



MINERVA

PA414A Converter Card

Performance & Burn In Test Rev. 1. 0

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1. Overview

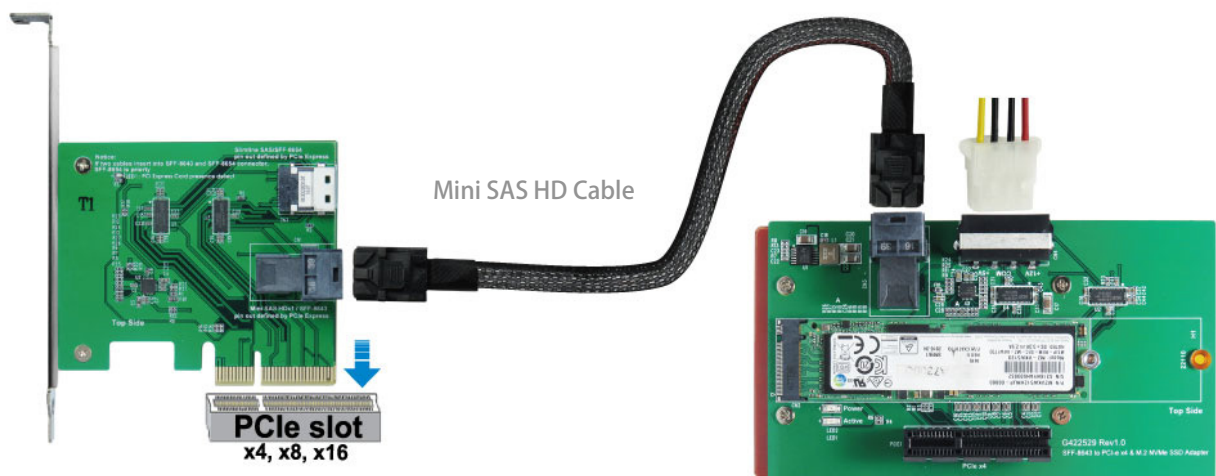
PA414A adapter, providing M.2 M-key connector can be M.2(PCI-e I/F) SSD converted into Mini SAS(SFF-8643), PCI-e Gen3 / 4 Lanes interface.

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**, **16GB**(8GB DIMM*2)
ATX Power : COOLER MASTER G750M, **750W ATX**, 12V V2.31 Power Supply
Graphic : Z170 Chipsets built-in **HD Graphics 530**
Adapter: PE0406 PCIe to SFF-8643 Mini SAS HD adapter
Cable: Amphenol SFF-8643 to SFF-8643 Mini SAS HD Cable
OS : Microsoft **Windows 10 64bit OS**

2.2 Test target: PA414A adapter & Samsung SM961 M.2 512GB NVMe SSD



PE0406 Adapter

PU414A Adapter + Samsung SM961 M.2 SSD

2.3 Install Hardware

Insert M.2 SSD into PA414A converter's M.2 M-key connector, and then with coppers, and screws to fix SSDs. (Please refer to the Installation Notes). Use SFF-8643 to SFF-8643 cable to connect PA414A converter to **PCI-e adapter of Z170 M/B**.

2.4 Windows 10 OS environment setup

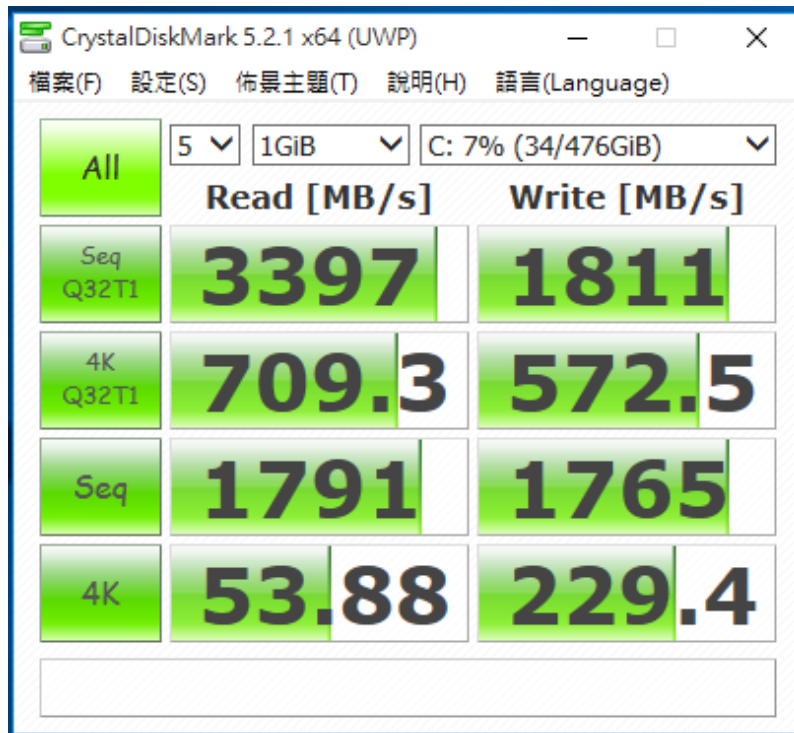
Install Windows 10 64bit OS in PA414A adapter

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2.5 CrystalDiskMark 5.2.1 x64 performance test

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

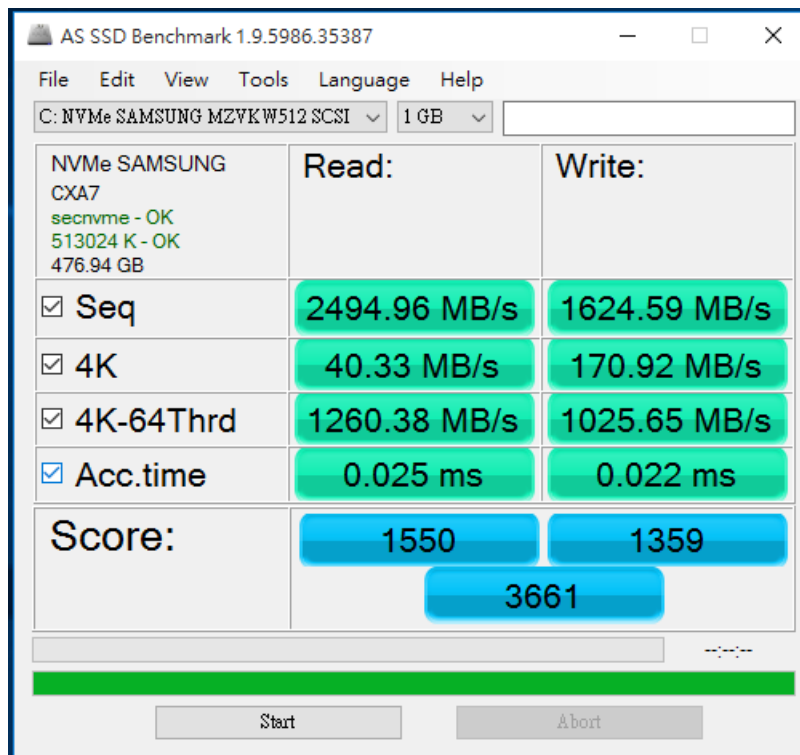
2.5.1 Show **M.2(NVMe) Samsung SM961/512GB** performance as below:



2.6 AS SSD Benchmark 1.9 performance test

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

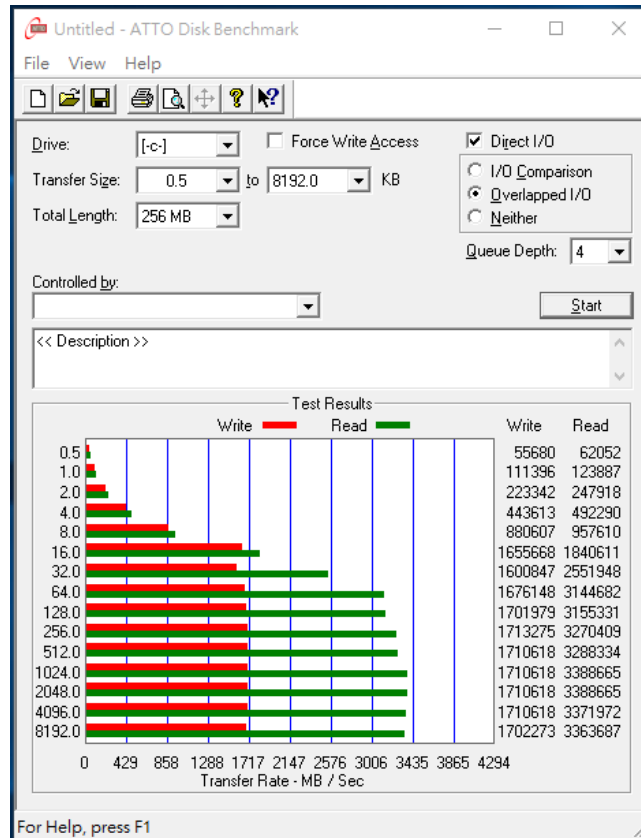
2.6.1 Show **M.2(NVMe) Samsung SM961/512GB** performance as below:



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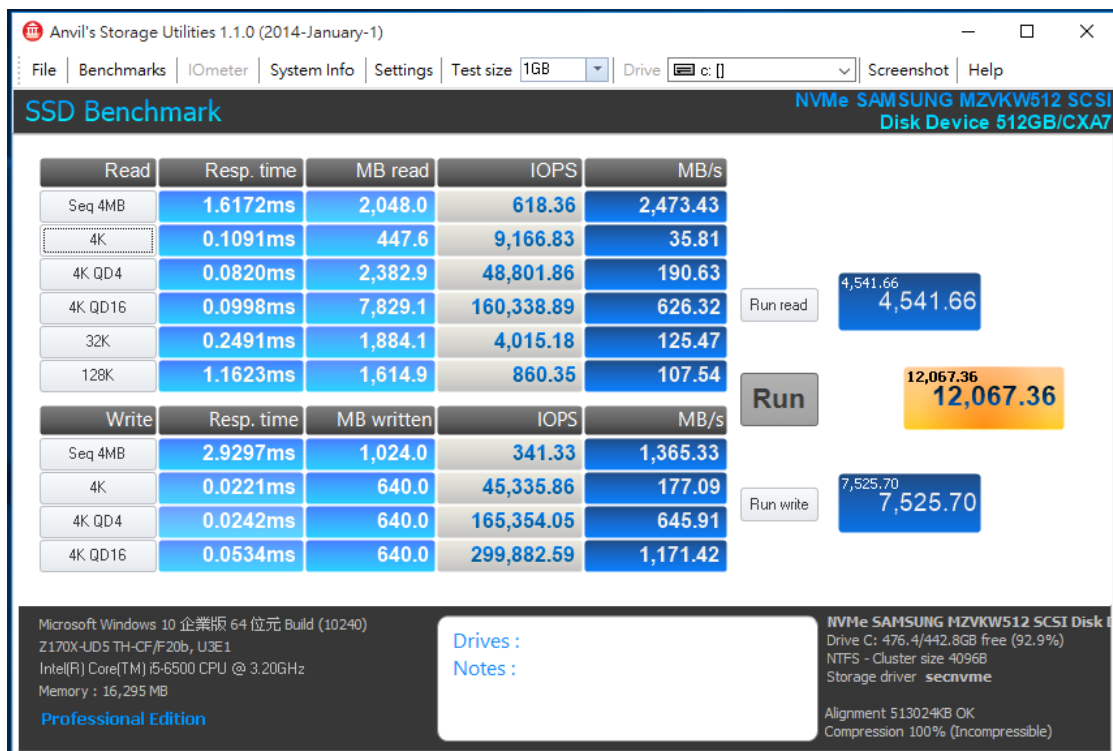
2.7 ATTO Disk Benchmark 2.47 performance test

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:

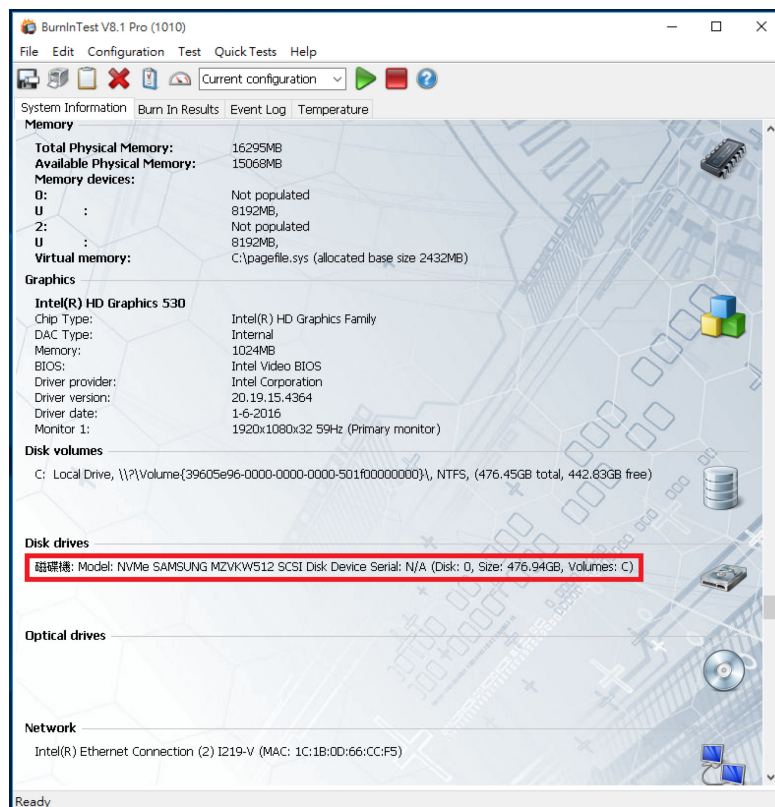
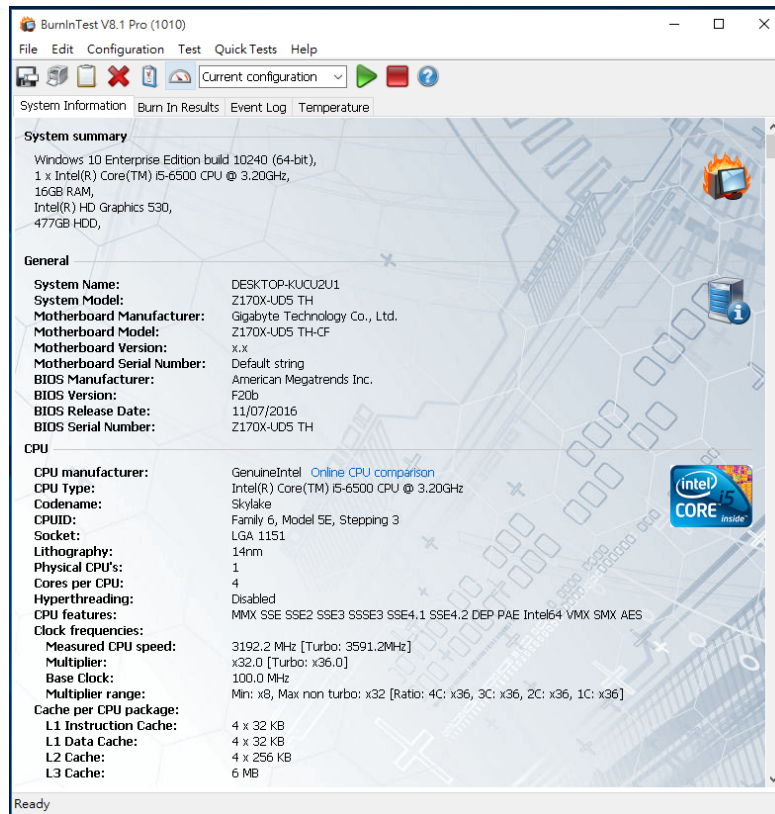


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3. Burn In Tests and Results

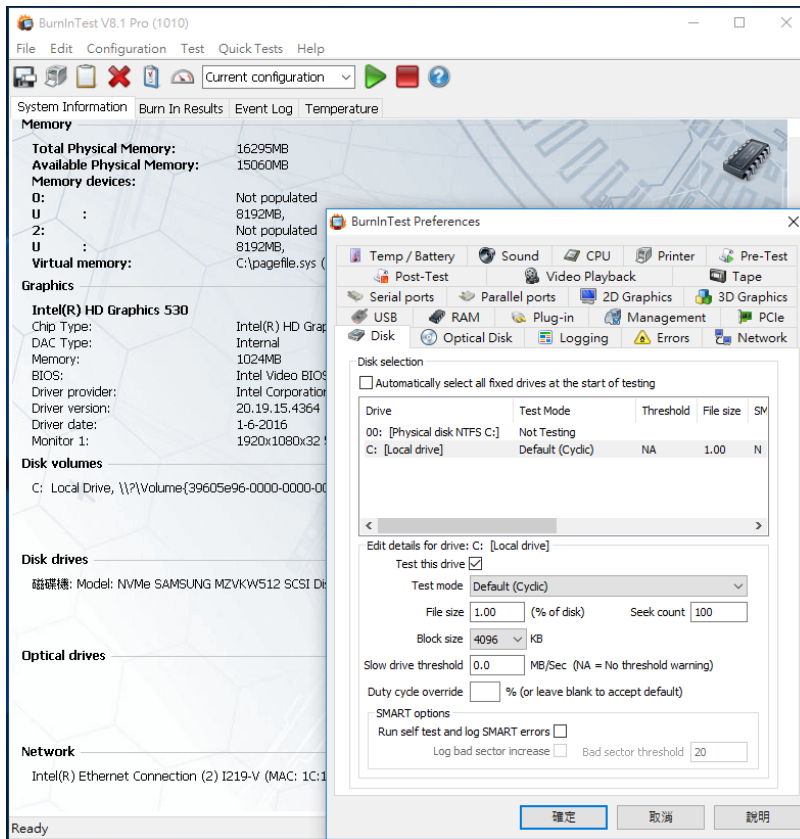
3.1 BurnInTest v8.1 Pro for M.2(NVMe) Samsung SM961/512GB

3.1.1 system information as below:

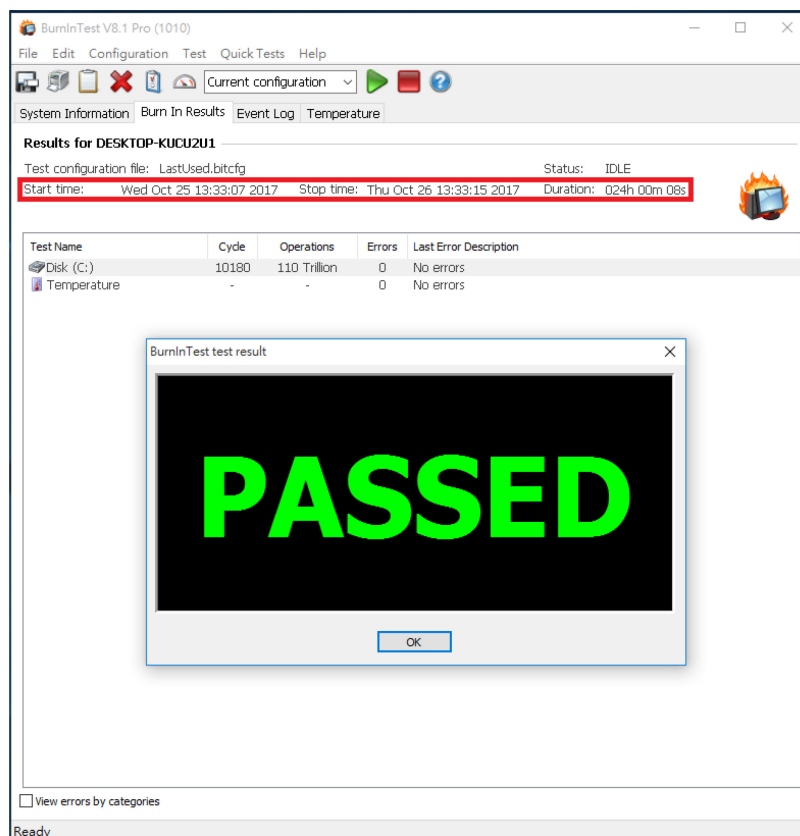


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3.1.2 show Disk test mode (10 ways cycle test)



3.1.3 show 24-hour Burn-in test PASSED



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4. Summary

- 4.1 M.2 SSD is PCI-e Gen 3 / 4 Lanes Interface, I/O speed, max. to 32Gbps.
- 4.2 PA414A adapter I/O performance is based on M.2 NVMe SSD.