



MINERVA

PD893A OCulink(SFF-8612 8i) to M.2/M.3 Dual ports converter

Performance & Burn In Test Rev 1.0

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1. Overview

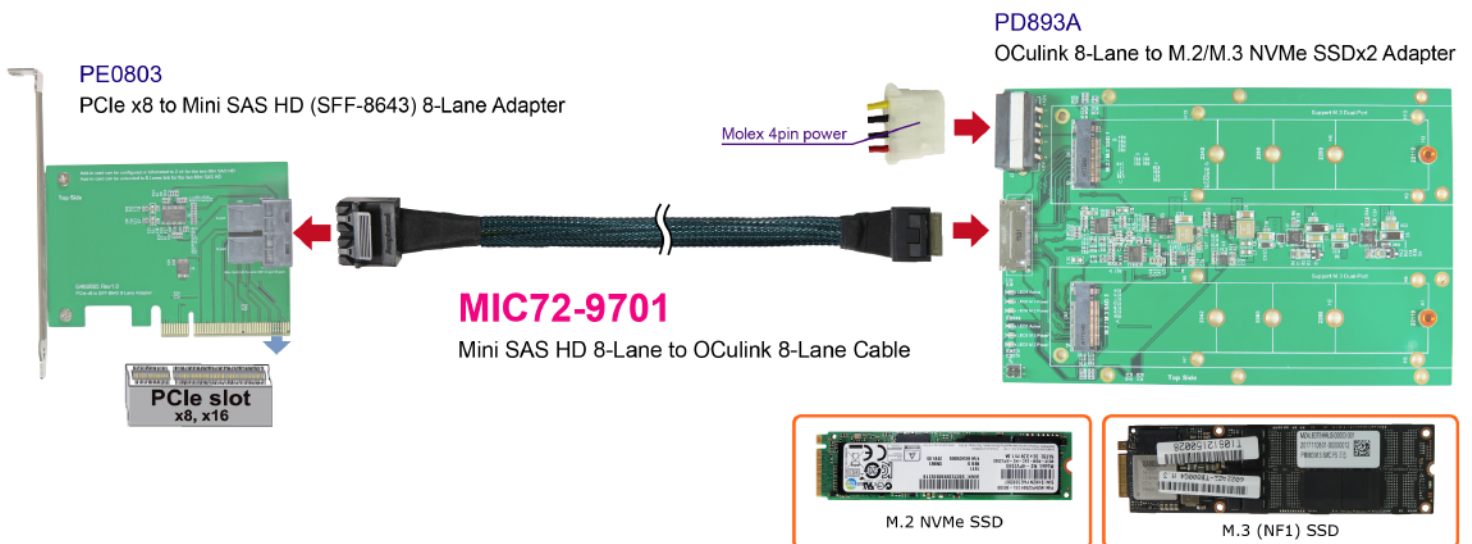
This adapter has built-in Oculink(SFF-8612) 8i connector and M.2 M-key connector dual ports, which can be inserted into M.2 or M.3 NVMe SSD. It is designed for use by supporting PCIe Gen 3 x8, x16 bifurcation AIC and SFF-9402 pinout PCIe Switch RAID Card.

2. Tools and Results of Performance Measurement

2.1 Test Platform

M/B : GIGABYTE **X570 AORUS MASTER**
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: PE0803 PCIe x8 to Mini SAS HD 8x Adapter
Cable: SFF-8643(Mini SAS HD 8x) to SFF-8611(Oculink 8i) Cable
Adapter: PD893A SFF-8612 8i to M.2/M.3 Adapter dual ports
OS : Microsoft **Windows 10 64bit OS**

2.2 Test target: PD893A adapter and M.3 NF1 **4TB** & M.2 **512GB** NVMe SSD



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2.3 Install Hardware

First inserts the M.3 and M.2 SSD into the PD893A riser card M.2 connector, then with copper nuts, and screws to fix SSDs. (Please refer to the Installation Notes). To connect the PD893A adapter to the PCIe to SFF-8643 8x AIC card using the **MIC72-9701 Cable**, and Plugs PE0803 AIC into GIGABYTE **X570 AORUS MASTER**.

2.4 BIOS & Windows 10 OS environment setup

2.4.1 Primary NVMe SSD install Windows 10 OS.

2.4.2 M.3 and M.2 NVMe SSD , formatted to NTFS Mode. Don't install any program.

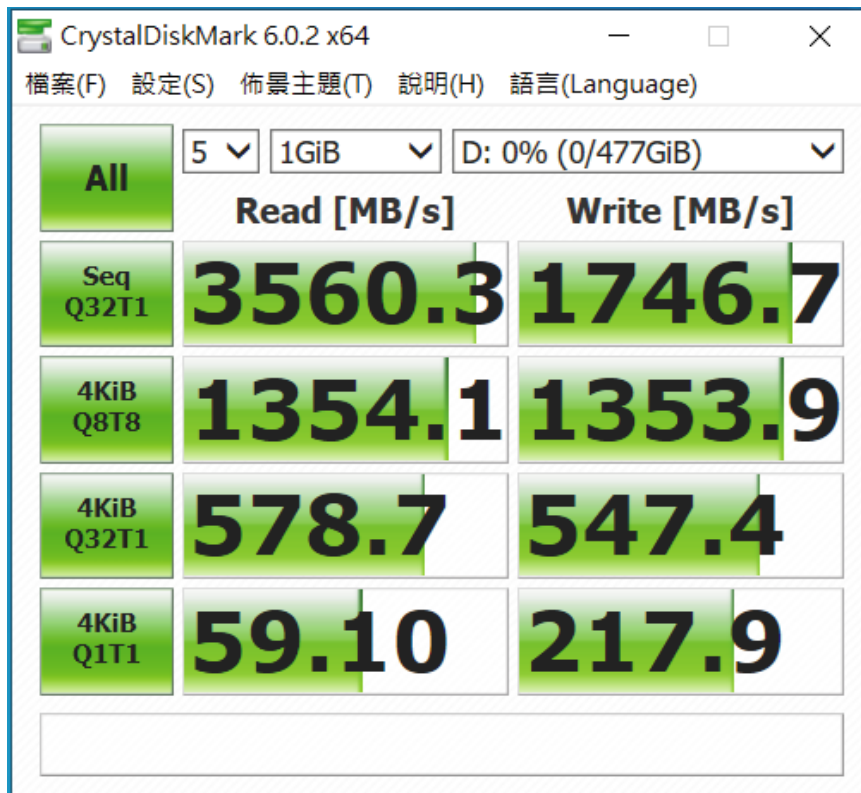


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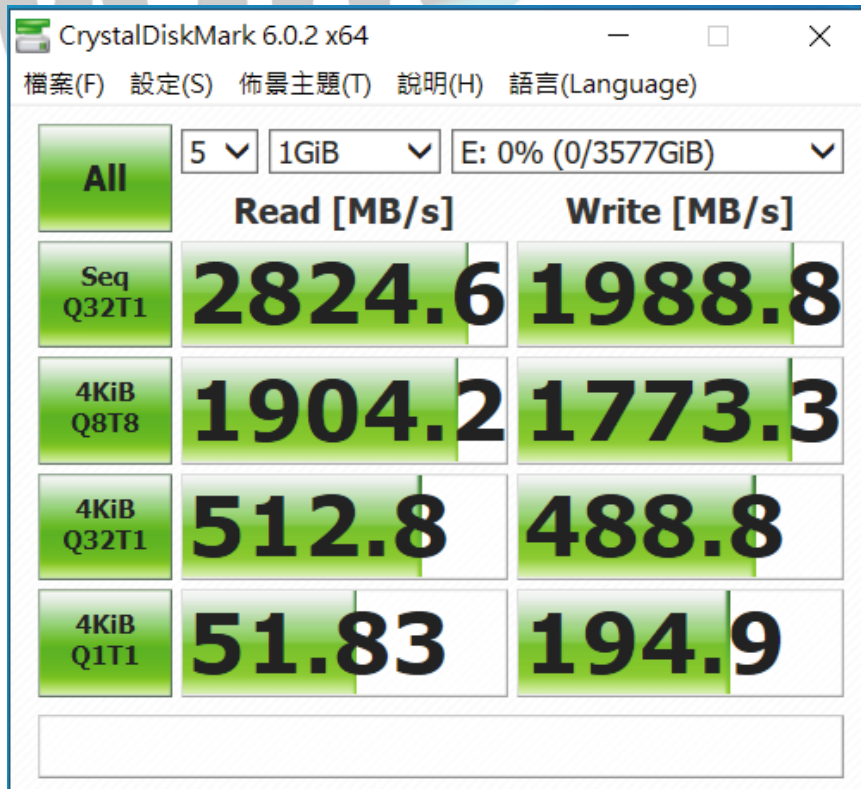
2.5 CrystalDiskMark 6.0.2 x64 performance test

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

2.5.1 **M.2 NVMe Samsung PM961 / 512GB** in **Drive D:** performance as below:



2.5.2 **M.3 NF1 NVMe Samsung PM983/4TB** in **Drive E:** performance as below:

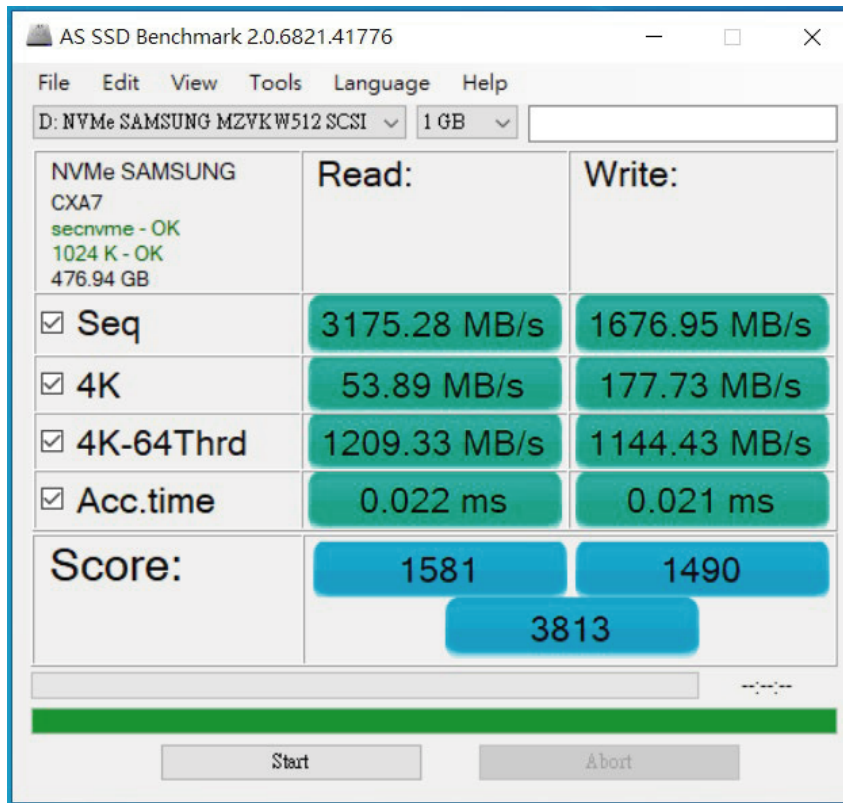


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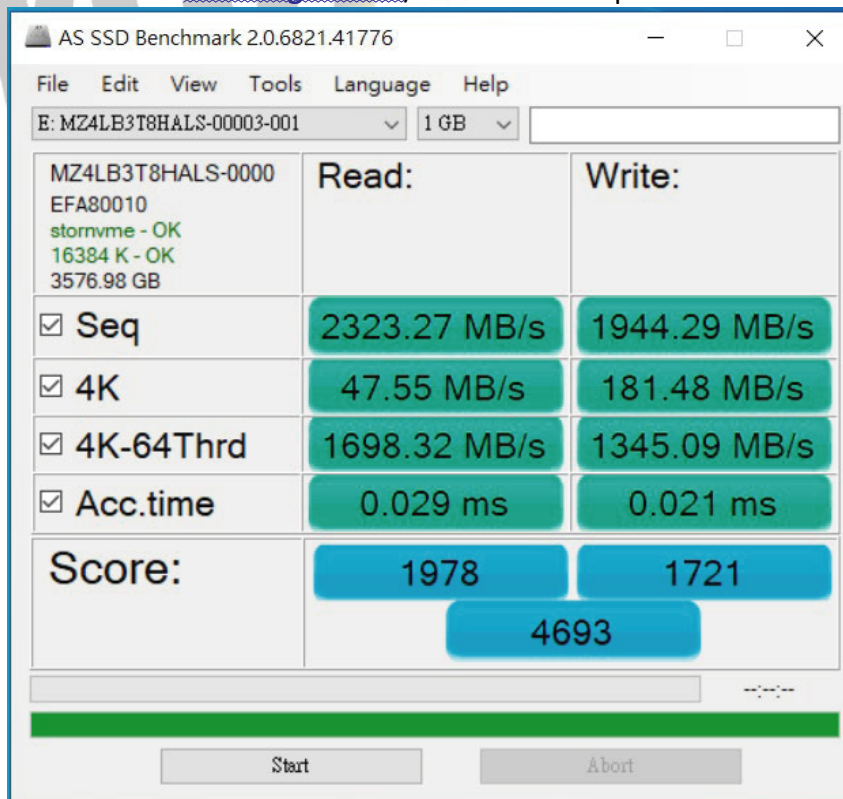
2.6 AS SSD Benchmark 1.9 performance test

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

2.6.1 **M.2 NVMe Samsung PM961 / 512GB** in Drive D: performance as below:



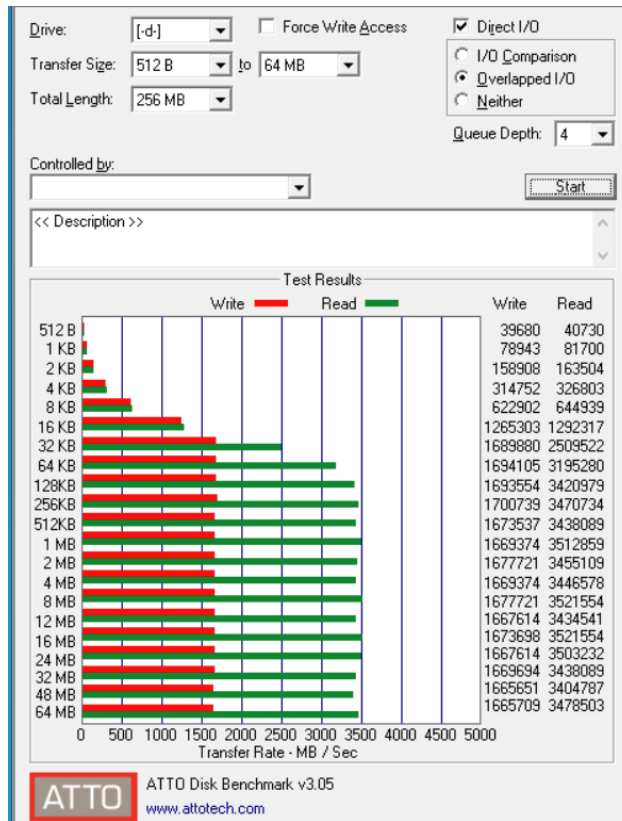
2.6.2 **M.3 NF1 NVMe Samsung PM983/4TB** in Drive E: performance as below:



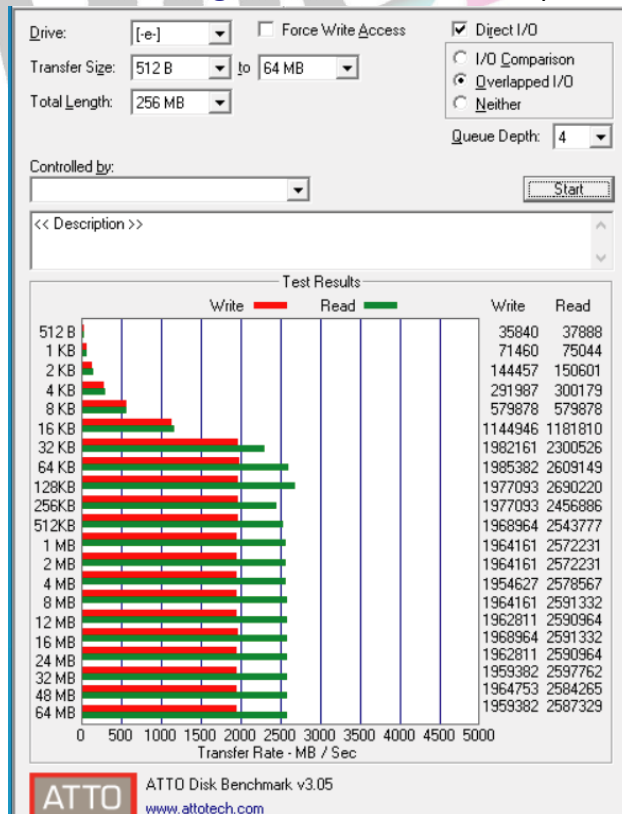
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2.7 ATTO Disk Benchmark 3.05 performance test

2.7.1 M.2 NVMe Samsung PM961 / 512GB in Drive D: performance as below:



2.7.2 M.3 NF1 NVMe Samsung PM983/4TB in Drive E: performance as below:



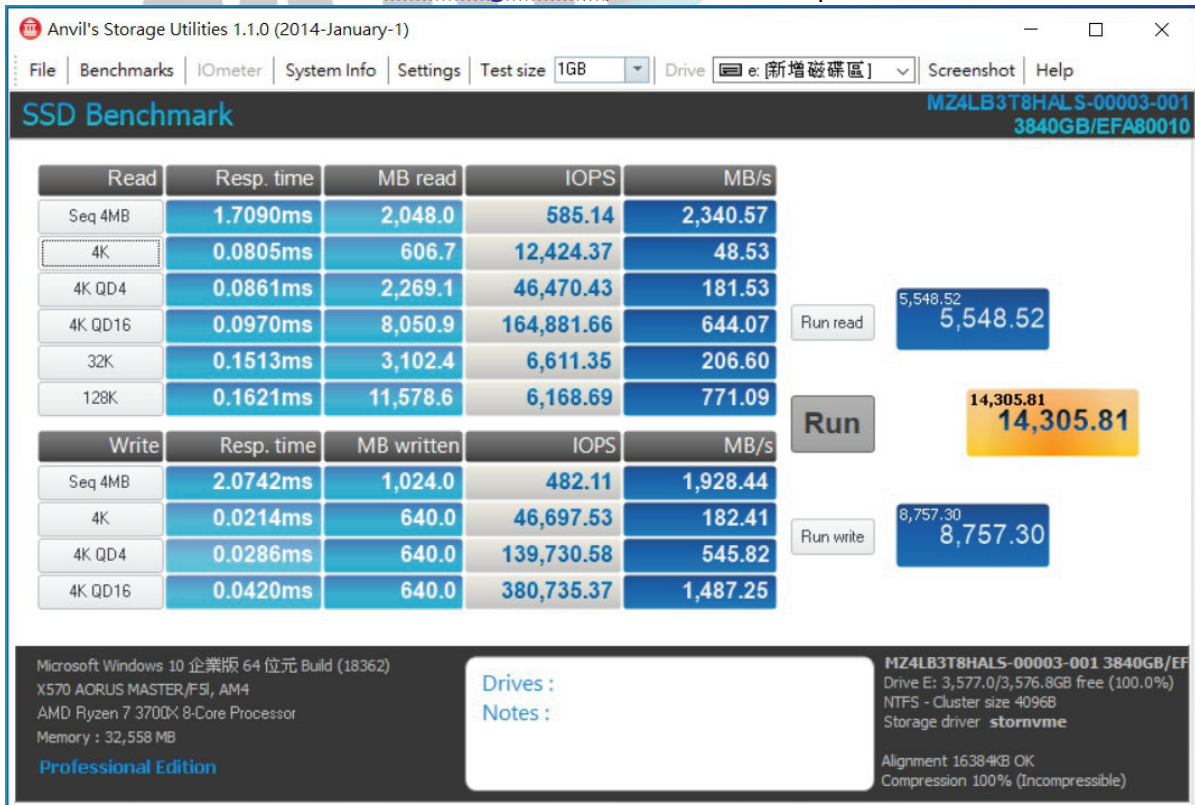
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2.8 AnvilBenchmark_V110_B337

2.8.1 M.2 NVMe Samsung PM961/ 512GB in Drive D: performance as below:



2.8.2 M.3 NF1 NVMe Samsung PM983/4TB in Drive E: performance as below:



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3. Burn In Tests and Results

3.1 BurnInTest v8.1 Pro

3.1.1 system information as below:

System summary
Windows 10 Enterprise Edition build 18362 (64-bit),
1 x AMD Ryzen 7 3700X B-Core Processor [3601.1 MHz],
32GB RAM,
NVIDIA GeForce 210,
477GB HDD, 119GB SSD, 3577GB HDD,

General
System Name: DESKTOP-7FB106L
Motherboard Manufacturer: Gigabyte Technology Co., Ltd.
Motherboard Model: X570 AORUS MASTER
Motherboard Version: x.x
Motherboard Serial Number: Default string
BIOS Manufacturer: American Megatrends Inc.
BIOS Version: F5I
BIOS Release Date: 08/02/2019
BIOS Serial Number: Default string

CPU
CPU manufacturer: AuthenticAMD [Online CPU comparison](#)
CPU Type: AMD Ryzen 7 3700X B-Core Processor
CPUID: Family 17, Model 71, Stepping 0
Physical CPU's: 1
Cores per CPU: 8
Hyperthreading: Not capable
CPU features: MMX SSE SSE2 SSE3 SSSE3 SSE4.1 SSE4.2 SSE4a DEP PAE AMD64 AES Turboc
Clock frequencies:
Measured CPU speed: 3601.1 MHz
Cache per CPU package:
L1 Instruction Cache: 16 x 32 KB
L1 Data Cache: 16 x 32 KB
L2 Cache: 16 x 512 KB
L3 Cache: 32 MB

Memory
Total Physical Memory: 32558MB
Available Physical Memory: 29901MB
Memory devices:
Slot 1: 16GB DDR4 SDRAM PC4-21300
Slot 2: 1.2V, Clk: 1333.3MHz, Timings 19-19-19-43 (@ Max. freq.)
16GB DDR4 SDRAM PC4-21300
Slot 3: 1.2V, Clk: 1333.3MHz, Timings 19-19-19-43 (@ Max. freq.)
Slot 4: Not populated
Virtual memory: C:\pagefile.sys (allocated base size 4864MB)

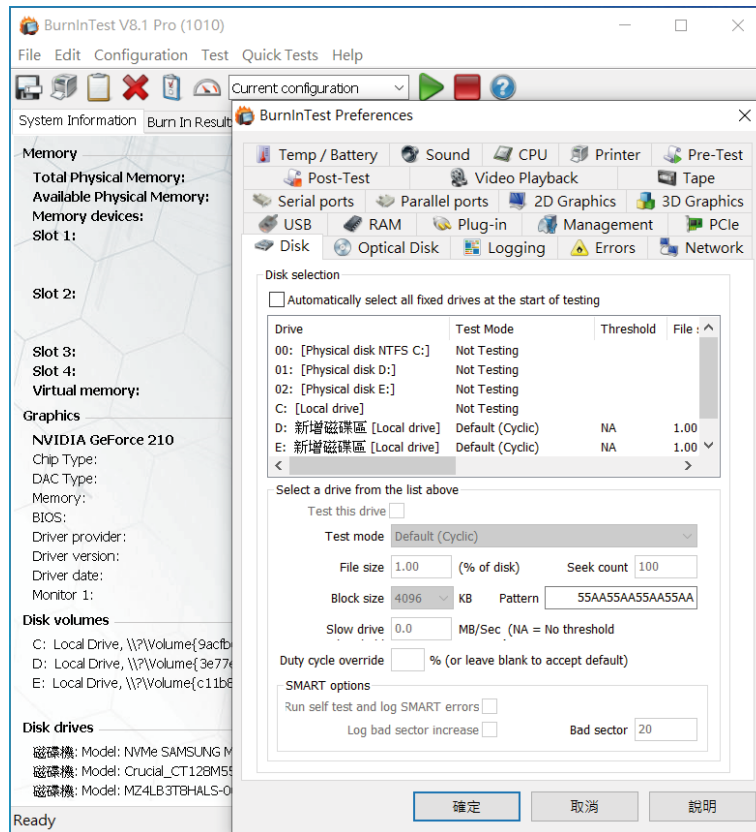
Graphics
NVIDIA GeForce 210
Chip Type: GeForce 210
DAC Type: Integrated RAMDAC
Memory: 512MB
BIOS: Version 70.18.64.0.5
Driver provider: NVIDIA
Driver version: 21.21.13.4201
Driver date: 11-14-2016
Monitor 1: 1920x1080x32 59Hz (Primary monitor)

Disk volumes
C: Local Drive, \\?\Volume{9acfb6ca-0000-0000-009e-b93e00000000}\, NTFS, (117.26GB total, 69.37GB free)
D: Local Drive, \\?\Volume{3e77e454-0000-0000-100000000000}\, 新增磁碟區, NTFS, (476.94GB total, 476.83
E: Local Drive, \\?\Volume{c11b8394-fa3e-42fd-befe-c2bb09d1514f}\, 新增磁碟區, NTFS, (3576.97GB total, 3576.76

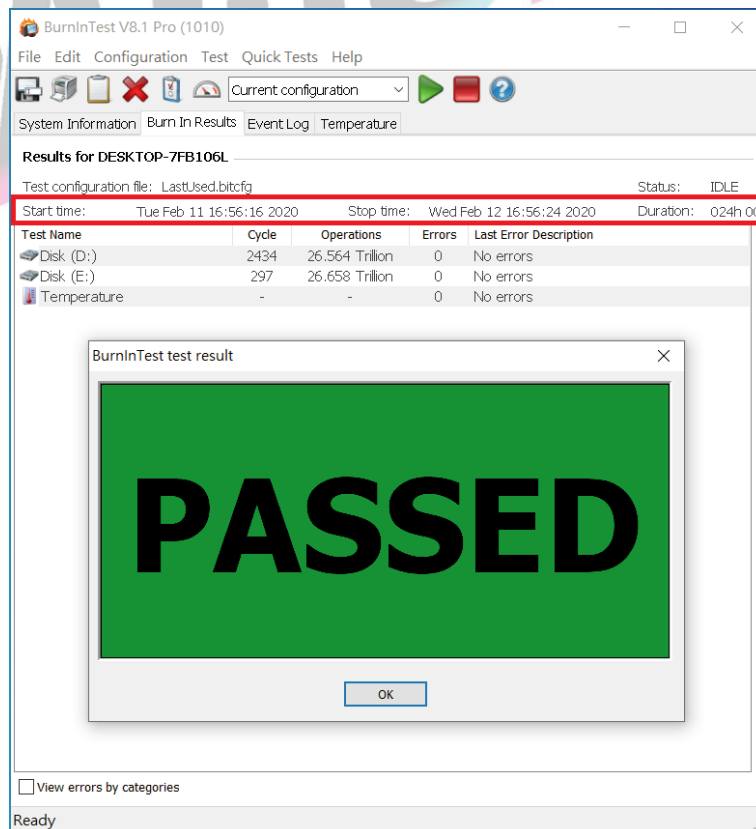
Disk drives
磁碟機: Model: NVMe SAMSUNG MZVKW512 SCSI Disk Device Serial: N/A (Disk: 1, Size: 476.94GB, Volumes: D)
磁碟機: Model: Crucial_CT128M550SSD3 Serial: 14230C32D185 (Disk: 0, Size: 119.24GB, Volumes: C)
磁碟機: Model: MZ4LB3TBHALS-00003-001 Serial: N/A (Disk: 2, Size: 3576.96GB, Volumes: E)

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3.1.2 Disk test mode (10 ways cycle test)



3.1.3 24-hour Burn-in test PASSED



4. Summary

- 4.1 M.3 and M.2 NVMe SSD is PCI-e Gen 3 / 4 Lane Interface, I/O speed, max. to 32Gbps.
- 4.2 PD893A adapter I/O performance is based on NVMe SSD.

