UP-APL01

Thermal Image Analysis Report

Summary	☐ **Pass** ☐ **Fail** ☑ **Pass with Deviation** **Comment:** _There is one temperature point marginal passed, the functions are stable,_

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
2017 / 06 / 14	KJ Wang	Ben Sun

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Sample Configuration & Quantity Under Test

- **Model name : UP-APL01 A0.3**
- **CPU : INTEL Apollo Lake.Pentium N4200.2.5GHz**
- **Memory : 4GB, Samsung.K4F8E304HB-MGCH**
- **Storage : eMMC.32GB.Kingston.EMMC32G-M525-A51**
- **BIOS : R1.0**
- **Test Software : Windows 10 / Run PassMark Burn In Test 8.1 Pro**
- **Adapter: AD36AM050600 5V/6A**
- **CPU Cooler:**

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Thermal Image Analysis

1. Test Date: 2017-06-13

2. Test Product: UP-APL01

3. Test Site: AAEON QE Dept.

4. Temperature Measurement:

4.1. 20 Channel Thermal Recorder:

4.1.1 OMRON

4.1.2 Model: ZR-RX45

Date of Calibration: 2016/12/20

Serial Number: TH-208

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 & Fan

6. Take Picture Time:

After power on 2 hours

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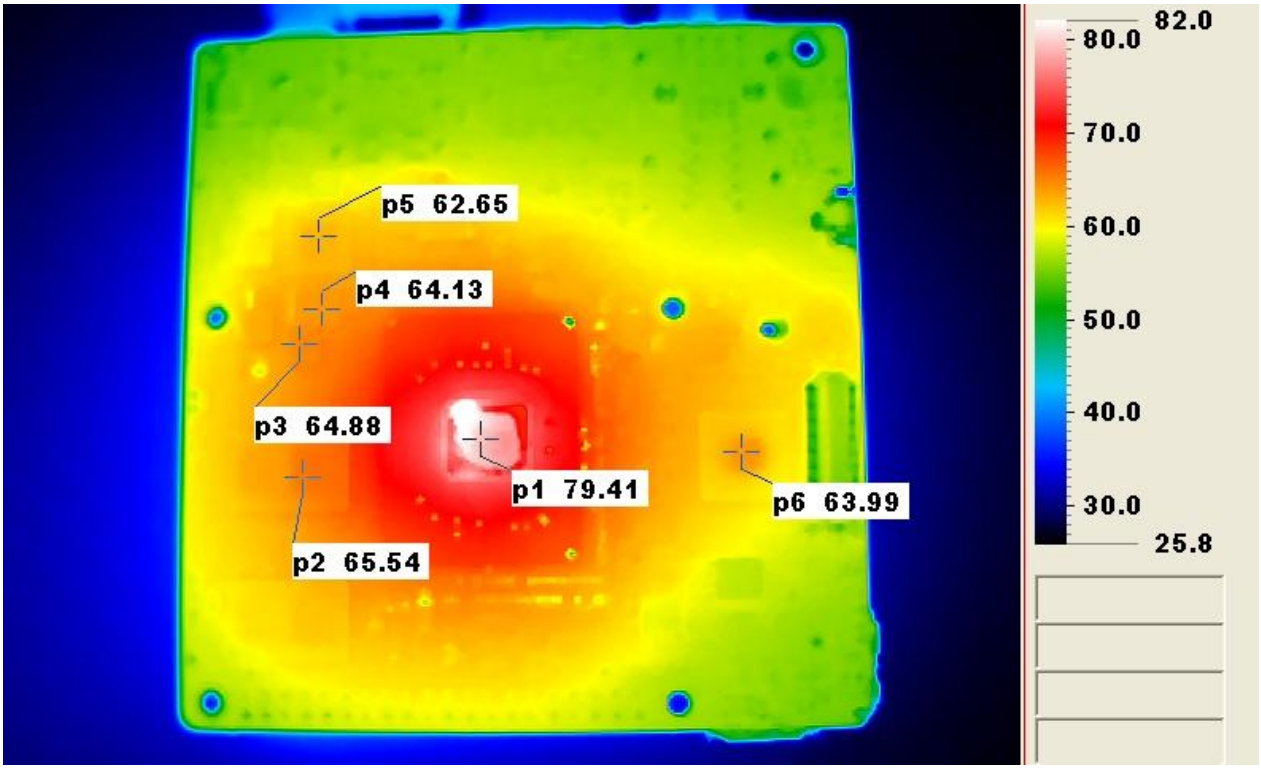
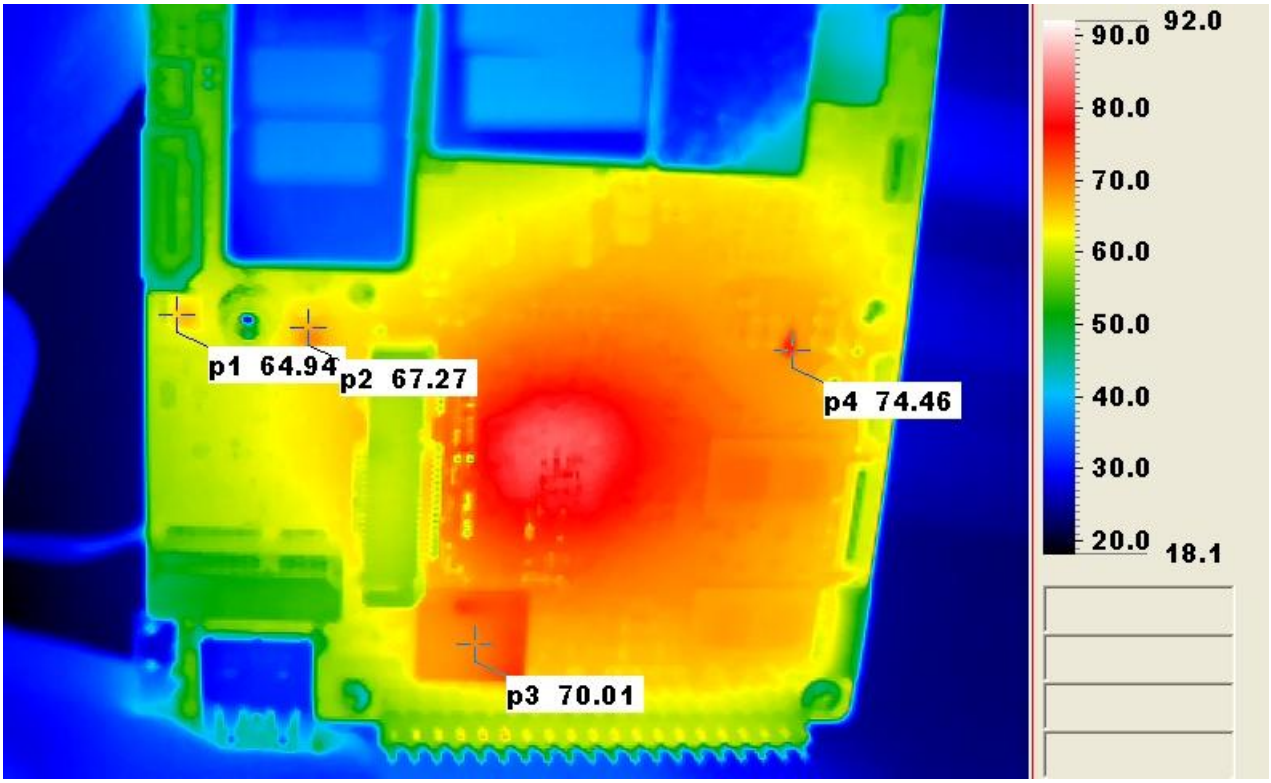
Temperature Profile Test:

Component Side:





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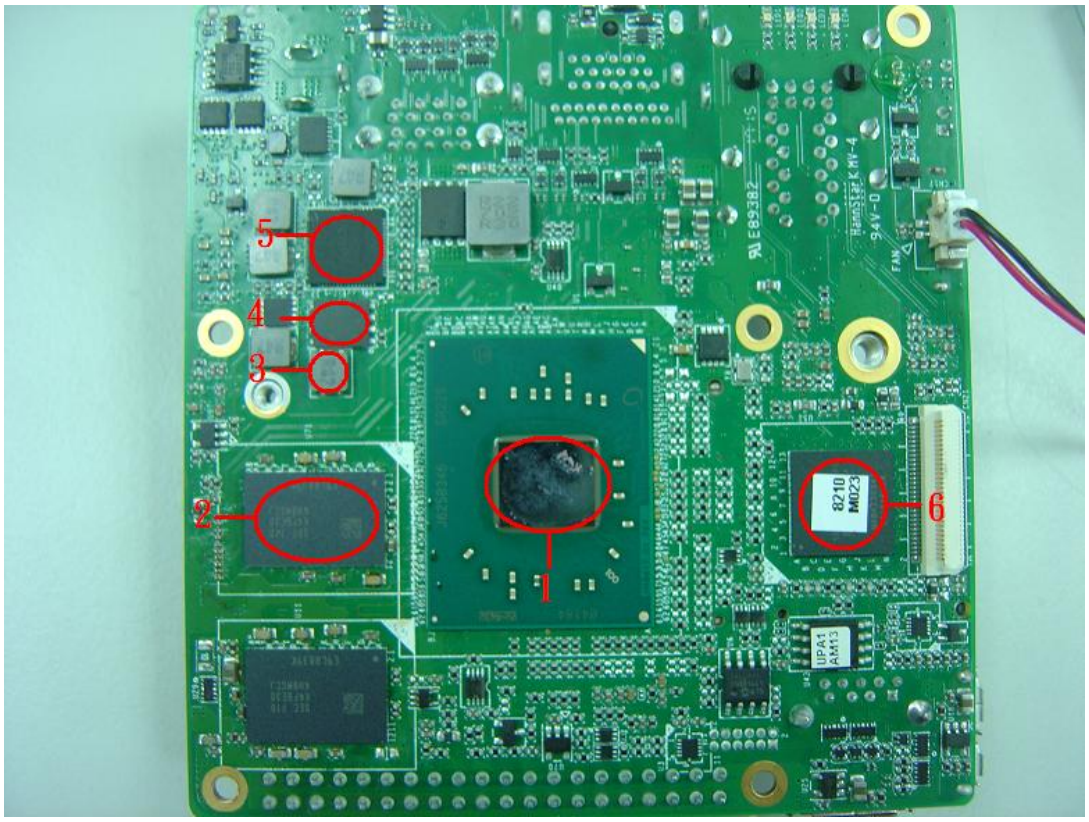
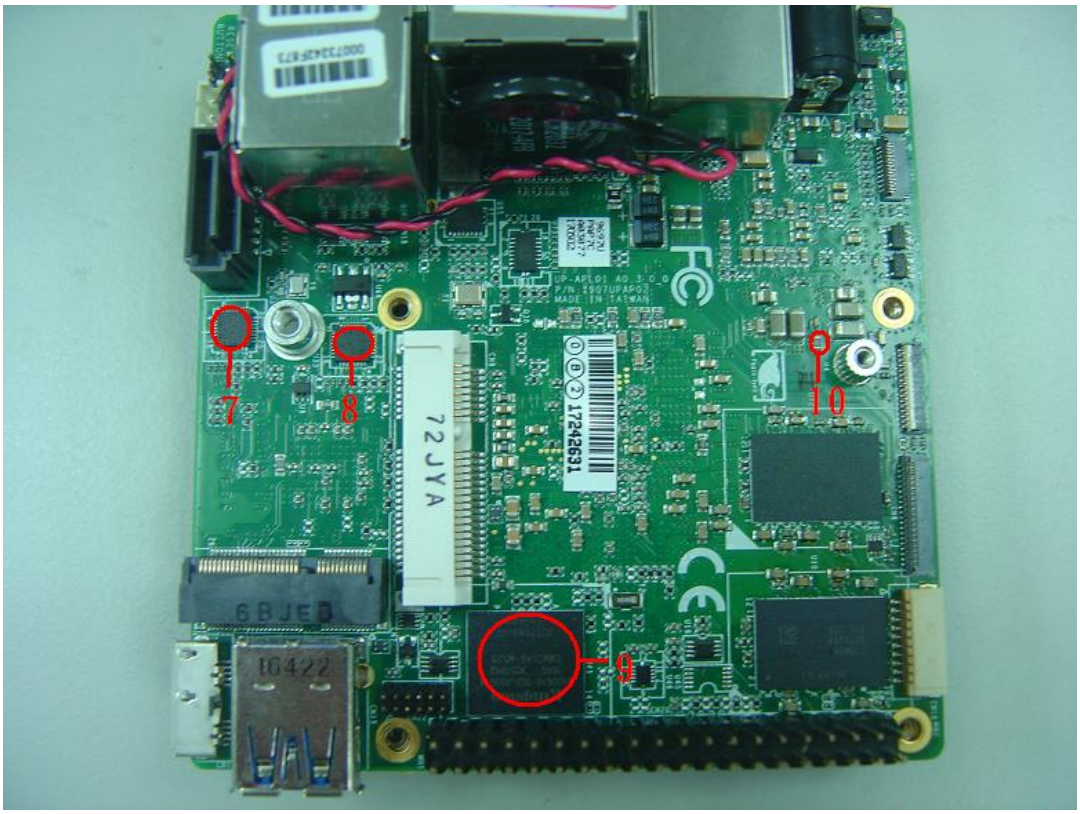
Terminal Recorder:

Measuring Thermal Couple Position：





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Using OMRON / ZR-RX45 test

Point	Position	Describe	Tc (*1) (℃)	TAT(*2) 25.0℃	TPT(*3) 60℃	Note
1	U1	(TF)INTEL CPU.Apollo Lake.Pentium N4200.2.5GHz.FCBGA1296.FH8066802979703.SR2Z5	105	43.2	78.2	
2	U71	(TF)IC.16Gb(512M32)LPDDR4.SDRAM.3200Mbps.1.8V/1.1V.FBGA 200P.D9TFW.SMD.Micron MT53B512M32D2NP-062WT:C	95	44.3	79.3	
3	L22	(TF)Coil.0.47uH.DCR=14mΩ.Irms=7Amp.20%.4.5x4x1.8mm.SMD.GOTREND.GSTD4020PE-R47M	100	45.1	80.1	
4	Q24	(TF)PWR.SMD.PMPAK5X6 DUAL N-MOSFET Vgs1/2=(+/-)20V Id1=10.1A Id2=12A Vds1/2=30V FAIRCHILD.FDMS7620S	125	45.1	80.1	
5	U56	(TF)IC.PMIC. Intel Apollo Lake.DDR=1.1V.VQFN 64P.SMD.TI.TPS650940A0RSKR	100	41.2	76.2	
6	U52	(TF)IC.CPLD FOR MAX 10 devices.UBGA 169P.C/S: 00691C2C/Blue.SMD.Altera.10M02SCU169C8G	100	45.3	80.3	
7	U34	(TF)IC.PCI-express.Gigabit Ethernet Chip.QFN 32P.SMD.REALTEK.RTL8111G-CG	100	45.7	80.7	
8	U33	(TF)IC.PCI-express.Gigabit Ethernet Chip.QFN 32P.SMD.REALTEK.RTL8111G-CG	100	53.2	88.2	
9	U41	(TF)IC.eMMC Flash.64GB.3.3V.FBGA 153P.11.5*13*1mm.SMD.Kingston.EMMC64G-M525-A51	85	47.8	82.8	NOTE3
10	R552	(TF)CR.2.2.1/10W.1%.0603.SMD	125	49.1	84.1	

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. D160807LABD02

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