

T99X171T00

Thermal Simulation Report

Date : Jan/07/2019

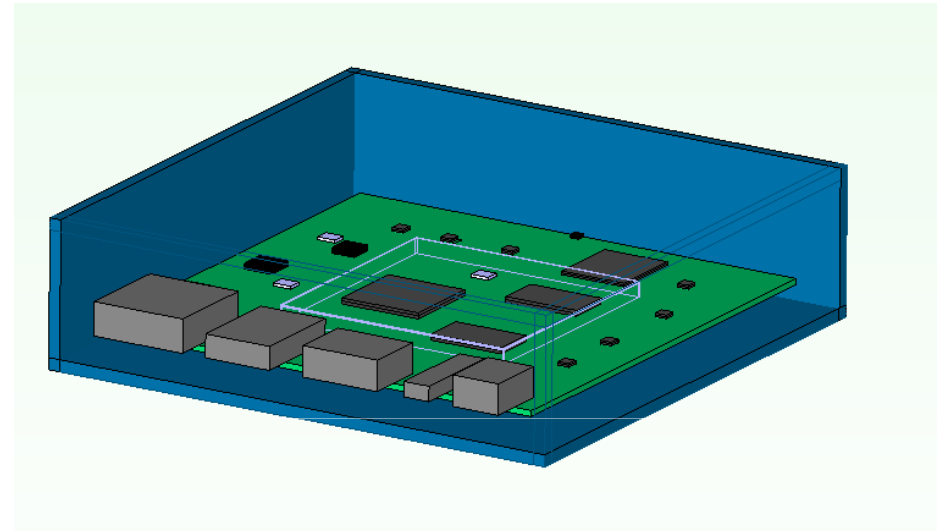
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Thermal Simulation Model – System

- **Software: Flotherm v11.2**
- **Ambient: 50°C**
- **Main board dimension: 80*80*1 (mm)**
- **Housing dimension: 91*91*25 (mm)**



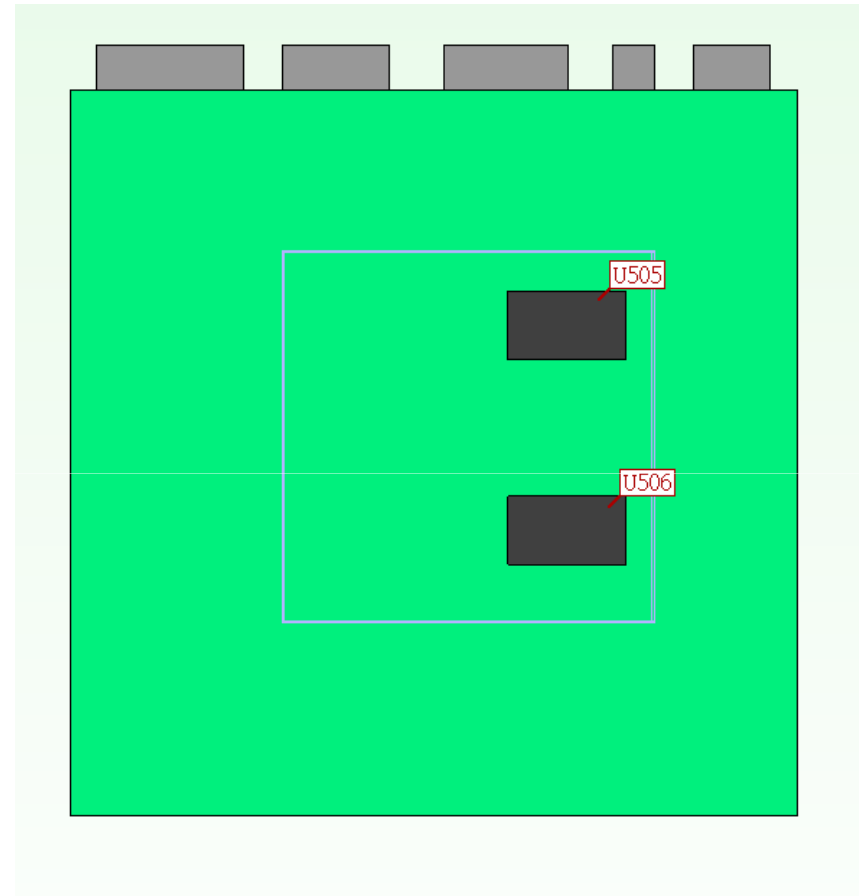
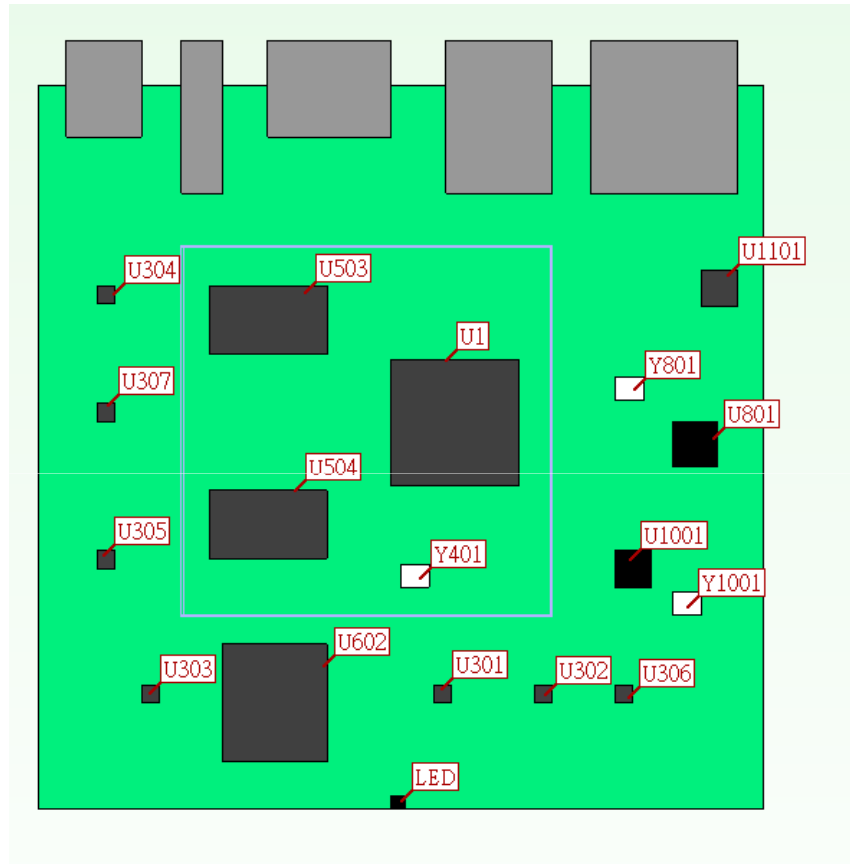
- **Heat Transfer Type:**
**Conduction, Natural convection, and
Radiation**

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Component Location - Placement



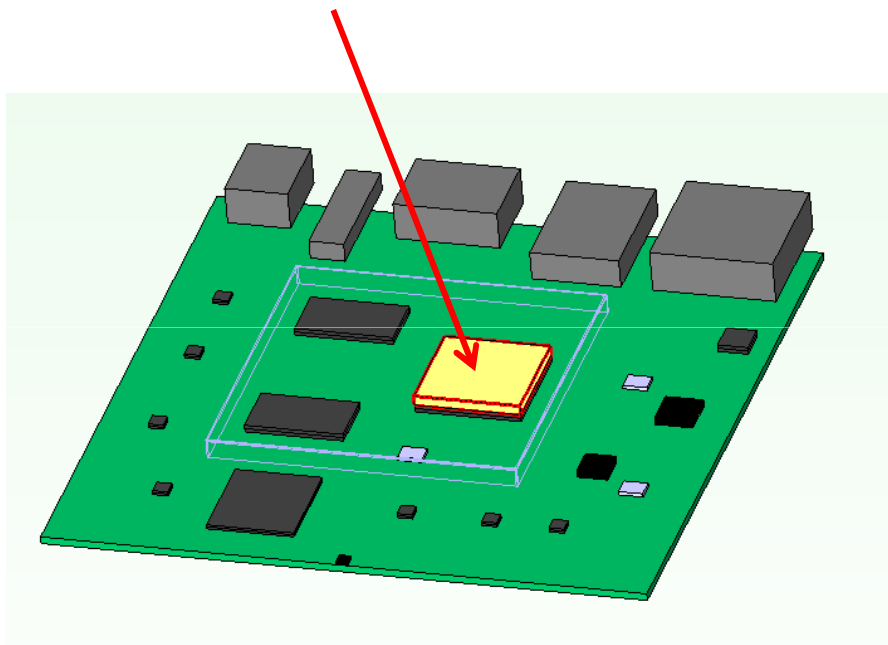
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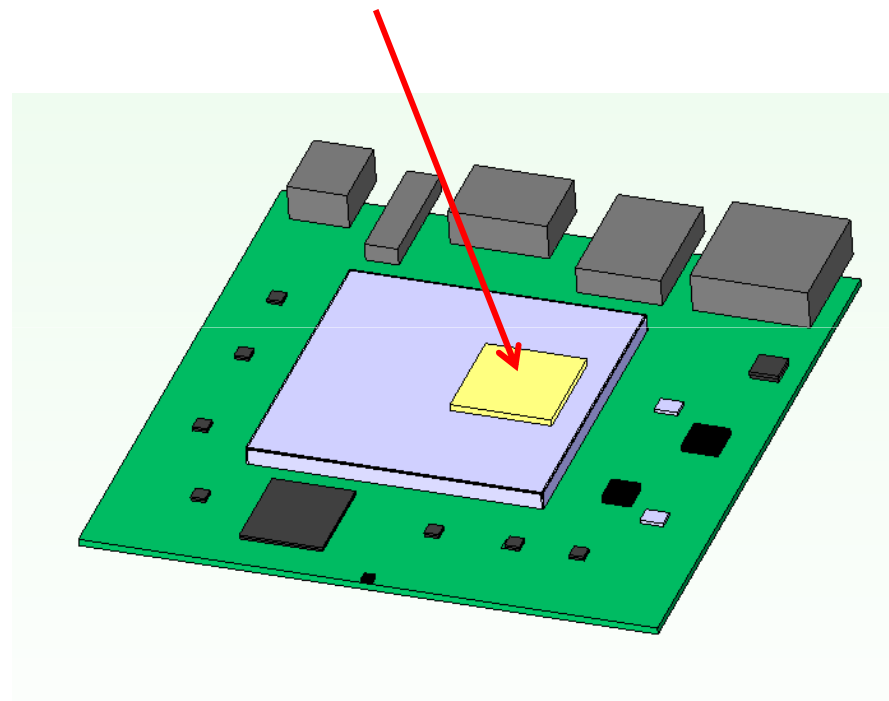


Thermal Solution (1)

Add TIM on U1 to contact shielding cover
 $K = 3 \text{ W/mk}$



Add TIM on U1 shielding cover
 $K = 3 \text{ W/mk}$



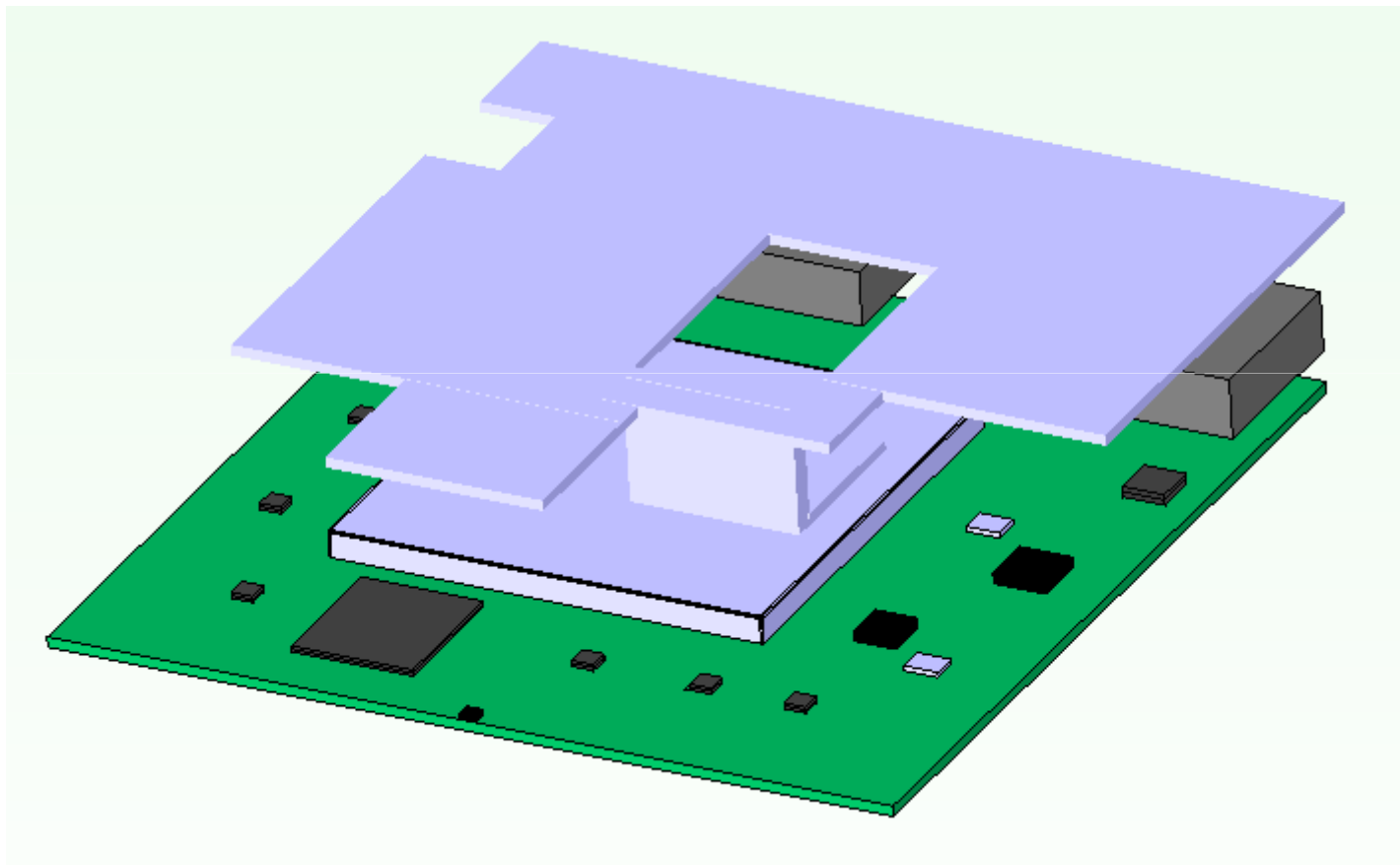
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Thermal Solution (2)

Add ME design heatspreader(weight plate)
Material : SGCC

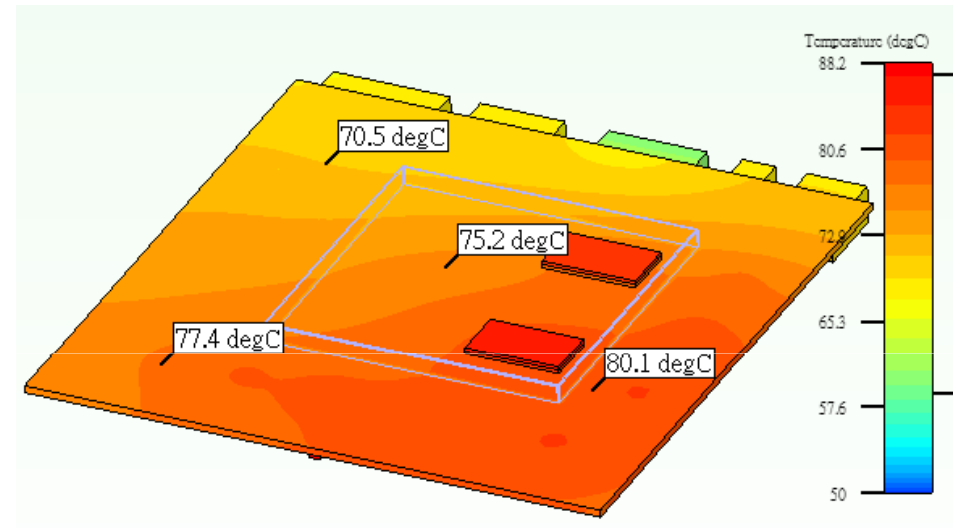
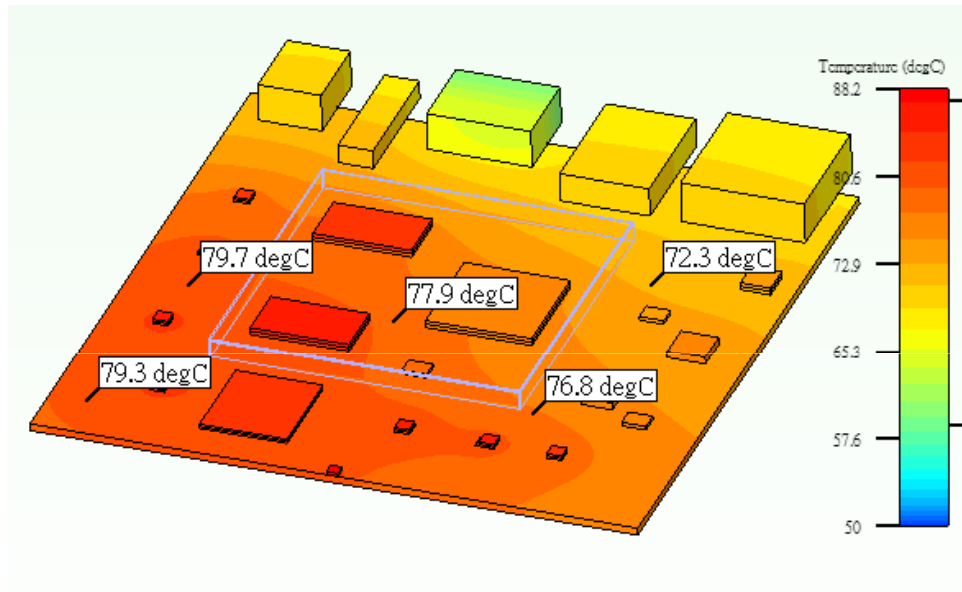


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Simulation Results - PCBA Temperature

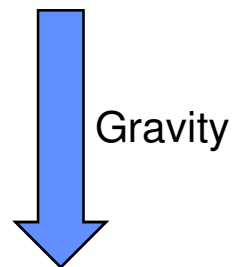
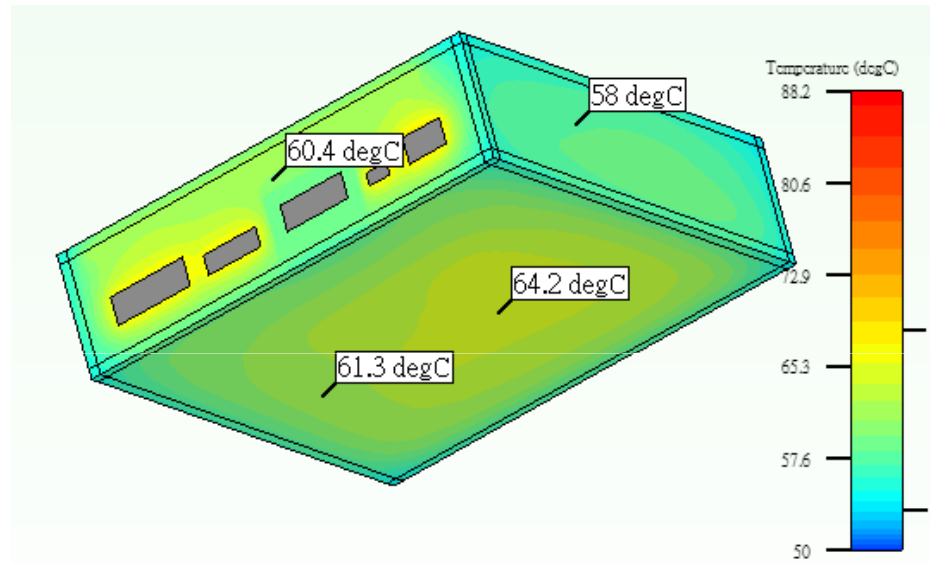
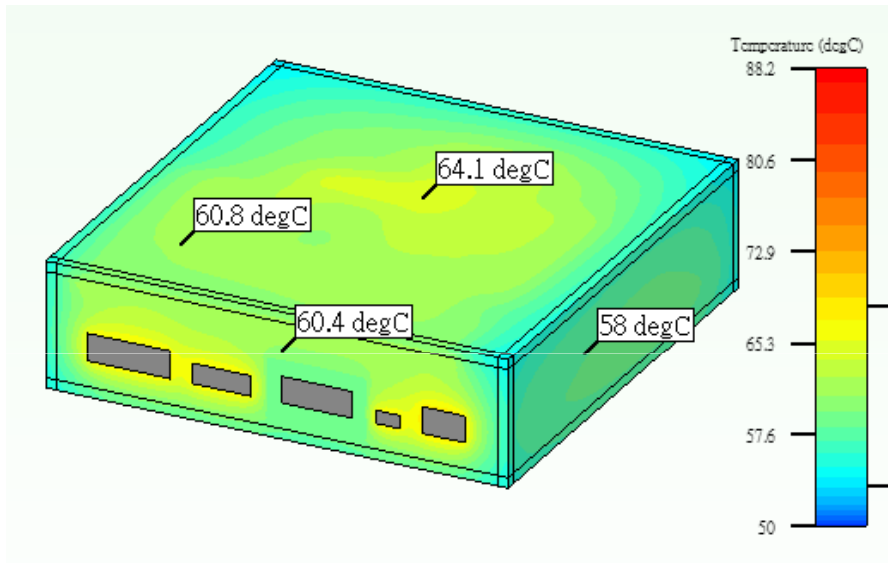


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Simulation Results - Housing Temperature



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Simulation Summary

			Component Specification							Simulation Results		Result	
	Symbol	Description	Power Dissipation(W)	Rjt (°C/W)	Rjc (°C/W)	Rjb (°C/W)	Rja (°C/W)	Ta Spec. (°C)	Tc Spec. (°C)	Tj Spec. (°C)	Tc (°C)	Tj (°C)	Pass/Fail
1	U301	TLV62569DRLR (0.9V) -CPU	0.191		51	27	146.3		140.26	150	82.3	92.0	Pass
2	U302	TLV62569DRLR (0.841V) -GPU & core	0.191		51	27	146.3		140.26	150	82.4	92.1	Pass
3	U305	TLV62569DRLR (3.3V) -System	0.191		51	27	146.3		140.26	150	82.8	92.5	Pass
4	U304	TLV62569DRLR (1.2V) -DDR4	0.191		51	27	146.3		140.26	150	79.1	88.8	Pass
5	U303	FP6188-18S5 (1.8V) -eMMC	0.191		130		250	85	125.17	150	83.3	108.1	Pass
6	U306	FP6188-18S5 (1.8V) -System	0.191		130		250	85	125.17	150	80.1	104.9	Pass
7	U307	FP6188-25S5 (2.5V) -DDR4	0.191		130		250	70	125.17	150	81.4	106.2	Pass
8	U1	S905X2-J CPU	0.5821		5.36	10.7	18.4	70	101.88	105	75.3	78.4	Pass
9	U504	H5AN4G6NBJR-XNC	0.1870		9.8	27.4	80.9		95		83.4		Pass
10	U506	H5AN4G6NBJR-XNC	0.1870		9.8	27.4	80.9		95		85.0	86.8	Pass
11	U503	H5AN8G6NCJR-XNC	0.1870		9.8	27.4	80.9		95		80.0	81.8	Pass
12	U505	H5AN8G6NNCR-XNC	0.1870		9.8	27.4	80.9		95		82.0	83.8	Pass
13	U602	KLMAG1JETD-B041	0.2802		2	4.8	35.7	85	124.44	125	82.6	83.2	Pass
14	U1001	CYW20704	0.3000		42.89	23.75	61.21	85	90.496	103.36	74.3	87.2	Pass
15	Y1001	20MHz	0.0001					100	100		74.7		Pass
16	U801	RTL8211F-CG	0.0438	0.36			31.3	70	81.9	82	73.8		Pass
17	Y401	24MHz	0.0001					105	105		77.7		Pass
18	Y801	25MHz	0.0001					105	105		72.7		Pass
19	U1101	TLV320ADC3101IRGET	0.1000	0.4	34.1	11.5	33.9	85	101.59	105	71.9	72.0	Pass

Summary:

- All of key components in system are passed its SPEC. @50deg. Ambient temperature.
- The temperature of housing surface top/bottom are under 65 degree(<Δ15deg.).

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