PBA-QM87

Thermal Image Analysis Report

Summary	☐ **Pass** ☐ **Fail** ☑ **Pass with Deviation** **Comment: 1.There are 5 component temperature was estimated to be in marginal temperature point in comparison with component datasheet.** **2. There are 1 component in the absence of Tc and Tj specification, So we are unable to determine.** **3. Thermal test occur "The 3D test was interrupted" error, when during run Burn in test 8.0.** **This 3D Graphics error (The 3D test was interrupted) is Intel knowing issue. Please reference the Intel release notes the Bug ID: 5557283 (Occur "The 3D test was interrupted" error when run Burnin 8.0 AC & DC.)**

Test Result Summary

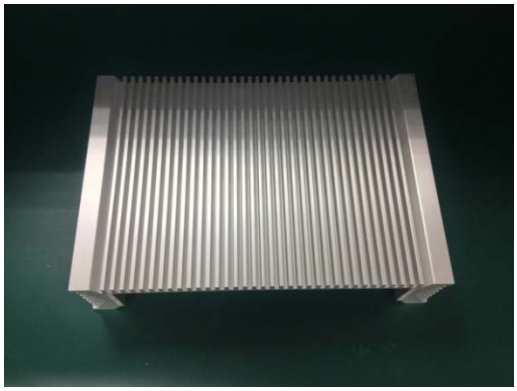
	Critical	Major	Minor	Enhancement
Defect Found	0	0	0	6
Defect Unsolved	0	0	0	6

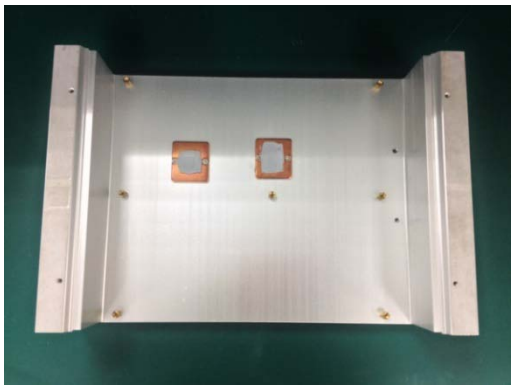
Issue date	Approval	Test Engineer
2015 / 06 / 17	KJ Wang	Juno Cheng

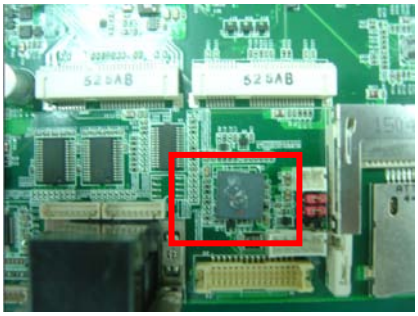
AAEON Technology Inc.
5F, No.135, Lane 235, Pao Chiao Rd.,
Hsin-Tien City, Taipei, Taiwan, R.O.C.
TEL: +886-2-8919-1234
FAX: +886-2-8919-1053

Sample Configuration & Quantity Under Test

- **Model Name : PBA-QM87 A0.2**
- **M/B Name: PBA-QM87 A0.2**
- **BIOS : PBA-QM87 R0.2 (RM87AM02) (12/02/2014)**
- **CPU : Intel Core i5-4402E 1.60GHz**
- **Memory : Transcend DDR3L 1600 2GB / SEC K4B2G0846Q**
- **3.5“ SATA HDD : Seagate ST380815AS 80GB**
- **Test Software : Windows 8 / Run PassMark Burn In Test 8.0 Pro**
- **Adapter：FSP / FSP084-DMAA1 12V 7A MAX**
- **AT Power：Zippy / HG2-6400P**
- **Heat sink:**







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

Thermal Image Analysis

1. Test Date: 2015-06-12

2. Test Product: PBA-QM87

3. Test Site: AAEON QE Dept.

4. Temperature Measurement:

4.1. 20 Channel Thermal Recorder:

4.1.1 SUNNICO Inc,

4.2.2 Model: ZR-RX45A

Date of Calibration: 2014/12/12

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: 2014/12/19

Serial Number: 1051444

5. Test Condition:

Test by DA-100: 25℃ With Heat Sink

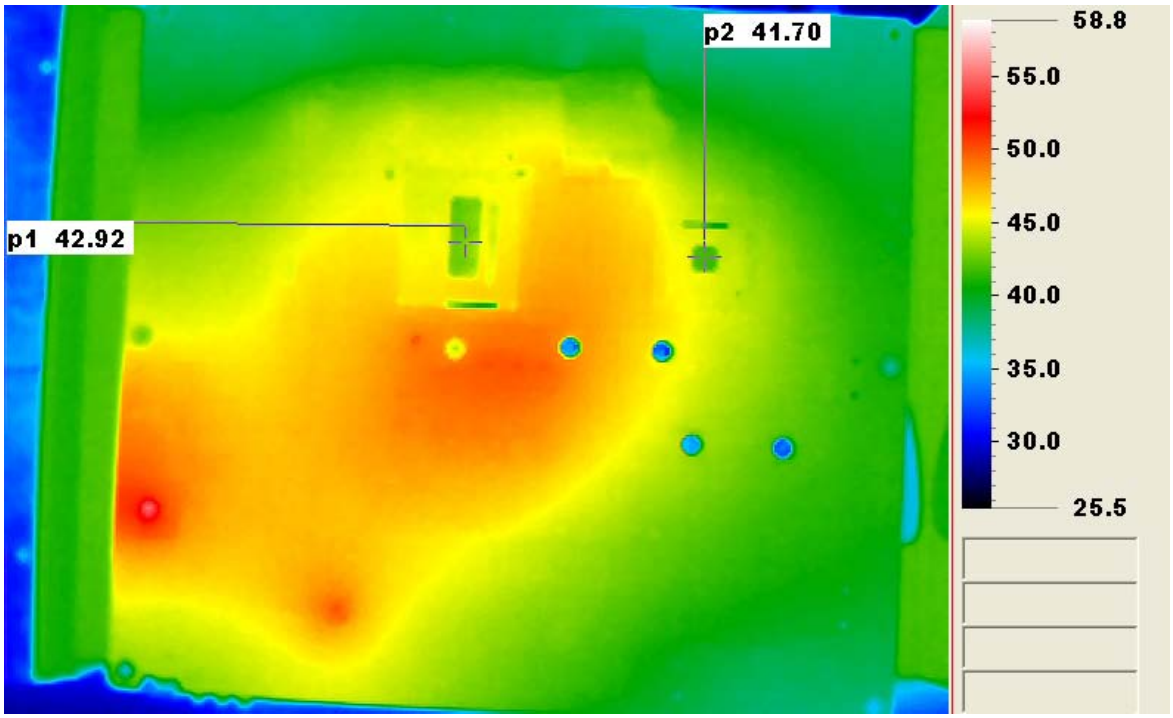
6. Take Picture Time:

After power on 2 hours

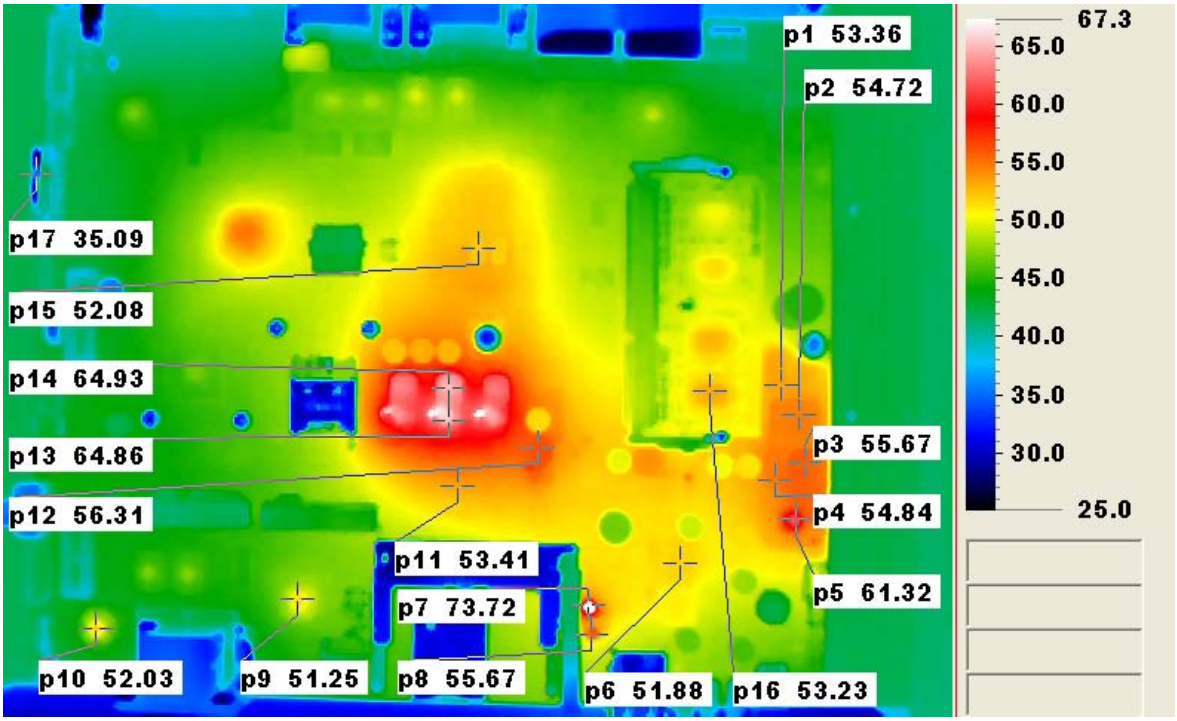
AAEON Technology Inc.
5F, No.135, Lane 235, Pao Chiao Rd.,
Hsin-Tien City, Taipei, Taiwan, R.O.C.
TEL: +886-2-8919-1234
FAX: +886-2-8919-1053

Temperature Profile Test:

Front Side:



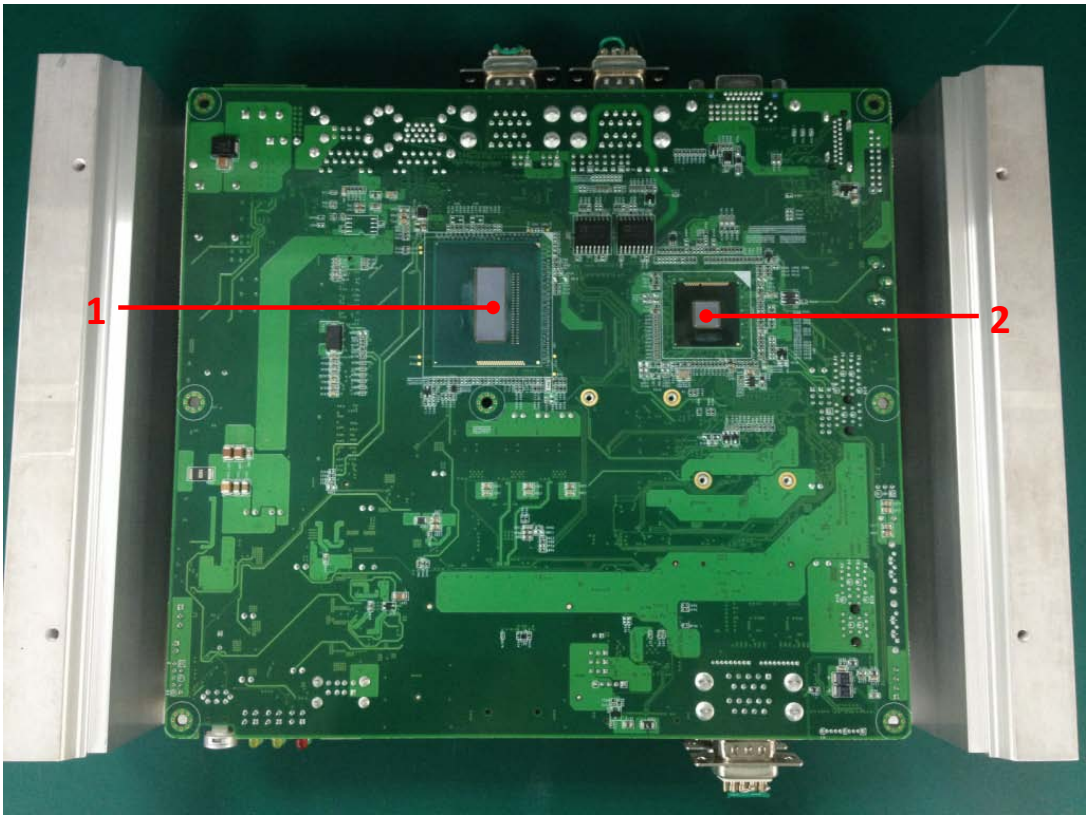
Rear Side:

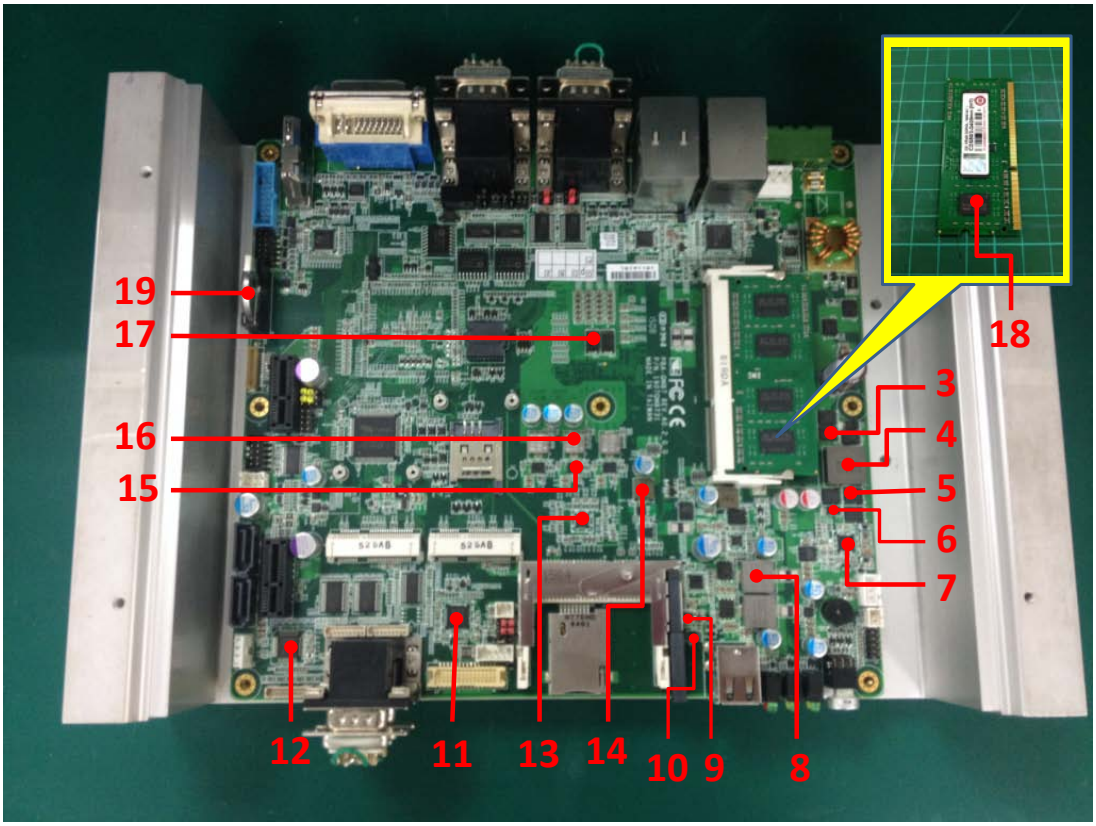


AAEON Technology Inc.
5F, No.135, Lane 235, Pao Chiao Rd.,
Hsin-Tien City, Taipei, Taiwan, R.O.C.
TEL: +886-2-8919-1234
FAX: +886-2-8919-1053

Terminal Recorder:

Measuring Thermal Couple Position：





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

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

Point	Position	Describe	Tc (*1) (℃)	Tm (*2) Measured Under		Note
				25℃	60℃	
1	U80	CPU - Intel Core i5-4402E 1.6GHz	100	53.1	88.1	
2	U79	IC.Chipset PCH.INTEL.DH82QM87 SR17C	108	52.1	87.1	
3	Q58	N-Channel.Vds=60V.20V.Ids=20A.FAIRCHILD.FDMS86540	125	56.4	91.4	
4	L6	COIL.2.2uH.DCR=4.6m ohm.GOTREND.GSTC135P-2R2MF	125	57.7	92.7	
5	U18	N-MOSFET.Ids=21.7A.SO-8FL.ON.NTMFS4C55NT1G	125	58.6	93.6	
6	D14	D Schottky.VDC=40V.Barrier Rectifiers.Willas.SK34A	100	58.5	93.5	Note3
7	U12	IC.QFN 32Pin.Regulator.LINEAR.LTC3780EUH#PBF	100	64.2	99.2	Note3
8	L2	COIL.1.5uH.DCR=3.8m ohm.GOTREND.GSTC104P-1R5MN	125	55.2	90.2	
9	U5	PWR.High-Side Switches with Flag.RICHTEK.RT9715AGBR	125	51.4	86.4	
10	TC1	CAP.150uF.6.3V.NEC-TOKIN.TEPSLB20J157M(35)8R	105	50	85	
11	U4	IC.Display Port to LVDS Converter.NXP.PTN3460BS	83.62	44.5	79.5	Note3
12	U2	IC.High Definition.Audio Codec.REALTEK.ALC892-CG	100.5	55.4	90.4	
13	U20	IC.D-CAP+TM.Step-Down Controller.TI.TPS51631ARSMR	100	58.4	93.4	Note3
14	L5	COIL.2.2uH.GOTREND.GSTD6030PE-2R2M	125	62.6	97.6	
15	U25	IC.Synchronous Buck NexFETTM.TI.CSD97374Q4M	125	71.7	106.7	
16	L8	COIL.0.24uH.DCR=1.2mohm.NEC/TOKIN.MPCH0730LR24	120	73.2	108.2	
17	C328	SP CAP.470uF.Panasonic.EEFSX0D471ER.A091046;1189647185	N/A	63.1	98.1	Note4
18	Memory	Transcend DDR3L 1600 2G (SEC / K4B2G0846Q)	95	60.3	95.3	Note3
19	BAT1	Maxell CR2032 H	85	36.1	71.1	
20	N/A	Air Temp.	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.** P140908QED13

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