



MINERVA

AU404A / Rev1.1 Converter Card

Performance & Burn In Test Rev. 2.0

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AU404A/Rev1.1 Converter Card

1. Overview

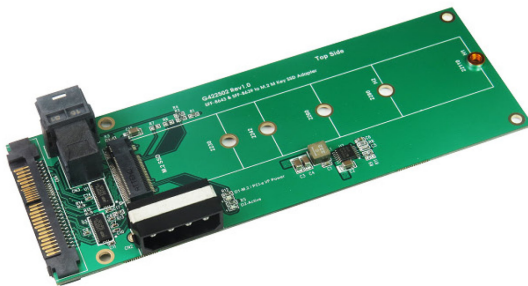
AU404A, built-in mini SAS HD(SFF-8643) connector, U.2(SFF-8639) connector, provide a port **M.2 M-key** connector. First M.2(PCIe) SSD inserts into M.2 connector, use Mini SAS HD cable, connected AU404A to the PCI-e to Mini SAS HD(SFF-8643) adapter, M.2(NVMe) SSD can be work.

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**, 16GB(8GB DIMM*2)
ATX Power : FSP RAIDER 550, **550W ATX**, 12V V2.2 Power Supply
Graphic : Z170 Chipsets built-in **HD Graphics 530**
Adapter: PE0404 PCIe to SFF-8643 Mini SAS HD Adapter
CABLE: Amphenol U.2(SFF-8639) to SFF-8643 Mini SAS HD Cable
OS : Microsoft **Windows 10 64bit OS**

2.2 Test target: AU404A adapter and **Samsung SM961 512GB NVMe SSD**



AU404A Adapter



SFF-8639 to SFF-8643 Cable



Samsung SM961 M.2 SSD

2.3 Install Hardware

Insert M.2 SSD into AU404A converter's M.2 connector, and then with coppers, and screws to fix SSDs. (Please refer to the Installation Notes). Connect AU404A converter to PE0404 adapter(PCI-e to Mini SAS HD SFF-8643), Plug PE0404 into **PCI-e slot of GIGABYTE Z170X UD5 TH.**

2.4 BIOS & Windows 10 OS environment setup

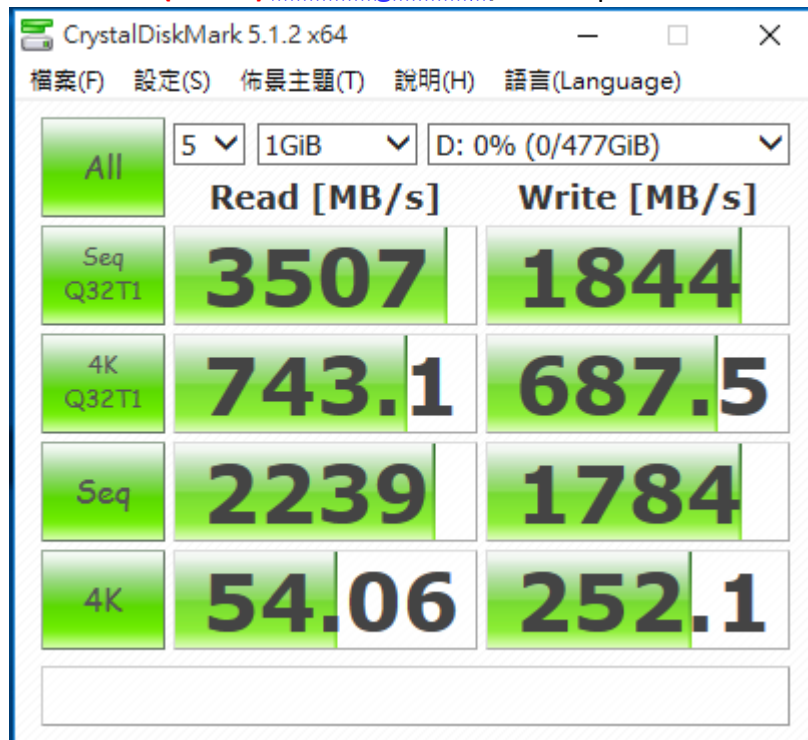
- 2.4.1.1 Install Windows 10 OS. Don't install any program.
- 2.4.1.2 AU404A+SM961 SSD Formatted NTFS

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2.5 CrystalDiskMark 5.1.2 x64 performance test

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

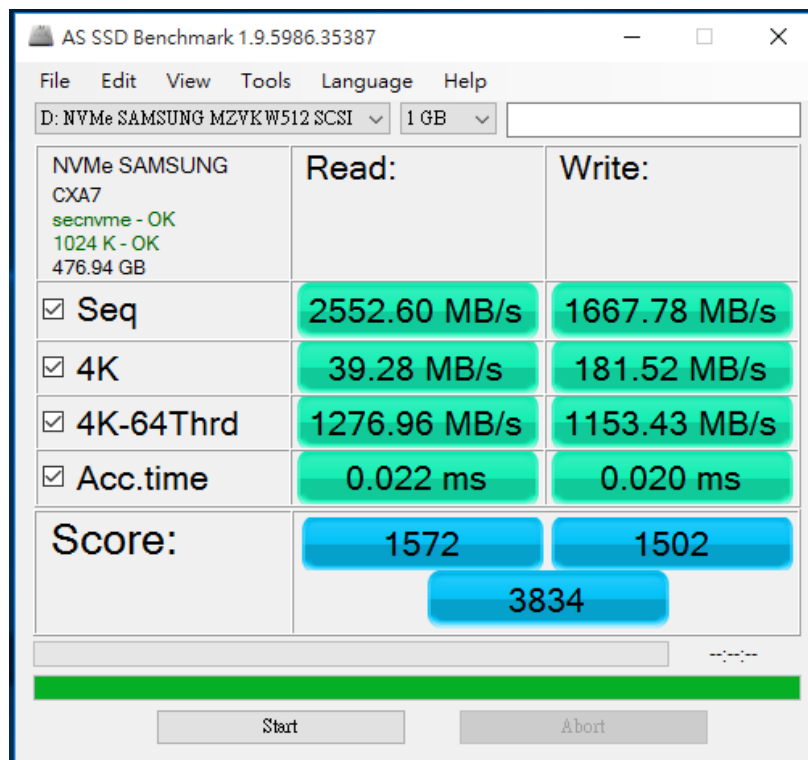
2.5.1 Show **M.2(NVMe) Samsung SM961/512GB** performance as below:



2.6 AS SSD Benchmark 1.9 performance test

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

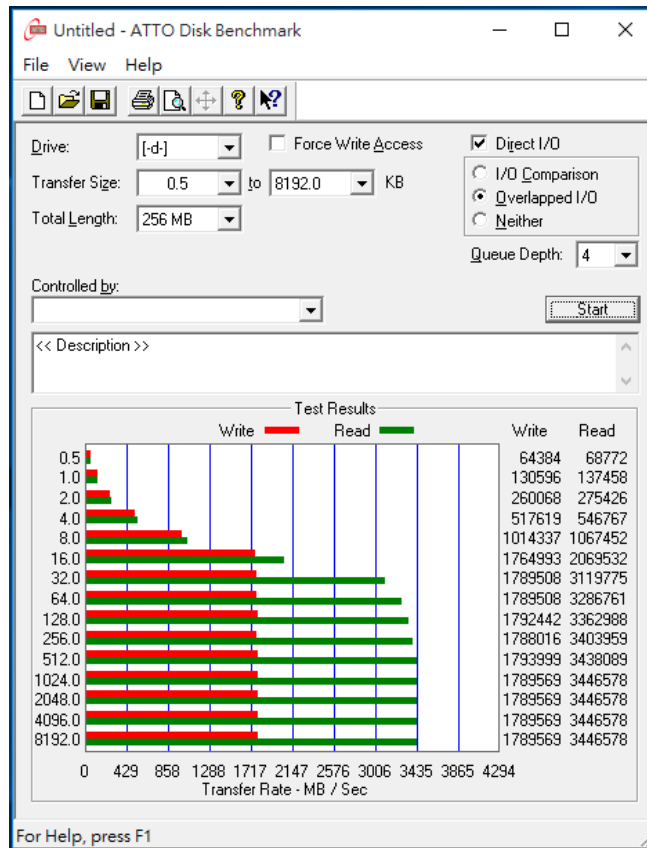
2.6.1 Show **M.2(NVMe) Samsung SM961/512GB** performance as below:



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2.7 ATTO Disk Benchmark 2.47 performance test

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



2.8 AnvilBenchmark_V110_B337

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



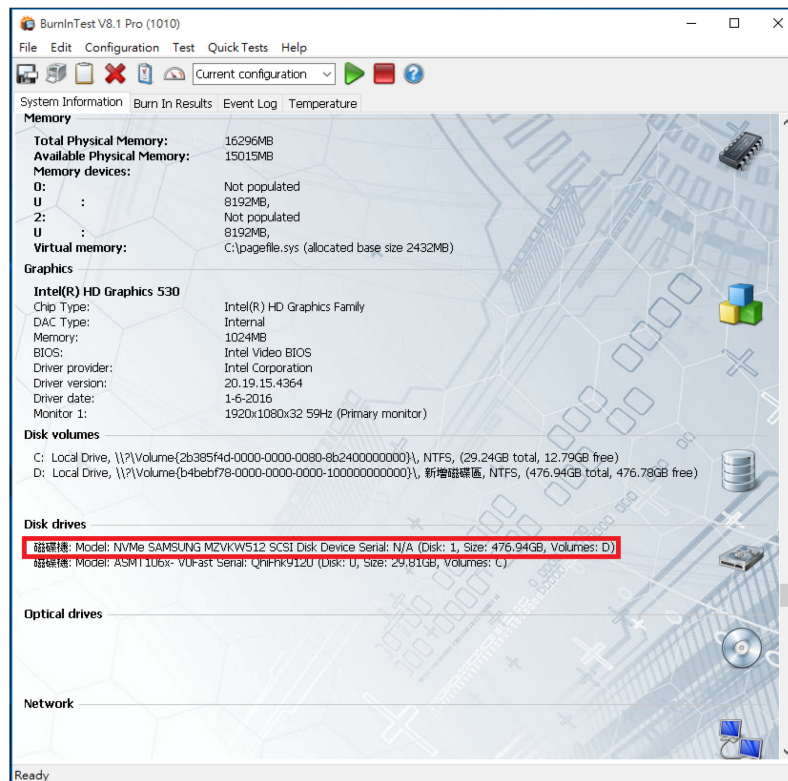
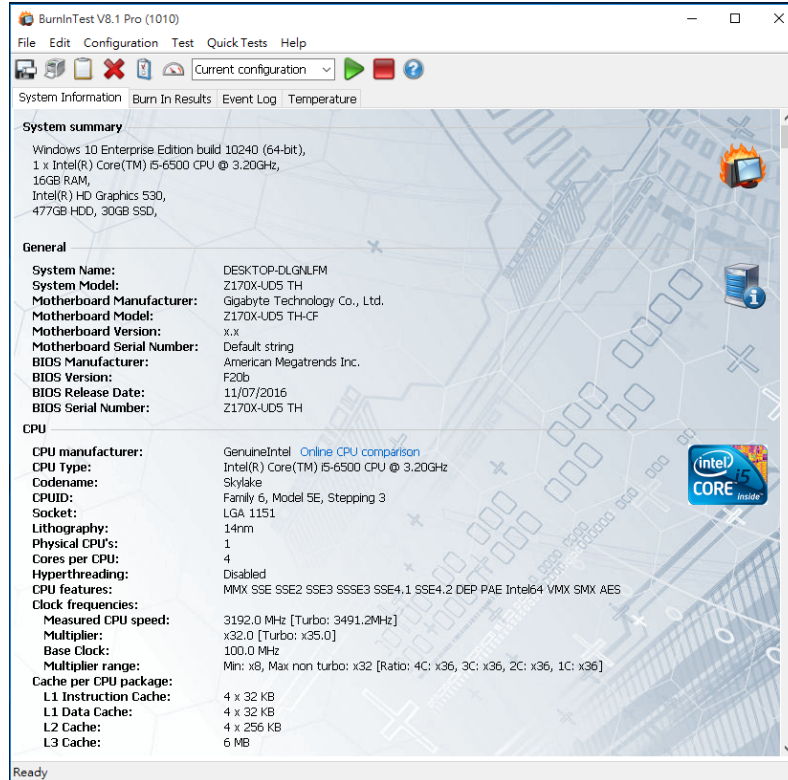
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3. Burn In Tests and Results

3.1 BurnInTest v8.1 Pro

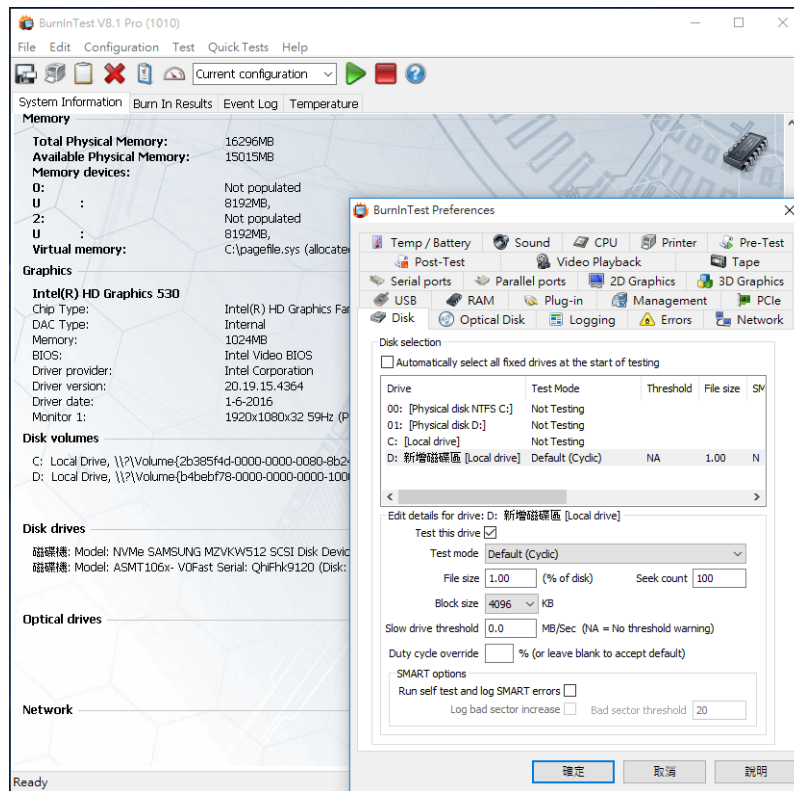
Shows in Samsung **M.2(NVMe) Samsung SM961/512GB**

3.1.1 **system information** as below:

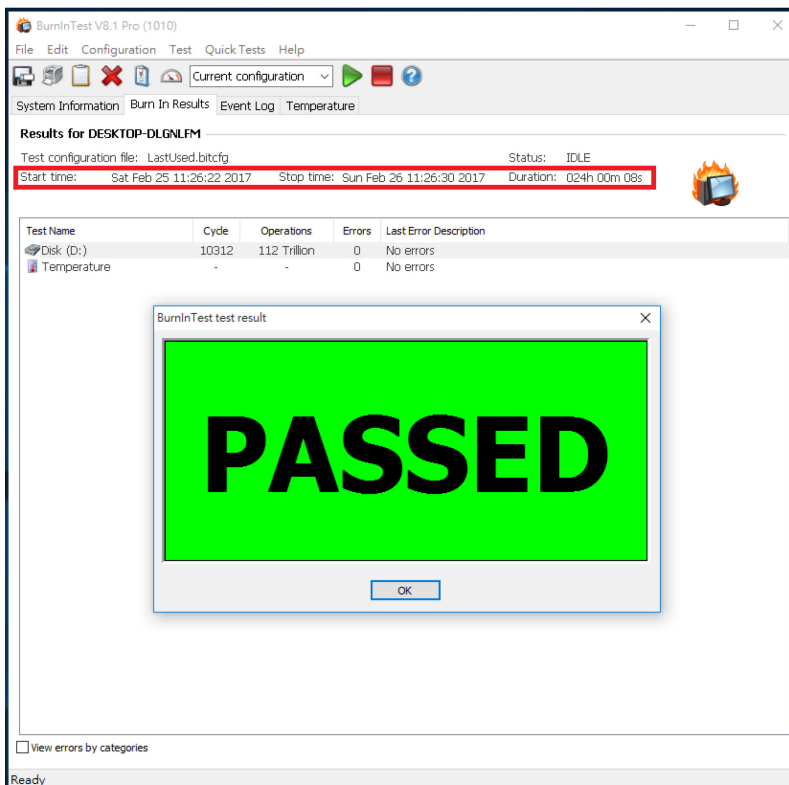


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3.1.2 show Disk test mode (10 ways cycle test)



3.1.3 show 24-hour Burn-in test PASSED



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4. Summary

- 4.1 M.2 NVMe SSD is PCI-e Gen 3 / 4 Lane Interface, I/O speed, max. to 4GB/s.
- 4.2 AU404A adapter I/O performance is based on M.2 NVMe SSD.