EMB-Q77A

Thermal Image Analysis Report

Summary	☐ **Pass** ☐ **Fail** ☑ **Pass with Deviation** **Comment: Temperature points at 2 components 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	2
Defect Unsolved	0	0	0	2

Issue date	Approval	Test Engineer
2013 / 03 / 28	Tom Lin	Rex Chang

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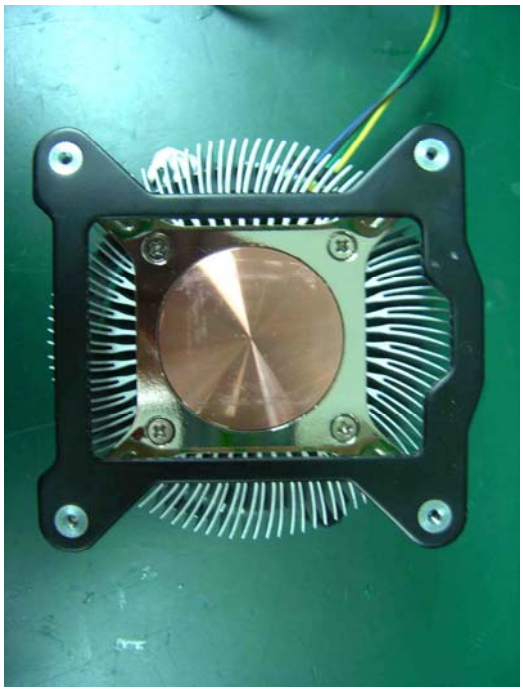
Sample Configuration & Quantity Under Test

- **Model name : EMB-Q77A 1.00**
- **CPU Board : EMB-Q77A 1.00**
- **CPU : Intel Core i7- 2600K / 3.4GHz**
- **Memory : ADATA 8GB * 2 / DDR3 1600 / Micron 2QE22 D9QBJ**
- **2.5” SATA HDD : TOSHIBA MK1676GSX / 160GB**
- **BIOS : 0108 x64 (03/13/2013)**
- **Test Software : Windows 7 / Run PassMark Burn In Test 7.0 Pro**
- **Power : ATX Power**
- **CPU Cooler :**



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Thermal Image Analysis

1. Test Date: 2013-03-28

2. Test Product: EMB-Q77A 1.00

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: 2012/10/08

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: 2013/01/08

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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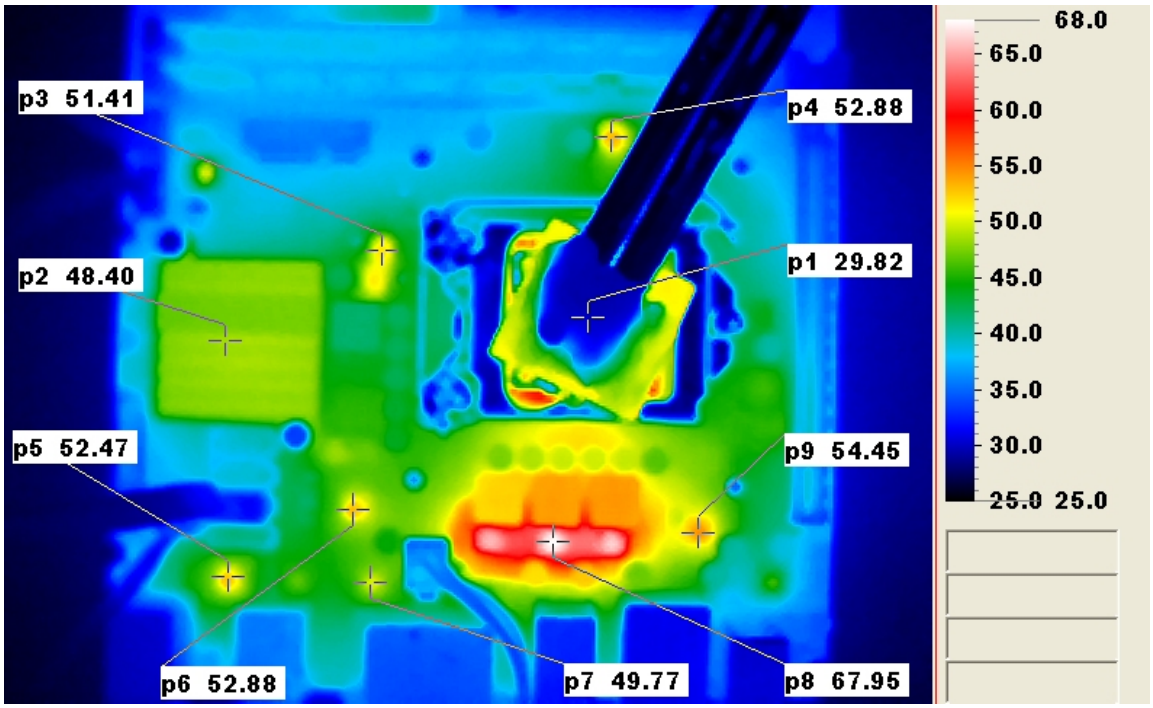
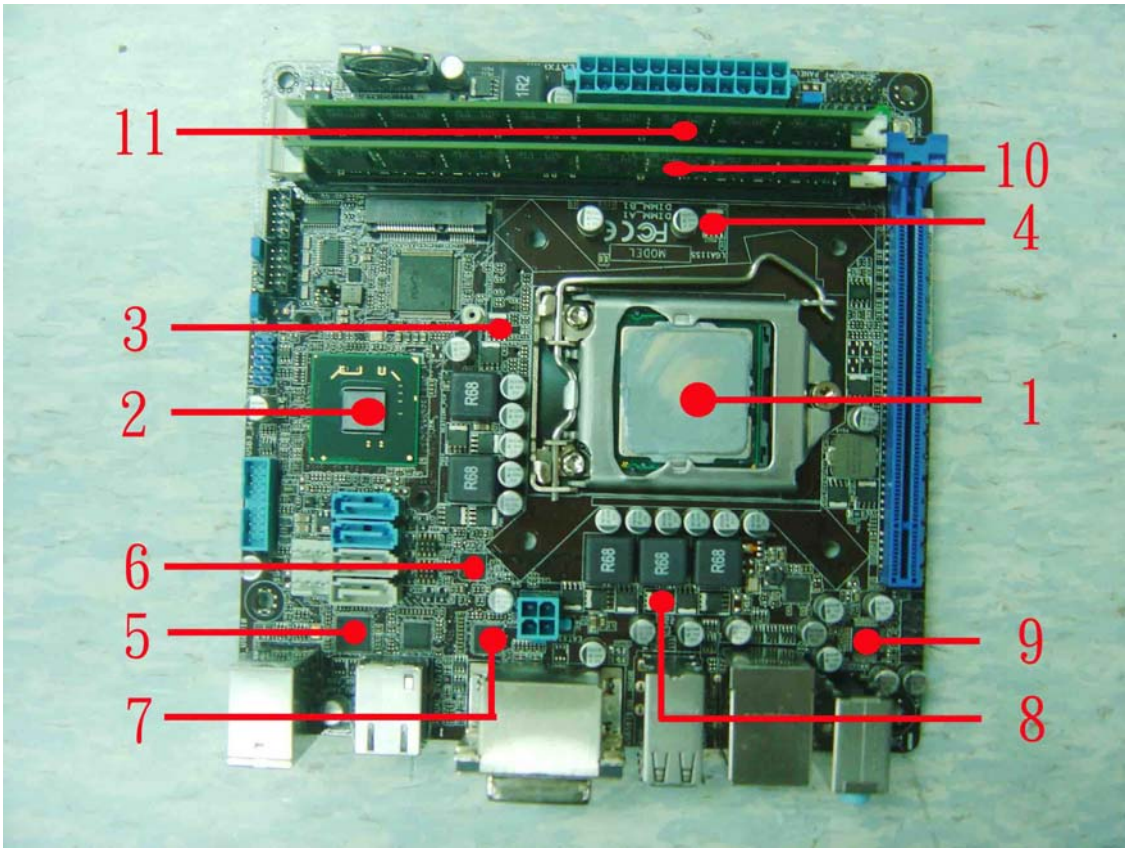
Temperature Profile Test:

Component Side:



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 I7-2600K 3.4GHz CPU	72.6	38.4	73.4	Note4
2	PCH	Intel PCH BD82Q77	85	37.0	72.0	
3	PQ20	NXP PH7030AL N-MOSFET	90	39.1	74.1	
4	PQ22	NXP PH7030AL N-MOSFET	90	40.2	75.2	
5	L2U1	Intel NIC WG82583V	85	37.8	72.8	
6	PU1	UPI UP1625SQGK	85	42.2	77.2	
7	GU1	Asmedia ASM1442	85	39.6	74.6	
8	PQ6	NXP PH2530AL	90	52.3	87.3	Note4
9	L1U1	Intel PHY WG82579	85	36.0	71.0	
10		Memory chipset - 1	95	31.1	66.1	
11		Memory chipset - 2	95	34.4	69.4	

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. BUL1304QED01

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