / 03 / 03	Tom Lin	Juno Cheng

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Sample Configuration & Quantity Under Test

- **Model name : EMB-Q87A R1.01**
- **CPU Board : EMB-Q87A R1.01**
- **CPU : Intel Core i7-4770S 3.10GHz**
- **Memory：InnoDisk DDR3-1600 8GB (Hynix H5TQ4G83MFR) *2**
- **SATA HDD : TOSHIBA 2.5“ 320G (MK3276GSX)**
- **BIOS : R0.4 (EQ87AT04)(01/13/2014)**
- **Test Software : Windows 7 / Run PassMark Burn In Test 7.1 Pro**
- **AT Power : DSA400P-C**
- **CPU Cooler :**

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Thermal Image Analysis

1. Test Date: 2014-03-03

2. Test Product: EMB-Q87A R1.01

3. Test Site: AAEON QE Dept.

4. Temperature Measurement:

4.1. 40 Channel Thermal Recorder:

4.1.1 YOKOGAWA Inc,

4.2.2 Model: DA100-13-1D

Date of Calibration: 2013/10/01

Serial Number: 12A323190

4.2. IR Scanner: Infrared Camera

4.2.1 NIPPON AVIONICS CO., LTD.

4.2.2 Model: TVS-100

Date of Calibration: 2013/12/30

Serial Number: 0179L2746

5. Test Condition:

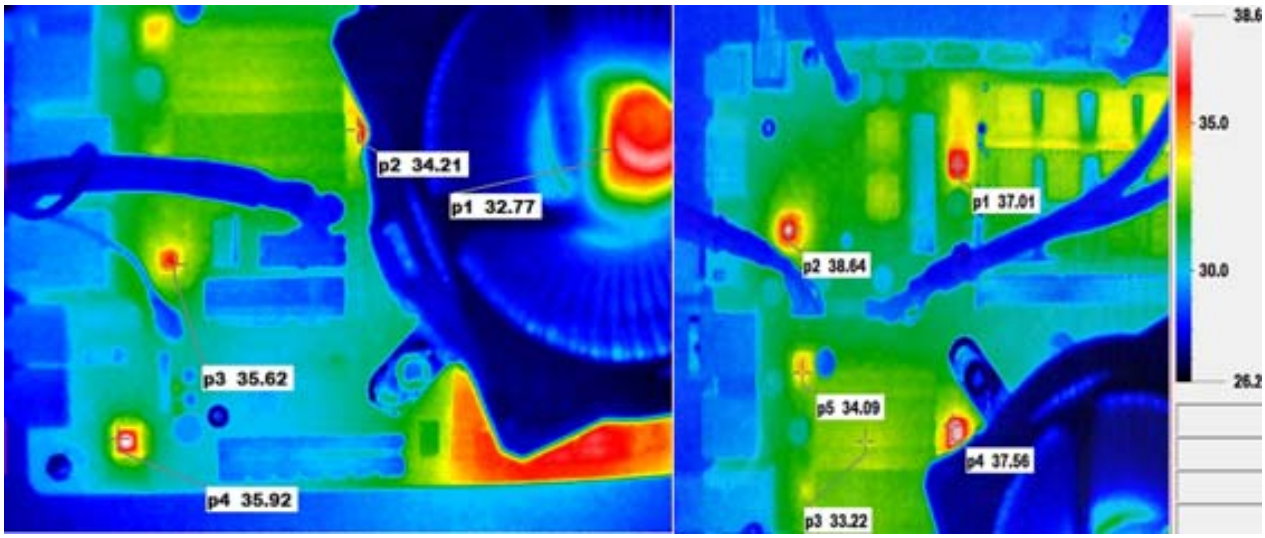
Test by DA-100: 60.0℃ with Cooler

6. Take Picture Time:

After power on 2 hours

Temperature Profile Test:

Component Side:



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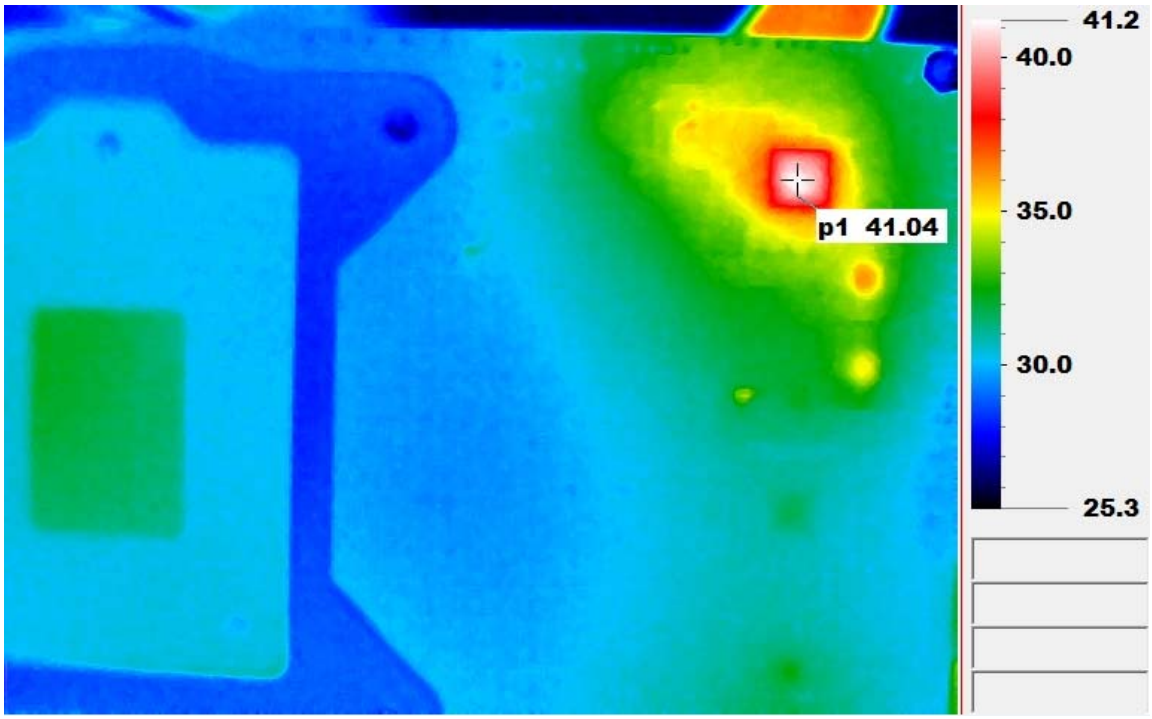
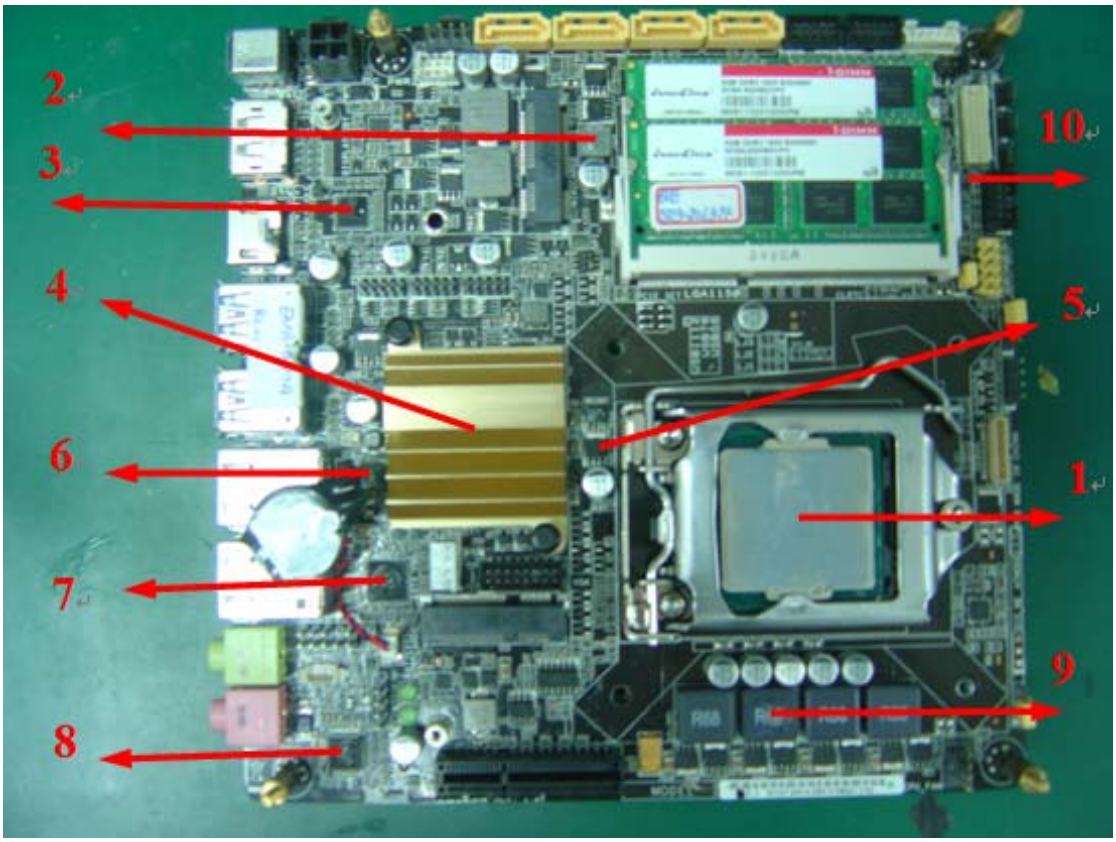
Back Side



Terminal Recorder:

Measuring Thermal Couple Position：



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Using YOKOGAWA / DARWIN DA100-100-13-1D test

Point	Position	Describe	Tc (℃)	Tm (25℃)	Tm (60℃)	Note
1	CPU	Intel Desktop 4th Generation Core CPU	66.45℃	33.6	68.6	Note 3
2	PL4	Cyntec PCMB063T-1R5MS	125℃	36.9	71.9	
3	U11	Asmedia ASM1442K (A1)	85℃	34.6	69.6	
4	PCH	Intel PCH DH82Q87 (SR173)	104℃	34.5	69.5	
5	PQ31	NXP PH7030AL	90℃	36.0	71.0	
6	L1U1	Intel PHY WGI217LM (SLJWF)	100	32.3	67.3	
7	L2U1	Intel NIC WGI210AT (SLJXR)	100	33.7	68.7	
8	AU1	Realtek Audio Codec ALC887-VD2-CG	85℃	36.0	71.0	
9	PL6	Chung Shuo CS1112-R68-I43UL	125℃	33.5	68.5	
10	LPU1	GMT G9141T11U	85℃	42.3	77.3	Note 3
11	LU1	Chrontel CH7511B-BF	85℃	41.0	76.0	Note 3

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+5℃; The measured value is over specification plus margin.
- **Margin** : Tc+5℃ > Tm > Tc-10℃; 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-10℃; The measured value is with safety margin.

4. Defect NO. : BUL1326LABE01

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