EMB-APL1

Thermal Image Analysis Report

Summary	☐ **Pass** ☐ **Fail** ☑ **Pass with Deviation** **Comment:** _There are 4 temperature points marginal passed, the functions are stable,_____

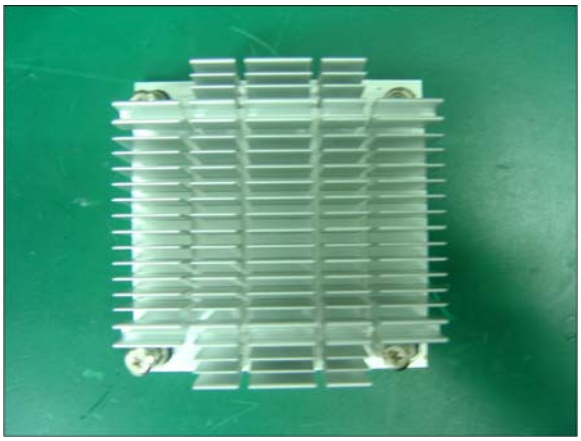
Test Result Summary				
	Critical	Major	Minor	Enhancement
Defect Found	0	0	0	4
Defect Unsolved	0	0	0	4

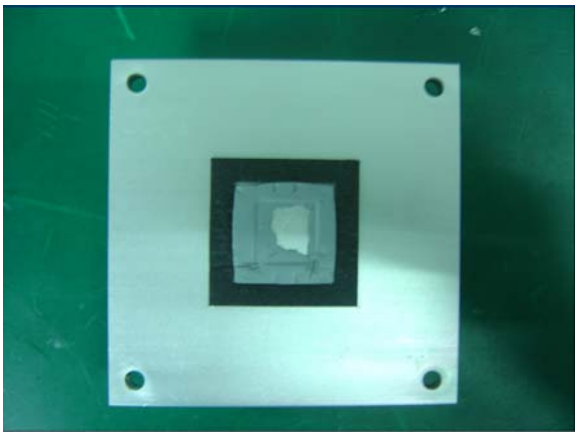
Issue date	QE Manager	Test Engineer
2017 / 10 / 05	KJ Wang	Juno Cheng

AAEON Technology Inc.
5F, No.135, Lane 235, Pao Chiao Rd.,
Hsin-Tien City, Taipei, Taiwan, R.O.C.
TEL: +886-2-8919-1234
FAX: +886-2-8919-1053

Sample Configuration & Quantity Under Test

- **Model name : EMB-APL1**
- **CPU : Intel Pentium CPU N4200 @ 1.10GHz**
- **Memory : Transcend DDR3L-1600 4GB(K4B4G084GD) *2**
- **SATA HDD : Kingston 120GB**
- **BIOS : T0.901 (EAPLAT0901)(08/01/2017)**
- **Test Software : Windows 10 / Run PassMark Burn In Test 8.1 Pro**
- **Power : FSP060-DBAE1**
- **Heat Sink :**





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Thermal Image Analysis

1. Test Date: 2017-10-05

2. Test Product: EMB-APL1 A1.0

3. Test Site: AAEON QE Dept.

4. Temperature Measurement:

4.1. 10 Channel Thermal Recorder:

4.1.1 OMRON

4.1.2 Model: ZR-RX25

Date of Calibration: 2016/11/30

Serial Number: TH-149

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: 2016/11/29

Serial Number: 1051444

5. Test Condition:

Test by DA-100: 26.0℃ with Heat Sink

6. Take Picture Time:

After power on 2 hours

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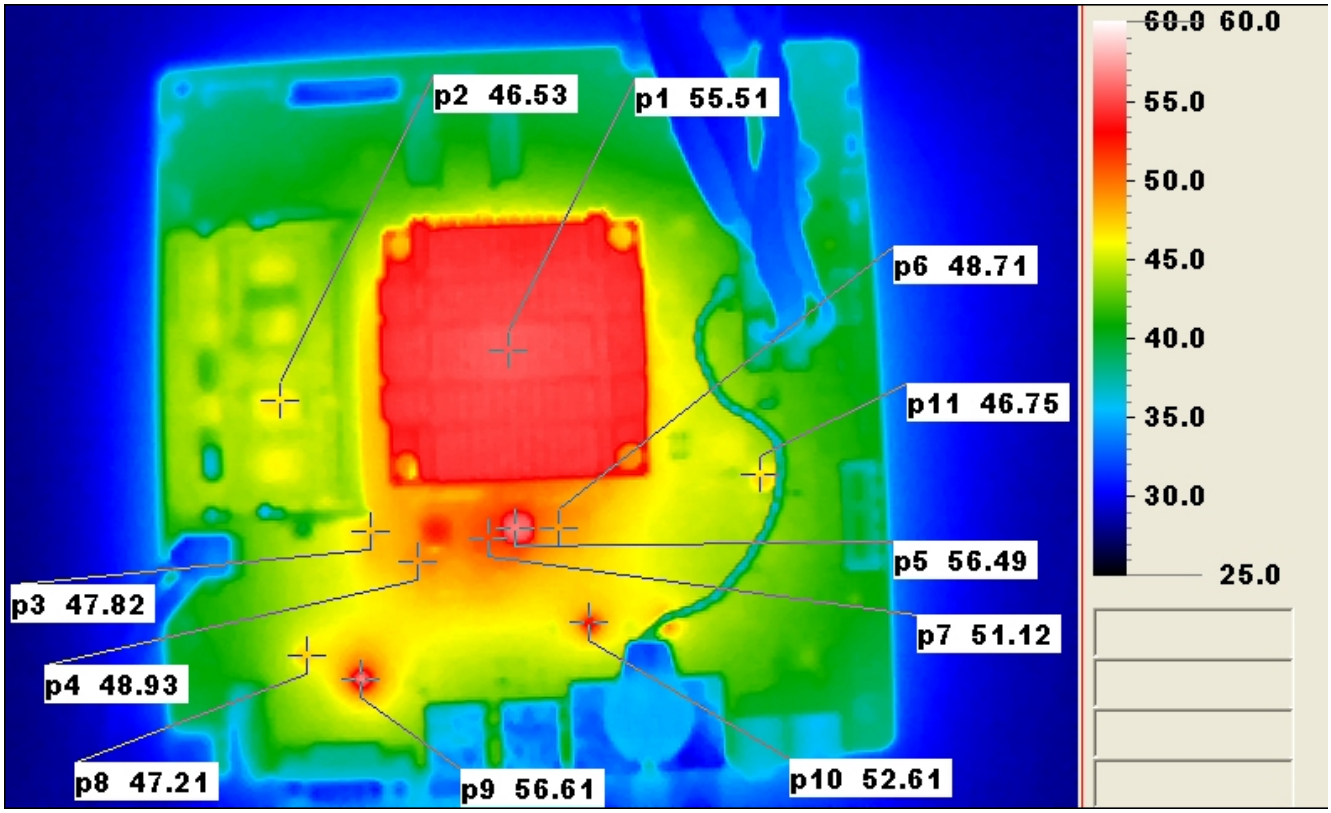
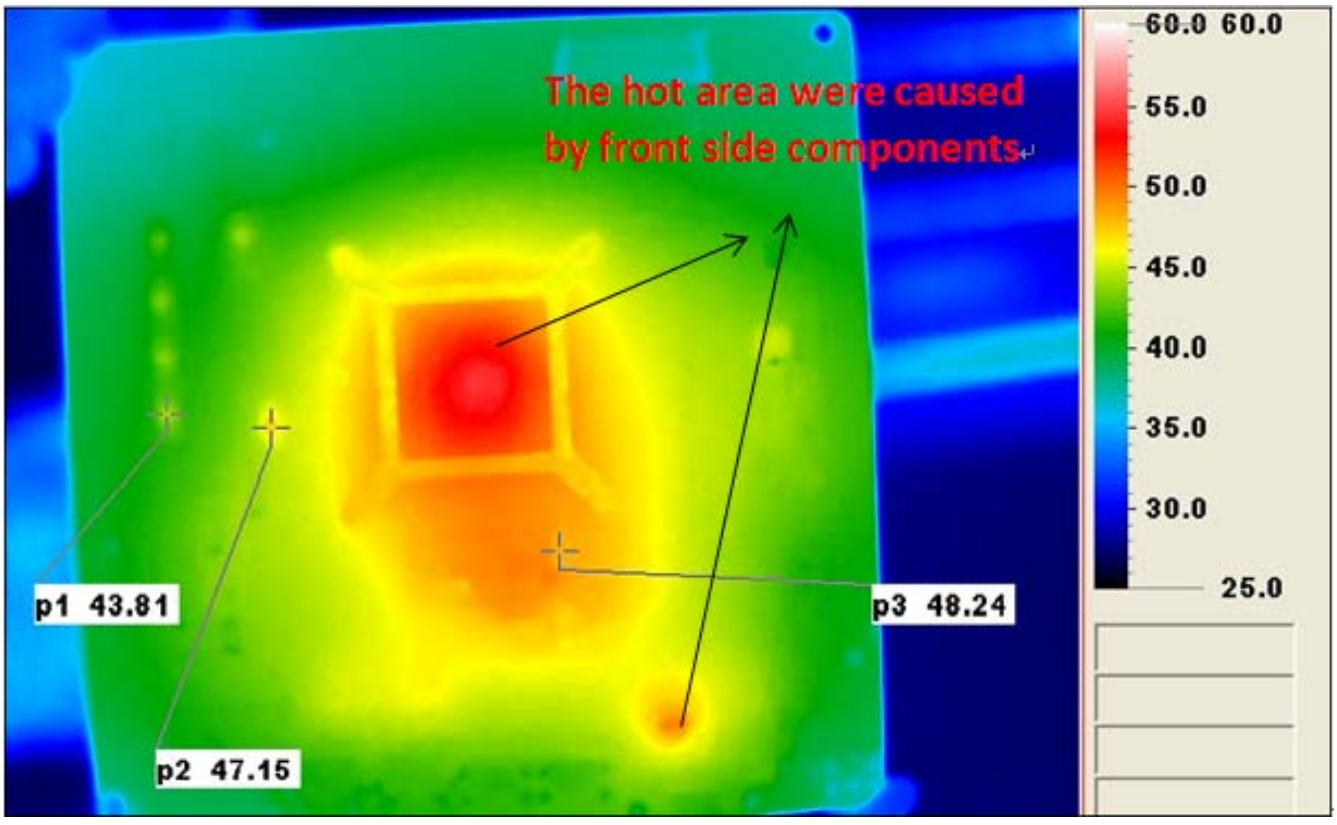
Temperature Profile Test:

Component Side:





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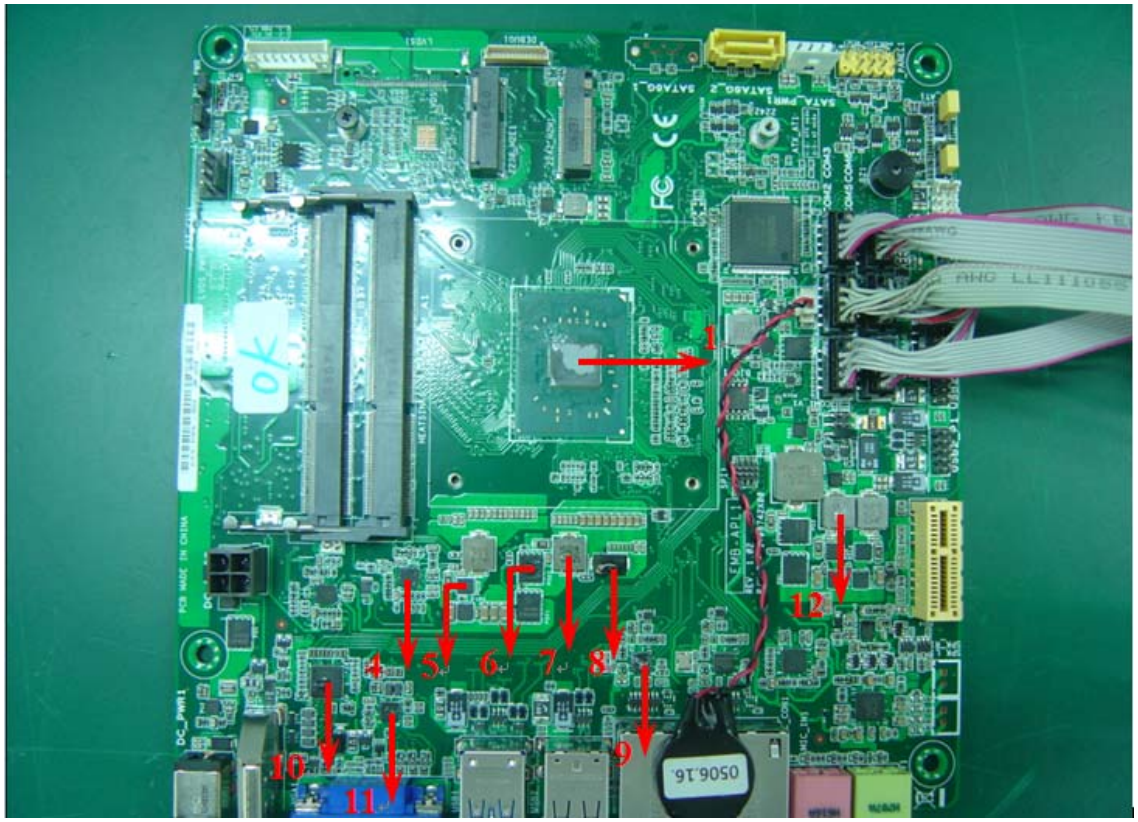
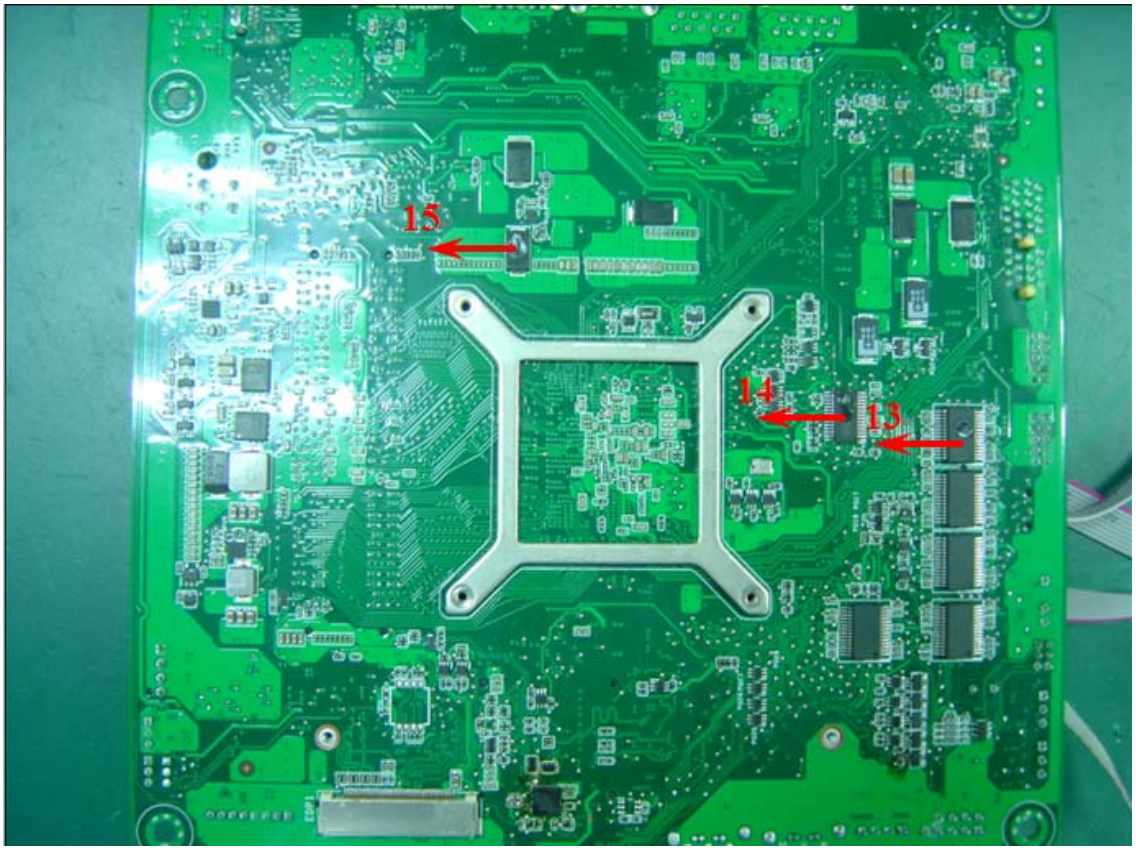
Terminal Recorder:

Measuring Thermal Couple Position：





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Using OMRON / ZR-RX25 test

Point	Position	Describe	Tc (*1) (℃)	TAT(*2)	TPT(*3)	Note
				26.0℃	60℃	
1	U1	CPU INTEL N4200 1.1G/2M SR2Z5 BGA	105	57.9	92.9	
2		Memory chipset - 1	95	50.5	**85.5**	**Note 4**
3		Memory chipset - 2	95	50.5	**85.5**	**Note 4**
4	PU9	PWM CONTROLLER RT3601EAGQW	100	49.7	84.7	
5	PQ20	N-MOSFET BSZ100N06LS3 G	125	50.7	85.7	
6	PQ22	N-MOSFET BSC027N04LS G	125	53.3	88.3	
7	PL9	POWER INDUCTOR 0.24UH/35A 20%	125	57.2	92.2	
8	PCE9	PL EL 470UF/2V (7343/D) 20%	105	51.0	86.0	
9	LAN1	C.S RTL8111G-CG QFN-32	125	53.1	88.1	
10	HU1	C.S ASM1442K (A1) QFN-48	85	48.1	**83.1**	**Note4**
11	GVU1	BRIDGE IT6516BFN/BX-0062	100	55.4	90.4	
12	PL2	INDUCTOR 4.7UH/5.5A SMD 20%	125	47.5	82.5	
13	U31	INTERFACE TRS213IDBR SSOP-28	125	46.1	81.1	
14	U28	INTERFACE F81438G TSSOP-28	85	49.4	**84.4**	**Note4**
15	PCE7	PL EL 470UF/2V (7343/D) 20%	105	51.8	86.8	

Note(*):

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

2. "TAT" indicates the actual measured temperature under product specification.

3. "TPT" indicates the predicted temperature under 25℃ working environmental.

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.

4. Defect NO. : BUL1618LABD02

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