MINERVA
GD9801G SlimSAS 8i to M.2 Dual port with 3.5"Housing

Performance & Burn In Test   Rev 1.2

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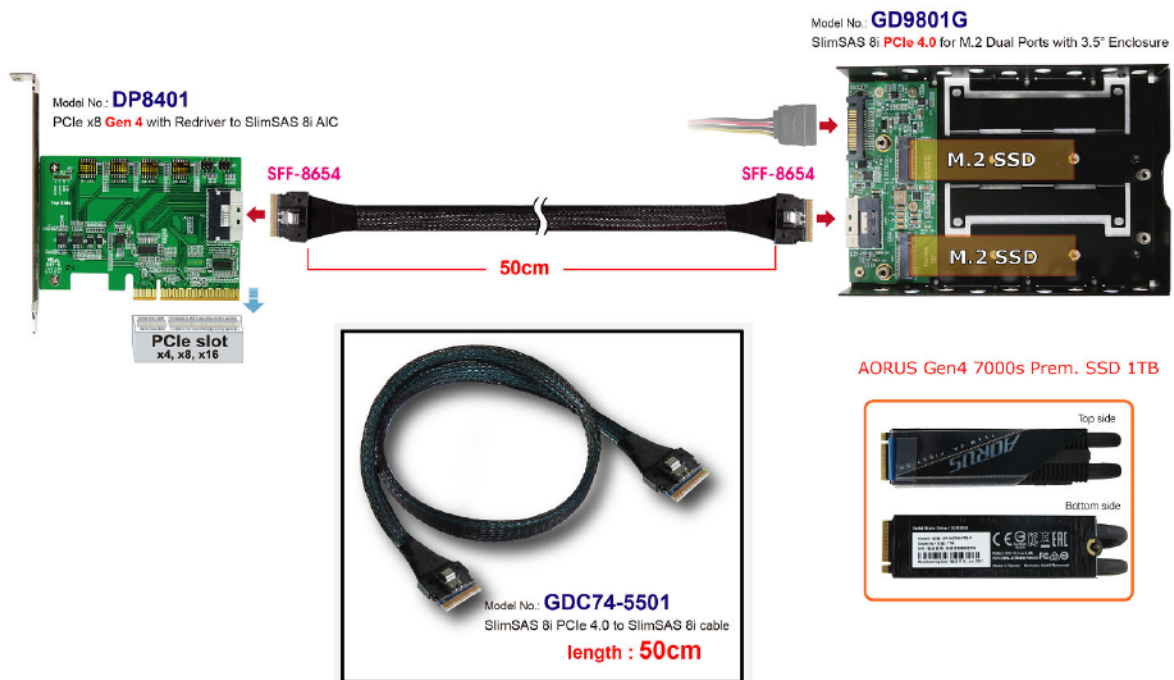
GD9801G Rev1.2 Converter Card

1. Overview

This adapter is built-in SlimSAS 8i(SFF-8654) connector and M.2 M-key connector dual port, which can be inserted into two M.2 NVMe SSDs. It is designed for use by supporting PCIe 4.0 x8, x16 bifurcation AIC and SFF-9402 pinout PCIe Switch RAID Card.

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 x8 Gen 4 to SlimSAS 8i(SFF-8654) AIC
Cable: PCIe 4.0 SlimSAS 8i(SFF-8654) male to male, 50cm Cable
Adapter: GD9801G SlimSAS 8i(SFF-8654) to M.2 dual port adapter
OS :   Microsoft **Windows 10 64bit OS**

2.2 Test target: GD9801G adapter and GIGABYTE M.2 **1TB** NVMe SSD x2pcs

2.3   Install Hardware

First inserts the M.2 SSD into the GD9801G M.2 connector, then with copper nuts, and screws to fix SSDs. (Please refer to the Installation Notes). Connect the GD9801G adapter to the DP8401 AIC card (PCIe x8 Gen4 to SFF-8654 8i), using the **GDC74-5501 Cable** and Plugs DP8401 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 GP-AG70S1TB-P / 1TB** in **Drive D:** performance as below:

CrystalDiskMark 8.0.0 x64 [Admin]	Read (MB/s)	Write (MB/s)
SEQ1M Q8T1	7156.29	4910.27
SEQ1M Q1T1	3059.70	4914.23
RND4K Q32T1	629.44	380.23
RND4K Q1T1	66.98	247.11

(5 / 1GiB / D: 0% (0/932GiB) / MB/s)

2.5.2 **M.2 NVMe GP-AG70S1TB-P / 1TB** in **Drive E:** performance as below:

CrystalDiskMark 8.0.0 x64 [Admin]	Read (MB/s)	Write (MB/s)
SEQ1M Q8T1	7277.14	4822.38
SEQ1M Q1T1	3043.92	4879.42
RND4K Q32T1	634.22	379.14
RND4K Q1T1	56.11	247.75

(5 / 1GiB / E: 0% (0/932GiB) / MB/s)
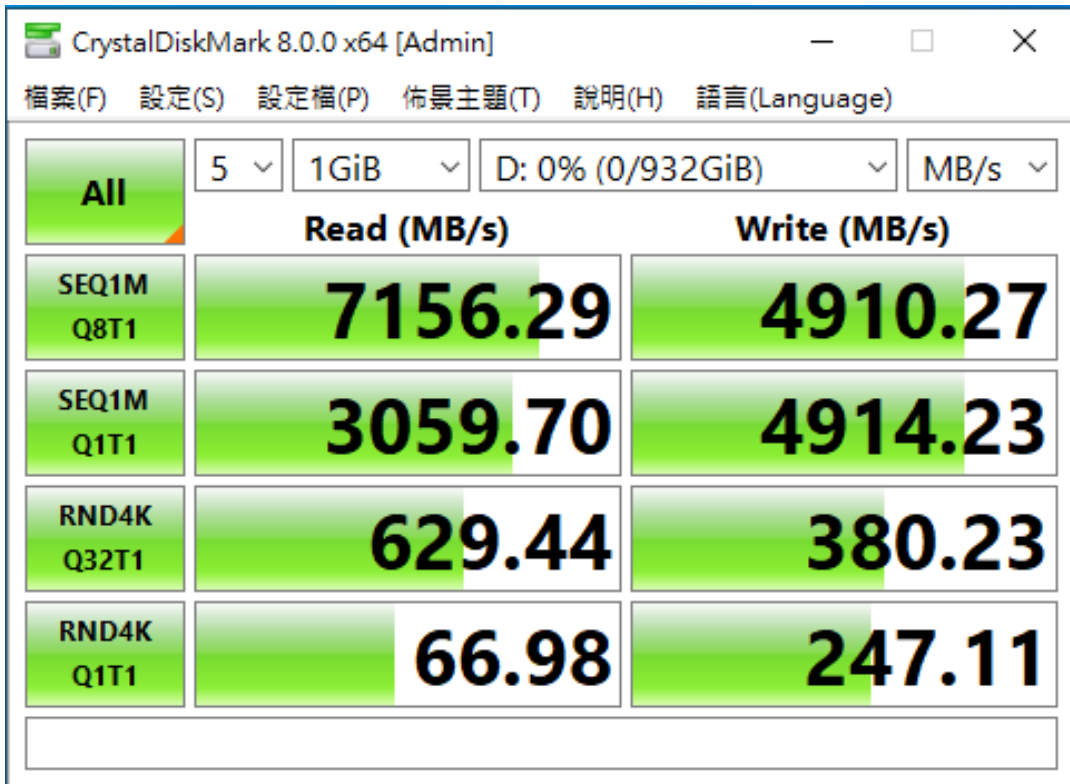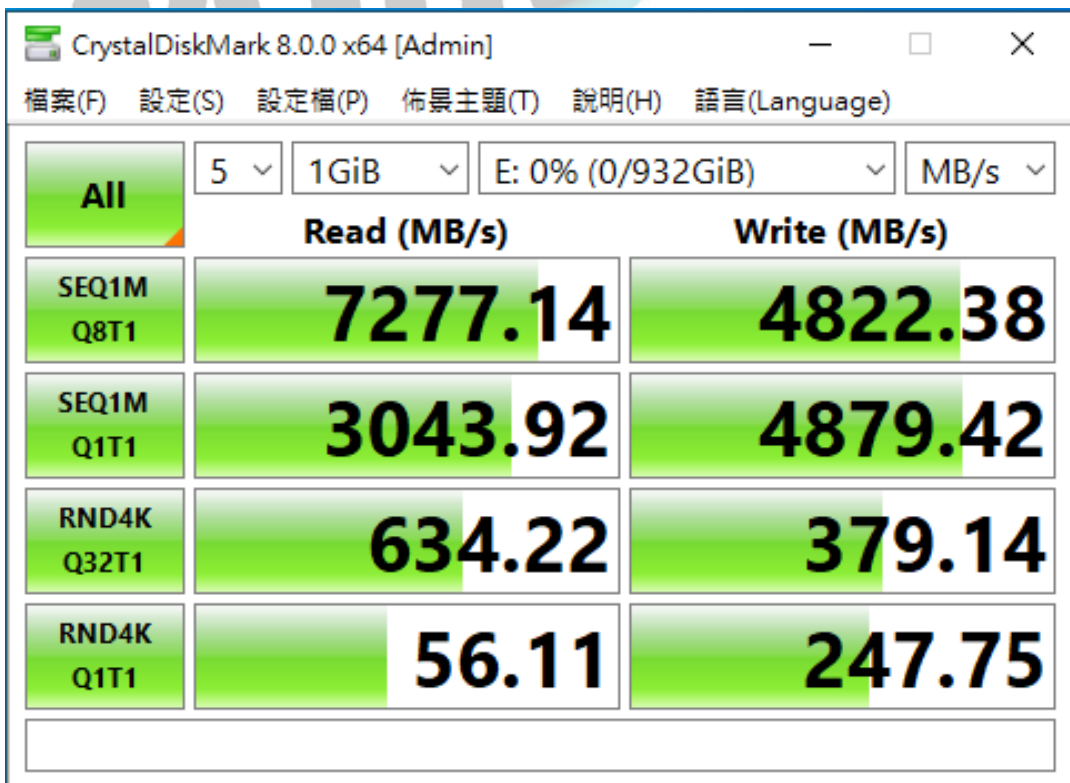
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2.6 AS SSD Benchmark 2.0 performance test

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

2.6.1 **M.2 NVMe** GP-AG70S1TB-P / 1TB in **Drive D:** performance as below:
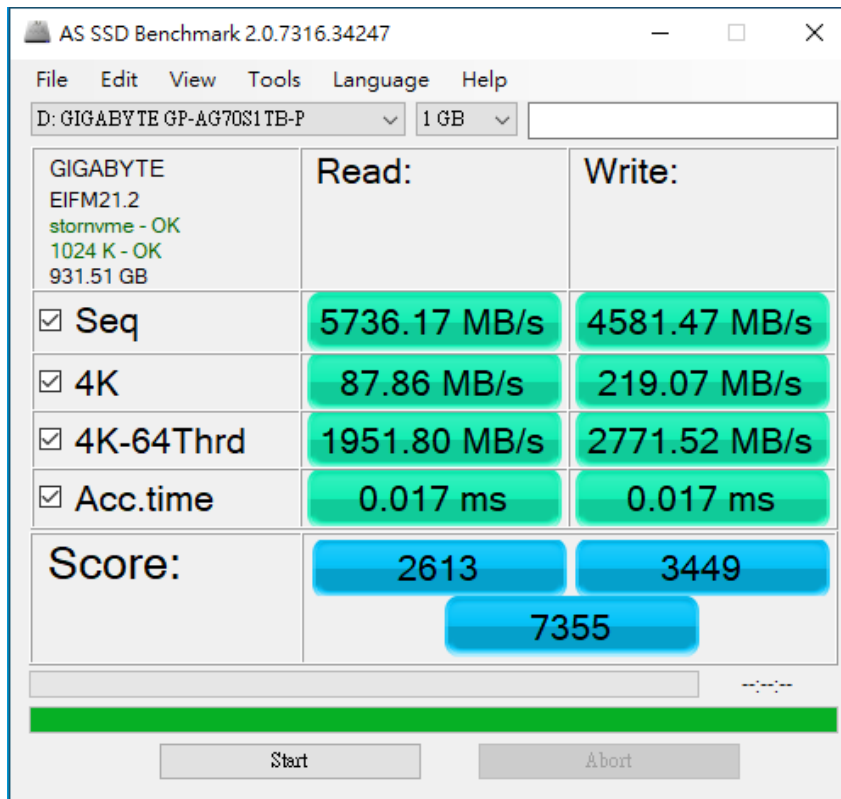
2.6.2 **M.2 NVMe** GP-AG70S1TB-P / 1TB in **Drive E:** performance as below:
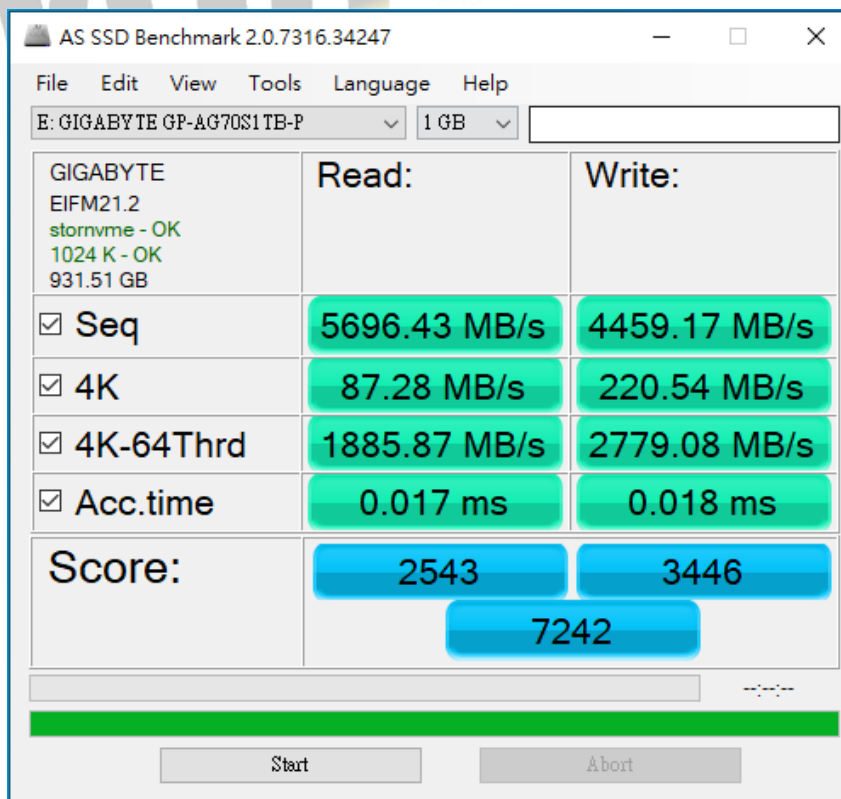
2.7 ATTO Disk Benchamrk 4.01 performance test

    2.7.1   **M.2 NVMe GP-AG70S1TB-P / 1TB** in **Drive D:** performance as below:

    2.7.2   **M.2 NVMe GP-AG70S1TB-P / 1TB** in **Drive E:** performance as below:

2.8 AnvilBenchmark_V110_B337

    2.8.1 **M.2 NVMe GP-AG70S1TB-P / 1TB** in **Drive D:** performance as below:

    2.8.2 **M.2 NVMe GP-AG70S1TB-P / 1TB** in **Drive E:** performance as below:

3. Burn In Tests and Results

3.1 BurnInTest v10.2 Pro

3.1.1 System information as below:
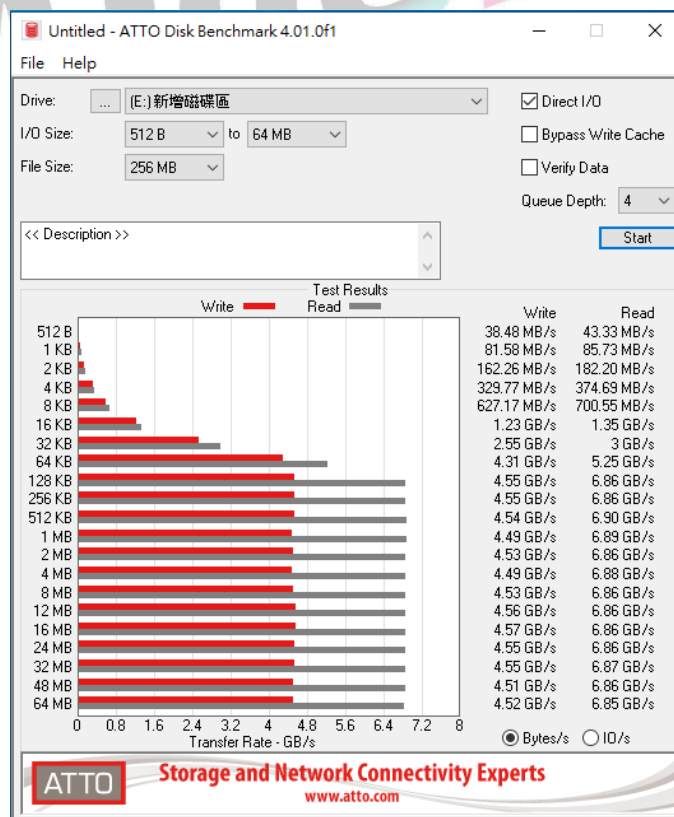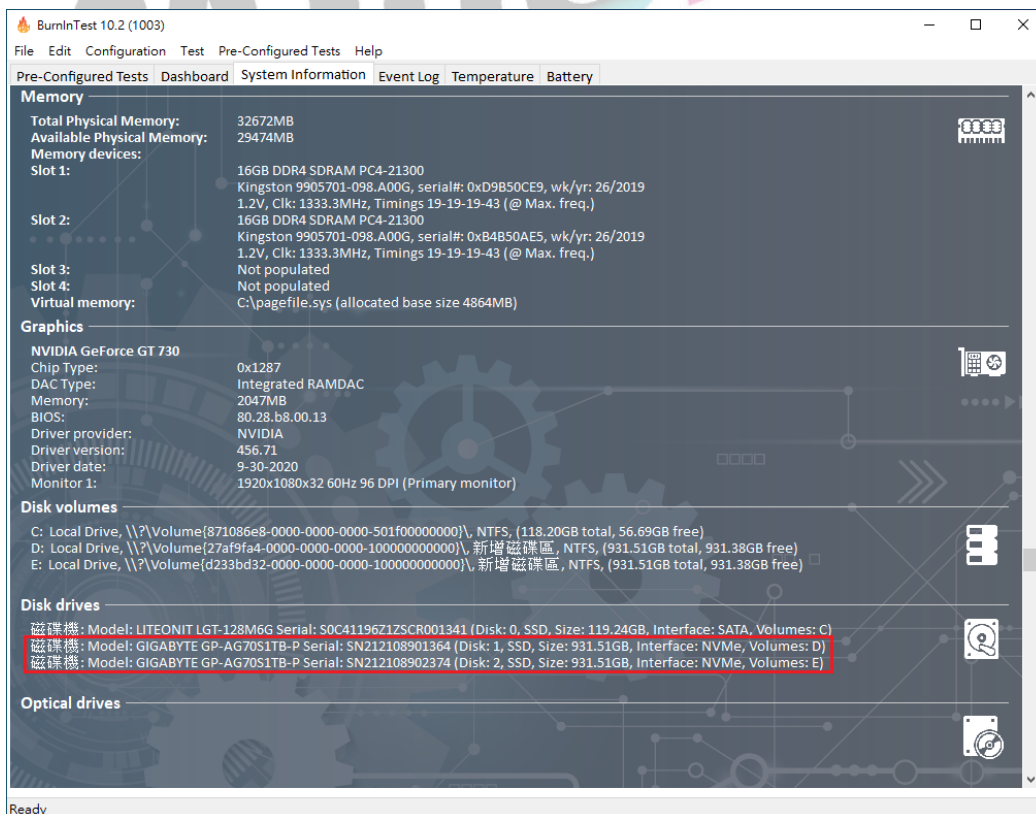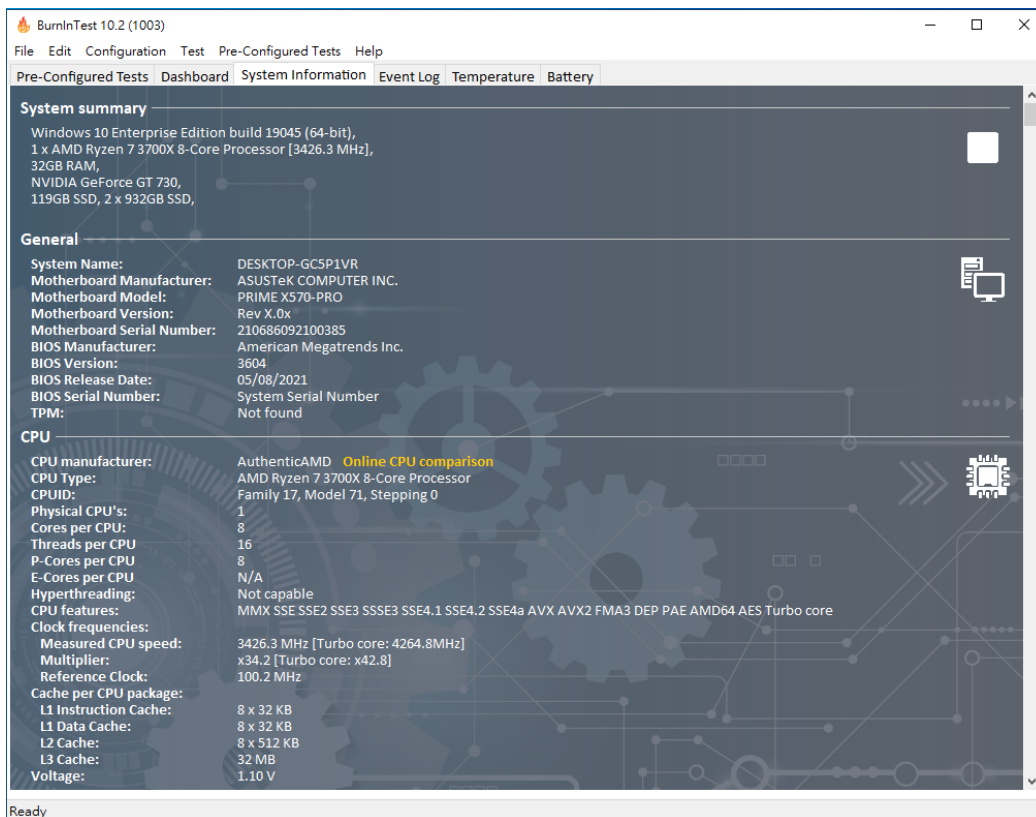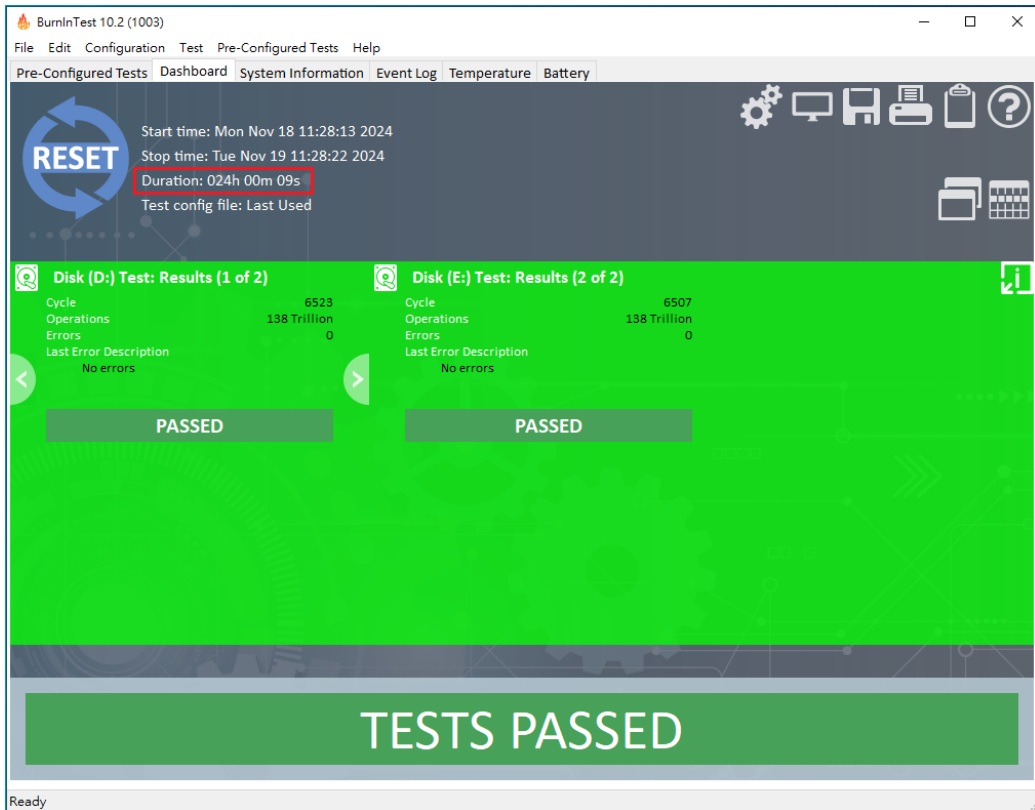
BurnInTest 10.2 (1003)

File Edit Configuration Test Pre-Configured Tests Help

Pre-Configured Tests | Dashboard | System Information | Event Log | Temperature | Battery

System summary
Windows 10 Enterprise Edition build 19045 (64-bit),
1 x AMD Ryzen 7 3700X 8-Core Processor [3426.3 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:	3426.3 MHz [Turbo core: 4264.8MHz]
Multiplier:	x34.2 [Turbo core: x42.8]
Reference Clock:	100.2 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

Ready

BurnInTest 10.2 (1003)

File Edit Configuration Test Pre-Configured Tests Help

Pre-Configured Tests | Dashboard | System Information | Event Log | Temperature | Battery

Memory
Total Physical Memory:	32672MB
Available Physical Memory:	29474MB
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, 56.69GB free)
D: Local Drive, \\?\Volume{27af9fa4-0000-0000-0000-100000000000}\, 新增磁碟區, NTFS, (931.51GB total, 931.38GB free)
E: Local Drive, \\?\Volume{d233bd32-0000-0000-0000-100000000000}\, 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: D)
磁碟機: Model: GIGABYTE GP-AG70S1TB-P Serial: SN212108902374 (Disk: 2, SSD, Size: 931.51GB, Interface: NVMe, Volumes: E)

Optical drives

Ready

3.1.1 24-hour Burn-in test PASSED

4. Summary

4.1 M.2 NVMe SSD is PCIe 4.0 / 4 Lanes Interface, I/O speed, max. to 64Gbps.

4.2 GD9801G adapter I/O performance is based on NVMe SSD.