



MINERVA

PCIe x8 Gen 4 with ReDriver to MCIO 74P AIC

Performance & Burn In Test Rev 1.0

PS: The test is used MCIO 74P to SFF-8654 4i, 100cm Y-cable

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PCIe x8 Gen 4 with ReDriver to SFF-TA-1016 74P

1. Overview

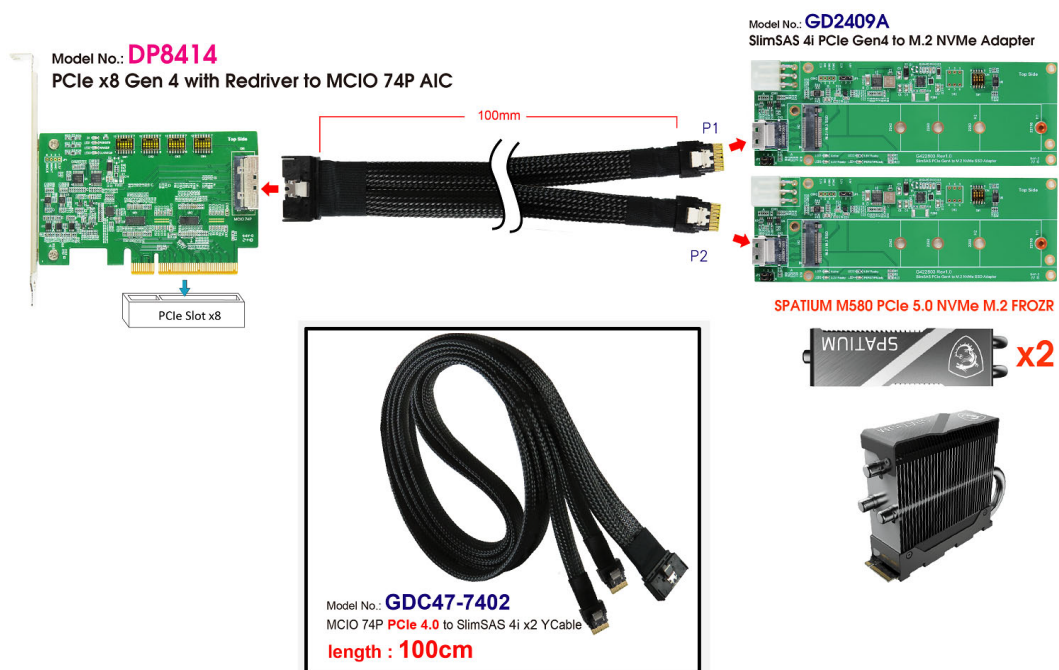
This riser card is built-in ReDriver controller with MCIO 74P connector. It is designed for use by PCIe x8 to configure two x4 bifurcations or can extend PCIe x8 channel reach. The ReDriver may support CTLE boosts up to **13 dB at 8 GHz**.

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: **DP8414 PCIe x8 Gen 4 to MCIO 74P AIC**
Cable: **PCIe 4.0 MCIO 74P to SlimSAS(SFF-8654) 4i x2, 100cm Y-Cable**
Adapter: **GD2409A SlimSAS(SFF-8654) 4i PCIe 4.0 to M.2 adapter x2**
OS : **Microsoft Windows 10 64bit OS**

2.2 Test target: DP8414, GD2409A adapter x2 with GIGABYTE M.2 1TB SSD X2



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2.3 Install Hardware

First inserts the M.2 SSD into the GD2409A M.2 connector, then with copper nuts, and screws to fix SSDs. (Please refer to the Installation Notes). Using the **GDC47-7402 Cable** to connect the GD2409A adapter to the DP8414 AIC card (PCIe x8 Gen 4 to MCIO 74P) and Plugs DP8414 AIC into **ASUS PRIME X570-PRO**.

2.4 BIOS & Windows 10 OS environment setup

2.4.1 Primary SATA NVMe SSD install Windows 10 OS.

2.4.2 Two 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 **M.2 NVMe Gigabyte / 1TB** in **Drive D:** performance as below:

	Read (MB/s)	Write (MB/s)
SEQ1M Q8T1	7216.18	4735.99
SEQ1M Q1T1	3281.09	4730.35
RND4K Q32T1	629.77	379.04
RND4K Q1T1	61.26	246.84

2.5.2 **M.2 NVMe Gigabyte / 1TB** in **Drive E:** performance as below:

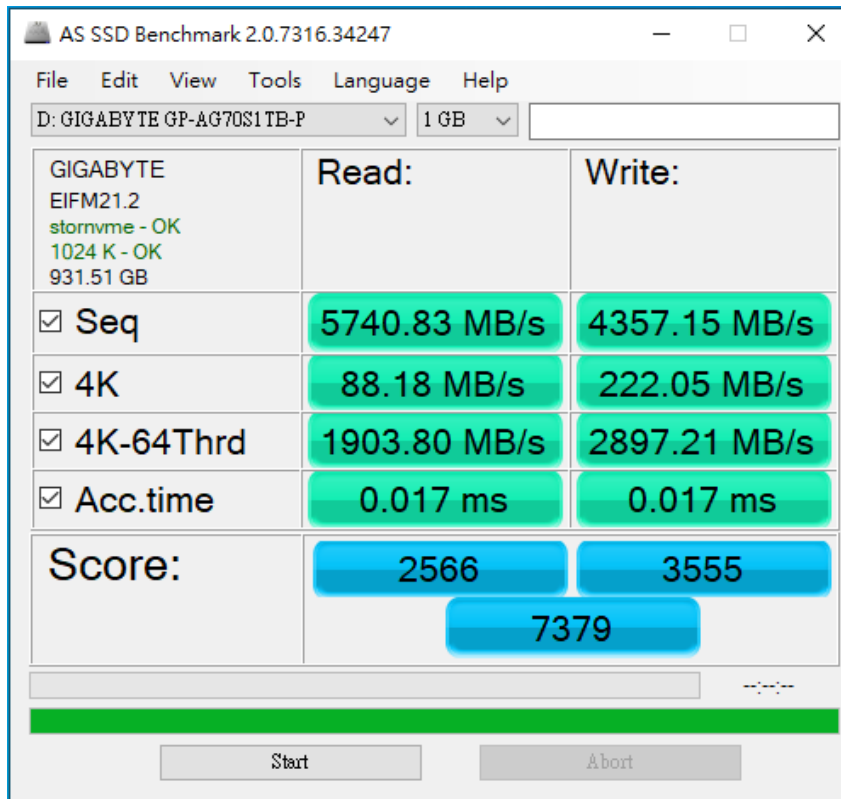
	Read (MB/s)	Write (MB/s)
SEQ1M Q8T1	7141.15	4809.06
SEQ1M Q1T1	3467.58	4790.75
RND4K Q32T1	637.53	378.13
RND4K Q1T1	66.28	246.47

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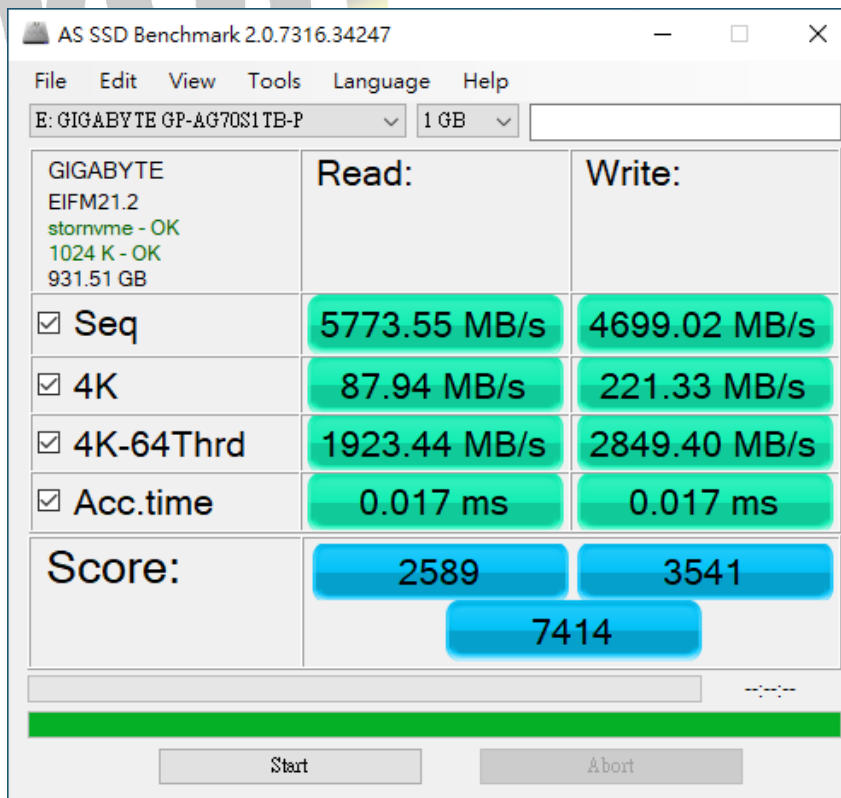
2.6 AS SSD Benchmark 2.0 performance test

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

2.6.1 **M.2 NVMe Gigabyte / 1TB** in Drive D: performance as below:



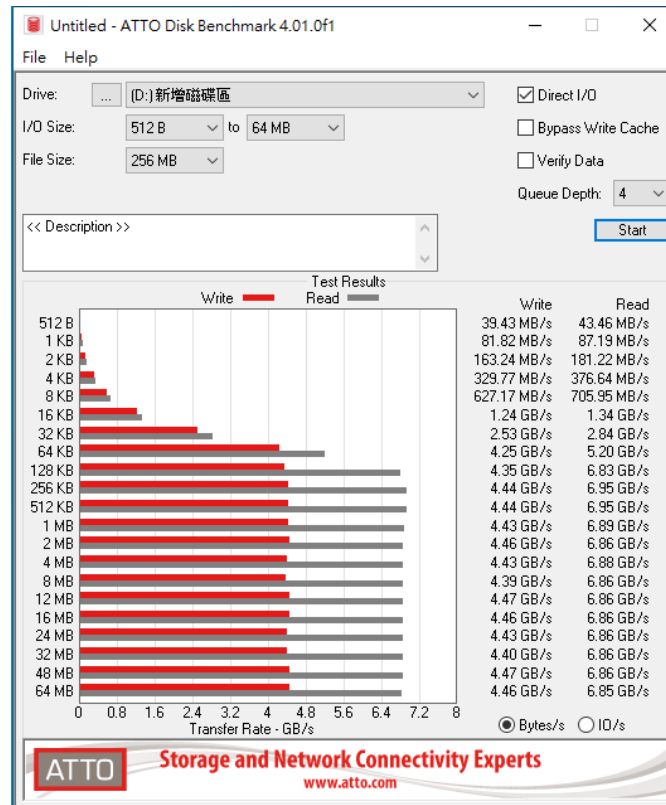
2.6.2 **M.2 NVMe Gigabyte / 1TB** in Drive E: performance as below:



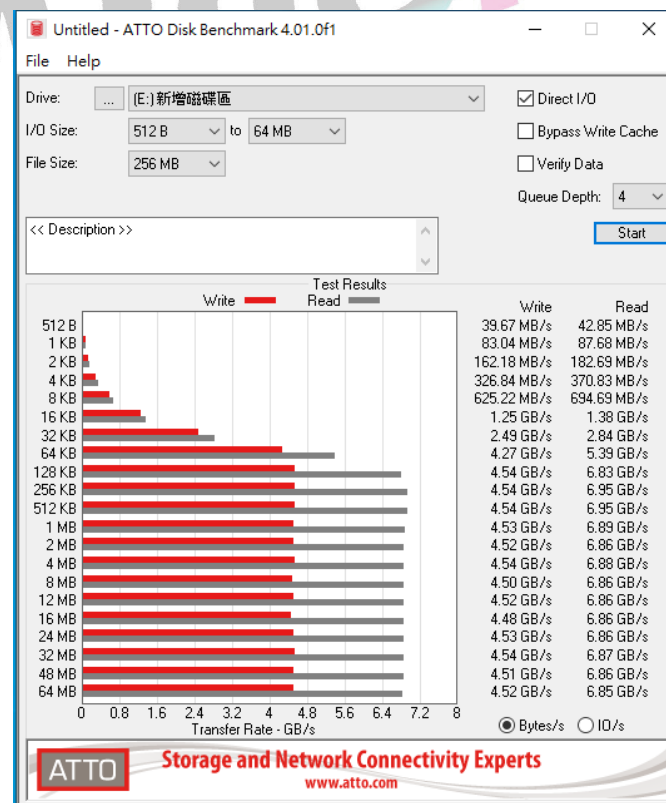
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2.7 ATTO Disk Benchmark 4.01 performance test

2.7.1 M.2 NVMe Gigabyte / 1TB in Drive D: performance as below:



2.7.2 M.2 NVMe Gigabyte / 1TB in Drive E: performance as below:



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2.8 AnvilBenchmark_V110_B337

2.8.1 M.2 NVMe Gigabyte/ 1TB in Drive D: performance as below:



2.8.2 M.2 NVMe Gigabyte/ 1TB in Drive E: performance as below:



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3. Burn In Tests and Results

3.1 BurnInTest v10.2 Pro

3.1.1 System information as below:

System summary
Windows 10 Enterprise Edition build 19045 (64-bit),
1 x AMD Ryzen 7 3700X 8-Core Processor [3597.1 MHz],
32GB RAM,
NVIDIA GeForce GT 730,
119GB SSD, 2 x 932GB SSD.

General
System Name: DESKTOP-GC5P1VR
Motherboard Manufacturer: ASUSTeK COMPUTER INC.
Motherboard Model: PRIME X570-PRO
Motherboard Version: Rev X.0x
Motherboard Serial Number: 210686092100385
BIOS Manufacturer: American Megatrends Inc.
BIOS Version: 3604
BIOS Release Date: 05/08/2021
BIOS Serial Number: System Serial Number
TPM: Not found

CPU
CPU manufacturer: AuthenticAMD [Online CPU comparison](#)
CPU Type: AMD Ryzen 7 3700X 8-Core Processor
CPUID: Family 17, Model 71, Stepping 0
Physical CPU's: 1
Cores per CPU: 8
Threads per CPU: 16
P-Cores per CPU: 8
E-Cores per CPU: N/A
Hyperthreading: Not capable
CPU features: MMX SSE SSE2 SSE3 SSSE3 SSE4.1 SSE4.2 SSE4a AVX AVX2 FMA3 DEP PAE AMD64 AES Turbo core
Clock frequencies:
Measured CPU speed: 3597.1 MHz [Turbo core: 4321.3MHz]
Multiplier: x36.0 [Turbo core: x43.5]
Reference Clock: 99.9 MHz
Cache per CPU package:
L1 Instruction Cache: 8 x 32 KB
L1 Data Cache: 8 x 32 KB
L2 Cache: 8 x 512 KB
L3 Cache: 32 MB
Voltage: 1.10 V

Memory
Total Physical Memory: 32672MB
Available Physical Memory: 26938MB
Memory devices:
Slot 1: 16GB DDR4 SDRAM PC4-21300
Kingston 9905701-098.A00G, serial#: 0xD9B50CE9, wk/yr: 26/2019
1.2V, Clk: 1333.3MHz, Timings 19-19-19-43 (@ Max. freq.)
Slot 2: 16GB DDR4 SDRAM PC4-21300
Kingston 9905701-098.A00G, serial#: 0xB4B50AE5, wk/yr: 26/2019
1.2V, Clk: 1333.3MHz, Timings 19-19-19-43 (@ Max. freq.)
Slot 3: Not populated
Slot 4: Not populated
Virtual memory: C:\pagefile.sys (allocated base size 4864MB)

Graphics
NVIDIA GeForce GT 730
Chip Type: 0x1287
DAC Type: Integrated RAMDAC
Memory: 2047MB
BIOS: 80.28.b8.00.13
Driver provider: NVIDIA
Driver version: 456.71
Driver date: 9-30-2020
Monitor 1: 1920x1080x32 60Hz 96 DPI (Primary monitor)

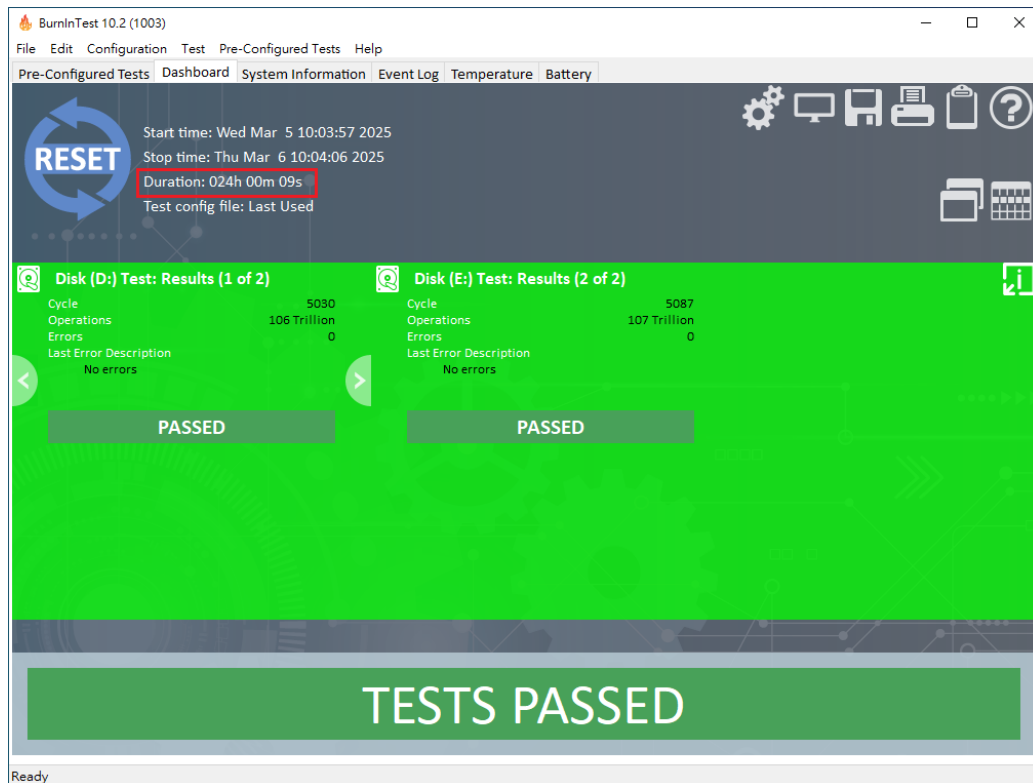
Disk volumes
C: Local Drive, \\?\Volume{871086e8-0000-0000-0000-501f00000000}\, NTFS, (118.20GB total, 29.57GB free)
D: Local Drive, \\?\Volume{d233bd32-0000-0000-0000-100000000000}\, 新增磁碟區, NTFS, (931.51GB total, 929.38GB free)
E: Local Drive, \\?\Volume{27af9fa4-0000-0000-0000-100000000000}\, 新增磁碟區, NTFS, (931.51GB total, 931.38GB free)

Disk drives
磁碟機: Model: LITEONIT LGT-128M6G Serial: S0C41196Z1ZSCR001341 (Disk: 0, SSD, Size: 119.24GB, Interface: SATA, Volumes: C)
磁碟機: Model: GIGABYTE GP-AG70S1TB-P Serial: SN212108901364 (Disk: 1, SSD, Size: 931.51GB, Interface: NVMe, Volumes: E)
磁碟機: Model: GIGABYTE GP-AG70S1TB-P Serial: SN212108902374 (Disk: 2, SSD, Size: 931.51GB, Interface: NVMe, Volumes: D)

Optical drives

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



4. Summary

- 4.1 M.2 NVMe SSD is PCIe Gen4 / 4 Lane Interface, I/O speed, max. to 64Gbps.
- 4.2 DP8414 cable, I/O performance is based on M.2 NVMe SSD.