



MINERVA

AS403A / Rev1.0 Converter Card

Performance & Burn In Test Rev. 1.0

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1. Overview

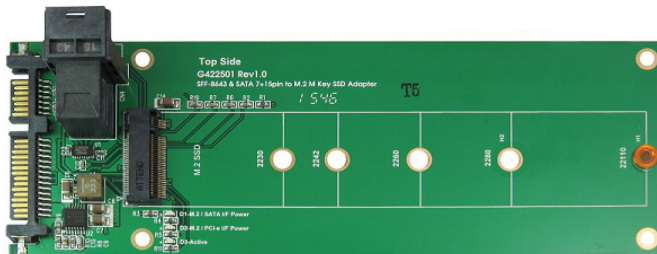
AS403A adapter, built-in mini SAS HD(SFF-8643) connector, SATA 7+15pin connector, provide a port **M.2 M-key** connector. First M.2 (PCI-e) SSD inserts M.2 M-key connector, use Mini SAS HD cable, connected to the PCI-e to Mini SAS HD(SFF-8643) adapter, then M.2 (PCI-e) SSD can be work. Also inserts M.2 (SATA) SSD into M.2 B-key connector, use SATA cable, connect to the host, and then M.2 (SATA) SSD can be work.

2. Tools and Results of Performance Measurement

2.1 Test Platform

M/B : ASRock **Z97 Extreme 6**
CPU : Intel **i5-4426**, 3.2GHz/ 6M Cache/ LGA1150
Memory : Kingston **KVR16N1S8/4**, DDR3-1600MHz, 8G(4GB DIMM*2)
ATX Power : FSP RAIDER 550, **550W ATX**, 12V V2.2 Power Supply
Graphic : Z97 Chipsets built-in **HD Graphics 4600**
OS : Microsoft **Windows 8.1 64bit OS**

2.2 Test target: AS403A adapter and M.2(PCI-e)SSD and M.2(SATA) SSD



AS403A Adapter



SM951 M.2 SSD
PCI-e I/F



Lite-On M.2 SSD
SATA I/F

2.3 Install Hardware

Insert M.2 (PCIe Interface)SSD into AS403A converter's M.2 connector, and then with coppers, and screws to fix SSDs. (Please refer to the Installation Notes). Connect AS403A converter to PE0404 adapter(PCI-e to Mini SAS HD SFF-86437), Plug PE0404 into **PCI-e slot of ASRock Z97 Extreme 6**. Or Insert M.2 (SATA Interface) SSD, then connect AS403A to **SATA port of ASRock Z97 Extreme 6**.

2.4 BIOS & Windows 8.1 OS environment setup

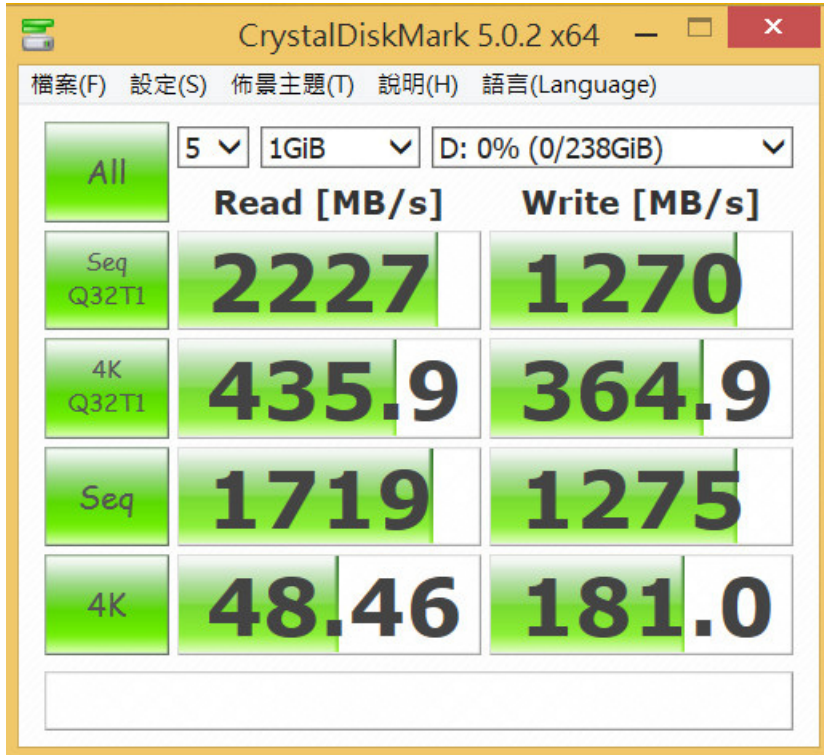
2.4.1 In Windows 8.1, formatted SSD to NTFS Mode. Don't install any program.

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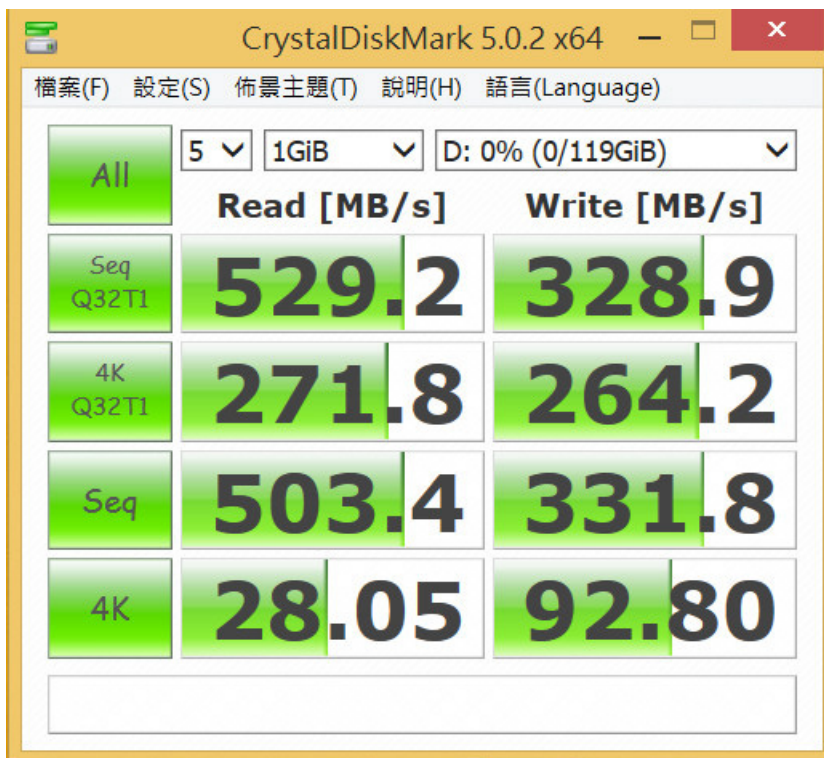
2.5 CrystalDiskMark 3.0.1 x64 performance test

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

2.5.1 Used Samsung [SM951 256GB AHCI MZHPV256HDGL](#) performance as below:



2.5.2 Used LITE-ON 128GB([LGT-128M6G](#))performance as below:

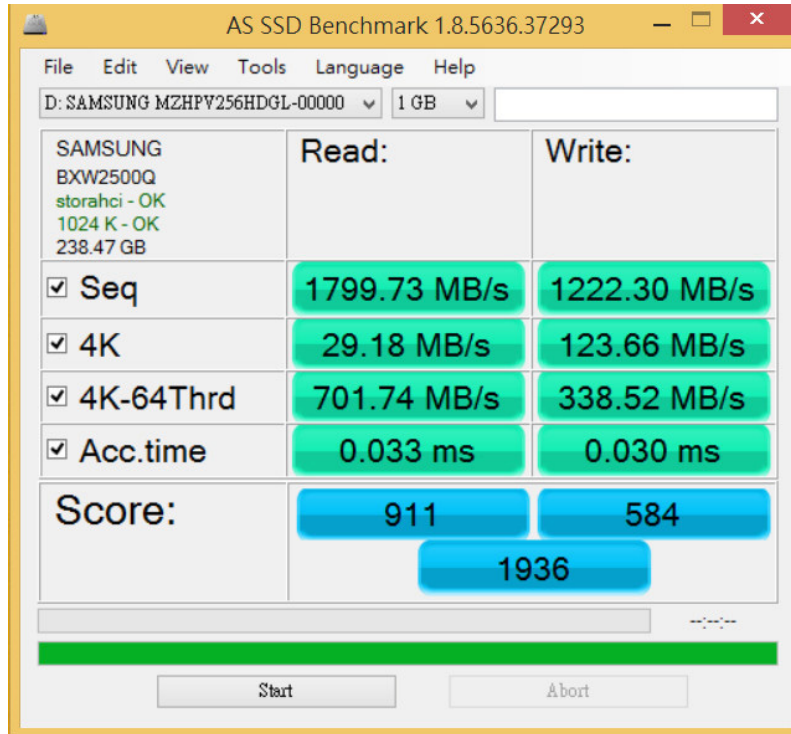


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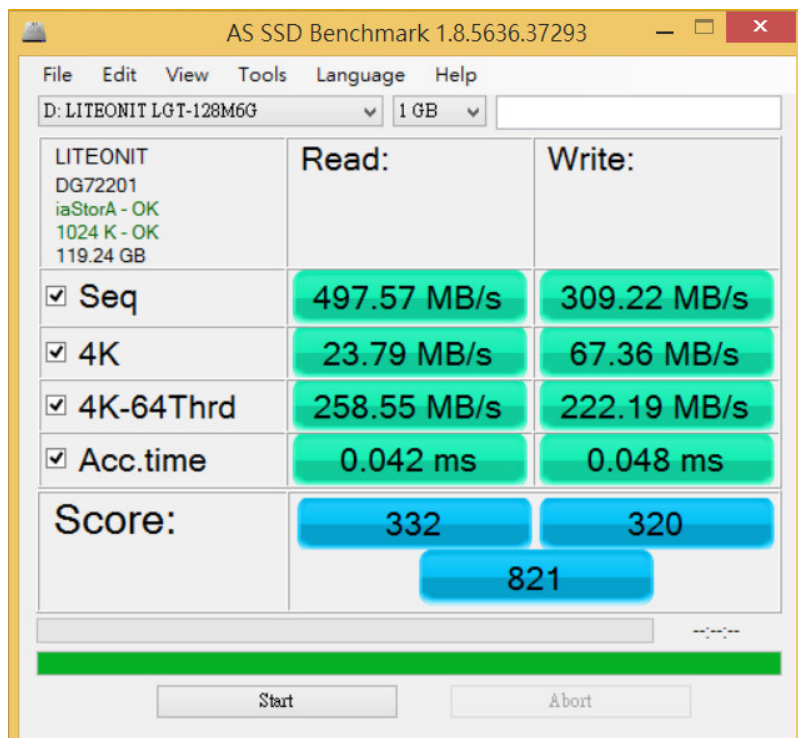
2.6 AS SSD Benchmark 1.8 performance test

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

2.6.1 Used Samsung [SM951 256GB AHCI MZHPV256HDGL](#) performance as below:



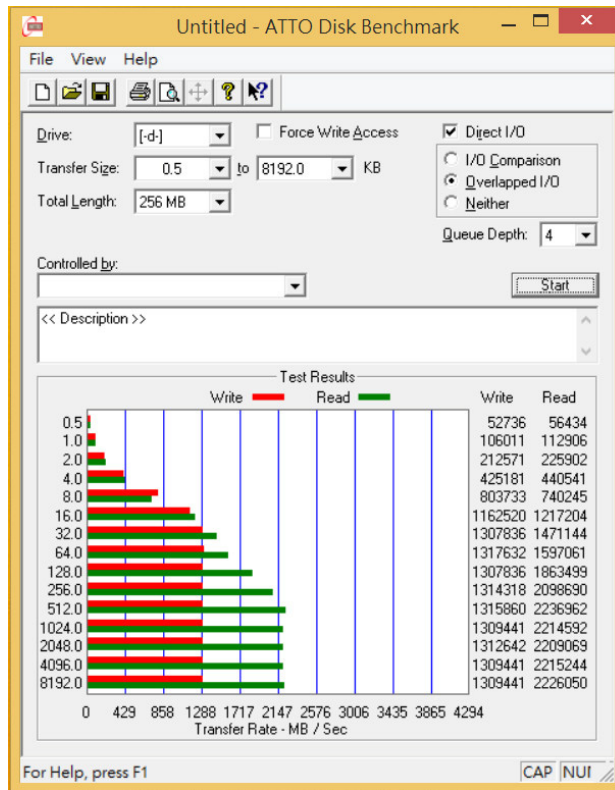
2.6.2 Used LITE-ON 128GB([LGT-128M6G](#)) performance as below:



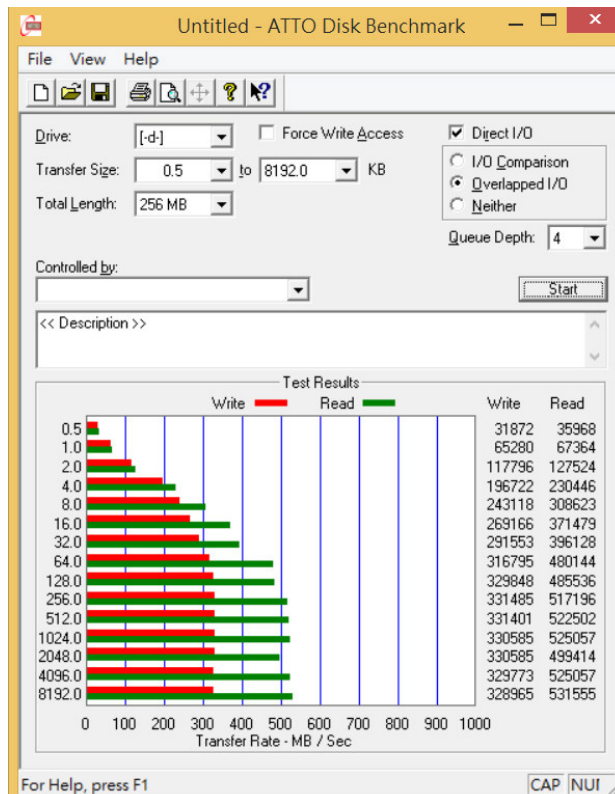
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2.7 ATTO Disk Benchmark 2.47 performance test

2.7.1 Used [SM951 256GB AHCI MZHPV256HDGL](#) performance as below:



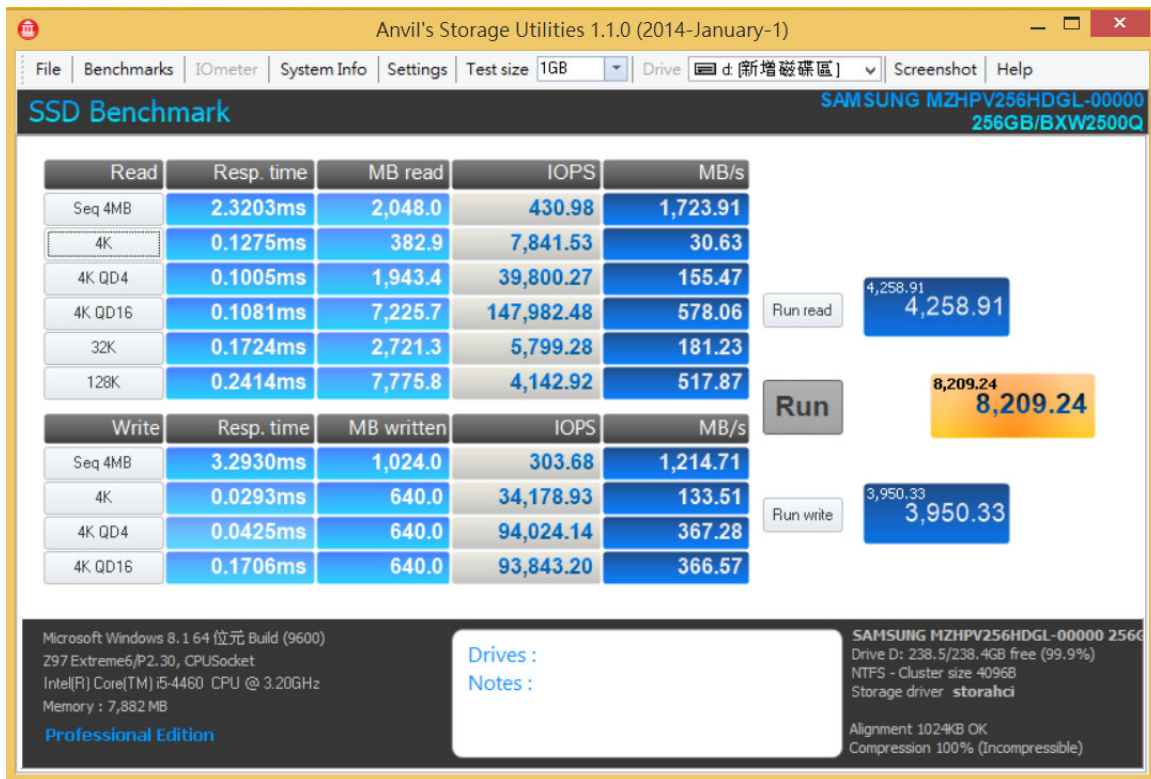
2.7.2 Used [LITE-ON 128GB\(LGT-128M6G\)](#) performance as below:



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2.8 AnvilBenchmark_V110_B337

2.8.1 Used Samsung [SM951 256GB AHCI MZHPV256HDGL](#) performance as below:



2.8.2 Used LITE-ON 128GB([LGT-128M6G](#)) performance as below:



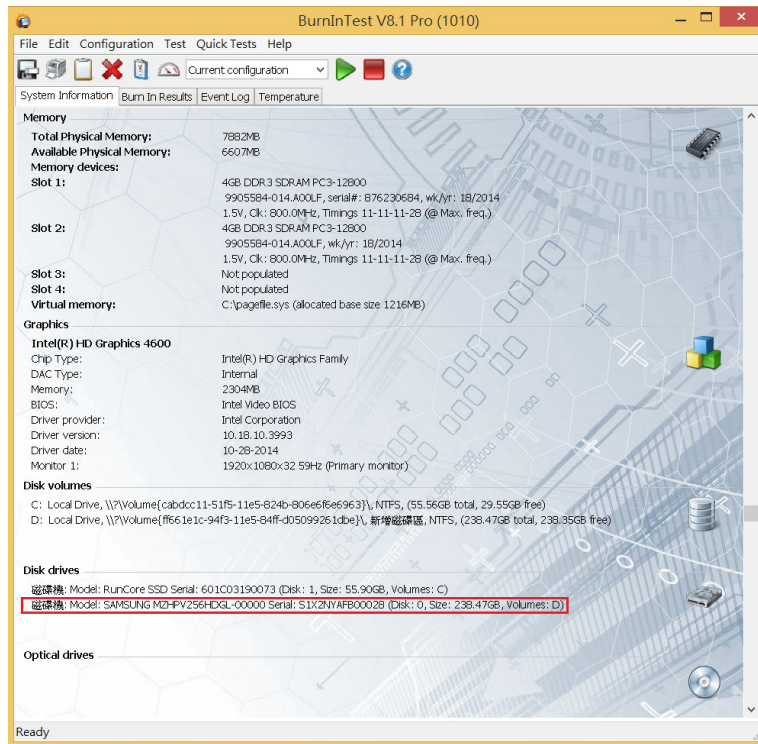
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3. Burn In Tests and Results

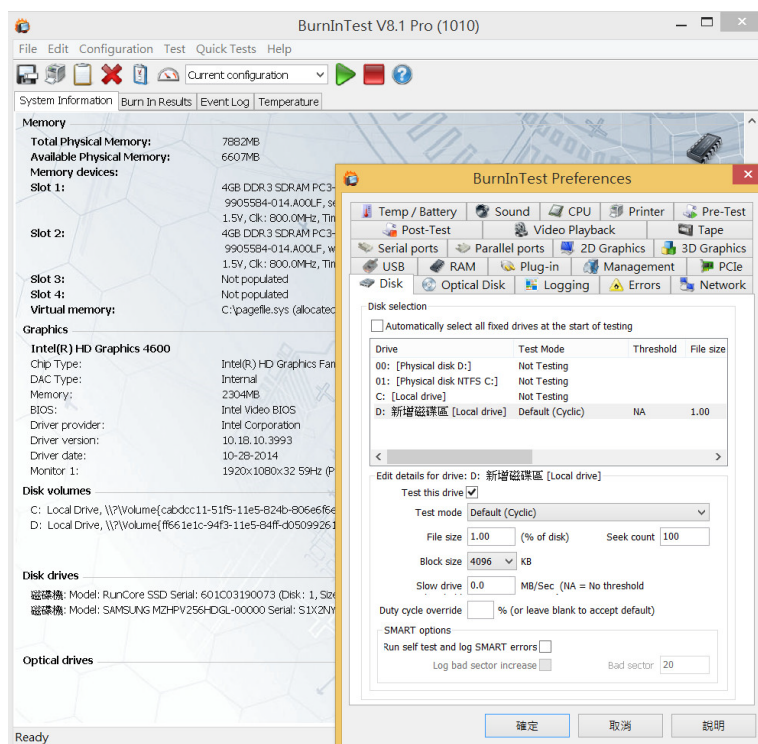
3.1 BurnInTest v8.1 Pro

Used in Samsung [SM951 256GB AHCI MZHPV256HDGL](#)

3.1.1 system information as below:

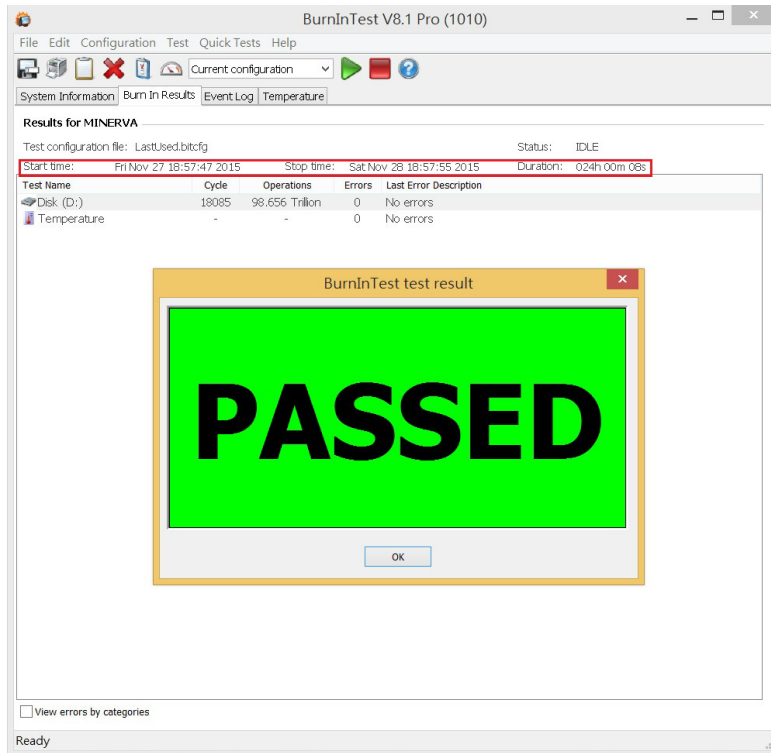


3.1.2 show Disk test mode(10 ways cycle test)



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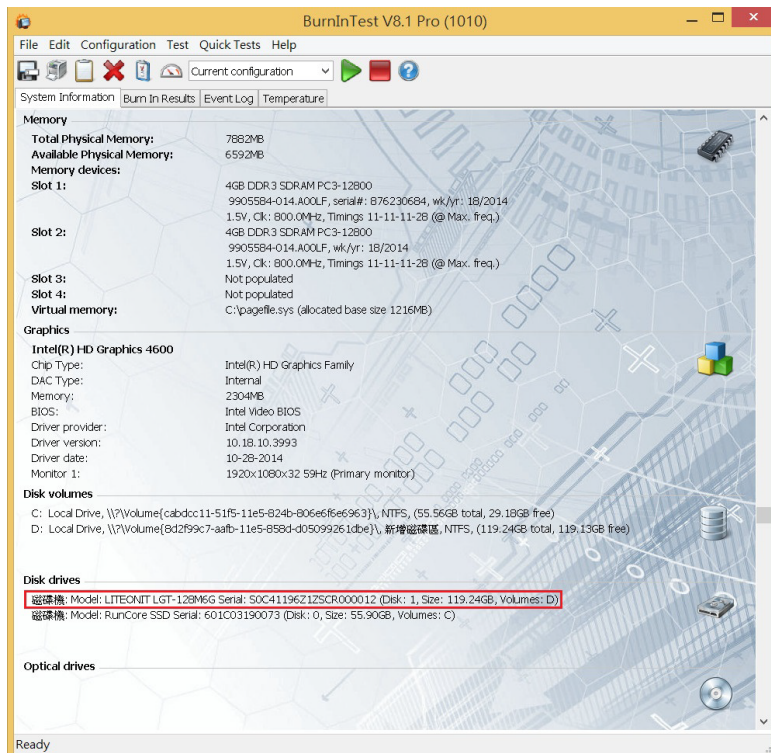
3.1.3 show 24-hour Burn-in test **PASSED**



3.2 BurnInTest v8.1 Pro

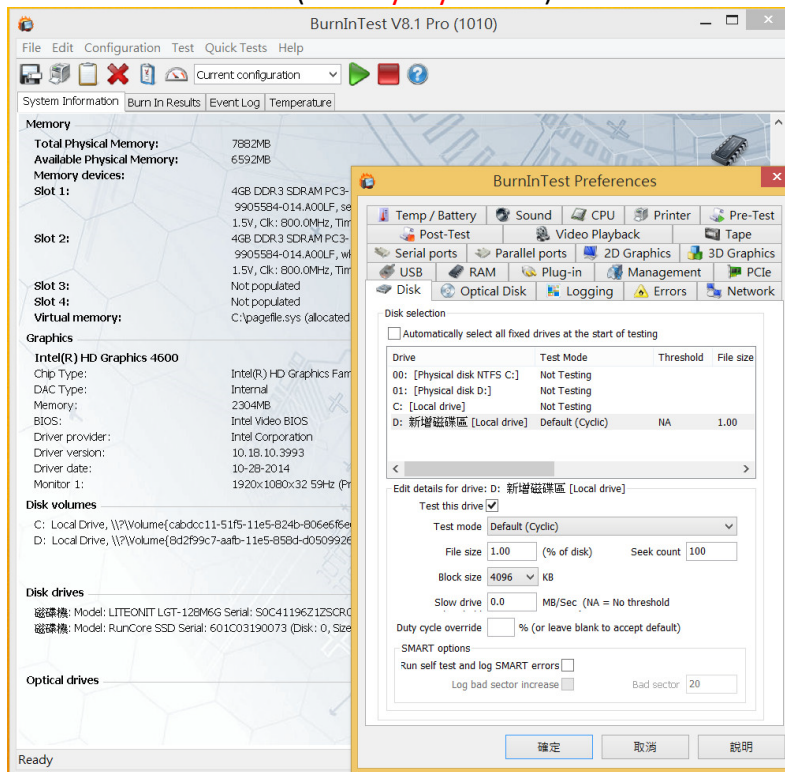
Used in LITE-ON 128GB(LGT-128M6G)

3.2.1 system information as below:

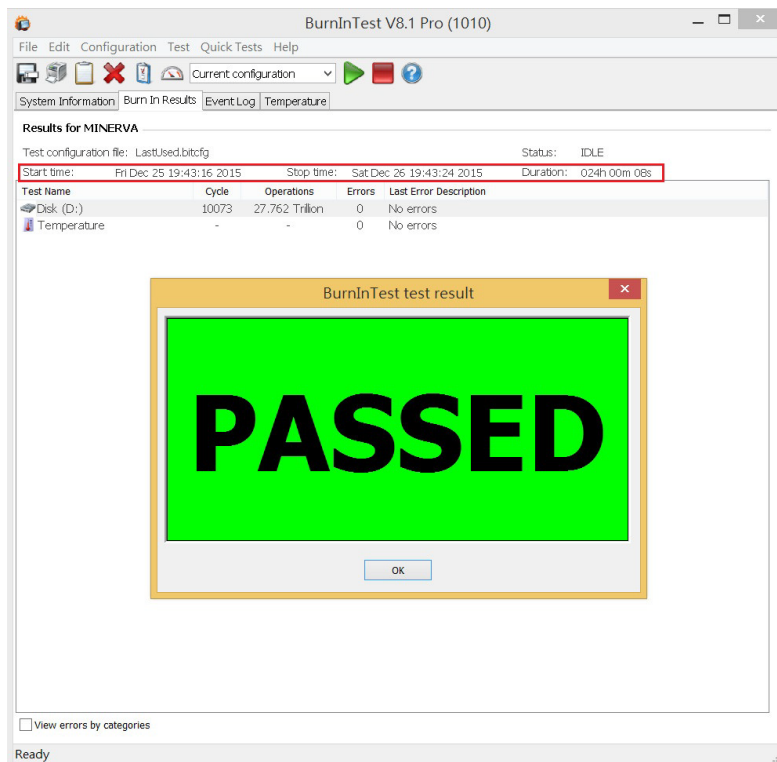


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3.2.2 show Disk test mode(10 ways cycle test)



3.3.3 show 24-hour Burn-in test PASSED



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4. Summary

- 4.1 M.2(PCI-e I/F) SSD is PCI-e Gen 3 / 4 Lane Interface, I/O speed, max. to 3,200MB/s.
- 4.2 M.2(SATA I/F) SSD is SATA III Interface, I/O speed, max. to 600MB/s.
- 4.3 AS403A adapter I/O performance is based on M.2 NGFF SSD.