



MINERVA

DP8413 PCIe x8 Gen 4 with ReDriver to SlimSAS 4 i Dual port

Performance & Burn In Test Rev 1.0

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4. Summary

DP8413 Add-in Card

1. Overview

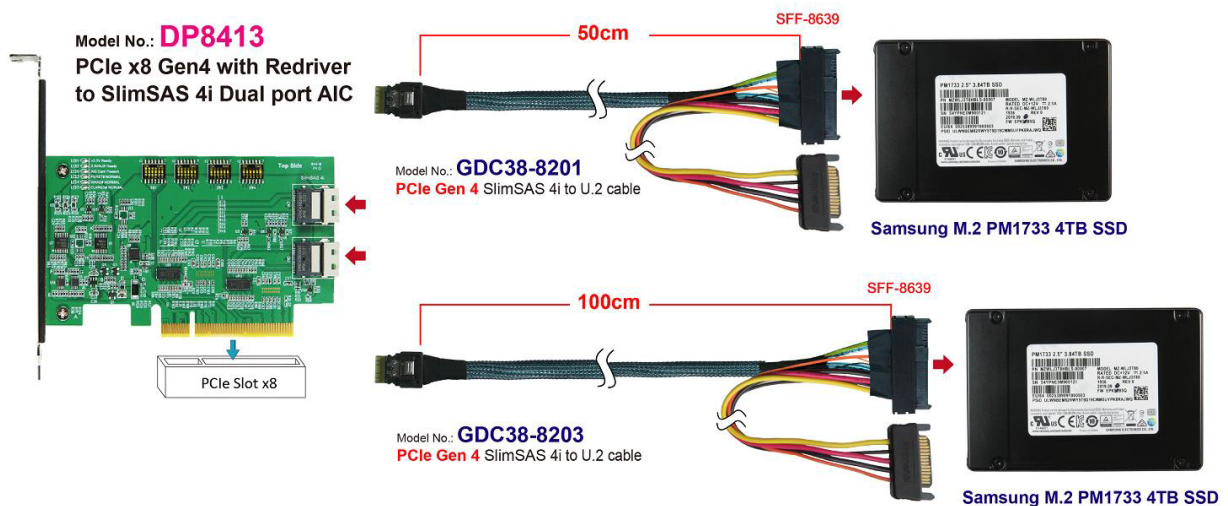
This Add-on Card has built-in SlimSAS 4i(SFF-8654) dual port connector. It is designed for be used by PCIe x8 link width to configure two x4 bifurcations which could be extended PCIe 4.0 signals. The ReDriver on board may support CTLE to boost up to **13 dB at 8 GHz**.

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: DP8413 PCIe x8 with ReDriver to SlimSAS 4i(SFF-8654) AIC
Cable: PCIe Gen 4 SlimSAS 4i(SFF-8654) to U.2, 100cm Cable
Cable: PCIe Gen 4 SlimSAS 4i(SFF-8654) to U.2, 50cm Cable
OS : Microsoft **Windows 10 64bit OS**

2.2 Test target: DP8413, SAMSUNG NVMe SSD/**4TB**



DP8413 Add-in Card

2.3 Install Hardware

First inserts the U.2 SSD into the GDC38-8203 cable's SFF-8639 connector and connects to the DP8413 AIC card (PCIe x8 Gen 4 to SFF-8654 4i x2). The DP8413 AIC plugs 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 U.2 NVMe SSD, formatted to NTFS Mode. Don't install any program.

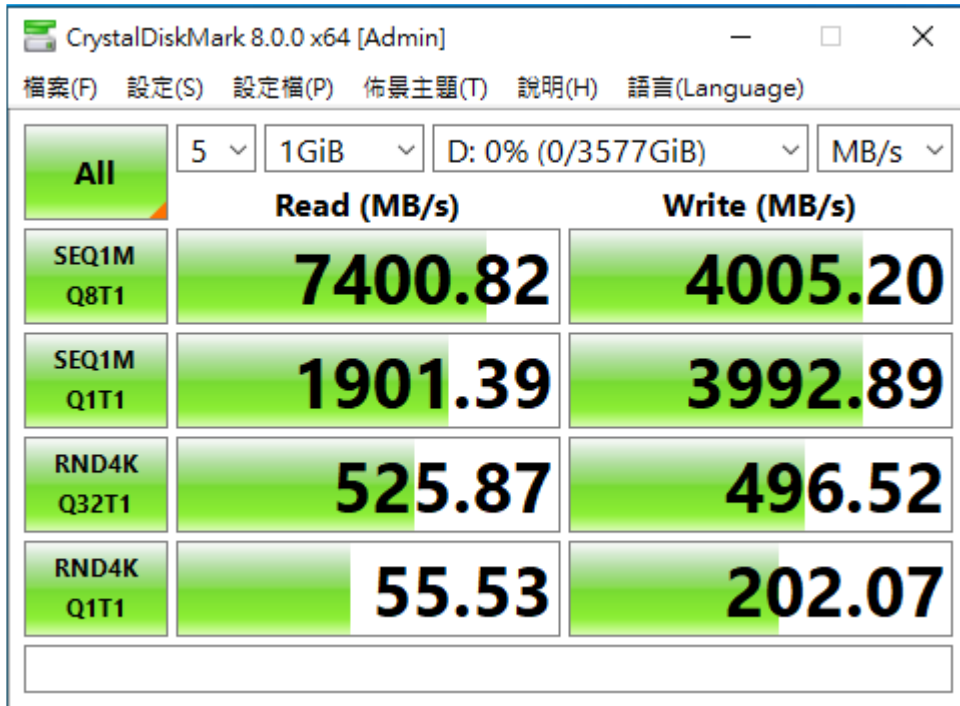


DP9504 Rev1.0 Host Bus Adapter

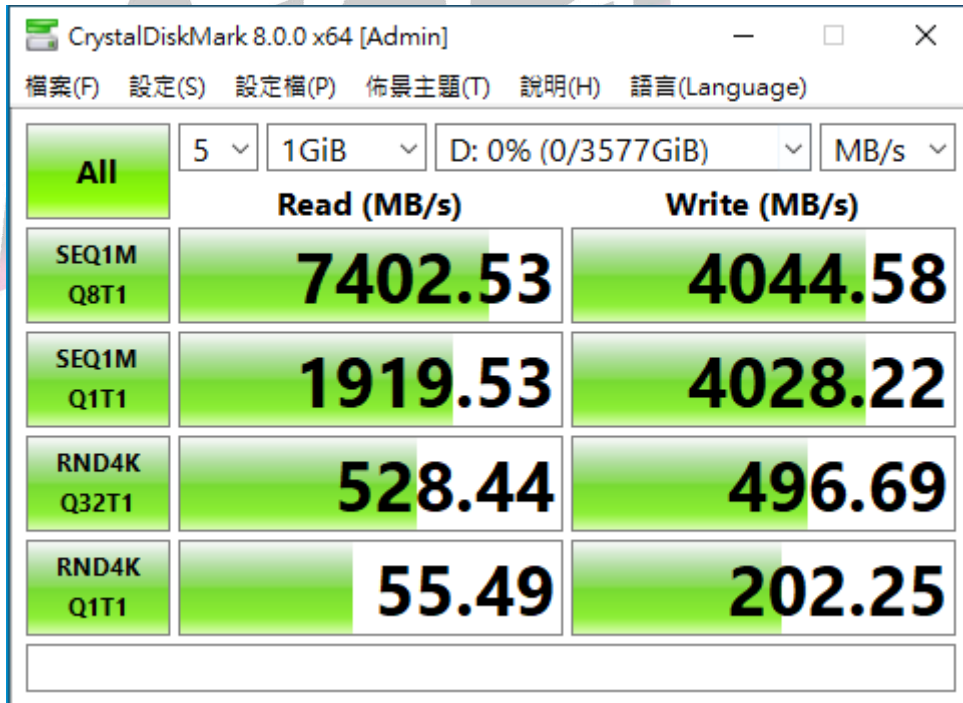
2.5 CrystalDiskMark 8.0.0 x64 performance test

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

2.5.1 SAMSUNG U.2 NVMe SSD/ 4TB performance with 100cm cable as below:



2.5.2 SAMSUNG U.2 NVMe SSD/ 4TB performance with 50cm cable as below:

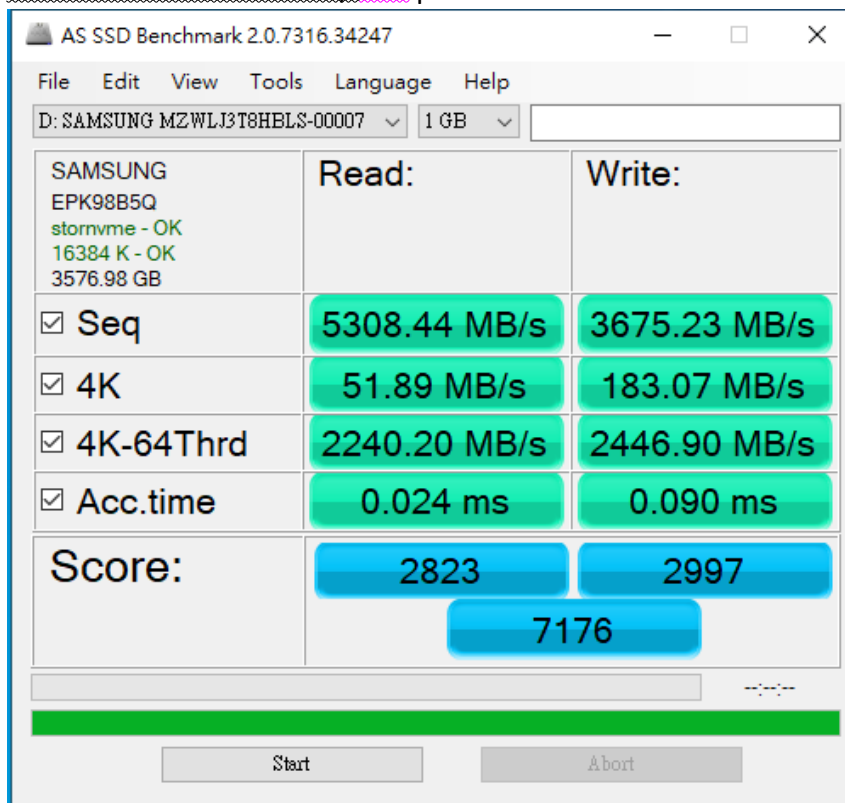


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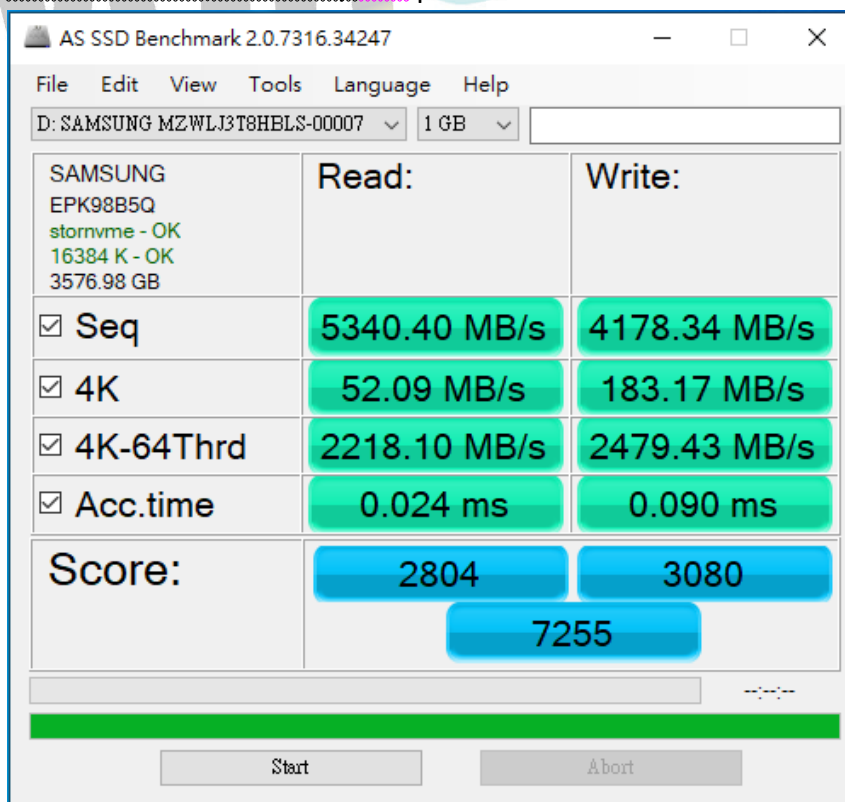
2.6 AS SSD Benchmark 2.0 performance test

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

2.6.1 SAMSUNG U.2 NVMe SSD/ 4TB performance with 100cm cable as below:



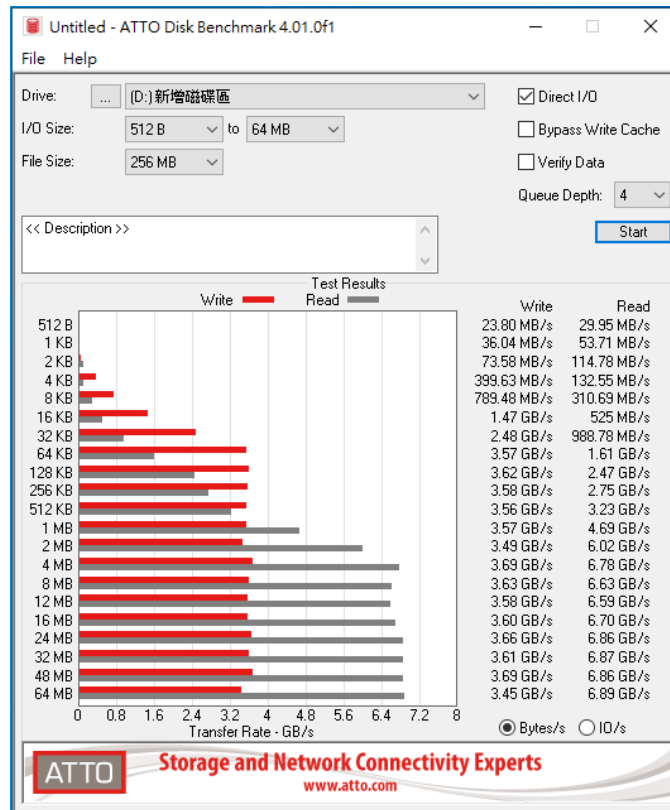
2.6.2 SAMSUNG U.2 NVMe SSD/ 4TB performance with 50cm cable as below:



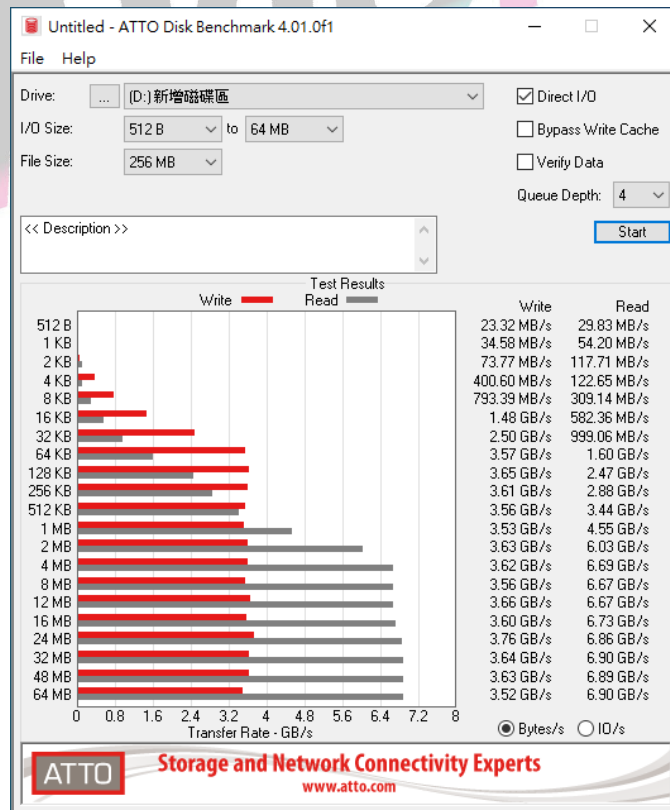
DP8413 Add-in Card

2.7 ATTO Disk Benchmark 4.01 performance test

2.7.1 SAMSUNG U.2 NVMe SSD/ 4TB performance with 100cm cable as below:



2.7.2 SAMSUNG U.2 NVMe SSD/ 4TB performance with 50cm cable as below:



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2.8 AnvilBenchmark_V110_B337

2.8.1 SAMSUNG U.2 NVMe SSD/ 4TB performance with 100cm cable as below:

SSD Benchmark SAMSUNG MZWLJ3T8HBL5-00007 3840GB/EPK98B5Q

Read	Resp. time	MB read	IOPS	MB/s
Seq 4MB	1.0977ms	2,048.0	911.03	3,644.13
4K	0.0746ms	654.6	13,407.02	52.37
4K QD4	0.0798ms	2,446.6	50,105.84	195.73
4K QD16	0.0867ms	9,015.9	184,644.07	721.27
32K	0.0996ms	4,000.0	10,039.22	313.73
128K	0.1367ms	13,731.6	7,315.73	914.47

Write	Resp. time	MB written	IOPS	MB/s
Seq 4MB	0.9766ms	1,024.0	1,024.00	4,096.00
4K	0.0203ms	640.0	49,265.73	192.44
4K QD4	0.0279ms	640.0	143,369.31	560.04
4K QD16	0.0454ms	640.0	353,022.27	1,378.99

Run read: 7,365.68

Run: 18,048.55

Run write: 10,682.87

System Info: Microsoft Windows 10 企業版 64 位元 Build (19045), PRIME X570-PRO/3604, AM4, AMD Ryzen 7 3700X 8-Core Processor, Memory: 32,672 MB, Professional Edition.

Drives: SAMSUNG MZWLJ3T8HBL5-00007 3840, Drive D: 3,577.0/3,576.8GB free (100.0%), NTFS - Cluster size 4096B, Storage driver stornvme, Alignment 16384KB OK, Compression 100% (Incompressible).

2.8.2 SAMSUNG U.2 NVMe SSD/ 4TB performance with 50cm cable as below:

SSD Benchmark SAMSUNG MZWLJ3T8HBL5-00007 3840GB/EPK98B5Q

Read	Resp. time	MB read	IOPS	MB/s
Seq 4MB	1.1289ms	2,048.0	885.81	3,543.25
4K	0.0746ms	654.7	13,407.32	52.37
4K QD4	0.0800ms	2,440.8	49,987.46	195.26
4K QD16	0.0867ms	9,010.7	184,537.34	720.85
32K	0.1010ms	4,000.0	9,905.59	309.55
128K	0.1368ms	13,717.8	7,308.34	913.54

Write	Resp. time	MB written	IOPS	MB/s
Seq 4MB	1.0977ms	1,024.0	911.03	3,644.13
4K	0.0204ms	640.0	48,920.64	191.10
4K QD4	0.0277ms	640.0	144,415.95	564.12
4K QD16	0.0435ms	640.0	367,635.19	1,436.07

Run read: 7,257.25

Run: 17,666.36

Run write: 10,409.11

System Info: Microsoft Windows 10 企業版 64 位元 Build (19045), PRIME X570-PRO/3604, AM4, AMD Ryzen 7 3700X 8-Core Processor, Memory: 32,672 MB, Professional Edition.

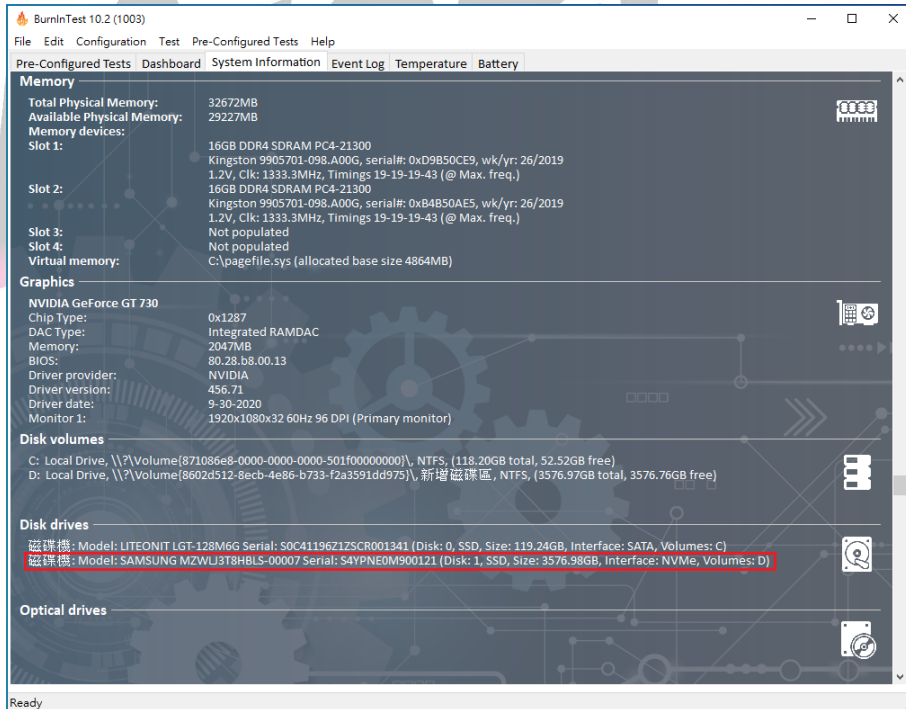
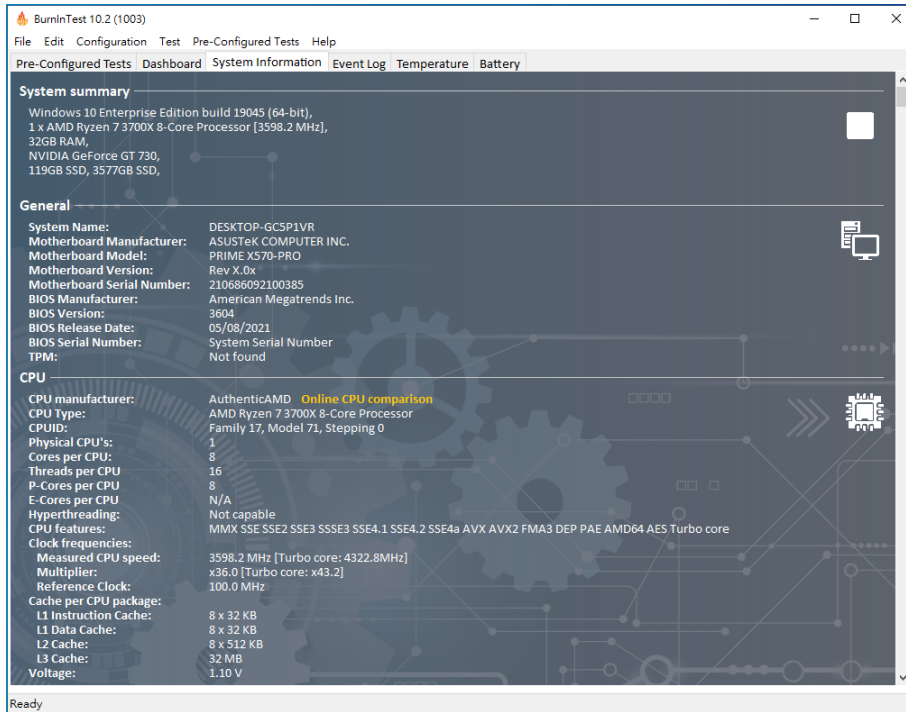
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DP8413 Add-in Card

3. Burn In Tests and Results

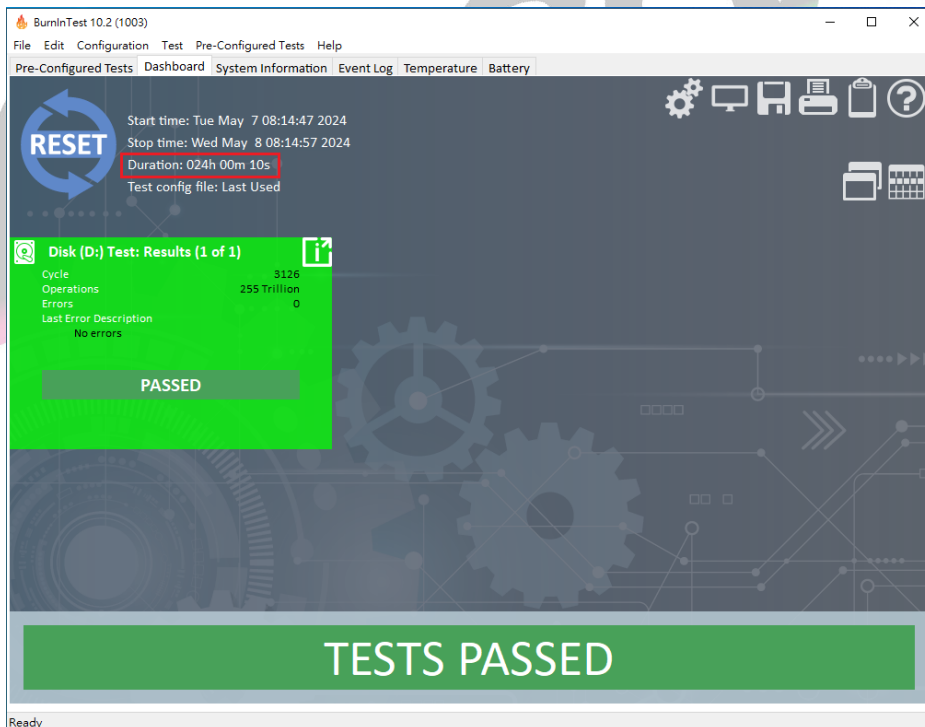
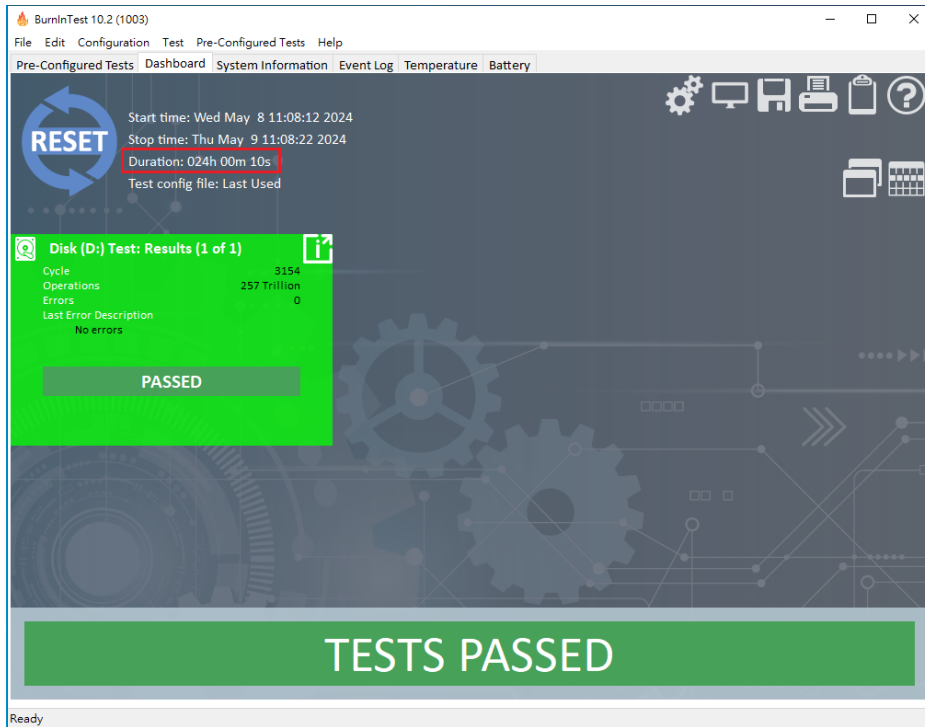
3.1 BurnInTest v8.1 Pro

3.1.1 system information as below:



DP8413 Add-in Card

3.1.3 24-hour Burn-in test PASSED



DP8413 Add-in Card

4. Summary

- 4.1 DP8413 AIC is PCIe x8 Gen 4 with SlimSAS 4i dual port
- 4.2 U.2 NVMe SSD is PCIe 4.0 / 4 Lane Interface, I/O speed, max. to 64Gbps.
- 4.3 DP8413 AIC I/O performance is based on U.2 NVMe SSD.

