AV800-D27

Thermal & Function
TEST REPORT

Product Manager	System Leader	System Engineer
Vinnie Yuan	James Chan	William Cheng

Date: 12/09/2022

INDEX

1. SYSTEM SPEC

   1-1. PRODUCT PHOTOS

   1-2. SYSTEM COFIGURATION

2. TEST PLAN

   2-1. THERMAL MEASUREMENT PROCESS

   2-2. AV800-D27 TEST RESULT

      2-2-1. TEMPERATURE CYCLE

      2-2-2. I/O FUNCTION

      2-2-3. LOW-TEMP. BOOT-UP

3. THERMAL TEST POINT

4. TEST PHOTOS IN LAB

5. AV800-D27 THERMAL TEST RESULT

6. FUNCTION TEST

1. SYSTEM SPEC

1-1. PRODUCT PHOTOS

1-2. SYSTEM COFIGURATION

System Configuration	
Motherboard	Supermicro X12SDV-20CSPT8F
CPU	Intel® XEON D-2796NT
Memory	Samsung DDR4-2666 32G ECC+REG DIMM *2
SSD	Exascend EXSAM1E002TB125IEA 2.5” 2TB W/AES
POWER BOARD	SK712 18~36V
GPU	Nvidia A4500 MXM GPU
100G LAN	Mellanox connectx6-dx dual 100G LAN

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: -20~60℃/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 testing period Temp (℃) 70 60 55 50 40 25 -10 -20 1.5 3 4.5 5 6.5 8 9.5 10 11.5 12 13.5 14 15.5 16

2-2. AV800-D27 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

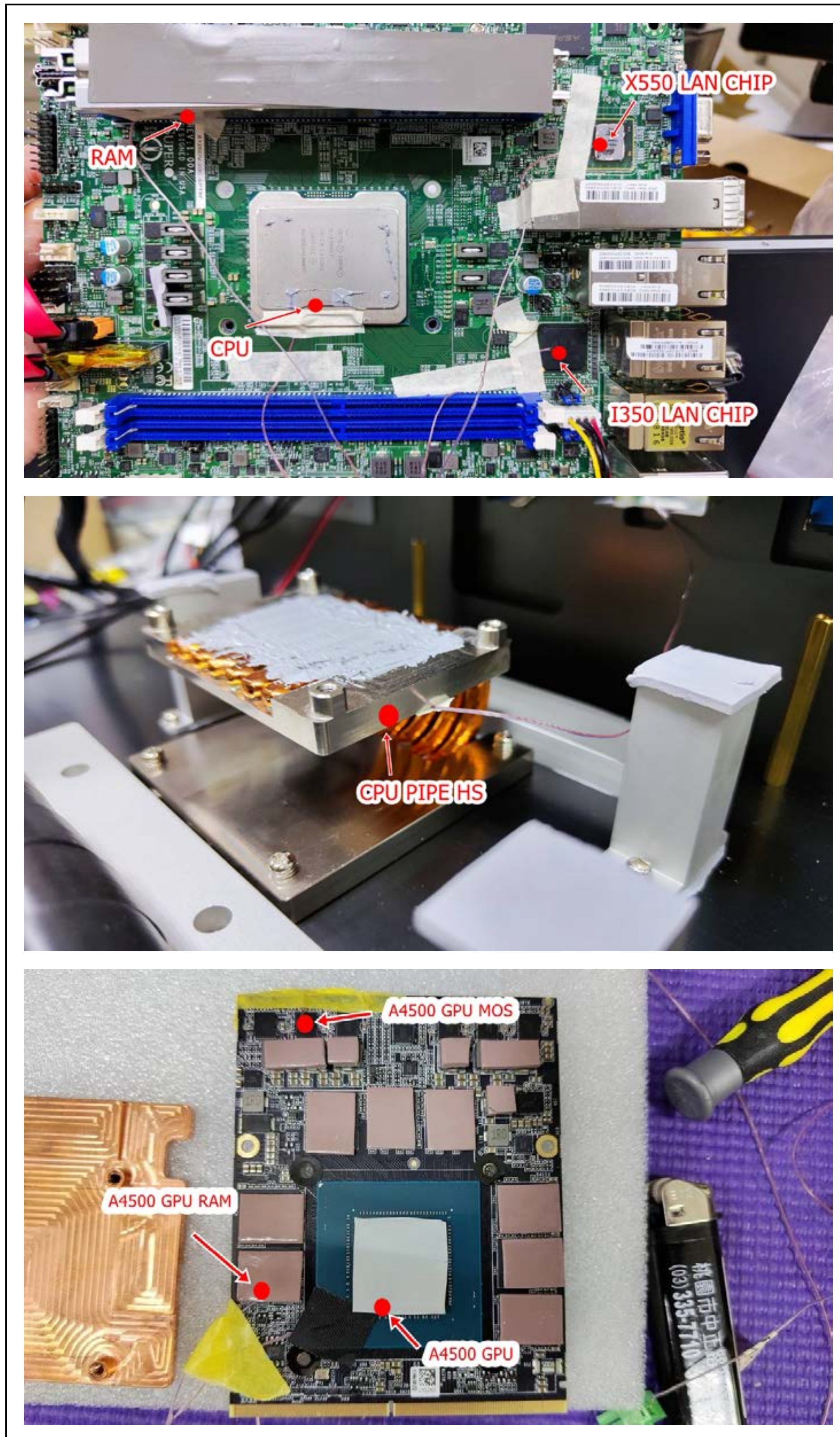
Item	Criteria	Result
USB3.0 *1	Connection 2.5” USB3.0 SSD device and transfer data test	PASS
	PassMark USB3.0 Loopback Plugs for Troubleshooting and Testing USB 3.0 ports.	
LAN *4	Connection 1G/10G/100G SWITCH HUB transfer data test	PASS
VGA *1	Check work well	PASS

2.2.3 LOW-TEMP. BOOT-UP

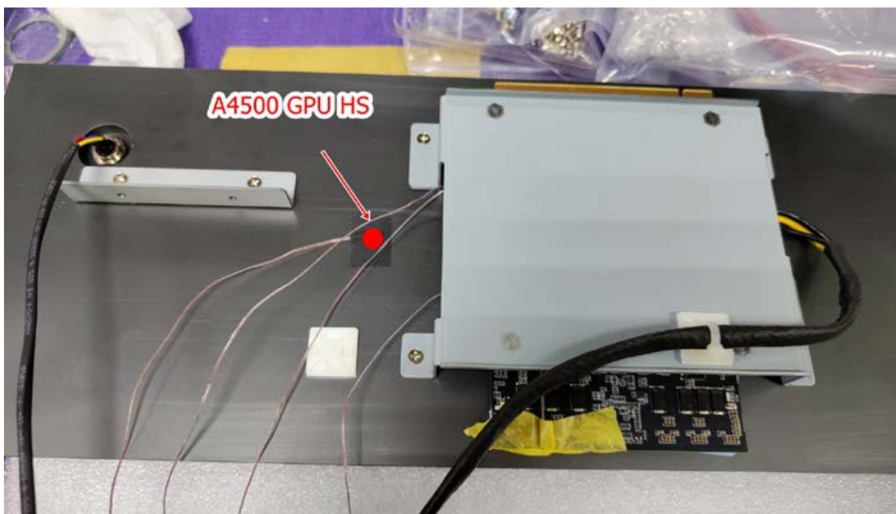
#Power supply under -20℃ and ensure that the system boot up properly

Ambient Temp.	Test Result
-20℃	PASS

3. Thermal Test Point



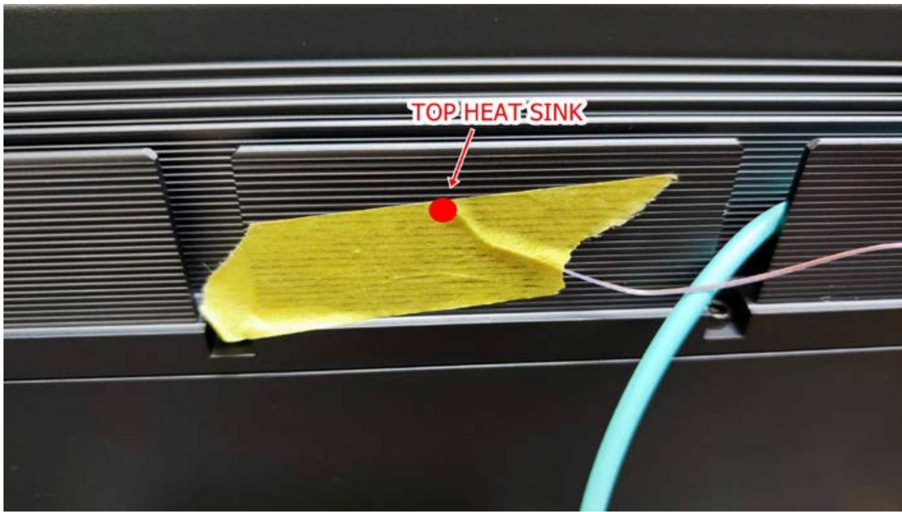
TEST POINT NO.	Test Point
1	CPU
2	PCH
3	DRAM
4	SSD
5	VGA Chip
6	SK708
7	CPU HS
8	VGA HS
9	LEFT CPU HS
10	RIGHT CPU HS


A4500 GPU HS

100G LAN CHIP
Mellanox

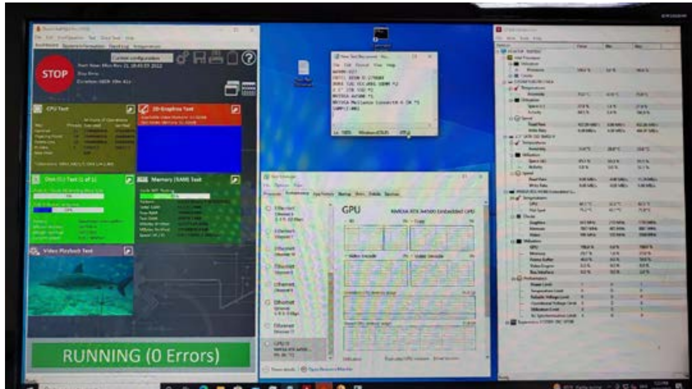
SK712 PW Q7

2.5" SSD
EXASCEND


TOP HEAT SINK

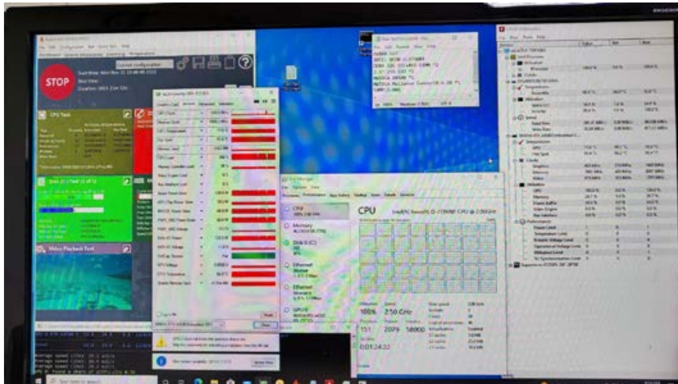
4. Test Photo in LAB

- Chamber in 25℃



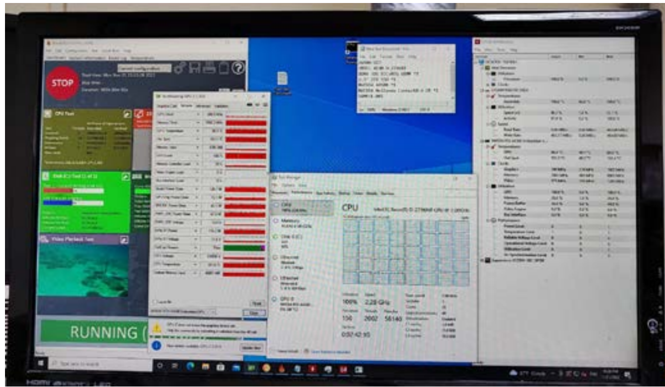
TEST POINT NO.	Ambient Temp. / Test Point	25℃
	CPU FRQ.	2.5G
	CPU Tj. (<105℃)	81
1	CPU	61.6
2	CPU PIPE HS	50.8
3	RAM	47.6
4	X550 LAN CHIP	51.9
5	X350 LAN CHIP	46.7
6	A4500 GPU	56.7
7	A4500 GPU RAM	52.5
8	A4500 GPU MOS	46.2
9	A4500 GPU HS	37.1
10	100G LAN CHIP	45.7
11	SK712 PW BOARD Q7	58.9
12	2.5" SSD	N/A
13	TOP HEST SINK	NA

- Chamber in 40℃



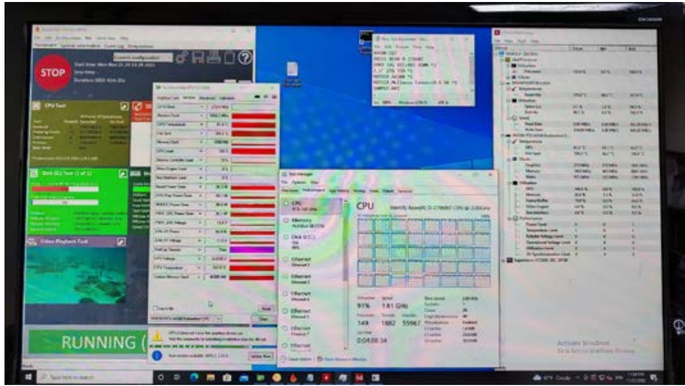
TEST POINT NO.	Ambient Temp. / Test Point	40℃
	CPU FRQ.	2.5G
	CPU Tj. (<105℃)	95
1	CPU	79.1
2	CPU PIPE HS	66.8
3	RAM	64
4	X550 LAN CHIP	68.2
5	X350 LAN CHIP	63.4
6	A4500 GPU	72.9
7	A4500 GPU RAM	68.5
8	A4500 GPU MOS	62.8
9	A4500 GPU HS	52.1
10	100G LAN CHIP	62,5
11	SK712 PW BOARD Q7	77.7
12	2.5" SSD	85.1
13	TOP HEST SINK	41.1

- Chamber in 50℃



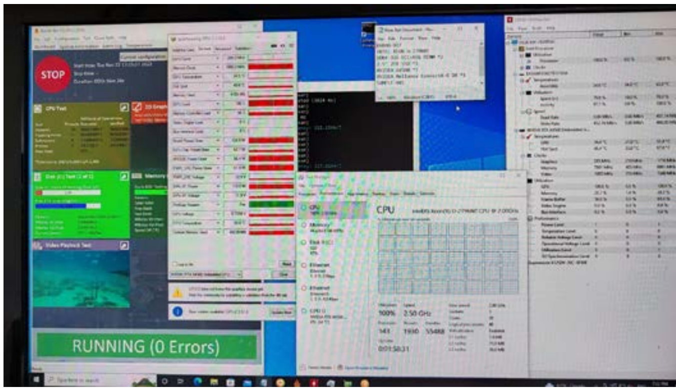
TEST POINT NO.	Ambient Temp. / Test Point	50℃
	CPU FRQ.	2.3G
	CPU Tj. (<105℃)	101
1	CPU	88.7
2	CPU PIPE HS	76.2
3	RAM	74.7
4	X550 LAN CHIP	79.6
5	X350 LAN CHIP	73.9
6	A4500 GPU	84
7	A4500 GPU RAM	79.3
8	A4500 GPU MOS	74.1
9	A4500 GPU HS	66.4
10	100G LAN CHIP	73.3
11	SK712 PW BOARD Q7	88.9
12	2.5" SSD	93.5
13	TOP HEST SINK	51.6

- Chamber in 60℃



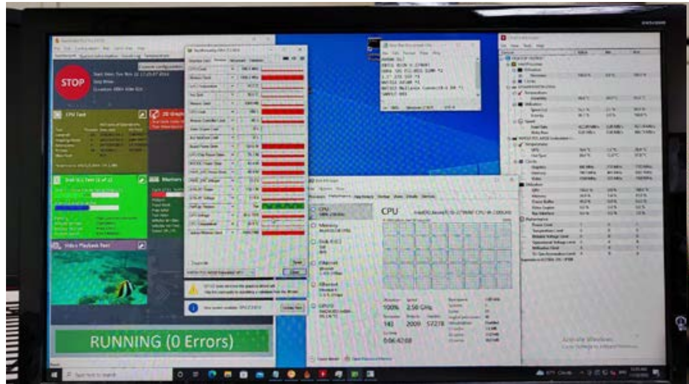
TEST POINT NO.	Ambient Temp. / Test Point	60℃
	CPU FRQ.	1.8G
	CPU Tj. (<105℃)	101
1	CPU	93.6
2	CPU PIPE HS	82.6
3	RAM	82.4
4	X550 LAN CHIP	89
5	X350 LAN CHIP	82.5
6	A4500 GPU	89
7	A4500 GPU RAM	85
8	A4500 GPU MOS	80.9
9	A4500 GPU HS	71.2
10	100G LAN CHIP	82.9
11	SK712 PW BOARD Q7	93.1
12	2.5" SSD	100.6
13	TOP HEST SINK	61.7

- Chamber in 0℃



TEST POINT NO.	Ambient Temp. / Test Point	0℃
	CPU FRQ.	2.5G
	CPU Tj. (<105℃)	50
1	CPU	33.3
2	CPU PIPE HS	25.3
3	RAM	21.5
4	X550 LAN CHIP	25
5	X350 LAN CHIP	20.6
6	A4500 GPU	29.8
7	A4500 GPU RAM	27.2
8	A4500 GPU MOS	18.6
9	A4500 GPU HS	10.5
10	100G LAN CHIP	19.4
11	SK712 PW BOARD Q7	30.4
12	2.5" SSD	NA
13	TOP HEST SINK	0.9

- Chamber in -20℃



TEST POINT NO.	Ambient Temp. / Test Point	-20℃
	CPU FRQ.	2.5G
	CPU Tj. (<105℃)	36
1	CPU	17.8
2	CPU PIPE HS	10.4
3	RAM	1.6
4	X550 LAN CHIP	4.6
5	X350 LAN CHIP	0.6
6	A4500 GPU	10.9
7	A4500 GPU RAM	7.8
8	A4500 GPU MOS	-1.1
9	A4500 GPU HS	-9.3
10	100G LAN CHIP	-0.8
11	SK712 PW BOARD Q7	8.4
12	2.5" SSD	27.7
13	TOP HEST SINK	-18.5

AV800-D27

Low Temperature SYSTEM Boot up Test

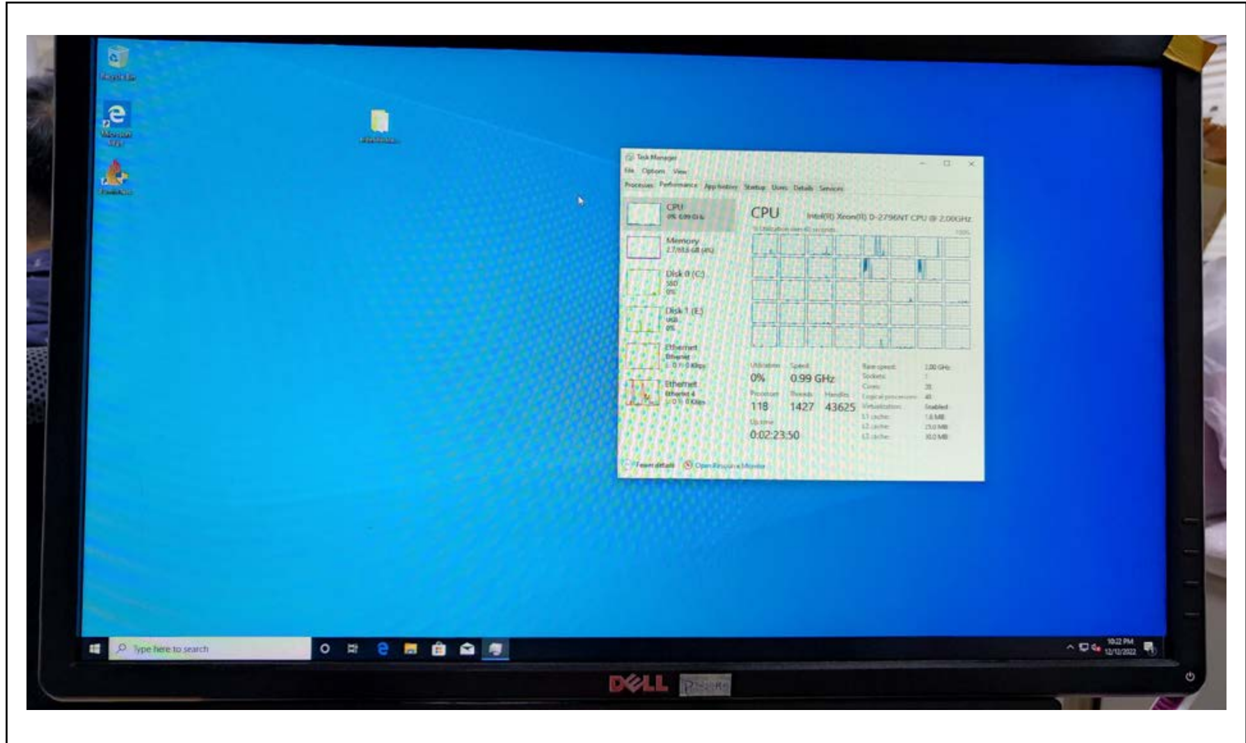
- Ambient Temp. -20℃

5. AV800-D27 THERMAL TEST RESULT (-20~+60 DEGREE)

TEST POINT NO.	Ambient Temp. / Test Point	-20℃	0℃	25℃	40℃	50℃	60℃
	CPU FRQ.	2.5G	2.5G	2.5G	2.5G	2.3G	1.8G
	CPU Tj. (<105℃)	36	50	81	95	101	101
1	CPU	17.8	33.3	61.6	79.1	88.7	93.6
2	CPU PIPE HS	10.4	25.3	50.8	66.8	76.2	82.6
3	RAM	1.6	21.5	47.6	64	74.7	82.4
4	X550 LAN CHIP	4.6	25	51.9	68.2	79.6	89
5	X350 LAN CHIP	0.6	20.6	46.7	63.4	73.9	82.5
6	A4500 GPU	10.9	29.8	56.7	72.9	84	89
7	A4500 GPU RAM	7.8	27.2	52.5	68.5	79.3	85
8	A4500 GPU MOS	-1.1	18.6	46.2	62.8	74.1	80.9
9	A4500 GPU HS	-9.3	10.5	37.1	52.1	66.4	71.2
10	100G LAN CHIP	-0.8	19.4	45.7	62,5	73.3	82.9
11	SK712 PW BOARD Q7	8.4	30.4	58.9	77.7	88.9	93.1
12	2.5" SSD	27.7	NA	N/A	85.1	93.5	100.6
13	TOP HEST SINK	-18.5	0.9	NA	41.1	51.6	61.7

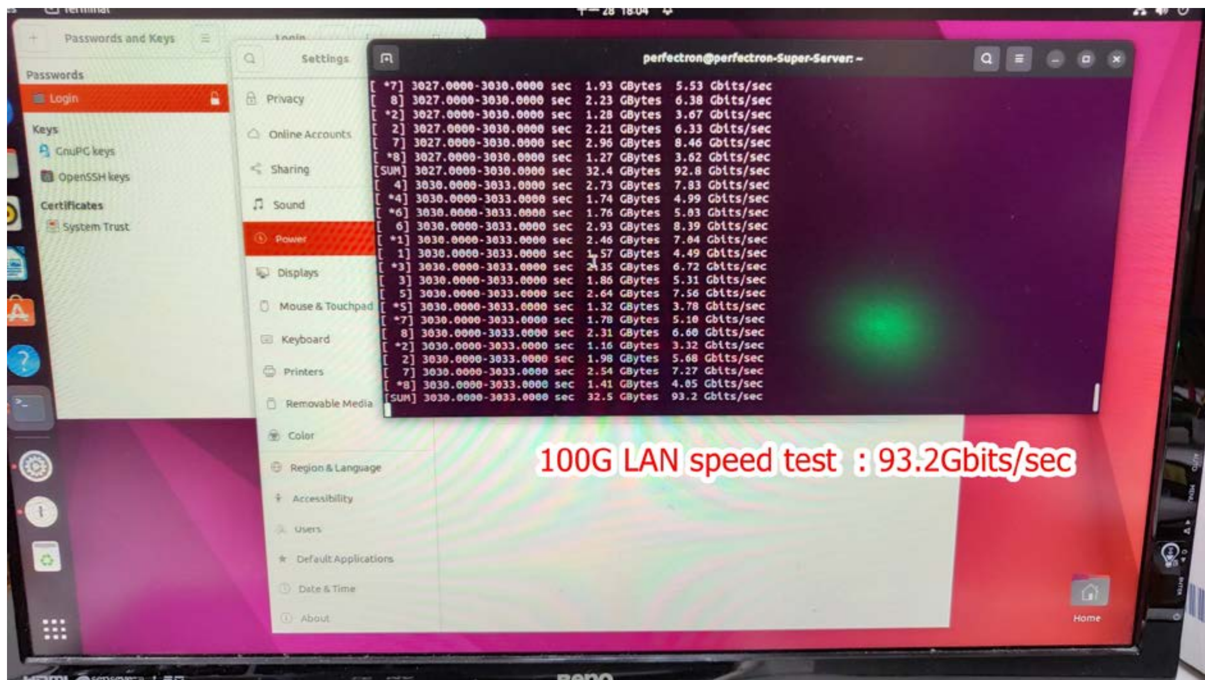
6 . I/O FUNCTION TEST

(1) VGA OUTPUT TEST

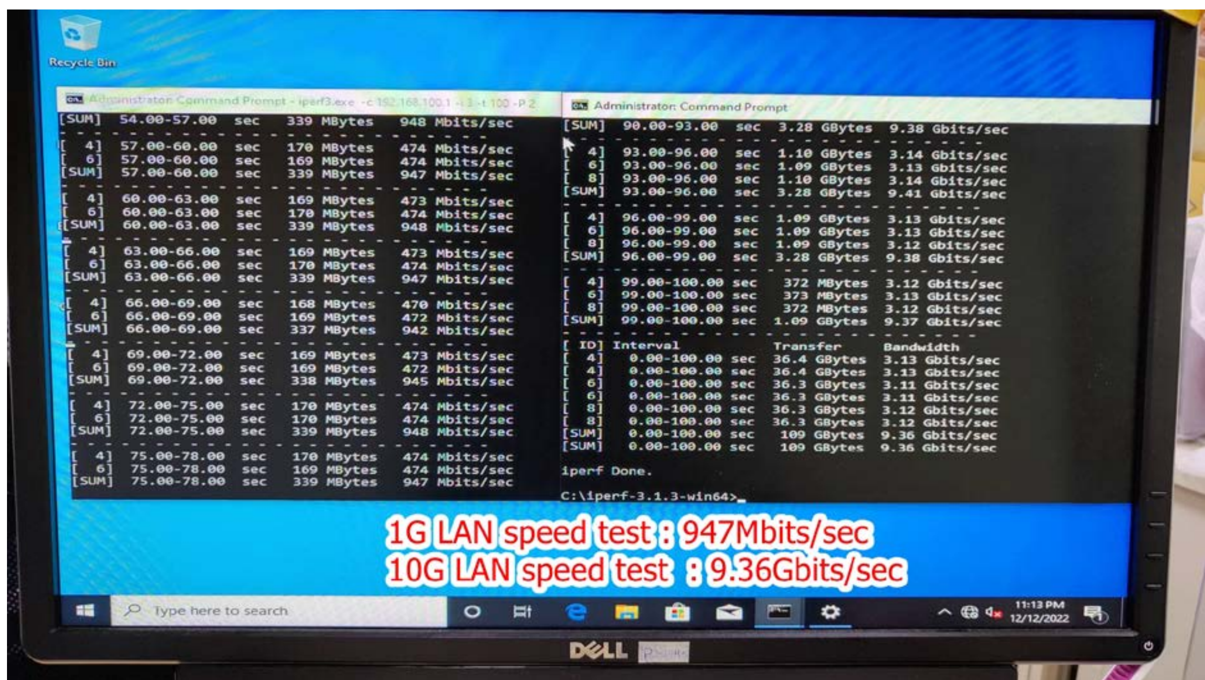


(2) LAN transfer data test

② **100G LAN TEST**



② **1G/10G LAN TEST**



(3) USB 3.0 transfer data test