PICO-APL4

BIOS/PL1：Disable (Power TDP: 15W)

Thermal Image Analysis Report

Test Cause
For ATRF No.QE180202 Request

Summary	☐ **Pass** ☐ **Fail** ☑ **Pass with Deviation** **Comment:** There are 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
2018 / 06 / 21	KJ Wang	Juno Cheng

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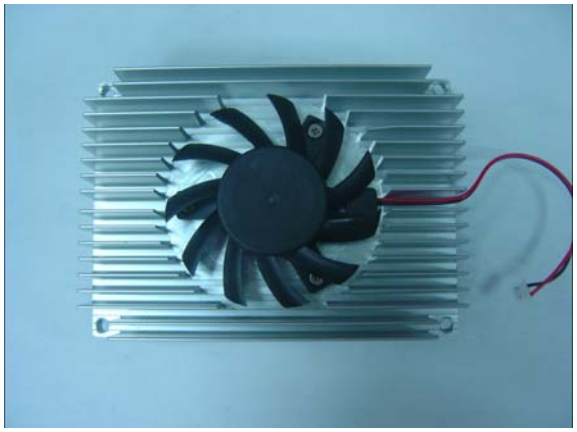
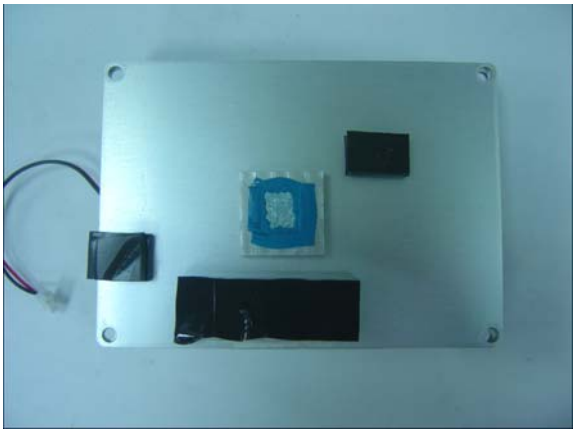
Sample Configuration & Quantity Under Test

- **Model name : PICO-APL4 A0.3**
- **CPU : Intel® Pentium® Processor N4200**
- **Memory : Onboard memory DDR3L-1600 4GB**
- **Storage : eMMC 32GB**
- **BIOS :PICO-APL4 R1.1 (ZAP4AM11)(05/14/2018)**
- **Test Software : Windows 10 / Run PassMark Burn In Test 8.1 Pro(1025)**
- **Power : FSP040-DHAN3(Output: 12V,3.3A)**
- **CPU Cooler :**





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Thermal Image Analysis

1. Test Date: 2018-06-21

2. Test Product: PICO-APL4 A0.3

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: 2017/09/08

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: 2017/11/23

Serial Number: 1051444

5. Test Condition:

Test by DA-100: 25.2℃ with Heat Sink + Fan (Full Speed)

6. Take Picture Time:

After power on 2 hours

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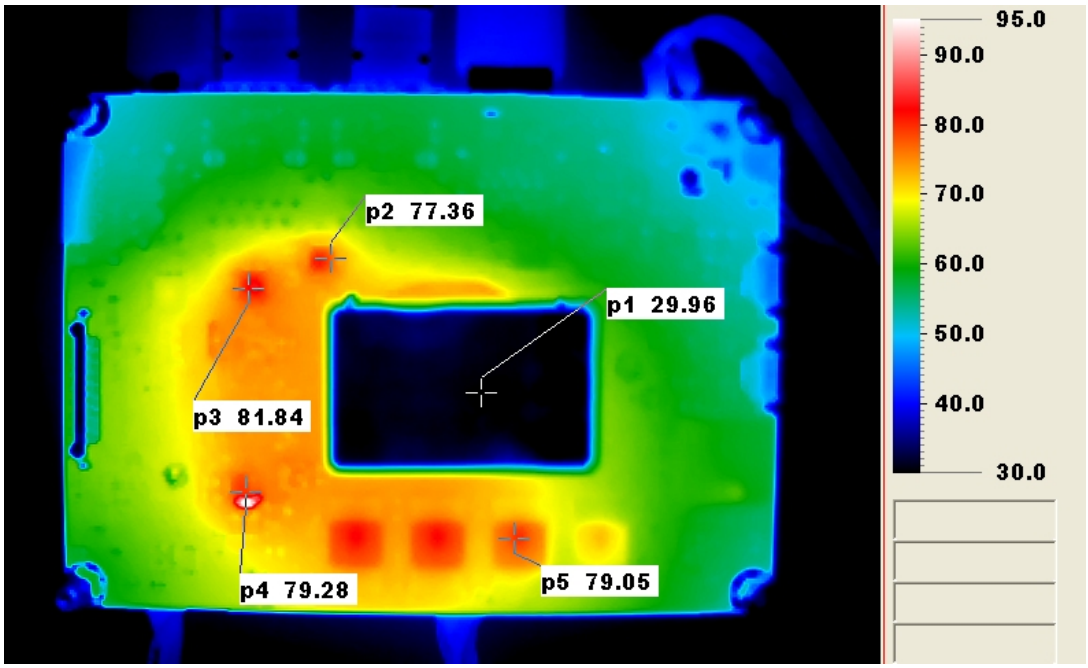
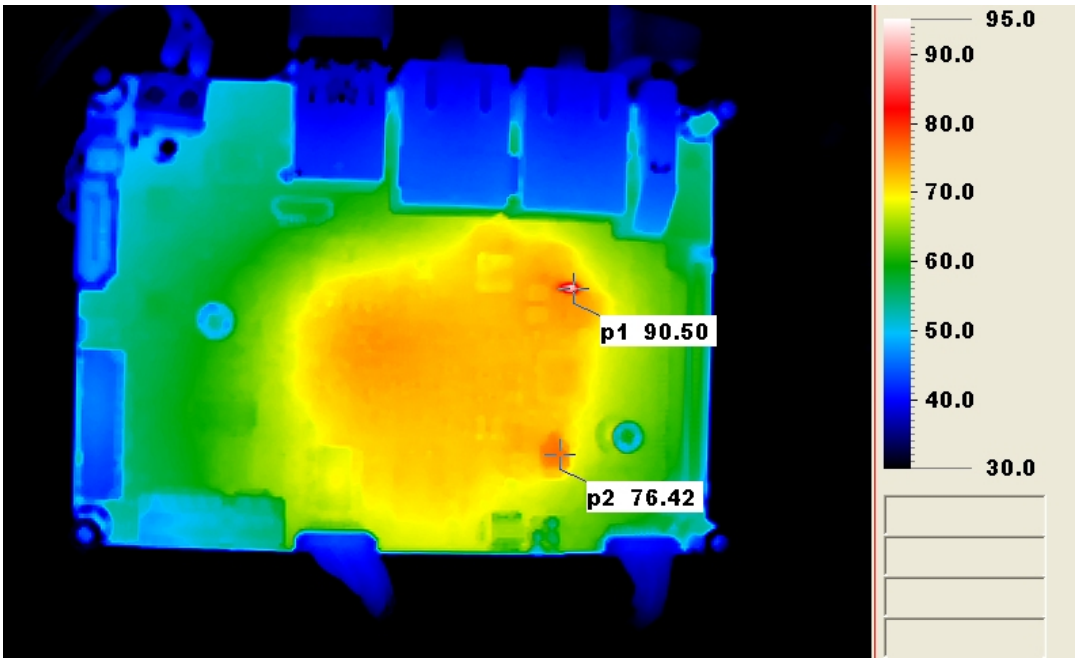
Temperature Profile Test:

Component Side:





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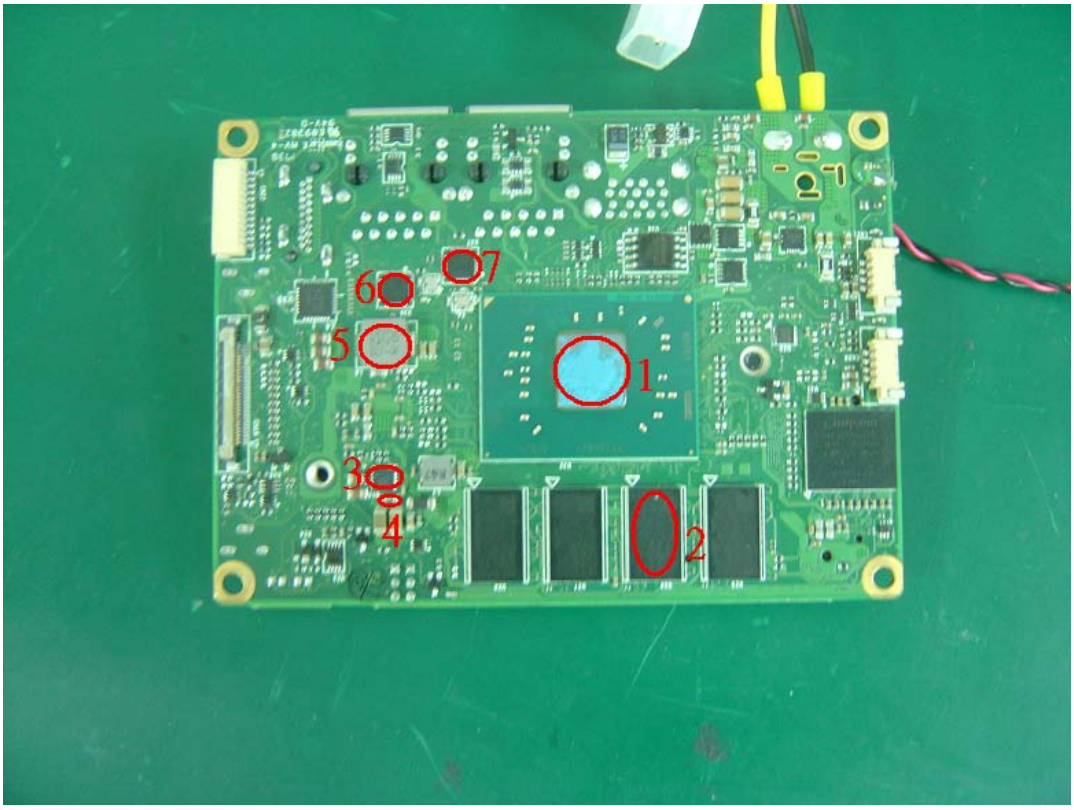
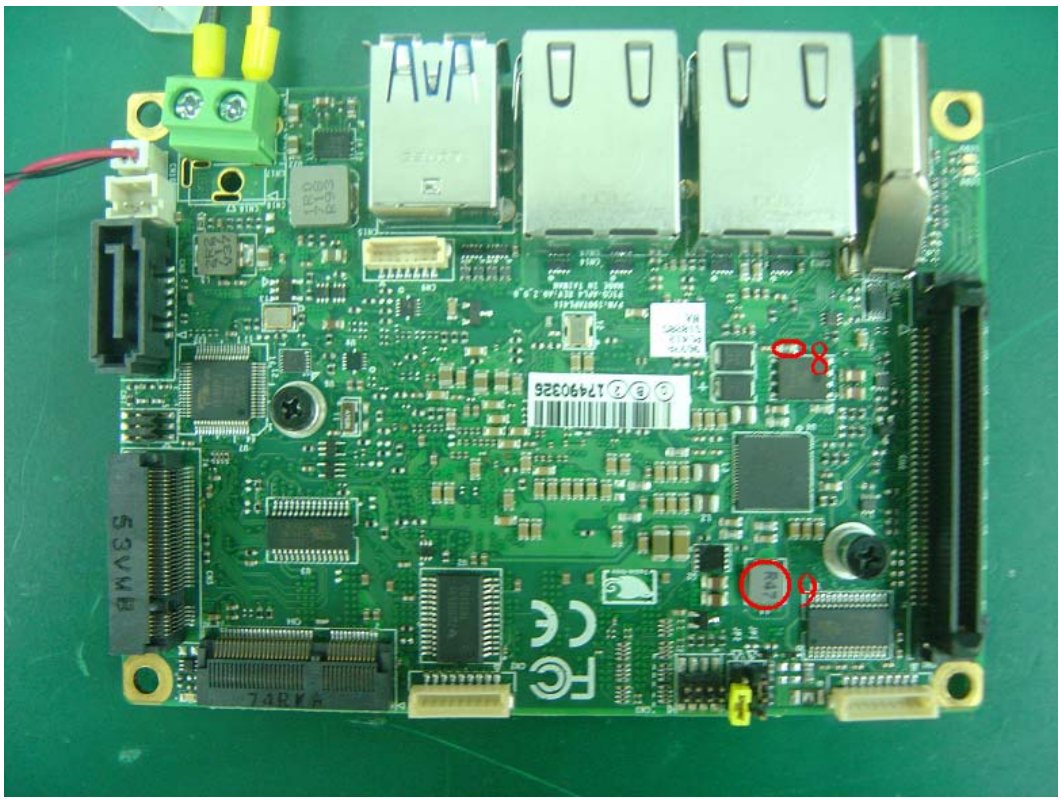
Terminal Recorder:

Measuring Thermal Couple Position：





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

Point	Position	Describe	Tc (*1) (℃)	TAT(*2)	TPT(*3)	Note
				25.0℃	60℃	
1	U32	(TF)INTEL CPU.Apollo Lake.Pentium N4200.2.5GHz FCBGA1296 SMD FH8066802979703.SR2Z5	105	43.0	78.0	
2	U26	(TF)IC.DDR3L-SDRAM.512Mx16(bit).Dual-Die.1600MHz.1.35V.FBGA.96P.SMD.Samsung.K4B8G1646D-MYK0	95	38.8	73.8	
3	Q18	(TF)PWR.PMPAK3X3 DUAL N-MOSFET.Vgs1/2=(+/-)20V Id1=6A.SMD.FAIRCHILD.FDMC7200S.Id2=8.5A.Vds1/2=30V	125	62.2	97.2	
4	R252	(TF)CR.2.2.1/10W.1%.0603.SMD	125	65.8	100.8	
5	L8	(TF)COIL.0.22uH.DCR=2.8mohm.Idc=23Amp.20%.SMD.6.95x6.6x2.8mm.CYNTEC.PCMB063T-R22MS	125	73.8	108.8	
6	U36	(TF)IC.PCI-express.Gigabit Ethernet Chip.QFN 32P.SMD.REALTEK.RTL8111G-CG	100	57.9	**92.9**	
7	U37	(TF)IC.PCI-express.Gigabit Ethernet Chip.QFN 32P.SMD.REALTEK.RTL8111G-CG	100	51.8	86.8	
8	R138	(TF)CR.2.2.1/10W.1%.0603.SMD	125	68.8	103.8	
9	L1	(TF)Coil.0.47uH.DCR=14mΩ.Irms=7Amp.20%.4.5x4x1.8mm.SMD.GOTREND.GSTD4020PE-R47M	125	65.1	100.1	

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.

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