Thermal & Functions Test Report

THOR200-X11EHG2

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1. SYSTEM SPEC

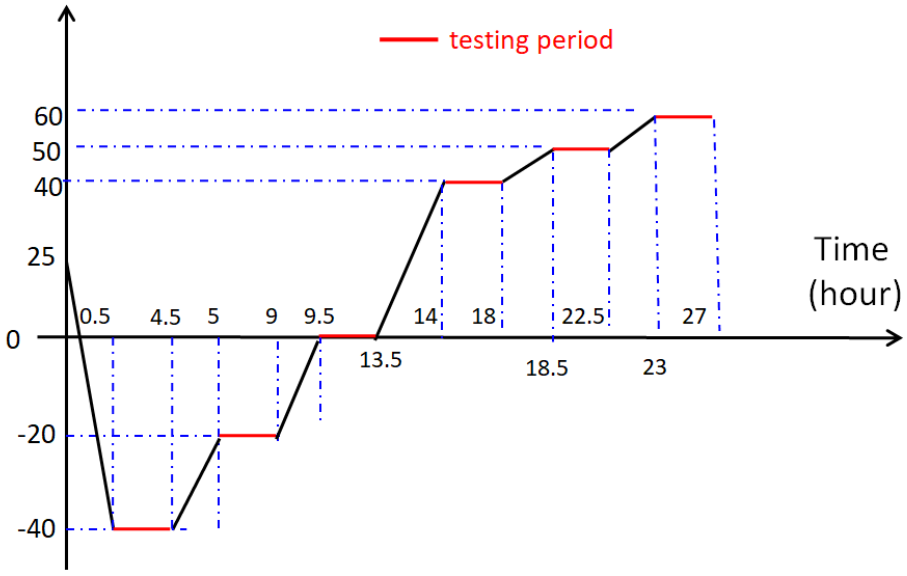
1-1. PRODUCT PHOTOS

1-2. SYSTEM COFIGURATION

System Configuration	
Motherboard	SK515
CPU	Advantech SOM-5883 Intel i7-11850HE 45W COM Express Base Type 6
Memory	TEAMGROUP SO-DIMM 32GB DDR4 2666 Mbps*1
SSD	2.5" SATA 1920GB TLC SSD (7SLSSB1K9GMLEX-I2C-8), -40~85°C, RoHS *2
GPU	ZRT-Tech Nvidia Quadro A2000m

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: -40~60℃/85%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	

2.2. THOR200-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℃	PASS
-20℃	PASS
0℃	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

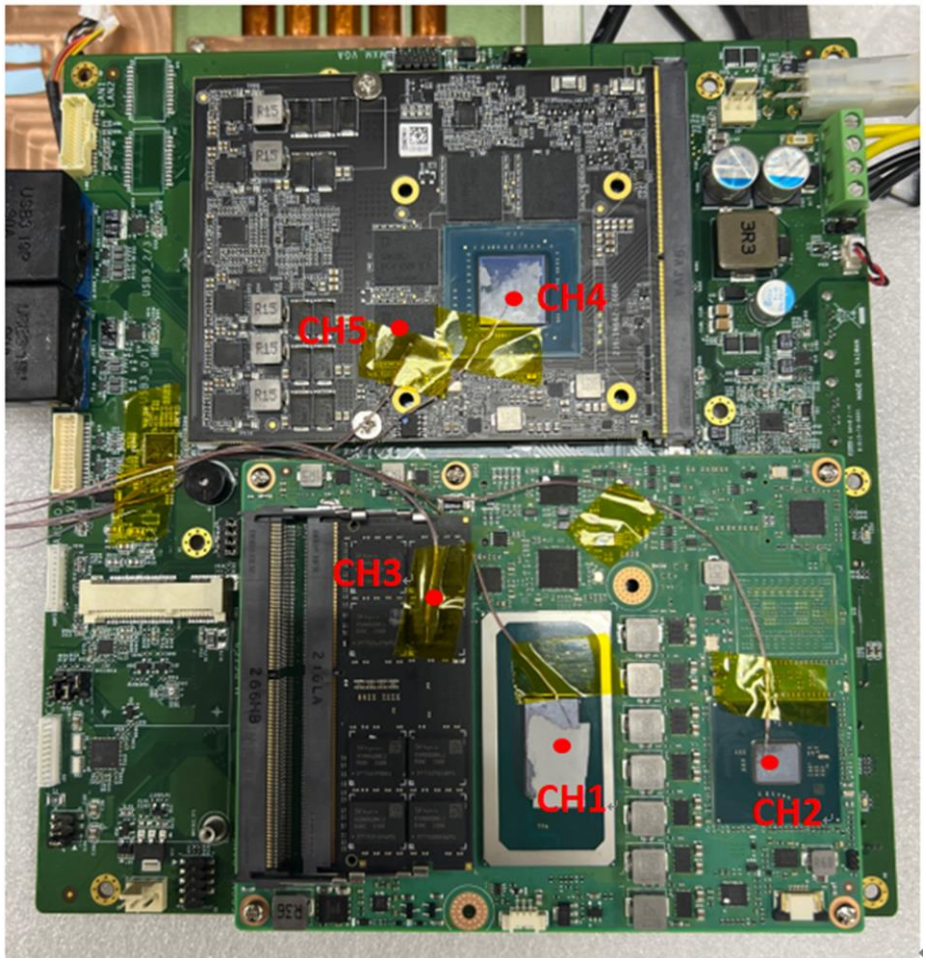
Item	Criteria	Result
USB3.0 *1	USB3.0 can use any USB device	PASS
	Loopback Plugs for USB 3.0 Trouble shooting and Testing	
USB2.0 *4	USB2.0 can use any USB device	PASS
	Loopback Plugs for USB 2.0 Trouble shooting and Testing	
DVI/VGA	Check work well	PASS
COM*2	Check work well	PASS
LAN*2	Check work well	PASS

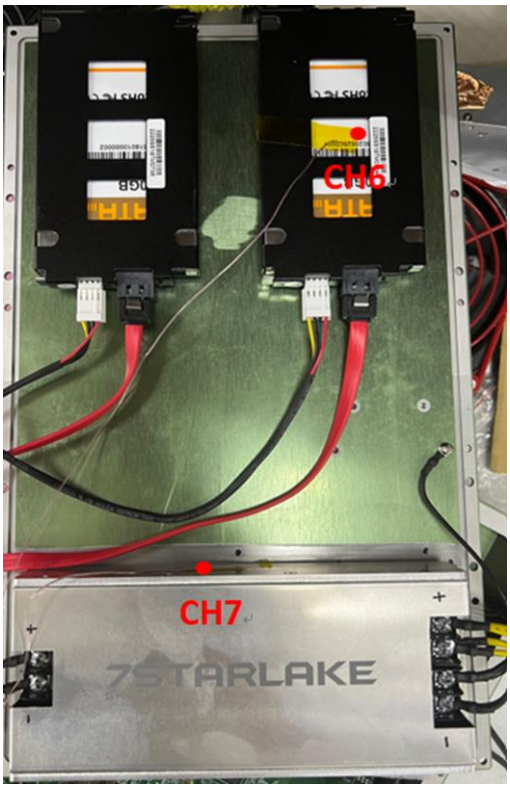
2.2.3 LOW-TEMP. BOOT-UP

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

Ambient Temp.	Test Result
-40℃	PASS

3. THERMAL TEST POINT

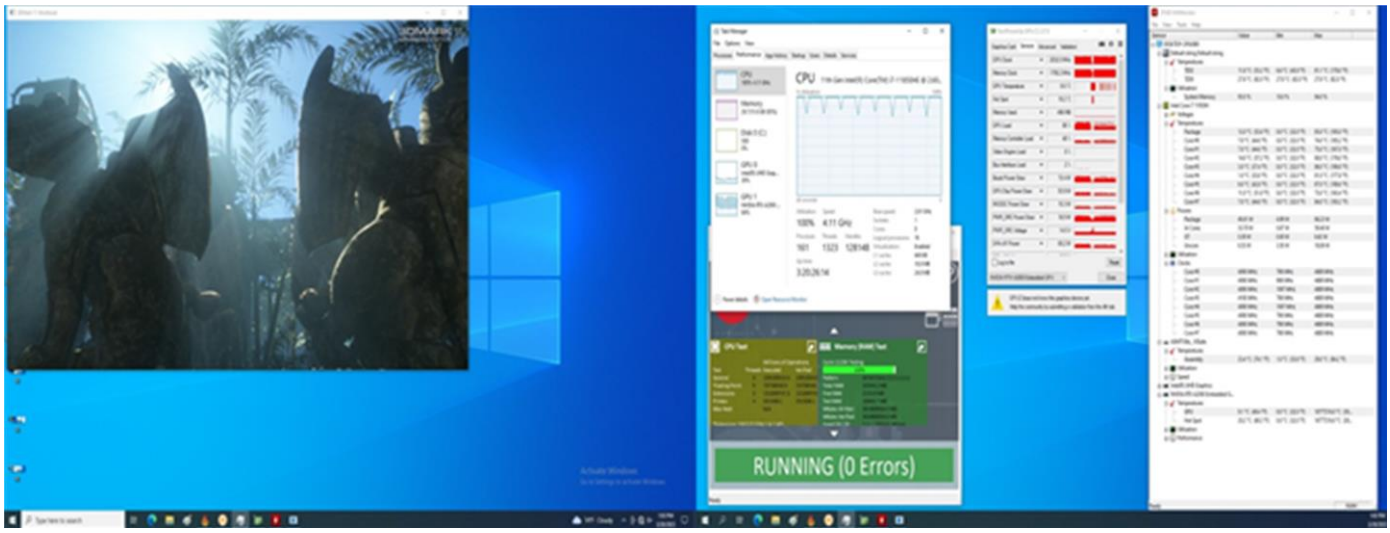


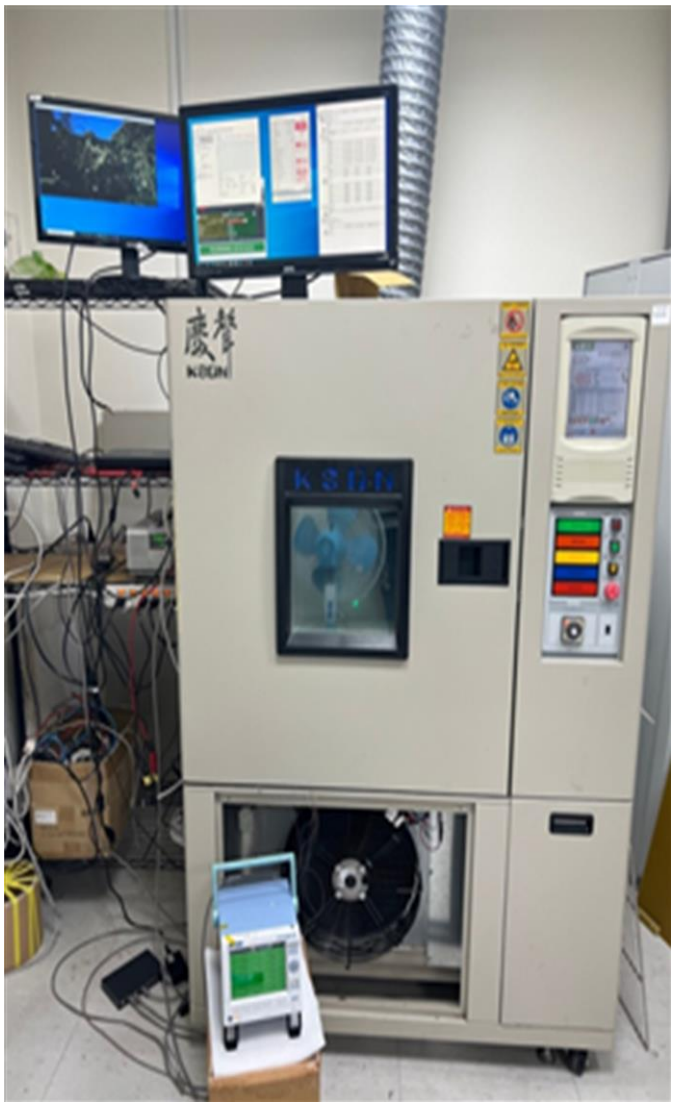


TEST POINT NO.	Test Point
1	CPU
2	PCH
3	DRAM
4	GPU
5	GPU RAM
6	SSD
7	POWER
8	SYSTEM IN

4. TEST PHOTO IN LAB

- Chamber in -40°C





Test Point	Ambient Temp.	-40°C
1	CPU	-8.6
2	PCH	-16.7
3	DRAM	-39.4
4	GPU	-4.3
5	GPU RAM	-16.5
6	SSD	26.1
7	POWER	-29.4
8	SYSTEM IN	-29.8

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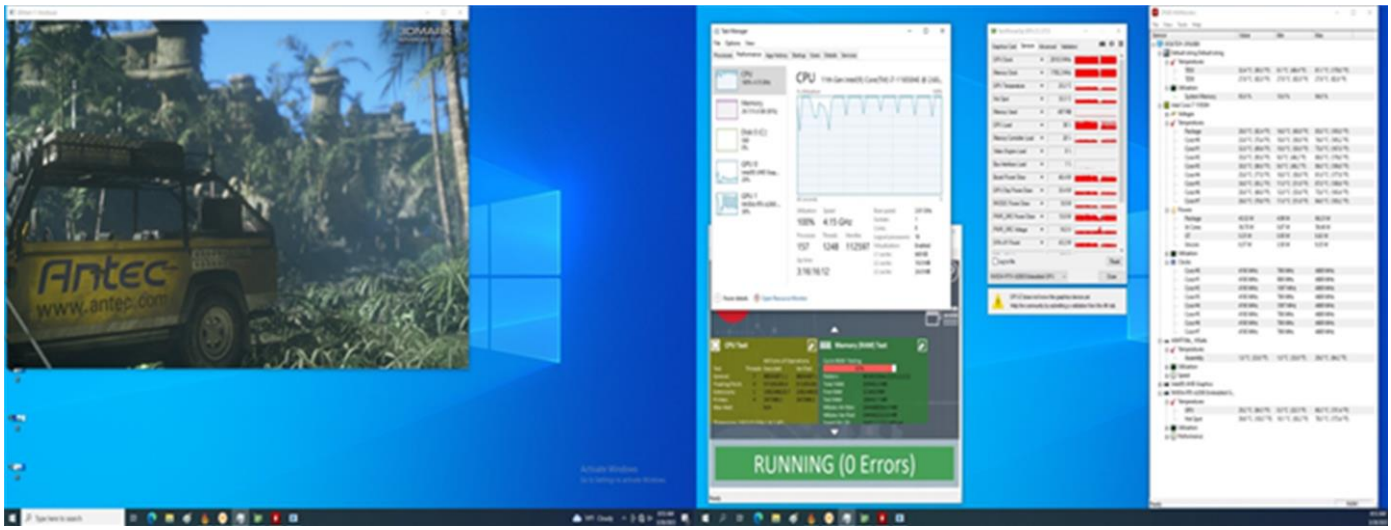
- Chamber in -20°C



Test Point	Ambient Temp.	-20°C
1	CPU	10.5
2	PCH	2.7
3	DRAM	-18.3
4	GPU	23.4
5	GPU RAM	6.3
6	SSD	-4.1
7	POWER	-5.2
8	SYSTEM IN	-7.4

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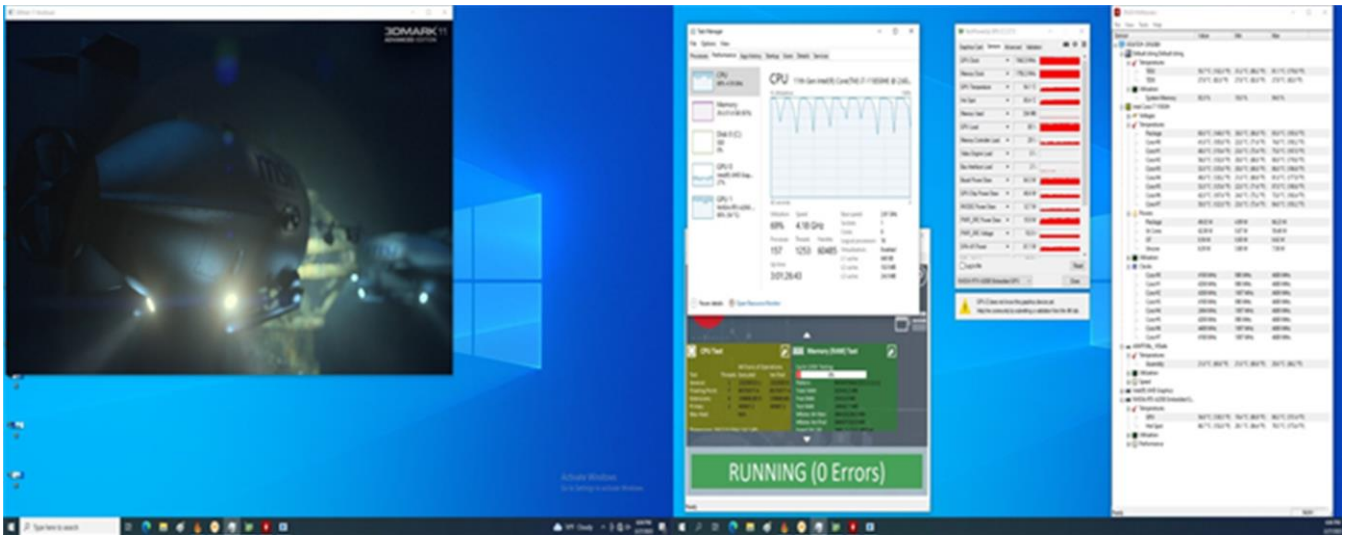
- Chamber in 0°C



Test Point	Ambient Temp.	0°C
1	CPU	30.4
2	PCH	22
3	DRAM	1.8
4	GPU	47.8
5	GPU RAM	25.9
6	SSD	16.6
7	POWER	14.7
8	SYSTEM IN	12.9

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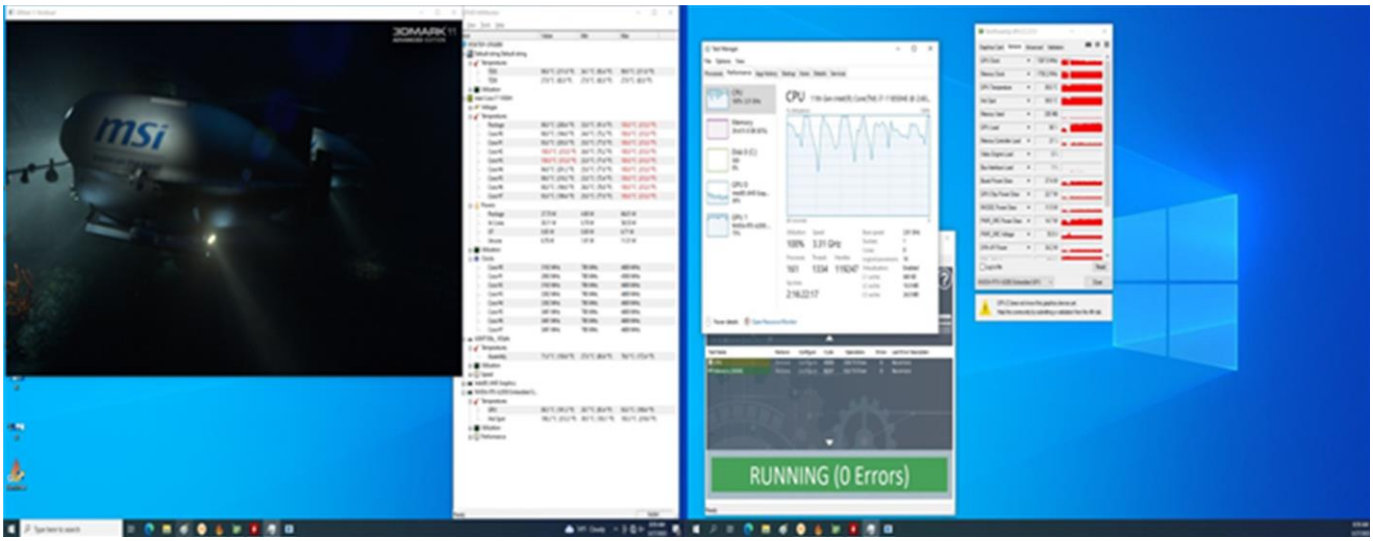
- Chamber in 40°C



Test Point	Ambient Temp.	40°C
1	CPU	80.5
2	PCH	71.1
3	DRAM	74.7
4	GPU	85.9
5	GPU RAM	75.1
6	SSD	69.4
7	POWER	63.9
8	SYSTEM IN	61.6

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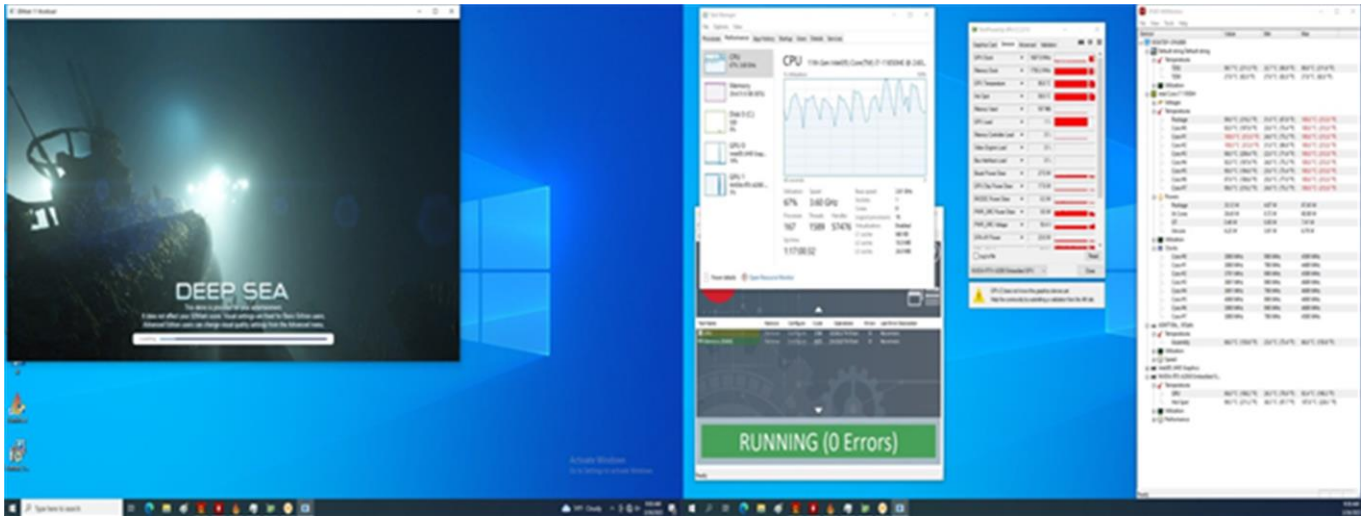
- Chamber in 50°C



Test Point	Ambient Temp.	50°C
1	CPU	81
2	PCH	72.1
3	DRAM	97.9
4	GPU	73.4
5	GPU RAM	73.1
6	SSD	-
7	POWER	60.7
8	SYSTEM IN	61.6

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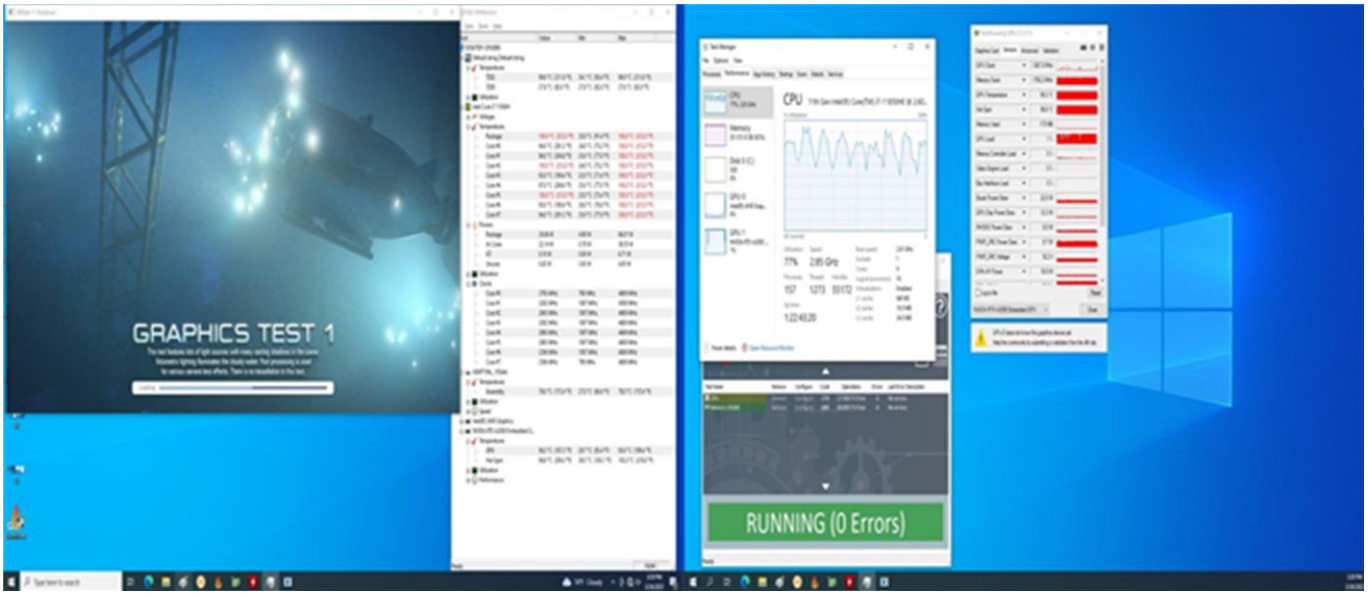
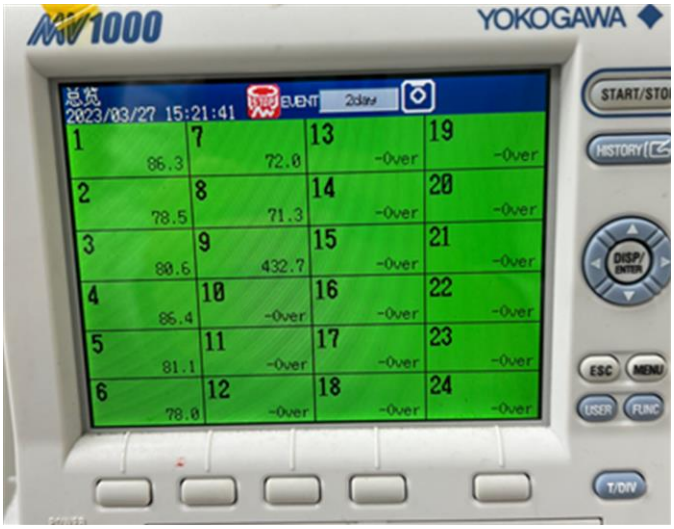
- Chamber in 60°C



Test Point	Ambient Temp.	60°C
1	CPU	86.3
2	PCH	78.5
3	DRAM	80.6
4	GPU	86.4
5	GPU RAM	81.1
6	SSD	78
7	POWER	72
8	SYSTEM IN	71.3



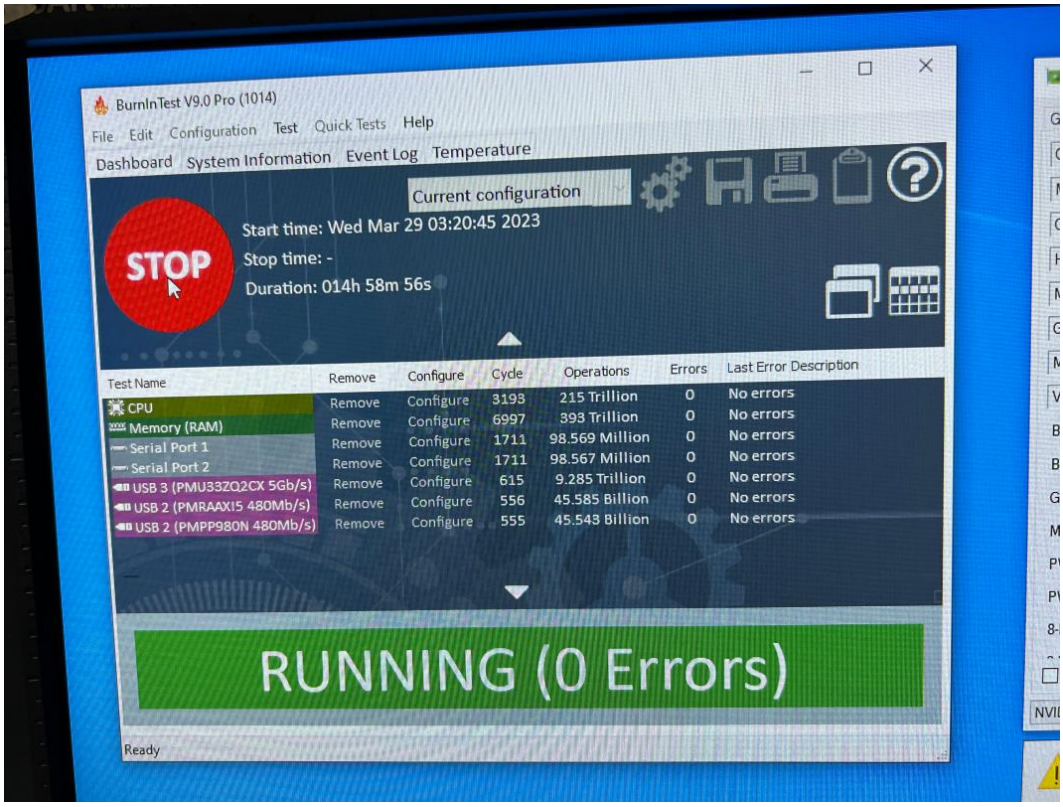
5. THOR200-X11 THERMAL TEST RESULT (-40~+60 DEGREE)

TEST POINT NO.	Ambient Tem / Test Point	-40° C	-20° c	0° c	40° C	50° C	60° C
1	CPU	-8.6	10.5	30.4	80.5	81	86.3
2	PCH	-16.7	2.7	22	71.1	72.1	78.5
3	DRAM	-39.4	-18.3	1.8	74.7	97.9	80.6
4	GPU	-4.3	23.4	47.8	85.9	73.4	86.4
5	GPU RAM	-16.5	6.3	25.9	75.1	73.1	81.1
6	SSD	-26.1	-4.1	16.6	69.4		78
7	POWER	-29.4	-5.2	14.7	63.9	60.7	72
8	SYSTEM IN	-29.8	-7.4	12.9	61.6	61.6	71.3
	CPU TJ	12	28	60	98	99	100
	CPU FRQ	4.11GHz	4.15GHz	4.18GHz	3.31GHz	3.6GHz	2.85GHz
	GPU TJ	8.6	23.2	54.1	88	86.8	86.3
	GPU (MHZ)	2032MHz	2010MHz	1940MHz	1387MHz	1687MHz	1387MHz

6. I/O FUNCTION TEST

6.1 DVI/VGA TEST

6.2 USB3.0 Test



6.3 LAN/COM Port Test