EMB-QM77

A0.2

Thermal Image Analysis Report

Summary	☐ **Pass** ☐ **Fail** ☑ **Pass with Deviation** **Comment: Temperature 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
2012 / 05 / 07	Vincent Chen	Clement Chien

Sample Configuration & Quantity Under Test

- **Model name :** EMB-QM77
- **CPU :** Intel core i7-3610QE / 2.3GHz
- **Chipset :** Intel QM77 Express
- **Memory :** Transcend 4G DDR3 1600 SODIMM CL11 x2
- **HDD :** WD WD6402AAEX 640GB SATA3
- **BIOS :** EMB-QM77 R0.7
- **Test Software :** Windows 7 / Run PassMark Burn In Test 7.0
- **Power :** AT Power
- **CPU Fan:**

Thermal Image Analysis

1. Test Date: 2012-05-04

2. Test Product: EMB-QM77

3. Test Site: AAEON Internal Lab.

4. Temperature Measurement:

4.1. 40 Channel Thermal Recorder:

4.1.1 YOKOGAWA Inc,

4.2.2 Model: DA100-13-1D

Date of Calibration: 2011/10/12

Serial Number: 12A323190

4.2. IR Scanner: Infrared Camera

4.2.1 NIPPON AVIONICS CO., LTD.

4.2.2 Model: TVS-100

Date of Calibration: 2011/07/11

Serial Number: 0179L2746

5. Test Condition:

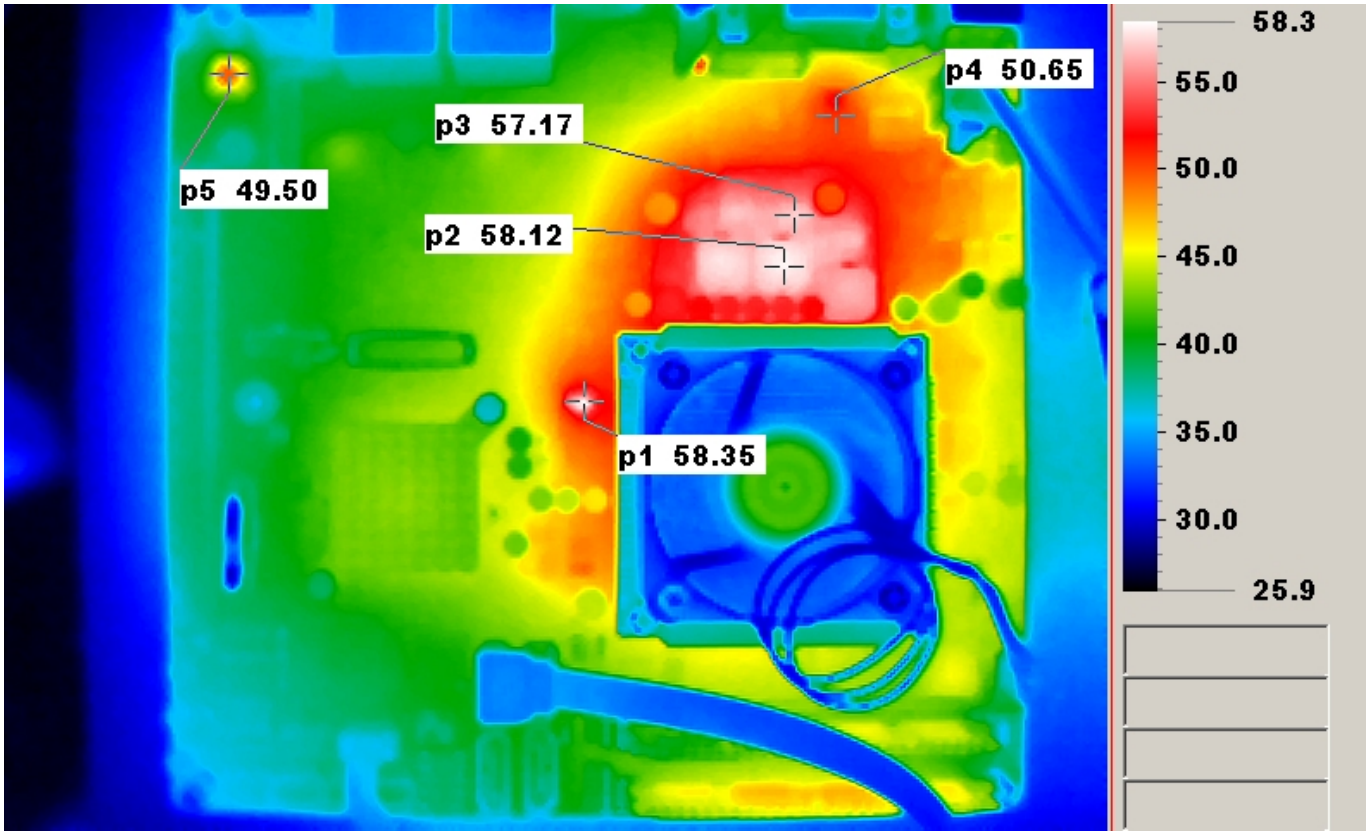
Component Side-1 (Test by DA-100): 25.0℃ With CPU Fan

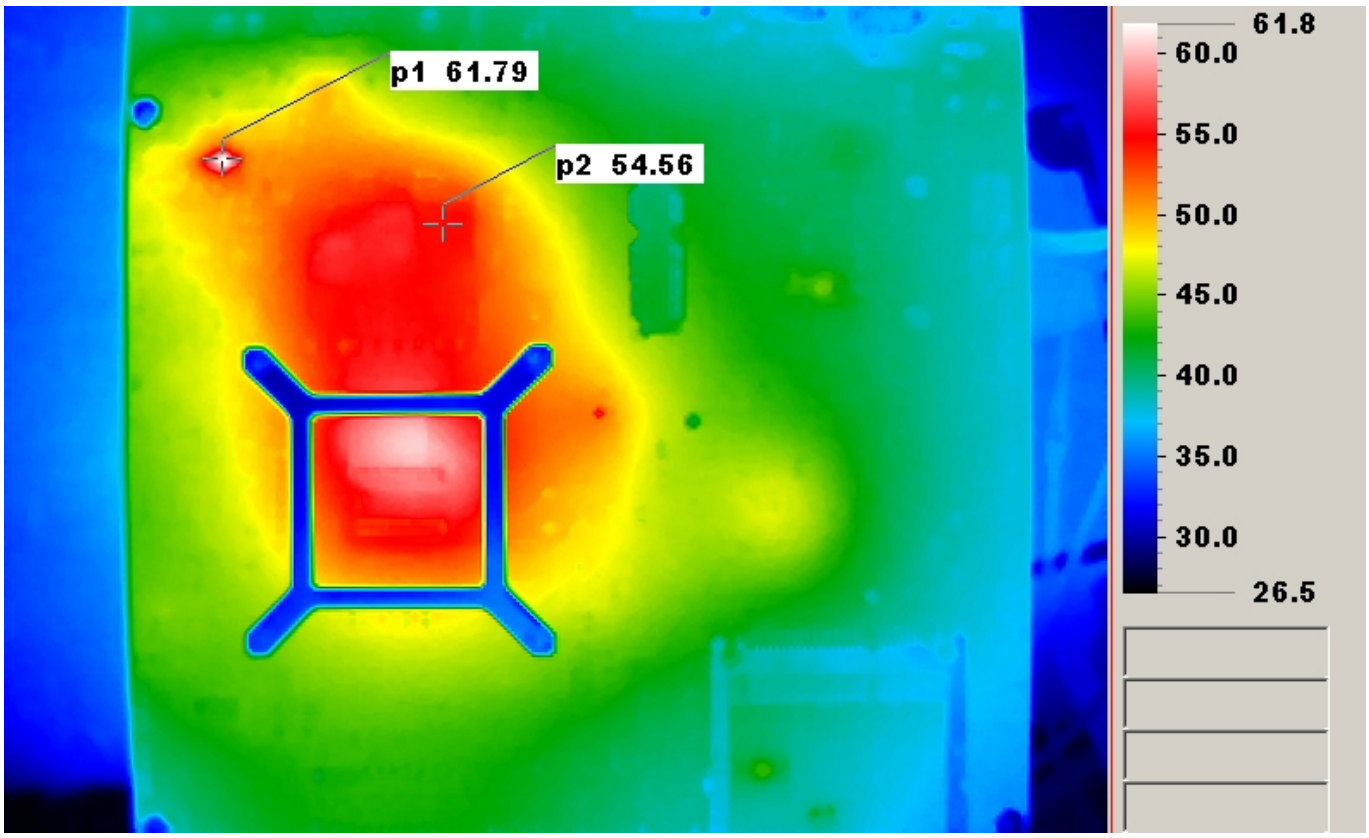
6. Take Picture Time:

After power on 2 hours

Temperature Profile Test:

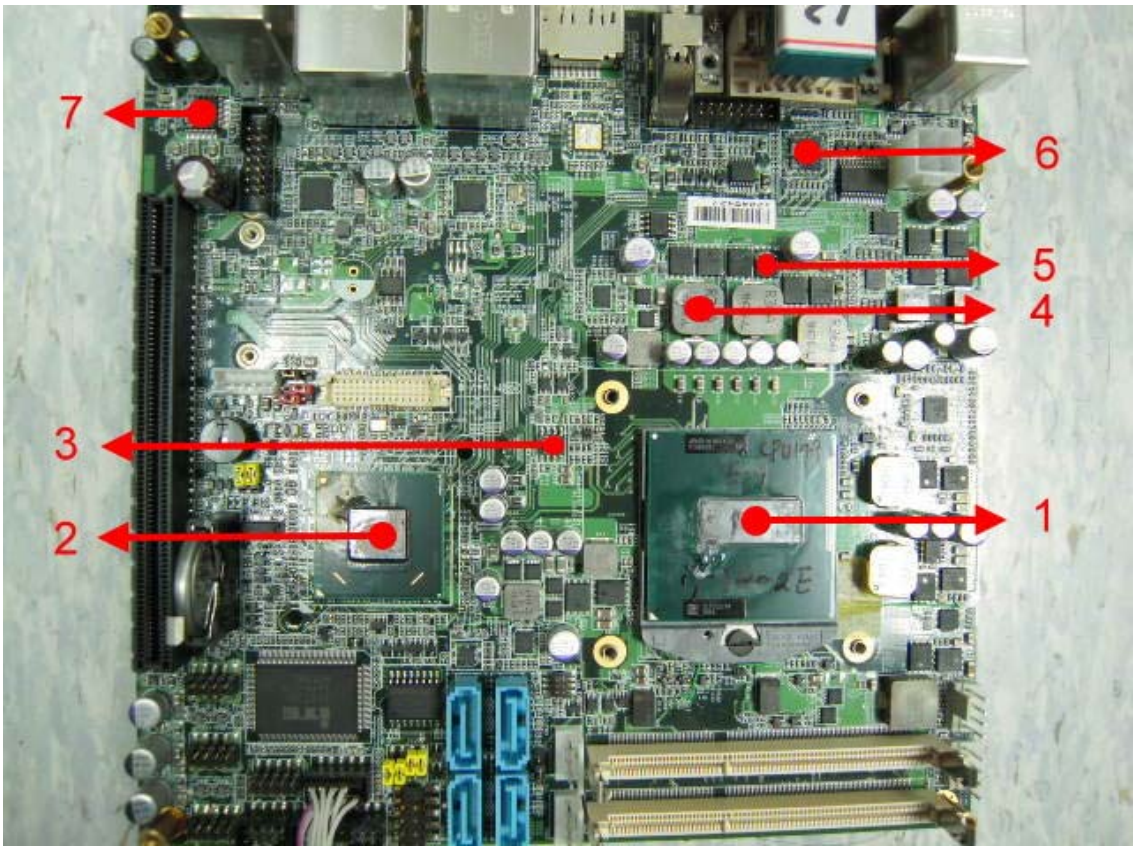
Component Side:

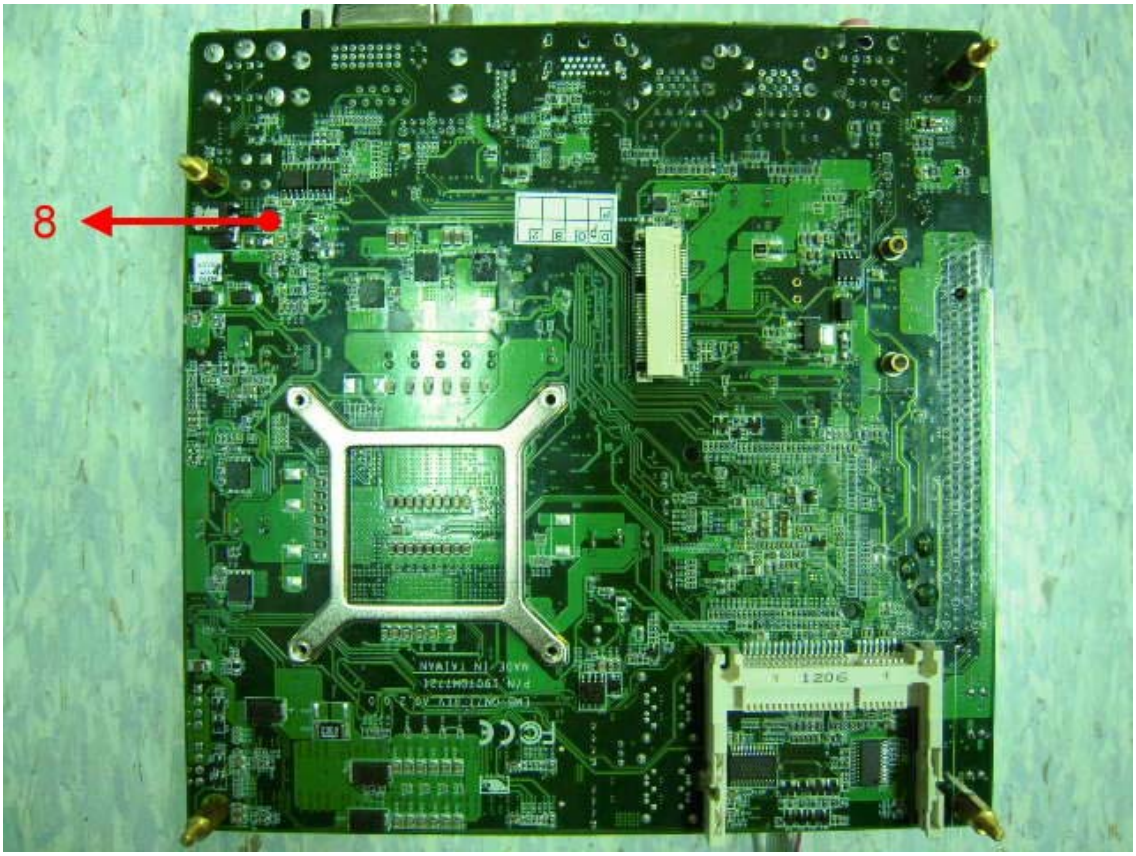




Terminal Recorder:

Measuring Thermal Couple Position：





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

Point	Position	Describe	Tc (*1) (℃)	Tm (*2) Measured Under		Note
				25℃	60℃	
1	CPU	Intel i7-3610QE / 2.30GHz	105	61.2	96.2	
2	U16	(TF)Chipset PCH.INTEL.BD82QM77	108	38.8	73.8	
3	U20	(TF)5A Ultra Low Dropout.Linear Regulator.APEC.APE8955MP	100	50.7	85.7	
4	L19	(TF)COIL.0.36uH.Irms=34A.20%.MDPanasonic.ETQP4LR36AFC	130	47.2	82.2	
5	Q48	(TF)PWR.PMPAK5X6 N-MOSFET.APEC.AP0503GMT-HF	125	45.5	80.5	
6	U42	(TF)Digital Video Level Shifter.for DP to HDMI.ASMEDIA.ASM1442	100	42.3	77.3	
7	U46	(TF)HIGH DEFINITIOND.AUDIO CODEC.REALTEK.ALC662-GR	100.5	43.4	78.4	
8	U63	(TF)NSOIC 8P.RS-485 Transceivers.SIPEX.SP485ECN-L	100	43.2	78.2	
09	Memory	Transcend 4G DDR3 1600 SODIMM CL11	85	46.5	81.5	

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.