MINERVA

PS0401 Rev1.1   Convert Card

Performance & Burn In Test   Rev. 1. 2

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# PS0401 PCIe or SATA for M.2 SSD converter

1. Overview

PS0401 adapter, providing M.2 M-key connector can be M.2 (PCI-e I/F) SSD converted into PCI-e Gen 3 / 4 Lanes standard interface or M.2 (SATA) SSD converted into SATA III interface.

2. Tools and Results of Performance Measurement

2.1 Test Platform

M/B : GIGABYTE **Z170X UD5 TH**
CPU : Intel **i5-6500,** 3.2GHz/ 6M Cache/ LGA1150
Memory : Kingston **KVR21N15D8/8,** DDR4-2133MHz, 8G(8GB DIMM*2)
ATX Power : FSP RAIDER 550, **550W ATX**, 12V V2.2 Power Supply
Graphic : Z170 Chipsets built-in **HD Graphics 530**
OS : Microsoft **Windows 10 64bit OS**

2.2 Test target: PS0401 adapter with M.2 SSD(PCI-e I/F) or M.2(SATA) SSD
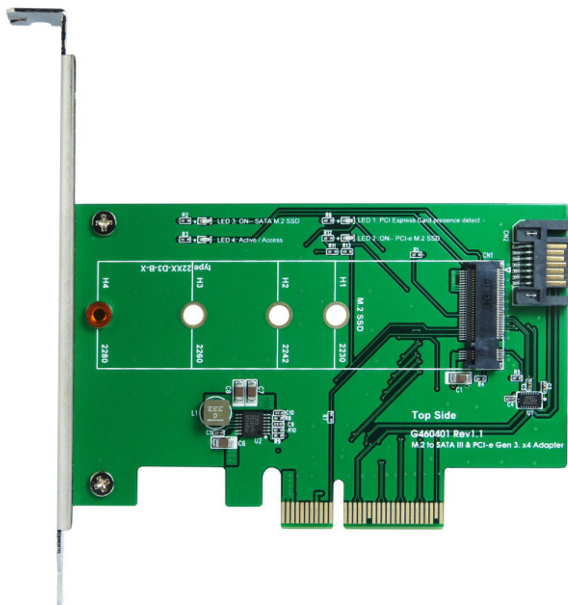
PS0401 Adapter   Samsung CM871a   Samsung SM961

2.3 Install Hardware

Inserts M.2 SSD(SATA) to PS0401 adapter's M.2 connector, and then use the coppers and screws to fix SSDs (please refer to the installation Notes). Then this adapter plug in PCIe slot or through SATA cable to connect to SATA port of GIGABYTE **Z170X UD5 TH**.

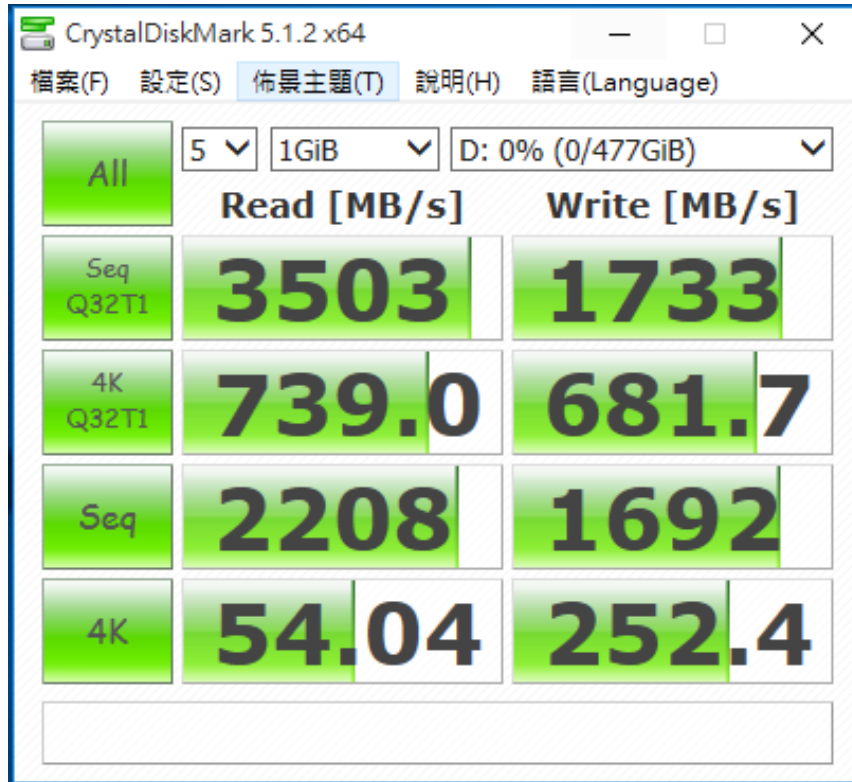### 2.4 BIOS & Windows 10 OS environment setup
2.4.1 install Windows 10 64bit OS.
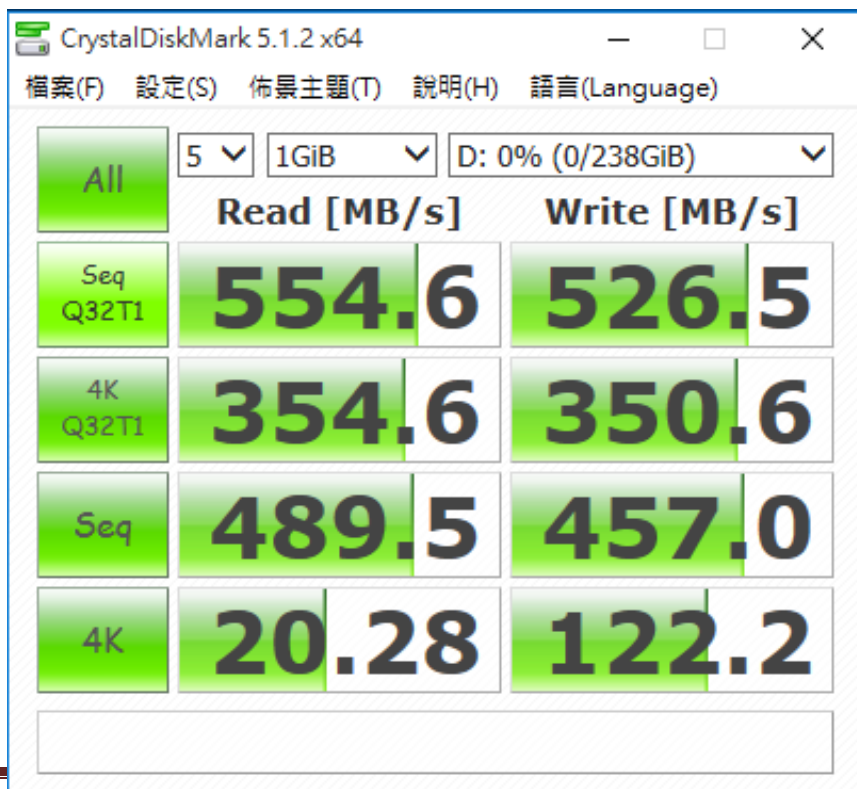
PS0401 PCIe or SATA for M.2 SSD converter

2.5　CrystalDiskMark 5.1.2 x64 performance test

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

2.5.1　Show M.2(NVMe) Samsung SM961/512GB performance as below:

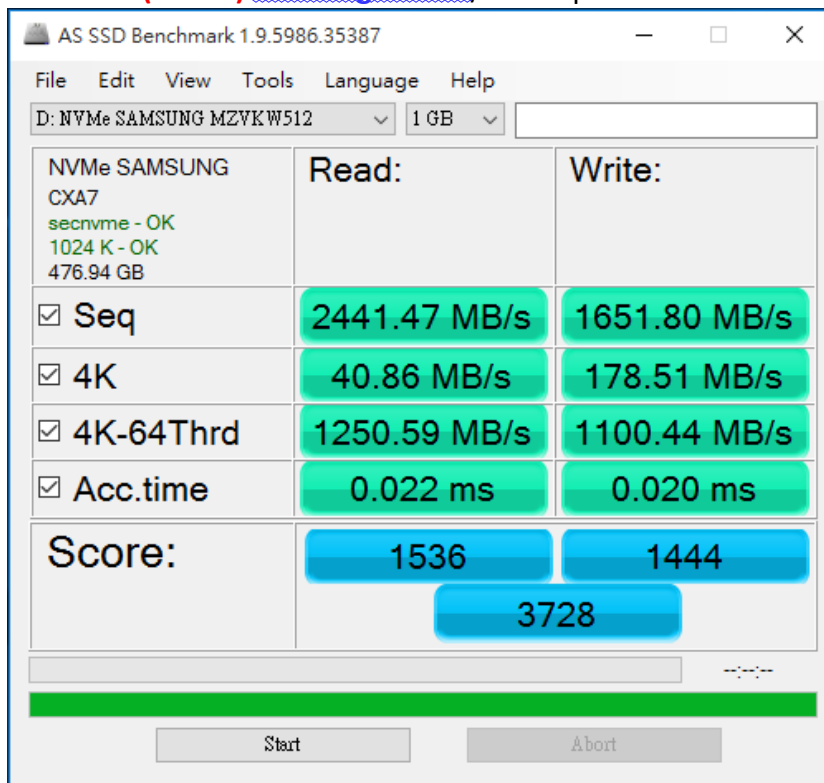2.5.2　Show M.2(SATA) Samsung CM871a/256GB performance as below:
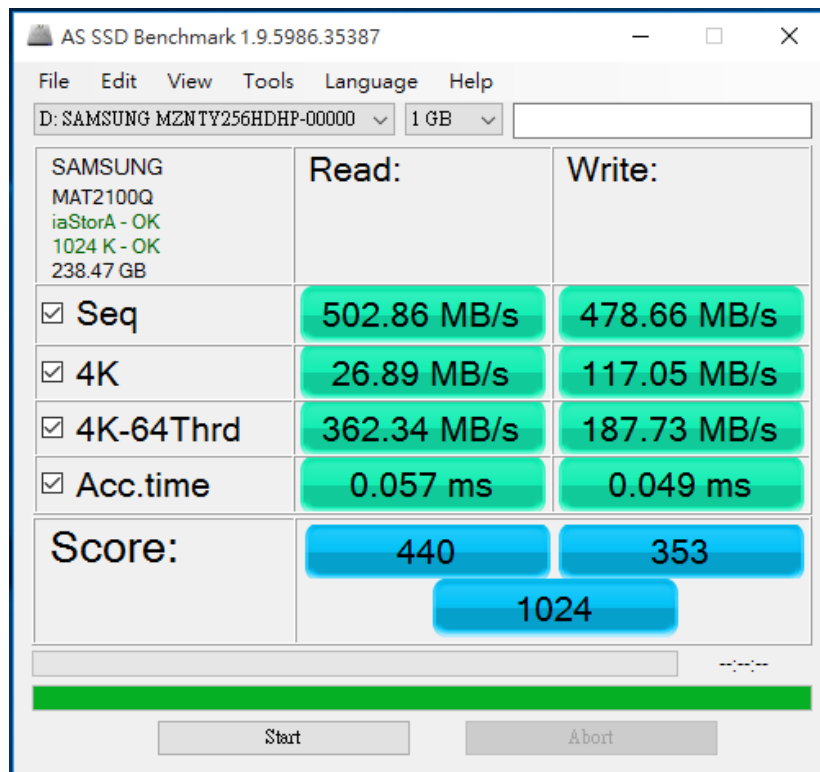
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2.6 AS SSD Benchmark 1.9 performance test

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

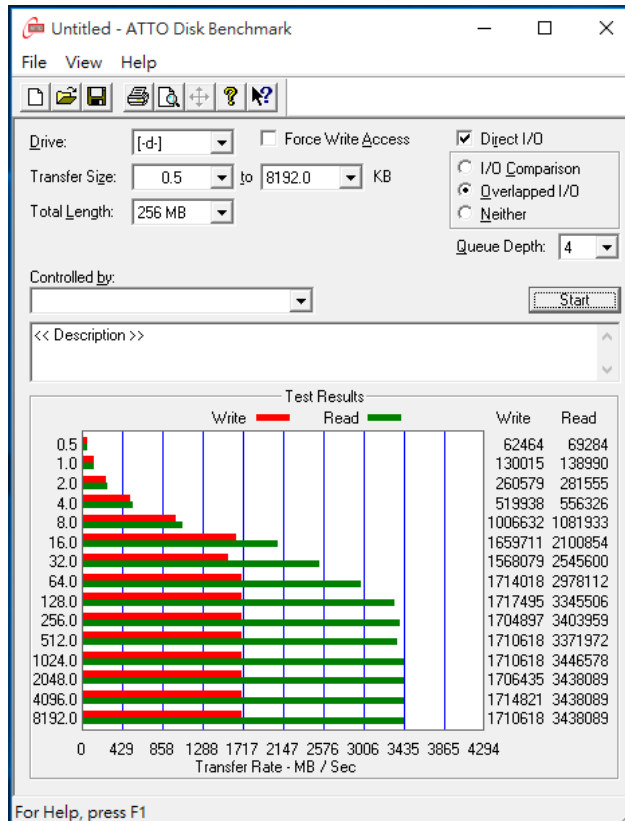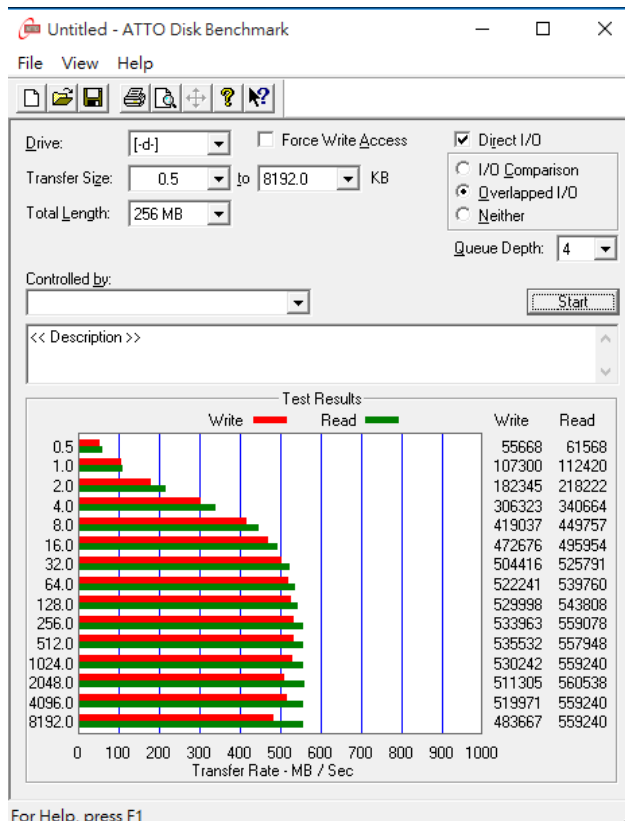2.6.1   Show **M.2(NVMe) Samsung SM961**/512GB performance as below:

AS SSD Benchmark 1.9.5986.35387

File Edit View Tools Language Help

D: NVMe SAMSUNG MZVKW512 ∨ | 1 GB ∨ |

NVMe SAMSUNG
CXA7
secnvme - OK
1024 K - OK
476.94 GB

	Read:	Write:
☑ Seq	2441.47 MB/s	1651.80 MB/s
☑ 4K	40.86 MB/s	178.51 MB/s
☑ 4K-64Thrd	1250.59 MB/s	1100.44 MB/s
☑ Acc.time	0.022 ms	0.020 ms
Score:	1536	1444
	3728	

Start   Abort

2.6.2   Show **M.2(SATA) Samsung CM871a**/256GB performance as below

AS SSD Benchmark 1.9.5986.35387

File Edit View Tools Language Help

D: SAMSUNG MZNTY256HDHP-00000 ∨ | 1 GB ∨ |

SAMSUNG
MAT2100Q
iaStorA - OK
1024 K - OK
238.47 GB

	Read:	Write:
☑ Seq	502.86 MB/s	478.66 MB/s
☑ 4K	26.89 MB/s	117.05 MB/s
☑ 4K-64Thrd	362.34 MB/s	187.73 MB/s
☑ Acc.time	0.057 ms	0.049 ms
Score:	440	353
	1024	

Start   Abort

2.7 ATTO Disk Benchamrk 2.47 performance test

2.7.1 Show **M.2(NVMe) Samsung SM961**/512GB performance as below:

2.7.2 Show **M.2(SATA) Samsung CM871a**/256GB performance as below:

2.8 AnvilBenchmark_V110_B337

    2.8.1 Show **M.2(NVMe) Samsung SM961**/512GB performance as below:

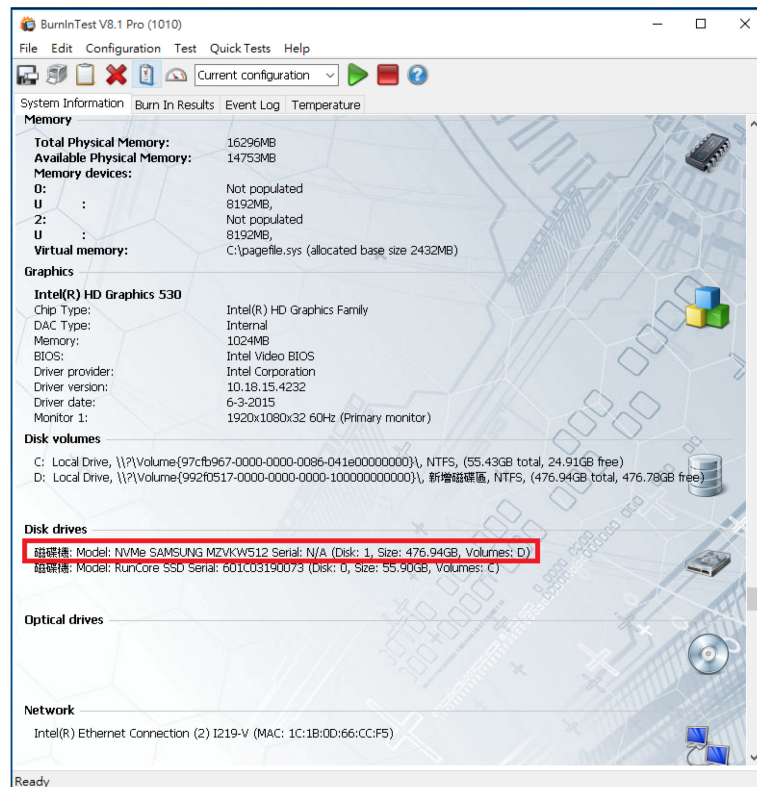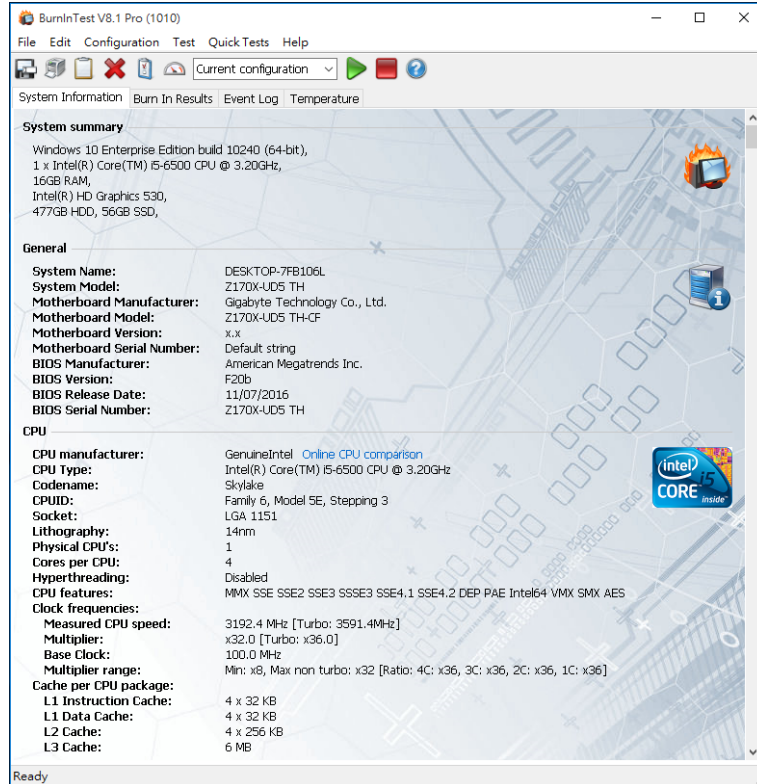2.8.2 Show **M.2(SATA) Samsung CM871a**/256GB performance as below:

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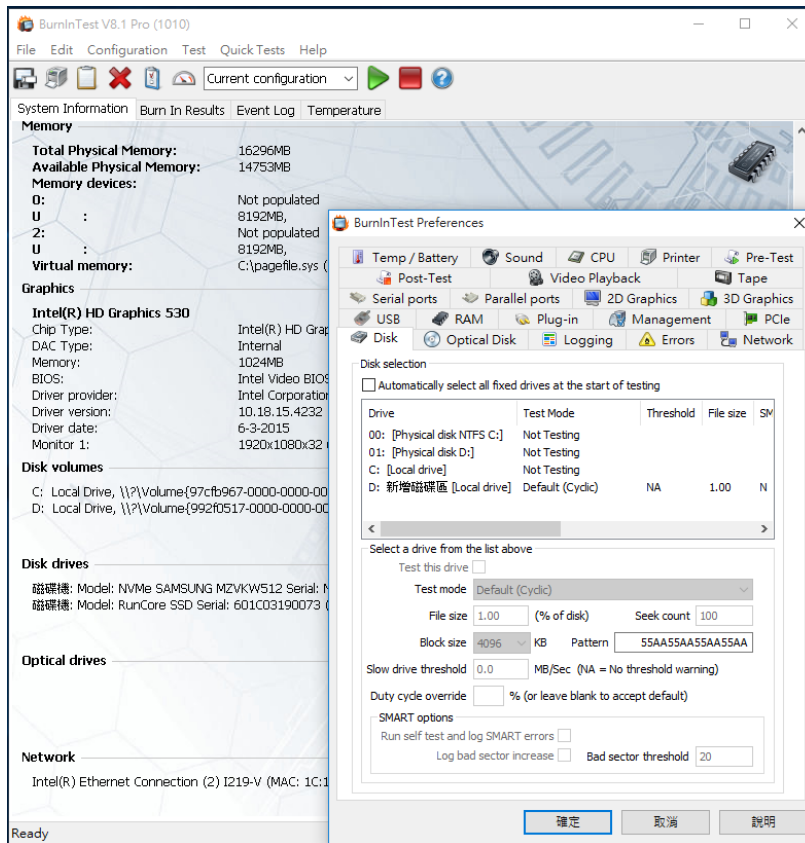## 3. Burn In Tests and Results

3.1 BurnInTest v8.1 Pro

Show **M.2(NVMe) Samsung SM961**/512GB
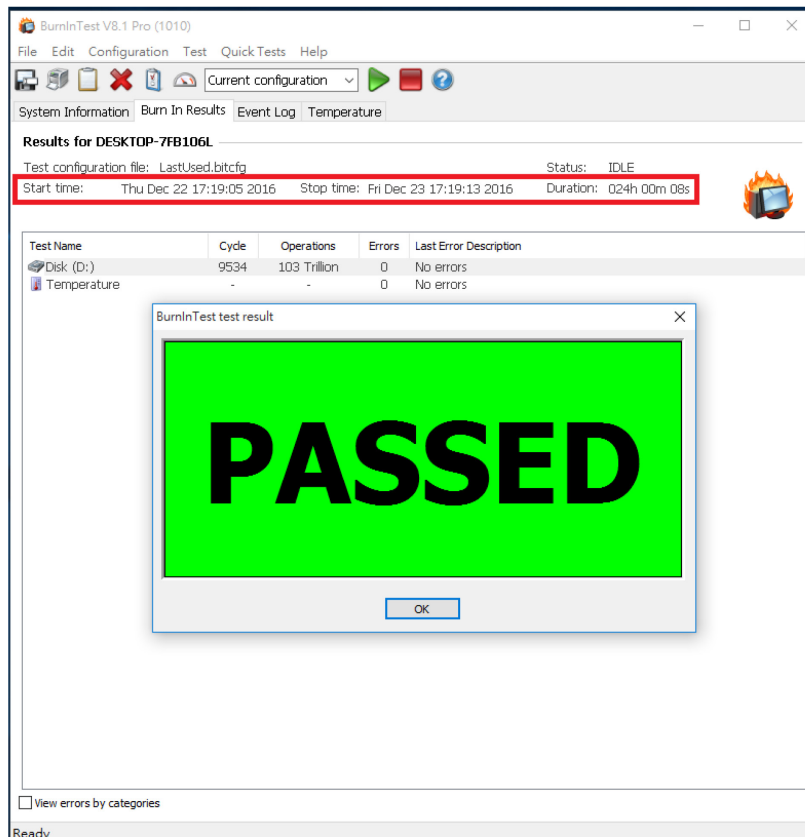
3.1.1 **system information** as below:

3.1.2 show Disk test mode(10 ways cycle test)

3.1.3 show 24-hour Burn-in test PASSED

Show **M.2(SATA)** Samsung CM871a/256GB

3.2.1   **system information** as below:
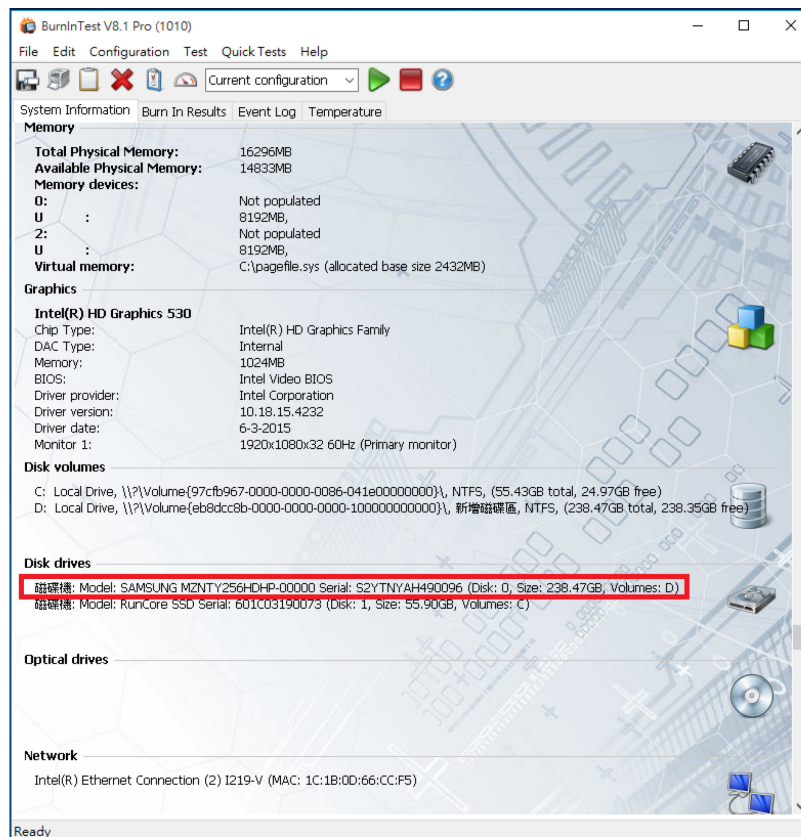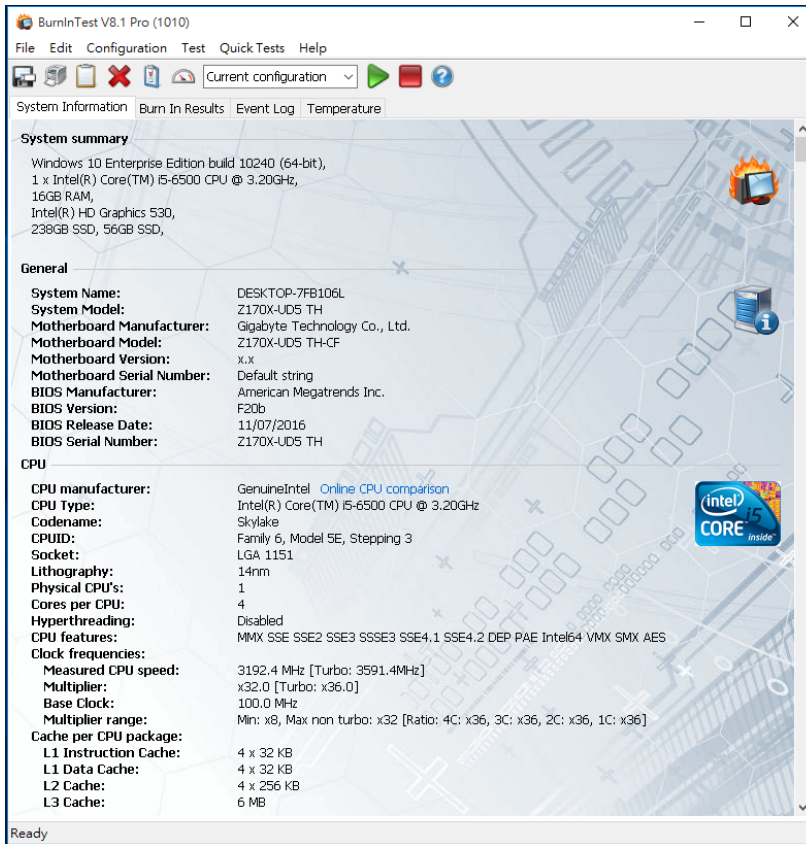
3.2.2 show Disk test mode(10 ways cycle test)
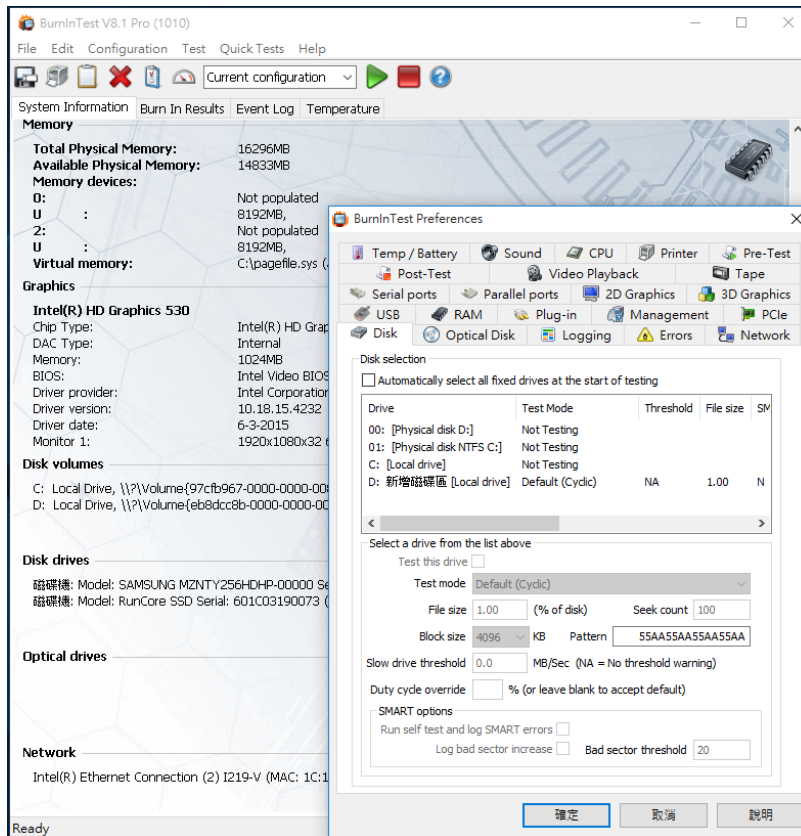
3.2.3 show 24-hour Burn-in test PASSED
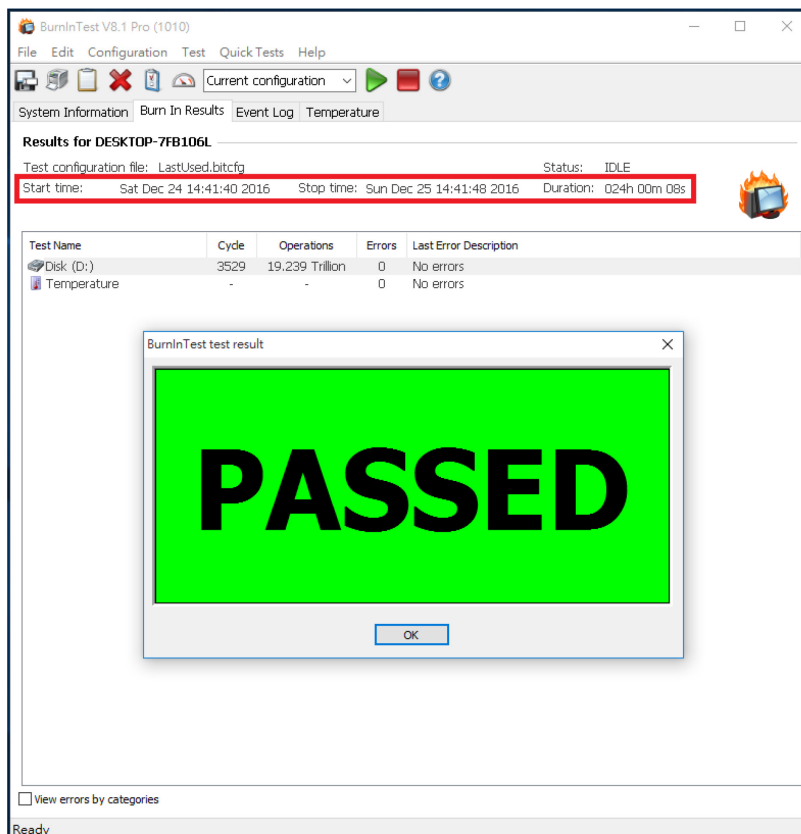
4. Summary

4.1 M.2 NVMe SSD is PCIe Gen3 Interface, I/O speed, max. to 4GB/s.

4.2 M.2 SSD is SATA III Interface, I/O speed, max. to 600MB/s.

4.3 PS0401 adapter I/O performance is based on M.2 NVMeSSD o M.2 SATA SSD.