



Thermal & Functions Test Report

THOR100-X11



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1. SYSTEM SPEC

1-1. PRODUCT PHOTOS



1-2. SYSTEM COFIGURATION

System Configuration	
Motherboard	OXY5363A
CPU	Intel® Core I7-1185G7E
Memory	DDR4-3200 16G SO-DIMM *1
SSD	7STARLAKE 2.5" SSD 512G
POWER BOARD	ONBOARD DC-DC 8V~24V
1G LAN	INTEL I225/I219

2. TEST PLAN

2.1. Thermal Measurement Process

Test Purpose	<p>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</p> <p>In case of systems cooling, patterns will vary with stacking choices, temperature/thermal mapping can aid in the development of optimum tacking arrangements</p>
Test Equipment	<p>1. KSON THS-B4T-150 Chamber</p> <p>2. YOKOGAWA MV1000, Thermometer (FLUKE50D K/J)</p>
Quantity Tested	Minimum 1 Set
Test Software	Passmark Burn-In Test under Windows 10
Test Procecedure	<ol style="list-style-type: none"> 1. Thermal pre-scan measurement: Temperature: -40~70°C /60%RH 2. Thermal actual measurement: <ol style="list-style-type: none"> 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	<p>Environment defines for 14 hours</p>

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2.2. THOR100-X11 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
-40°C	PASS
-20°C	PASS
25°C	PASS
40°C	PASS
50°C	PASS
60°C	PASS
70°C	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
USB2.0 *2	Connection 2.5" USB2.0 STICK device and transfer data test PassMark USB2.0 Loopback Plugs for Troubleshooting and Testing USB 2.0 ports.	PASS
RS232	PassMark RS232 Loopback Plugs for Troubleshooting and Testing RS232 ports.	PASS
LAN *2	Connection 1G SWITCH HUB transfer data test	PASS
Mini-DP *1	Check work well	PASS

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2.2.3 LOW-TEMP. BOOT-UP

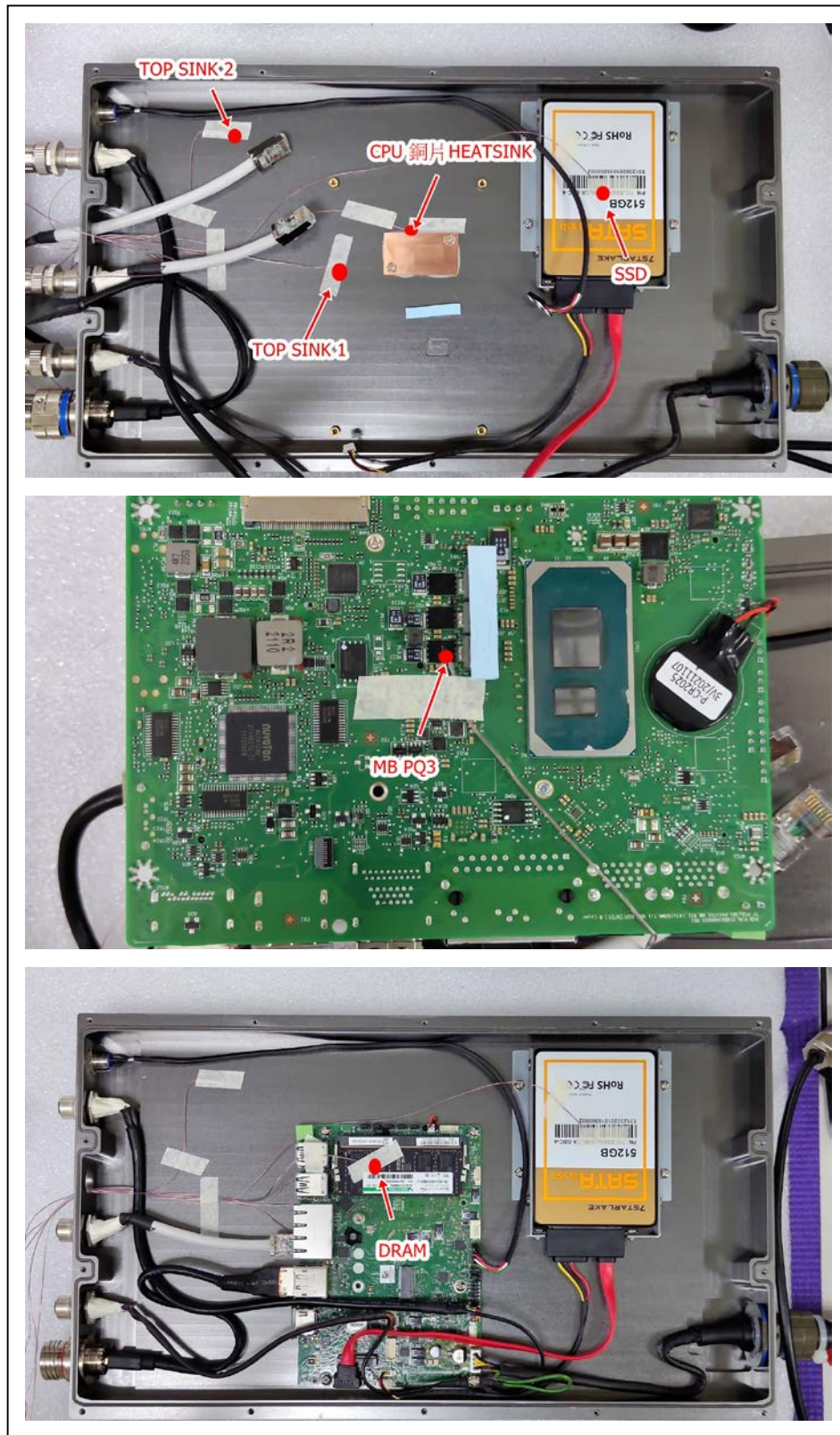
#Power supply under -40°C and ensure that the system boot up properly

Ambient Temp.	Test Result
-40°C	PASS

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3. THERMAL TEST POINT



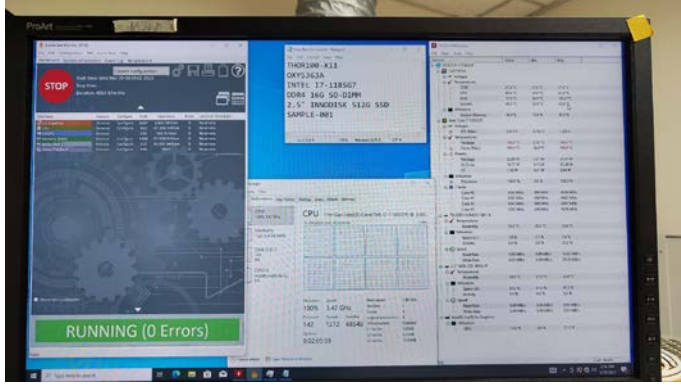
TEST POINT NO.	Test Point
1	CPU copper heatsink
2	MB PQ3
3	TOP SINK 1
4	DRAM
5	SSD
6	TOP SINK 2

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4. TEST PHOTO IN LAB

- Chamber in 25°C

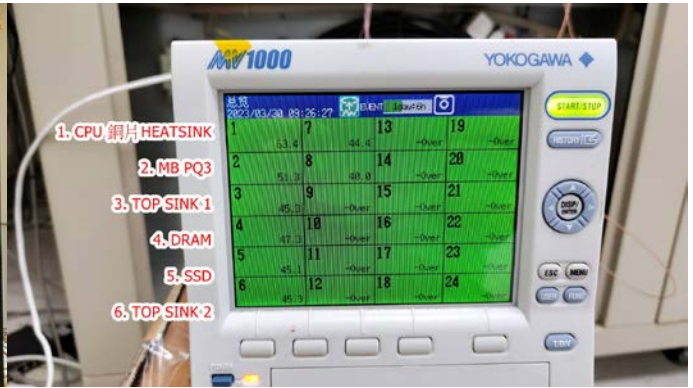
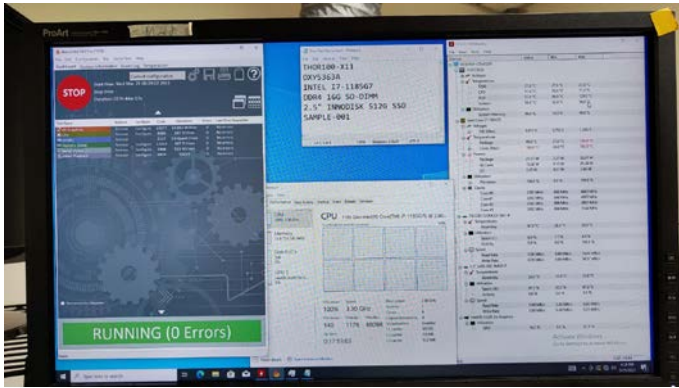


Test Point	Ambient Temp.	25°C
	CPU FRQ.	3.47G
	CPU TJ.	100
1	CPU COPPER HS	51
2	MB PQ3	37.1
3	TOP SINK 1	30.7
4	DRAM	32.6
5	SSD	30.4
6	TOP SINK 2	30.4

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- Chamber in 40°C

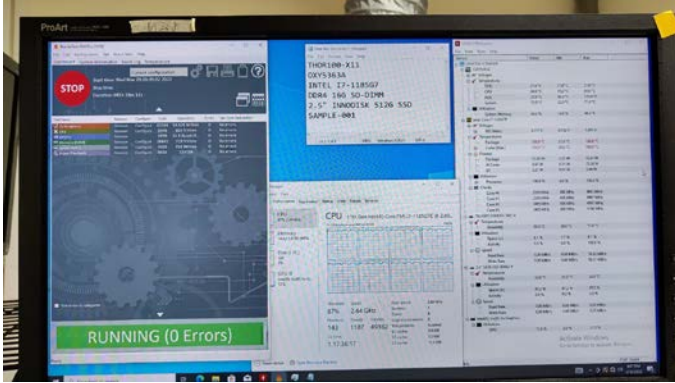


Test Point	Ambient Temp.	40°C
	CPU FRQ.	3.3G
	CPU TJ.	99
1	CPU COPPER HS	63.4
2	MB PQ3	51.3
3	TOP SINK 1	45.3
4	DRAM	47.3
5	SSD	45.1
6	TOP SINK 2	45.3

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- Chamber in 50°C

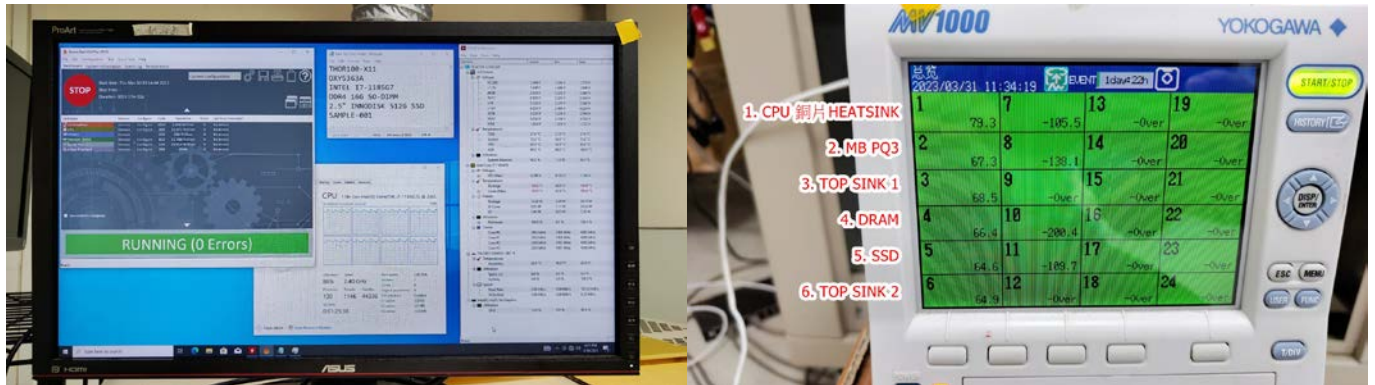


Test Point	Ambient Temp.	50°C
	CPU FRQ.	2.4G
	CPU TJ.	100
1	CPU COPPER HS	71.6
2	MB PQ3	60.4
3	TOP SINK 1	55.1
4	DRAM	56.7
5	SSD	54.8
6	TOP SINK 2	55.1

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- Chamber in 60°C

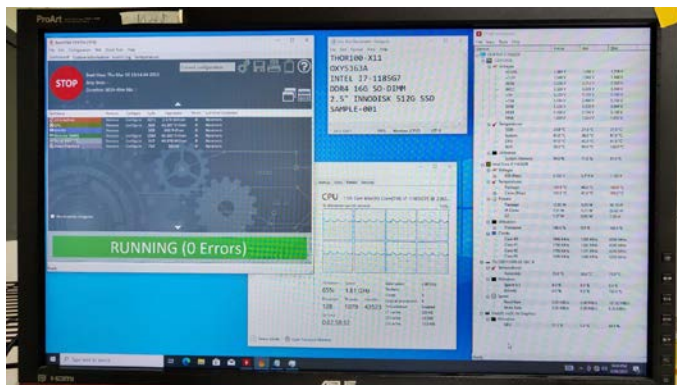


Test Point	Ambient Temp.	60°C
	CPU FRQ.	2.4G
	CPU TJ.	100
1	CPU COPPER HS	79.3
2	MB PQ3	67.3
3	TOP SINK 1	68.5
4	DRAM	66.4
5	SSD	64.6
6	TOP SINK 2	64.9

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- Chamber in 70°C

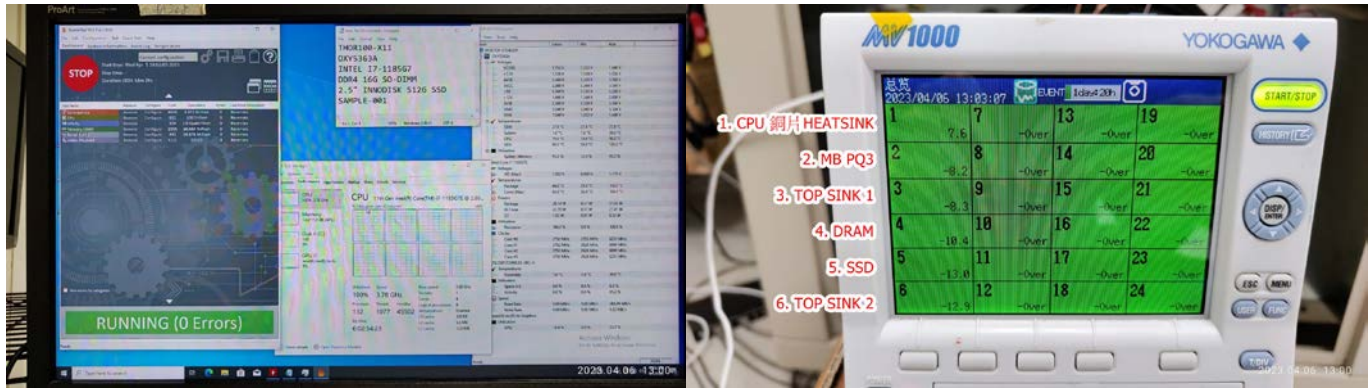


Test Point	Ambient Temp.	70°C
	CPU FRQ.	1.8G
	CPU TJ.	100
1	CPU COPPER HS	86.6
2	MB PQ3	76.2
3	TOP SINK 1	78.1
4	DRAM	76.2
5	SSD	74.7
6	TOP SINK 2	75

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- Chamber in -20°C

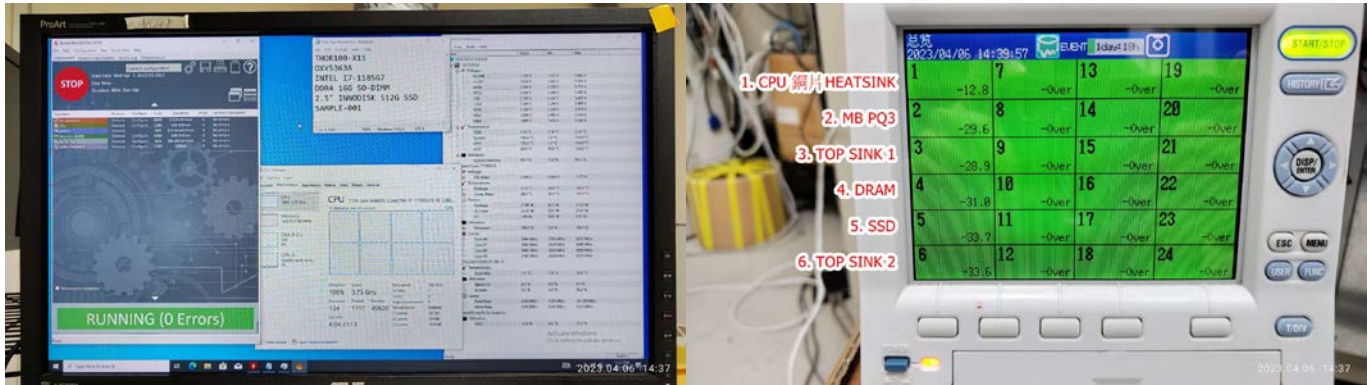


Test Point	Ambient Temp.	-20°C
	CPU FRQ.	3.8G
	CPU TJ.	64
1	CPU COPPER HS	7.6
2	MB PQ3	-8.2
3	TOP SINK 1	-8.3
4	DRAM	-10.4
5	SSD	-13
6	TOP SINK 2	-12.9

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- Chamber in -40°C

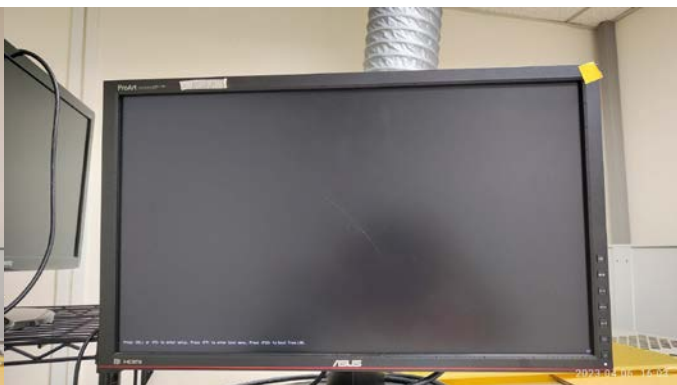
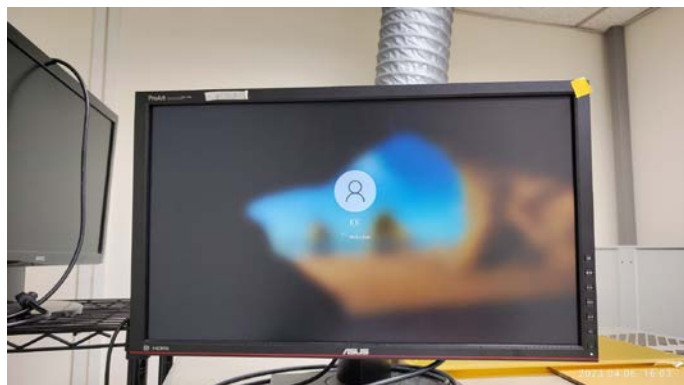
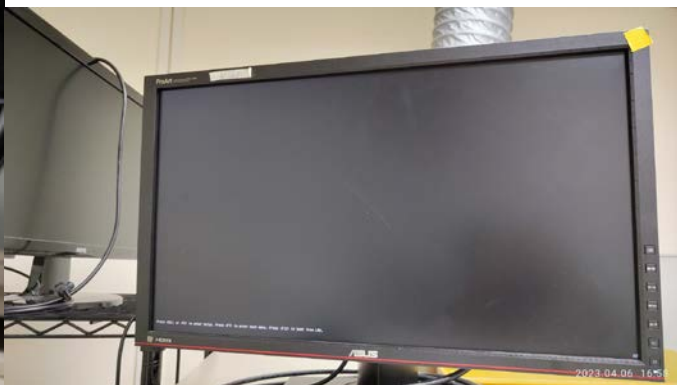
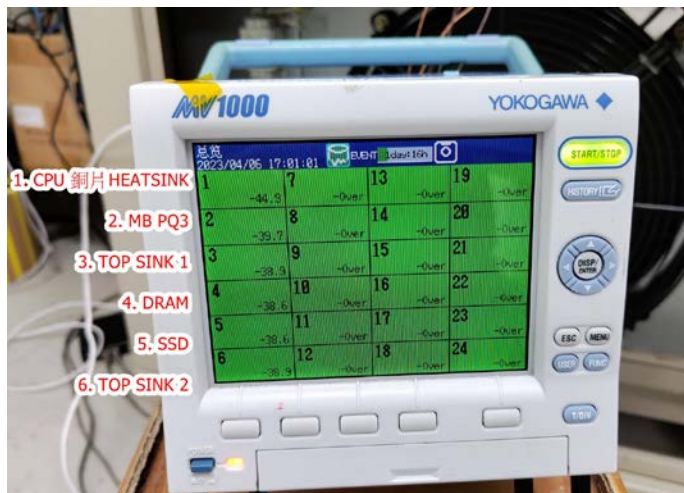


Test Point	Ambient Temp.	-40°C
	CPU FRQ.	3.75G
	CPU TJ.	38
1	CPU 銅片 HS	-12.8
2	MB PQ3	-29.6
3	TOP SINK 1	-28.9
4	DRAM	-31
5	SSD	-33.7
6	TOP SINK 2	-33.6

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Low Temperature SYSTEM Boot up Test - Ambient Temp. -40°C

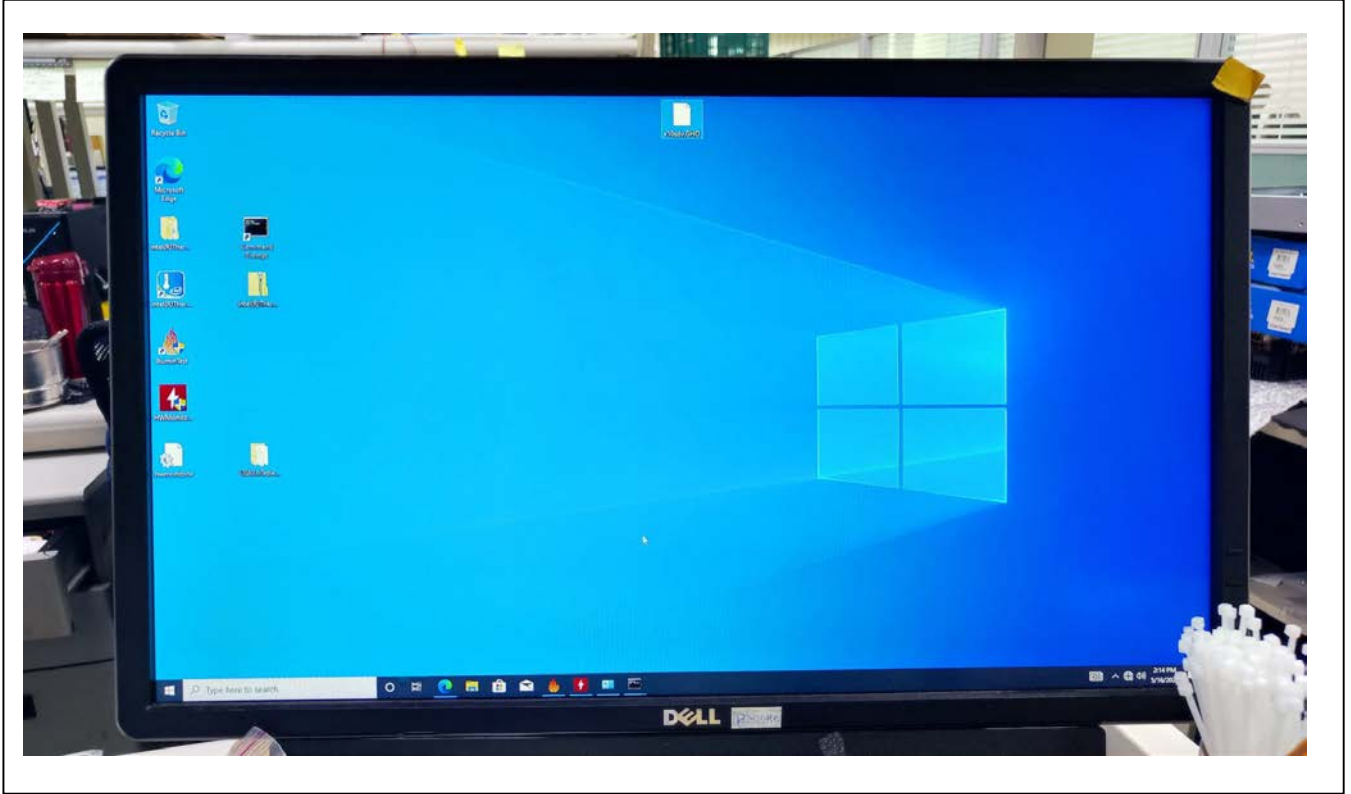


5. THOR100-X11 THERMAL TEST RESULT (-40~+70 DEGREE)

TEST POINT NO.	Ambient Temp. Test Point	-40	-20	25D	40D	50D	60D	70D
		CPU FRQ.	3.75G	3.8G	3.47G	3.3G	2.4G	2.4G
	CPU TJ.	38	64	100	99	100	100	100
1	CPU COPPER HS	-12.8	7.6	51	63.4	71.6	79.3	86.6
2	MB PQ3	-29.6	-8.2	37.1	51.3	60.4	67.3	76.2
3	TOP SINK 1	-28.9	-8.3	30.7	45.3	55.1	68.5	78.1
4	DRAM	-31	-10.4	32.6	47.3	56.7	66.4	76.2
5	SSD	-33.7	-13	30.4	45.1	54.8	64.6	74.7
6	TOP SINK 2	-33.6	-12.9	30.4	45.3	55.1	64.9	75

6. I/O FUNCTION TEST

6.1 MINI-DP OUTPUT TEST

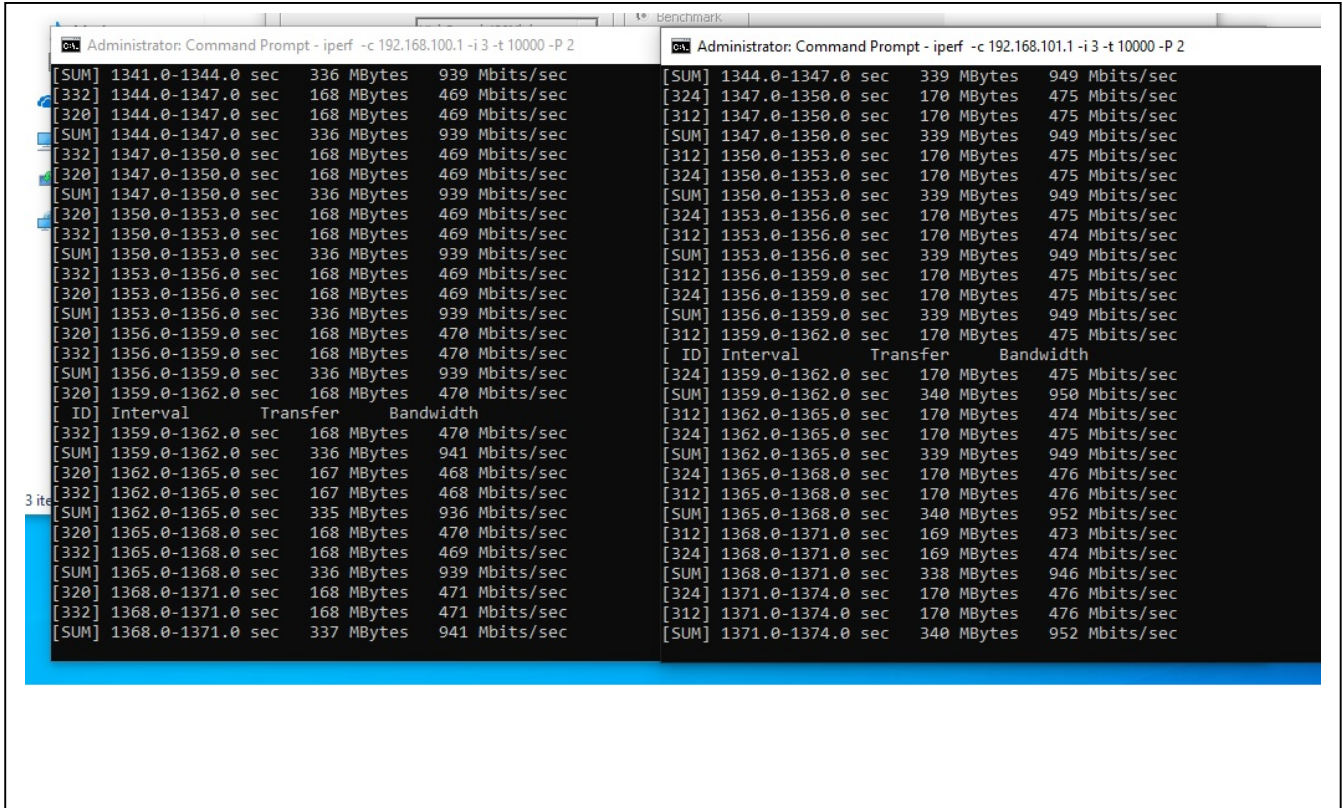


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6.2 LAN Transfer Data Test

LAN 1 / LAN 2 1Gbps transfer test.



The image shows two side-by-side screenshots of Windows Command Prompts running iperf tests. The left window is titled 'Administrator: Command Prompt - iperf -c 192.168.100.1 -i 3 -t 10000 -P 2' and the right window is titled 'Administrator: Command Prompt - iperf -c 192.168.101.1 -i 3 -t 10000 -P 2'. Both windows display a series of test results for various intervals, showing transfer times, data transferred (in MBytes), and bandwidth (in Mbits/sec). The results are consistent across both tests, indicating stable performance. A '3 ite' label is visible on the left side of the screenshot.

Window	Interval	Transfer	Bandwidth
Left	1341.0-1344.0 sec	336 MBytes	939 Mbits/sec
Left	1344.0-1347.0 sec	168 MBytes	469 Mbits/sec
Left	1344.0-1347.0 sec	168 MBytes	469 Mbits/sec
Left	1344.0-1347.0 sec	336 MBytes	939 Mbits/sec
Left	1347.0-1350.0 sec	168 MBytes	469 Mbits/sec
Left	1347.0-1350.0 sec	168 MBytes	469 Mbits/sec
Left	1347.0-1350.0 sec	336 MBytes	939 Mbits/sec
Left	1350.0-1353.0 sec	168 MBytes	469 Mbits/sec
Left	1350.0-1353.0 sec	168 MBytes	469 Mbits/sec
Left	1350.0-1353.0 sec	336 MBytes	939 Mbits/sec
Left	1353.0-1356.0 sec	168 MBytes	469 Mbits/sec
Left	1353.0-1356.0 sec	168 MBytes	469 Mbits/sec
Left	1353.0-1356.0 sec	336 MBytes	939 Mbits/sec
Left	1356.0-1359.0 sec	168 MBytes	470 Mbits/sec
Left	1356.0-1359.0 sec	168 MBytes	470 Mbits/sec
Left	1356.0-1359.0 sec	336 MBytes	939 Mbits/sec
Left	1359.0-1362.0 sec	168 MBytes	470 Mbits/sec
Left	1359.0-1362.0 sec	168 MBytes	470 Mbits/sec
Left	1359.0-1362.0 sec	336 MBytes	941 Mbits/sec
Left	1362.0-1365.0 sec	167 MBytes	468 Mbits/sec
Left	1362.0-1365.0 sec	167 MBytes	468 Mbits/sec
Left	1362.0-1365.0 sec	335 MBytes	936 Mbits/sec
Left	1365.0-1368.0 sec	168 MBytes	470 Mbits/sec
Left	1365.0-1368.0 sec	168 MBytes	469 Mbits/sec
Left	1365.0-1368.0 sec	336 MBytes	939 Mbits/sec
Left	1368.0-1371.0 sec	168 MBytes	471 Mbits/sec
Left	1368.0-1371.0 sec	168 MBytes	471 Mbits/sec
Left	1368.0-1371.0 sec	337 MBytes	941 Mbits/sec
Right	1344.0-1347.0 sec	339 MBytes	949 Mbits/sec
Right	1347.0-1350.0 sec	170 MBytes	475 Mbits/sec
Right	1347.0-1350.0 sec	170 MBytes	475 Mbits/sec
Right	1347.0-1350.0 sec	339 MBytes	949 Mbits/sec
Right	1350.0-1353.0 sec	170 MBytes	475 Mbits/sec
Right	1350.0-1353.0 sec	170 MBytes	475 Mbits/sec
Right	1350.0-1353.0 sec	339 MBytes	949 Mbits/sec
Right	1353.0-1356.0 sec	170 MBytes	475 Mbits/sec
Right	1353.0-1356.0 sec	170 MBytes	474 Mbits/sec
Right	1353.0-1356.0 sec	339 MBytes	949 Mbits/sec
Right	1356.0-1359.0 sec	170 MBytes	475 Mbits/sec
Right	1356.0-1359.0 sec	170 MBytes	475 Mbits/sec
Right	1356.0-1359.0 sec	339 MBytes	949 Mbits/sec
Right	1359.0-1362.0 sec	170 MBytes	475 Mbits/sec
Right	1359.0-1362.0 sec	170 MBytes	475 Mbits/sec
Right	1359.0-1362.0 sec	340 MBytes	950 Mbits/sec
Right	1362.0-1365.0 sec	170 MBytes	474 Mbits/sec
Right	1362.0-1365.0 sec	170 MBytes	475 Mbits/sec
Right	1362.0-1365.0 sec	339 MBytes	949 Mbits/sec
Right	1365.0-1368.0 sec	170 MBytes	476 Mbits/sec
Right	1365.0-1368.0 sec	170 MBytes	476 Mbits/sec
Right	1365.0-1368.0 sec	340 MBytes	952 Mbits/sec
Right	1368.0-1371.0 sec	169 MBytes	473 Mbits/sec
Right	1368.0-1371.0 sec	169 MBytes	474 Mbits/sec
Right	1368.0-1371.0 sec	338 MBytes	946 Mbits/sec
Right	1371.0-1374.0 sec	170 MBytes	476 Mbits/sec
Right	1371.0-1374.0 sec	170 MBytes	476 Mbits/sec
Right	1371.0-1374.0 sec	340 MBytes	952 Mbits/sec

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6.3 USB 2.0 Transfer Data Test

The screenshot shows the PassMark(TM) USB3Test application window. The device selected is 'PMUJ36IYHFB (HighSpeed 480Mb/s)' with a connection type of 'HighSpeed 480Mb/s'. The test mode is set to 'Benchmark'. The results table shows a duration of 000h 06m 37s, 0 operations, and 0 errors. A bar chart on the right indicates a maximum rate of 375 Mb/s. Below the results table, a summary table provides detailed performance metrics.

Duration	Operations	Errors
000h 06m 37s	0	0

Read block 564: 375.0 Mb/s (46.9 MB/s)
Read block 565: 375.0 Mb/s (46.9 MB/s)
Read block 566: 375.0 Mb/s (46.9 MB/s)
Read block 567: 375.0 Mb/s (46.9 MB/s)
Read block 568: 375.0 Mb/s (46.9 MB/s)
Read block 569: 375.0 Mb/s (46.9 MB/s)
Read block 570: 375.0 Mb/s (46.9 MB/s)
Read block 571: 375.0 Mb/s (46.9 MB/s)
Read block 572: 375.0 Mb/s (46.9 MB/s)
Read block 573: 375.0 Mb/s (46.9 MB/s)
Read block 574: 375.0 Mb/s (46.9 MB/s)
Read block 575: 375.0 Mb/s (46.9 MB/s)
Read block 576: 375.0 Mb/s (46.9 MB/s)
Read block 577: 375.0 Mb/s (46.9 MB/s)
Read block 578: 375.0 Mb/s (46.9 MB/s)
Read block 579: 375.0 Mb/s (46.9 MB/s)
Read block 580: 375.0 Mb/s (46.9 MB/s)
Read block 581: 375.0 Mb/s (46.9 MB/s)
Read block 582: 375.0 Mb/s (46.9 MB/s)
Read block 583: 375.0 Mb/s (46.9 MB/s)
Read block 584: 374.9 Mb/s (46.9 MB/s)

1275.0 sec	168 MBytes	469 Mbits/sec	[SUM]	1275.0-1278.0 sec	339 MBytes	949 Mbits/sec
1275.0 sec	336 MBytes	939 Mbits/sec	[324]	1278.0-1281.0 sec	170 MBytes	475 Mbits/sec
1278.0 sec	168 MBytes	469 Mbits/sec	[312]	1278.0-1281.0 sec	170 MBytes	475 Mbits/sec

The screenshot shows a Windows file transfer progress window. It indicates that 23% of the file '11PE_NET.wim' (465 MB) has been copied from the PE to the Desktop. The current speed is 41.9 MB/s, and the time remaining is about 10 seconds.

Copying 1 item from PE to Desktop
23% complete
Speed: 41.9 MB/s
Name: 11PE_NET.wim
Time remaining: About 10 seconds
Items remaining: 1 (465 MB)