EMB-Q87B

Thermal Image Analysis Report

Summary	☐ **Pass** ☐ **Fail** ☑ **Pass with Deviation** **Comment: Temperature at one component were estimated to be in marginal temperature points in comparion with component datasheets.**

Test Result Summary

	Critical	Major	Minor	Enhancement
Defect Found	0	0	0	1
Defect Unsolved	0	0	0	1

Issue date	Approval	Test Engineer
2015 / 10 / 05	KJ Wang	Rex Chang

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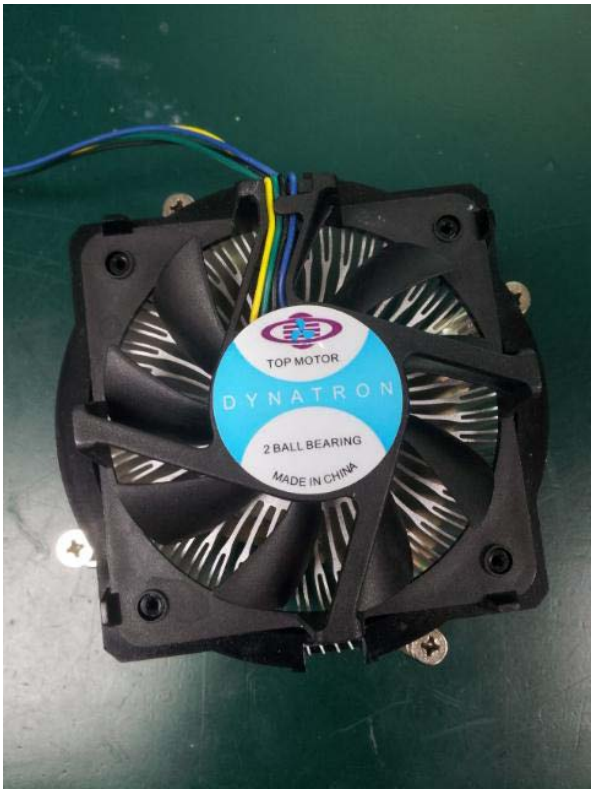
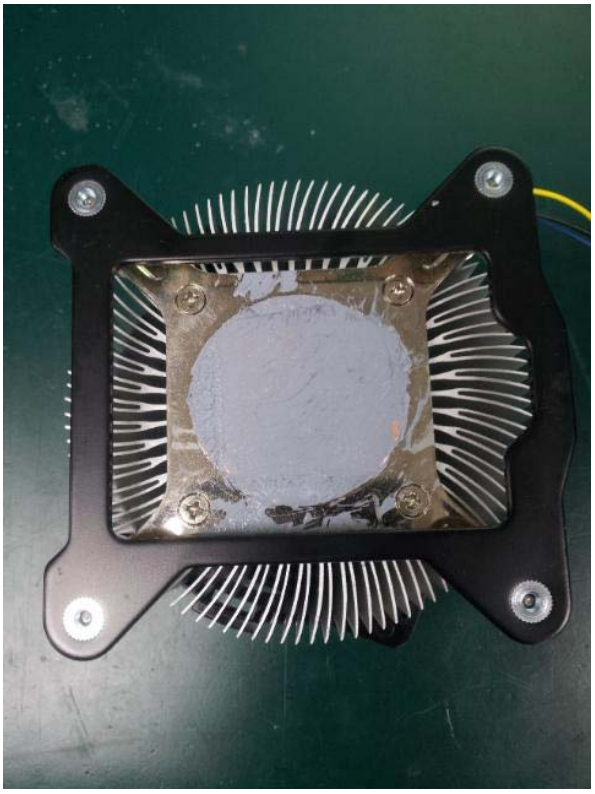
Sample Configuration & Quantity Under Test

- **Model name : EMB-Q87B A1.0**
- **CPU Board : EMB-Q87B A1.0**
- **CPU : Intel Core i7- 4770S / 3.1GHz)**
- **Memory : DSL 8GB * 2 / DDR3 1600 / SEC K4B4G08468**
- **2.5” SATA HDD : Hischi HDS721050CLA362 500GB**
- **BIOS : R1.0 (EQ87BM01) (07/25/2014)**
- **Test Software : Windows 7 / Run PassMark Burn In Test 7.1 Pro**
- **Power : AT Power (AT to ATX Mode)**
- **CPU Cooler :**





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Thermal Image Analysis

1. Test Date: 2014-09-02

2. Test Product: EMB-Q87B

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: 2013/10/08

Serial Number: 12A323190

4.2. IR Scanner: Infrared Camera

4.2.1 NEC Avio Infrared Technologies Co., Ltd.

4.2.2 Model: Thermo GEAR G100W2-D

Date of Calibration: 2013/12/30

Serial Number: 1051444

5. Test Condition:

Test by DA-100: 25.0℃ with Heat Sink + FAN (Full speed)

6. Take Picture Time:

After power on 2 hours

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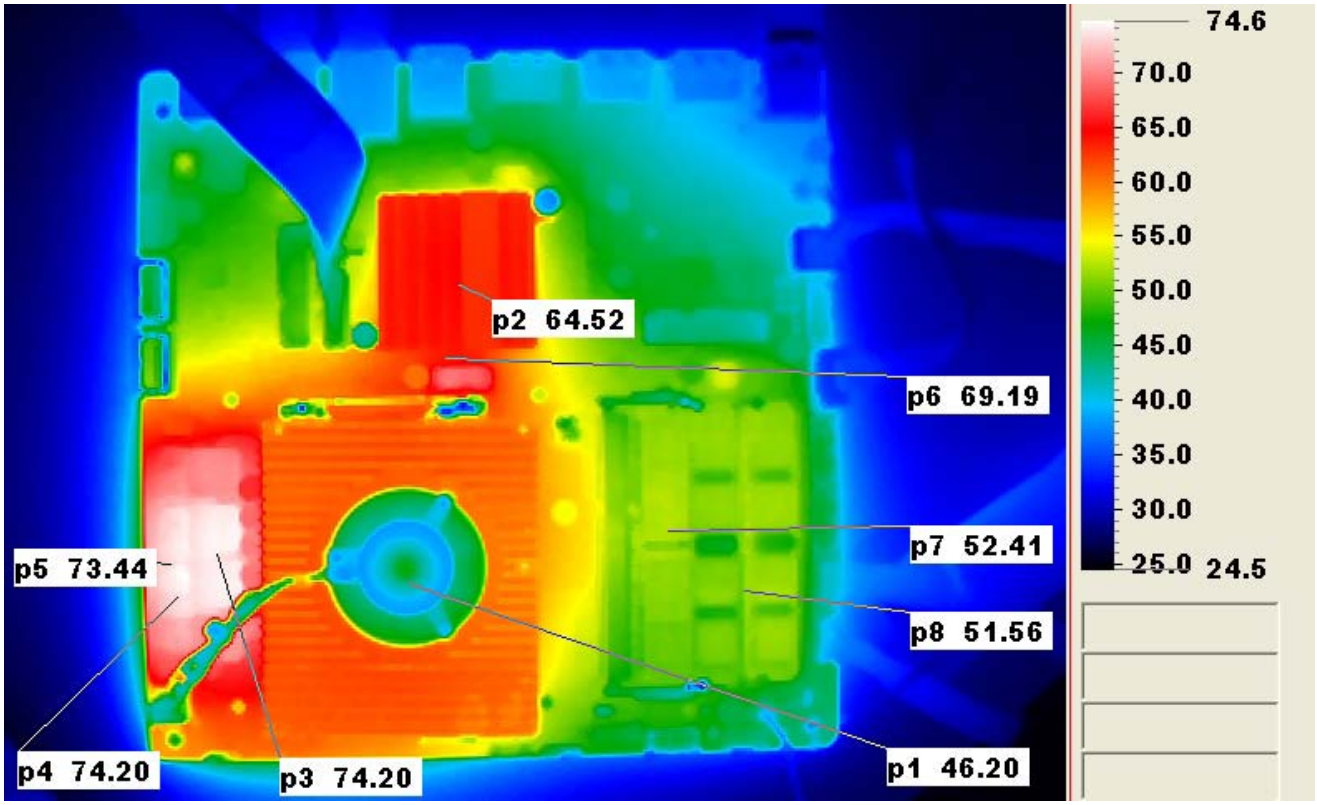
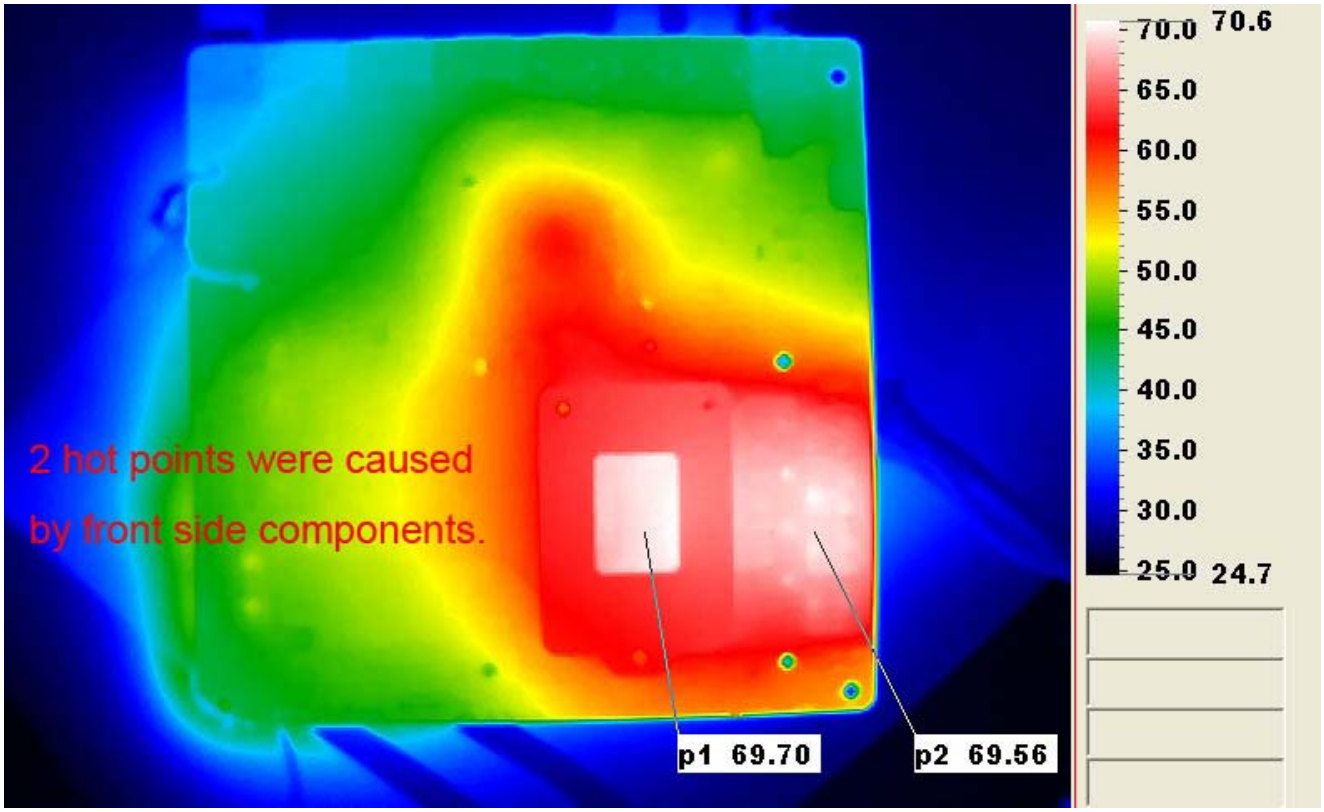
Temperature Profile Test:

Component Side:





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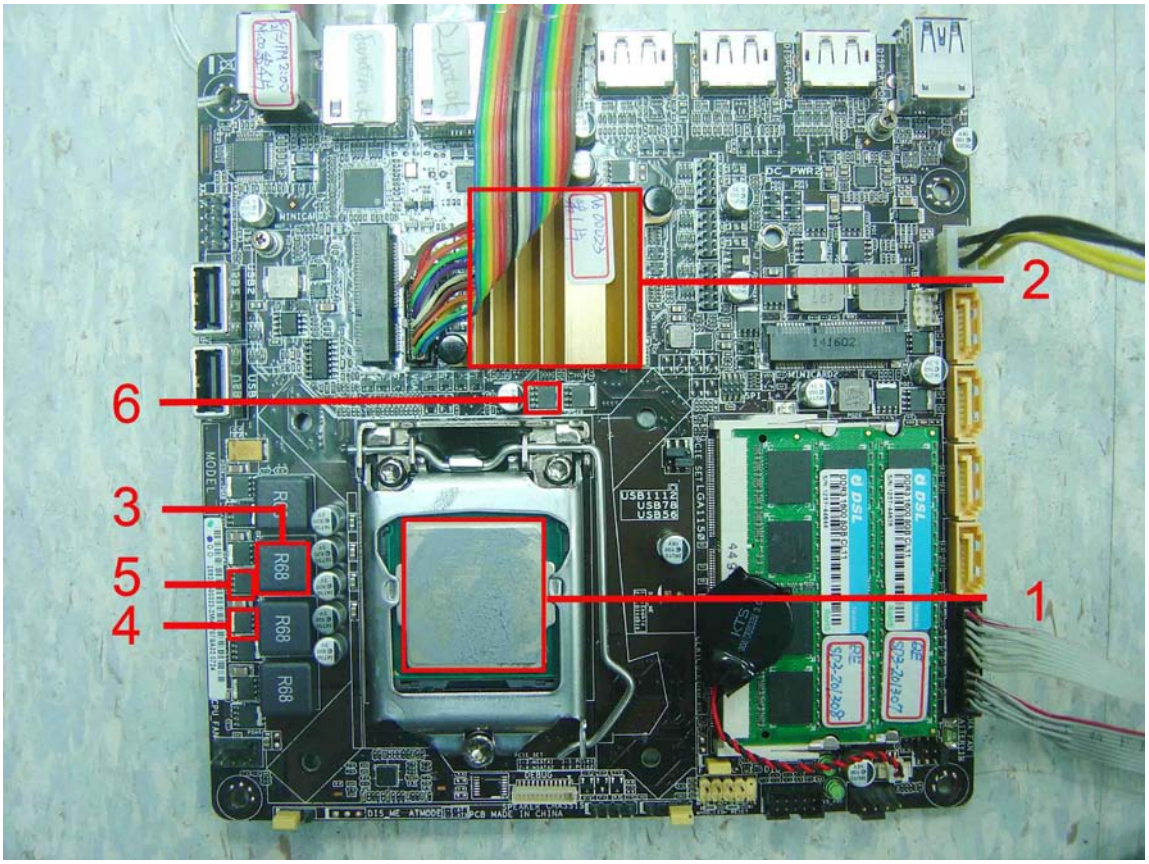
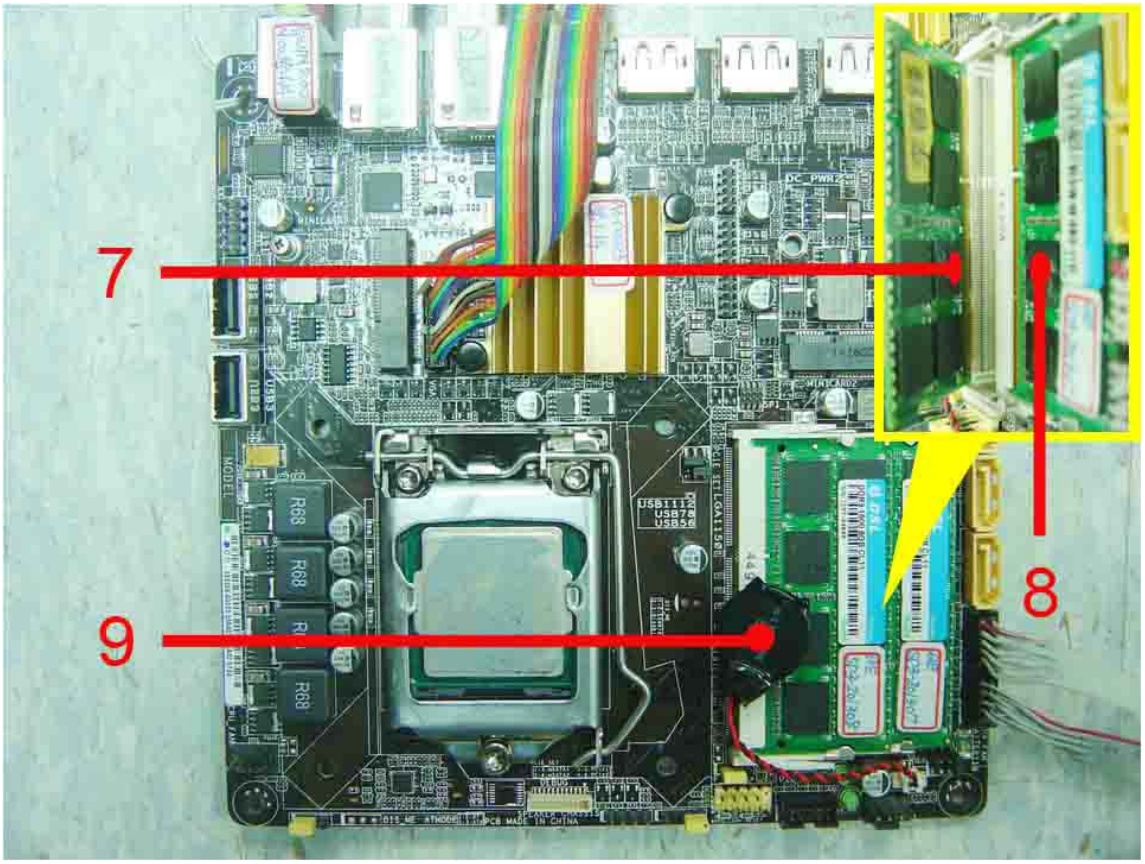
Terminal Recorder:

Measuring Thermal Couple Position：





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

Point	Position	Describe	Tc (*1) (℃)	Tm (*2) Measured Under		Note
				25.0℃	60℃	
1	CPU	Intel Core i7-4770S / 3.1GHz CPU	66.45	34.8	69.8	Note4
2	PCH	Intel PCH DH82Q87 (SR173)	104	34.1	69.1	
3	PL6	Chung Shuo CS1112-R68-I43UL	125	33.7	68.7	
4	PQ43	N-MOSFET PH7030AL SOT-669 // NXP	150	29.5	64.5	
5	PQ44	N-MOSFET PH2525L SOT-669 // PHILIPS	125	30.8	65.8	
6	PQ31	NXP PH7030AL	90	34.3	69.3	
7	-	Memory chipset - 1	95	31.9	66.9	
8	-	Memory chipset - 2	95	32.5	67.5	
9	Battery	BATT-LI CR2032 3V/220mAH //KTS/BCR2032H7.2AM1UB	70	27.2	62.2	

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. BUL1415QED01

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