# EMB-Q170C

## Thermal Image Analysis Report

| | |
|---|---|
| Summary | ☐ **Pass**<br>☐ **Fail**<br>☑ **Pass with Deviation**<br>**Comment:**<br>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 / 08 / 10** | **KJ Wang** | **Jerry Chen** |



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## Sample Configuration & Quantity Under Test

- **Model name : EMB-Q170C**
- **CPU Board : EMB-Q170C Rev. 1.00**
- **CPU : Intel Core i7-6700 3.40 GHz**
- **BIOS : R0.3 ( EQH0CM03) (06/08/2016)**
- **Chipset: Intel Q170 Express Chipset**
- **Memory：innodisk / DDR4 2133 SODIMM 16GB *2 / SEC K4A8G085WB**
- **2.5” SATA HDD: WD / WD5000LPVX 500GB**
- **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: 2016-07-26**

**2. Test Product: EMB-Q170C**

**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: 2015/12/18**
**Due date of Calibration: 2016/12/17**
**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: 2015/12/01**
**Due date of Calibration: 2016/11/30**
**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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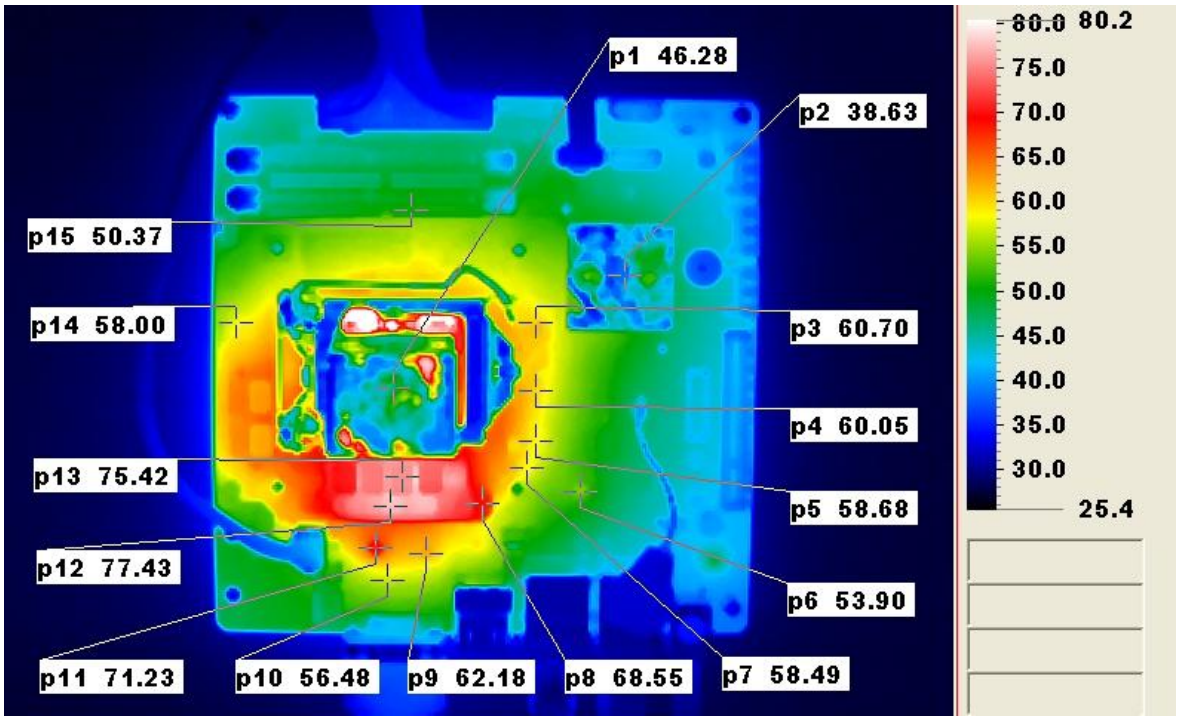
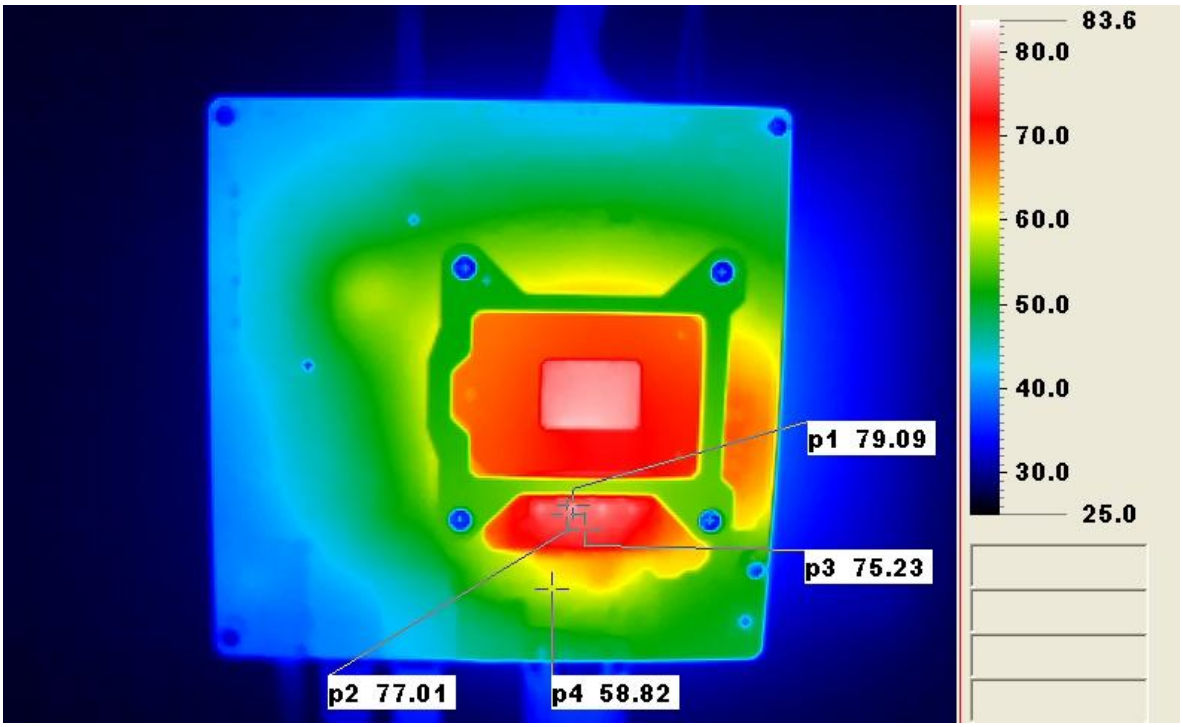
# Temperature Profile Test:

## Front Side:




## Back Side:



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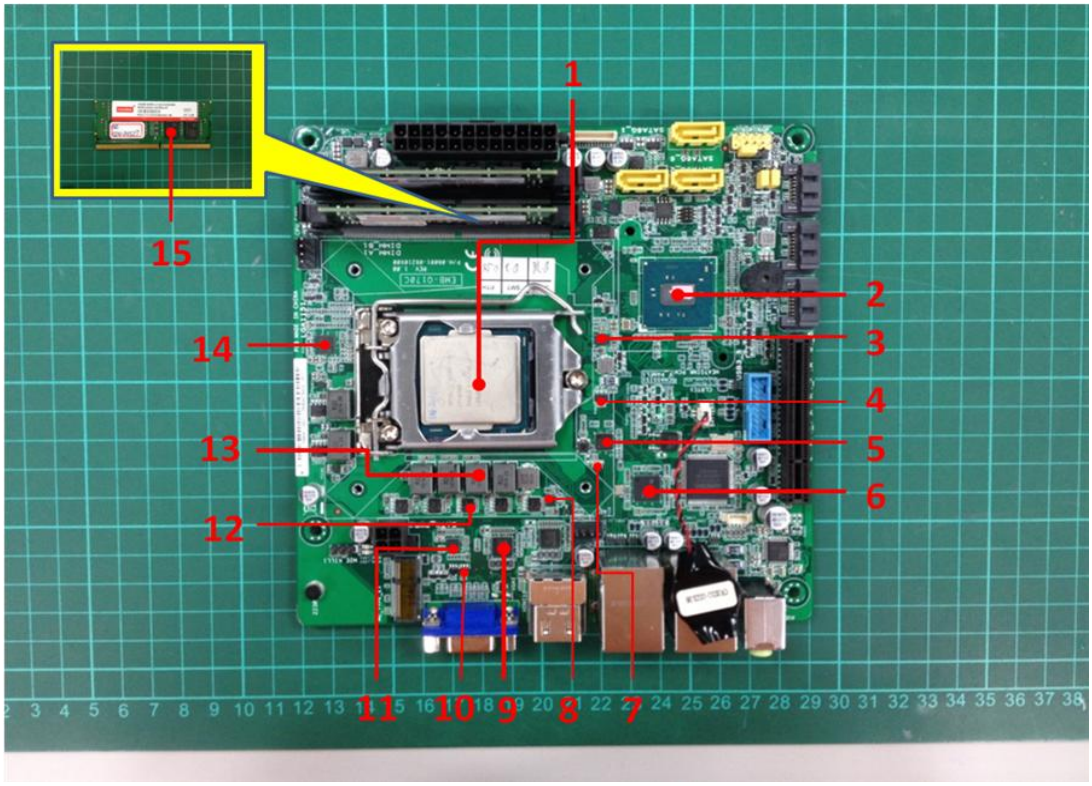
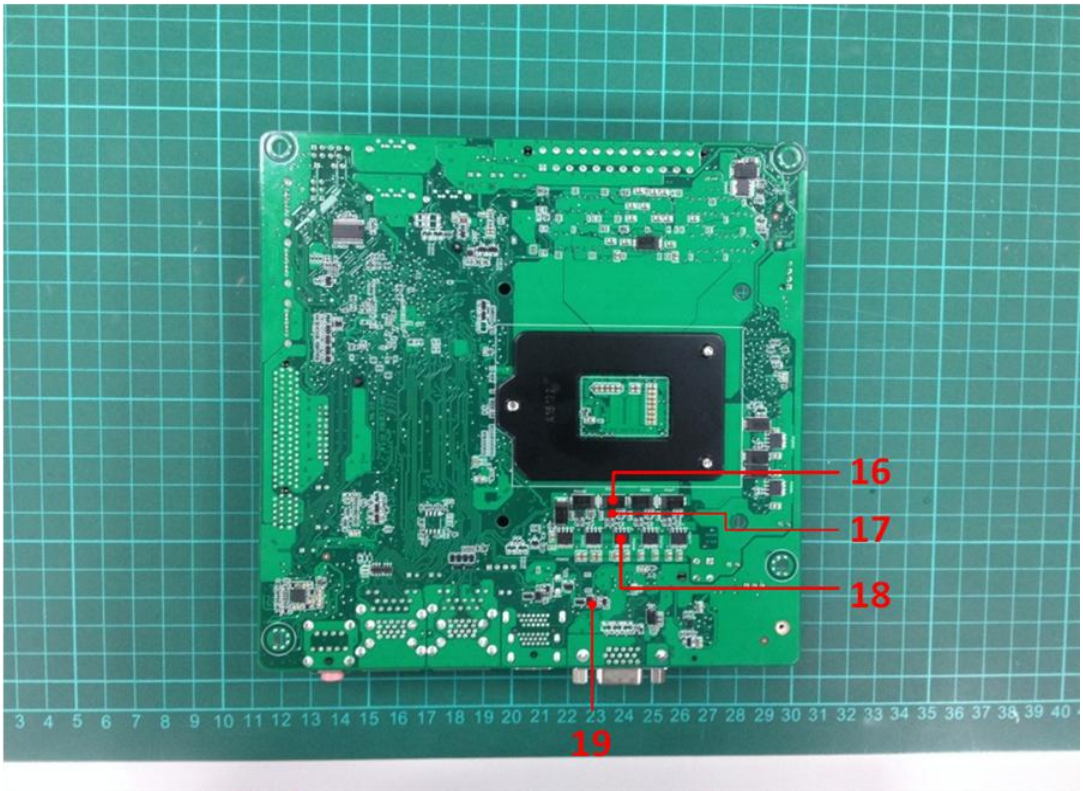
## Terminal Recorder:

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 | 35.2 | 70.2 | Note 6 |
| 2 | SU1 | PCH Q170 | 108 | 32.1 | 67.1 | |
| 3 | PU92 | PWM:HPA02240 | 125 | 32.3 | 67.3 | |
| 4 | PQ868 | NMOS:EMB45P03P | 150 | 29.5 | 64.5 | |
| 5 | L1U1 | LAN WGI219LM | 106 | 30.5 | 65.5 | |
| 6 | L2U1 | LAN I211AT | 85 | 32.6 | 67.6 | |
| 7 | L1X1 | CRYSTAL 25MHZ | 70 | 30.5 | 65.5 | Note 6 |
| 8 | PU101 | PWM:RT8202M | 100 | 35.9 | 70.9 | |
| 9 | HU2 | ASM1442K | 85 | 37 | 72 | |
| 10 | GU400 | 74LVC1G125 | 85 | 31.6 | 66.6 | |
| 11 | GVU1 | IT6516BFN | 100 | 34.1 | 69.1 | |
| 12 | PQ882 | NMOS: PH1530CL | 150 | 43.8 | 78.8 | |
| 13 | PL8 | POWER INDUCTOR 0.215UH/48A | 125 | 35.6 | 70.6 | |
| 14 | PU96 | PWM: RT3607CE | 100 | 32.2 | 67.2 | |
| 15 | RAM | Memory chipset / SEC K4A8G085WB | 95 | 31.9 | 66.9 | |
| 16 | PCE3 | 470UF/2V (7343/D) 20% | 105 | 40.7 | 75.7 | |
| 17 | PU99 | MOSFET DRIVER: RT9624G | 100 | 47.3 | 82.3 | |
| 18 | PQ880 | NMOS:PH6030DLB | 150 | 45.8 | 80.8 | |
| 19 | U103 | PCA9306DCUR | 100 | 33.2 | 68.2 | |
| 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. : BUL1605LABE01**



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