UPC-PLUS

Thermal Image Analysis Report

Summary	☐ **Pass** ☐ **Fail** ☑ **Pass with Deviation** **Comment:** There is one temperature point marginal passed, the system works properly.

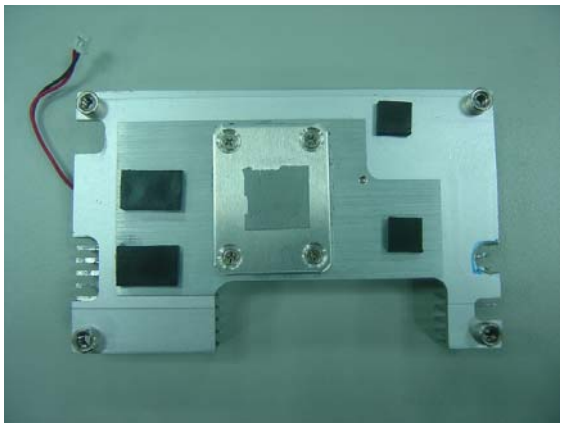
Test Result Summary				
	Critical	Major	Minor	Enhancement
Defect Found	0	0	0	1
Defect Unsolved	0	0	0	1

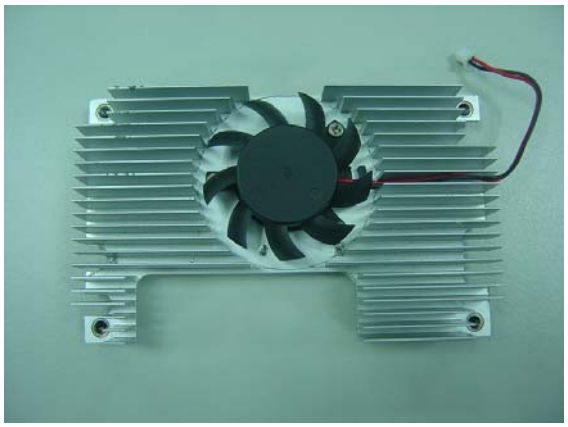
Issue date	QE Manager	Test Engineer
2019 / 01 / 23	KJ Wang	Ben Sun

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 : UPC-PLUS A0.4**
- **CPU : Intel® APL E3940 2M Cache, up to 1.80 GHz**
- **Memory : LPDDR4 Micron MT53B256M32D1NP-062WT:C**
- **Storage: eMMC 64GB Sandisk SDINBDA4-64G-V**
- **BIOS : UPCPSM0A3**
- **Test Software : Ubuntu 16.04 / Run PassMark Burn In Test 3.2**
- **Power : PS1065-120IB500 12V/5A**
- **Heat Sink & Fan:**





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Thermal Image Analysis

1. Test Date: 2019-01-21

2. Test Product: UPC-PLUS A0.4

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: 2018/09/07

Serial Number: 12A323190

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: 2018/11/23

Serial Number: 1051444

5. Test Condition:

Test by DA-100: 25.4℃ with Heat Sink & Fan

6. Take Picture Time:

After power on 2 hours

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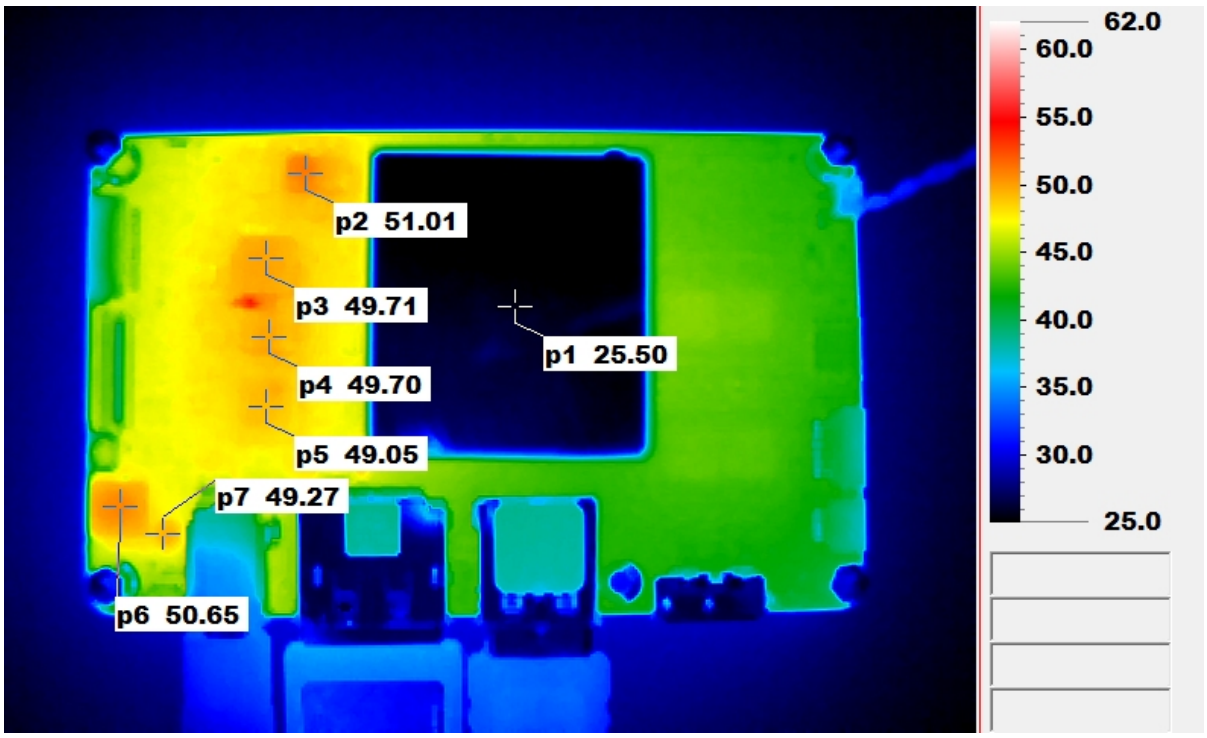
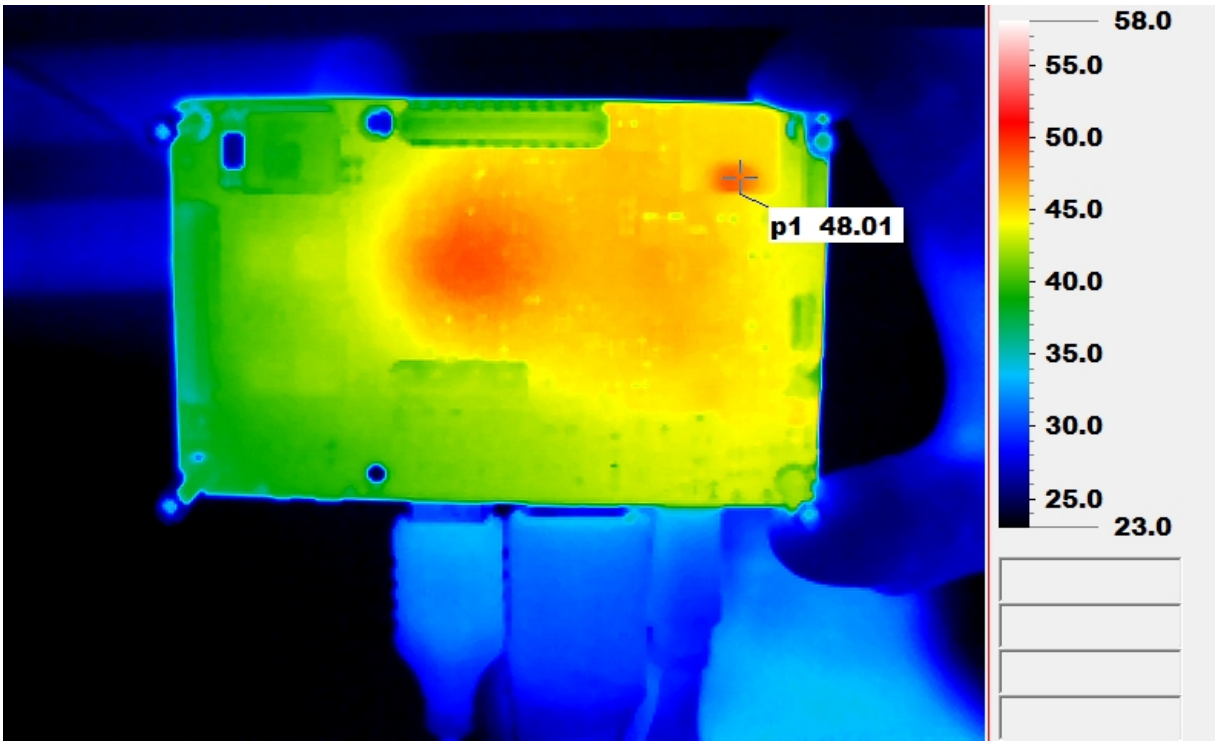
Temperature Profile Test:

Component Side:





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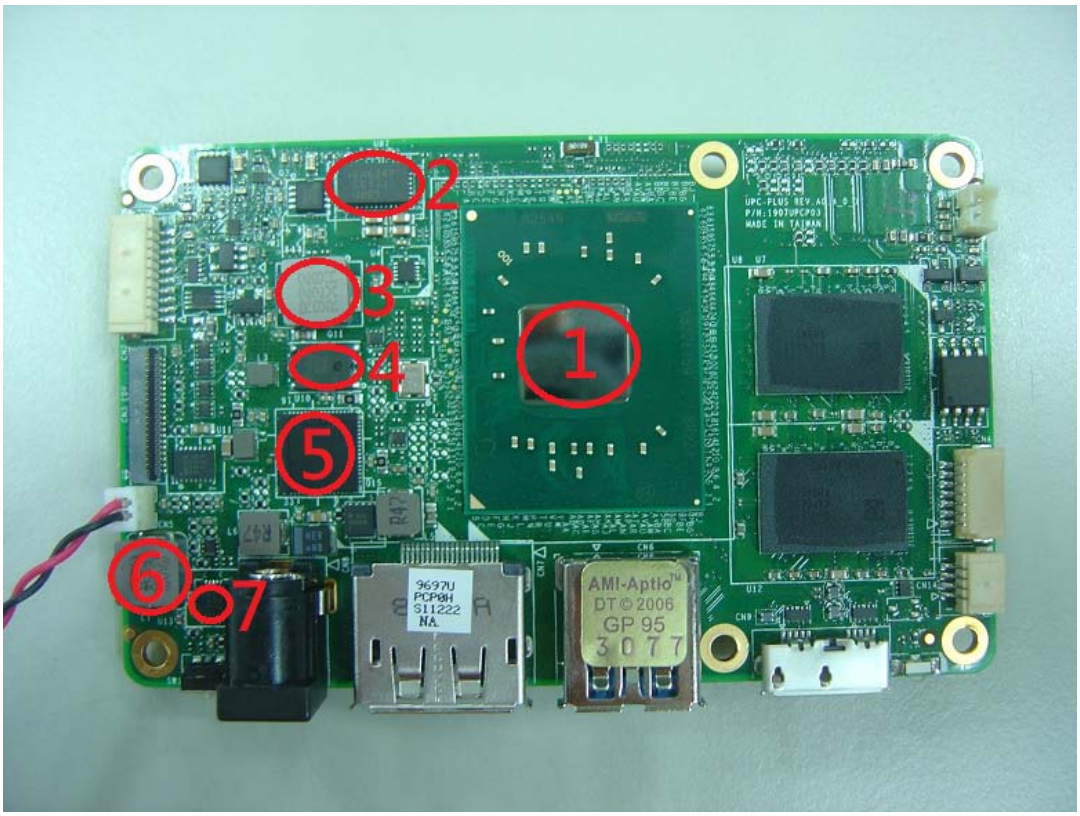
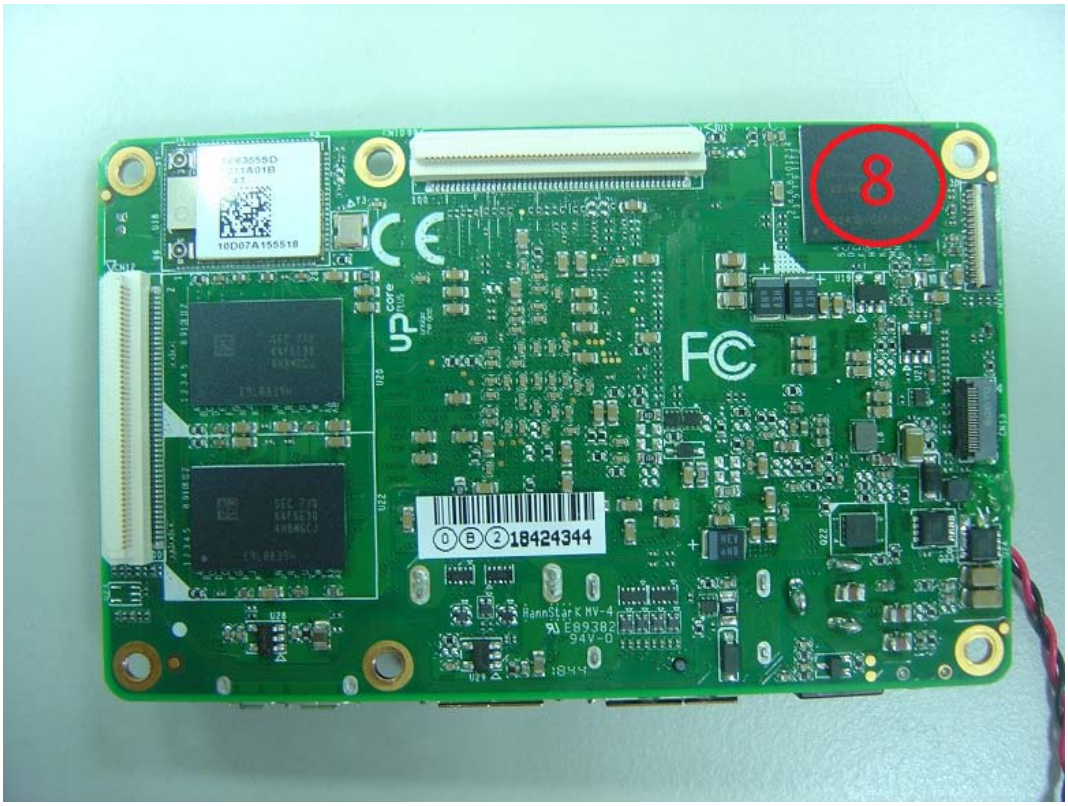
Terminal Recorder:

Measuring Thermal Couple Position：





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

Point	Position	Describe	Tc (*1) (℃)	TAT(*2) 25.0℃	TPT(*3) 60℃	Note
1	U8	(TF)INTEL CPU.Apollo Lake.Celeron N3350.2.4GHz FCBGA1296 SMD.FH8066802980002.SR2Z7	105	35.1	70.1	
2	U87	(TF)IC.Enpirion Power.PWM Buck with .Integrated Induct.QFN 38.SMD.Altera.EN6347QI	100	37.7	72.7	
3	L2	(TF)COIL.0.22uH.DCR=2.8mohm.Idc=23Amp.20%.SMD.6.95x6.6x2.8mm.CYNTEC.PCMB063T-R22MS	100	29.4	64.4	
4	Q11	(TF)PWR.DUALSMD.N-MOSFET.Vgs1/2=(+/-)20/12V.Vds1/2=30V.Id1=13A.Id2=25A.Rds(on)=10.8/3.8mohm.PQFN8.FAIRCHILD.FDMS3664S	125	41.5	76.5	
5	U10	(TF)IC.PMIC.Intel Apollo Lake.DDR=1.1V.VQFN 64P SMD TI.TPS650940A0RSKR.(after&including DC1731)	85	35.2	70.2	
6	L7	(TF)COIL.3.3uH.Idc=6.5A.DCR=18mohm.20%.6.8x7.3x3.0mm.2P.SMD.CYNTEC.PCMB063T-3R3MS 1211133075	125	34.8	69.8	
7	U13	(TF)IC.High Current Synchronous.Step-down Converter QFN16.3x3mm.SMD.MPS.NB671GQ-Z	100	41.2	76.2	
8	U17	(TF)IC.eMMC 5.1 Flash.64GB.3.3V.FBGA.153P 11.5x13x1mm SMD.Sandisk.SDINBDA4-64G-V	85	42.1	77.1	NOTE4

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.

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