IMBA-Q87B

Thermal Image Analysis Report

Summary	☐ **Pass** ☐ **Fail** ☑ **Pass with Deviation** **Comment: After compared with component datasheet, there were 3 components' surface temperature located in marginal pass criteria.**

Test Result Summary

	Critical	Major	Minor	Enhancement
Defect Found	0	0	0	3
Defect Unsolved	0	0	0	3

Issue date	Approval	Test Engineer
2015 / 05 / 21	KJ Wang	Juno Cheng

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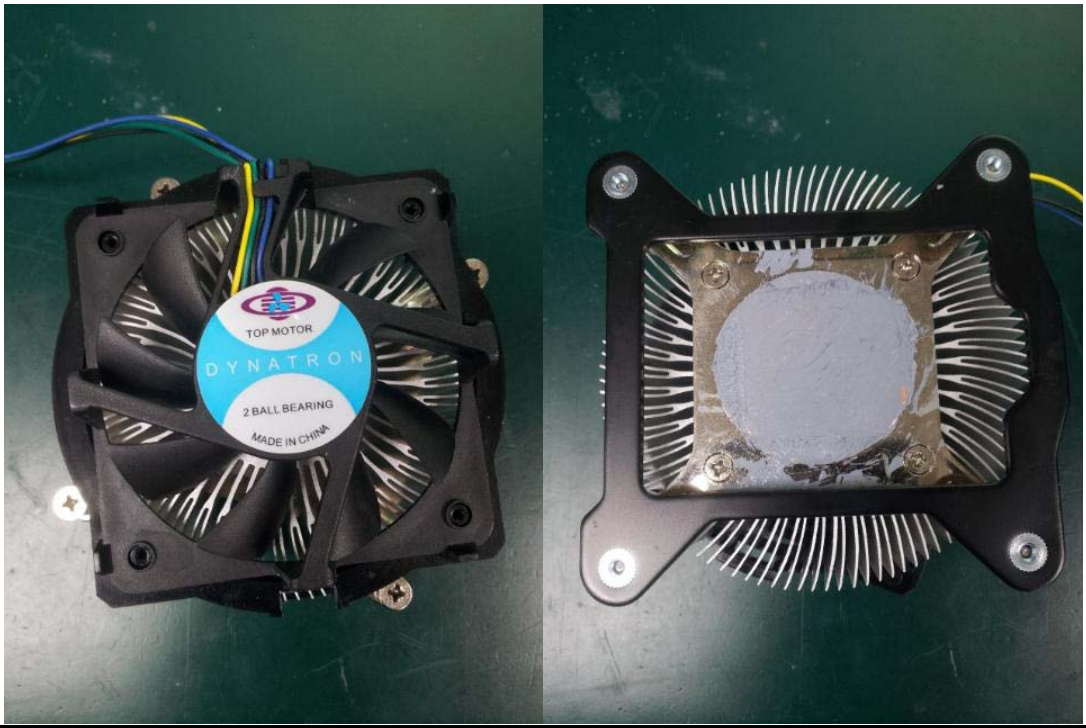
Sample Configuration & Quantity Under Test

- **Model name : IMBA-Q87B A1.00**
- **CPU Board : IMBA-Q87B A1.00**
- **CPU : Intel Core i7- 4770 Processor(8M Cache, 3.4GHz up to 3.90GHz) 84W**
- **Memory : Transcend 8GB * 2 / DDR3 1600 U / SEC K4B4G0846B**
  Transcend 8GB * 2 / DDR3 1600 U / ELPIDA 1226R6JH420
- **2.5” SATA HDD : WD WD5000LPVT 500GB**
- **BIOS : IMBA-Q87B R0.3 (AQ87BM03)(03/24/2014)**
- **Test Software : Windows 7 / Run PassMark Burn In Test 7.1 Pro**
- **Power : ATX Power**
- **CPU Cooler :**



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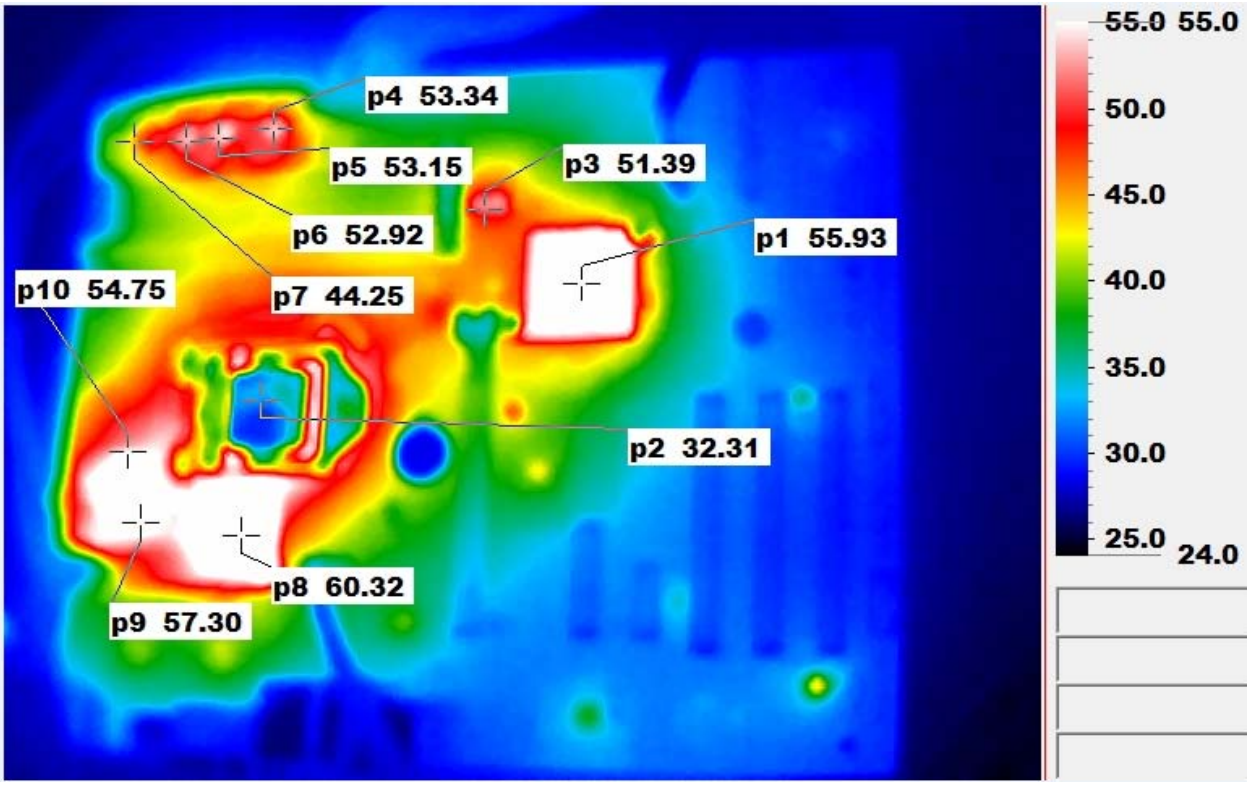
Thermal Image Analysis

1. Test Date: 2015-05-21
2. Test Product: IMBA-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: 2014/10/01
       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: 2014/12/18
       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

Temperature Profile Test:

Component Side:



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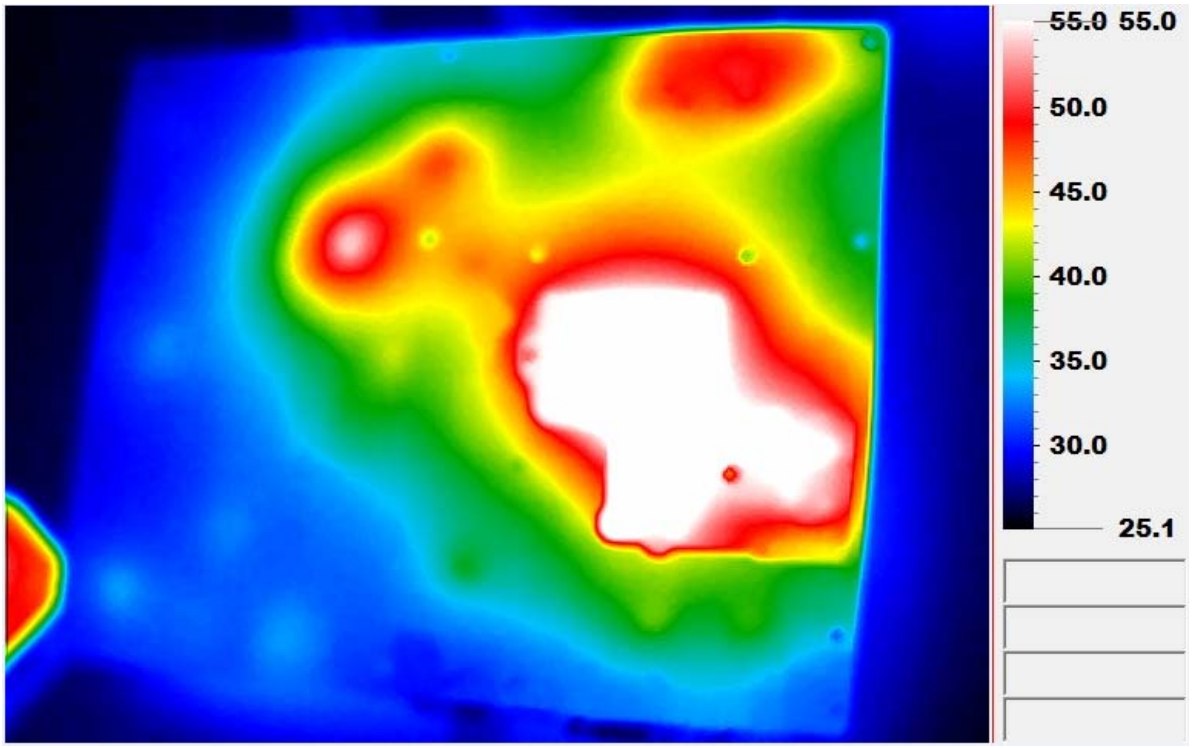
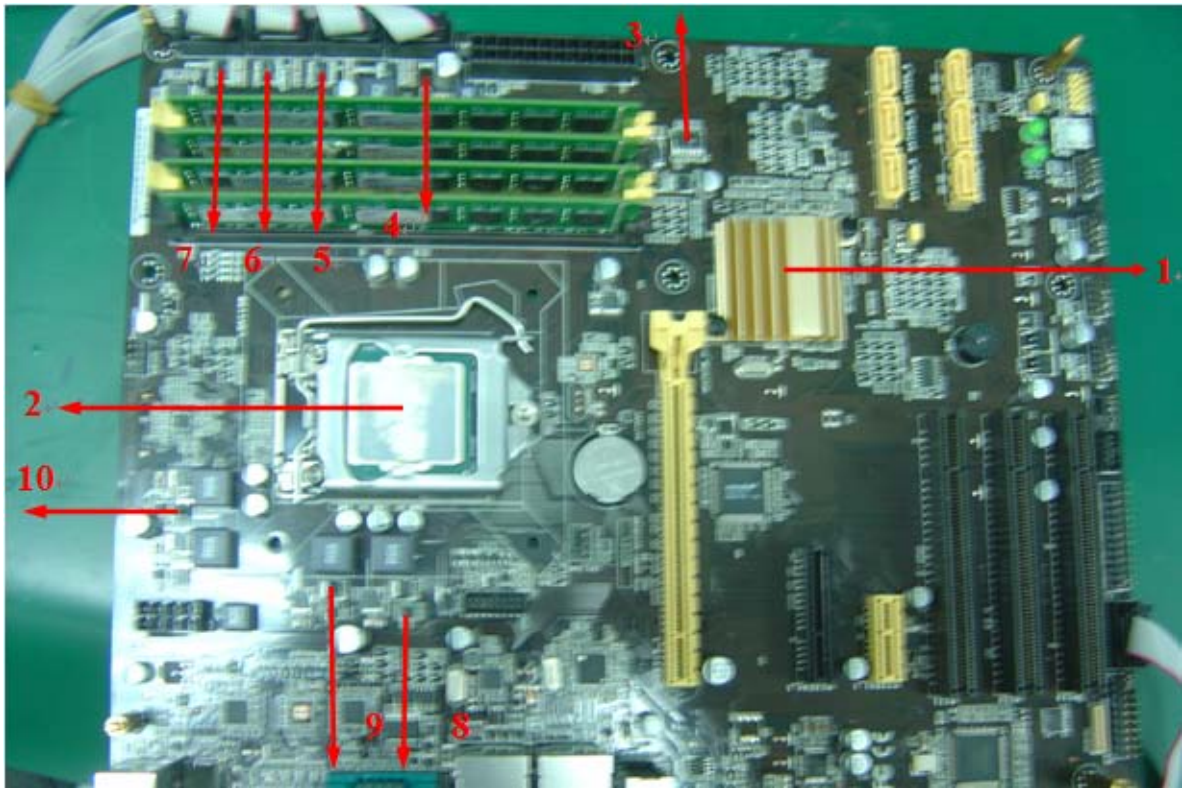
Back Side



Terminal Recorder :

Measuring Thermal Couple Position：



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

Point	Position	Describe	Tc (*1) (℃)	Tm (*2) Measured Under		Note
				25.0℃	60℃	
1	SU1	C.S FCBGA708//INTEL 929132/DH82Q87/SR173	104	41.9	76.9	
2	CPU	Intel Haswell DT (LGA1150) 86W CPU	73.78	37.8	72.8	Note 3
3	PU4	OP AMP. AS324MTR-E1 SOIC-14//AAC	100	35.9	70.9	
4	OU11	INTERFACE AZ75232GTR-E1//BCD TSSOP-20	100	58.3	93.3	Note 3
5	OU13	INTERFACE AZ75232GTR-E1//BCD TSSOP-20	100	55.5	90.5	Note 3
6	OU12	INTERFACE AZ75232GTR-E1//BCD TSSOP-20	100	53.2	88.2	
7	OU10	INTERFACE AZ75232GTR-E1//BCD TSSOP-20	100	52.4	87.4	
8	PU9	MOSFET DRIVER IC RT9611AGQW//RICHTEK WDFN-8L	100	50.5	85.5	
9	PQ838	N-MOSFET PH2530AL SOT-669//NXP	105	40.7	75.7	
10	PQ834	N-MOSFET PH2530AL SOT-669//NXP	105	46.8	81.8	
11	-	Memory chipset – 1	95	30.7	65.7	
12	-	Memory chipset – 2	95	36.9	71.9	

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. : BUL1407QED01

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