EMB-H81B

Thermal Image Analysis Report

Test Cause
For ATRF No. QE150120 Request

Summary	☐ Pass ☐ Fail ☑ Pass with Deviation Comment: Two temperature points advise need improving.

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

Issue date	Approval	Test Engineer
2015 / 03 / 13	KJ Wang	Jerry Chen

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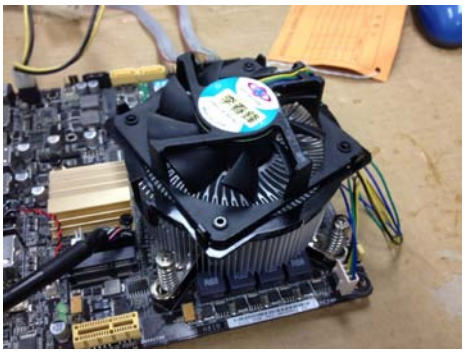
Sample Configuration & Quantity Under Test

- **Model name : EMB-H81B R2.00**
- **CPU Board : EMB-H81B**
- **CPU : Intel Core i7-4790S / 3.20GHz**
- **BIOS : R2.0 (EH81BT20) (01/21/2015)**

Chipset: Intel(R) H81

- **Memory：DSL DDR3 1600 8GB*2 / Hynix H5TQ4G83MFR**
- **2.5” SATA HDD: : WD WD5000LPVX / 500GB**
- **Test Software : Windows 7 / Run PassMark Burn In Test 8.0 Pro**
- **AT Power Supply: AT to simulate ATX / Zippy HG2-6400P**
- **CPU Cooler :**



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Thermal Image Analysis

1. Test Date: 2015-03-12

2. Test Product: EMB-H81B

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: 2014/09/11

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: 2014/12/20

Serial Number: 0179L2746

5. Test Condition:

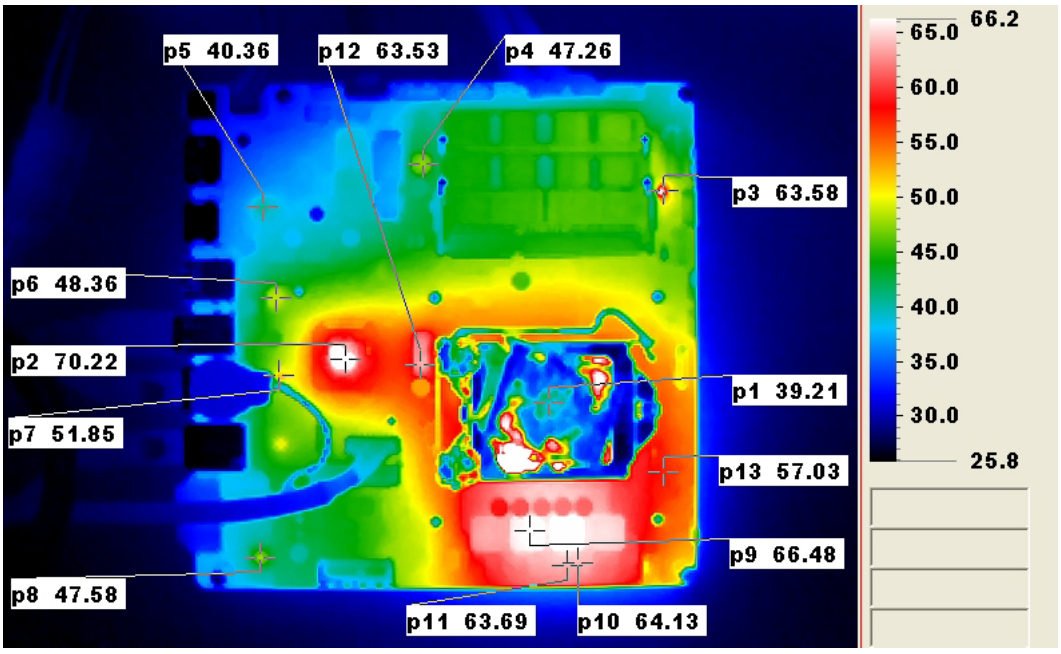
Test by DA-100: 25.0℃ with Cooler

6. Take Picture Time:

After power on 2 hours

Temperature Profile Test:

Component Side:



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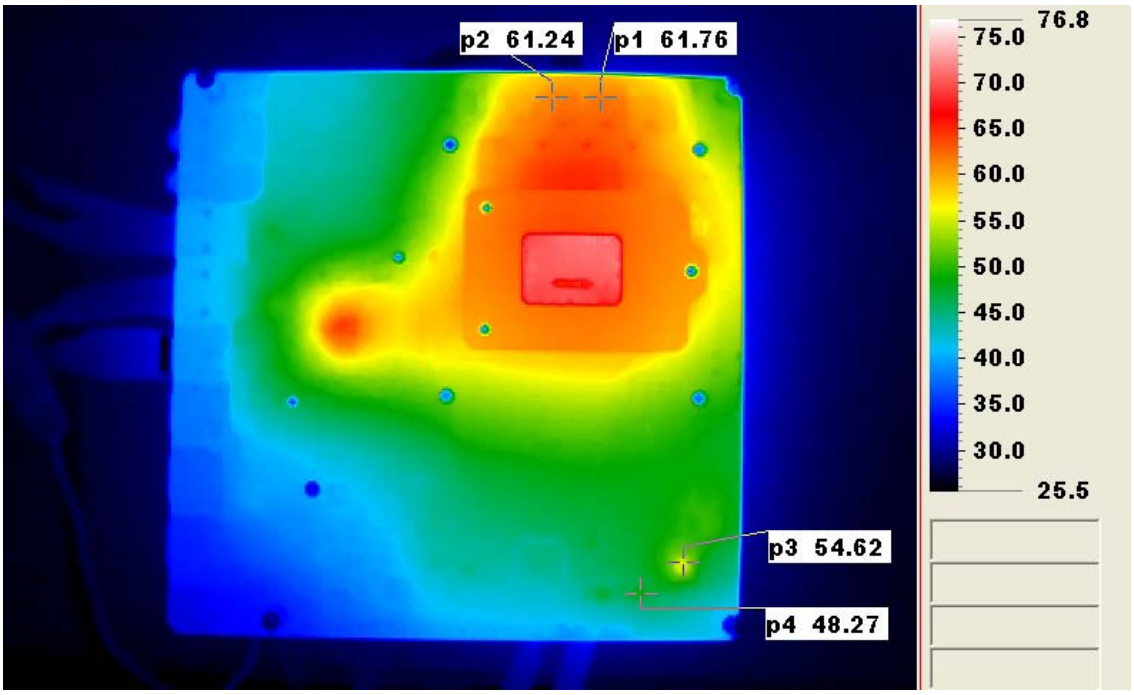
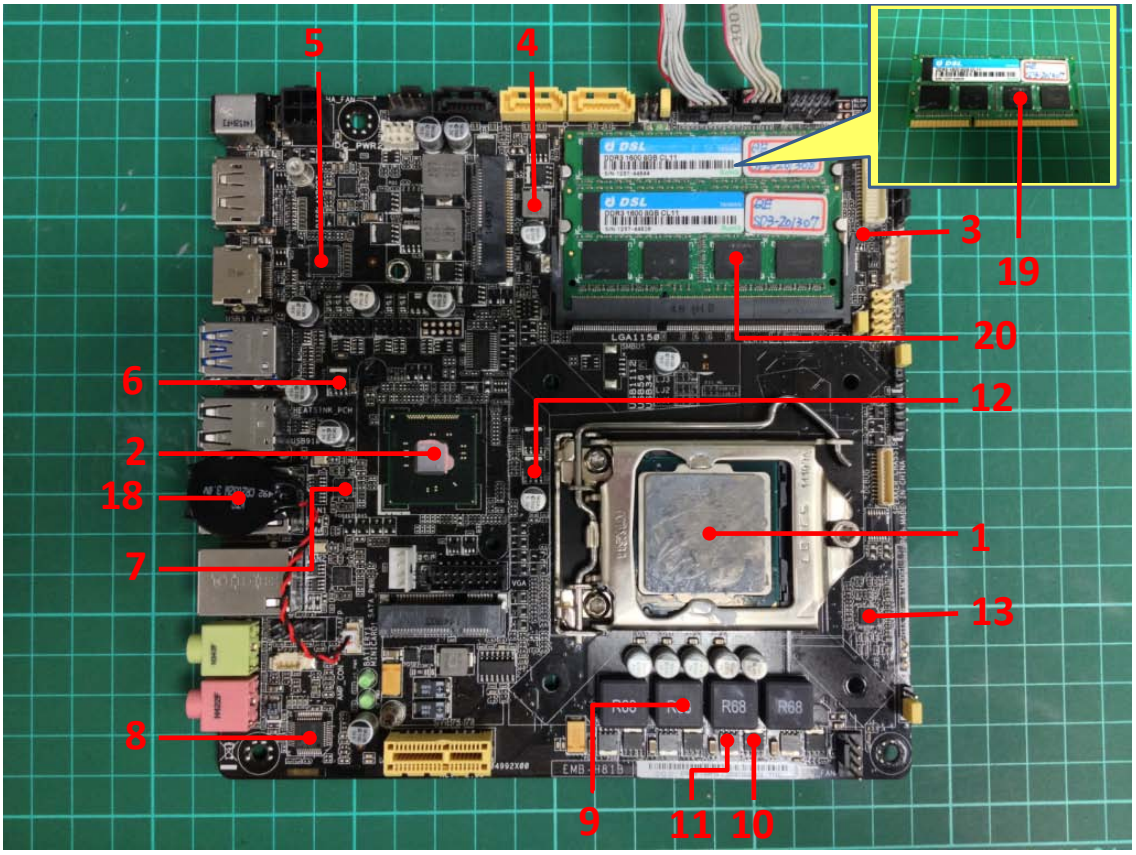
Back Side



Terminal Recorder:

Measuring Thermal Couple Position：



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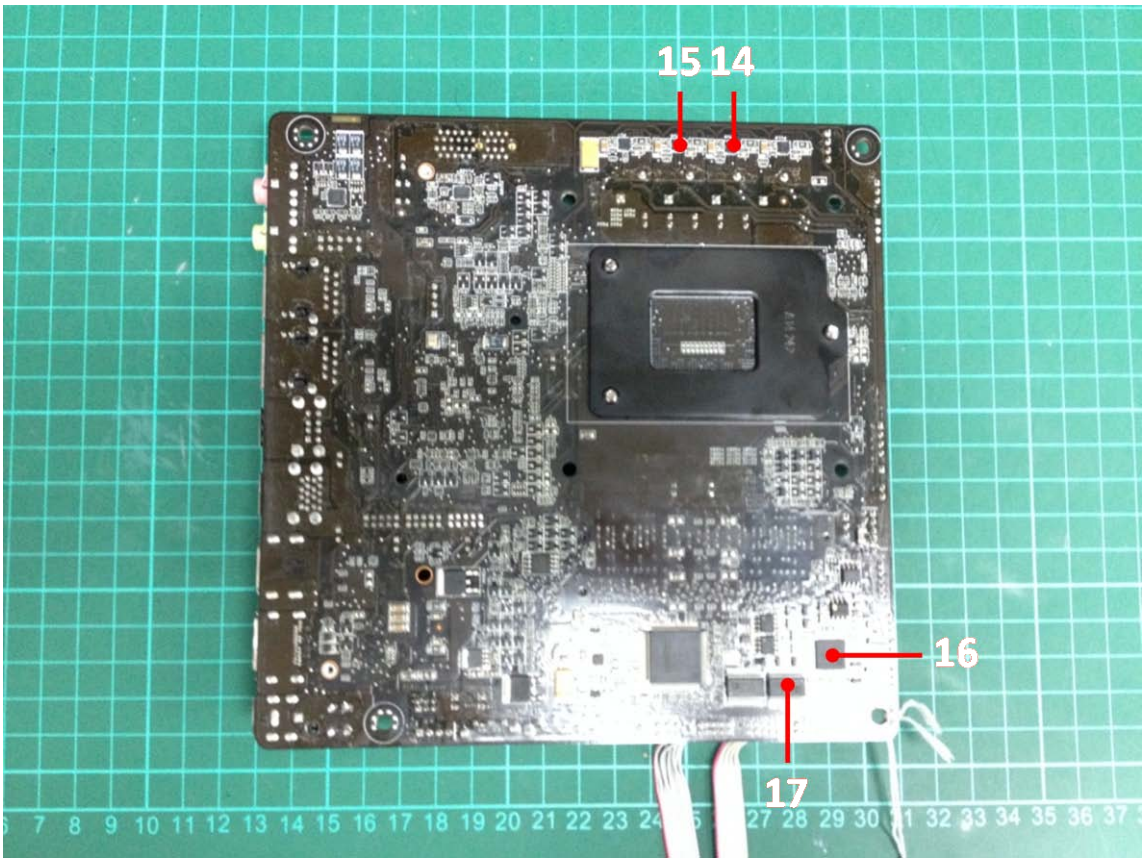

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Using YOKOGAWA / DARWIN DA100-100-13-1D test

Point	Position	Describe	Tc (℃)	Tm (25℃)	Tm (60℃)	Note
1	CPU	Intel i7-4790S 3.20GHz	71.35	41.1	**76.1**	**Note4**
2	PCH	Intel PCH DH82Q87 (SR173)	104	38.6	73.6	
3	LPU1	GMT G9141T11U	100	54.3	89.3	
4	PL4	Cyntec PCMB063T-1R5MS	125	35.6	70.6	
5	U11	Asmedia ASM1442K (A1)	85	34	69	
6	PQ29	NXP PH6030DLB	90	36.6	71.6	
7	L2U1	Realtek RTL8111G-CG	85	39.8	74.8	
8	AU1	Realtek Audio Codec ALC887-VD2-CG	85	36.8	71.8	
9	PL6	Chung Shuo CS1112-R68-I43UL	125	36	71	
10	PQ44	NXP PH2530AL	90	37.7	72.7	
11	PQ43	NXP PH6030DLB	90	39	74	
12	PQ31	NXP PH6030DLB	90	37.3	72.3	
13	PU6	RICHTEK RT8884BGQW	85	31.1	66.1	
14	PU9	Richtek RT9610AZQW	100	39.5	74.5	
15	PU8	Richtek RT9610AZQW	100	39.3	74.3	
16	LU1	Chrontel CH7511B-BF	85	39.5	74.5	
17	BU3	AD ADM213EARSZ	100	34.9	69.9	
18	CR2032	KTS BCR2032H7.2AM1UB(Battery)	70	26.7	**61.7**	**Note4**
19	RAM-1	RAM Chipset / Hynix (H5TQ4G83MFR)	95	33.5	68.5	
20	RAM-2	RAM Chipset / Hynix (H5TQ4G83MFR)	95	30.4	65.4	
21	N/A	Air Temperature	N/A	25	60	

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. : W141101QEE02

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