

UPN-ADLN01

With Intel® i3-N305 15W

Thermal Image Analysis Report

Summary	☒ Pass Comment: _____			
	☐ Fail Note : There is/are ____ defect(s) not list in the report, please check it in the DTS Website.			
Test Result Summary				
	Critical	Major	Minor	Enhancement
Defect Found	0	0	0	0
Defect Unsolved	0	0	0	0

Issue date

2022 / 12 / 15

Deputy Manager

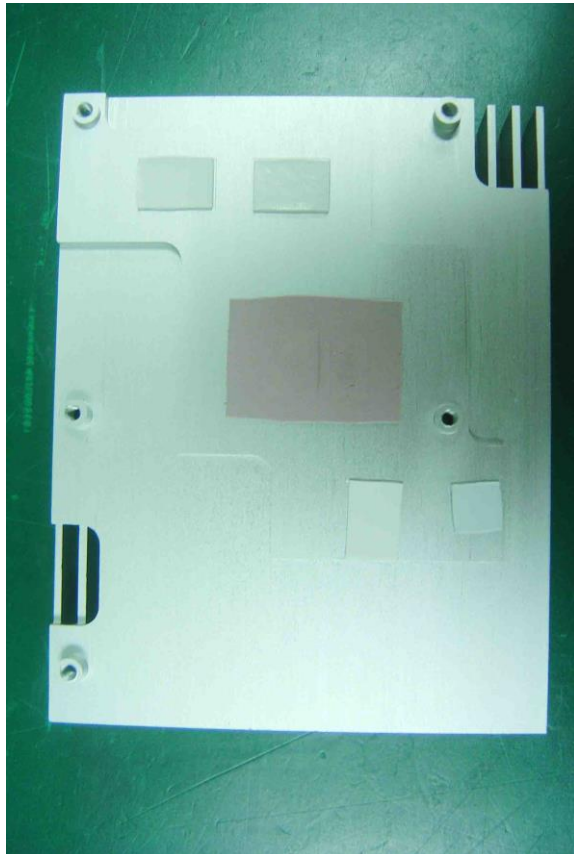
Louie Lee

Test Engineer

Ben Sun

Sample Configuration & Quantity Under Test

- **Model name :** UPN-ADLN01 / A0.1
- **BIOS :** UPN-ADLN01 R0.2 (UNADAM02) (10/14/2022)
- **CPU :** Intel® i3-N305 15W
- **Memory :** Onboard SAMSUNG K3LKCKC0BM 16GB
- **Storage:** Onboard eMMC 64GB / SAMSUNG KLMCG2UCTB-B041
- **Test Software :** Windows 10 / Run PassMark Burn In Test 9.0 Pro(1014)
- **Adapter:** FSP060-DIBAN2 / 12V; 5.0A MAX
- **Heat Sink :**



Thermal Image Analysis

1. Test Date: 2022-12-13

2. Test Product: UPN-ADLN01 / A0.1

3. Test Site: AAEON QE Dept.

4. Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 03/10/22
Due date of Calibration: 03/09/23
Serial Number: 6487KT

5. Temperature Measurement:

5.1 20 Channel Thermal Recorder:

OMRON Inc,
Model: ZR-RX45
Date of Calibration: 09/18/22
Dute Date of Calibration: 09/17/23
Serial Number: TH-204

5.2 IR Scanner: Infrared Camera

NEC Avio Infrared Technologies Co., Ltd.
Model: Thermo GEAR G100W2-D
Date of Calibration: 11/11/22
Dute Date of Calibration: 11/10/23
Serial Number: 1051444

6. Test Condition:

6.1 Test by IR Scanner: 25.0°C Room Temperature

6.2 EUT with Heat Sink

6.3 Test by PTAT Tool: 25.0°C with 0.5m/s Air Flow

6.4 Test by PTAT Tool and Thermal Recorder: 60°C with 0.5m/s Air Flow

6.5 Run PTAT tool + Burn in Test v9.0(DISK + LAN + Sound + Com) & USB
Dummy Load

7. Take Picture Time:

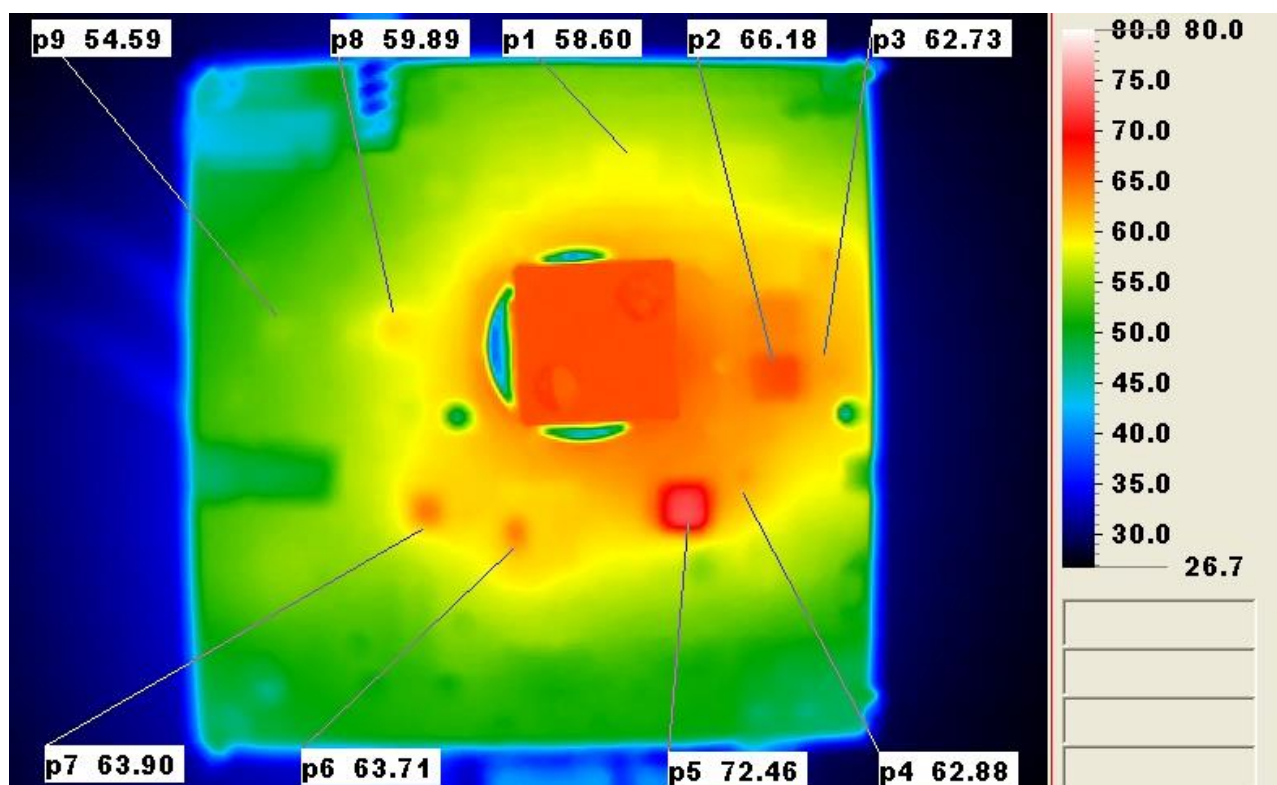
After Power on 2 hours

8. Tempeture Points Record Time:

After Burn in 4 hours

Temperature Profile Test:

Component Side:

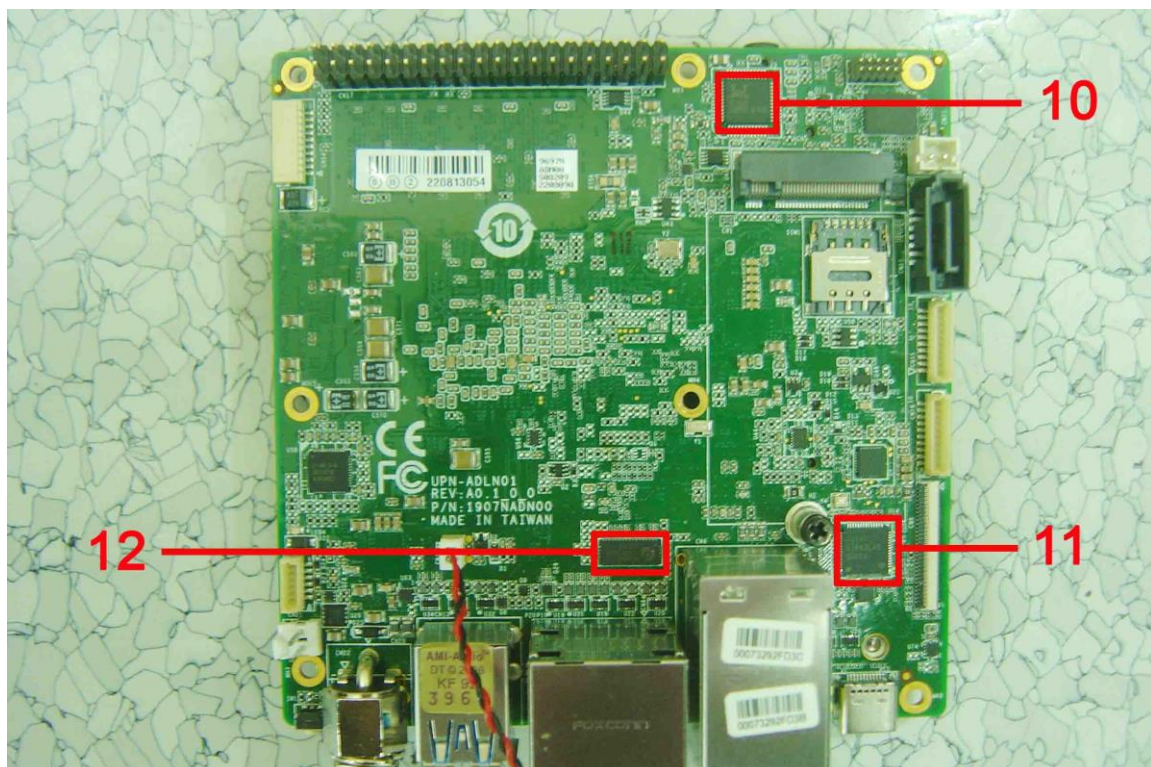
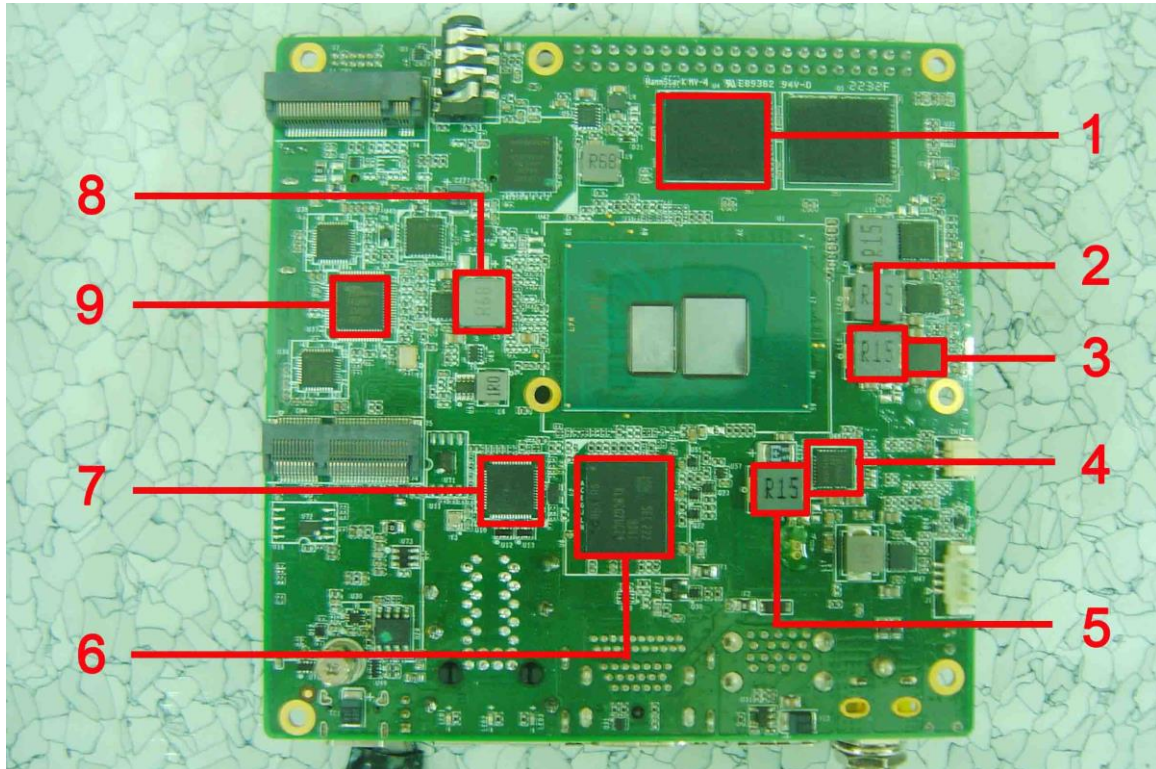


Back Side:



Terminal Recorder:

Measuring Thermal Couple Position :



CPU Frequency Record

Point	Temp. Stage(°C)	CPU Freq.	Intel® i3-N305 / 1.7GHz TDP:15W	Note
1	Normal Tn(*1) = 25		Fn(*3) = 1.9GHz 1.9GHz	DTS=59°C DTS=67°C TDP=15W
	SPEC. Ts(*2) = 60		Fs(*4) = 1.77GHz 1.79GHz	DTS=96°C DTS=103°C TDP=15W

Note(*):

1. "Tn" indicates the room temperature value in testing chamber.
2. "Ts" indicates the maximum operating temperature value specified in its datasheet.
3. "Fn" indicates under normal temperature environment, the operating freq. of the CPU.
4. "Fs" indicates under high temperature environment, the operating freq. of the CPU.

5. Judgment Criteria:

- Fail:

Fs < Fn * 70%; The CPU average freq. value is lower than Fn * 70%.

- Pass:

Fs > Fn * 70%; The CPU average freq. value is higher than Fn * 70%.

6. Intel PTAT tool 2.01.1002: use workload test CPU loading 90%.

Using YOKOGAWA / DA100-13-1D test

Point	Position	Describe	Tc (*1) (°C)	Tm(*3)	Note
				60°C	
2	L10	(TF)COIL. 0.15uH.20%.ZenithTek.ZBWM060630C6R15MB	125	89.2	
3	U59	(TF)Smart Power Stage.4x5 RENESAS.RAA2213404GNP#HB0	100	81.7	
4	U68	(TF)Smart Power Stage.5x5 RENESAS.ISL99360FRZ-T	100	83.1	
5	L16	(TF)COIL..0.15uH.20%.ZenithTek.ZBWM060630C6R15MB	125	87.4	
7	U10	(TF) PCI-E 2.5G GigaBit Ethernet Chipset. Intel.I226-IT.SRKTX	100	79.8	
8	L5	(TF)COIL0.68uH..ZenithTek.ZPWM-6030M-R68M	125	75.6	
9	U37	(TF)Super I/O.eSPI/LPC 2 UART. Fintek.F81804U-I.(ver.D)	95	85.0	
10	U9	(TF)7.1+2 Channel.Audio Codec. REALTEK.ALC888S-VD2-GR	100.5	72.0	
11	U14	(TF)PCI-E 2.5G GigaBit Ethernet Chipset. Intel.I226-IT.SRKTX	100	72.7	
Point	Position	Describe	TA (*2) (°C)	Tm(*3) 60°C	Note
1	U4	(TF)LPDDR5-SDRAM.8GB.6400MHz.SAMSUNG.K3LKCKC0BM-MGCP	85	77.4	
6	U6	(TF) eMMC 5.1 Flash.64GB. Sandisk.SDINBDA4-64G-V	85	76.1	
12	U23	(TF) Clock Generator/Buffer. HDMI 2.0 6Gbps Limiting ReDriver. PERICOM.PI3HDX1204B1ZHIEX	85	76.8	

Note(*):

1. "Tc" indicates the component's case maximum temperature value specified in its datasheet.
2. "TA" indicates the component's ambient temperature value specified in its datasheet
3. "Tm" indicates the actual measured temperature under 60°C product specification working environmental.

4. Judgment Criteria:

- **Fail** :
 - Tm > Tc+5°C; The measured value is over specification plus margin.
 - Tm > TA+5°C; The measured value is over specification plus margin.
- **Margin** :
 - Tc+5°C > Tm > Tc-10°C; The measured value is within specification with margin.
 - TA+5°C > Tm > TA-10°C; 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°C; The measured value is with safety margin.
 - Tm < TA-10°C; The measured value is with safety margin.

5. RTC battery avoid to put on heat position. Please do not exceed battery temperature specification.