



Performance Test Report

CPT400-ELM

S/N: SR2025101301

Product Manager	Mechanical Engineer	System Engineer	Test Engineer
Stanley Lo	Ricky Ho	Darren Chen	Mike Chen

Performance Test

CPT400-ELM



INDEX

1. SPECIFICATION.....	3
1-1. SYSTEM CONFIGURATION.....	3
1-2. PRODUCT INTERIOR PHOTOS	4
2. TEST PLAN	5
2-1. THERMAL MEASUREMENT PROCESS.....	5
2-2. TEST RESULT	6
2-2-1. Temperature Cycle.....	6
2-2-2. I/O Function	7
2-2-3. Low-temperature & Boot-up.....	8
2-3. POWER CONSUMPTION	9
3. TEST PHOTO IN LAB.....	10
3-1. ENVIRONMENTAL TEMPERATURE TEST	10
4. THERMAL TEST RESULT(-40°C ~ +60°C).....	17
5. I/O FUNCTION TEST	21
5-1. USB 3.1.....	21
5-2. 2.5GbE LAN	23
5-3. USB2.0	25
5-4. MIC-IN AND LINE OUT	27
5-5. SERIAL PORT(RS232)	28
5-6. 10GbE LAN	29
5-7. HDD TRAY CHECK	33

1. SPECIFICATION

1-1. SYSTEM CONFIGURATION

Motherboard	BIOS Version: D8680A02 SMBIOS Version: 3.6 BaseBoard Version: Default string
CPU	Total Cores: 24 # of Performance-cores: 8 # of Efficient-cores: 16 Total Threads: 32 Max Turbo Frequency: 5.00 GHz Performance-core Max Turbo Frequency: 5.00 GHz Efficient-core Max Turbo Frequency: 3.90 GHz Performance-core Base Frequency: 1.00 GHz Efficient-core Base Frequency: 800 MHz Processor Base Frequency: 1.00 GHz Processor Base Power: 35 W TDP: 35 W
Memory	64GB DDR5
Storage	2TB Exascend MLC SSD
GPU 1	NVIDIA® Geforce RTX 4090 16384 CUDA Cores 24GB GDDR6X Memory Base clock: 2235 MHz Boost clock: 2520 MHz
GPU 2	NVIDIA RTX 6000 Ada Generation 18176 CUDA Cores 48 GB GDDR6 with ECC Memory Base clock: 915MHz Boost clock: 2505 MHz
10 GbE LAN Card	Intel(R) Ethernet Controller X710 for 10 Gigabit SFP+ #2

1-2. PRODUCT INTERIOR PHOTOS



2. TEST PLAN

2-1. THERMAL MEASUREMENT PROCESS

Test Purpose	<p>The purpose of performing thermal profile testing is to identify potential thermal issues with the EUT. Considering that semiconductor failure rates rise rapidly with increasing junction temperature, it can aid product reliability assessment.</p> <p>As the system cools down, the mode will change with stack selection, temperature/heat. Mapping can help develop the best tracking arrangements.</p>
Test Equipment	1. KSON THS-B4T-150 Chamber.
Quantity Tested	Minimum 1 Set
Test Software	<p>1. Stress CPU: PassMark BurnInTest Professional 9.0 build 1014</p> <p>2. Stress GPU: AIDA64 Business 7.70.7500</p> <p>3. LAN Speed: iPerf3</p> <p>4. USB Test: PassMark USB 3.0 Loop Back Plug</p>
Test Procedure	<p>1. Thermal pre-scan measurement: Temperature: -40°C ~60°C Humidity: 60%RH</p> <p>2. Actual thermal measurement:</p> <p>2-1. Select the test point based on the infrared photo and connect the thermocouple to the hot spot.</p> <p>2-2. Place the EUT into the hot chamber and set the test temperature curve Specification.</p> <p>2-3. Open the hot cell and power up the EUT, enter the Windows 11 Pro environment and perform a maximum power test + stress application.</p> <p>2-4. After the EUT executes the test software for 8 hours, record the maximum heat generation of each thermocouple point.</p> <p>2-5. Turn off the hot cell and EUT.</p> <p>2-6. Verify and check that the recorded information for each component complies with the operating temperature range listed in the specification/approval sheet for each component being tested.</p> <p>3. For the Operating system software compatibility testing:</p> <p>3-1.open the thermal chamber and power on the device under test. Enter the Ubuntu 24.02 LTS environment and perform the maximum power test and stress test.</p>
Test Diagram of Curves	<p>Environment defines for 174 hours.</p>

2-2. TEST RESULT**2-2-1. Temperature Cycle**

Aging test of various parts at different temperatures under maximum load and full load conditions.

Test Temperature	Test Result
-40°C / 0%RH	PASS
-20°C / 0%RH	PASS
0°C / 0%RH	PASS
25°C / 60%RH	PASS
40°C / 60%RH	PASS
50°C / 60%RH	PASS
60°C / 60%RH	PASS

Performance Test

CPT400-ELM

2-2-2. I/O Function

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

Item	Test Criteria	Result
LAN Port (2.5Gbps)	Data transmission via connection to a 2.5Gbps LAN switch has been tested. The transfer speed meets the required standard with zero packet loss, confirming normal functionality.	PASS
USB 2.0	Connected the PassMark USB 2.0 Loopback Plug for testing. Continuous testing was performed for 30 minutes without any issues such as speed degradation or disconnection.	PASS
USB 3.1	Connected the PassMark USB 3.1 Loopback Plug for testing. Continuous testing was performed for 30 minutes without any issues such as speed degradation or disconnection.	PASS
Serial Port (RS232)	The two RS232 devices were successfully connected. Data transmission tests showed no packet loss, confirming normal operation.	PASS
DP Port (RTX 4090 RTX 6000 Ada)	The DP output was verified to be working properly with a resolution of 3840 x 2160.	PASS
HDMI Port (RTX4090)	The HDMI output was verified to be working properly with a resolution of 3840 x 2160.	PASS
LAN Port (10Gbps)	Data transmission via connection to a 10Gbps LAN switch has been tested. The transfer speed meets the required standard with zero packet loss, confirming normal functionality.	PASS
Mic-in	Connect the microphone and check if it is receiving sound properly.	PASS
Line-Out	Connect external speakers and ensure that music is outputting correctly.	PASS

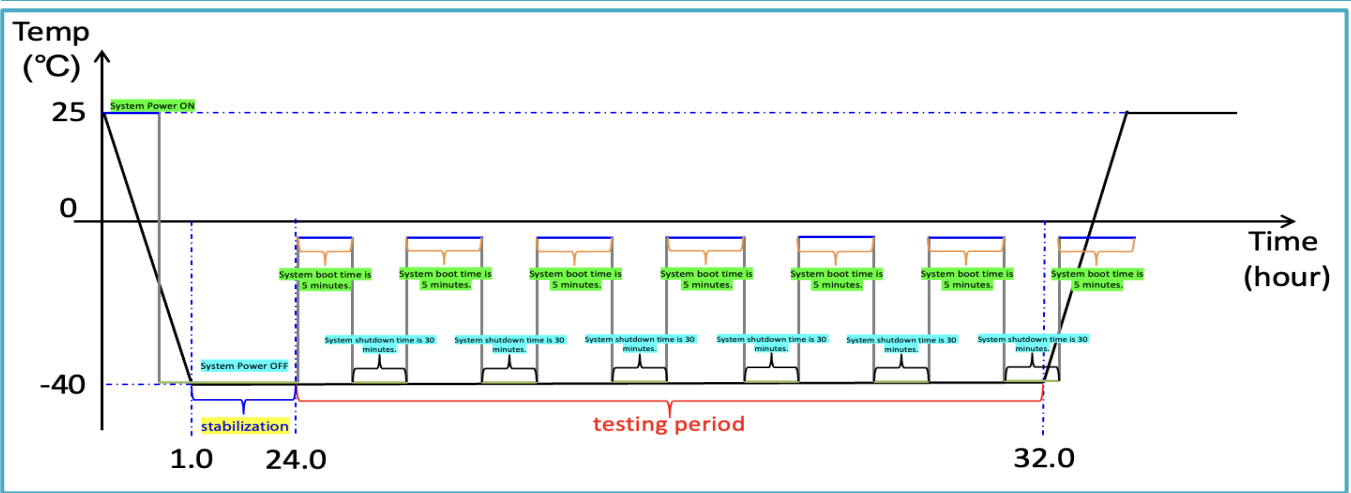
Performance Test

CPT400-ELM

2-2-3. Low-temperature & Boot-up

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

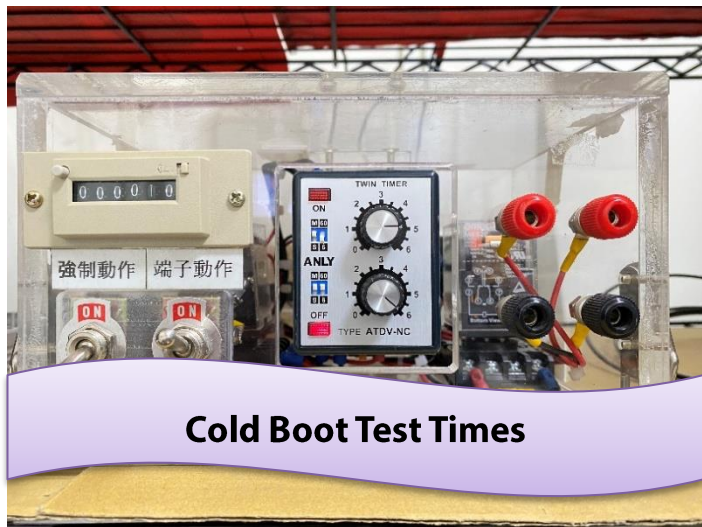
Ambient Temp.	Cold Boot Test Times	Test Result
-40°C	10 times	PASS



Power off



Power on



Cold Boot Test Times

2-3. POWER CONSUMPTION

The power consumption under full load was measured by operating the device at its maximum performance capacity. All performance cores and functional modules were fully utilized during the test. Power was monitored using a precision power meter connected to the main power input.

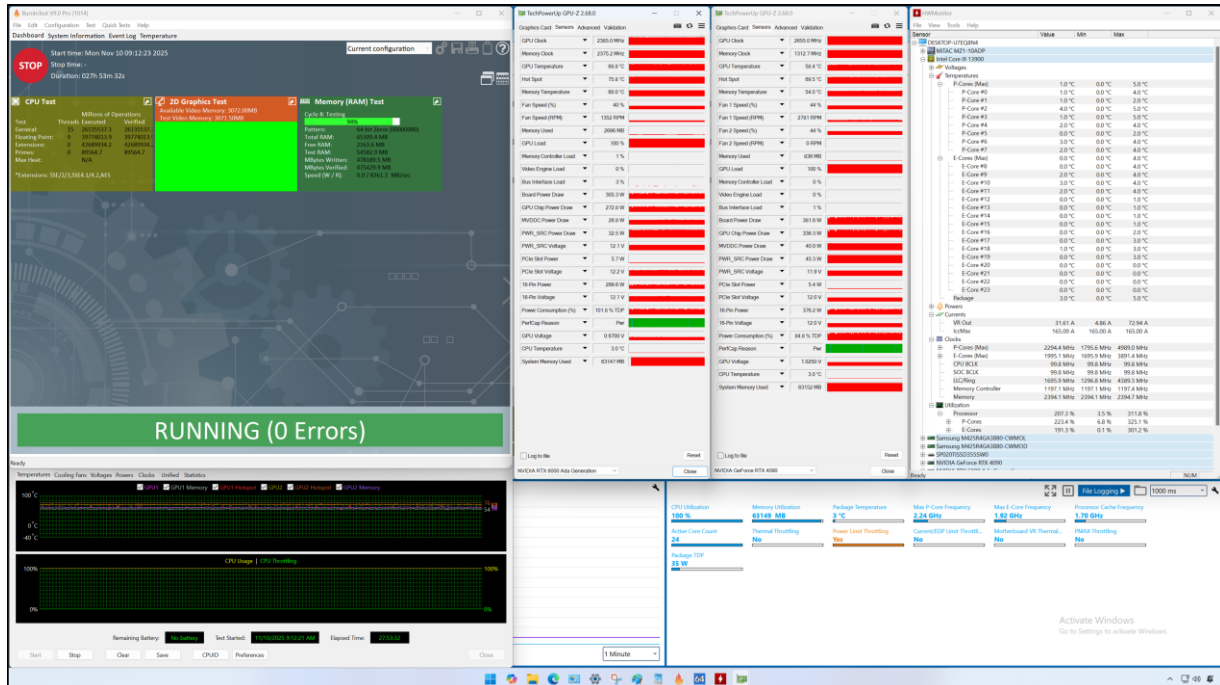
Voltage	Current	Wattage
9.0V	91.73A	826W
12.0V	68.80A	826W
24.0V	34.40A	826W
36.0V	22.93A	826W
48.0V	17.20A	826W



3. TEST PHOTO IN LAB

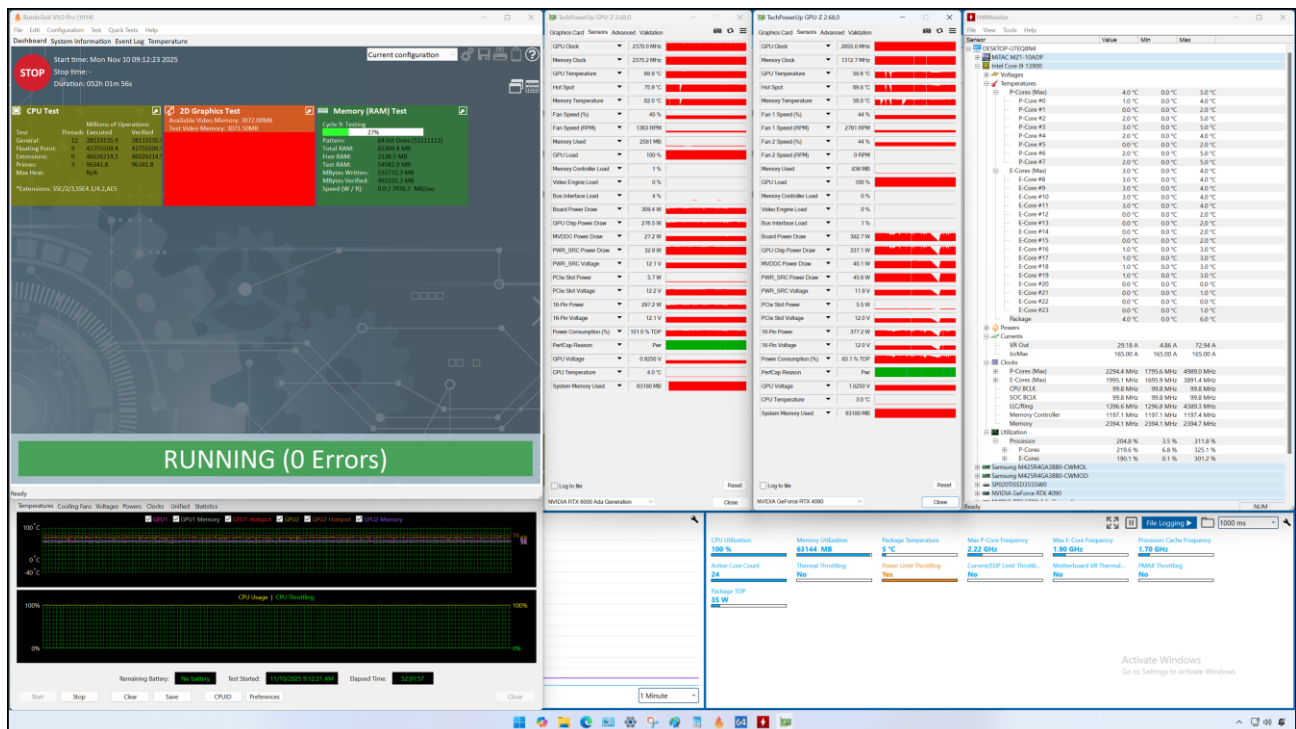
3-1. ENVIRONMENTAL TEMPERATURE TEST

- Chamber in -40°C



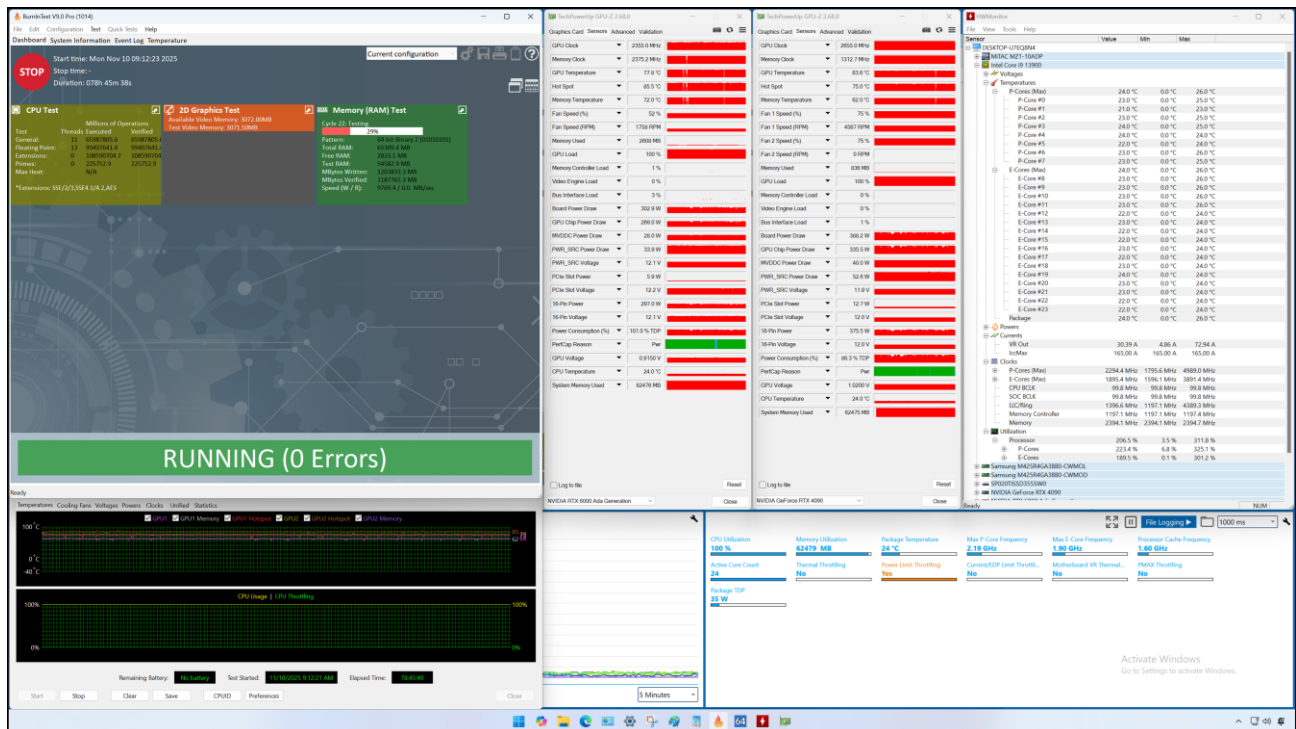
Performance Test CPT400-ELM

- Chamber in -20°C



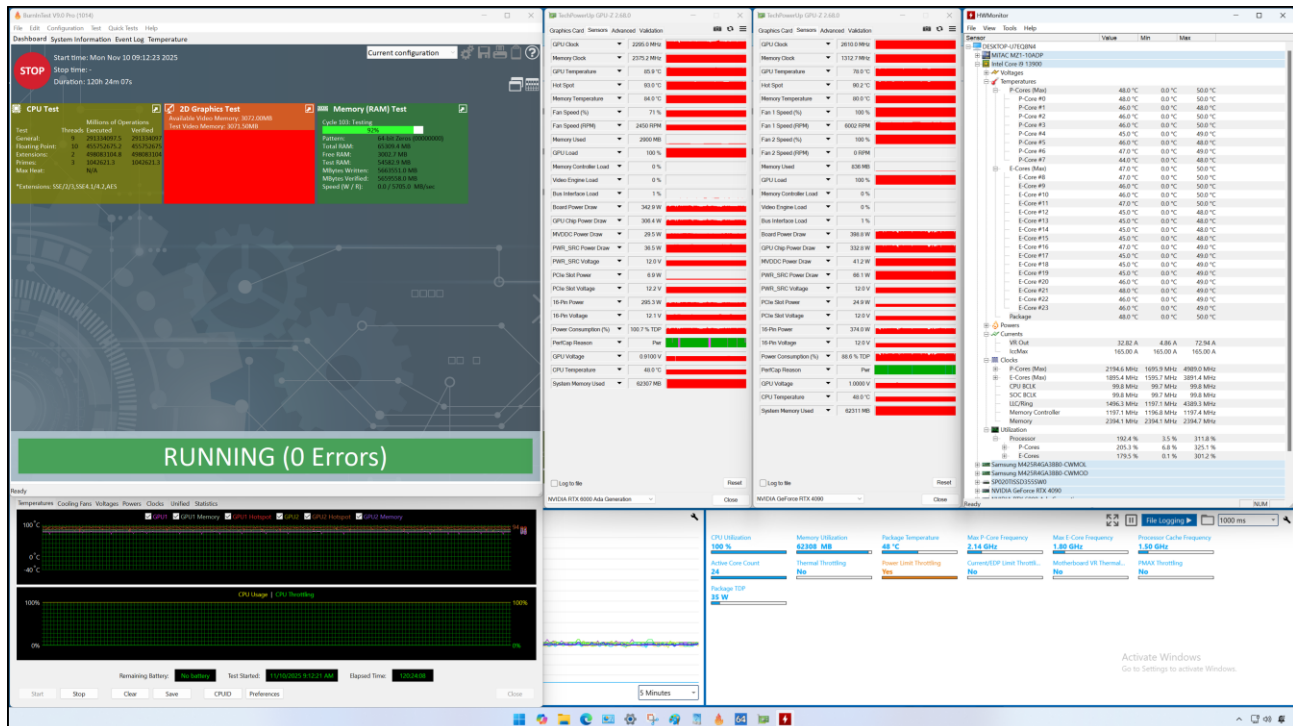
Performance Test CPT400-ELM

- Chamber in 0°C



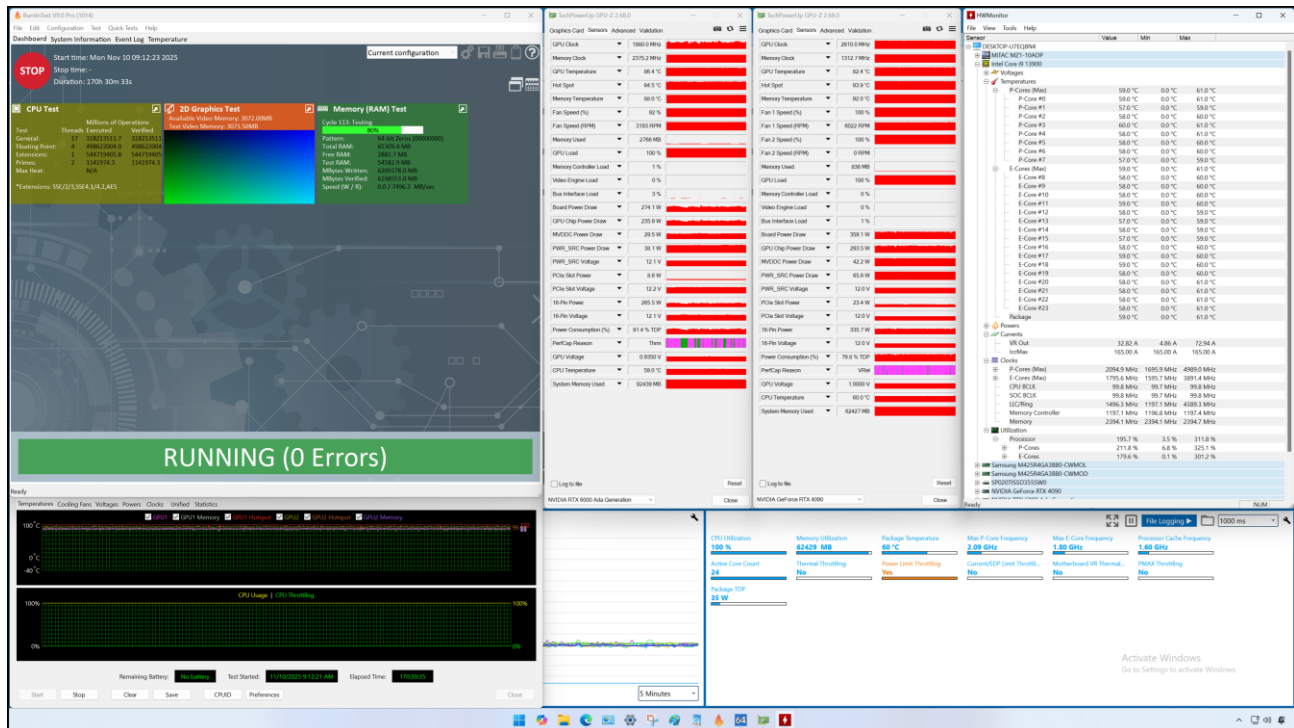
Performance Test CPT400-ELM

- Chamber in 25°C



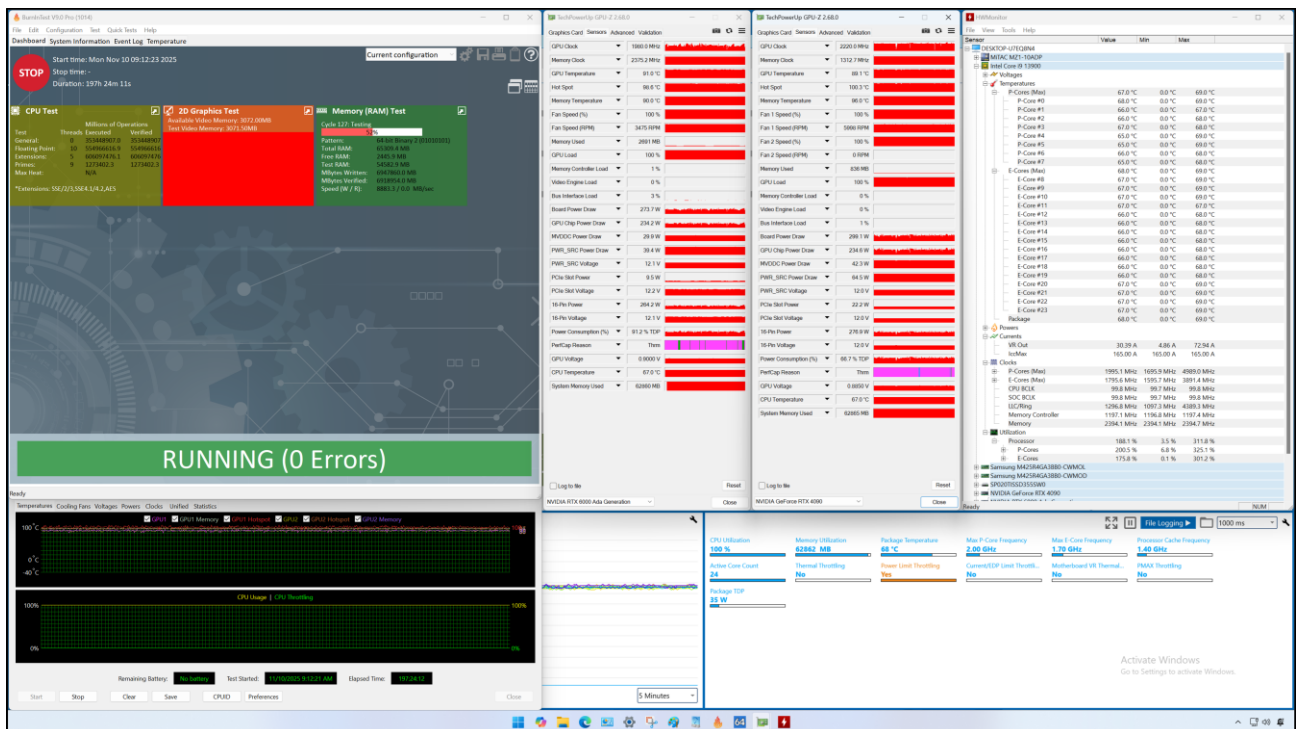
Performance Test CPT400-ELM

- Chamber in 40°C



Performance Test CPT400-ELM

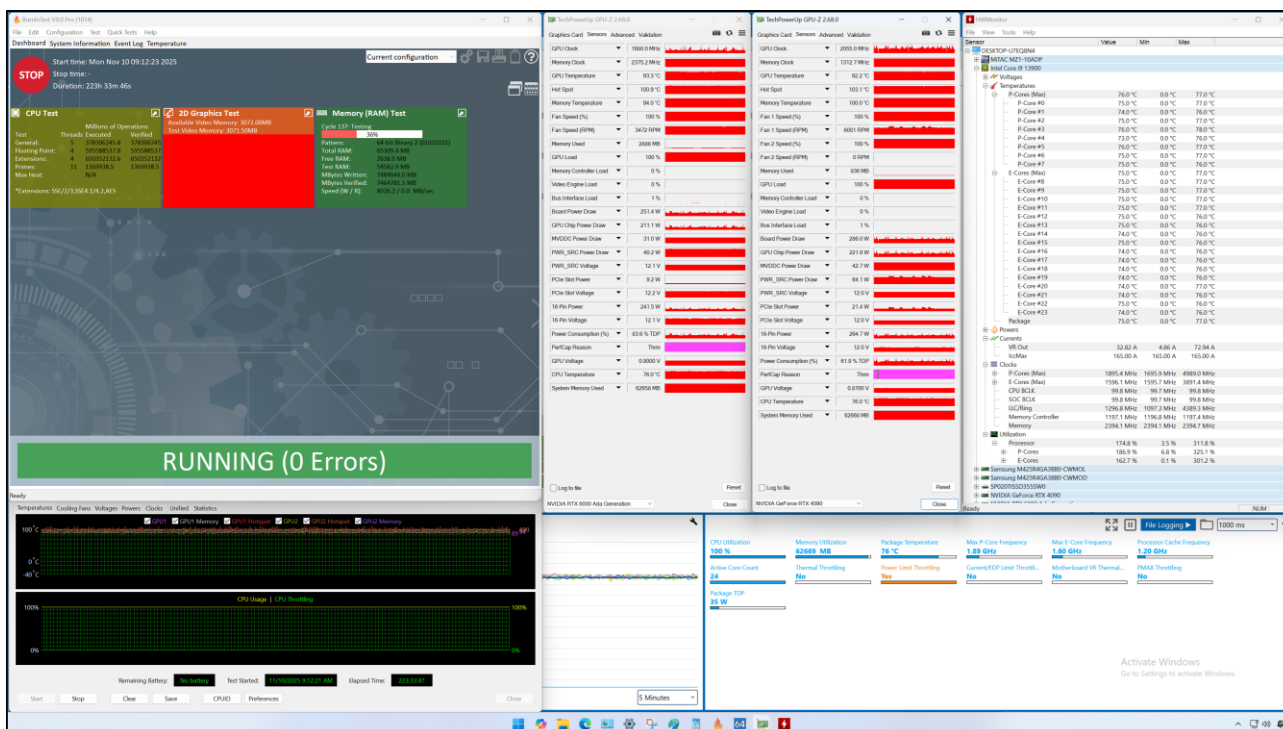
- Chamber in 50°C



Performance Test

CPT400-ELM

- Chamber in 60°C



4. THERMAL TEST RESULT(-40°C ~ +60°C)

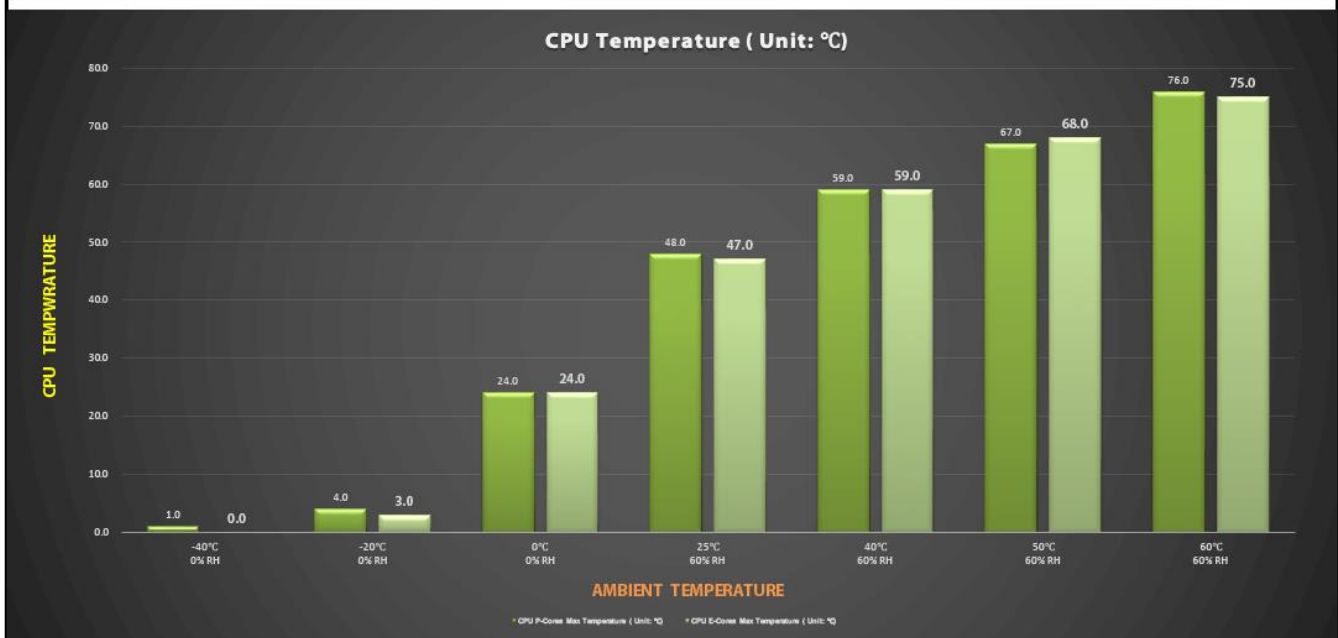
CPU & GPU Temperature and Frequency

Temperature Frequency	Ambient Temp.	-40°C 0% RH	-20°C 0% RH	0°C 0% RH	25°C 60% RH	40°C 60% RH	50°C 60% RH	60°C 60% RH
CPU P-Cores Max Temperature (Unit: °C)		1.0	4.0	24.0	48.0	59.0	67.0	76.0
CPU E-Cores Max Temperature (Unit: °C)		0.0	3.0	24.0	47.0	59.0	68.0	75.0
CPU P-Cores Frequency (Unit: GHz) Processor Base Frequency: 1.00 GHz		2.24	2.20	2.19	2.14	2.09	2.00	1.89
CPU E-CoresFrequency (Unit: GHz)		1.92	1.90	1.90	1.80	1.80	1.70	1.60
GPU Temperature (Unit: °C) Nvidia RTX 4090		58.4	58.6	63.6	78.0	82.4	89.1	92.2
GPU Hot Spot Temperature (Unit: °C) Nvidia RTX 4090		69.5	69.8	75.0	90.2	93.9	100.3	103.1
GPU Frequency (Unit: MHz) Nvidia RTX 4090		2655	2655	2655	2610	2610	2220	2055
GPU Temperature (Unit: °C) Nvidia RTX 6000 Ada		68.8	68.9	77.8	85.9	86.4	91.0	93.3
GPU Hot Spot Temperature (Unit: °C) Nvidia RTX 6000 Ada		75.8	75.9	85.5	93.0	94.5	98.6	100.2
GPU Frequency (Unit: MHz) Nvidia RTX 6000 Ada		2385	2370	2355	2295	1980	1980	1680

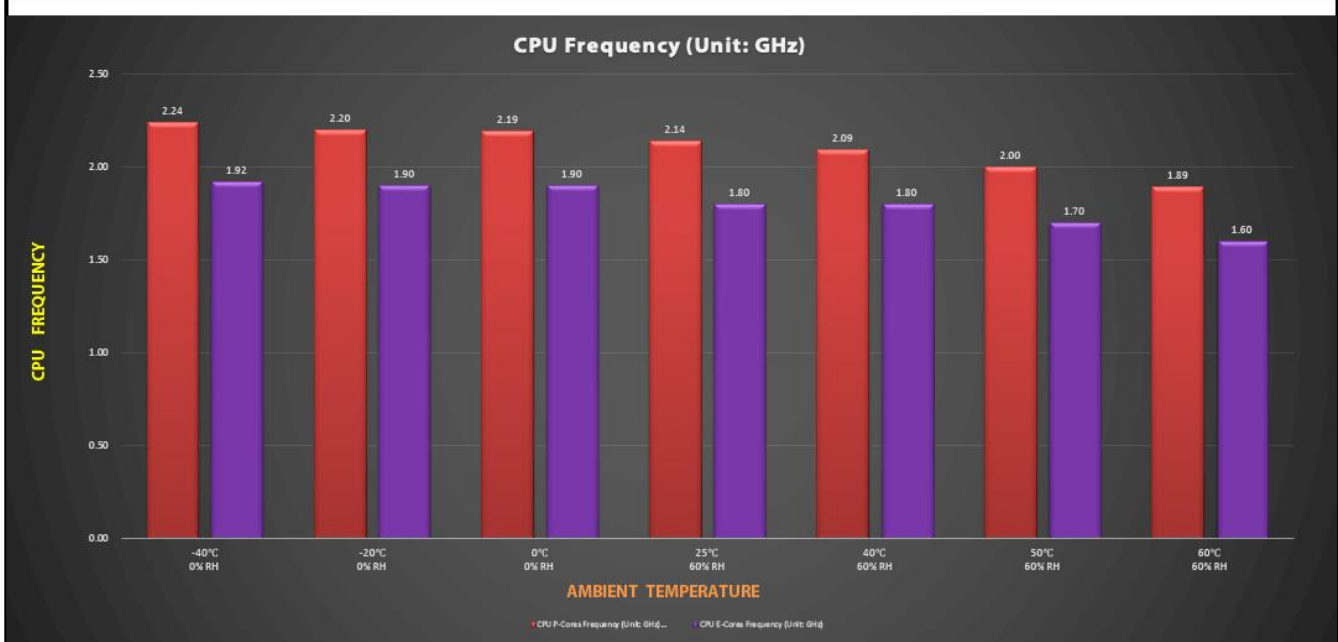
Performance Test

CPT400-ELM

CPU Core Temperature \ Ambient Temperature	-40°C 0% RH	-20°C 0% RH	0°C 0% RH	25°C 60% RH	40°C 60% RH	50°C 60% RH	60°C 60% RH
CPU P-Cores Max Temperature (Unit: °C)	1.0	4.0	24.0	48.0	59.0	67.0	76.0
CPU E-Cores Max Temperature (Unit: °C)	0.0	3.0	24.0	47.0	59.0	68.0	75.0

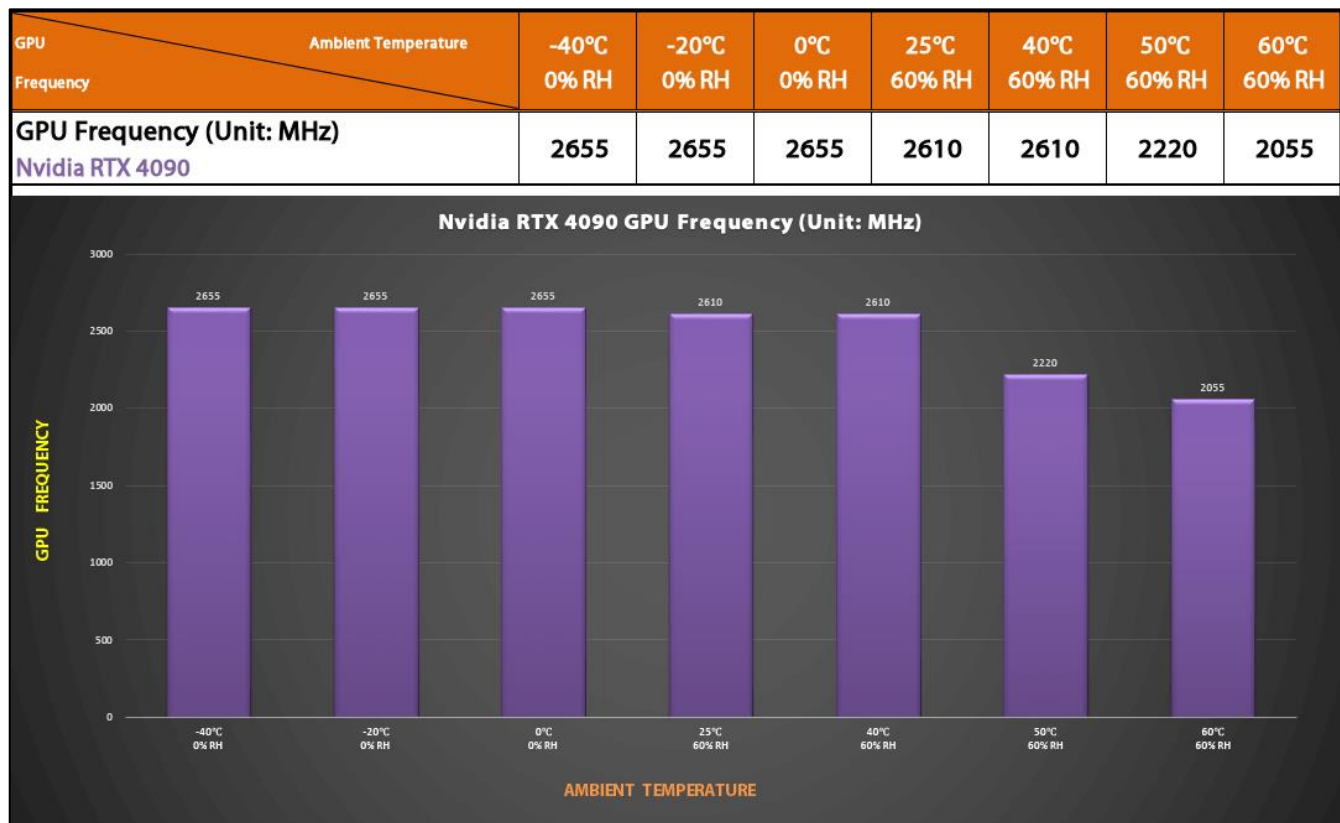
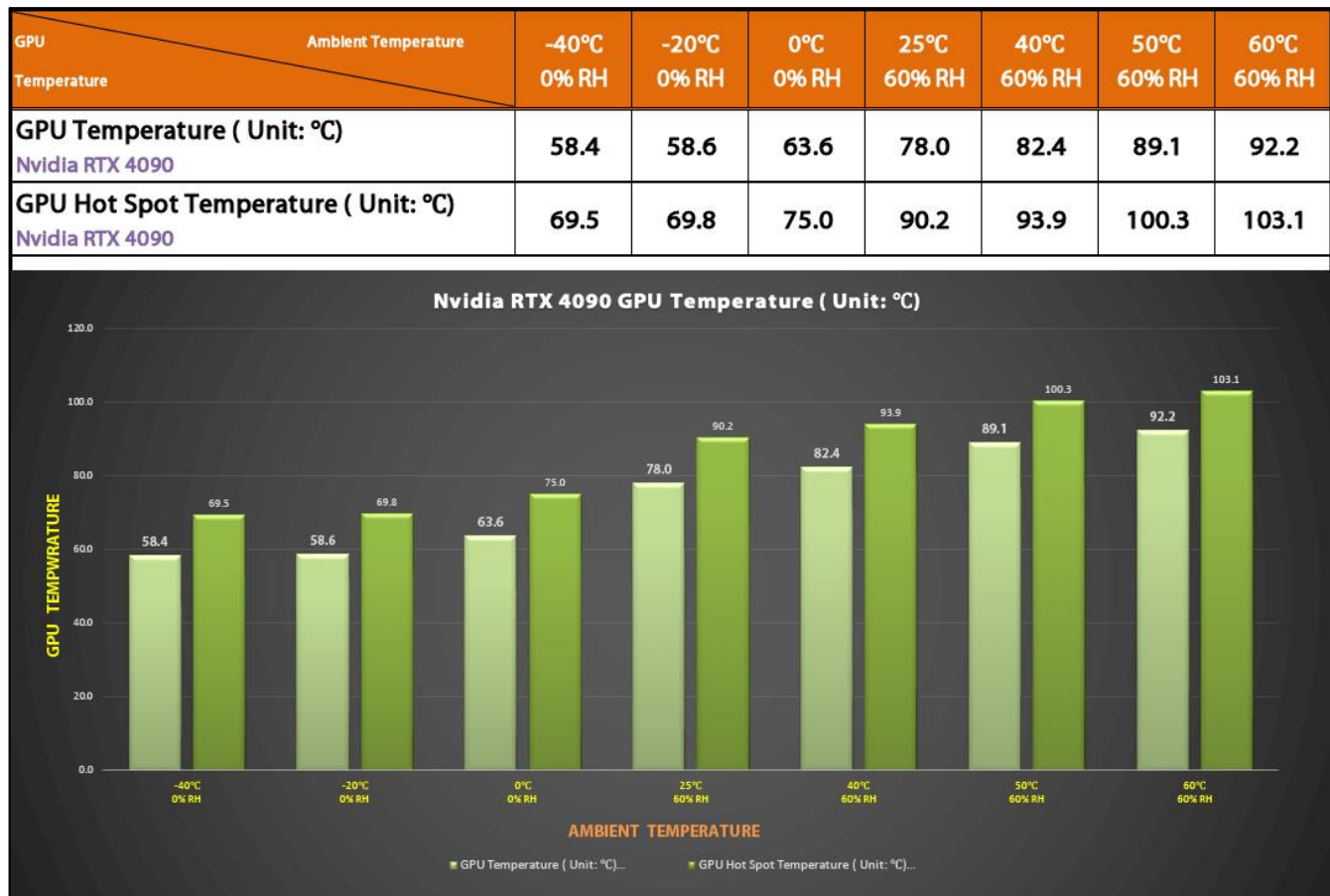


CPU Frequency \ Ambient Temperature	-40°C 0% RH	-20°C 0% RH	0°C 0% RH	25°C 60% RH	40°C 60% RH	50°C 60% RH	60°C 60% RH
CPU P-Cores Frequency (Unit: GHz) Processor Base Frequency: 1.00 GHz	2.24	2.20	2.19	2.14	2.09	2.00	1.89
CPU E-Cores Frequency (Unit: GHz)	1.92	1.90	1.90	1.80	1.80	1.70	1.60



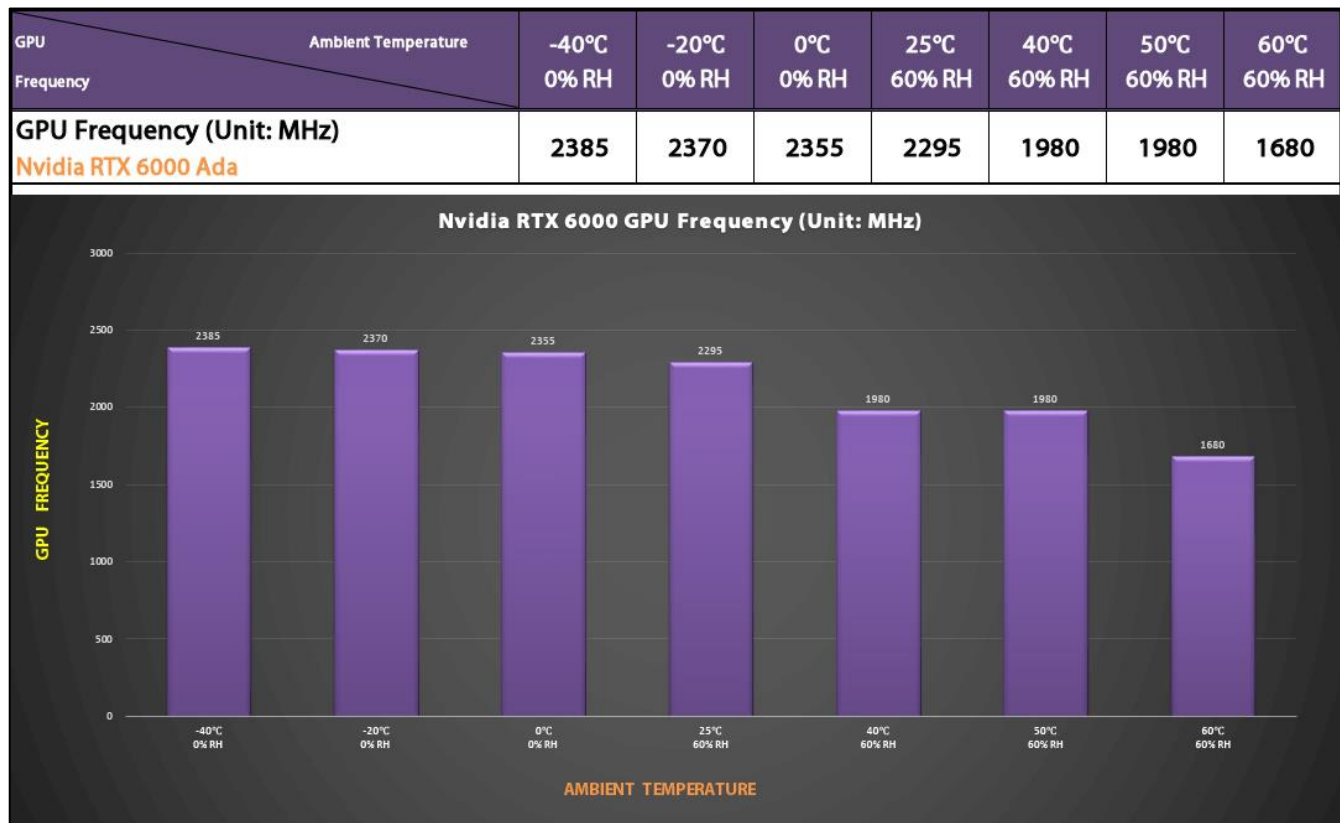
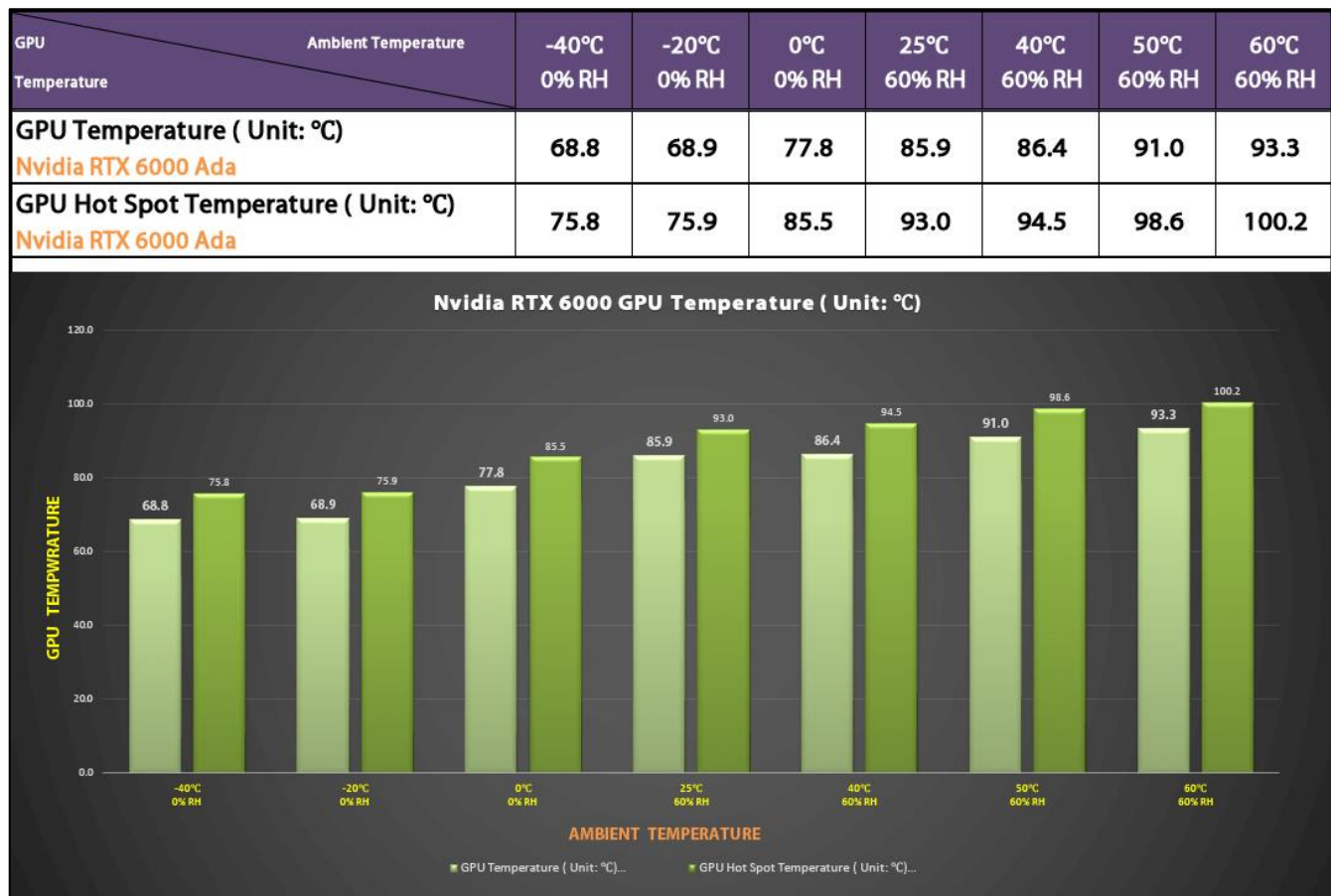
Performance Test

CPT400-ELM



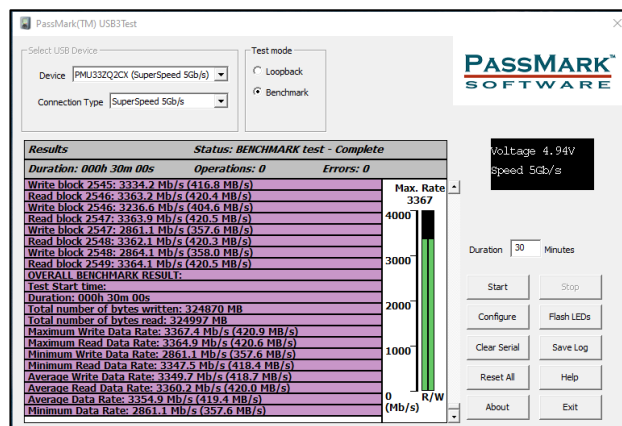
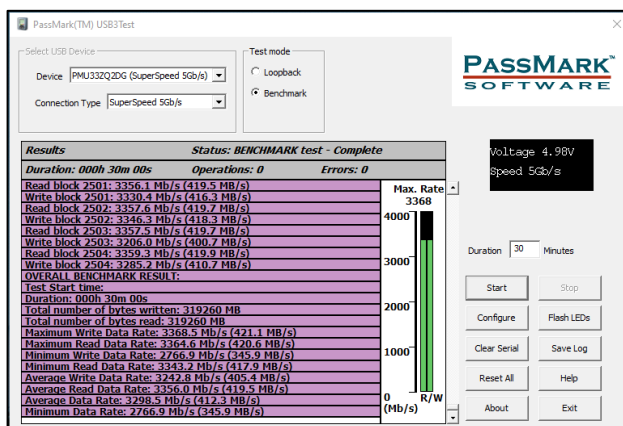
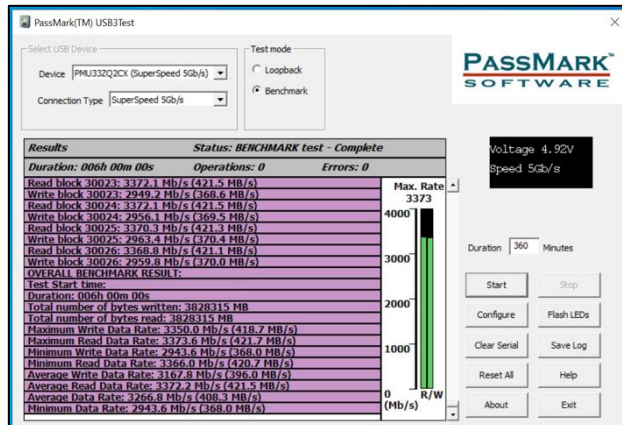
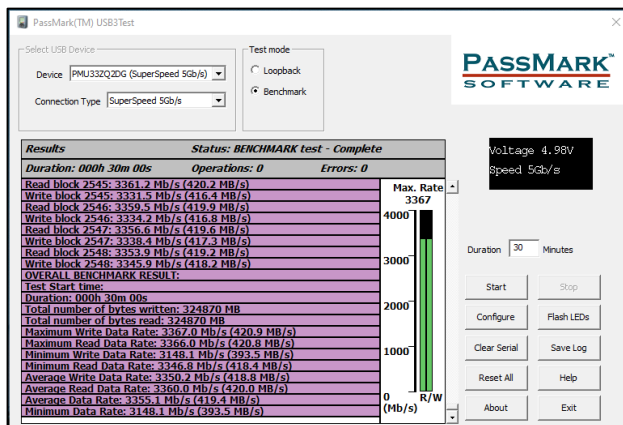
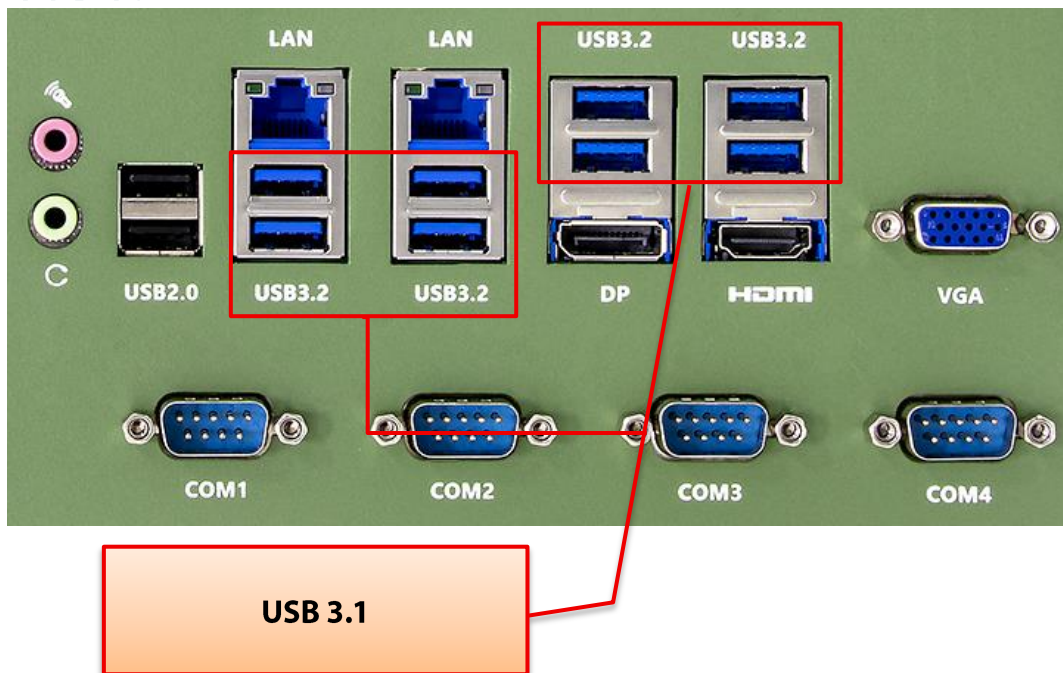
Performance Test

CPT400-ELM



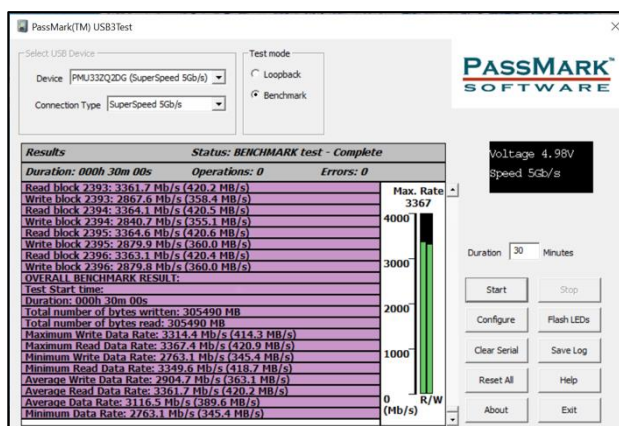
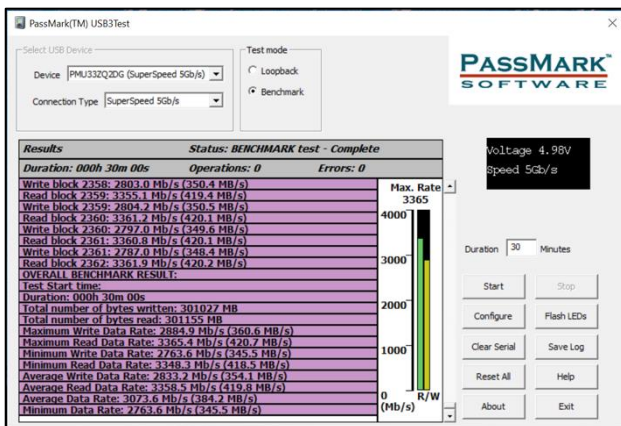
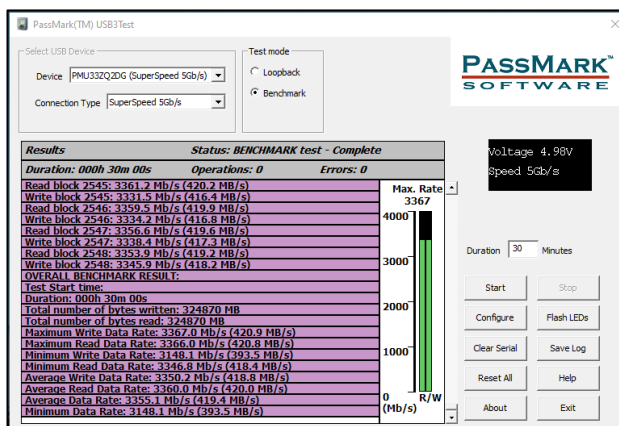
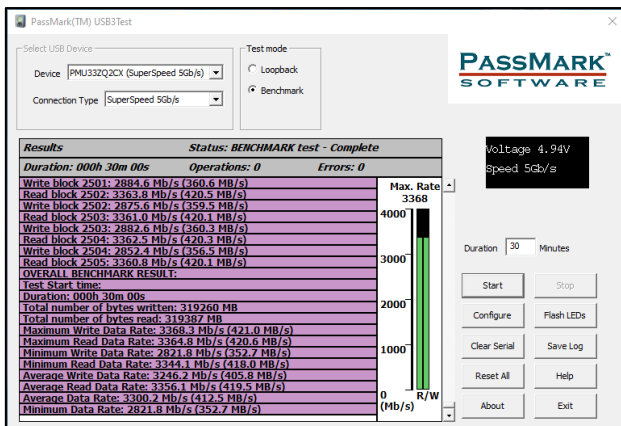
5. I/O FUNCTION TEST

5-1. USB 3.1

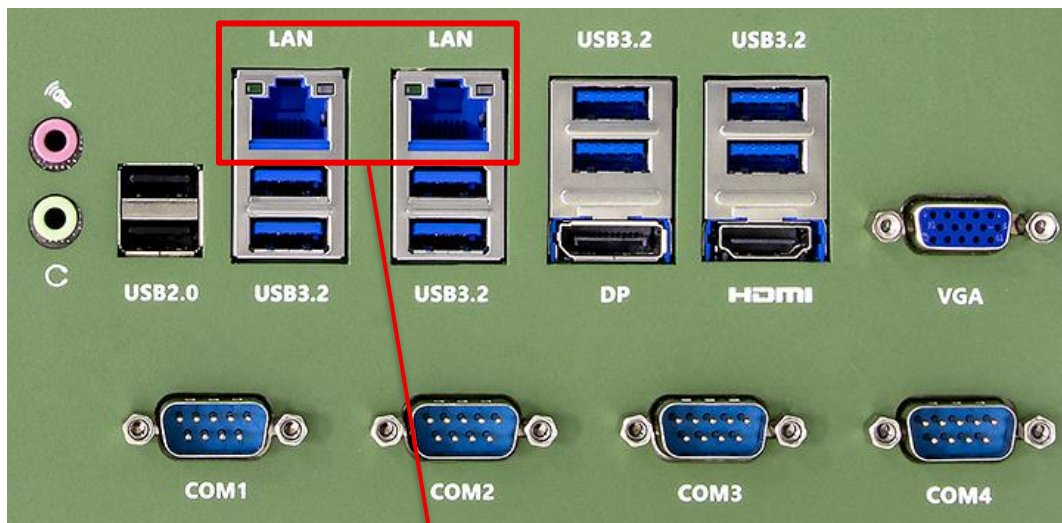


Performance Test

CPT400-ELM



5-2. 2.5GBE LAN

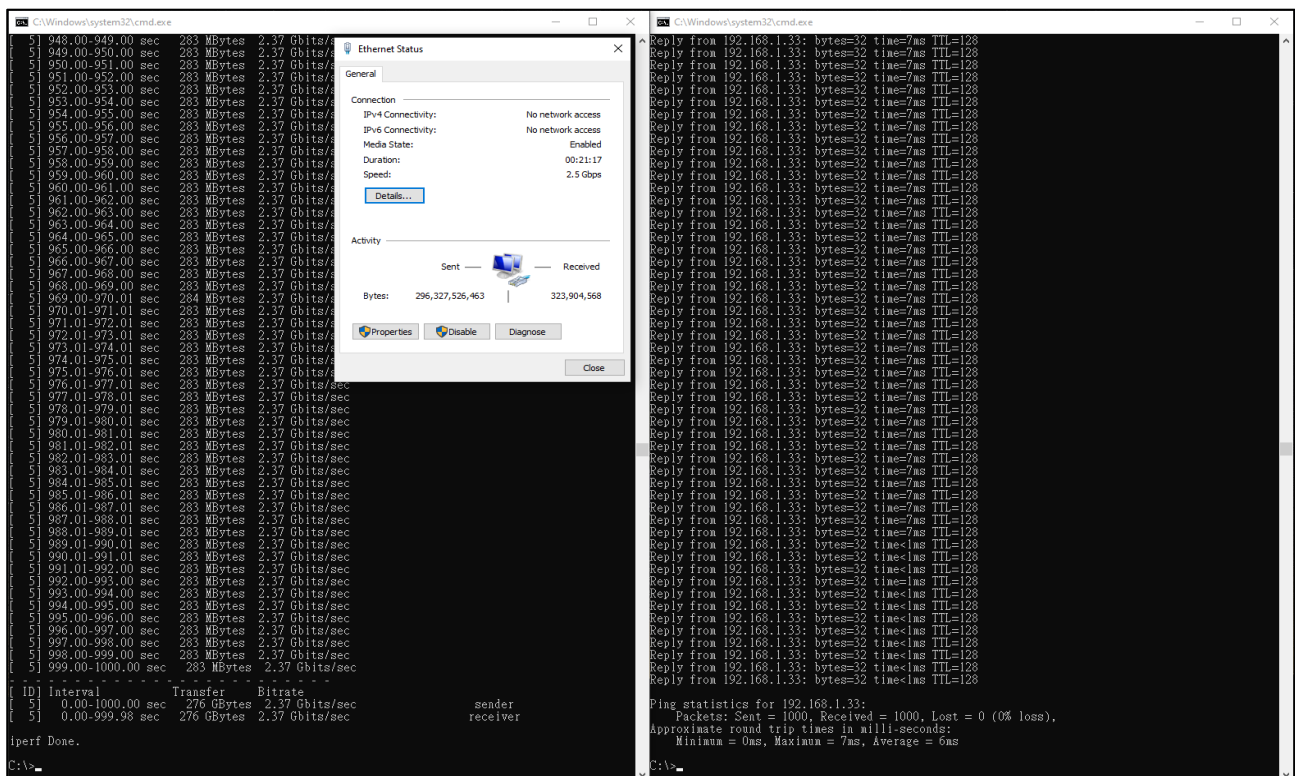


2.5GbE

LAN SPEED

LAN Data-Packet

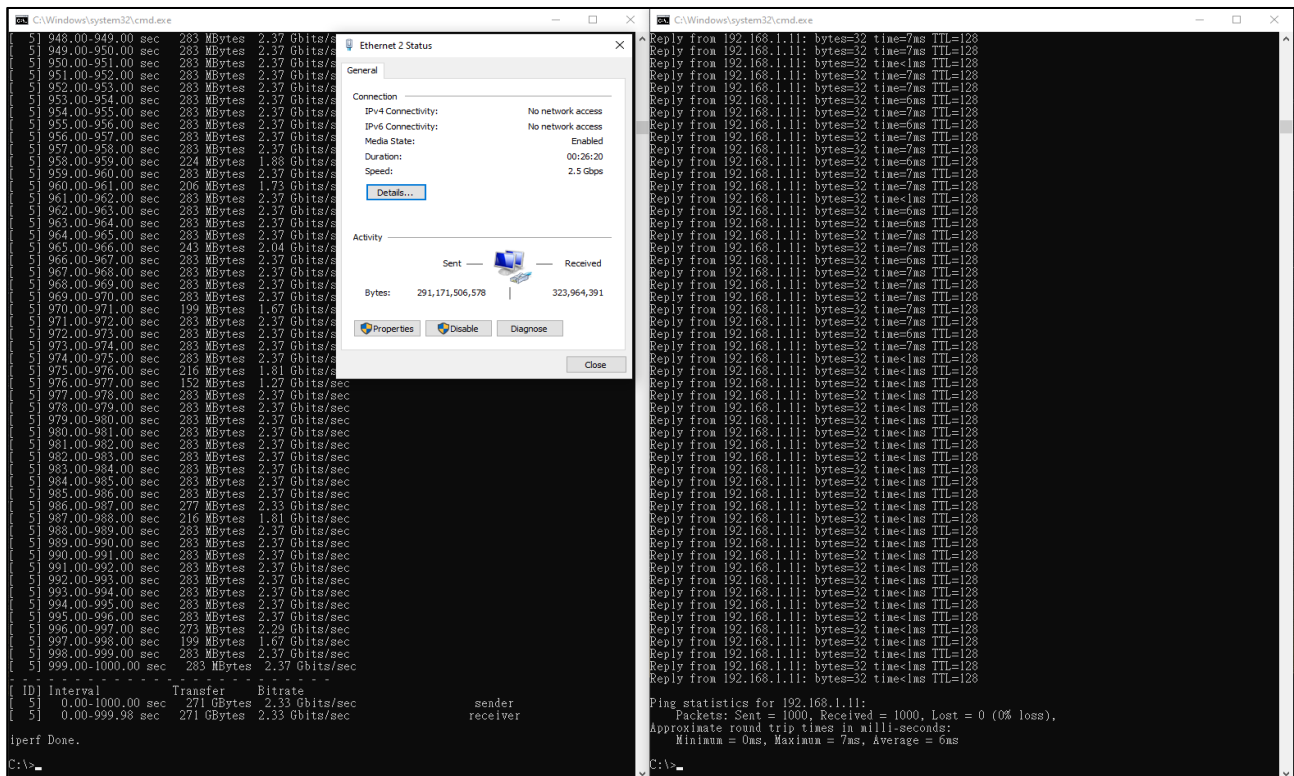
LAN 1 Port



LAN SPEED

LAN Data-Packet

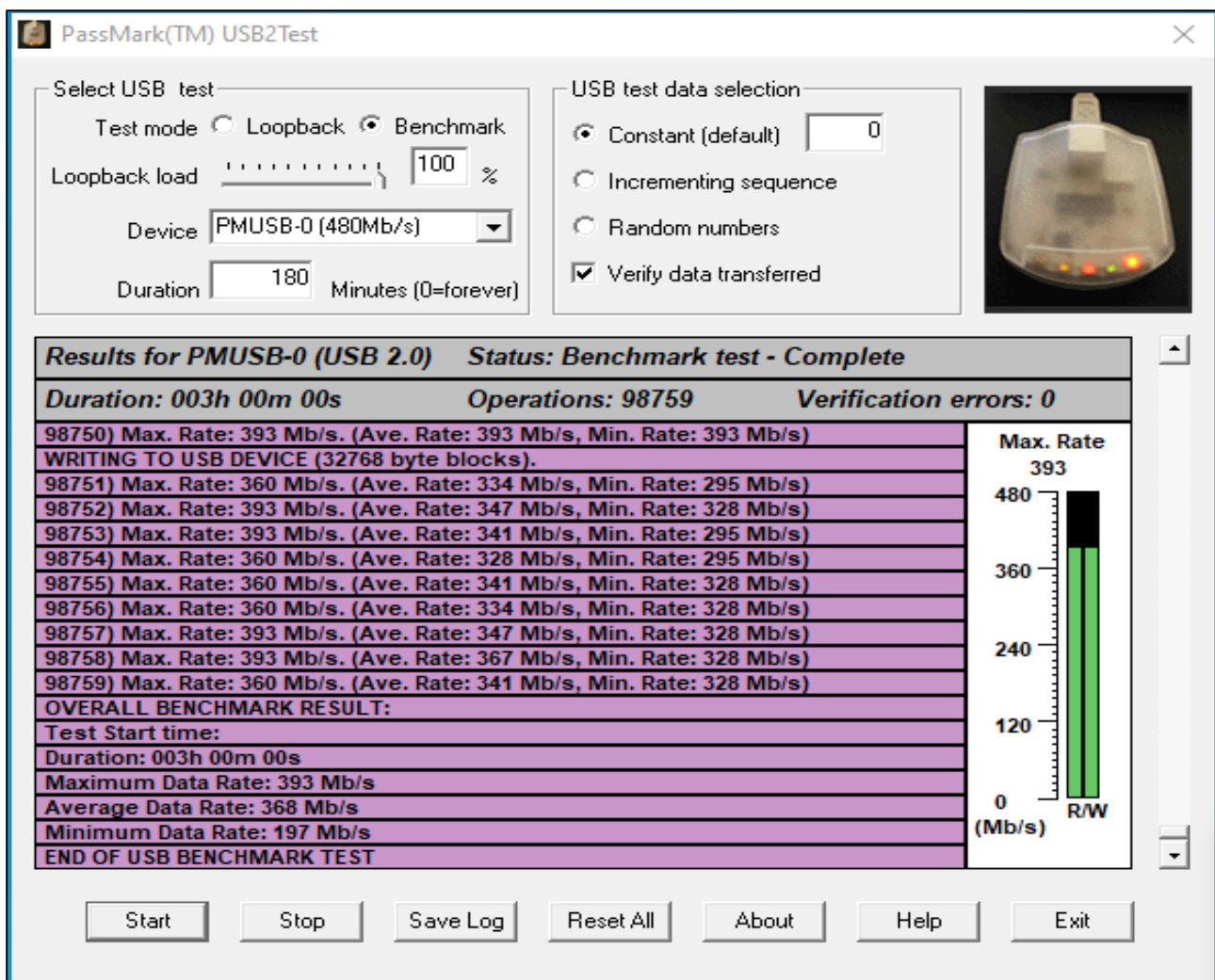
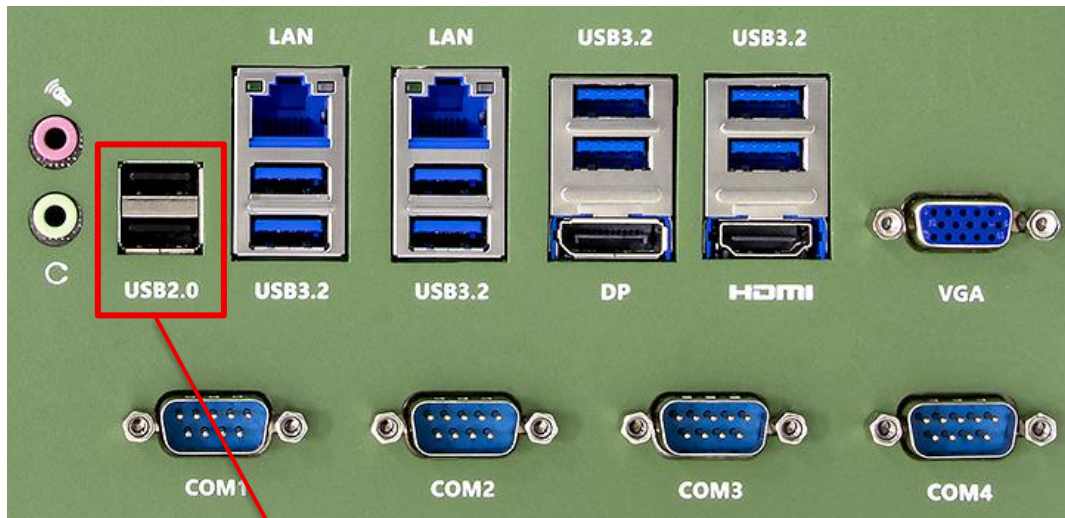
LAN 2 Port



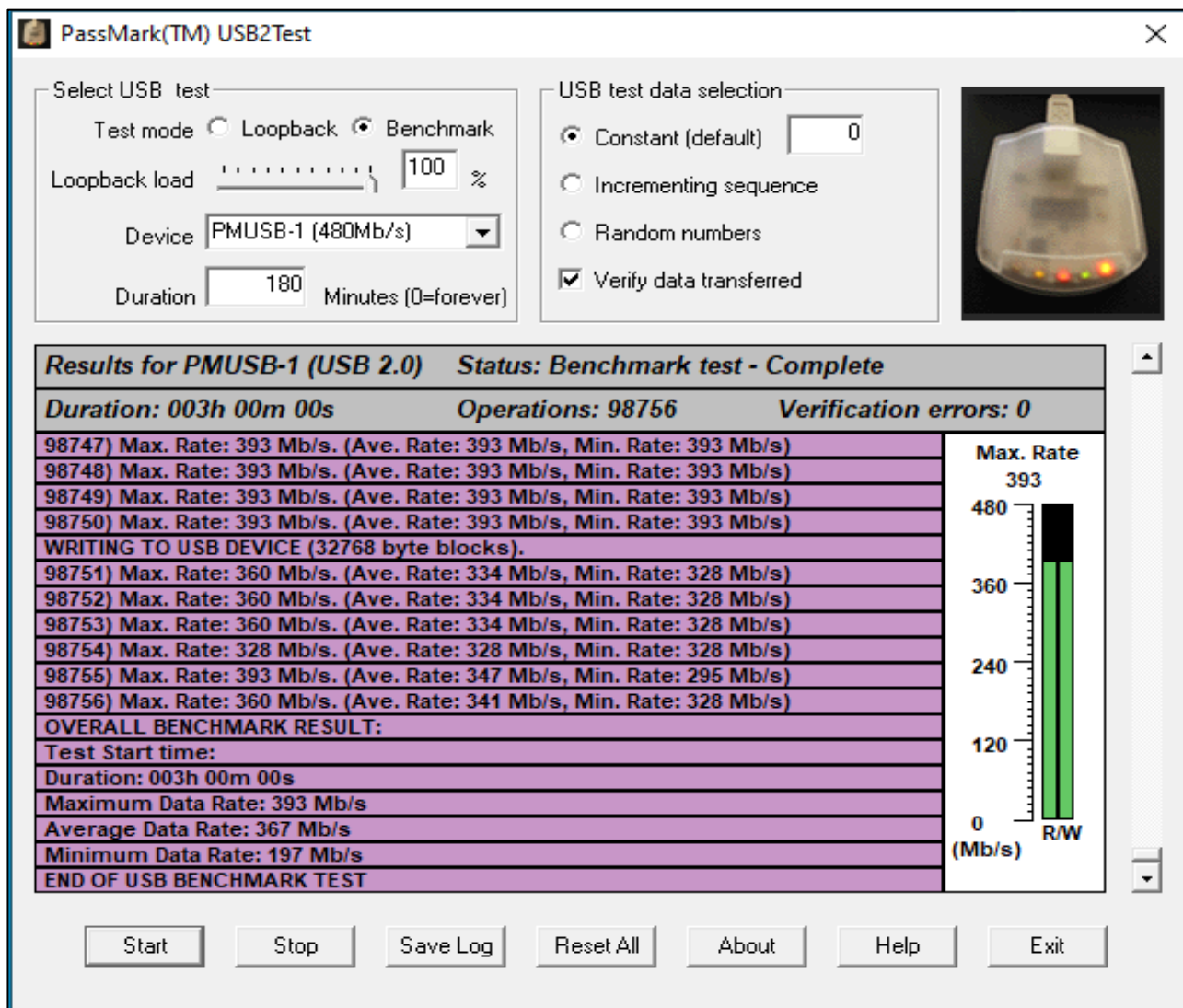
LAN Speed Test Result: Pass

LAN Data-Packet Test Result: 0 Lost (0% loss)

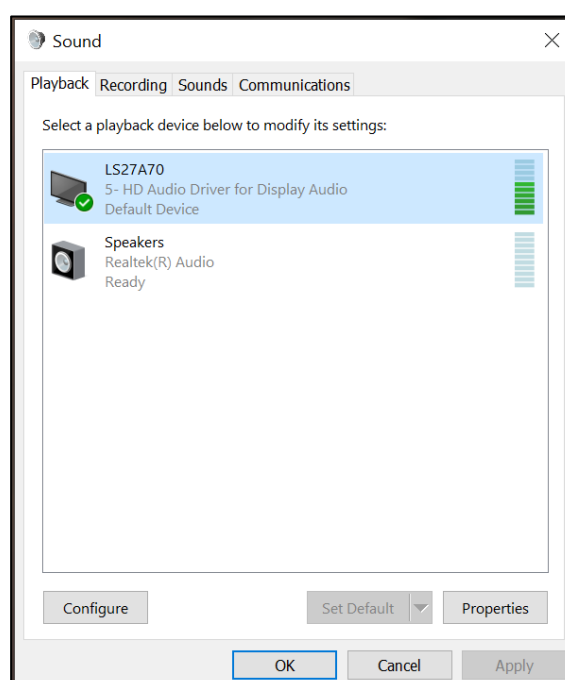
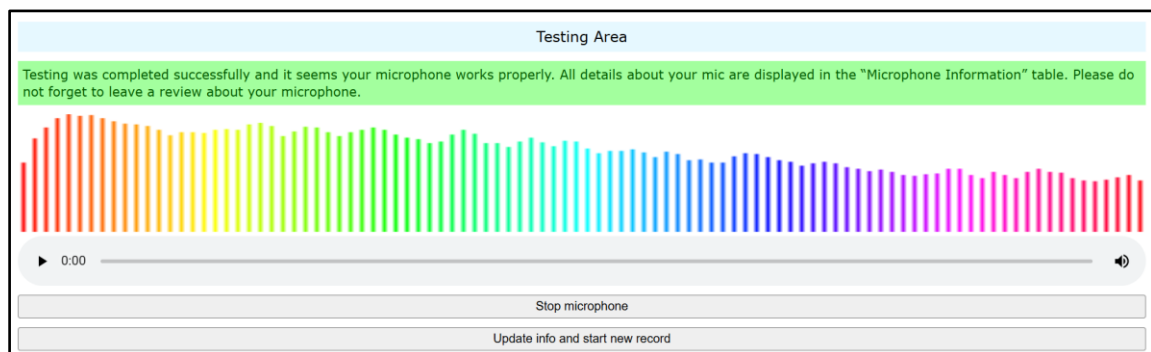
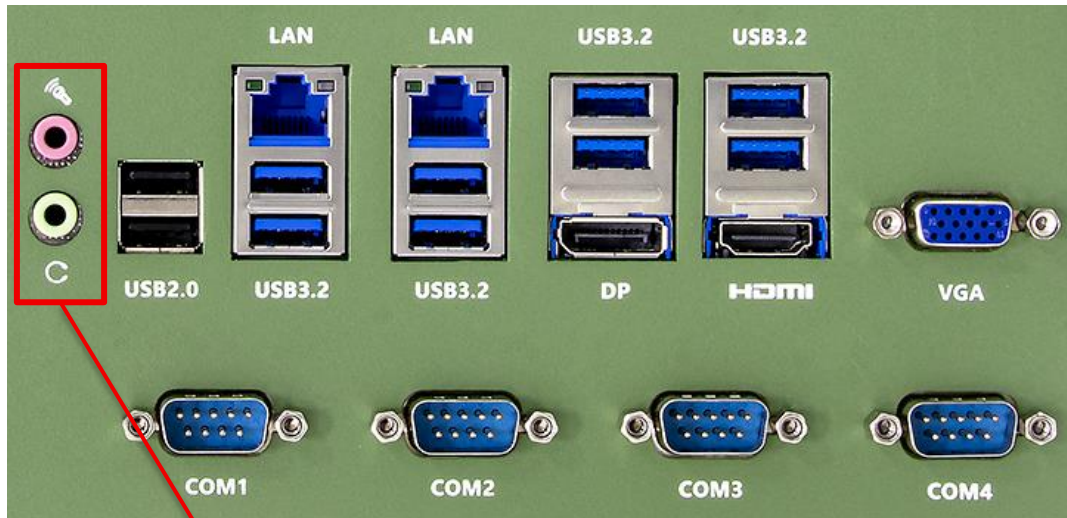
5-3. USB2.0



CPT400-ELM



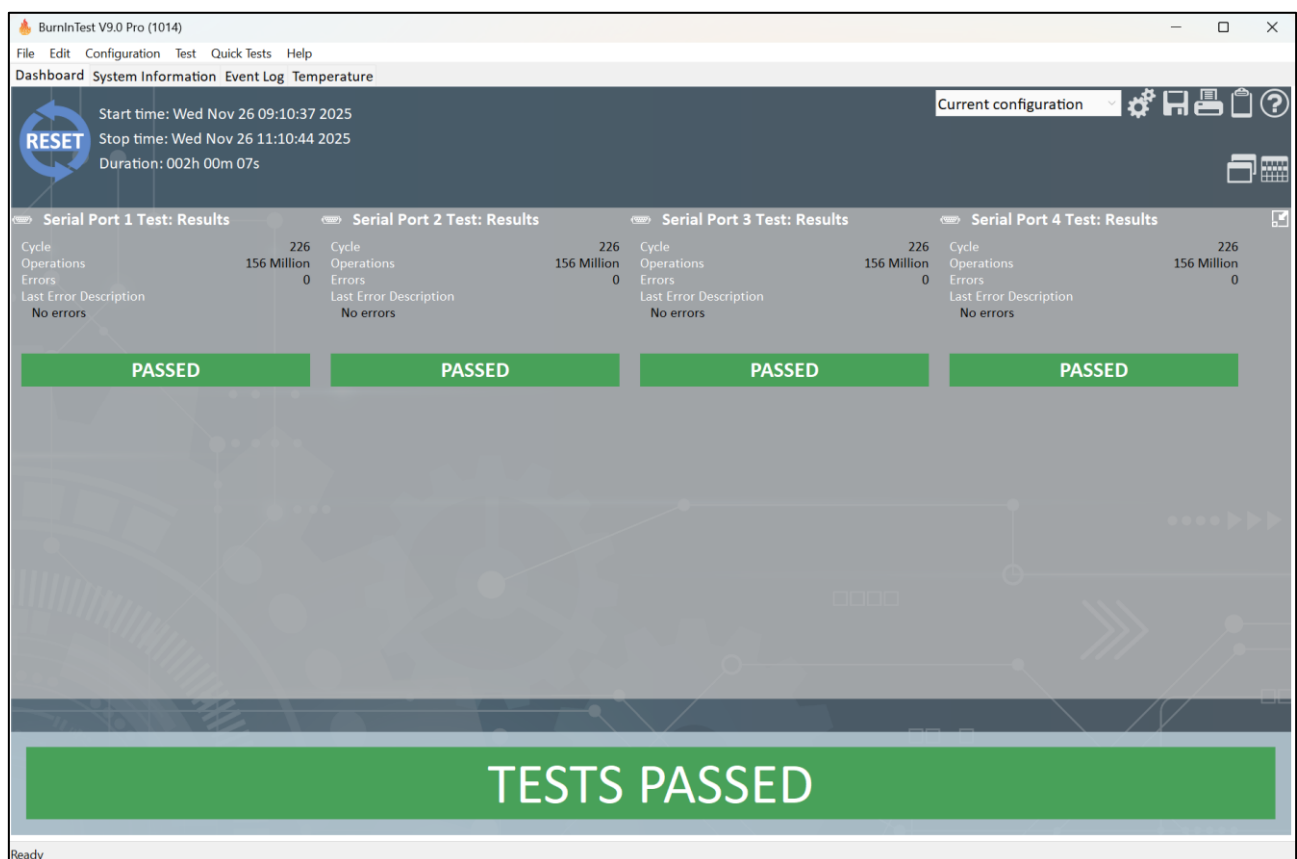
5-4. MIC-IN AND LINE OUT



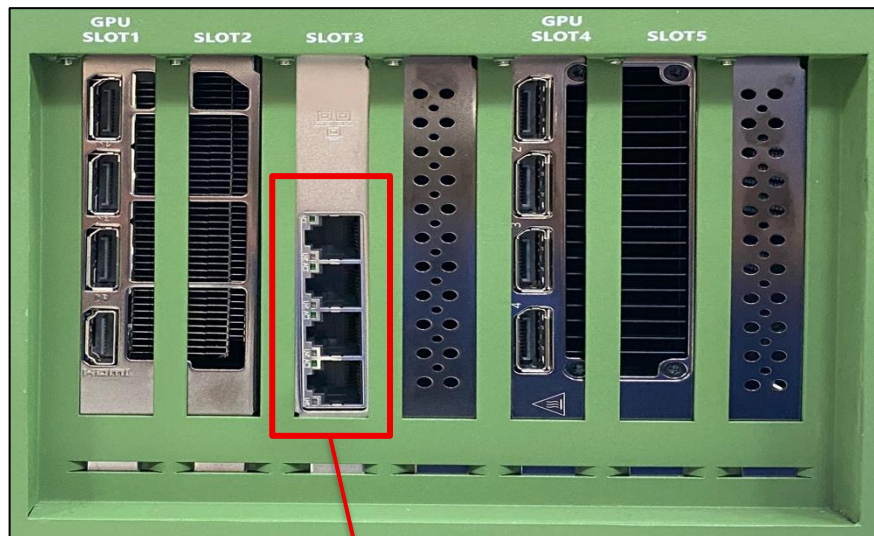
5-5. SERIAL PORT(RS232)



RS232



5-6. 10GBE LAN

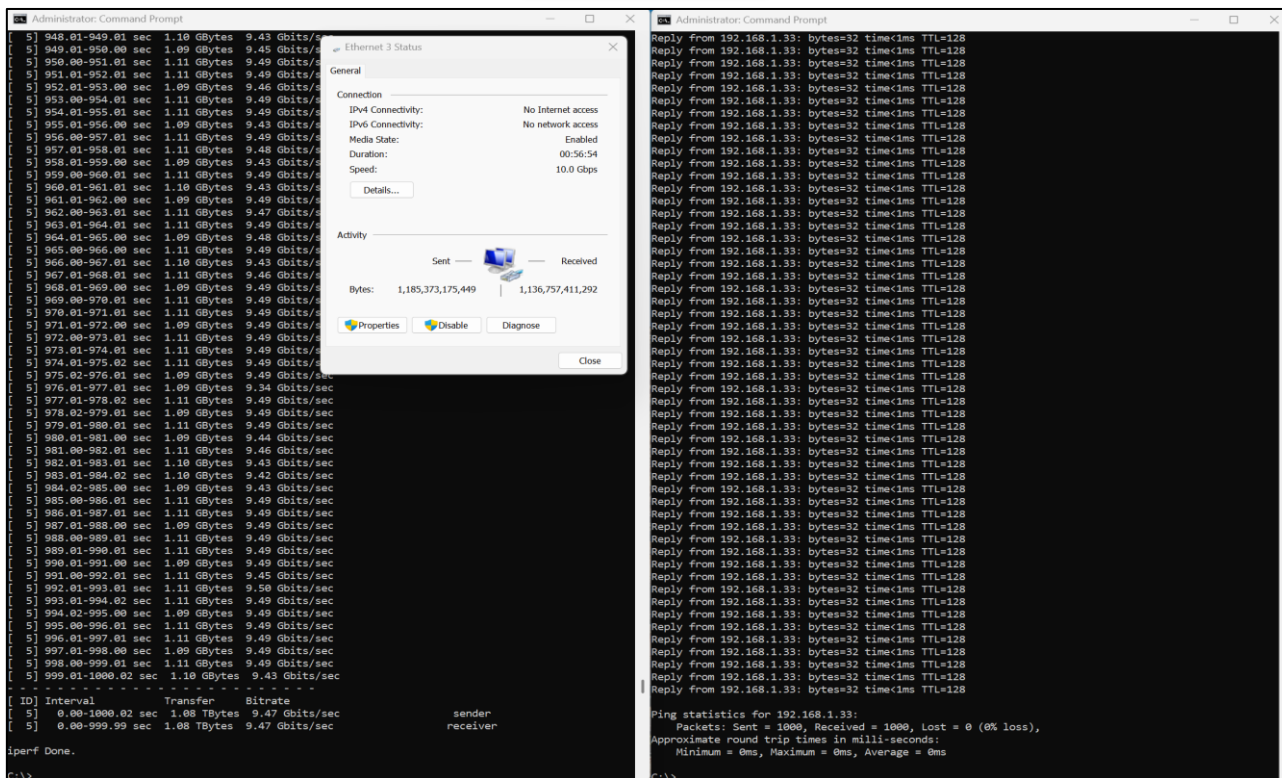


LAN #3 ~ LAN #6

LAN SPEED

LAN Data-Packet

LAN 3 Port

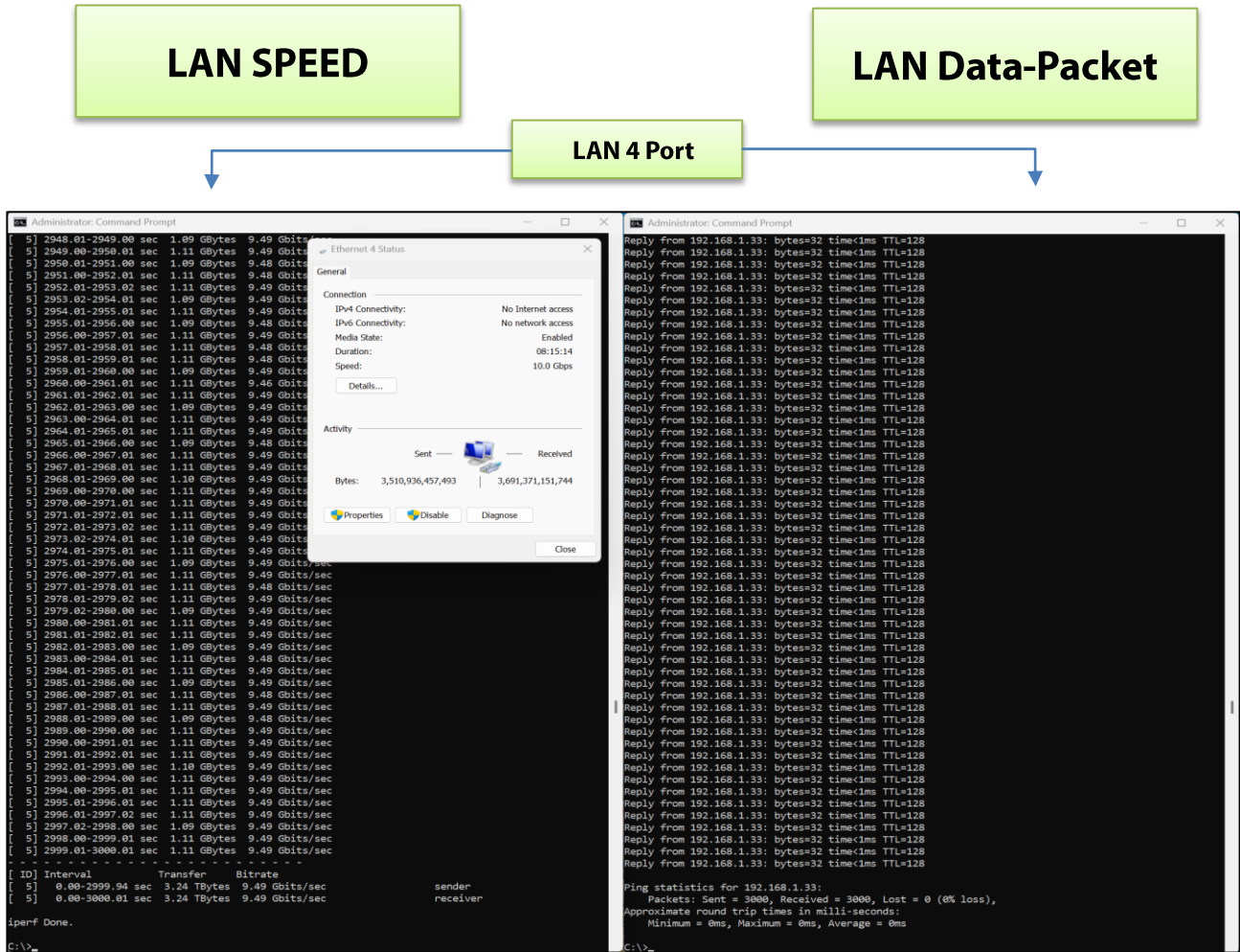


LAN Speed Test Result: Pass

LAN Data-Packet Test Result: 0 Lost (0% loss)

Performance Test

CPT400-ELM



LAN Speed Test Result: Pass

LAN Data-Packet Test Result: 0 Lost (0% loss)

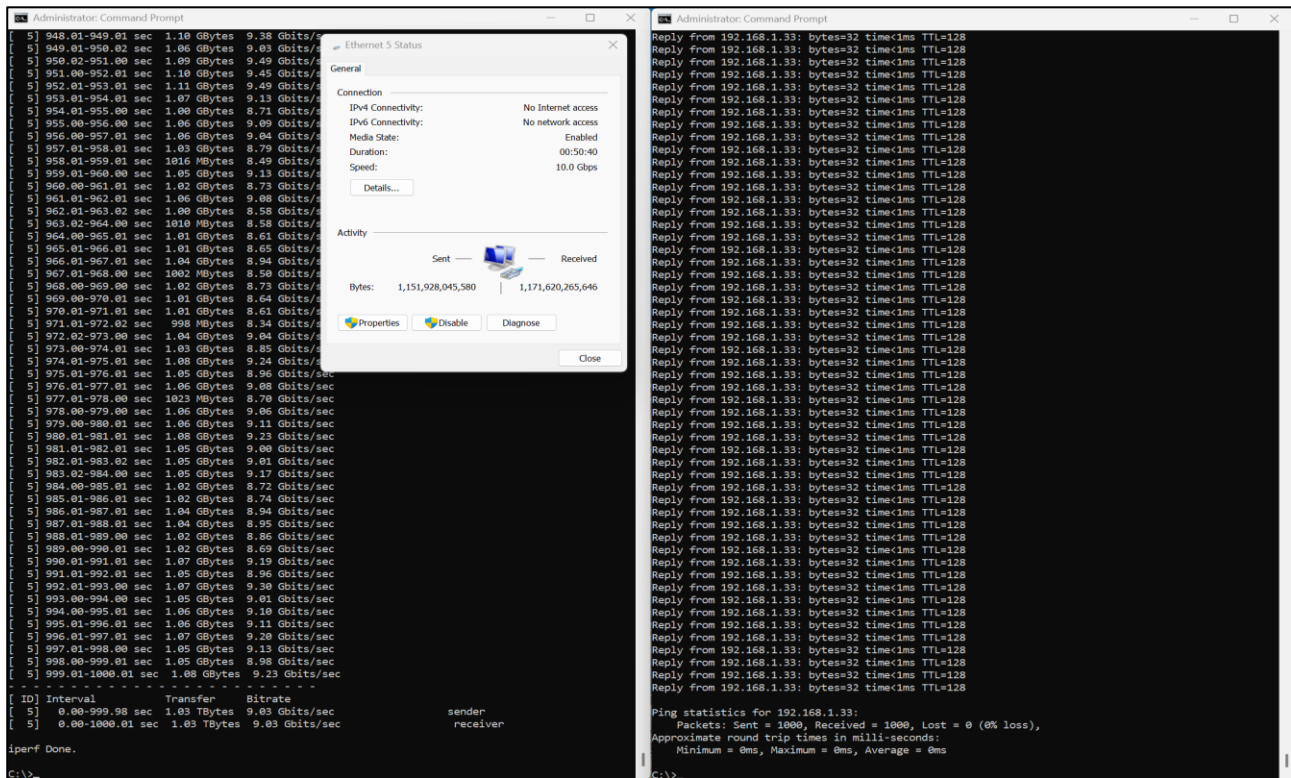
Performance Test

CPT400-ELM

LAN SPEED

LAN Data-Packet

LAN 5 Port



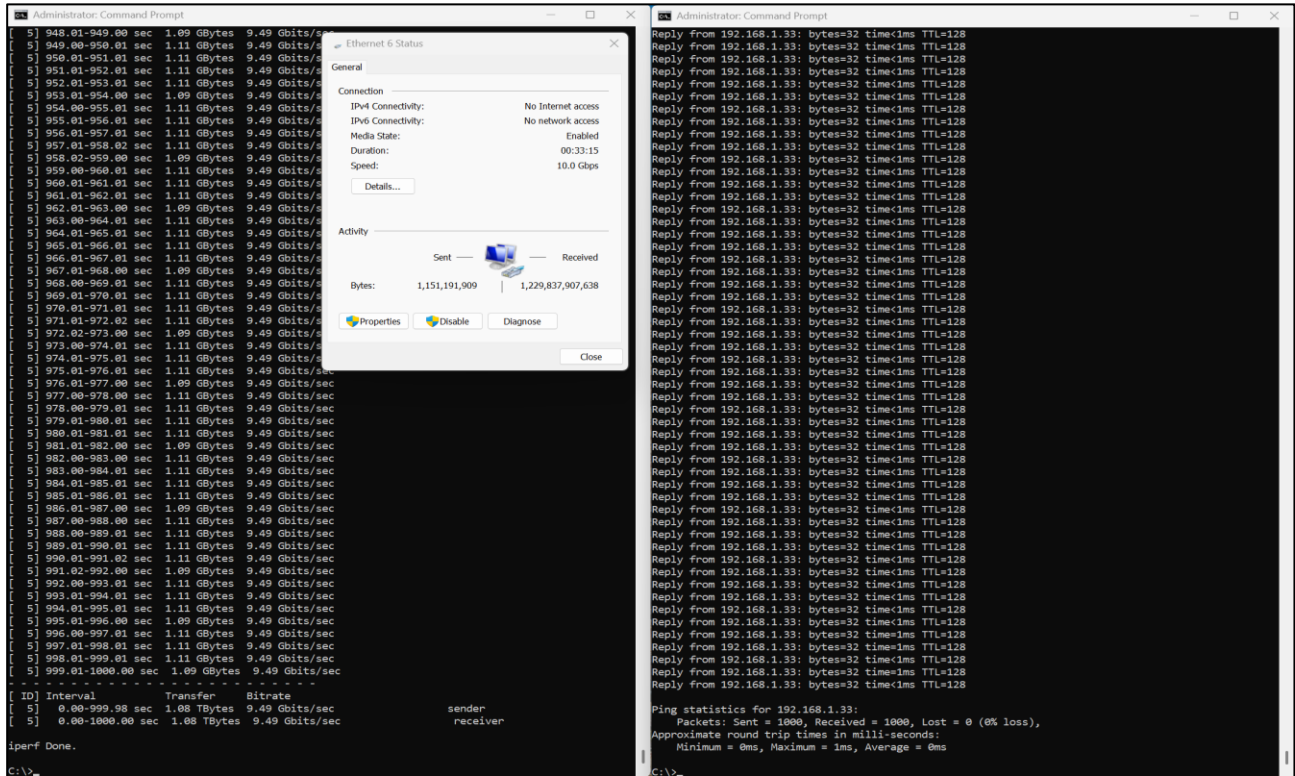
LAN Speed Test Result: Pass

LAN Data-Packet Test Result: 0 Lost (0% loss)

LAN SPEED

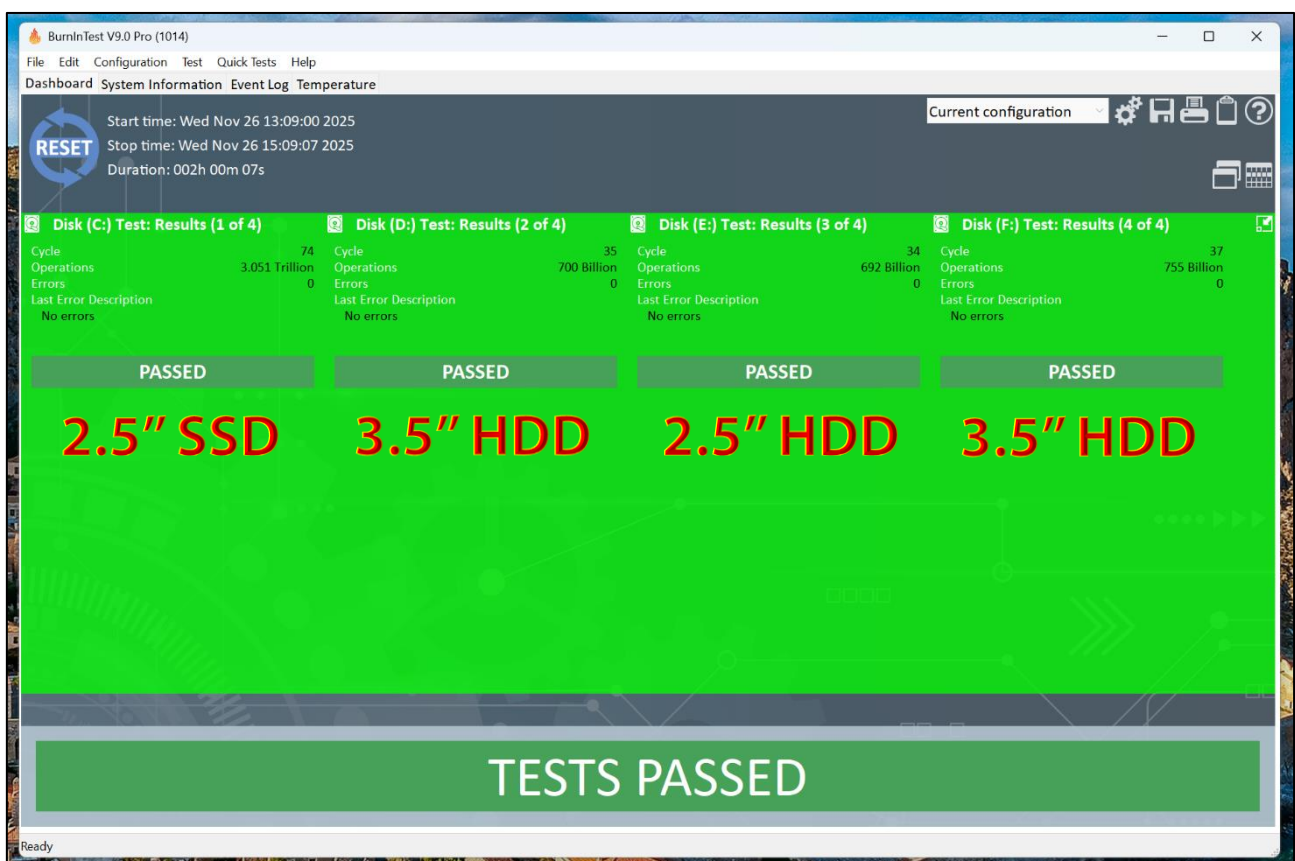
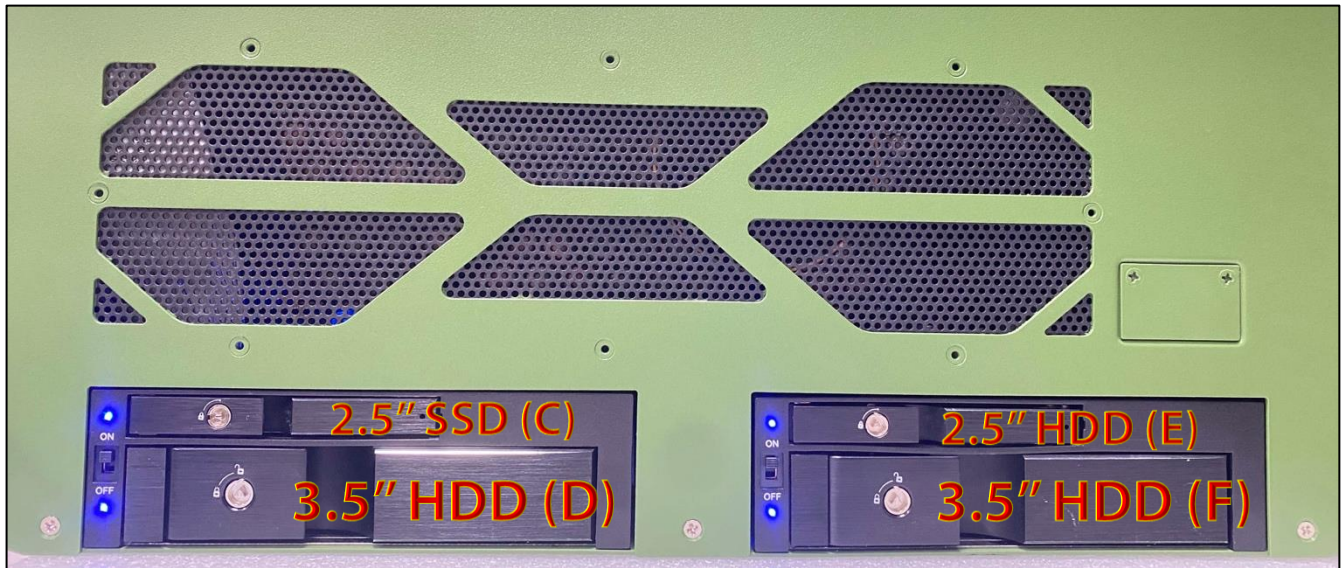
LAN Data-Packet

LAN 6 Port



LAN Speed Test Result: Pass
LAN Data-Packet Test Result: 0 Lost (0% loss)

5-7. HDD TRAY CHECK



-----End of Report-----