EMB-Q170A

Thermal Image Analysis Report

Summary	☐ **Pass** ☐ **Fail** ☑ **Pass with Deviation** **Comment:** There are two temperature points marginal passed but they function are normal during the thermal test.

Test Result Summary				
	Critical	Major	Minor	Enhancement
Defect Found	0	0	0	2
Defect Unsolved	0	0	0	2

Issue date	QE Manager	Test Engineer
2016 / 09 / 05	**KJ Wang**	**Jerry Chen**

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Sample Configuration & Quantity Under Test

- **Model name : EMB-Q170A**
- **M/B Name : EMB-Q170A Rev. 1.02**
- **CPU : Intel Core i7-6700 3.40 GHz**
- **BIOS : R0.D (E17AAM0D) (06/28/2016)**
- **Chipset: Intel Q170**
- **Memory：Transcend / DDR4 2133 SO 16GB *2 / SEC K4A8G085WB**
- **2.5” SATA HDD: Seagate / ST9120823AS 120GB**
- **Test Software : Windows 8.1 / Run PassMark Burn In Test 8.1 Pro**
- **ATX Power Supply: CWT / DSA400P-C 400W**
- **CPU Cooler :**

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Thermal Image Analysis

1. Test Date: 2016-08-22

2. Test Product: EMB-Q170A

3. Test Site: AAEON QE Dept.

4. Temperature Measurement:

4.1. 20 Channel Thermal Recorder:

4.1.1 OMRON Inc,

4.2.2 Model: ZR-RX45

Date of Calibration: 12/18/2015
Due date of Calibration: 12/17/2016
Serial Number: H30481978

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: 12/01/2015
Due date of Calibration: 11/30/2016
Serial Number: 1051444

5. Test Condition:

Test by DA-100: 25.0℃ with Cooler (Full speed)

6. Take Picture Time:

After power on 2 hours

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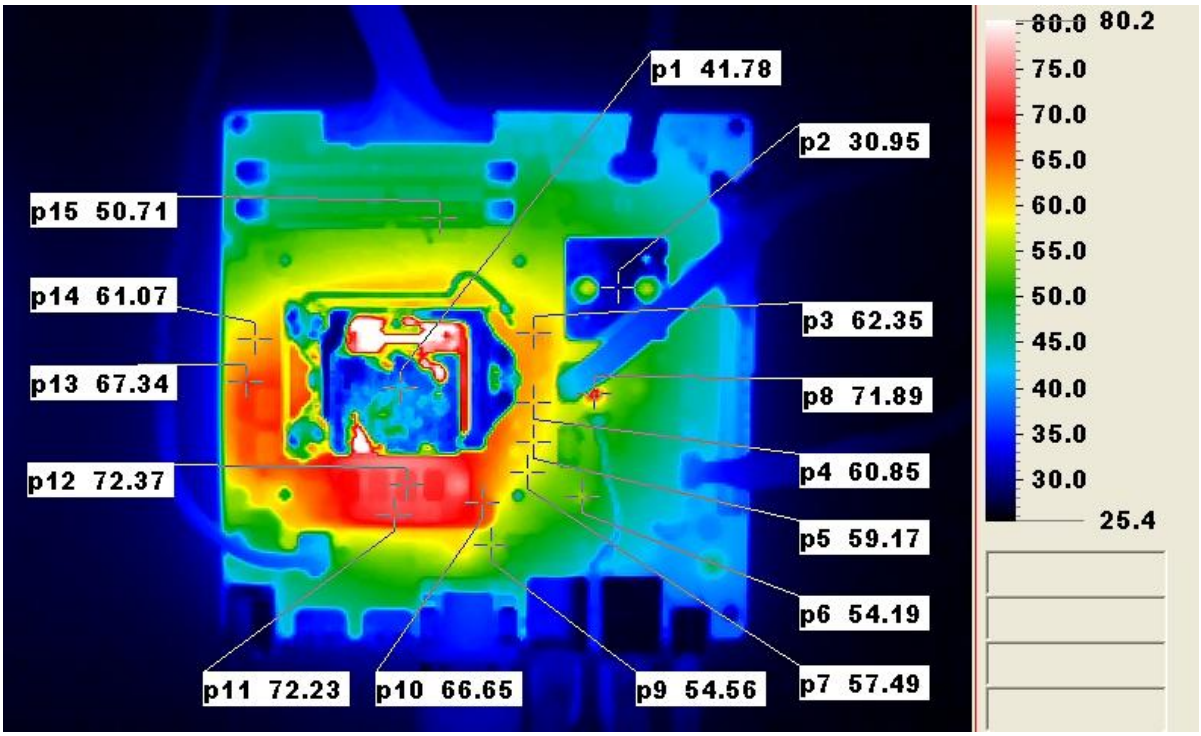
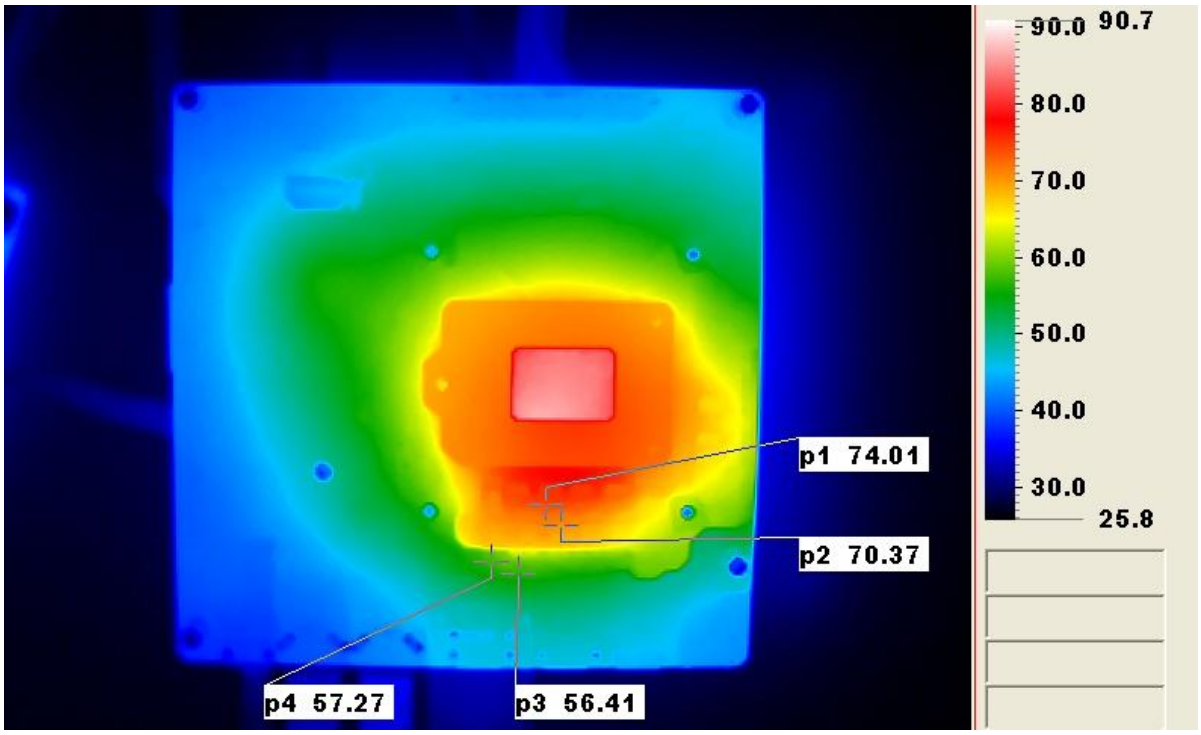
Temperature Profile Test:

Front Side:



Back Side:



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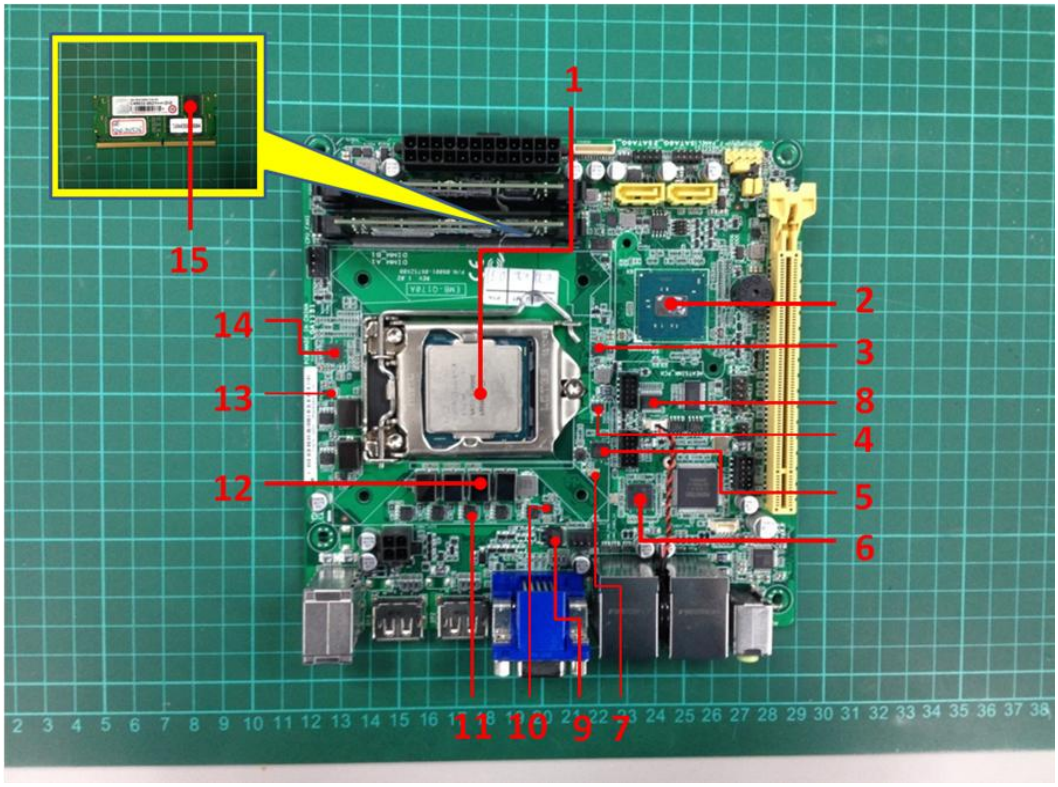
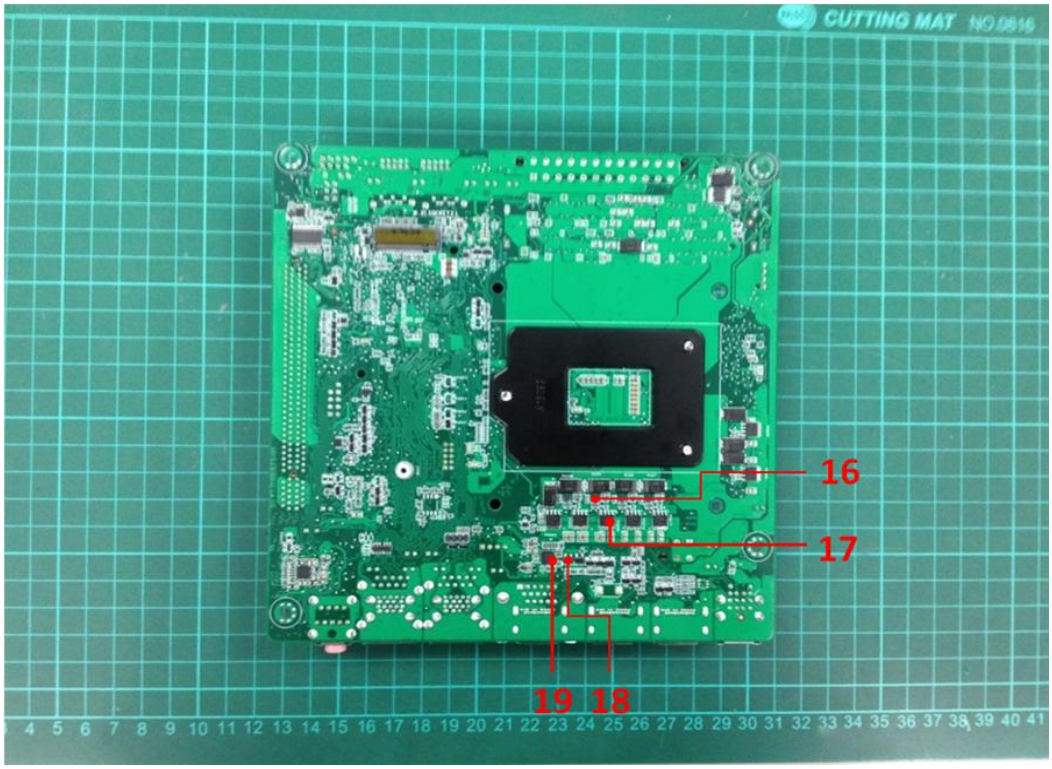
Terminal Recorder:

Measuring Thermal Couple Position：

Front Side:



Back Side:



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Using OMRON Inc / ZR-RX45 test

Point	Position	Describe	Tc (*1) (℃)	TAT(*2)	TPT(*3)	Note
				25℃	60℃	
1	LGA1151	CPU Intel Core i7-6700 3.40 GHz	71	35	70	Note 6
2	SU1	PCH Q170	108	32.4	67.4	
3	PU92	PWM:HPA02240	125	32.6	67.6	
4	PQ868	NMOS:EMB45P03P	150	29.6	64.6	
5	L1U1	LAN WGI219LM	106	31.2	66.2	
6	L2U1	LAN I211AT	85	34.6	69.6	
7	L1X1	CRYSTAL 25MHZ	70	31.5	66.5	Note 6
8	OU8	75232 (MULTIPLE RS-232 DRIVERS)	125	43.9	78.9	
9	OQ4	PMOS:EMF90P02A	150	34.5	69.5	
10	PU101	RT8202M	100	36.1	71.1	
11	PQ882	NMOS: PH1530CL	150	46.3	81.3	
12	PL8	POWER INDUCTOR 0.215UH/48A	125	35.1	70.1	
13	PU103	MOSFET DRIVER: RT9624G	100	40	75	
14	PU96	PWM: RT3607CE	100	32.4	67.4	
15	RAM	Memory chipset / SEC K4A8G085WB	95	31.7	66.7	
16	PU99	MOSFET DRIVER: RT9624G	100	52.8	87.8	
17	PQ880	NMOS:PH6030DLB	150	49.6	84.6	
18	GU400	74LVC1G125	125	37.6	72.6	
19	GVU1	IT6516BFN/BX-0062	100	47.5	82.5	
20	N/A	Air Temperature	N/A	25	60	

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Note(*):

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

2. "TAT" indicates the actual measured temperature under 25℃ working environmental.

3. "TPT" indicates the predicted temperature under product specification.

4. 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.

5. RTC battery avoid to put on heat position. Please do not exceed battery temperature specification.

6. Defect NO. : W150913LABD01

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