



MINERVA

EP6121 PCIe x16 Gen 5 with ReDriver for MCIO 74P dual port

Performance & Burn In Test Rev. 1. 0

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4. Summary

EP6121 Rev1.0 Host Bus Adapter

1. Overview

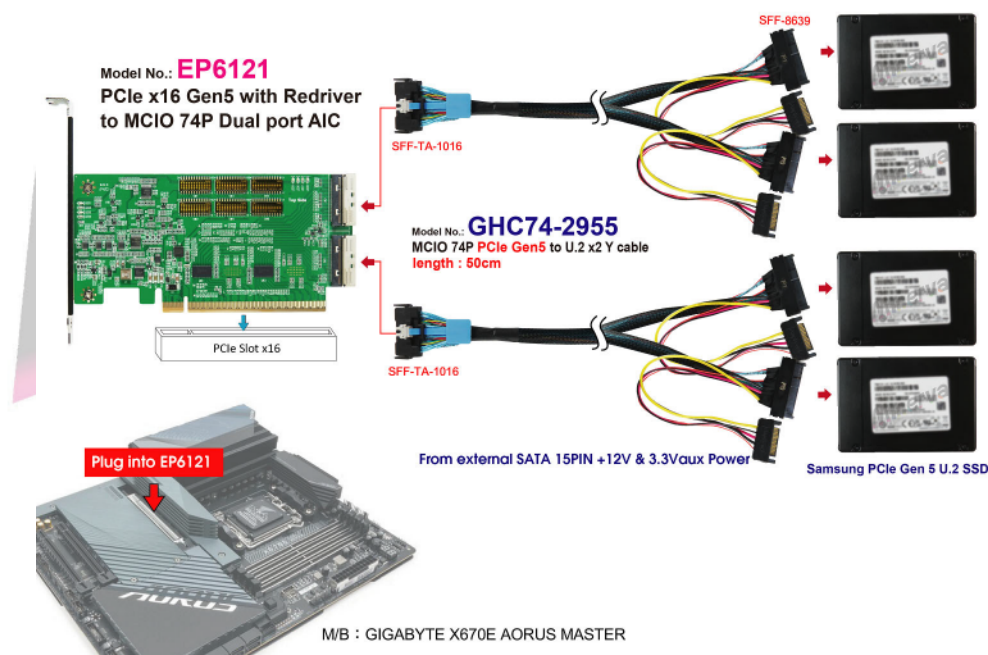
The Host Bus Adapter may provide PCIe x16 Gen 5, 32GT/s high-speed signals extension, built-in ReDriver controller to provides equalization up to **22 dB at 16 GHz** to MCIO 74P.

2. Tools and Results of Performance Measurement

2.1 Test Platform:

M/B : GIGABYTE **X670E AORUS MASTER**
CPU : AMD **Ryzen 5, 7600X 6-Core**
Memory : Kingston **KF556C36BBEK2, DDR5-5600MT/s, 64GB**(32GB DIMM*2)
ATX Power : Apexgaming AN-550, **550W ATX**, 12V V2.2 Power Supply
AIC: EP6121 PCIe x16 Gen 5 with Redriver to MCIO 74P dual port ADD-in Card
Cable: PCIe 5.0 MCIO 74P to U.2(SFF-8639) dual port, **50cm** Cable
OS : Microsoft **Windows 11 64bit OS**

2.2 Test target: EP6121 & Samsung **U.2 PM1783 / 15.36TB NVMe SSD**



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2.3 Install Hardware

Inserts U.2 NVMe SSD into MCIO 74P to U.2 dual port cable, and connects cable to EP6121 AIC. The EP6121 AIC plugs into PCIe x16 Slot of GIGABYTE **X670E AORUS MASTER**

2.4 BIOS & Windows 11 OS environment setup

- 2.4.1 Primary SATA SSD installed Windows 10 OS.
- 2.4.2 U.2 NVMe SSD, formatted to NTFS Mode. Don't install any program.

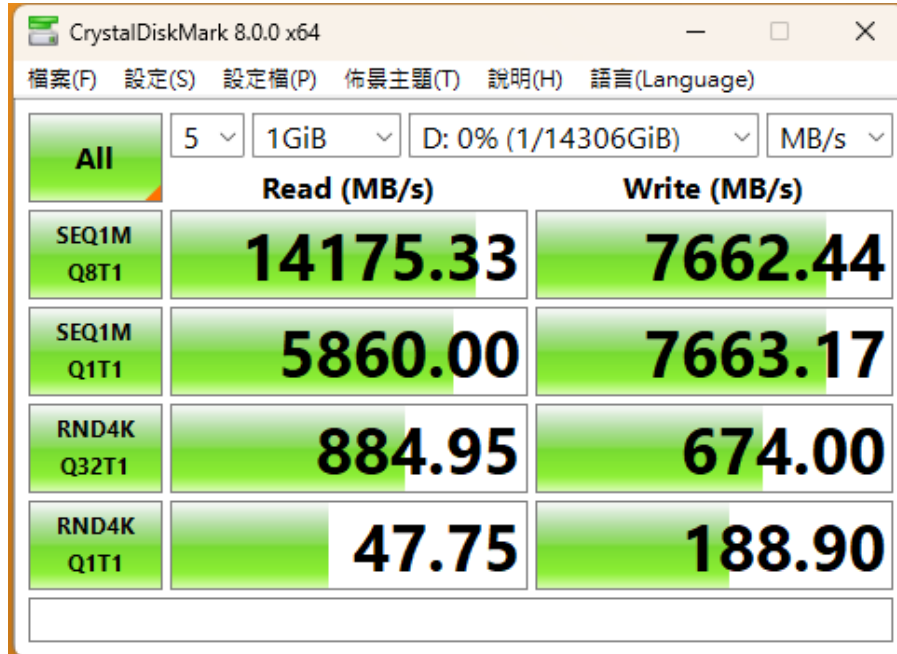


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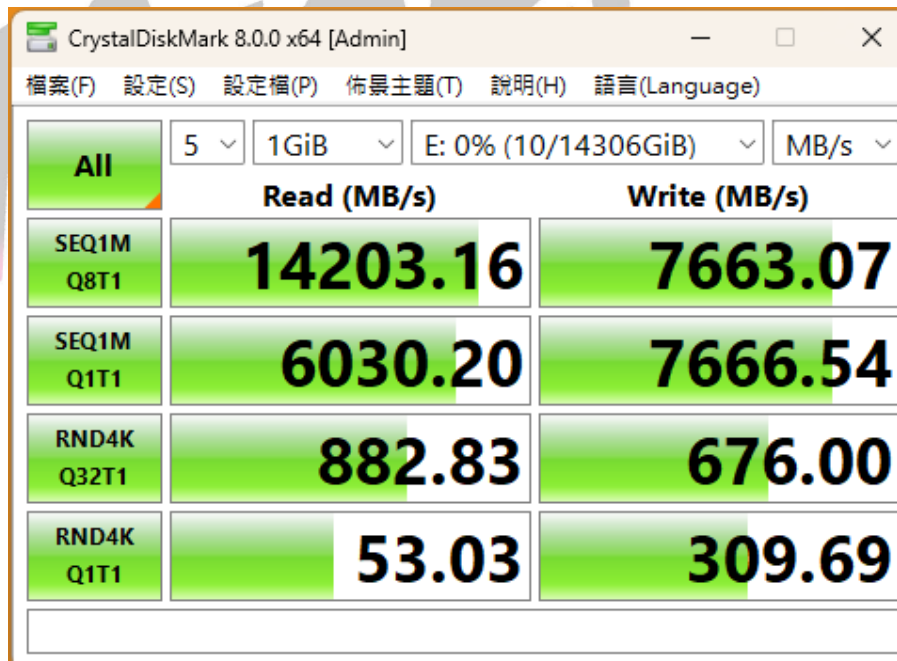
2.5 CrystalDiskMark 8.0 x64 performance test

※Benchmark (Sequential Read & Write / default = 1MB)

2.5.1 **Samsung U.2 PM1783 / 15.36TB SSD** performance in **Lane 0~3** as below:



2.5.2 **Samsung U.2 PM1783 / 15.36TB NVMe** performance in **Lane 4~7** as below:



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2.5.3 **Samsung U.2 PM1783 / 15.36TB NVMe** performance in **Lane 8~11** as below:

	Read (MB/s)	Write (MB/s)
All		
SEQ1M Q8T1	14176.96	7662.53
SEQ1M Q1T1	6085.05	7662.95
RND4K Q32T1	878.14	679.18
RND4K Q1T1	52.45	307.75

2.5.4 **Samsung U.2 PM1783 / 15.36TB NVMe** performance in **Lane 12~15** as below:

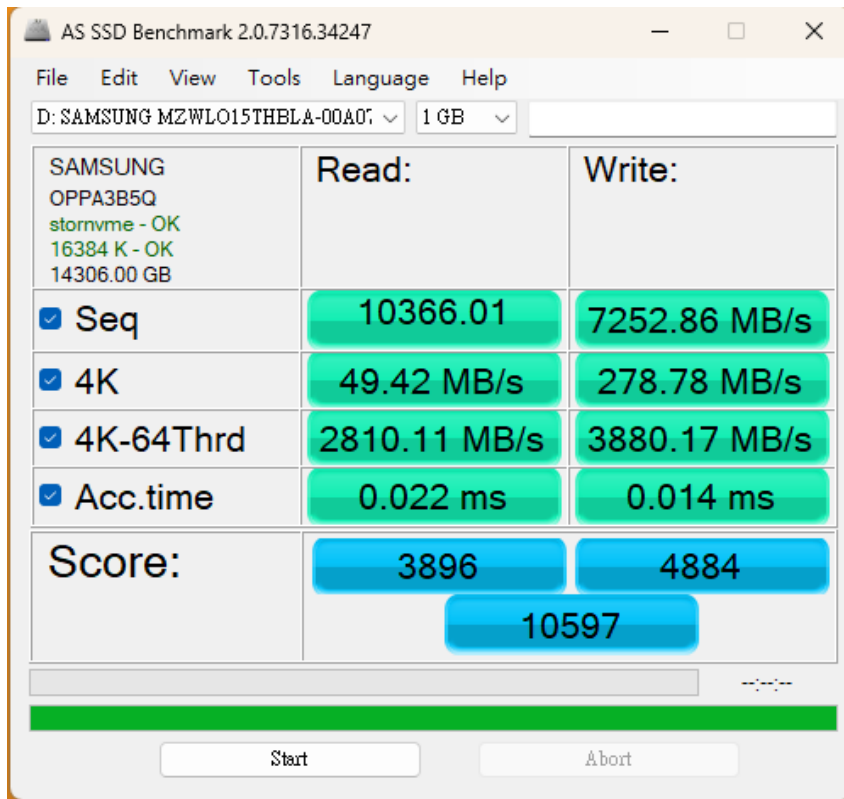
	Read (MB/s)	Write (MB/s)
All		
SEQ1M Q8T1	14199.20	7662.03
SEQ1M Q1T1	6116.43	7665.85
RND4K Q32T1	888.63	677.12
RND4K Q1T1	52.94	306.15

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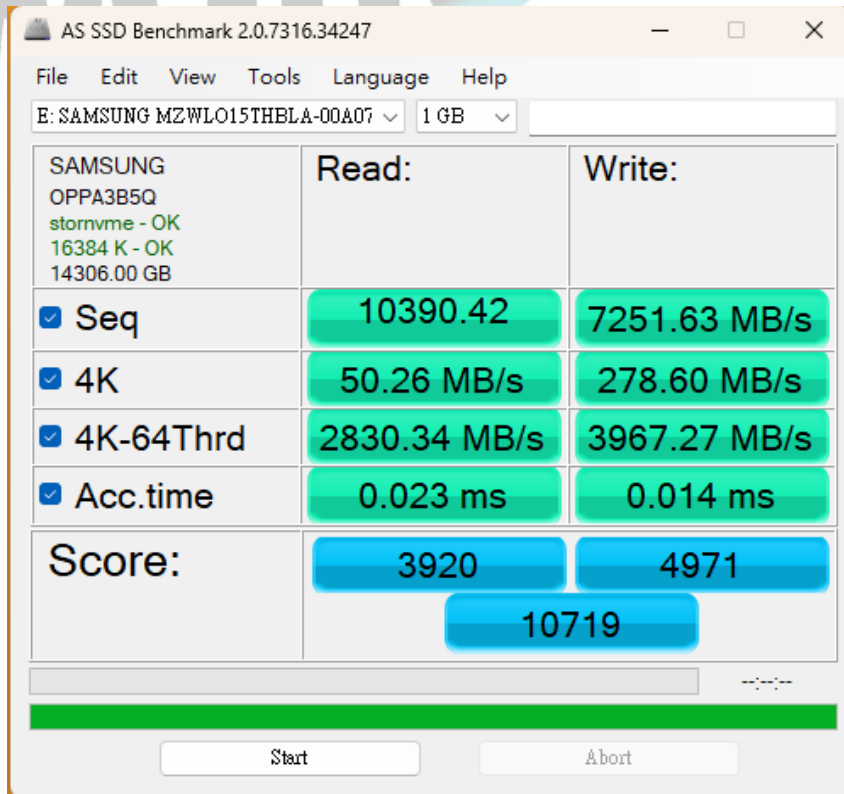
2.6 AS SSD Benchmark 2.0.7 performance test

✘Benchmark (Read & Write by MB/s, default block size = 16MB)

2.6.1 **Samsung U.2 PM1783 / 15.36TB NVMe** performance in **Lane 0~3** as below:

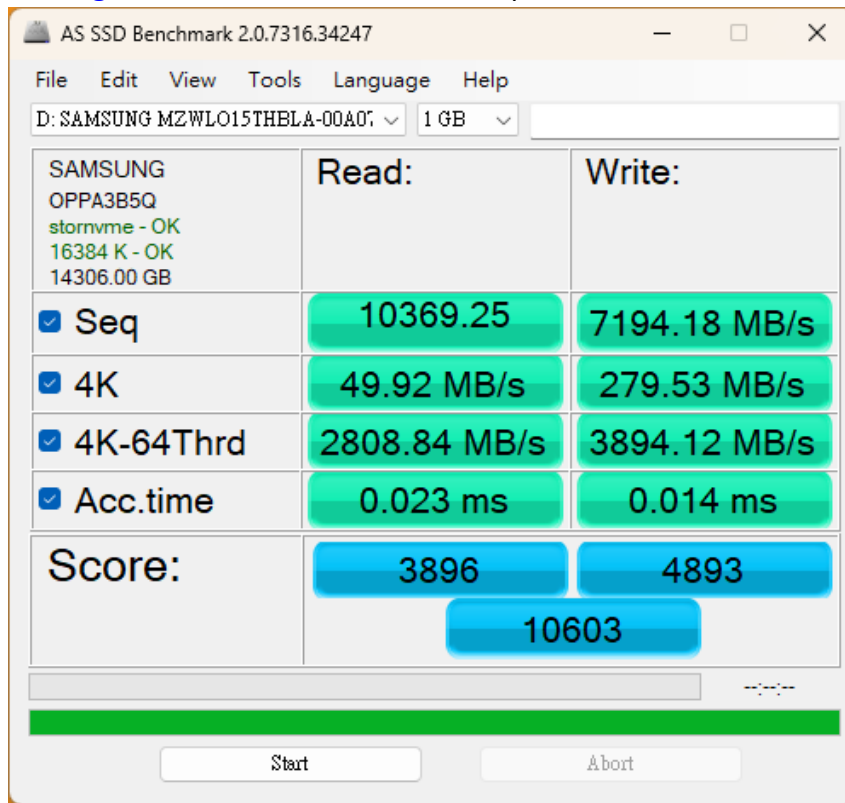


2.6.2 **Samsung U.2 PM1783 / 15.36TB NVMe** performance in **Lane 4~7** as below:

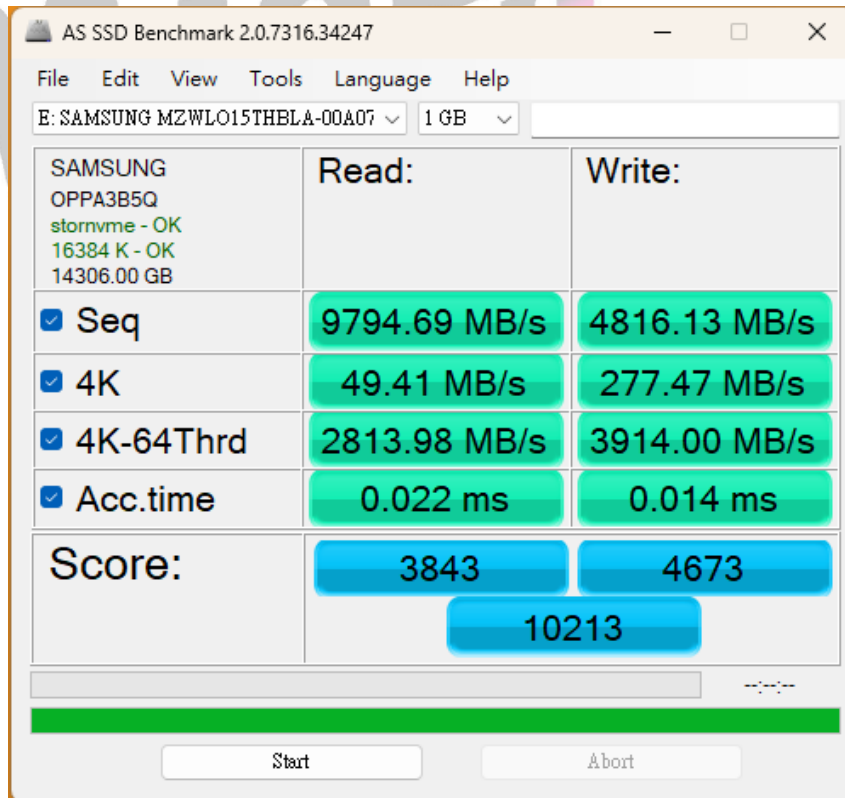


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2.6.3 Samsung U.2 PM1783 / 15.36TB NVMe performance in Lane 8~11 as below:



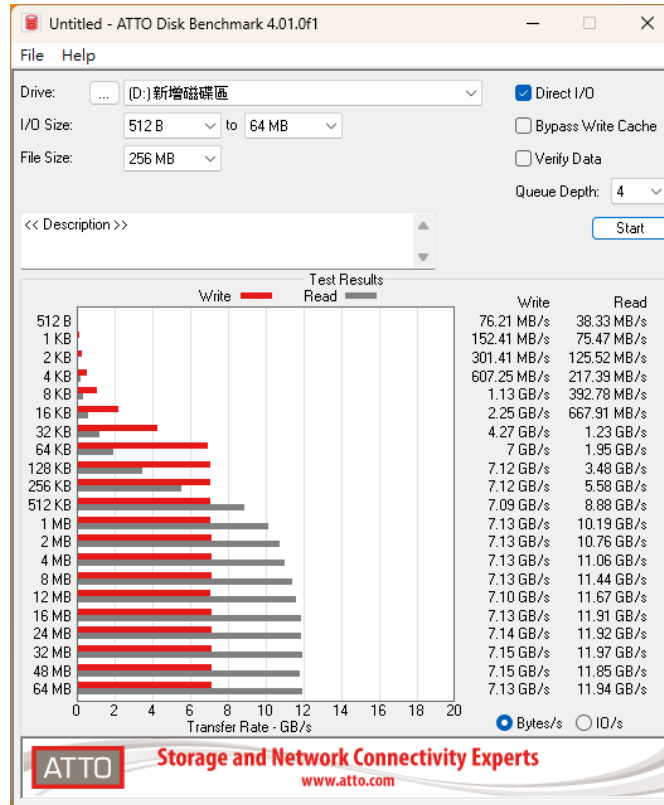
2.6.4 Samsung U.2 PM1783 / 15.36TB NVMe performance in Lane 12~15 as below:



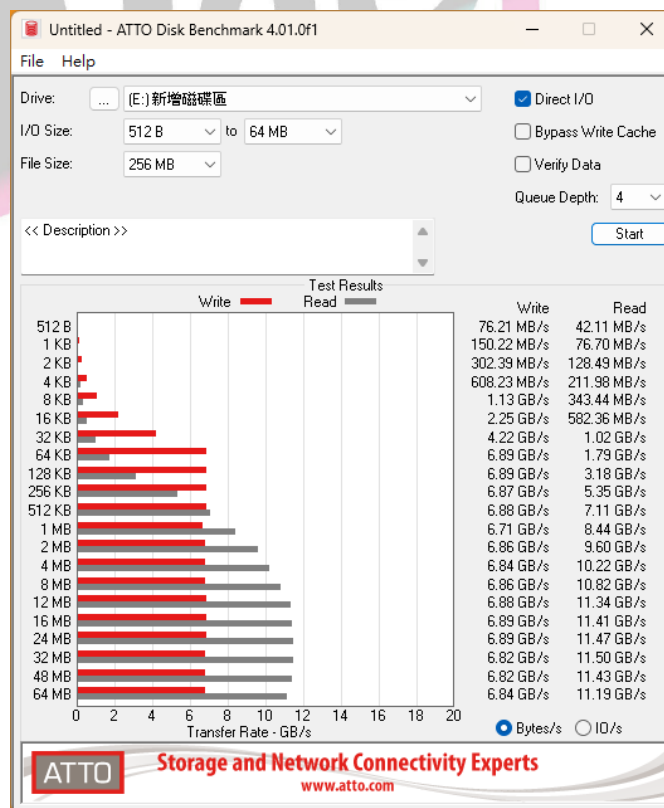
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2.7 ATTO Disk Benchmark 4.01 performance test

2.7.1 **Samsung U.2 PM1783 / 15.36TB NVMe** performance in **Lane 0~3** as below:

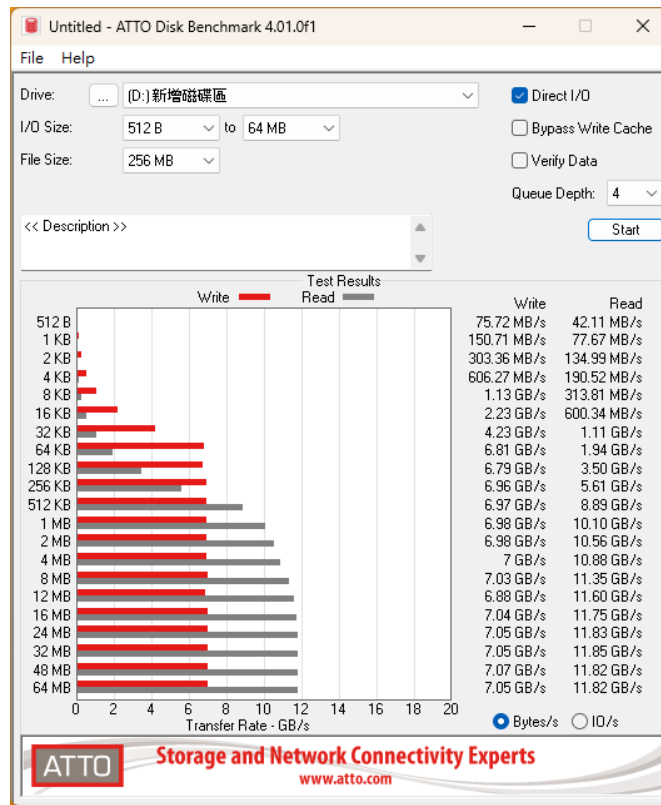


2.7.2 **Samsung U.2 PM1783 / 15.36TB NVMe** performance in **Lane 4~7** as below:

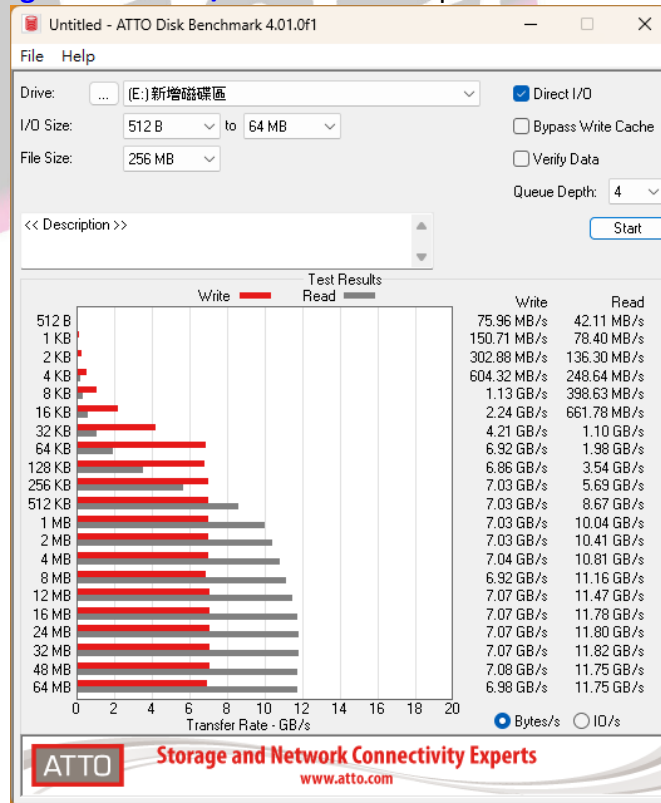


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2.7.3 Samsung U.2 PM1783 / 15.36TB NVMe performance in Lane 8~11 as below:



2.7.4 Samsung U.2 PM1783 / 15.36TB NVMe performance in Lane 12~15 as below:



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2.8 AnvilBenchmark_V110_B337

2.8.1 Samsung U.2 PM1783 / 15.36TB NVMe performance in Lane 0~3 as below:

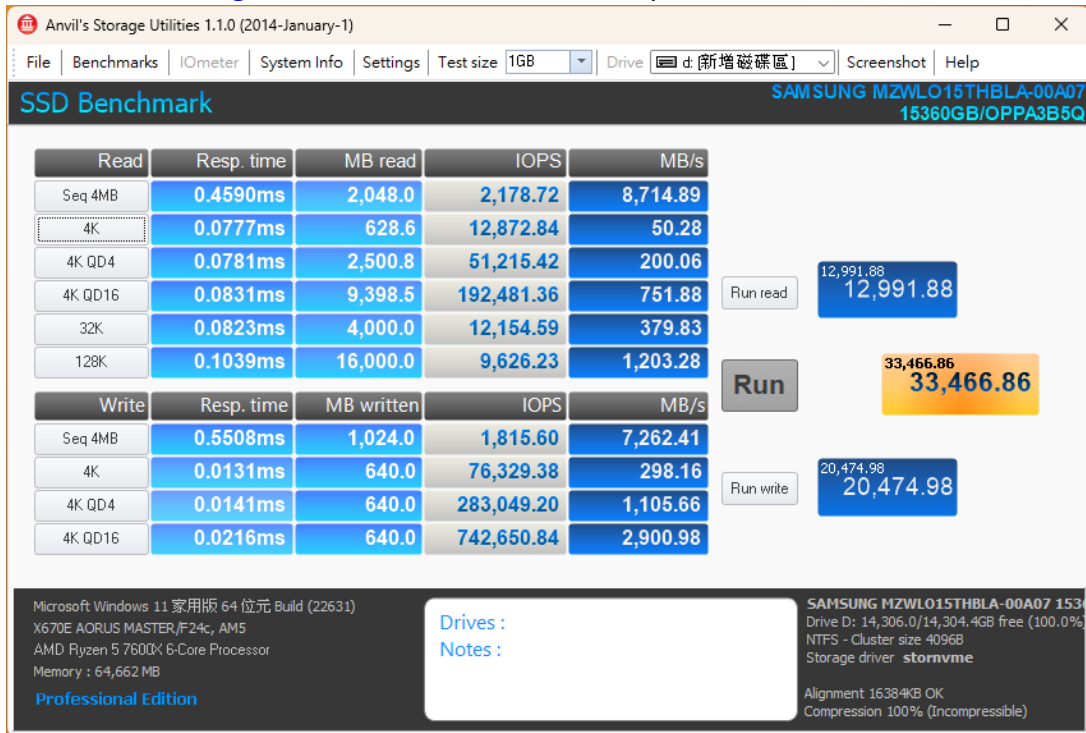


2.8.2 Samsung U.2 PM1783 / 15.36TB NVMe performance in Lane 4~7 as below:

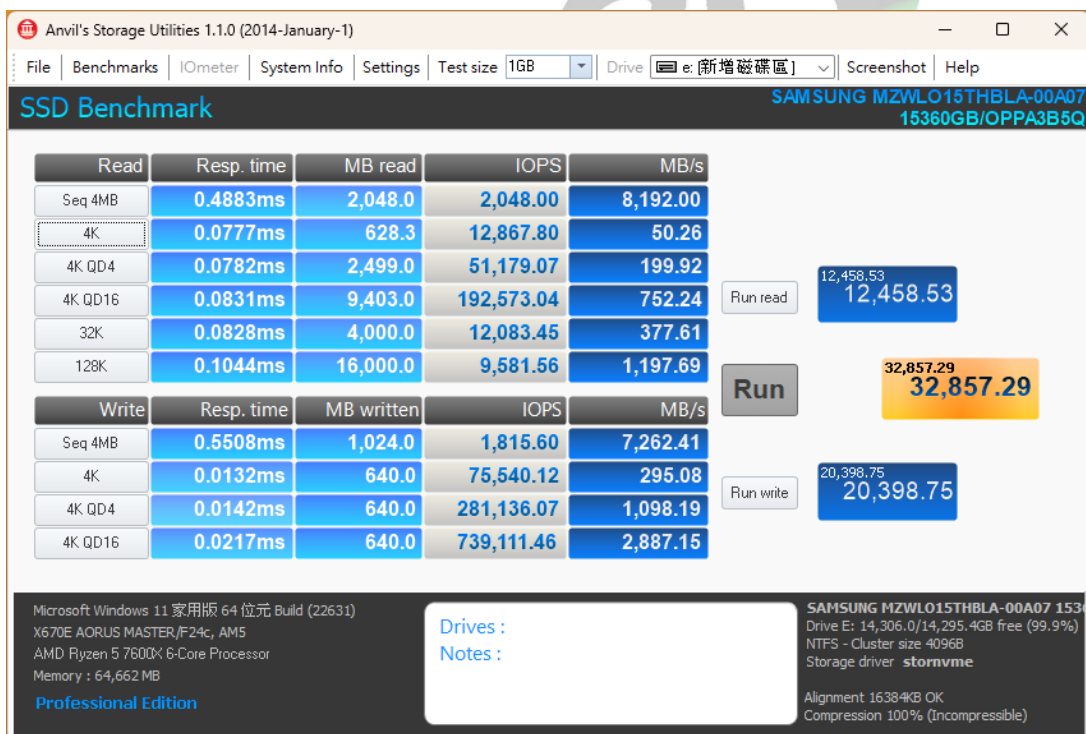


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2.8.3 Samsung U.2 PM1783 / 15.36TB NVMe performance in Lane 8~11 as below:



2.8.4 Samsung U.2 PM1783 / 15.36TB NVMe performance in Lane 12~15 as below:

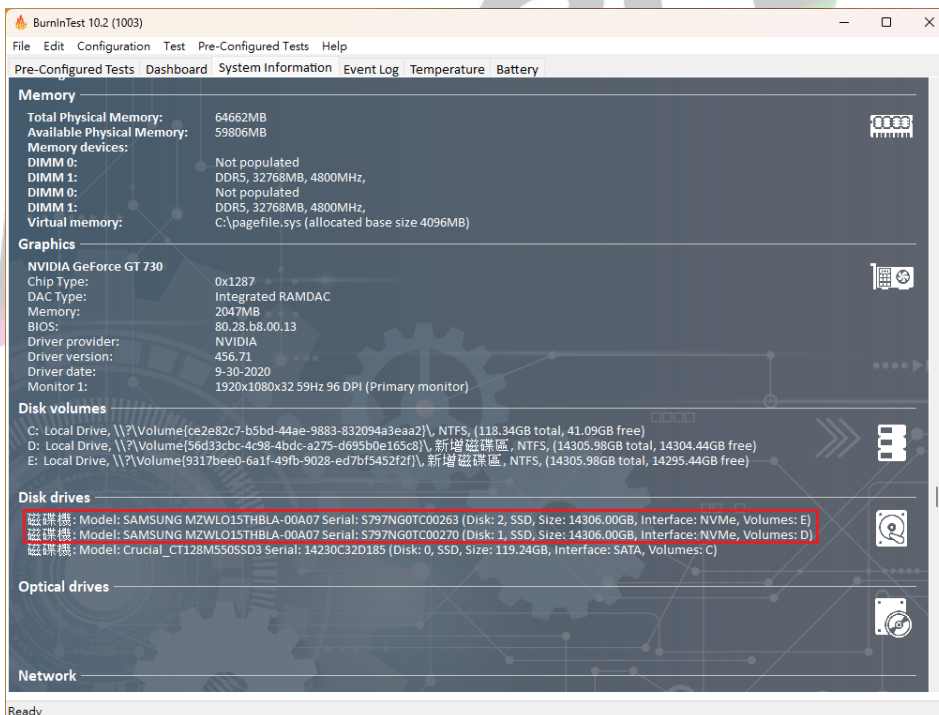
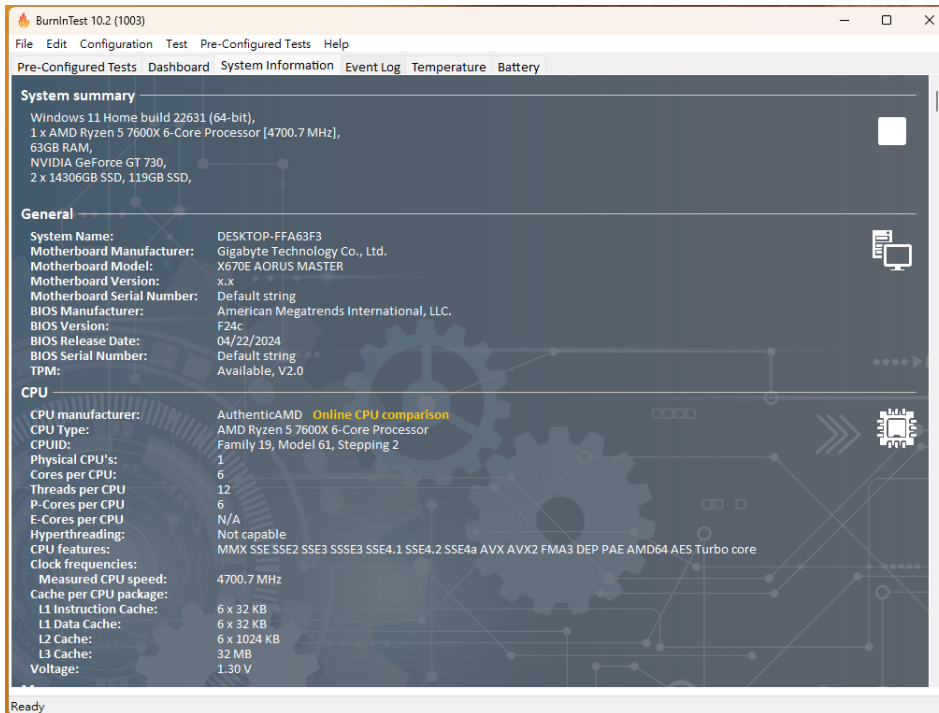


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3. Burn In Tests and Results

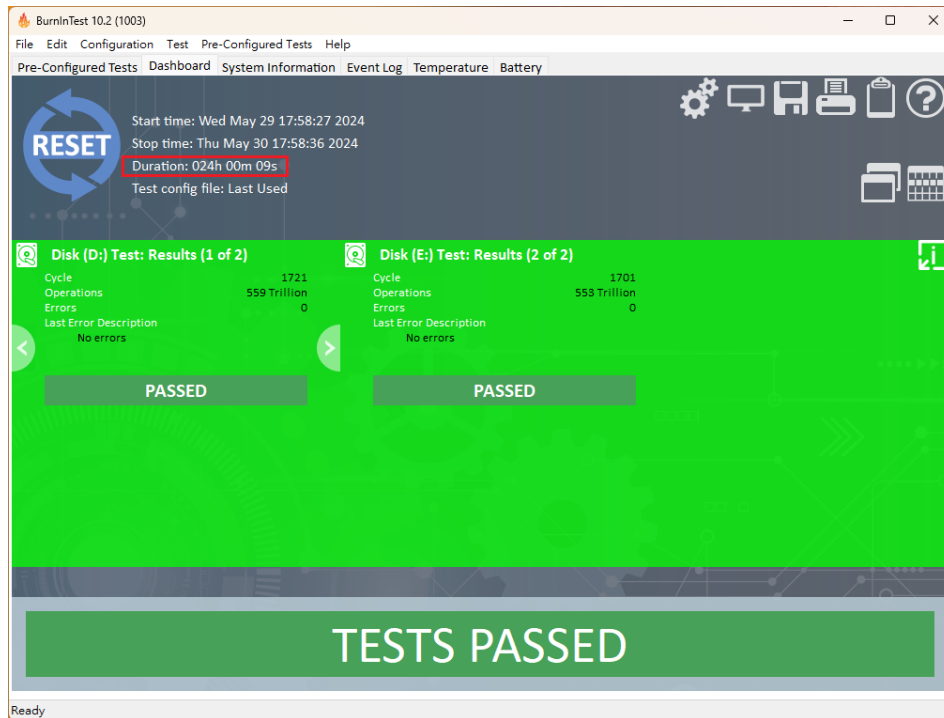
3.1 BurnInTest v10.2 Pro for Samsung U.2 PM1783 / 15.36TB SSD

3.1.1 System Information for lane 0~7 as below:



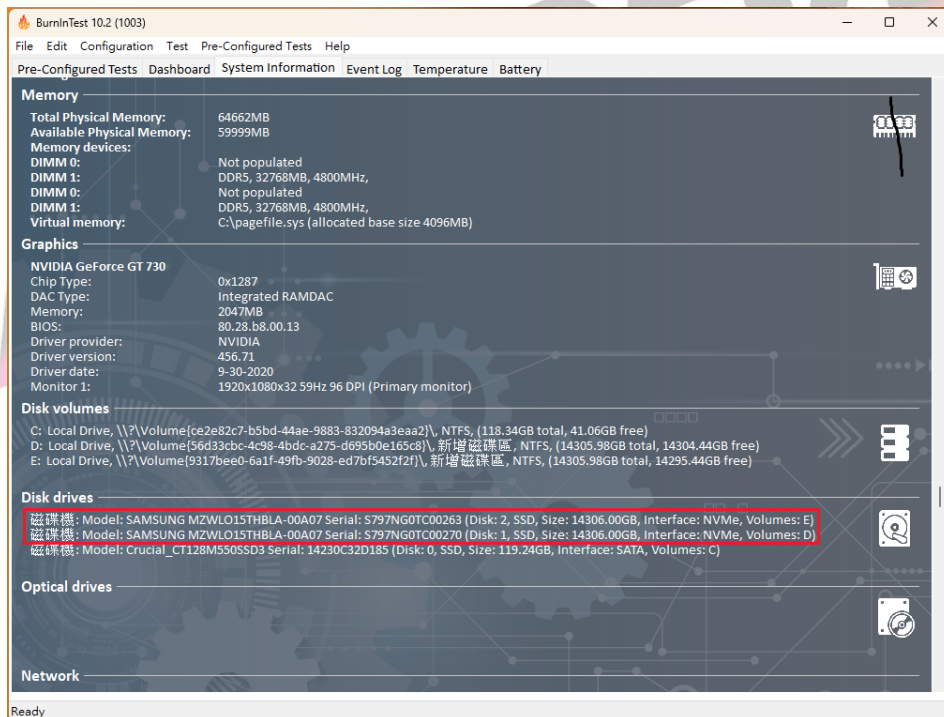
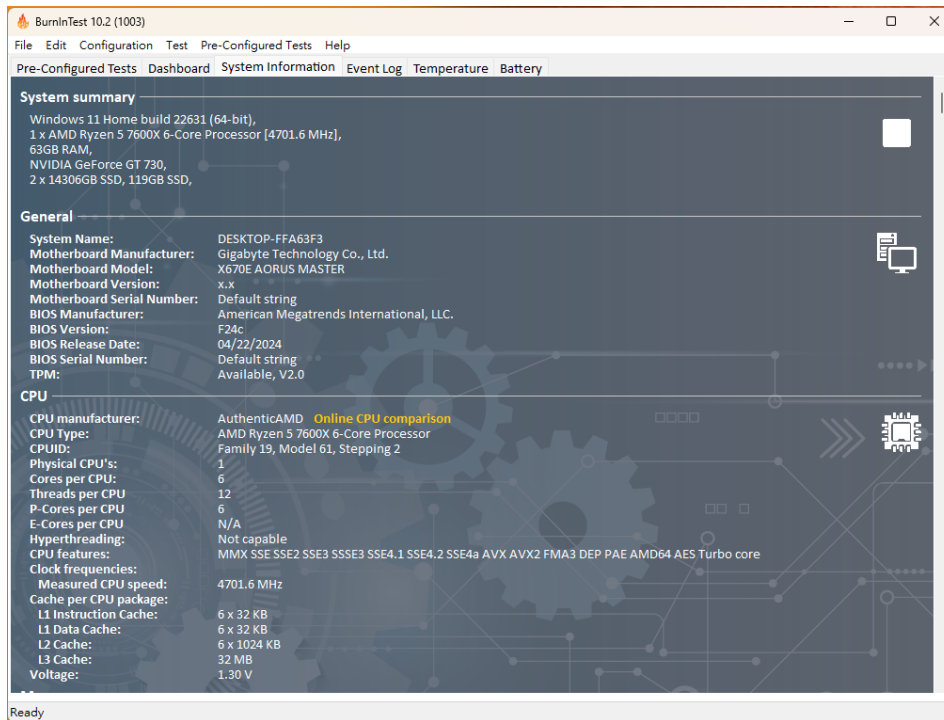
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3.1.2 24-hour Burn-in test **PASSED**



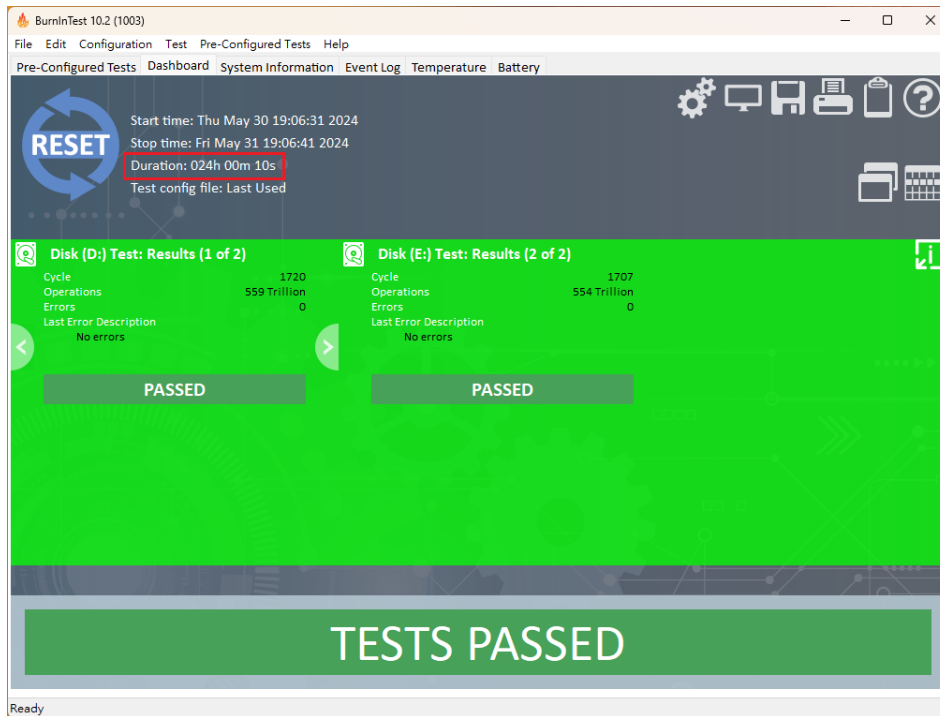
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3.2.1 System Information for lane 8~15 as below:



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3.2.2 24-hour Burn-in test **PASSED**



4. Summary

- 4.1 U.2 NVMe SSD is PCIe Gen 5, 32GT/s , 4 Lanes Interface, I/O speed, max. to 128Gbps.
- 4.2 EP6121 Host Bus Adapter I/O performance is based on U.2 NVMe SSD.