PRODUCT OUTGOING QUALITY INSPECTION REPORT

IV320-KS-KD

S/N: SR202404240101

Product Manager	R&D Leader	Mechanical Engineer	System Engineer	Test Engineer
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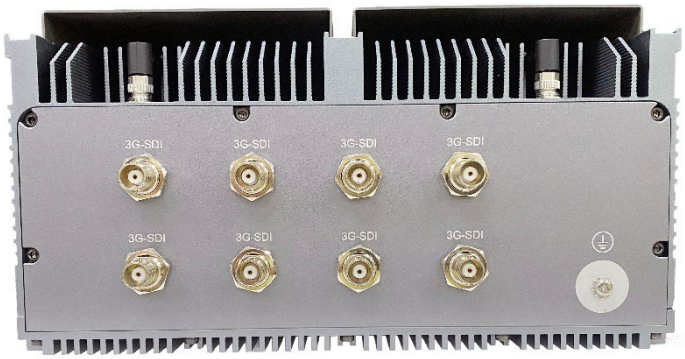
Revision Date: August 6, 2024

IV320-KS-KD


X1
X2
X3
X4
X5
X8
X9
X10
HDD
SSD


X1
X2
X3
X4
X5
X8
X9
X10
HDD
DC IN 12~32V
SSD
SSD


3G-SDI
3G-SDI
3G-SDI
3G-SDI
3G-SDI
3G-SDI
3G-SDI
3G-SDI

INDEX

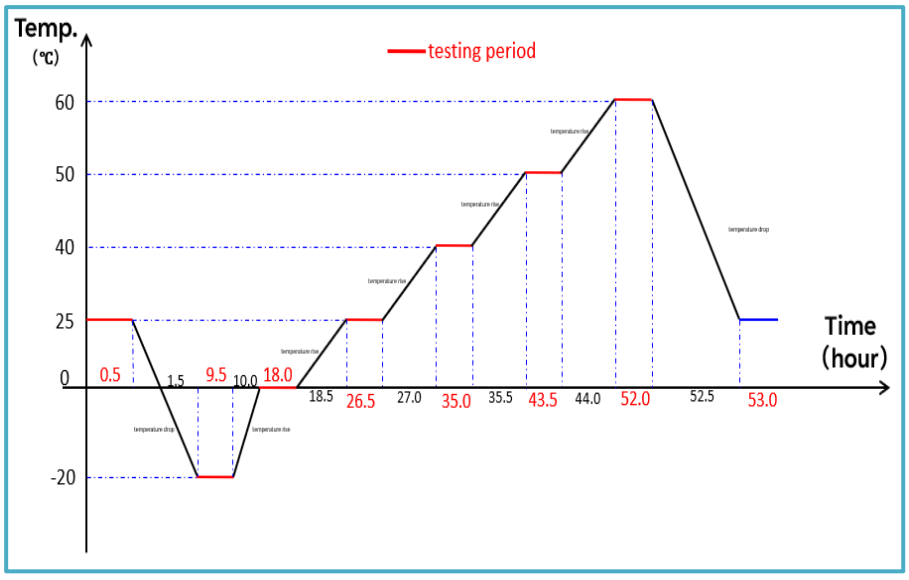
1. SPECIFICATION

1-1. SYSTEM CONFIGURATION

Motherboard	SK515M+COM Express CPU module MXM Type 3.1 Support NVIDIA® GTX® / RTX® GPU GPU Support Up to MXM RTX 5000 Ada (9728 CUDA, 16GB RAM) PCI/104 Express Expansion Slot for Modular Open Structure Multi-Expansion Slots include Dual Mini PCIe Express Slots, 1x M.2 Slot Wide Range DC 9V~36V Input Extreme Temperature Support -40°C to 85°C
CPU	Intel® Core™ i7-13800HRE Processor Total Cores: 14 # of Performance-cores: 6 # of Efficient-cores: 8 Total Threads: 20 Max Turbo Frequency: 5.00 GHz Performance-core Max Turbo Frequency: 5.00 GHz Efficient-core Max Turbo Frequency: 4.00 GHz Processor Base Frequency: 2.50 GHz Cache 24 MB Intel® Smart Cache TDP: 45 W
Memory	64GB DDR5 SO-DIMM wide temp. (0C02AM425R4GD00L*2pcs)
Storage	2* 2TB SATA SSD wide temperature (2 x Swappable Tray) (0I05077SL02TB00L*2pcs)
GPU	Nvidia RTX A4500 Embedded GPU BIOS Version: 94.04.81.00.30 CUDA parallel-processing cores: 5888 CUDA® cores GPU base/boost clock: 930 MHz / 1500 MHz Max Power Consumption: 80 W
Power Module	SK708 (0L18SK708000P3PF*1pcs)
RS485 Serial Port	EGP2-X401 M.2 to 4 x RS232/422/485 Module

2. TEST PLAN

2-1. THERMAL MEASUREMENT PROCESS

Test Purpose	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. As the system cools down, the mode will change with stack selection, temperature/heat. Mapping can help develop the best tracking arrangements.
Test Equipment	1. KSON THS-B4T-150 Chamber.
Quantity Tested	Minimum 1 Set
Test Software	1. Stress CPU: PassMark Burn-in Test Software Ver 9.0 2. Stress GPU: AIDA64 extreme590 3. LAN Speed Test: iPerf3
Test Procedure	1. Thermal pre-scan measurement: Temperature: **-20˚C～60˚C** Humidity: **85%RH (Temperature above 25℃)** 2. Actual thermal measurement: 2-1. Select the test point based on the infrared photo and connect the thermocouple to the hot spot. 2-2. Place the EUT into the hot chamber and set the test temperature curve Specification. 2-3. Open the hot cell and power up the EUT, enter the Windows 10 Pro environment and perform a maximum power test + stress application. 2-4. After the EUT executes the test software for 8 hours, record the maximum heat generation of each thermocouple point. 2-5. Turn off the hot cell and EUT. 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.
Test Diagram of Curves	Environment defines for 53 hours. 

2-2. Test Rresult <Test Item>

2-2-1. TEMPERATURE CYCLE

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

Test Temperature	Test Result
-20˚C	PASS
0˚C	PASS
25˚C / 85%RH	PASS
40˚C / 85%RH	PASS
50˚C / 85%RH	PASS
60˚C / 85%RH	PASS

2-2-2. I/O FUNCTION

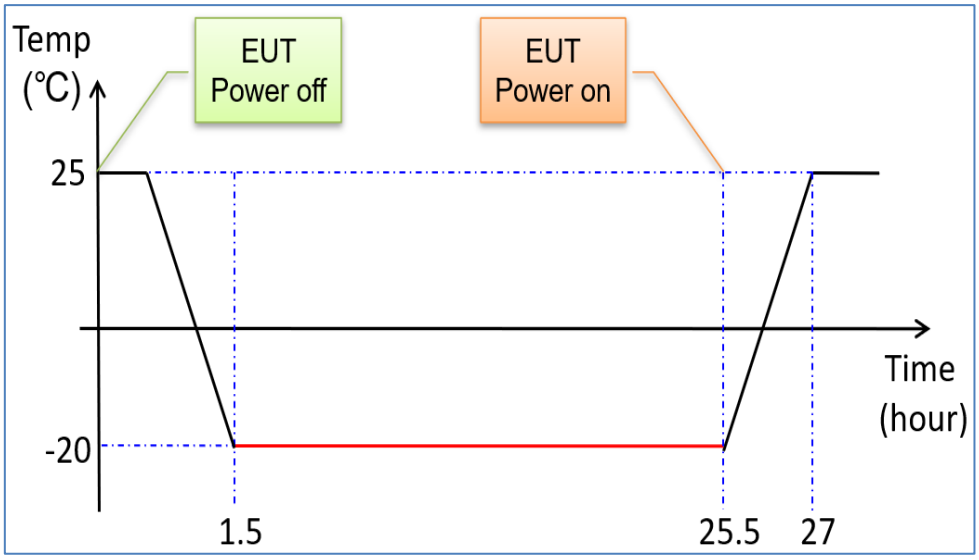
#Confirm the system specifications and I/O connection to ensure that they are functioning properly

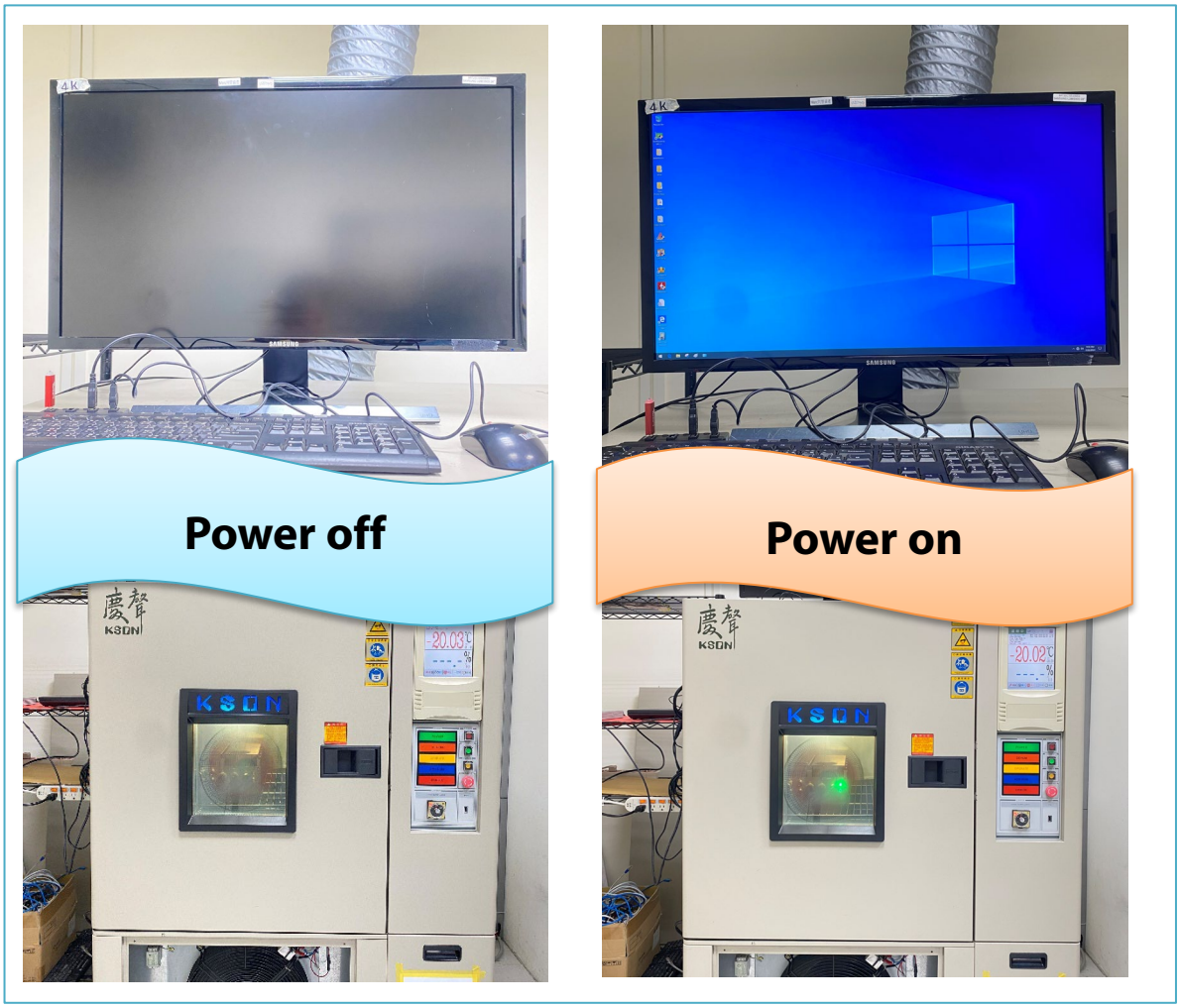
Item	Test Criteria	Result
X1Port - LAN **(2.5Gbps)**	Connection 1G/2.5G/10G/100G SWITCH HUB transfer data test, it can work normally.	PASS
X2 Port - LAN **(2.5Gbps)**	Connection 1G/2.5G/10G/100G SWITCH HUB transfer data test, it can work normally.	PASS
X3 Port – CANBus **(COM 5)**	Connect to the test computer to exchange messages.	PASS
X3 Port – CANBus **(COM 6)**	Connect to the test computer to exchange messages.	PASS
X4 Port – RS485 **(COM 3)**	Connect to the test computer to exchange messages.	PASS
X4 Port – RS485 **(COM 4)**	Connect to the test computer to exchange messages.	PASS
X4 Port – RS485 **(COM 7)**	Connect to the test computer to exchange messages.	PASS
X4 Port – RS485 **(COM 8)**	Connect to the test computer to exchange messages.	PASS
X8 Port - USB3.0	Connect a PassMark USB 3.0 Loopback Plugs for testing, it can work normally.	PASS
X9 Port - USB3.0	Connect a PassMark USB 3.0 Loopback Plugs for testing, it can work normally.	PASS
X10 Port - Mini DP	Check work well. (Max Resolution: 4K at 3840 x 2160)	PASS

2-2-3. LOW-TEMPERATURE & BOOT-UP

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

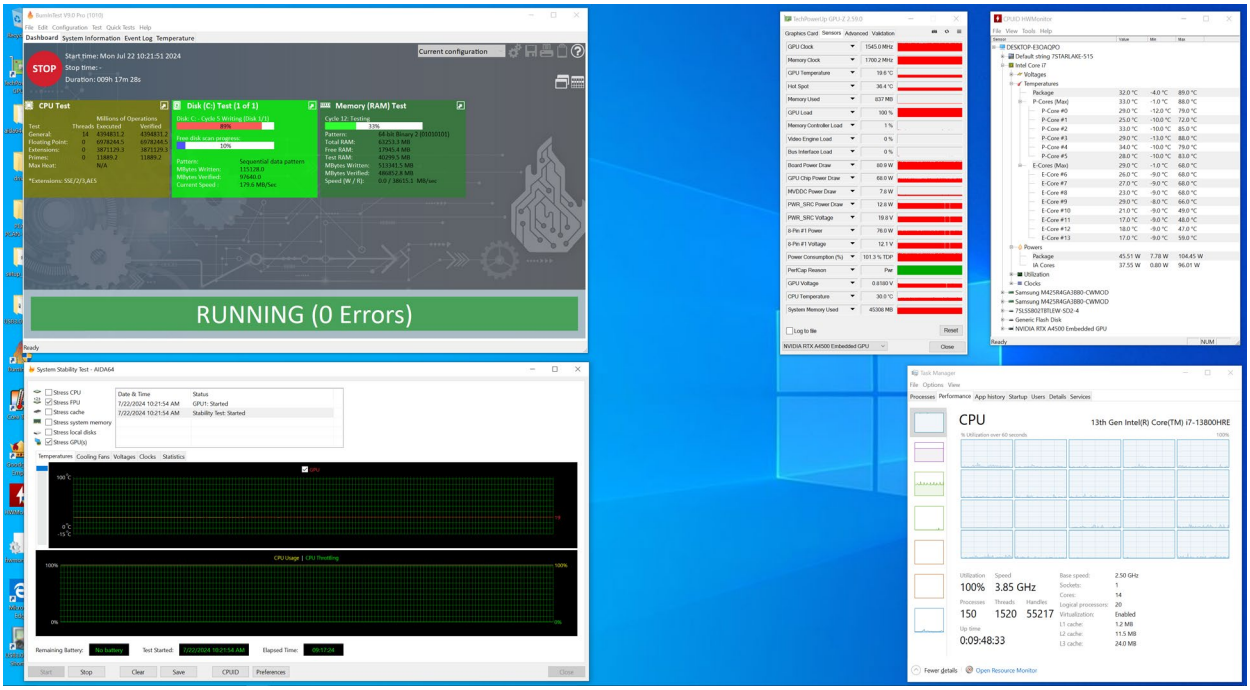
Ambient Temp.	Test Result
-20°C	PASS



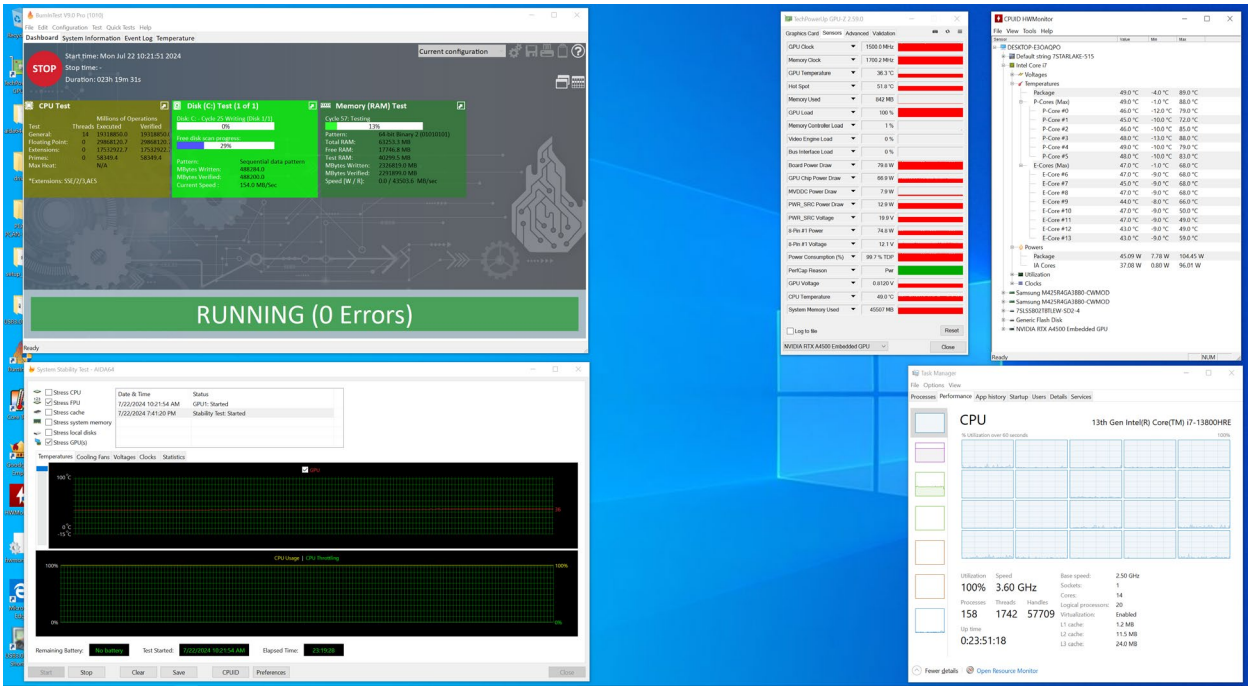


3. TEST PHOTO IN LAB

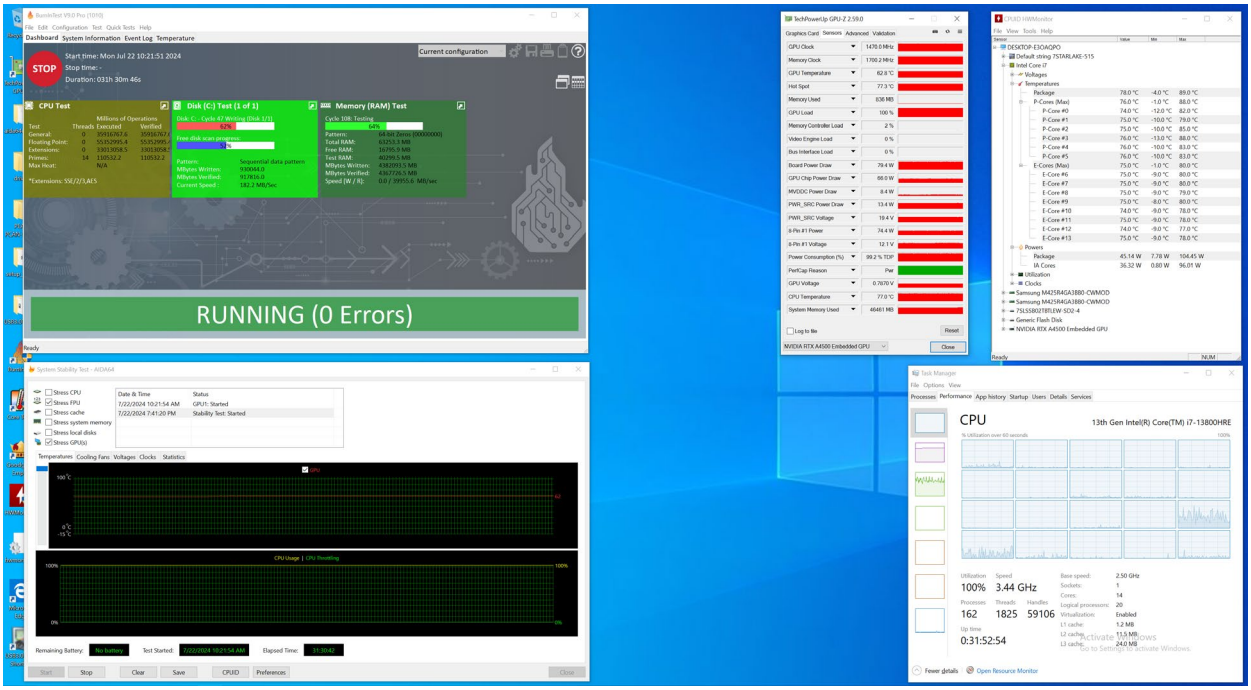
- Chamber in -20°C



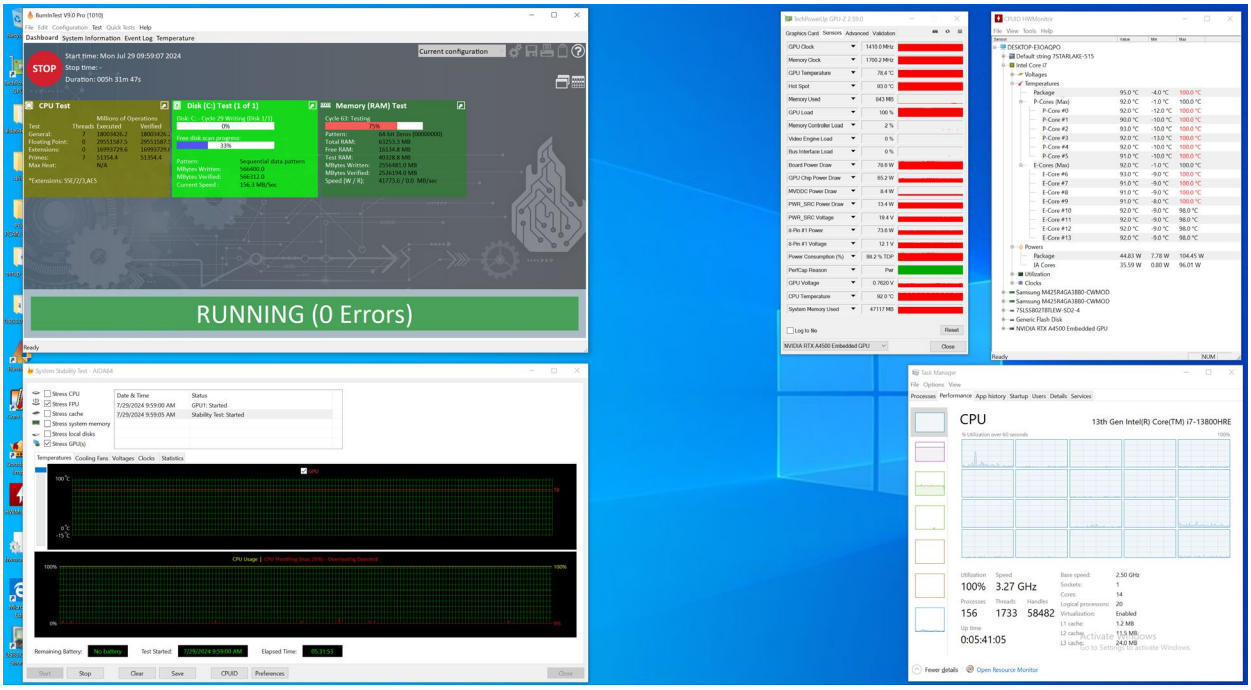
- Chamber in 0°C

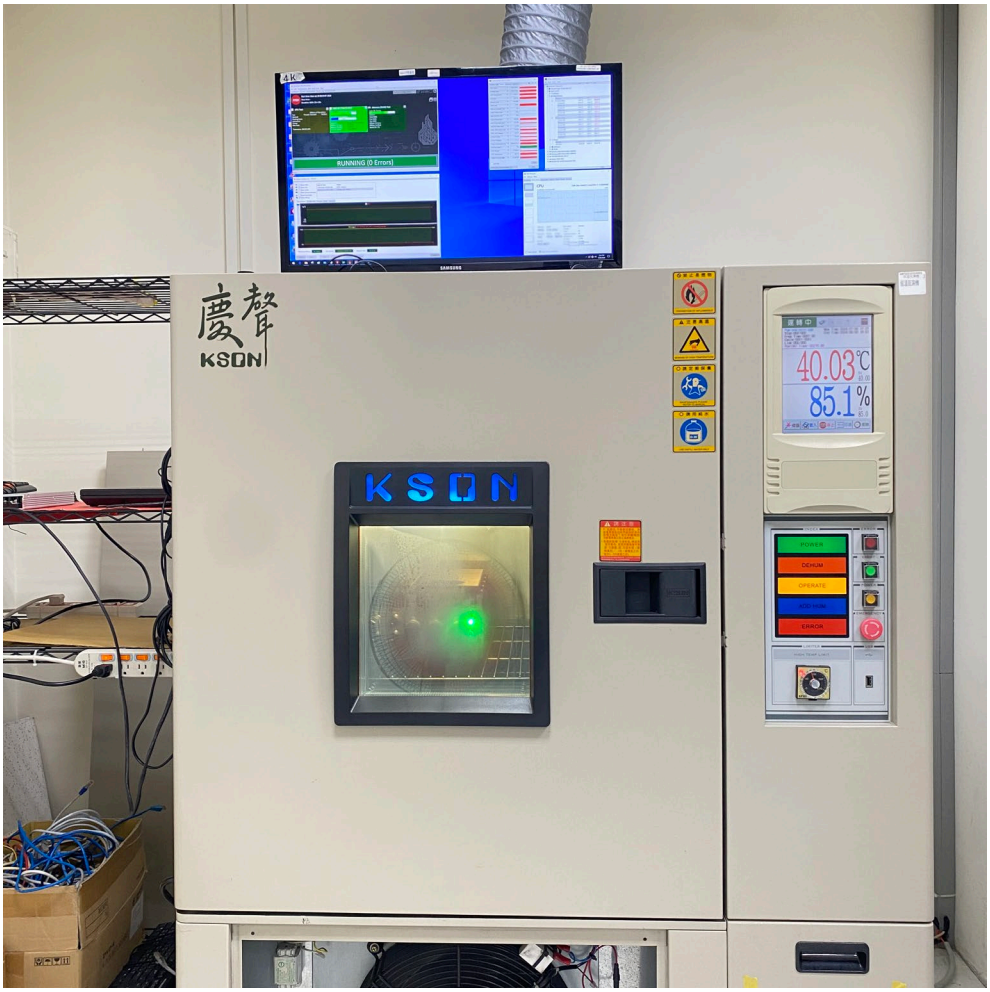


- Chamber in 25°C / 85%RH

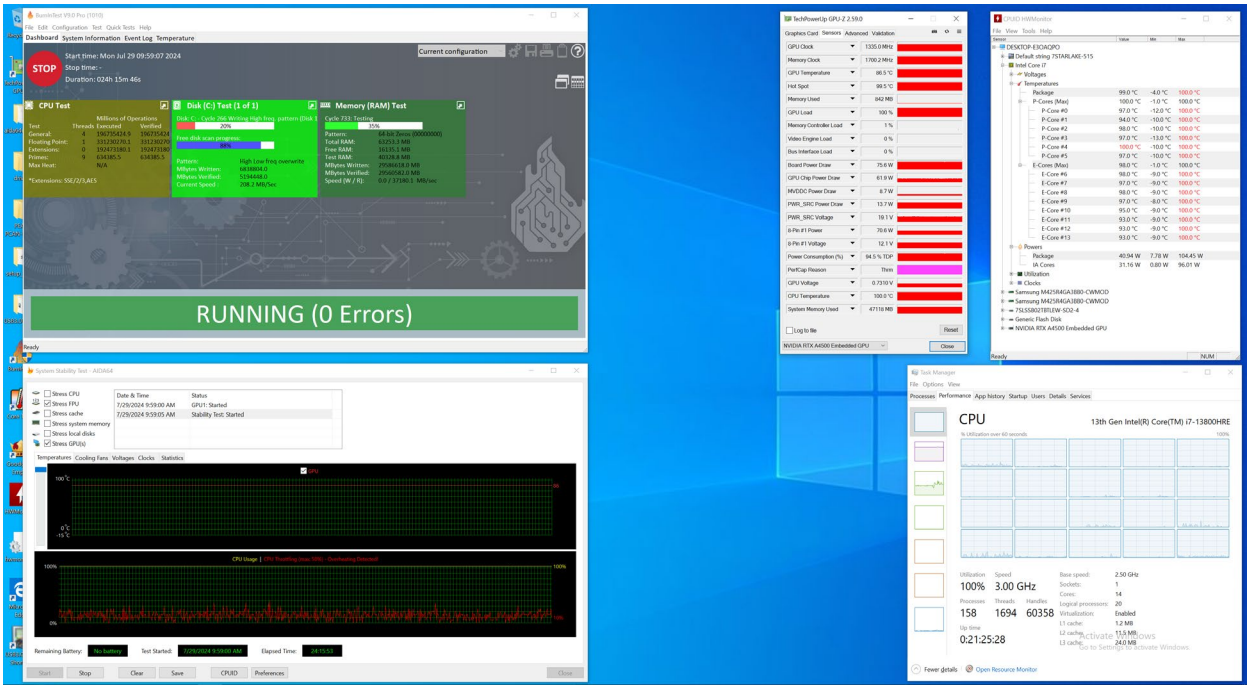


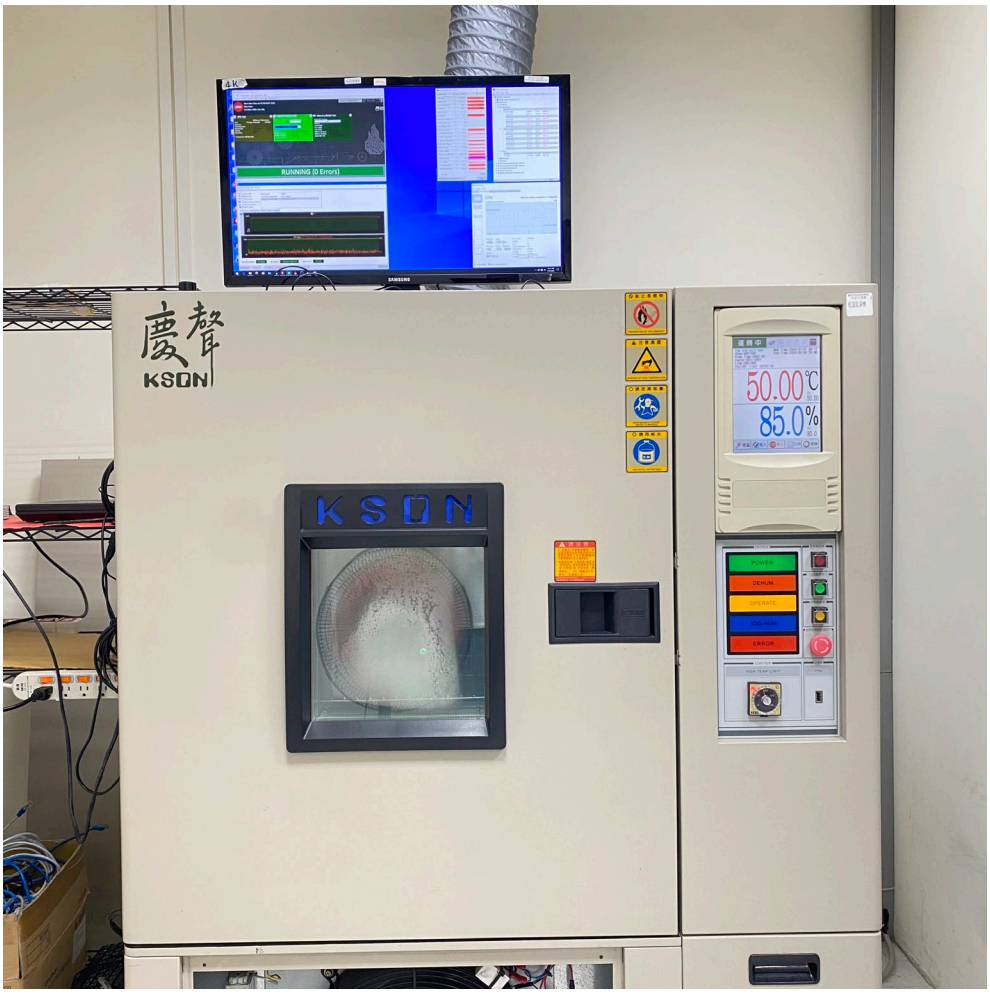
- Chamber in 40°C / 85%RH



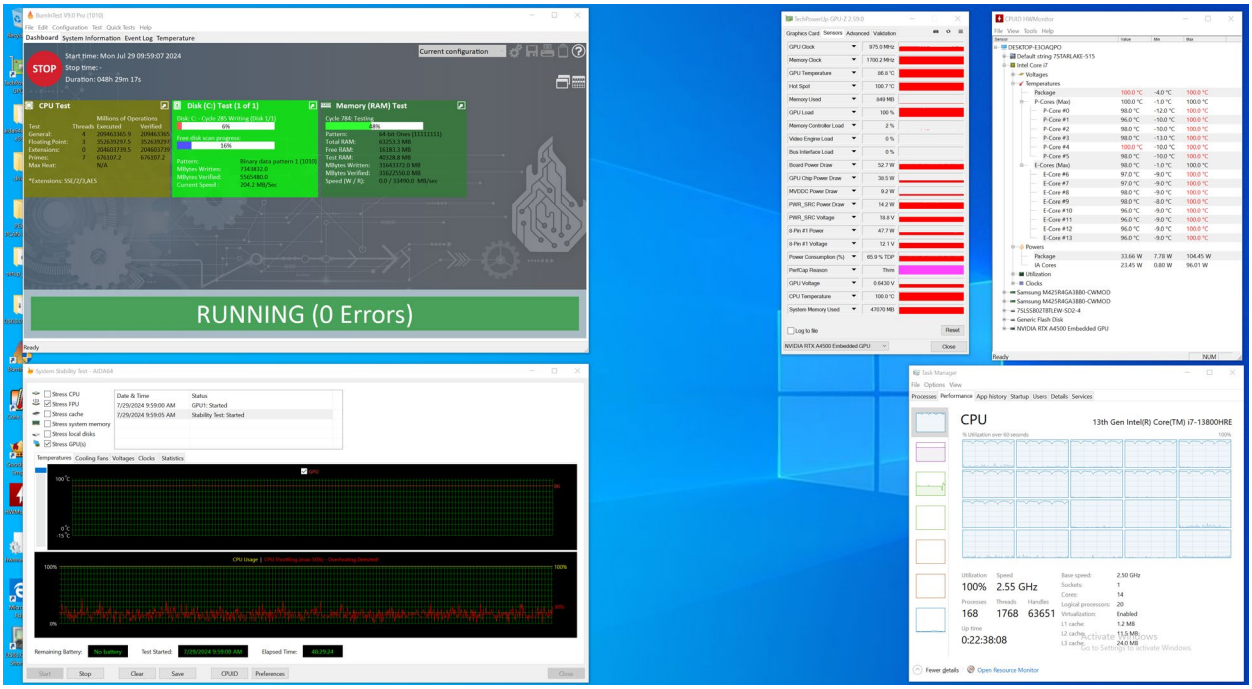


- Chamber in 50°C / 85%RH





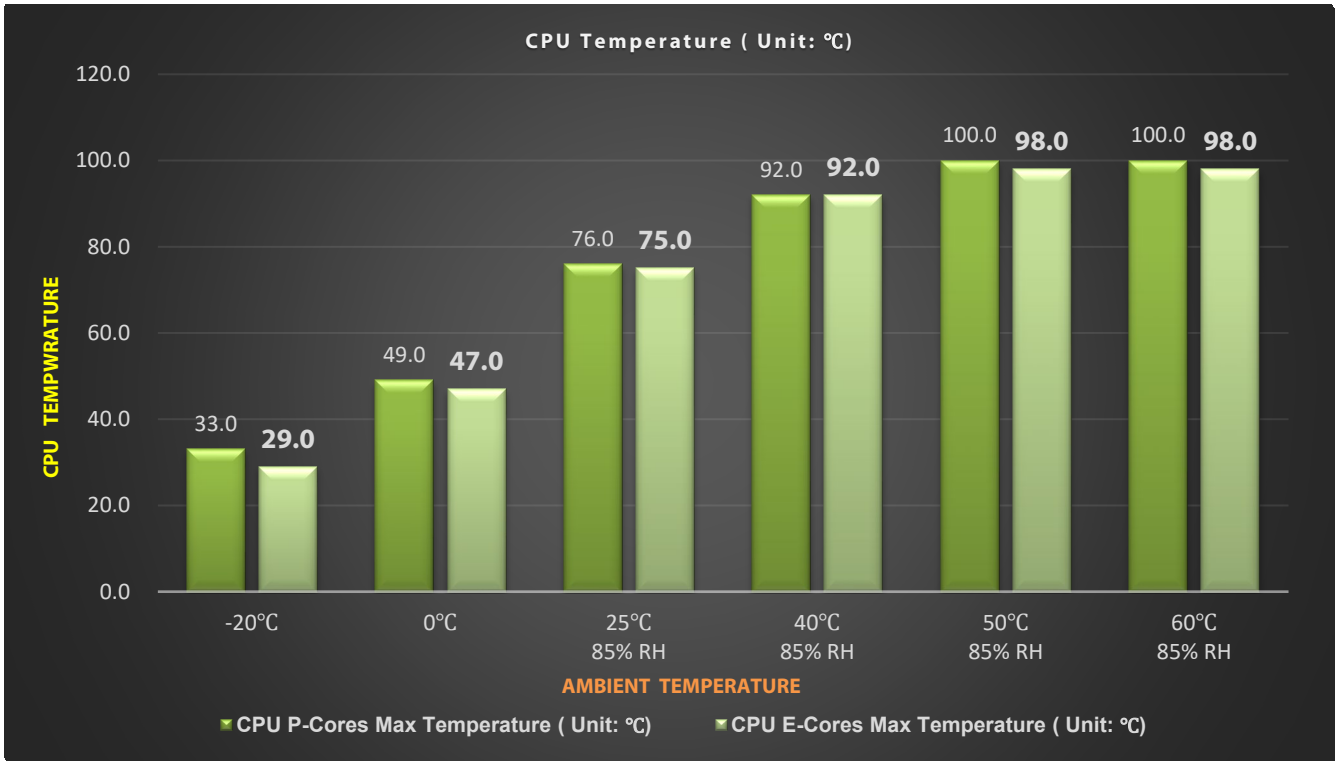
- Chamber in 60°C / 85%RH

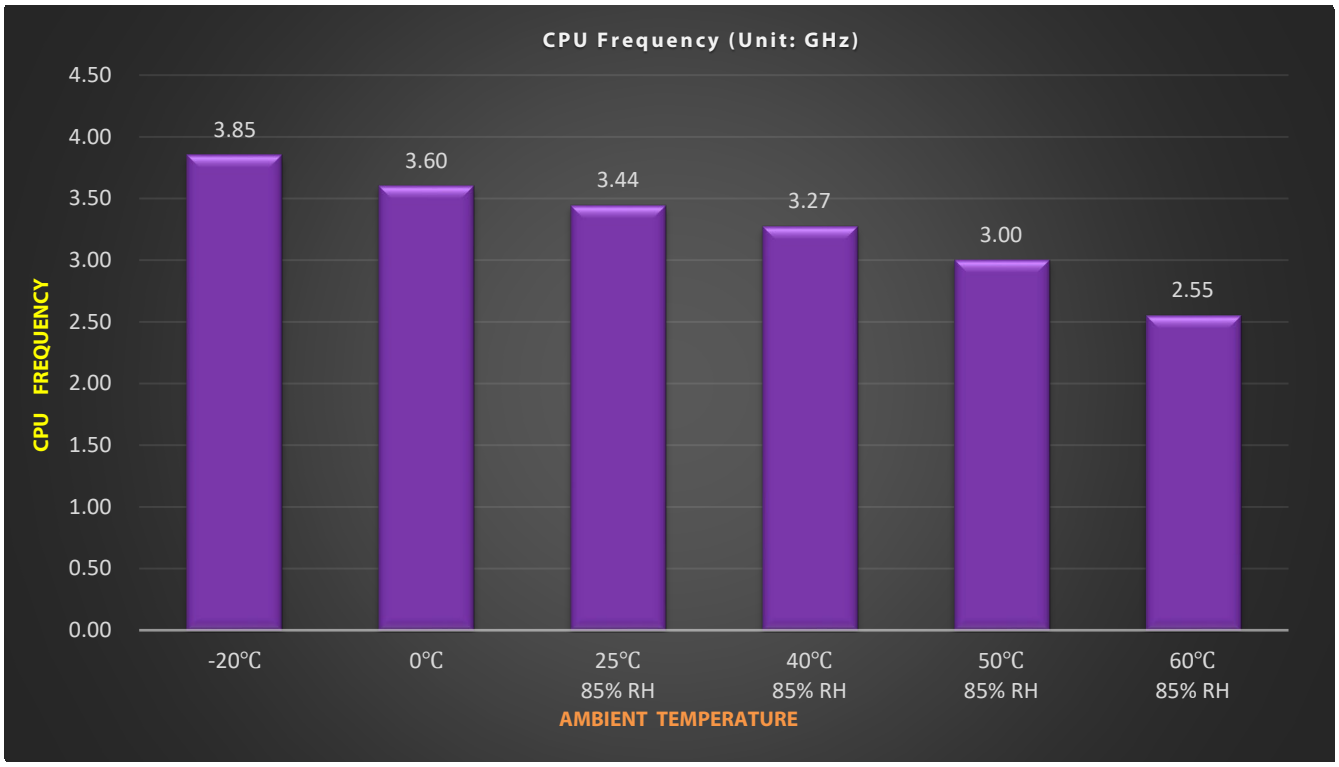


4. THERMAL TEST RESULT(-20°C ~ +60°C)

CPU Temperature and Frequency

Temperature / Frequency \ Ambient Temp.	-20°C	0°C	25°C 85% RH	40°C 85% RH	50°C 85% RH	60°C 85% RH
CPU P-Cores Max Temperature (Unit: °C)	33.0	49.0	76.0	92.0	100.0	100.0
CPU E-Cores Max Temperature (Unit: °C)	29.0	47.0	75.0	92.0	98.0	98.0
CPU Frequency (Unit: GHz)	3.85	3.60	3.44	3.27	3.00	2.55





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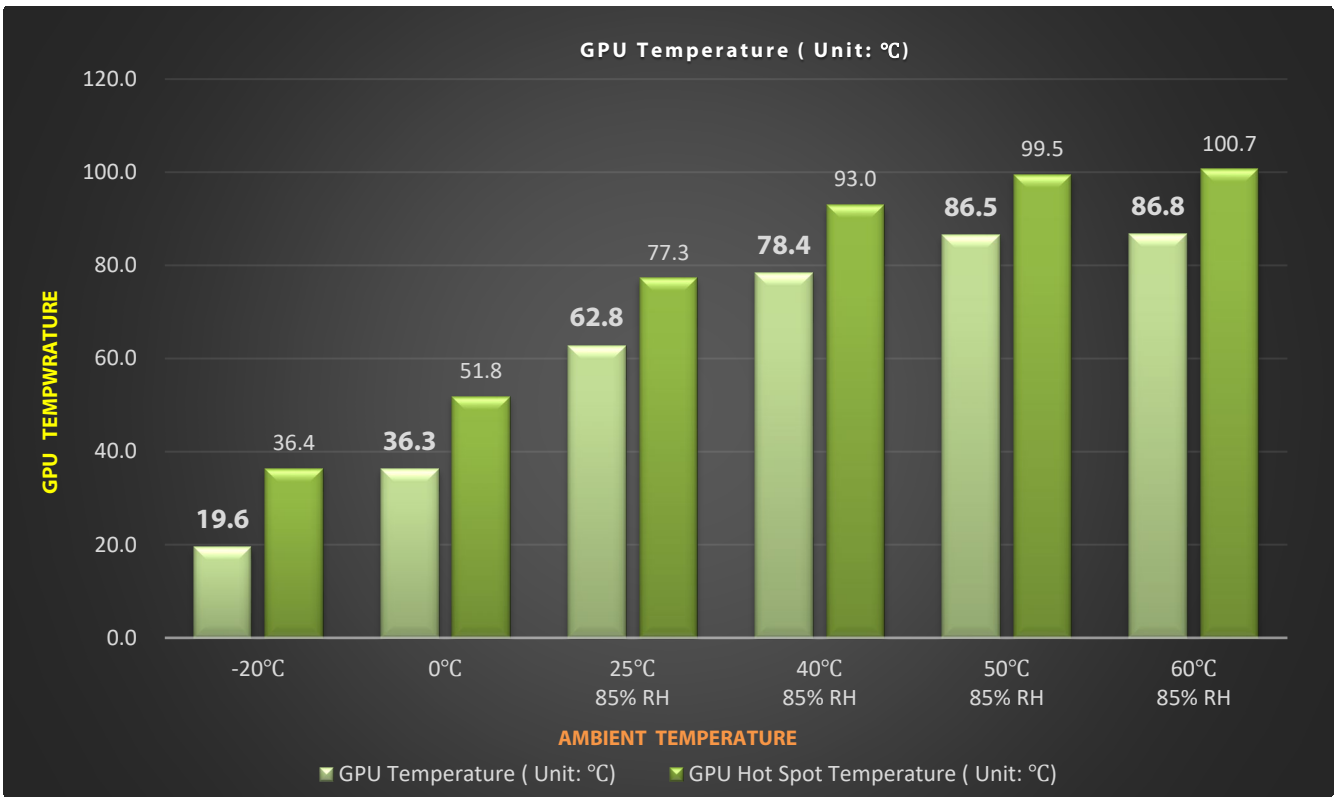
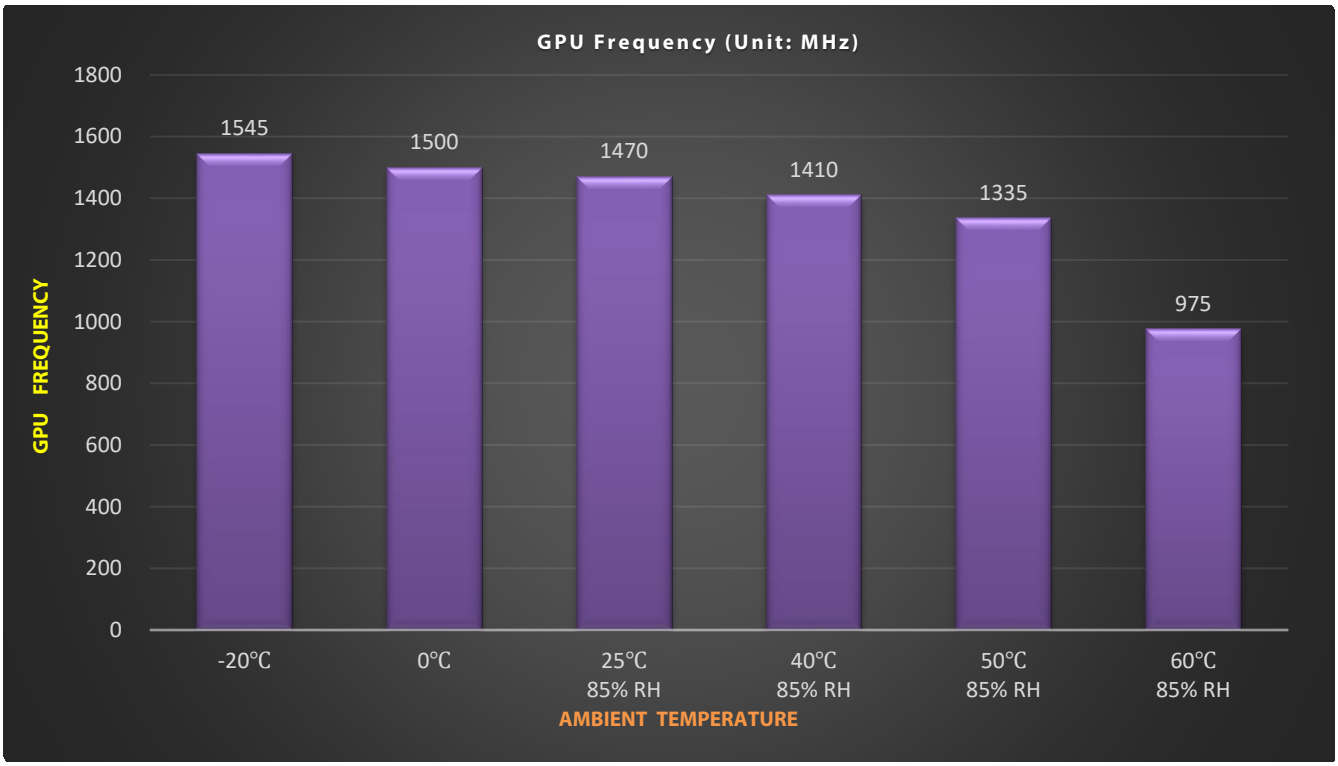
GPU Temperature and Frequency

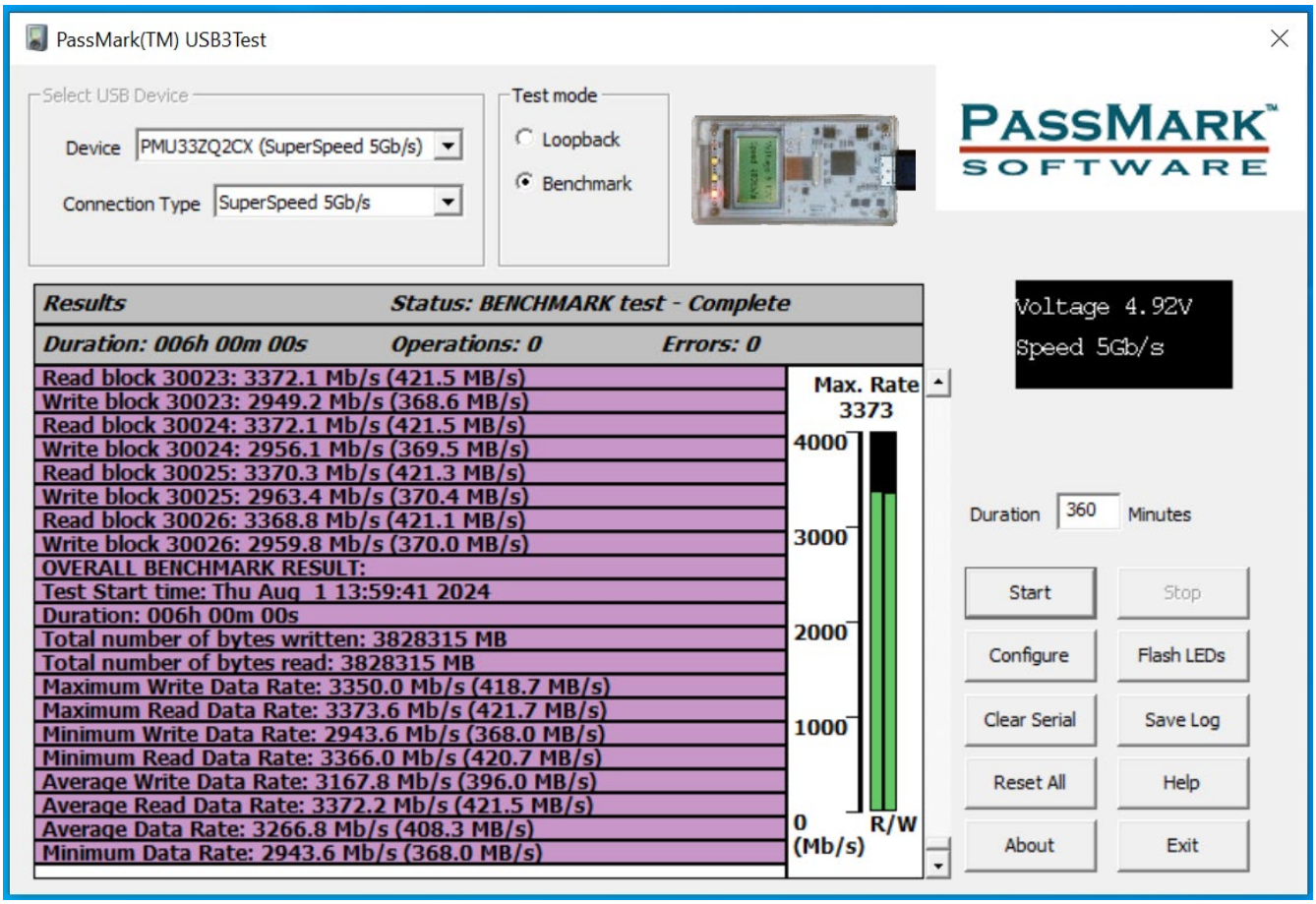
Temperature / Frequency \ Ambient Temp.	-20°C	0°C	25°C 85% RH	40°C 85% RH	50°C 85% RH	60°C 85% RH
GPU Temperature (Unit: °C)	19.6	36.3	62.8	78.4	86.5	86.8
GPU Hot Spot Temperature (Unit: °C)	36.4	51.8	77.3	93.0	99.5	100.7
GPU Frequency (Unit: MHz)	1545	1500	1470	1410	1335	975





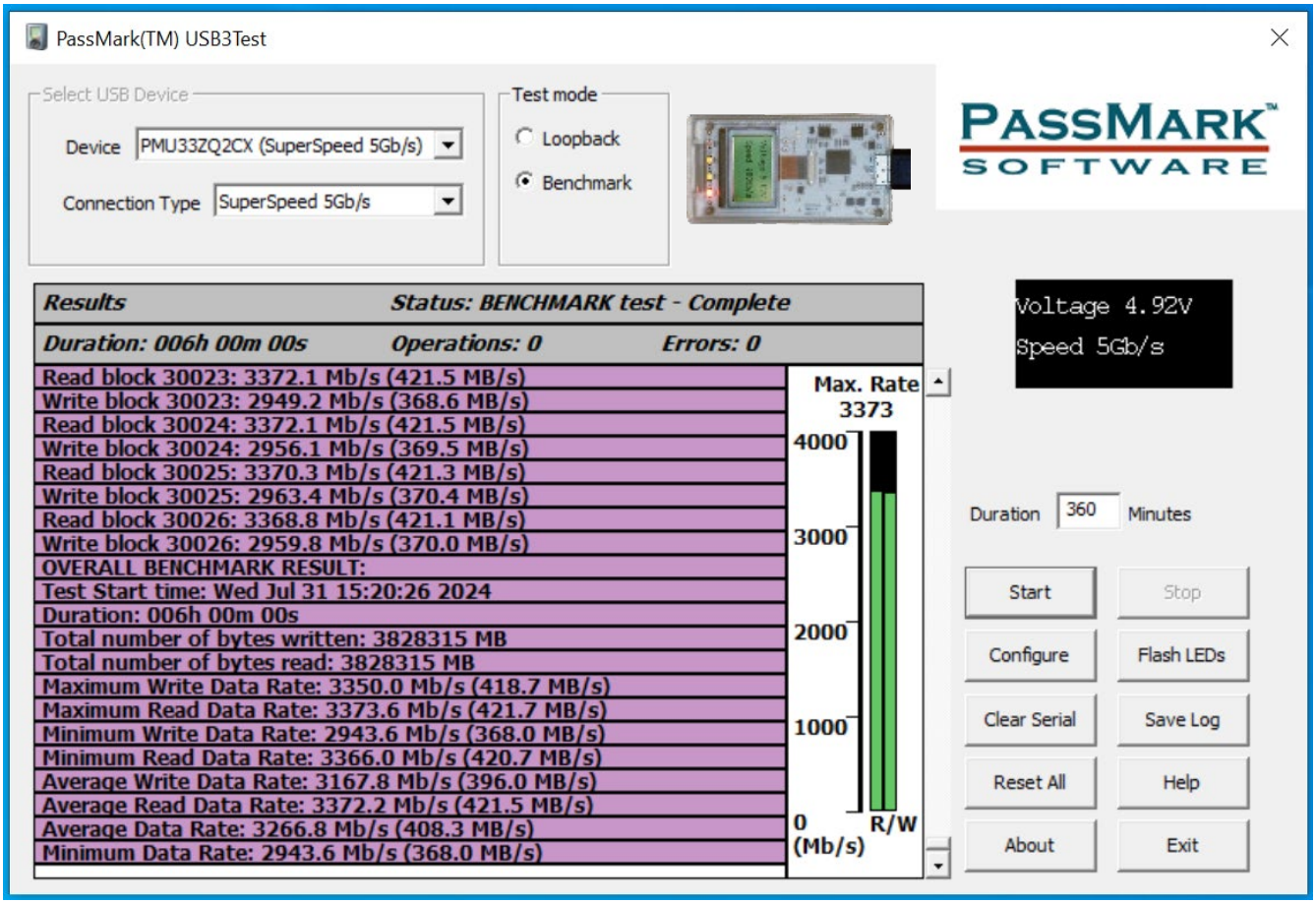
5. I/O FUNCTION TEST

5-1. USB 3.0

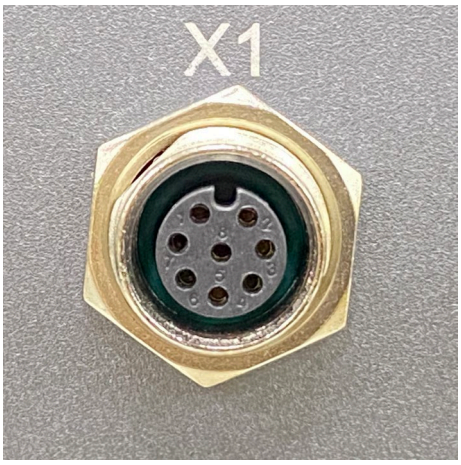


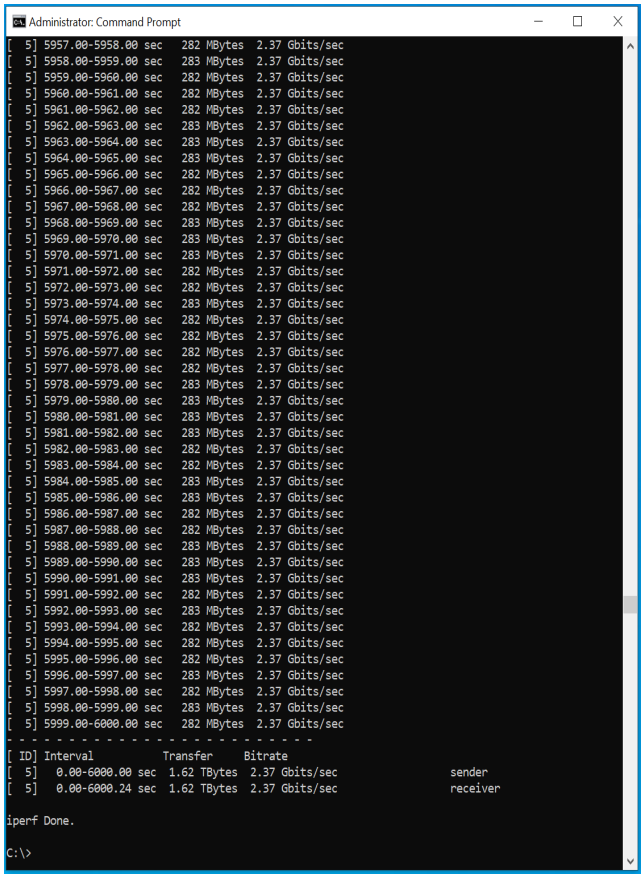
5-2. USB 3.0


X9
GTC
GTC


PassMark(TM) USB3Test
Select USB Device
Device
PMU33ZQ2CX (SuperSpeed 5Gb/s)
Connection Type
SuperSpeed 5Gb/s
Test mode
Loopback
Benchmark
PASSMARK SOFTWARE
Results
Status: BENCHMARK test - Complete
Duration: 006h 00m 00s
Operations: 0
Errors: 0
Read block 30023: 3372.1 Mb/s (421.5 MB/s)
Write block 30023: 2949.2 Mb/s (368.6 MB/s)
Read block 30024: 3372.1 Mb/s (421.5 MB/s)
Write block 30024: 2956.1 Mb/s (369.5 MB/s)
Read block 30025: 3370.3 Mb/s (421.3 MB/s)
Write block 30025: 2963.4 Mb/s (370.4 MB/s)
Read block 30026: 3368.8 Mb/s (421.1 MB/s)
Write block 30026: 2959.8 Mb/s (370.0 MB/s)
OVERALL BENCHMARK RESULT:
Test Start time: Wed Jul 31 15:20:26 2024
Duration: 006h 00m 00s
Total number of bytes written: 3828315 MB
Total number of bytes read: 3828315 MB
Maximum Write Data Rate: 3350.0 Mb/s (418.7 MB/s)
Maximum Read Data Rate: 3373.6 Mb/s (421.7 MB/s)
Minimum Write Data Rate: 2943.6 Mb/s (368.0 MB/s)
Minimum Read Data Rate: 3366.0 Mb/s (420.7 MB/s)
Average Write Data Rate: 3167.8 Mb/s (396.0 MB/s)
Average Read Data Rate: 3372.2 Mb/s (421.5 MB/s)
Average Data Rate: 3266.8 Mb/s (408.3 MB/s)
Minimum Data Rate: 2943.6 Mb/s (368.0 MB/s)
Max. Rate
3373
4000
3000
2000
1000
0
(Mb/s)
R/W
Voltage 4.92V
Speed 5Gb/s
Duration
360
Minutes
Start
Stop
Configure
Flash LEDs
Clear Serial
Save Log
Reset All
Help
About
Exit

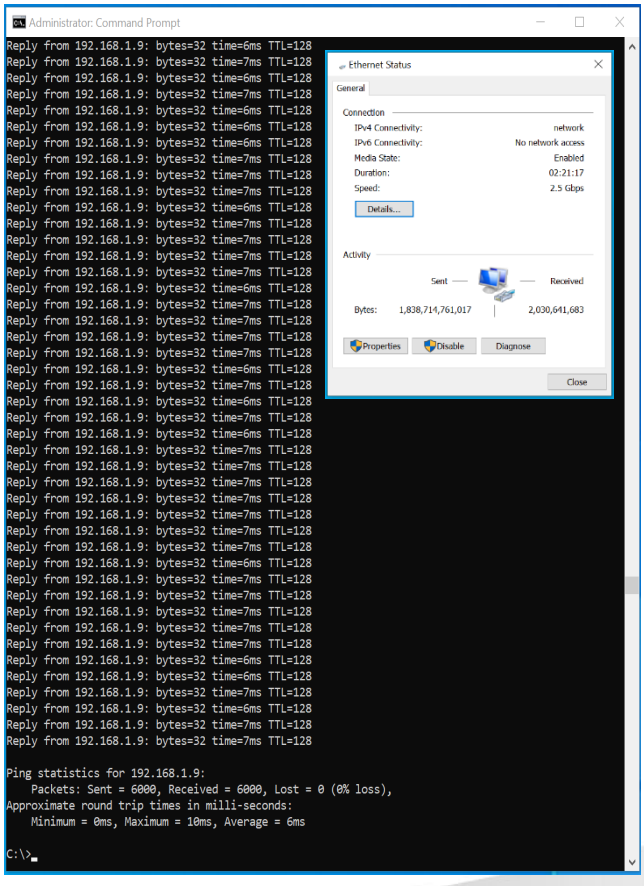
5-3. LAN (2.5Gbps)



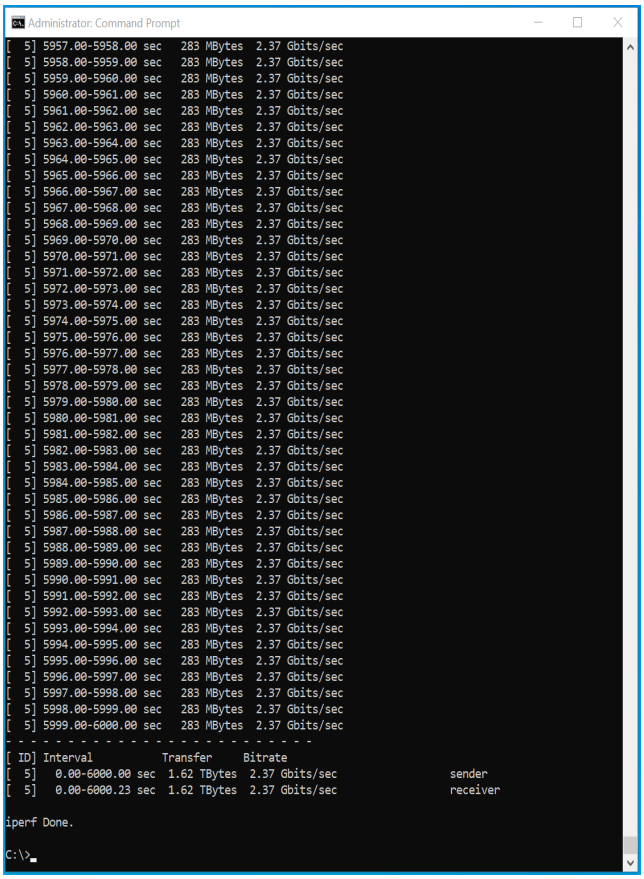


LAN SPEED TEST

DATA PACKET TEST

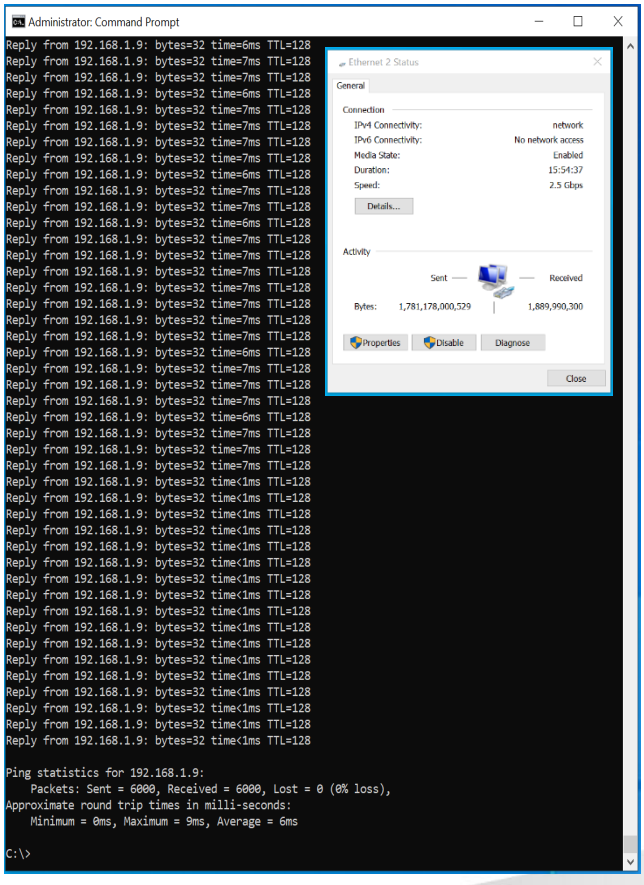


5-4. LAN (2.5Gbps)

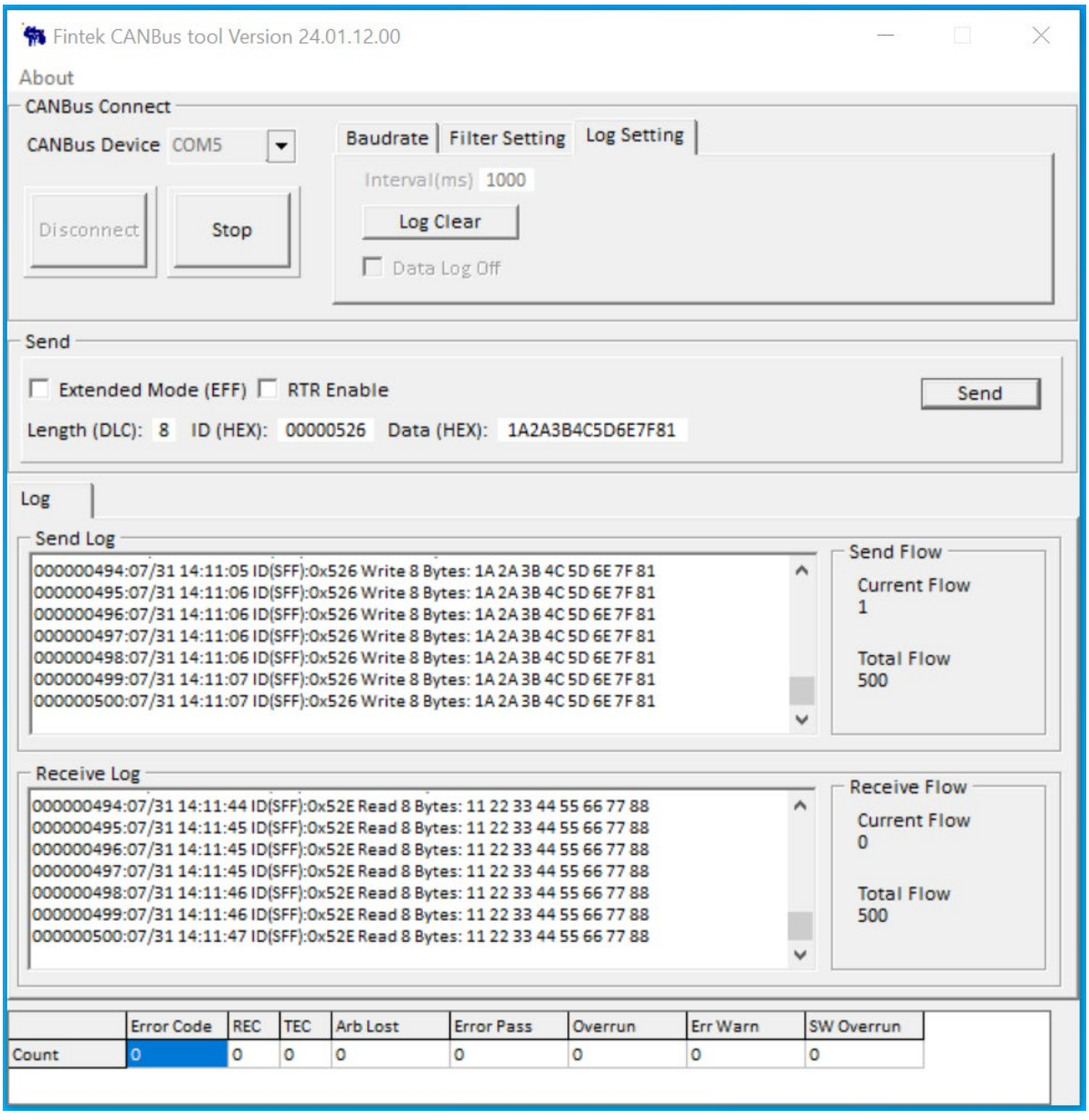


LAN SPEED TEST

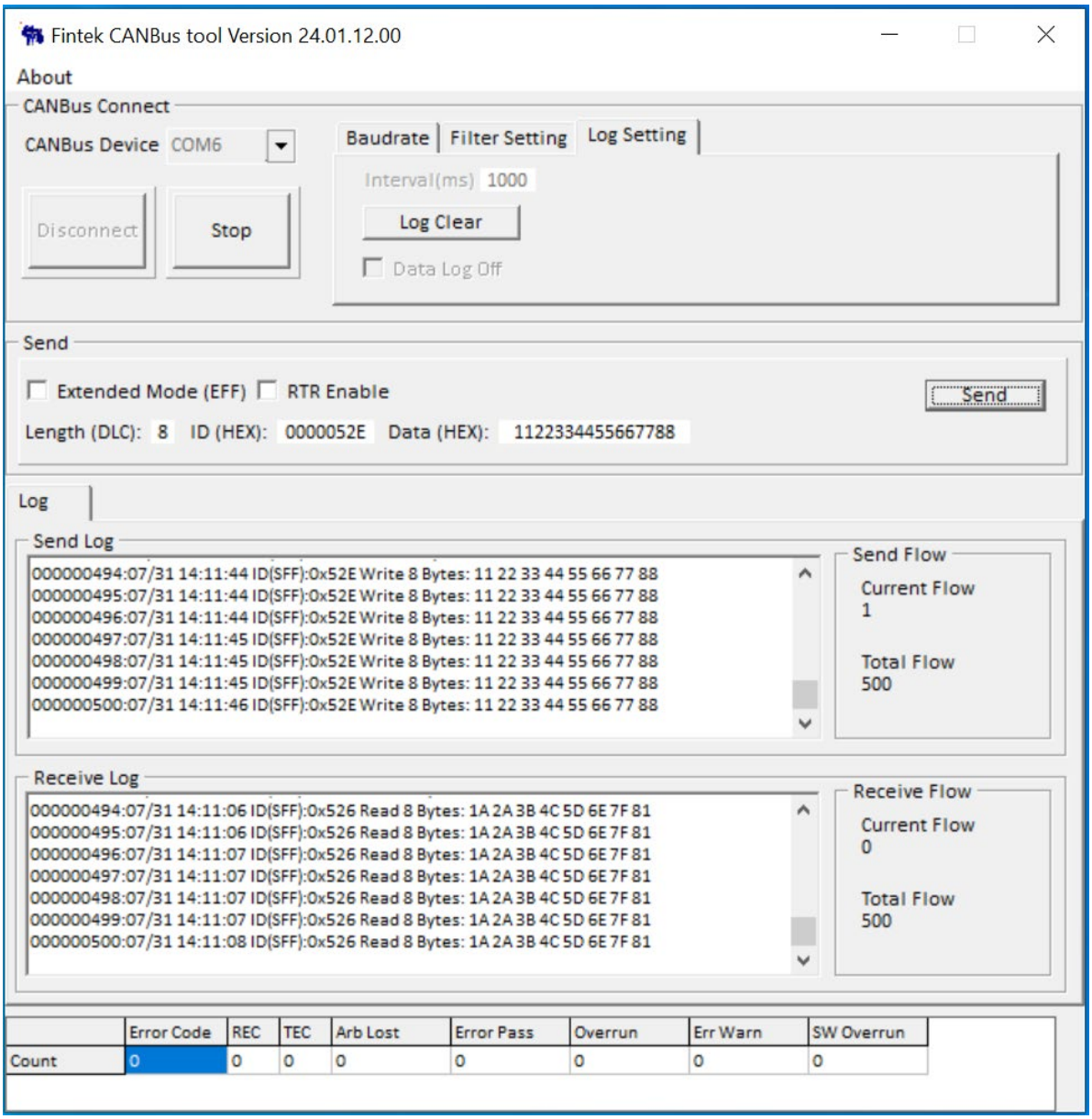
DATA PACKET TEST



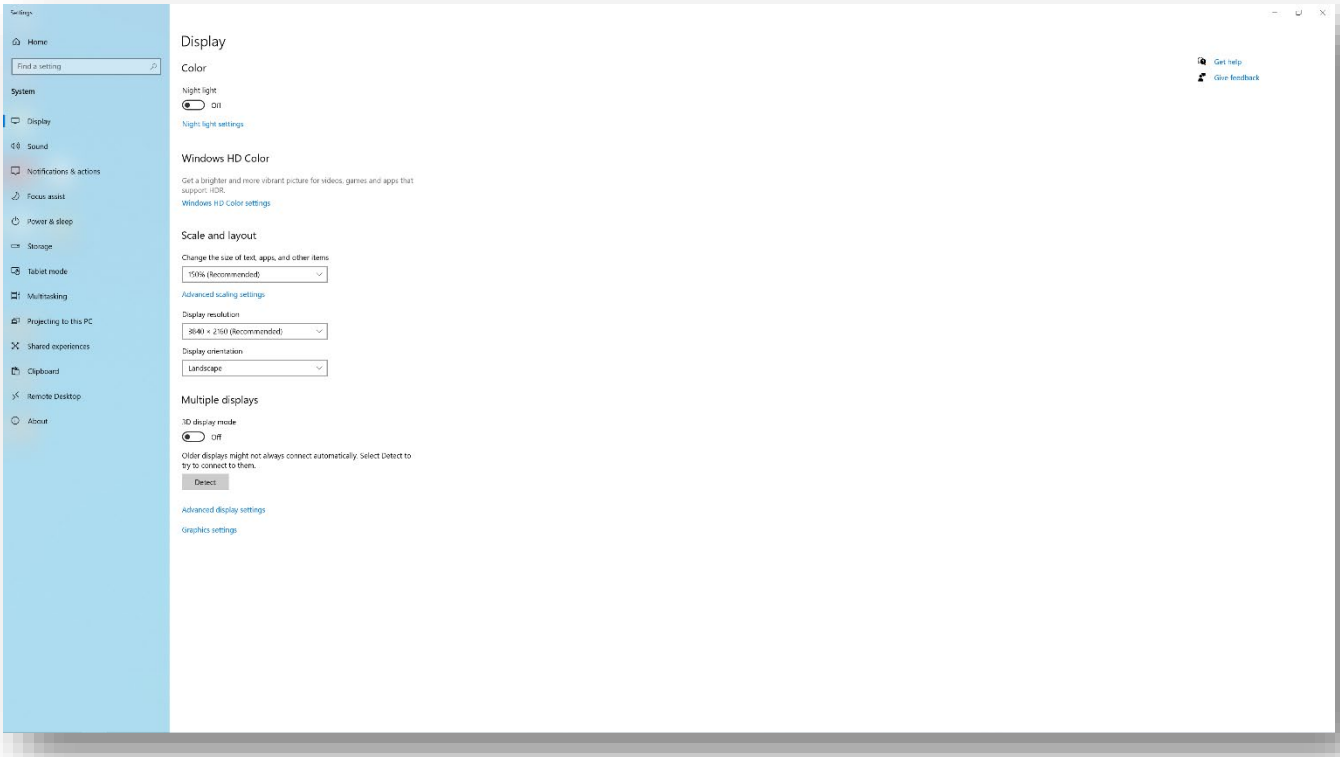
5-5. CANBus (COM 5)



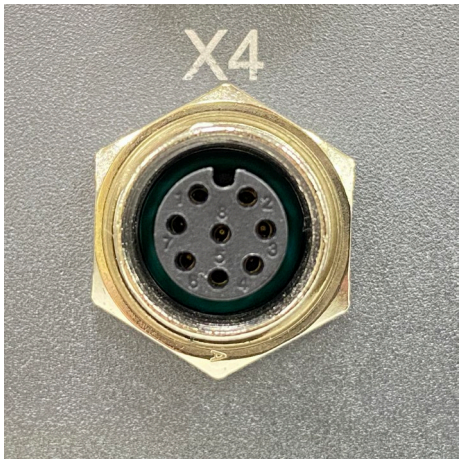
5-6. CANBus (COM 6)

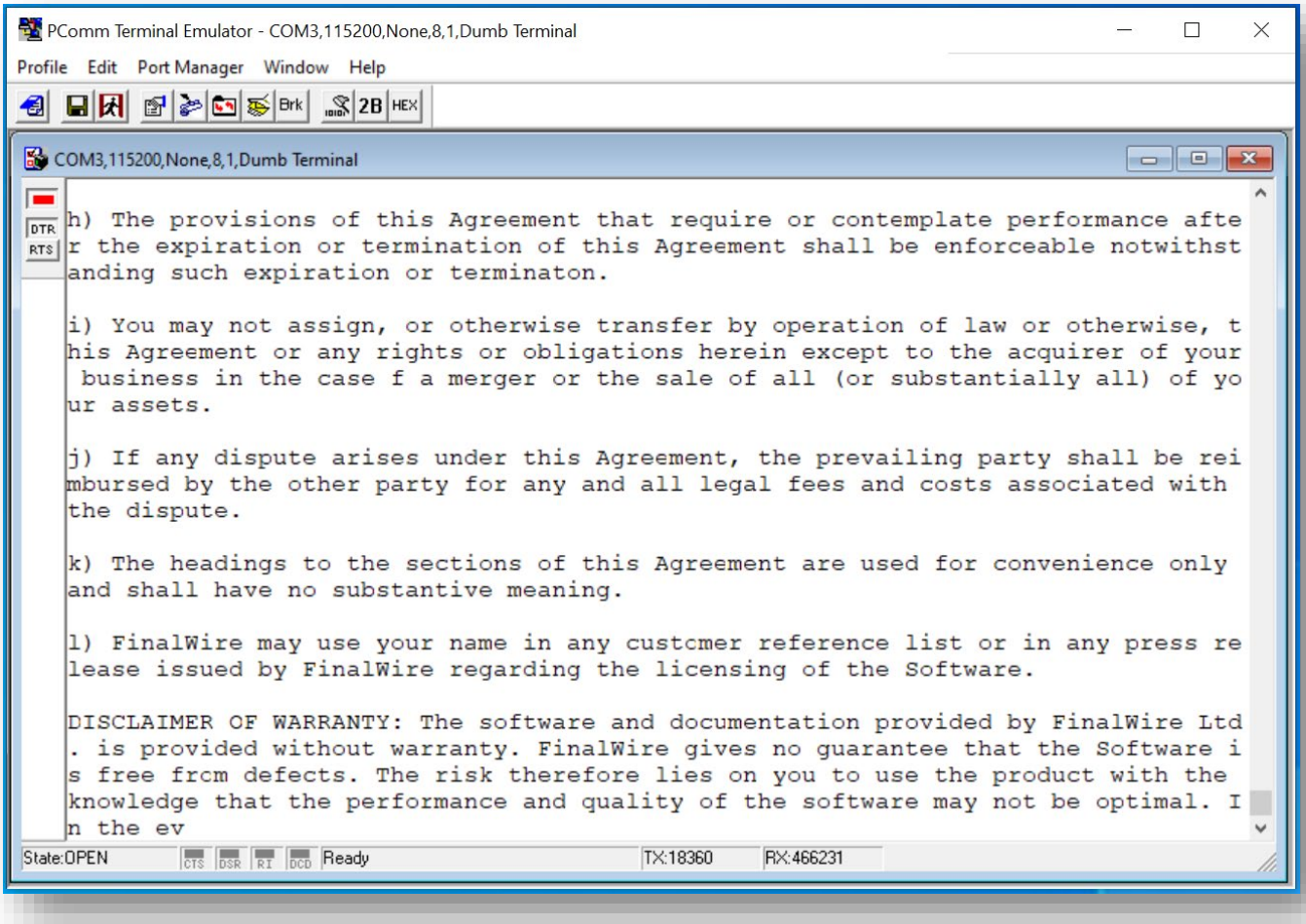


5-7. Mini Display Port

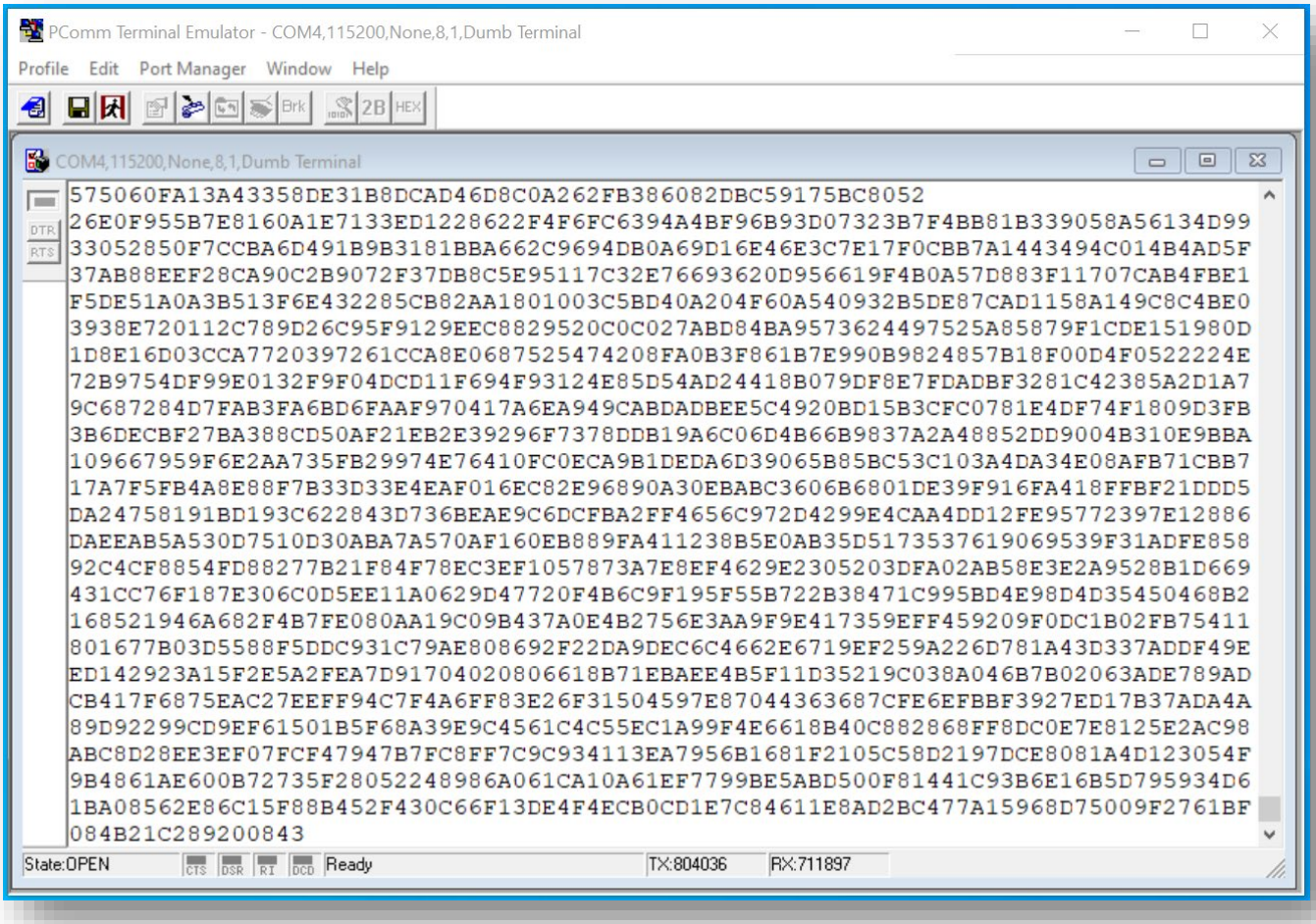


5-8. Serial Port RS485 (COM 3)

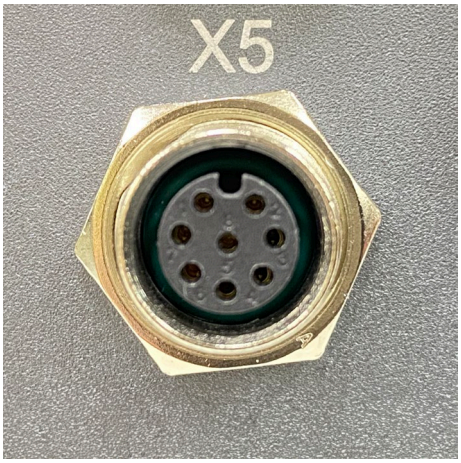


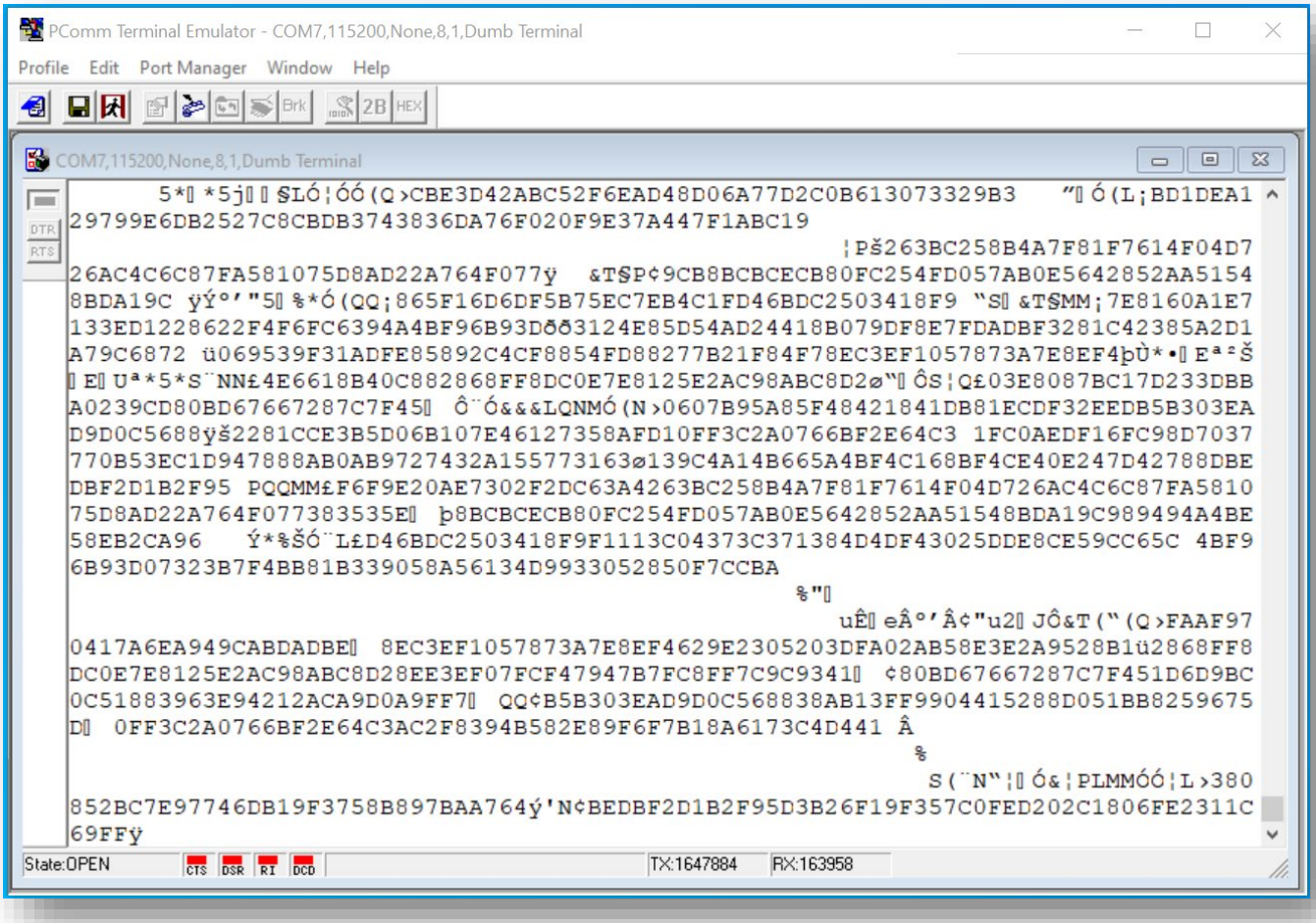


5-9. Serial Port RS485 (COM 4)

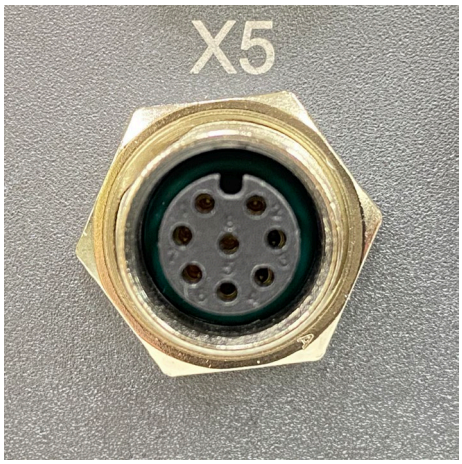


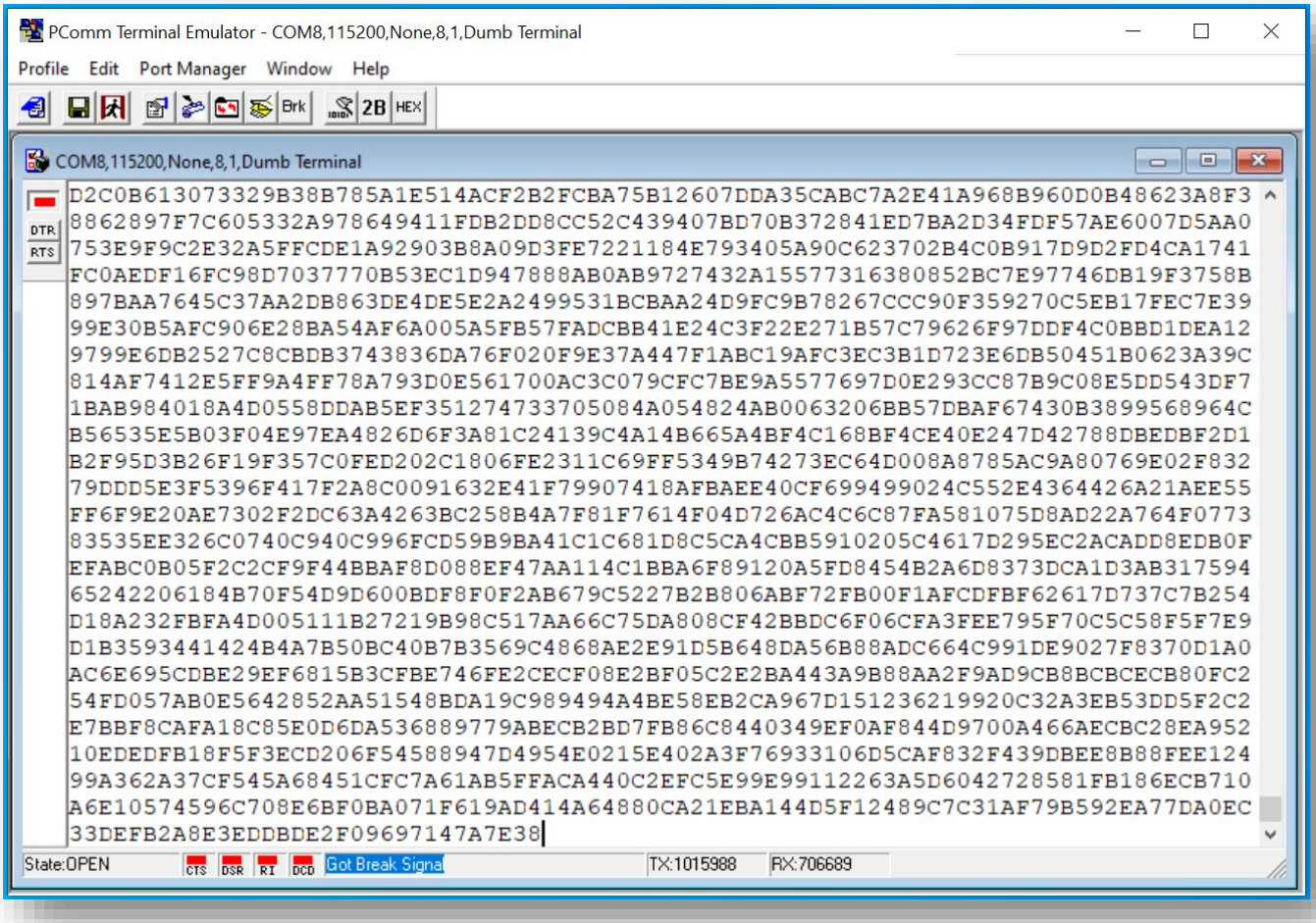
5-10. SERIAL PORT RS485 (COM 7)





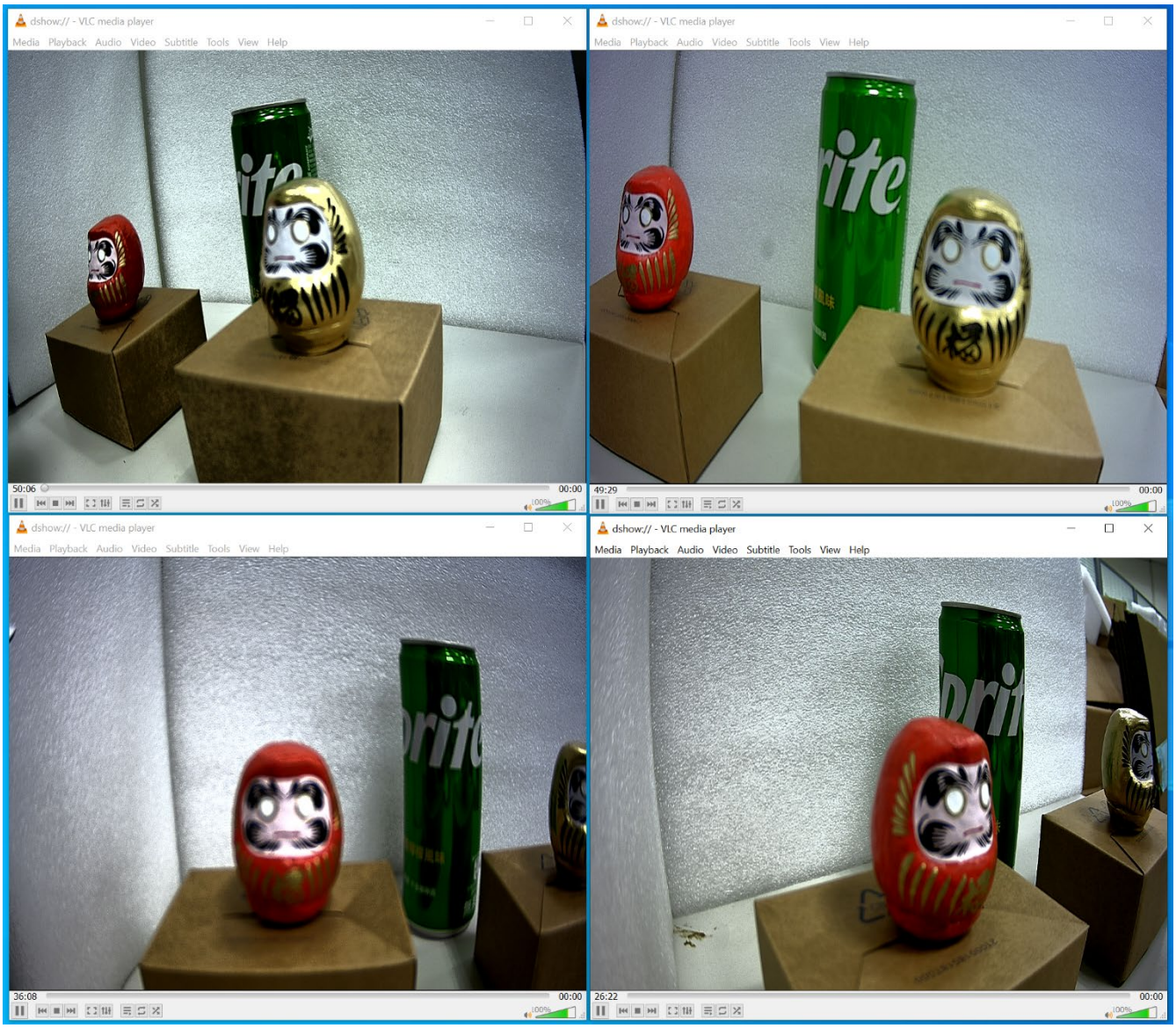
5-11. SERIAL PORT RS485 (COM 8)





5-12. 3G-SDI (Port 1,3,5,7)

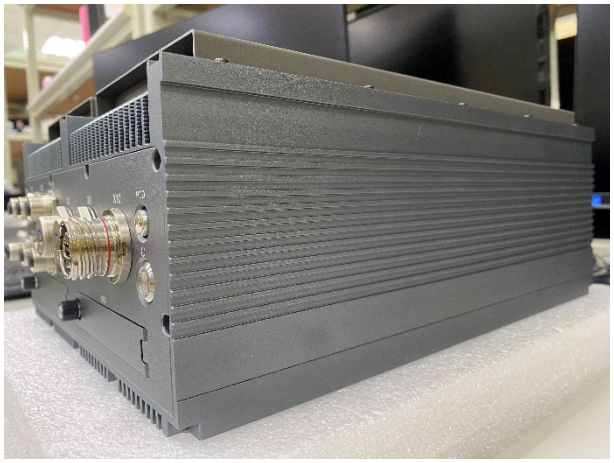
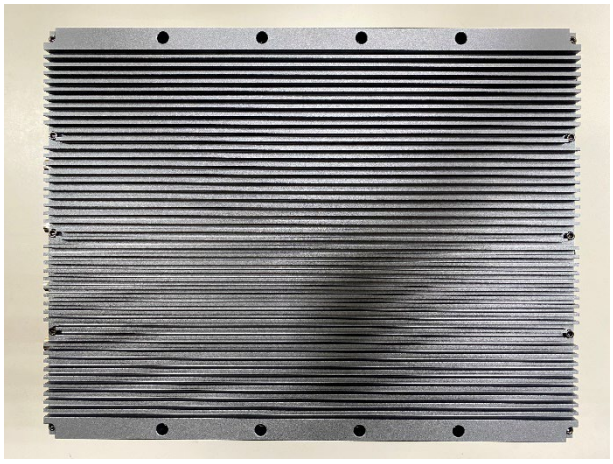
5-13. 3G-SDI (Port 2,4,6,8)



6. COSMETIC INSPECTION

No.	Result			Inspection items	Remark
	OK	NG	NA		
1	✔			Whether there are Scratch mark on the appearance?	
2	✔			Whether the cutting edge is oxidized in appearance?	
3	✔			Whether there are impact scars on the appearance?	
4	✔			Whether there is any burr on the exterior?	
5	✔			Whether there is a deformation in the appearance?	
6	✔			Is there any dirt or glue residue on the outside?	
7	✔			Is the baking paint peeling or spilled on the appearance?	
8	✔			Is the version of the nameplate correct and not skewed or warped?	
9	✔			Is the serial number version sticker affixed and is the version correct?	
10	✔			HDD CAGE/TRAY trial installation and actual configuration to confirm whether there is interference?	

Cosmetic Inspection Photo

FRONT SIDE	BACK SIDE
	
LEFT SIDE	**RIGHT SIDE**
	
TOP SIDE	**BOTTOM SIDE**
	

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FRONT LEFT CORNER	FRONT RIGHT CORNER
	
BACK LEFT CORNER	**BACK RIGHT CORNER**