



MINERVA

PU416G Converter Card

Performance & Burn In Test Rev. 1. 0

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1. Overview

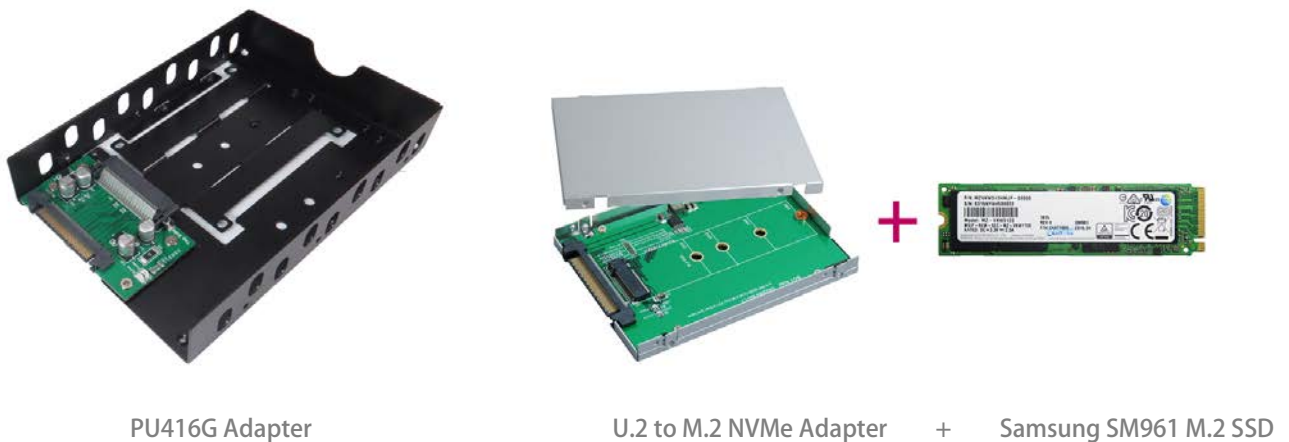
PU416G adapter, providing U.2 connector can be M.2 (PCI-e I/F NVMe) SSD converted into U.2(SFF-8639), PCI-e Gen 3 / 4 Lanes interface and uses heat sink strip to M2 SSD.

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, **16G**(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 Cable
Adapter: PU3401F / SFF-8639 to M.2 converter
CABLE: Amphenol U.2(SFF-8639) to SFF-8643 Mini SAS HD Cable
OS : Microsoft **Windows 8.1 64bit OS**

2.2 Test target: PU416G adapter & [Samsung SM961 512GB NVMe SSD](#)



2.3 Install Hardware

Insert M.2 SSD into PU3401F converter's M.2 M-key connector, and then with coppers, and screws to fix SSDs. (Please refer to the Installation Notes). Inserts PU3401F into PU409G, and then connects PU416G to PE0404 adapter(PCI-e 4-lane to Mini SAS HD SFF-8643) using U.2 cable, Plug PE0404 into **PCI-e slot of Z170X UD5 TH**.

2.4 BIOS & Windows 10 OS environment setup

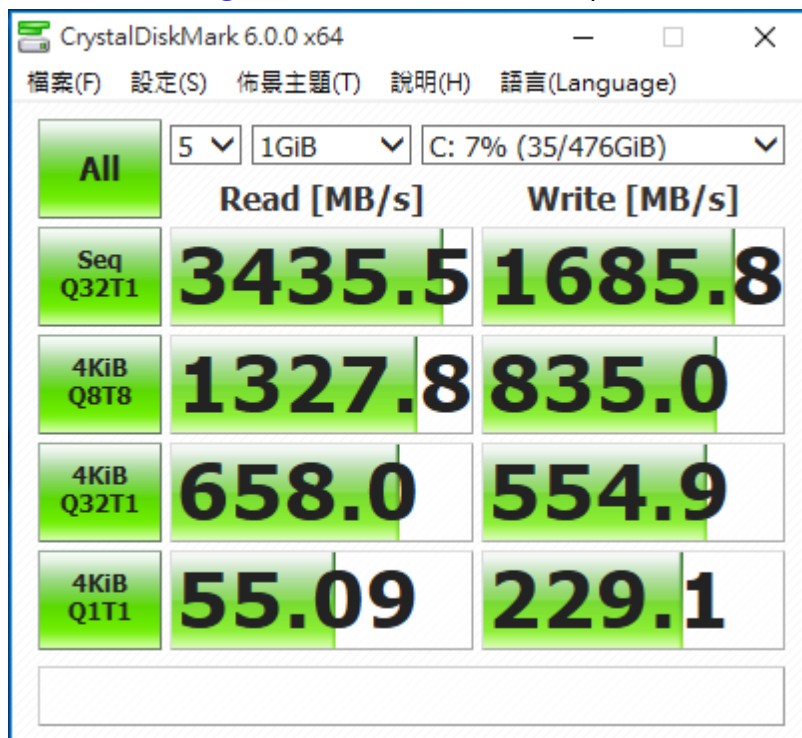
Install Windows 10 64bit OS into [Samsung SM961/512GB](#)

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2.5 CrystalDiskMark 6.0.0 x64 performance test

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

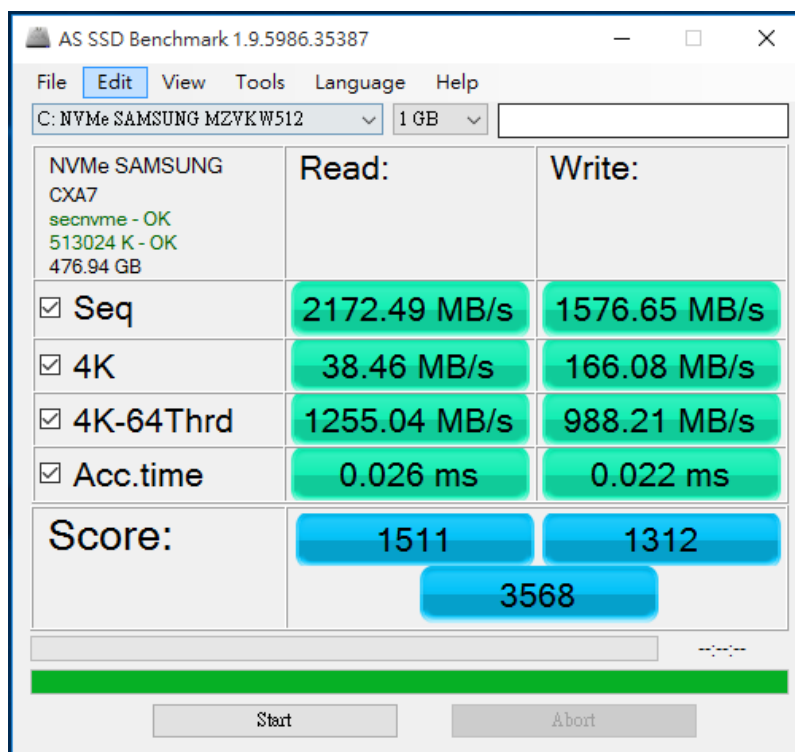
2.5.1 Shows **Samsung SM961 NVMe SSD/512GB** performance as below:



2.6 AS SSD Benchmark 1.9 performance test

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

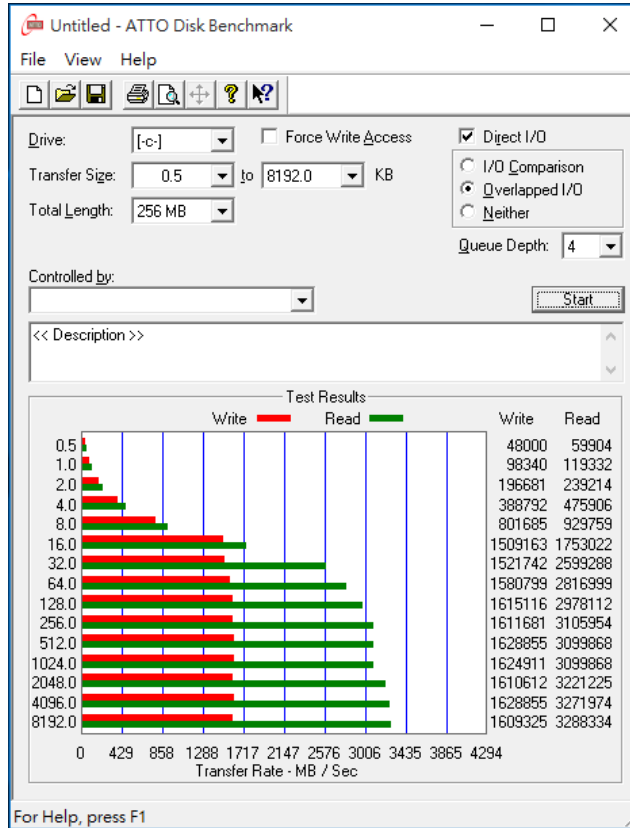
2.6.1 Shows **Samsung SM961 NVMe SSD/512GB** performance as below:



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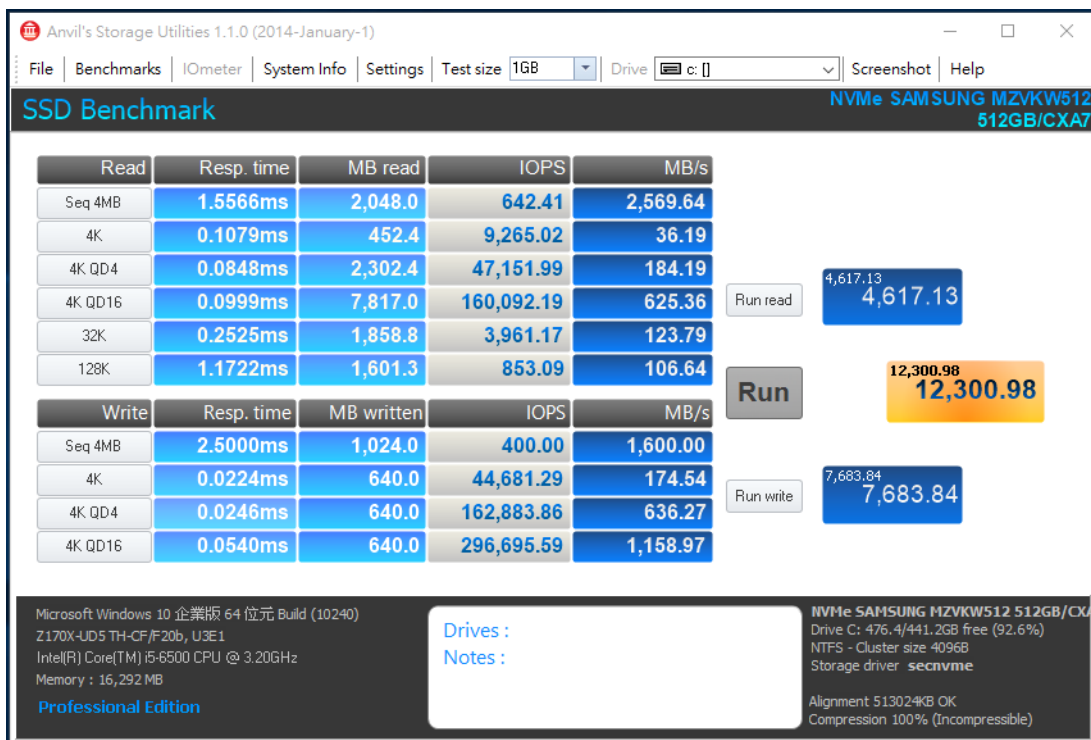
2.7 ATTO Disk Benchmark 2.47 performance test

2.7.1 Shows [Samsung SM961 NVMe SSD/512GB](#) performance as below:



2.8 AnvilBenchmark_V110_B337

2.8.1 Shows [Samsung SM961 NVMe SSD/512GB](#) performance as below:

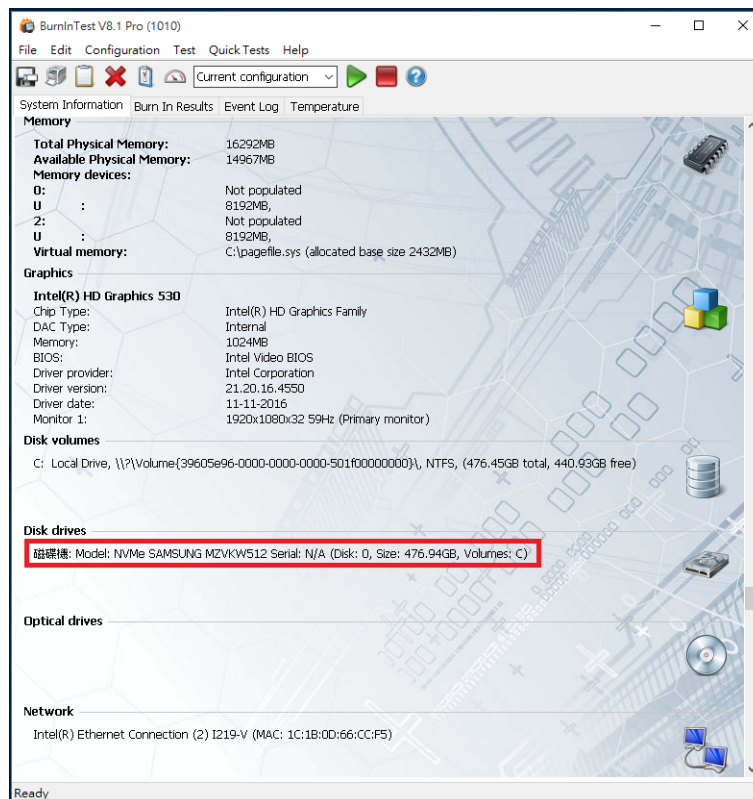
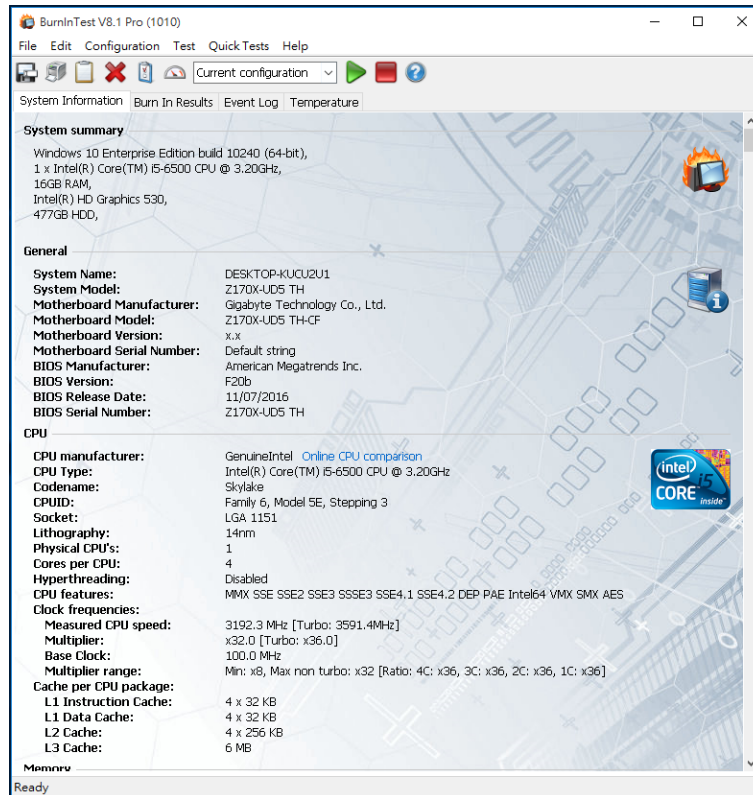


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3. Burn In Tests and Results

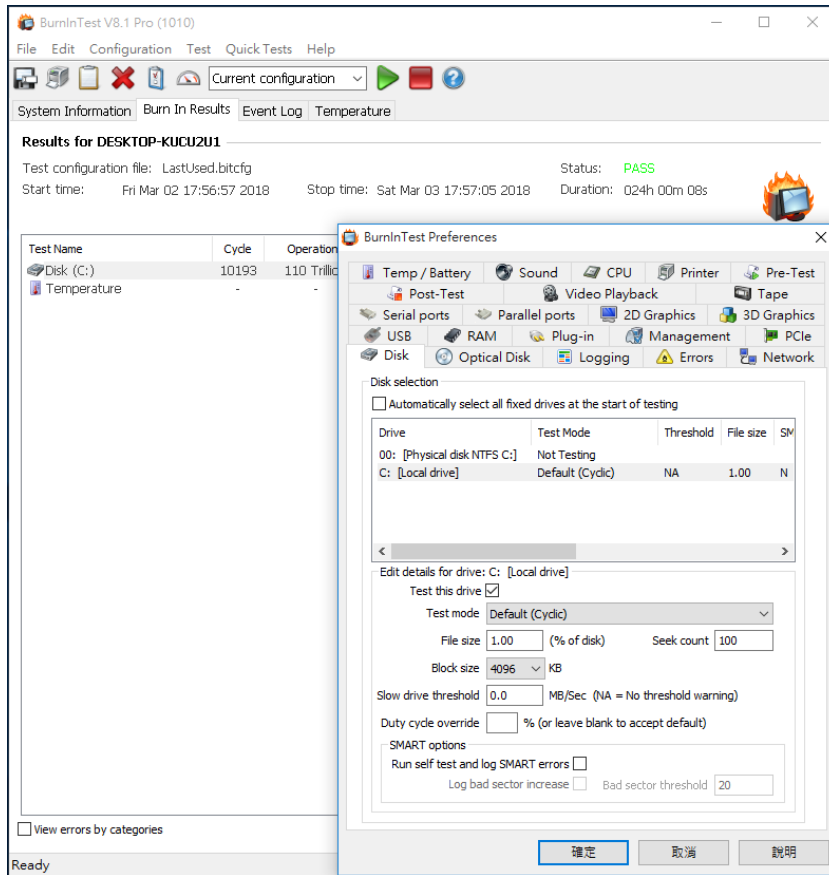
3.1 BurnInTest v8.1 Pro for Shows [Samsung SM961 NVMe SSD/512GB](#)

3.1.1 [system information](#) as below:

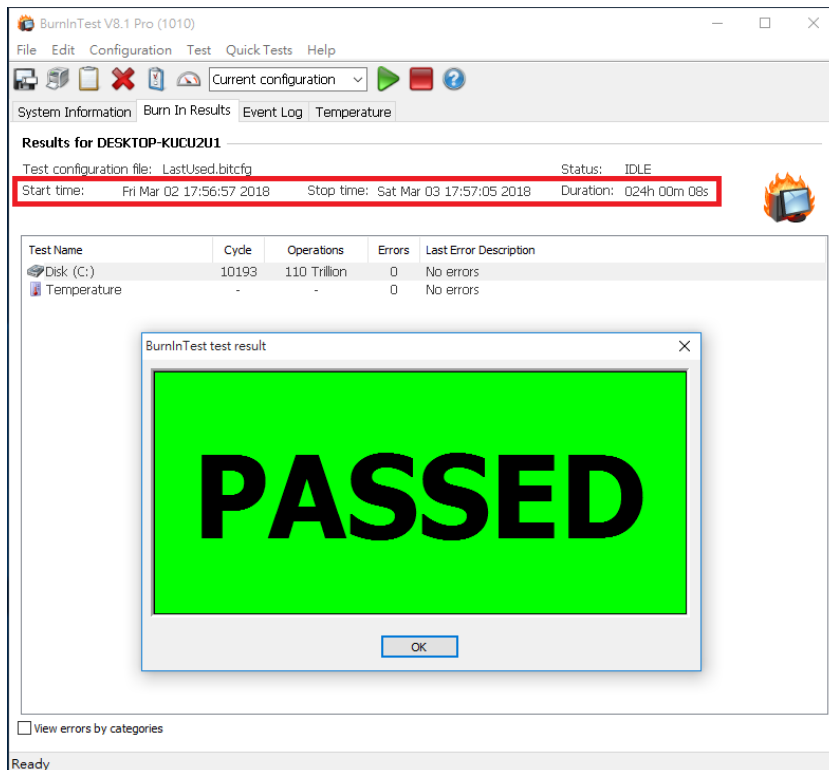


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3.1.2 show Disk test mode(10 ways cycle test)



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 PU416G adapter I/O performance is based on M.2 NVMe PCI-e Gen 3 / 4 Lanes SSD.