



# MINERVA

## GD9608A SlimSAS 8i dual port PCIe 4.0 to M.2 quad port

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### Performance & Burn In Test Rev 1.0

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# GD9608A Adapter

## 1. Overview

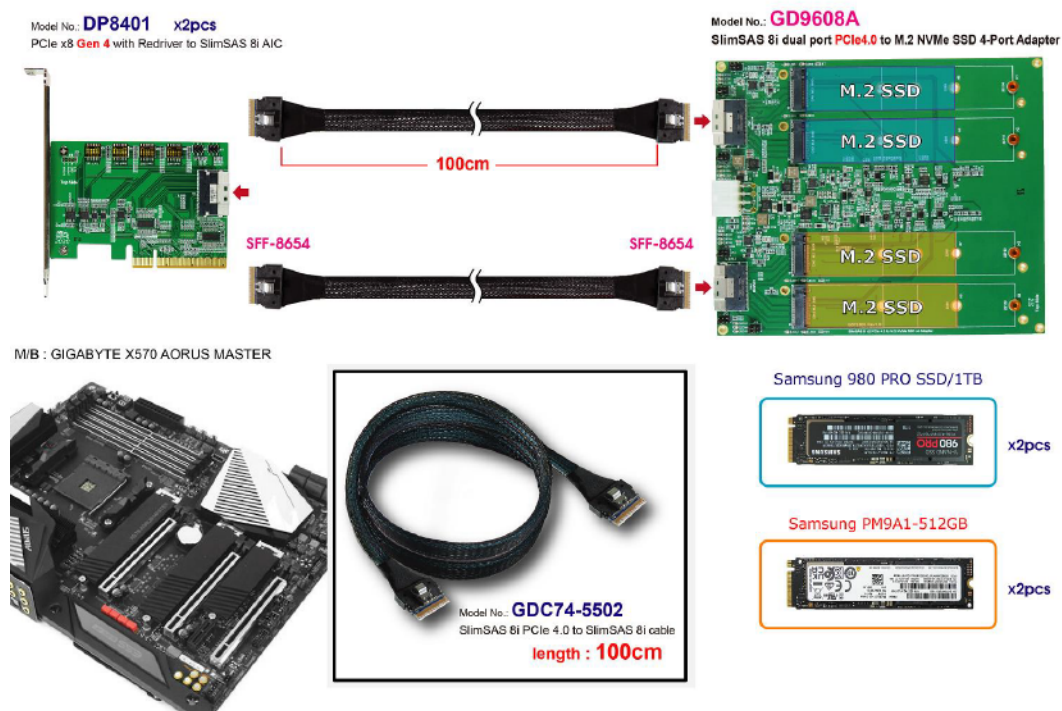
The GD9608A adapter provides four ports M.2 connector for M.2 SSD application. Its each individual M.2 port supports Hot Plug Power protection and input port is with SlimSAS 8i(SFF-8654) dual port connector. It is designed for use by PCIe x16 bifurcation AIC to be bifurcated four x4 link width.

## 2. Tools and Results of Performance Measurement

### 2.1 Test Platform

- M/B : ASUS **PRIME X570-PRO**
- CPU : AMD **Ryzen 7, 3700X 8-Core**
- Memory : Kingston **KVR26N19D8/16, DDR4-2666MHz, 32GB**(16GB DIMM\*2)
- ATX Power : COOLER MASTER G750M, **750W ATX**, 12V V2.2 Power Supply
- Add in Card: DP8401 PCIe x16 to with ReDriver SlimSAS 8i(SFF-8654) AIC
- Cable: PCIe 4.0 SFF-8654 8i, 100cm Cable
- Adapter: GD9608A SlimSAS 8i dual port PCIe 4.0 to M.2 quad port adapter
- OS : Microsoft **Windows 10 64bit OS**

### 2.2 Test target: DP8401, GD9608A adapter with M.2 **512GB, 1TB SSD**



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## 2.3 Install Hardware

First inserts the M.2 SSD into the GD9608A M.2 connector and connects the GD9608A adapter to the DP8401 AIC card (PCIe x8 Gen 4 to SFF-8654 8i ), using the **GDC74-5502 Cable**, and Plugs DP8401 AIC into PCIe x16 Slot of ASUS **PRIME X570-PRO** mainboard.

## 2.4 BIOS & Windows 10 OS environment setup

2.4.1 Primary SATA NVMe SSD install Windows 10 OS.

2.4.2 M.2 NVMe SSDs, formatted to NTFS Mode. Don't install any program.



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## 2.5 CrystalDiskMark 8.0.0 x64 performance test

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

2.5.1 SAMSUNG 980 PRO M.2 / 1TB in CN1: performance as below:

The screenshot shows the CrystalDiskMark 8.0.0 x64 [Admin] window. The interface includes a menu bar with options like 檔案(F), 設定(S), 設定檔(P), 佈景主題(T), 說明(H), and 語言(Language). Below the menu, there are controls for the number of passes (5), test size (1GiB), drive (D: 0% (0/932GiB)), and units (MB/s). The main display area is a table with columns for Read (MB/s) and Write (MB/s). The test results are as follows:

	Read (MB/s)	Write (MB/s)
SEQ1M Q8T1	6786.97	4941.66
SEQ1M Q1T1	4168.28	4244.32
RND4K Q32T1	527.74	360.54
RND4K Q1T1	86.43	193.90

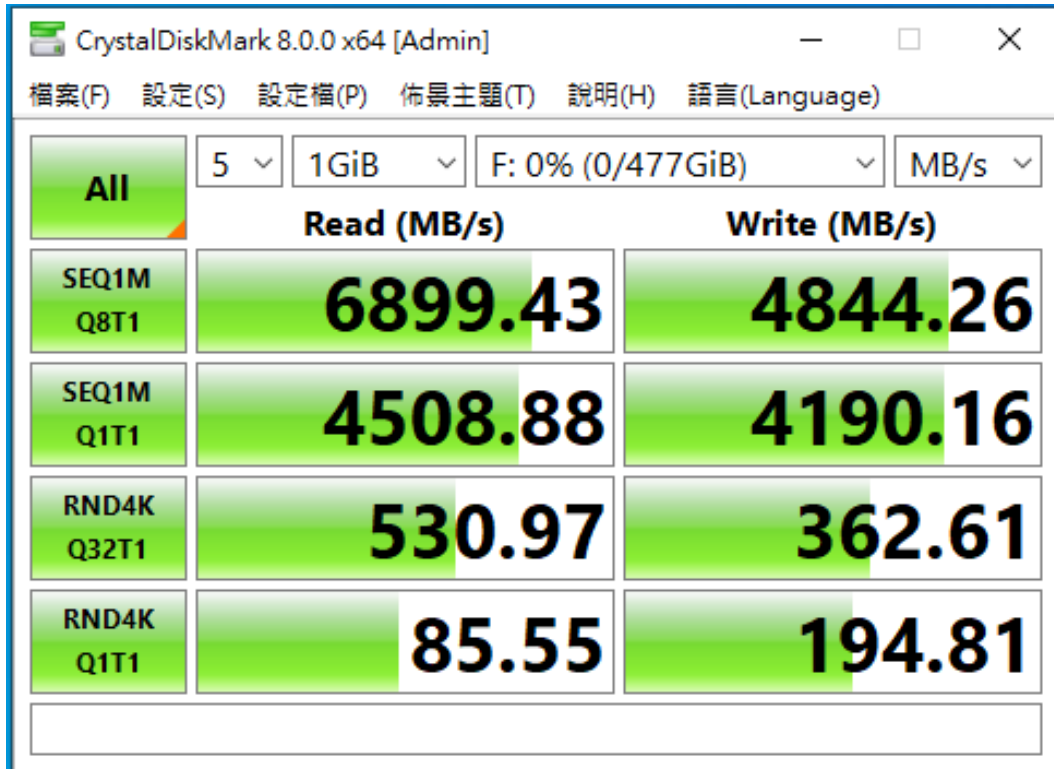
2.5.2 SAMSUNG 980 PRO M.2 / 1TB in CN2: performance as below:

The screenshot shows the Random Write (5/5) [Admin] window. The interface includes a menu bar with options like 檔案(F), 設定(S), 設定檔(P), 佈景主題(T), 說明(H), and 語言(Language). Below the menu, there are controls for the number of passes (5), test size (1GiB), drive (E: 0% (0/932GiB)), and units (MB/s). The main display area is a table with columns for Read (MB/s) and Write (MB/s). The test results are as follows:

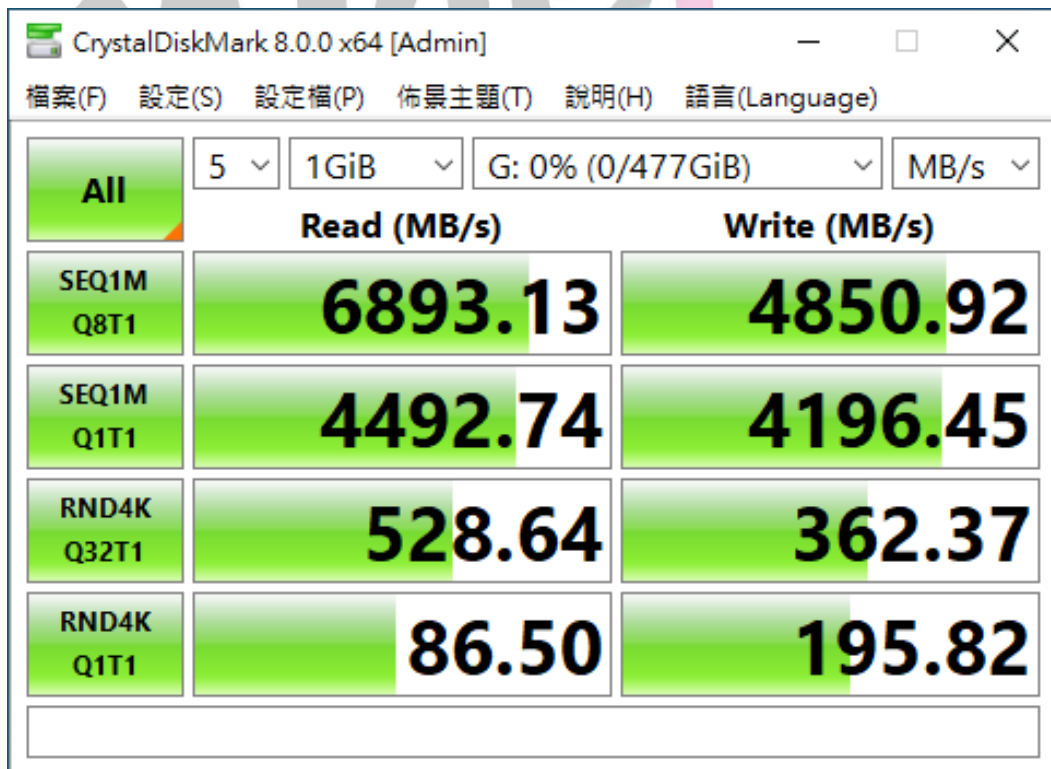
	Read (MB/s)	Write (MB/s)
Stop	6716.61	4948.16
Stop	3899.91	4253.82
Stop	537.34	361.43
Stop	67.48	193.21

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2.5.3 SAMSUNG PM9A1 M.2 / 512GB in CN3: performance as below:



2.5.4 SAMSUNG PM9A1 M.2 / 512GB in CN4: performance as below:

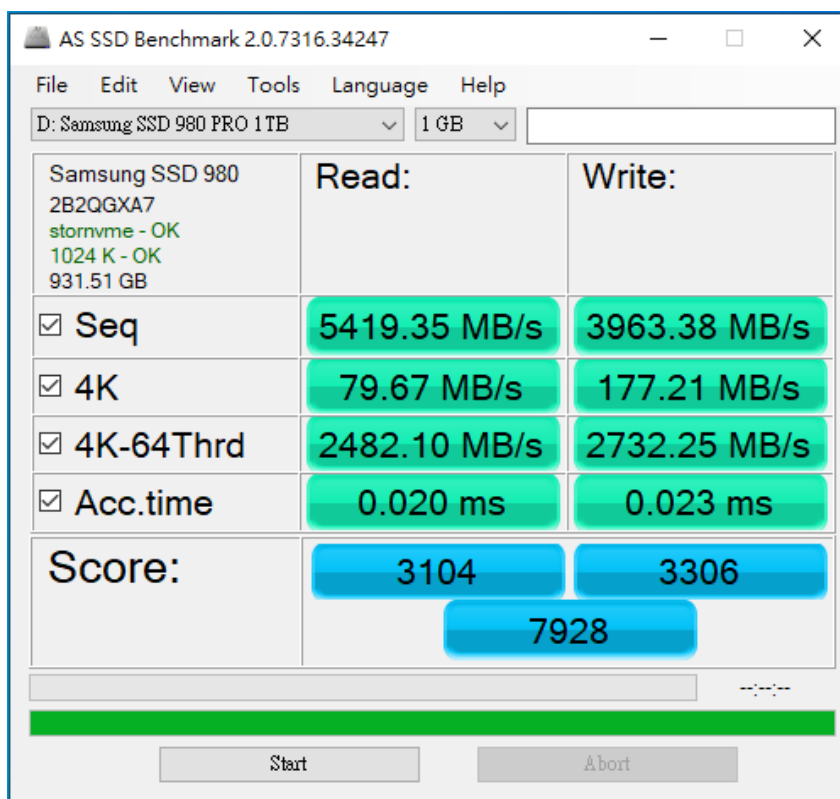


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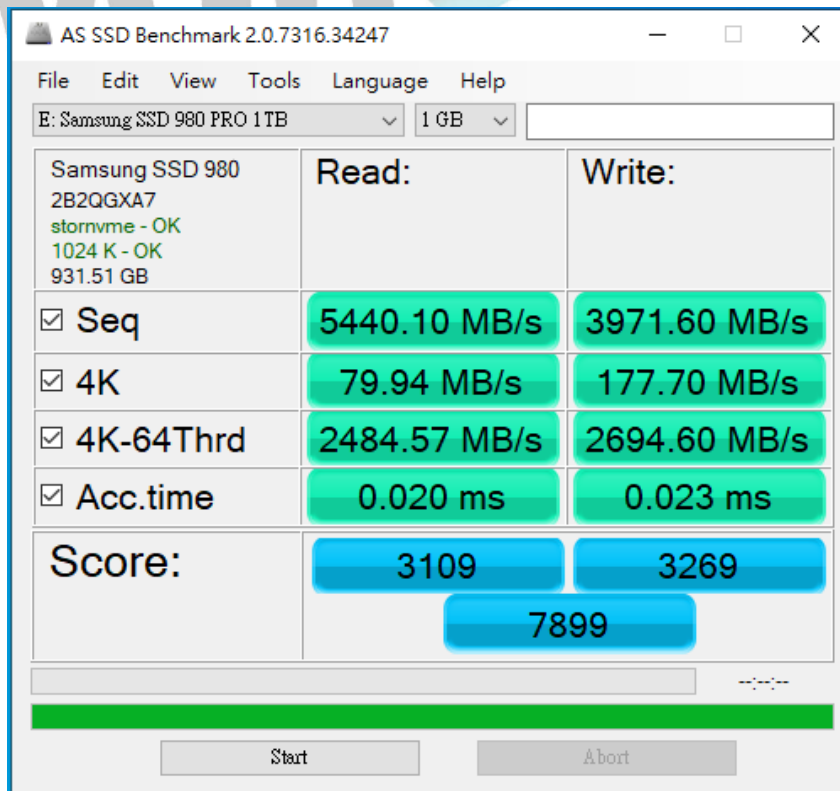
## 2.6 AS SSD Benchmark 2.0 performance test

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

2.6.1 SAMSUNG 980 PRO M.2 / 1TB in CN1: performance as below:

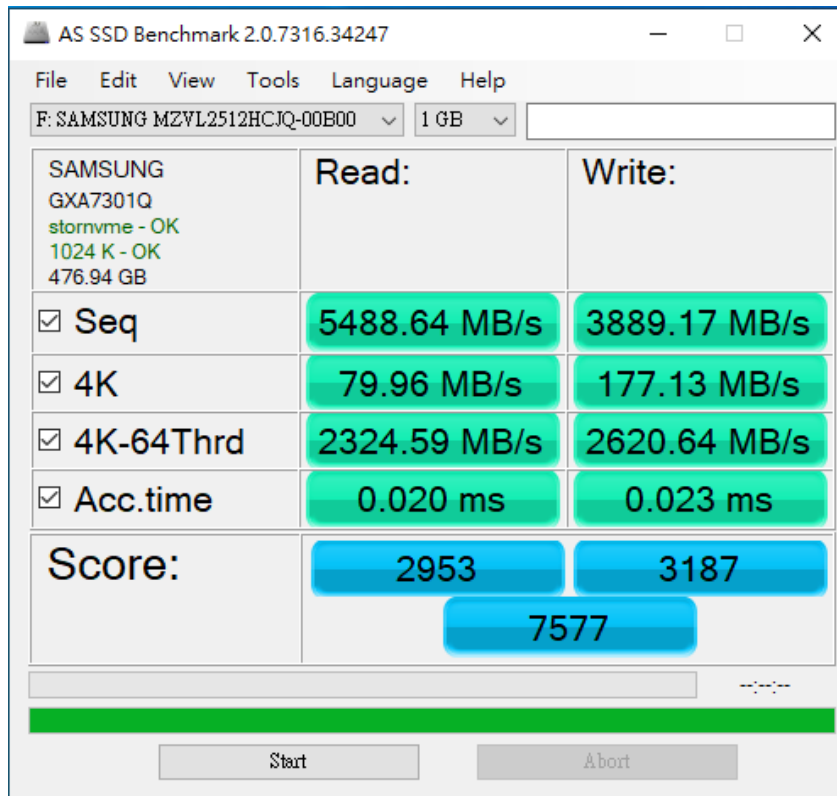


2.6.2 SAMSUNG 980 PRO M.2 / 1TB in CN2: performance as below:

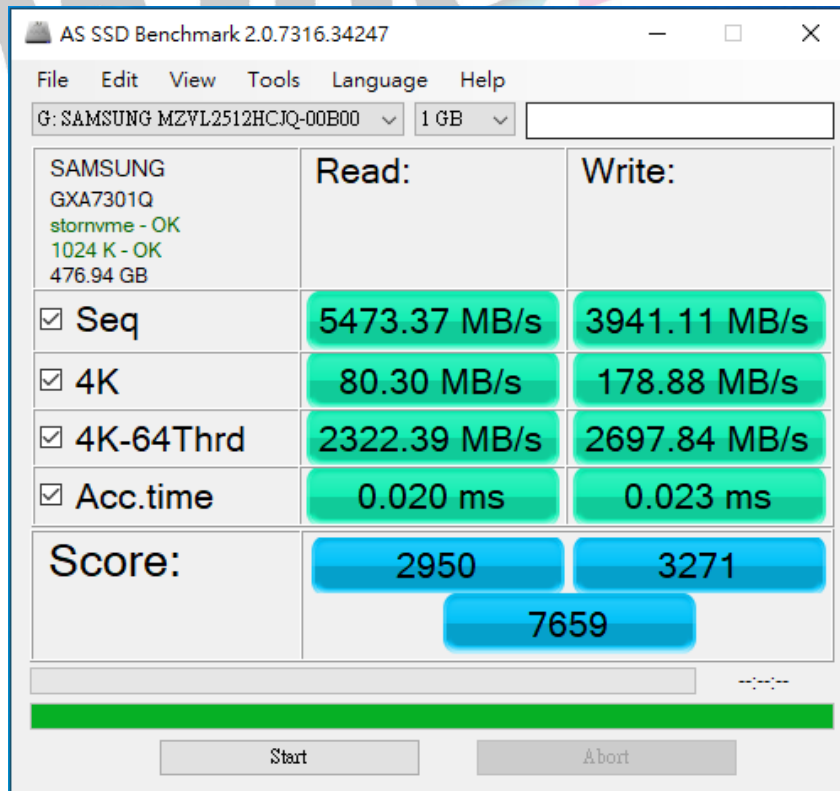


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2.6.3 SAMSUNG PM9A1 M.2 / 512GB in CN3: performance as below:



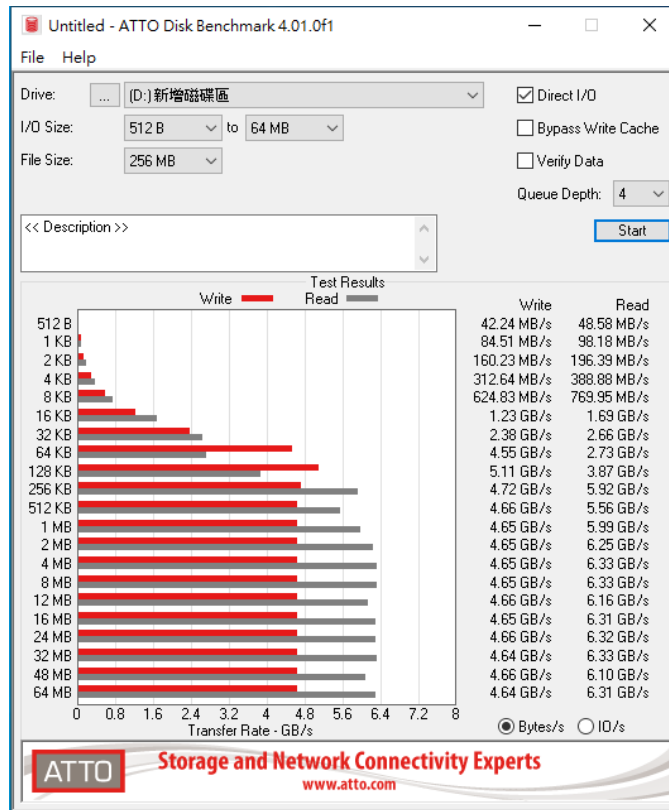
2.6.4 SAMSUNG PM9A1 M.2 / 512GB in CN4: performance as below:



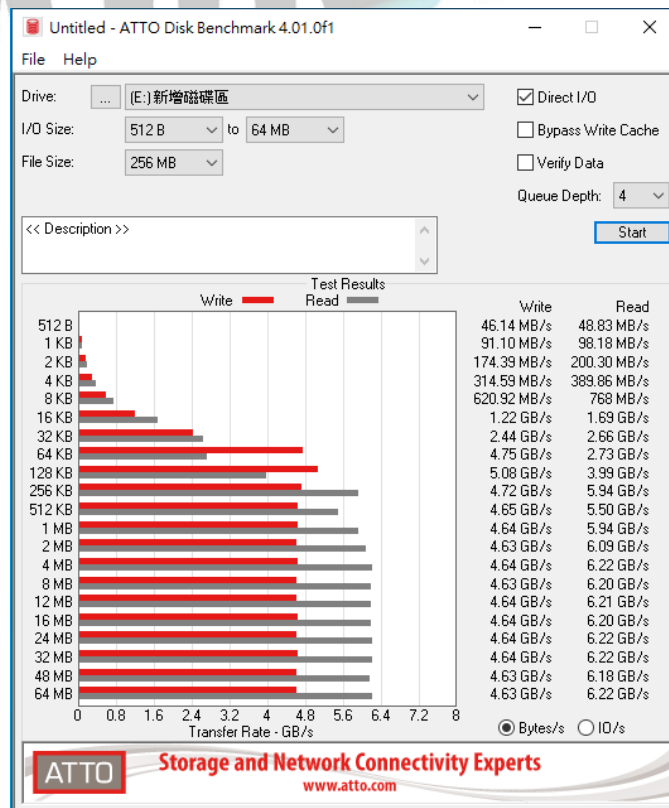
# GD9608A Adapter

## 2.7 ATTO Disk Benchmark 4.01 performance test

### 2.7.1 SAMSUNG 980 PRO M.2 / 1TB in CN1: performance as below:



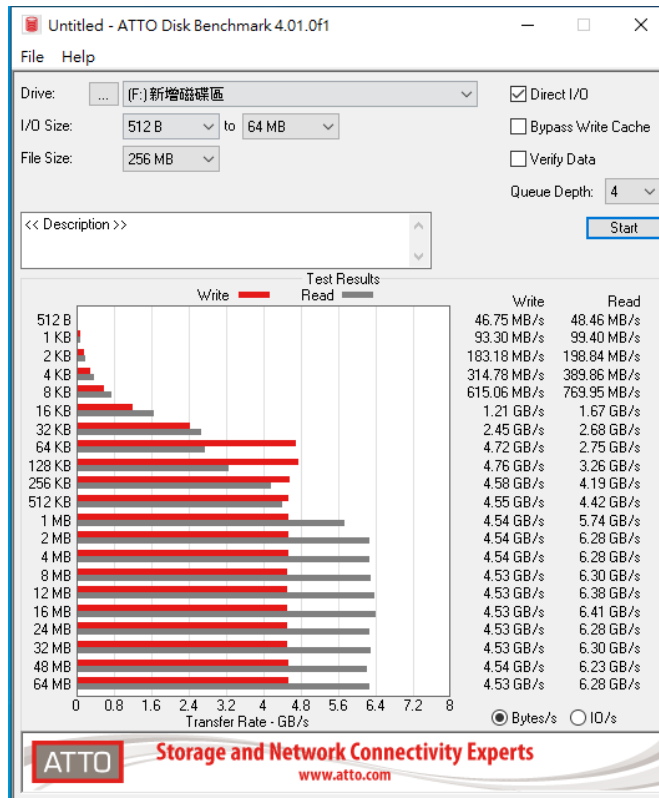
### 2.7.2 SAMSUNG 980 PRO M.2 / 1TB in CN2: performance as below:



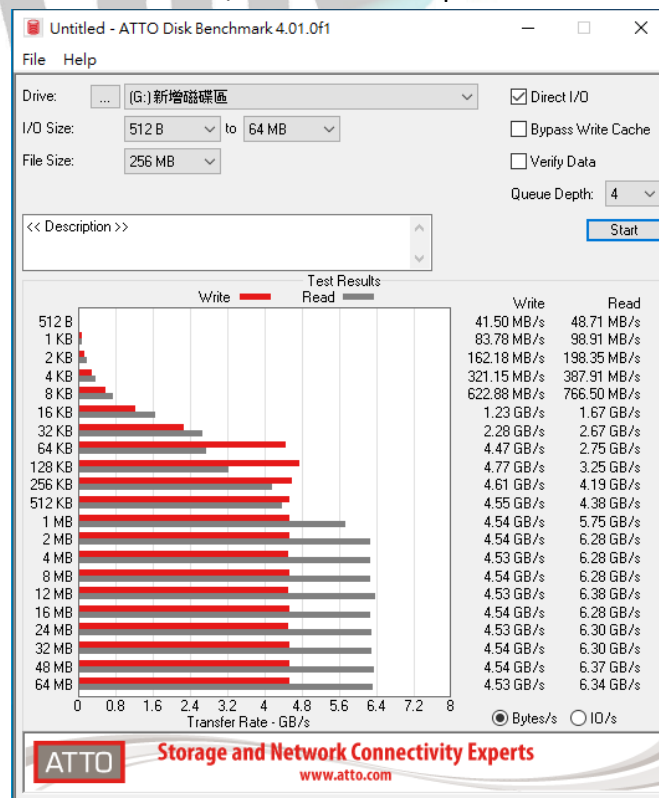


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## 2.7.3 SAMSUNG PM9A1 M.2 / 512GB in CN3: performance as below:



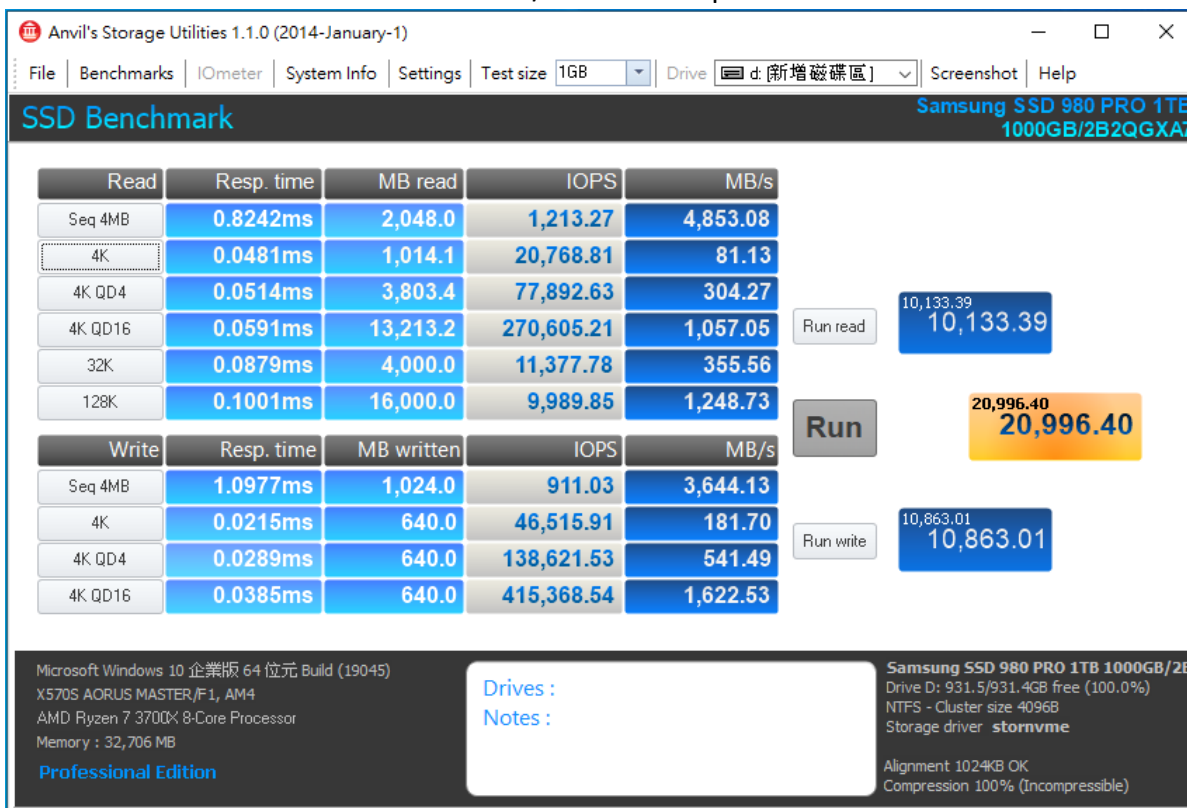
## 2.7.4 SAMSUNG PM9A1 M.2 / 512GB in CN4: performance as below:



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## 2.8 AnvilBenchmark\_V110\_B337

### 2.8.1 SAMSUNG 980 PRO M.2 / 1TB in CN1: performance as below:



### 2.8.2 SAMSUNG 980 PRO M.2 / 1TB in CN2: performance as below:



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## 2.8.3 SAMSUNG PM9A1 M.2 / 512GB in CN3: performance as below:

**SSD Benchmark** SAMSUNG MZVL2512HCJQ-00B00 512GB/GXA7301Q

Read	Resp. time	MB read	IOPS	MB/s
Seq 4MB	0.7949ms	2,048.0	1,257.99	5,031.94
4K	0.0480ms	1,017.5	20,838.75	81.40
4K QD4	0.0513ms	3,803.7	77,899.73	304.30
4K QD16	0.0604ms	12,925.2	264,707.95	1,034.02
32K	0.0879ms	4,000.0	11,377.78	355.56
128K	0.1003ms	16,000.0	9,965.74	1,245.72

Write	Resp. time	MB written	IOPS	MB/s
Seq 4MB	1.0977ms	1,024.0	911.03	3,644.13
4K	0.0213ms	640.0	47,009.29	183.63
4K QD4	0.0288ms	640.0	138,770.10	542.07
4K QD16	0.0387ms	640.0	412,992.21	1,613.25

Run read: 10,268.72 / 10,268.72

Run: 21,113.33 / 21,113.33

Run write: 10,844.61 / 10,844.61

Microsoft Windows 10 企業版 64 位元 Build (19045)  
X570S AORUS MASTER/F1, AM4  
AMD Ryzen 7 3700X 8-Core Processor  
Memory : 32,706 MB  
Professional Edition

Drives :  
Notes :

SAMSUNG MZVL2512HCJQ-00B00 512G  
Drive F: 476.9/476.8GB free (100.0%)  
NTFS - Cluster size 4096B  
Storage driver stornvme  
Alignment 1024KB OK  
Compression 100% (Incompressible)

## 2.8.4 SAMSUNG PM9A1 M.2 / 512GB in CN4: performance as below:

**SSD Benchmark** SAMSUNG MZVL2512HCJQ-00B00 512GB/GXA7301Q

Read	Resp. time	MB read	IOPS	MB/s
Seq 4MB	0.8242ms	2,048.0	1,213.27	4,853.08
4K	0.0479ms	1,018.5	20,858.13	81.48
4K QD4	0.0513ms	3,804.7	77,920.90	304.38
4K QD16	0.0605ms	12,915.7	264,513.10	1,033.25
32K	0.0879ms	4,000.0	11,377.78	355.56
128K	0.1005ms	16,000.0	9,953.34	1,244.17

Write	Resp. time	MB written	IOPS	MB/s
Seq 4MB	1.0352ms	1,024.0	966.04	3,864.15
4K	0.0214ms	640.0	46,798.31	182.81
4K QD4	0.0287ms	640.0	139,188.92	543.71
4K QD16	0.0390ms	640.0	410,287.10	1,602.68

Run read: 10,086.77 / 10,086.77

Run: 21,121.32 / 21,121.32

Run write: 11,034.55 / 11,034.55

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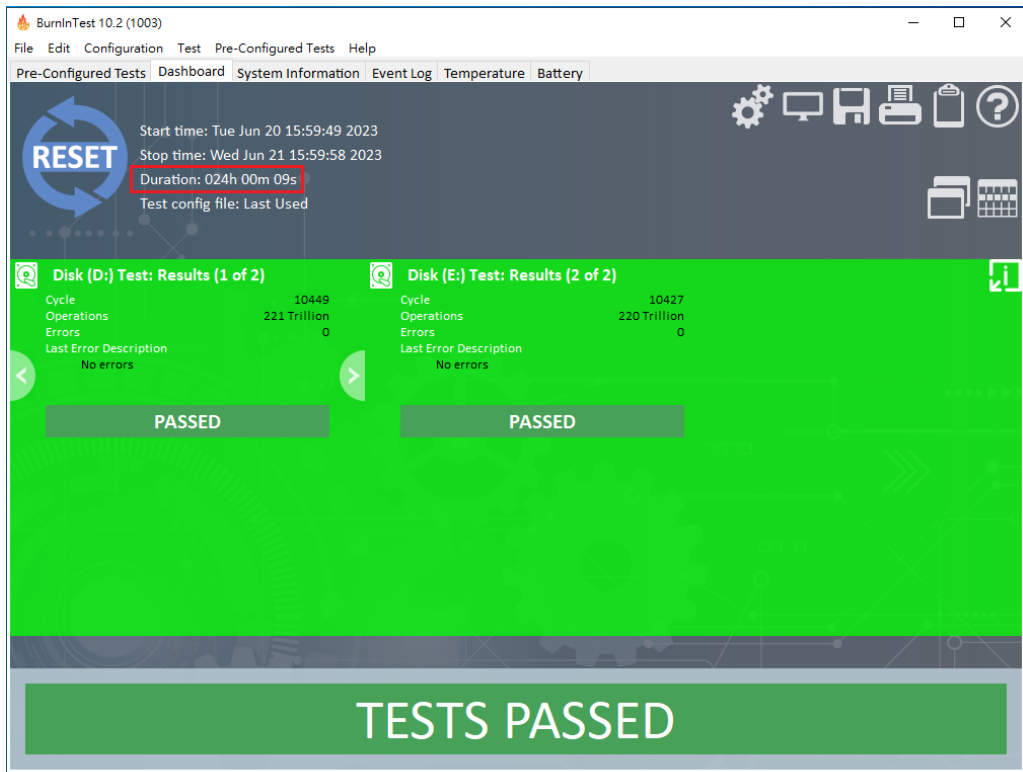
SAMSUNG MZVL2512HCJQ-00B00 512G  
Drive G: 476.9/476.8GB free (100.0%)  
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Storage driver stornvme  
Alignment 1024KB OK  
Compression 100% (Incompressible)

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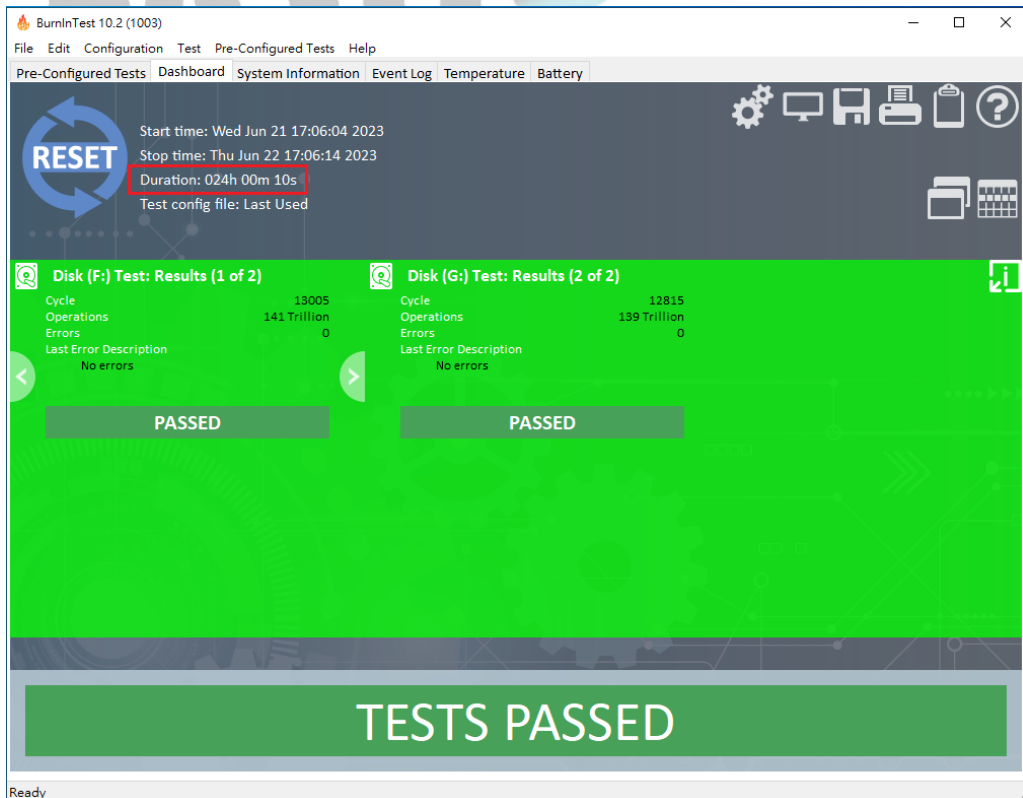
## 3. Burn In Tests and Results

### 3.1 BurnInTest v10.2 Pro

#### 3.1.1 24-hour Burn-in test **PASSED** For CN1, CN2



#### 3.1.2 24-hour Burn-in test **PASSED** For CN3, CN4



## 4. Summary

- 4.1 M.2 NVMe SSD is PCIe Gen 4 / 4 Lane Interface, I/O speed, max. to 64Gbps.
- 4.2 DP8401 AIC & GD9608A Adapter I/O performance is based on M.2 NVMe SSD.

