ROC236AX

Thermal & Function

TEST REPORT

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1. SYSTEM SPEC

1-1. PRODUCT PHOTOS

1-2. SYSTEM COFIGURATION

System Configuration	
Motherboard	ASROCK IMB-1222
CPU	Intel® I7-10700TE
Memory	Innodisk DDR4-2400 8G SODIMM
M.2 NVME PCIe SSD	7Starlake 2.5" SSD 256GB
VGA CARD	TUL ES768KL-I3U

2. Test Plan

2-1. Thermal Measurement Process

Test Purpose	The purpose of performing thermal profile test is to identify potential thermal problem of the EUT. And it is to aid products in reliability assessment considering that semiconductor failure rates rise rapidly with increasing junction temperature In case of systems cooling, patterns will vary with stacking choices, temperature/thermal mapping can aid in the development of optimum tacking arrangements
Test Equipment	1. KSON THS-B4T-150 Chamber 2. YOKOGAWA MV1000, Thermometer (FLUKE50D K/J)
Quantity Tested	Minimum 1 Set
Test Software	Passmark Burn-In Test under Windows 10
Test Procecedure	1. Thermal pre-scan measurement: Temperature: -40~70℃/60%RH 2. Thermal actual measurement: a. Select the test points according to the IR photo and attach thermocouples to the hot points b. Put the EUT in thermal chamber and set the temperature profile of as test specification c. Turn on the thermal chamber and power on the EUT to enter windows environment to run Max Power Test + 3DMARK 2003 application program d. After the EUT executing the test software for 4 hours, record thermal maximum value for each thermocouples point. e. Turn off the thermal chamber and EUT f. Verify and check recorded figure of each components to its' operating temperature range listed in specification/approval sheet of each measured component
Test diagram of curves	Environment defines for 8 hours

2-2. ROC236AX TEST RESULT

TEST ITEM:

2.2.1 TEMPERATURE CYCLE

Burn-in test under each temperature with maximum quantity of external devices on all I/O connected and full loading status on each device

Test Temperature	Test Result
-20℃	PASS
0℃	PASS
25℃	PASS
40℃	PASS
50℃	PASS
60℃	PASS

2.2.2 I/O FUNCTION

#Confirm the system specifications and I/O connection to ensure that they are functioning properly

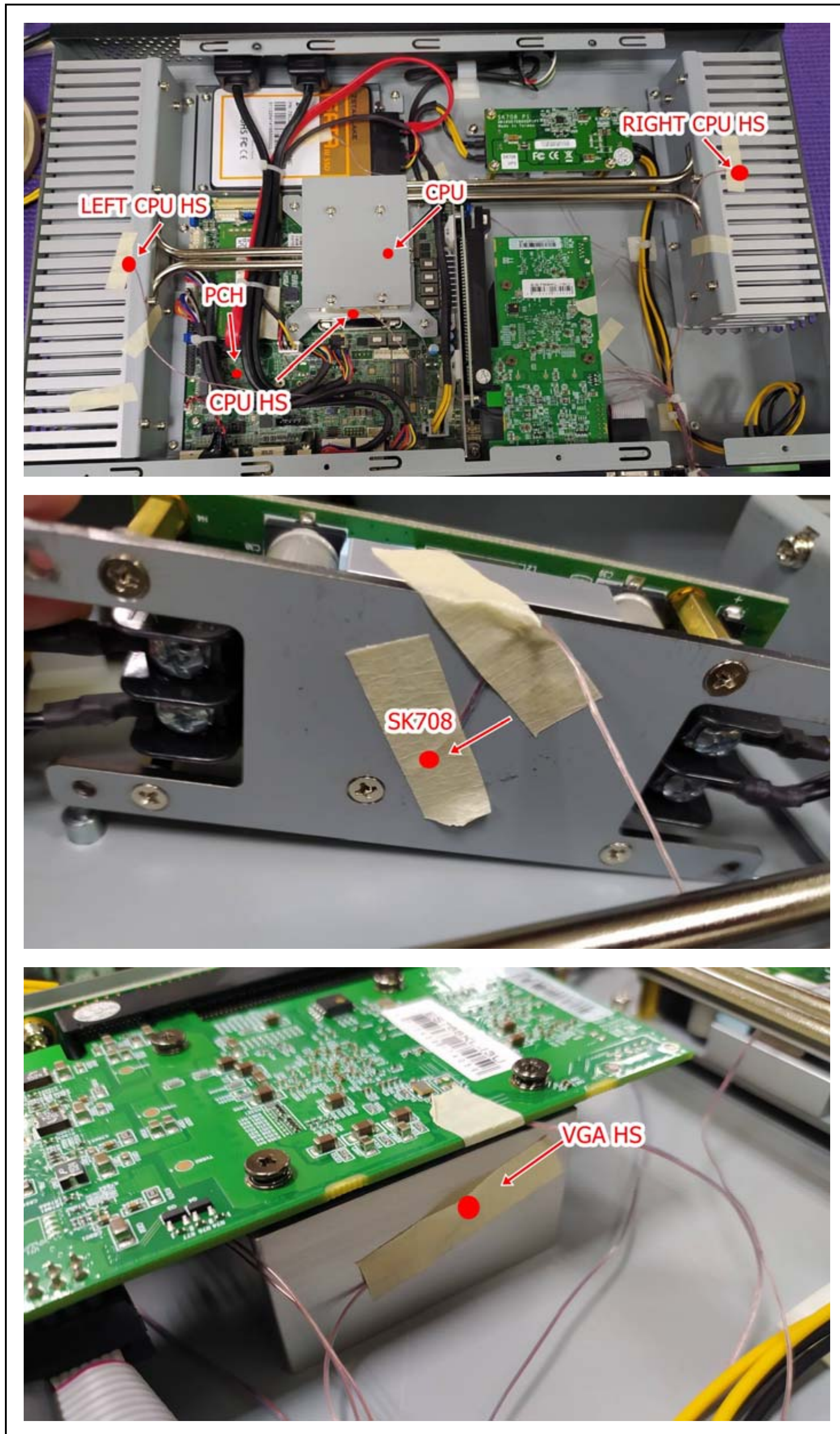
Item	Criteria	Result
USB3.0 *4 USB2.0 *4	Connection 2.5” USB3.0 SSD device and transfer data test	PASS
	PassMark USB3.0 Loopback Plugs for Troubleshooting and Testing USB 3.0 ports.	
LAN * 2	Connection 2.5” USB3.0 SSD device and transfer data test	PASS
HDMI*3 / VGA *1	Check work well	PASS
Line Out/Mic In	Check work well	PASS

2.2.3 LOW-TEMP. BOOT-UP

#Power supply under -20℃ and ensure that the system boot up properly

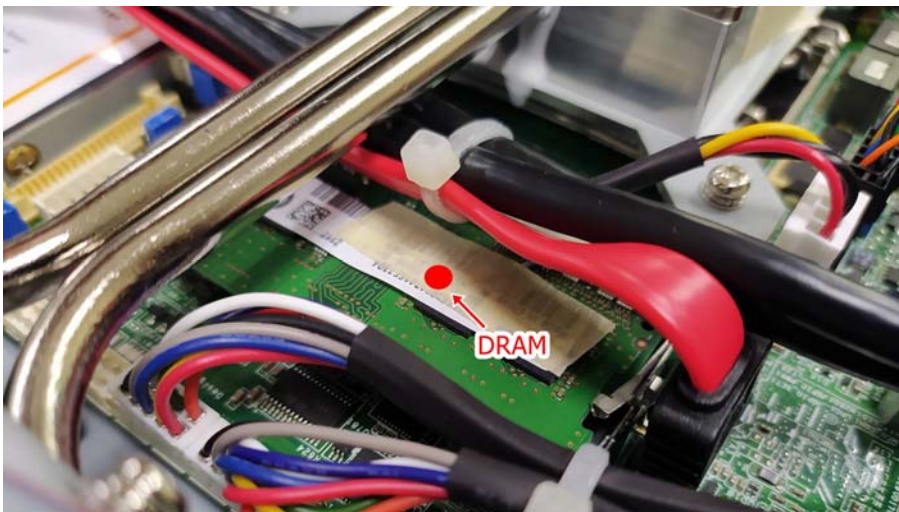
Ambient Temp.	Test Result
-20℃	PASS

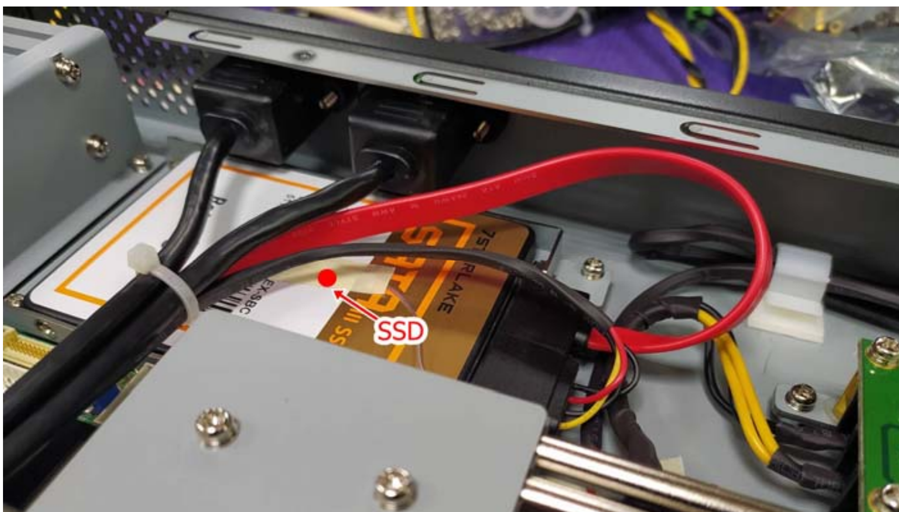
3. Thermal Test Point



TEST POINT NO.	Test Point
1	CPU
2	PCH
3	DRAM
4	SSD
5	VGA Chip
6	SK708
7	CPU HS
8	VGA HS
9	LEFT CPU HS
10	RIGHT CPU HS

VGA CHIP


DRAM

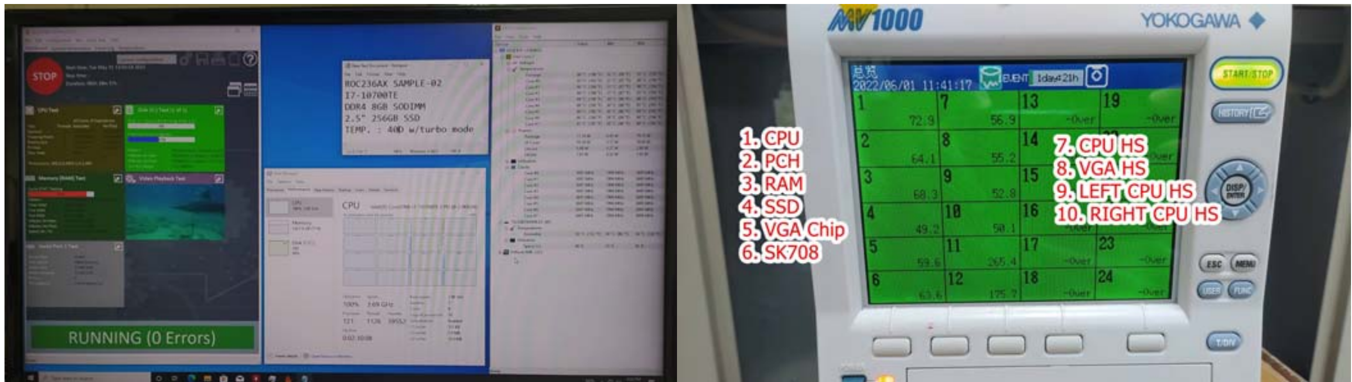

SSD

4. Test Photo in LAB

- Chamber in 25℃

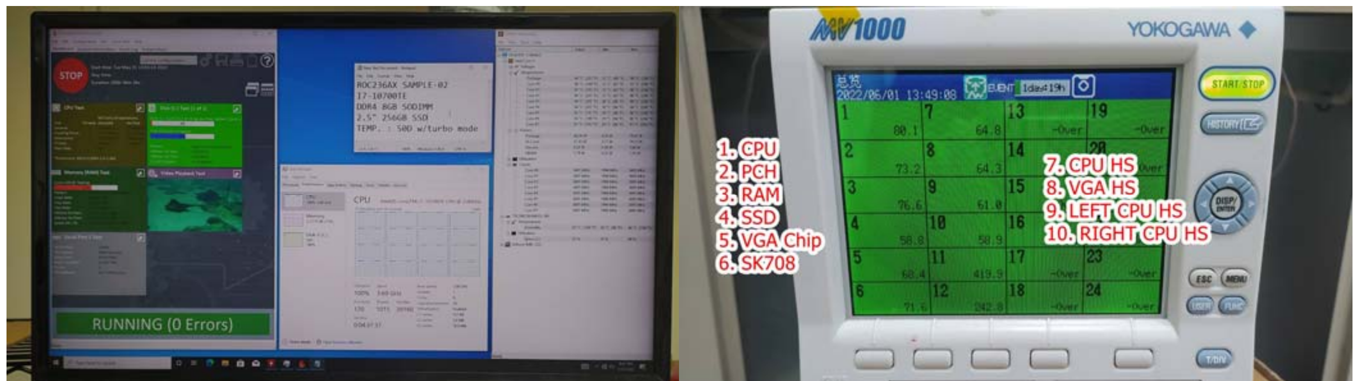
TEST POINT NO.	Test Point \ Ambient Temp.	25℃
	CPU FRQ.	3.7G
	CPU Tj. (<105℃)	72
1	CPU	57.9
2	PCH	48.6
3	DRAM	53.4
4	SSD	34.3
5	VGA Chip	44.9
6	SK708	48.7
7	CPU HS	42.6
8	VGA HS	40.4
9	LEFT CPU HS	38.1
10	RIGHT CPU HS	35.7

- Chamber in 40℃



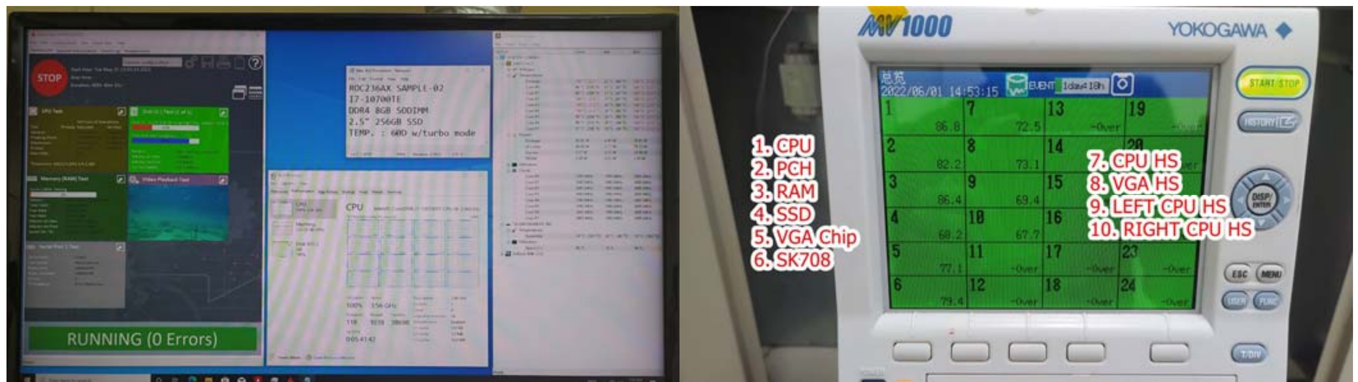
TEST POINT NO.	Ambient Temp. / Test Point	40℃
	CPU FRQ.	3.7G
	CPU Tj. (<105℃)	88
1	CPU	72.9
2	PCH	64.1
3	DRAM	68.3
4	SSD	49.2
5	VGA Chip	59.6
6	SK708	63.6
7	CPU HS	56.9
8	VGA HS	55.2
9	LEFT CPU HS	52.8
10	RIGHT CPU HS	50.1

- Chamber in 50℃



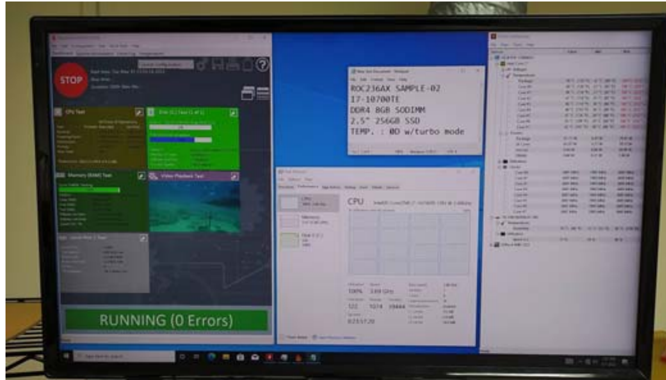
TEST POINT NO.	Ambient Temp. / Test Point	50℃
	CPU FRQ.	3.7G
	CPU Tj. (<105℃)	94
1	CPU	80.1
2	PCH	73.2
3	DRAM	76.6
4	SSD	58.8
5	VGA Chip	68.4
6	SK708	71.6
7	CPU HS	64.8
8	VGA HS	64.3
9	LEFT CPU HS	61
10	RIGHT CPU HS	58.9

- Chamber in 60℃



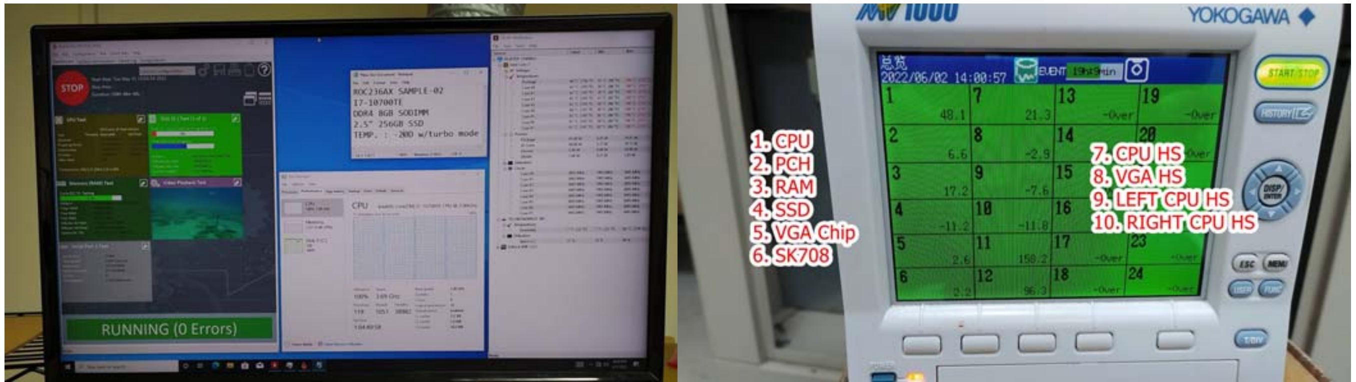
TEST POINT NO.	Test Point \ Ambient Temp.	60℃
	CPU FRQ.	3.6G
	CPU Tj. (<105℃)	100
1	CPU	86.8
2	PCH	82.8
3	DRAM	86.4
4	SSD	68.2
5	VGA Chip	77.1
6	SK708	79.4
7	CPU HS	72.5
8	VGA HS	73.1
9	LEFT CPU HS	69.4
10	RIGHT CPU HS	67.7

- Chamber in 0℃



TEST POINT NO.	Ambient Temp. / Test Point	0℃
	CPU FRQ.	3.7G
	CPU Tj. (<105℃)	49
1	CPU	32.3
2	PCH	22.6
3	DRAM	28.4
4	SSD	8.6
5	VGA Chip	19
6	SK708	22
7	CPU HS	16.7
8	VGA HS	14.6
9	LEFT CPU HS	12.9
10	RIGHT CPU HS	9.7

- Chamber in -20℃



TEST POINT NO.	Test Point \ Ambient Temp.	-20℃
	CPU FRQ.	3.7G
	CPU Tj. (<105℃)	66
1	CPU	48.1
2	PCH	6.6
3	DRAM	17.2
4	SSD	-11.2
5	VGA Chip	2.6
6	SK708	2.2
7	CPU HS	21.3
8	VGA HS	-2.9
9	LEFT CPU HS	-7.6
10	RIGHT CPU HS	-11.8

Low Temperature SYSTEM Boot up Test

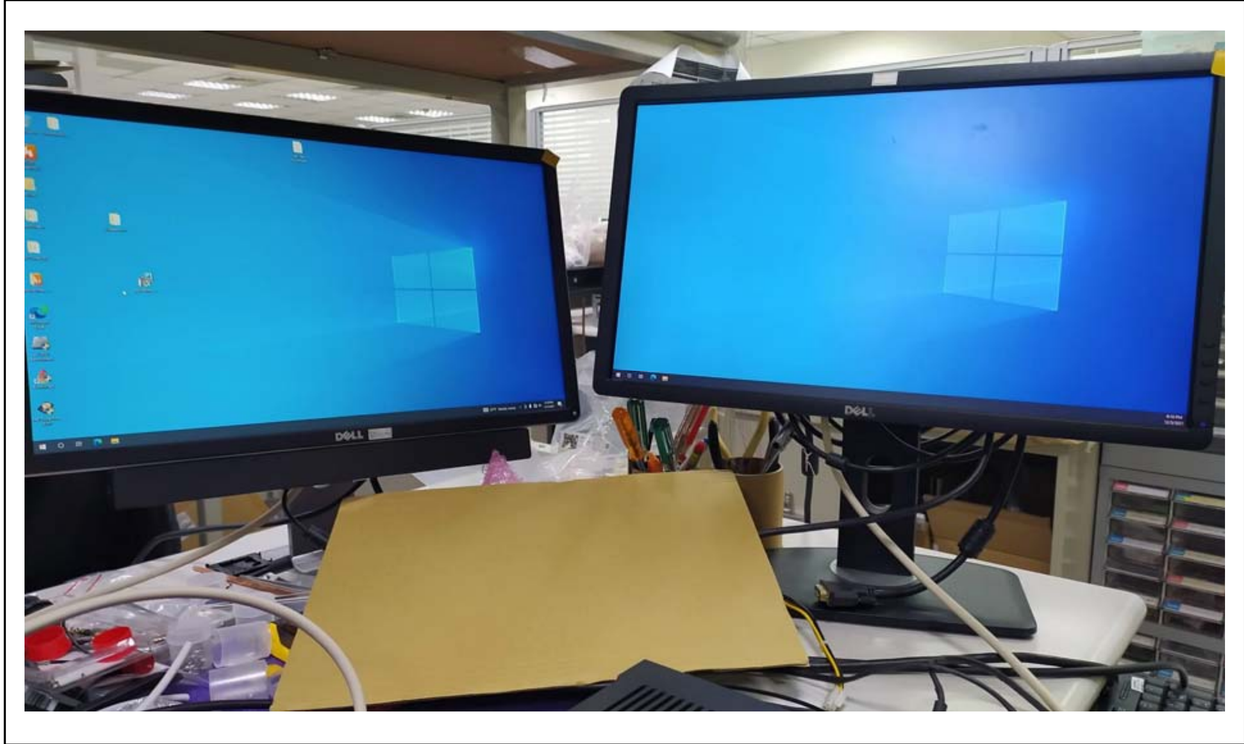
- Ambient Temp. -20℃

5. ROC236AX THERMAL TEST RESULT (-20～+60 DEGREE)

TEST POINT NO.	Ambient Tem / Test Point	-20℃	0℃	25℃	40℃	50℃	60℃
	CPU FRQ.	3.7G	3.7G	3.7G	3.7G	3.7G	3.6G
	CPU Tj. (<105℃)	66	49	72	88	94	100
1	CPU	48.1	32.3	57.9	72.9	80.1	86.8
2	PCH	6.6	22.6	48.6	64.1	73.2	82.8
3	DRAM	17.2	28.4	53.4	68.3	76.6	86.4
4	SSD	-11.2	8.6	34.3	49.2	58.8	68.2
5	VGA Chip	2.6	19	44.9	59.6	68.4	77.1
6	SK708	2.2	22	48.7	63.6	71.6	79.4
7	CPU HS	21.3	16.7	42.6	56.9	64.8	72.5
8	VGA HS	-2.9	14.6	40.4	55.2	64.3	73.1
9	LEFT CPU HS	-7.6	12.9	38.1	52.8	61	69.4
10	RIGHT CPU HS	-11.8	9.7	35.7	50.1	58.9	67.7

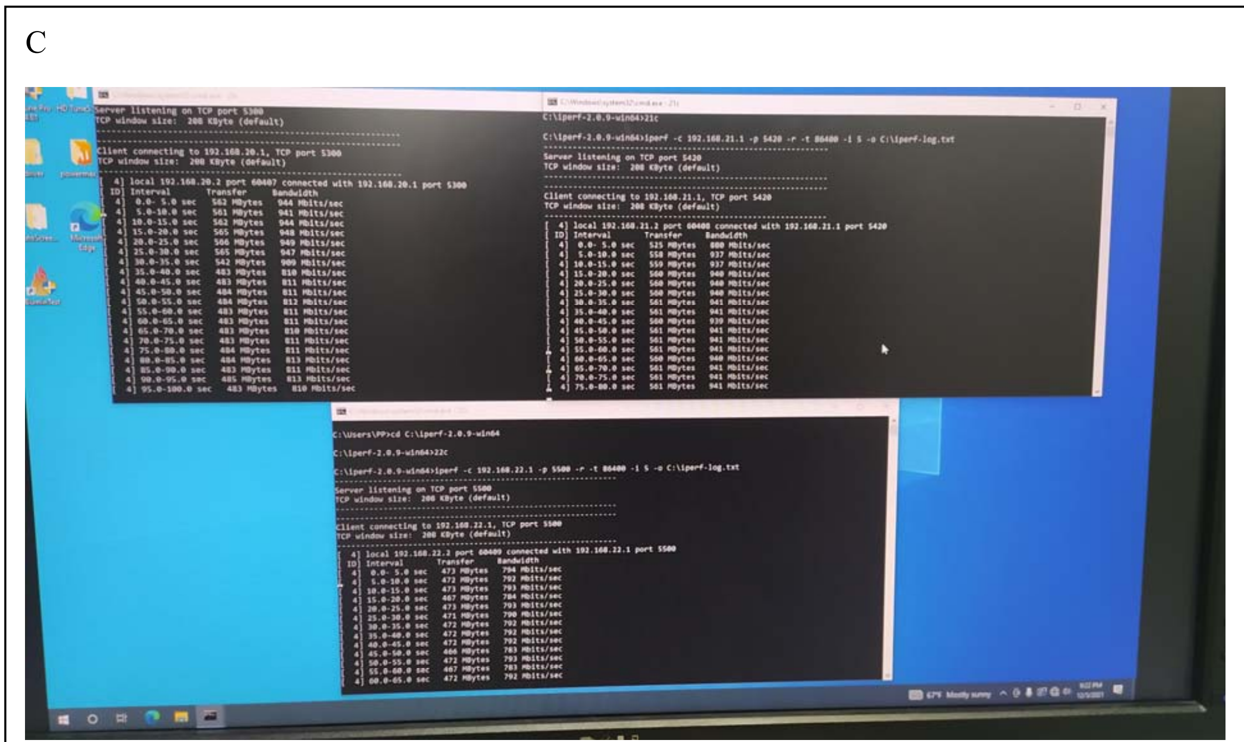
6 . I/O FUNCTION TEST

(1) VGA / HDMI OUTPUT TEST



(2) LAN transfer data test

C



(3) USB 3.0 transfer data test