



MINERVA

CS411A / Slimline SAS & SATA to M.2 Converter Card

Performance & Burn In Test Rev. 1.0

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1. Overview

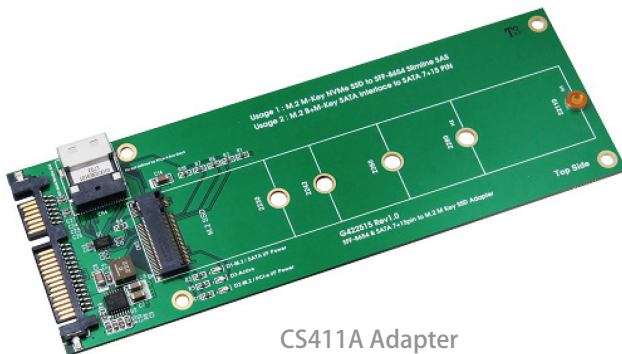
CS411A adapter, built-in Slimline SAS(SFF-8654) connector, SATA 7+15pin connector, provide a port **M.2 M-key** connector. First **M.2 SATA SSD** inserts M.2 M-key connector, uses SATA cable, connected to the SATA port of M/B, then M.2 SATA SSD can work.

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 : COOLER MASTER G750M, **750W ATX**, 12V V2.2 Power Supply
Graphic : Z170 Chipsets built-in **HD Graphics 530**
OS : Microsoft **Windows 10 64bit OS**

2.2 Test target: CS411A adapter and [Samsung CM871a M.2 SATA/512GB](#)



CS411A Adapter



Samsung CM871a M.2 SATA SSD

2.3 Install Hardware

Insert M.2 SATA SSD into CS411A converter's M.2 M-key connector, and then with coppers, and screws to fix SSDs. (Please refer to the Installation Notes). Use SATA signals cable to connect CS411A converter to SATA port **of Z170X UD5 TH**.

2.4 BIOS & Windows 10 OS environment setup

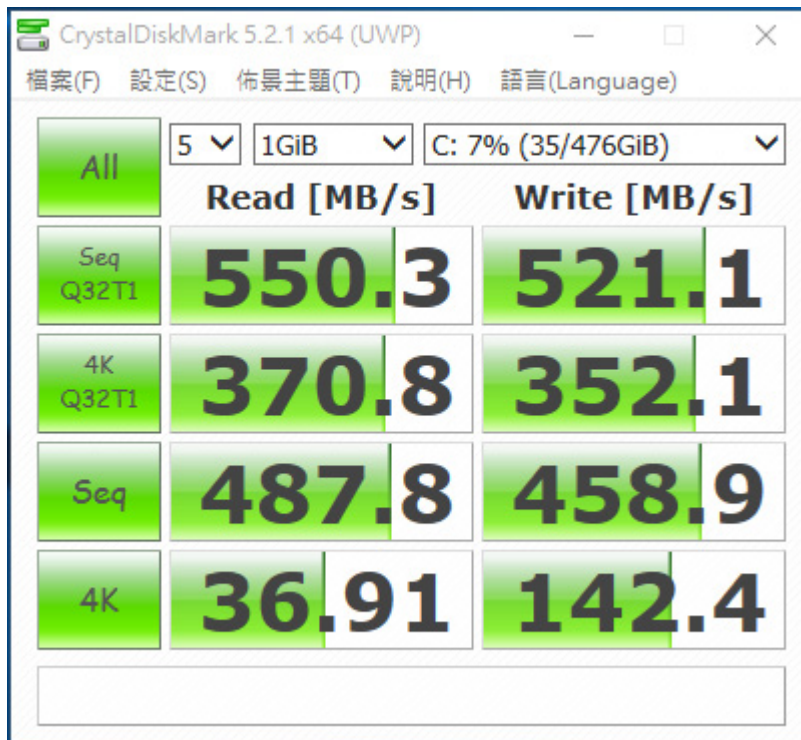
2.4.1.1 Install Windows 10 OS in **[CM871a M.2 SATA/512GB](#)** +CS411A adapter. Don't install any program.

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2.5 CrystalDiskMark 5.2.1 x64 performance test

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

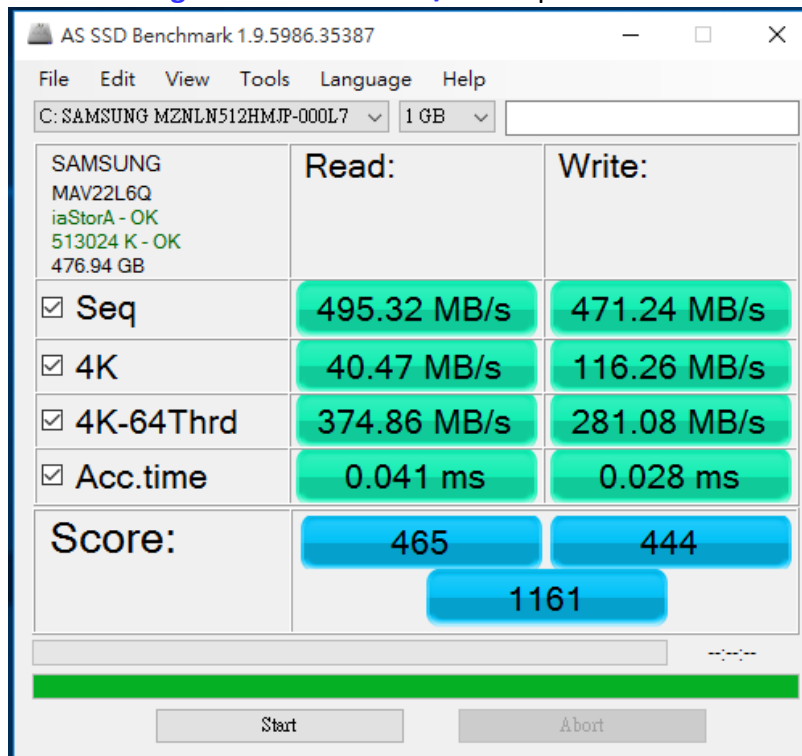
2.5.1 Show **Samsung CM871a M.2 SATA/512GB** performance as below:



2.6 AS SSD Benchmark 1.9 performance test

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

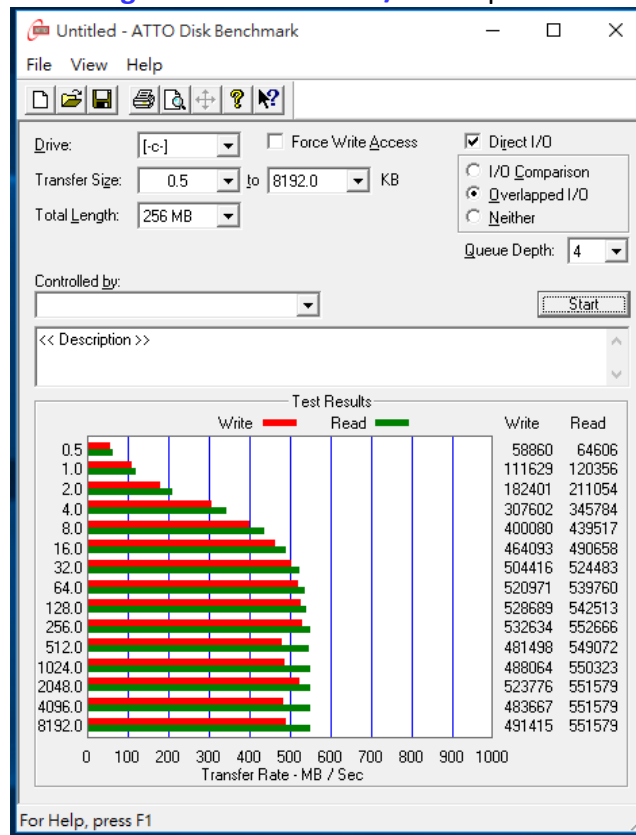
2.6.1 Show **Samsung CM871a M.2 SATA/512GB** performance as below:



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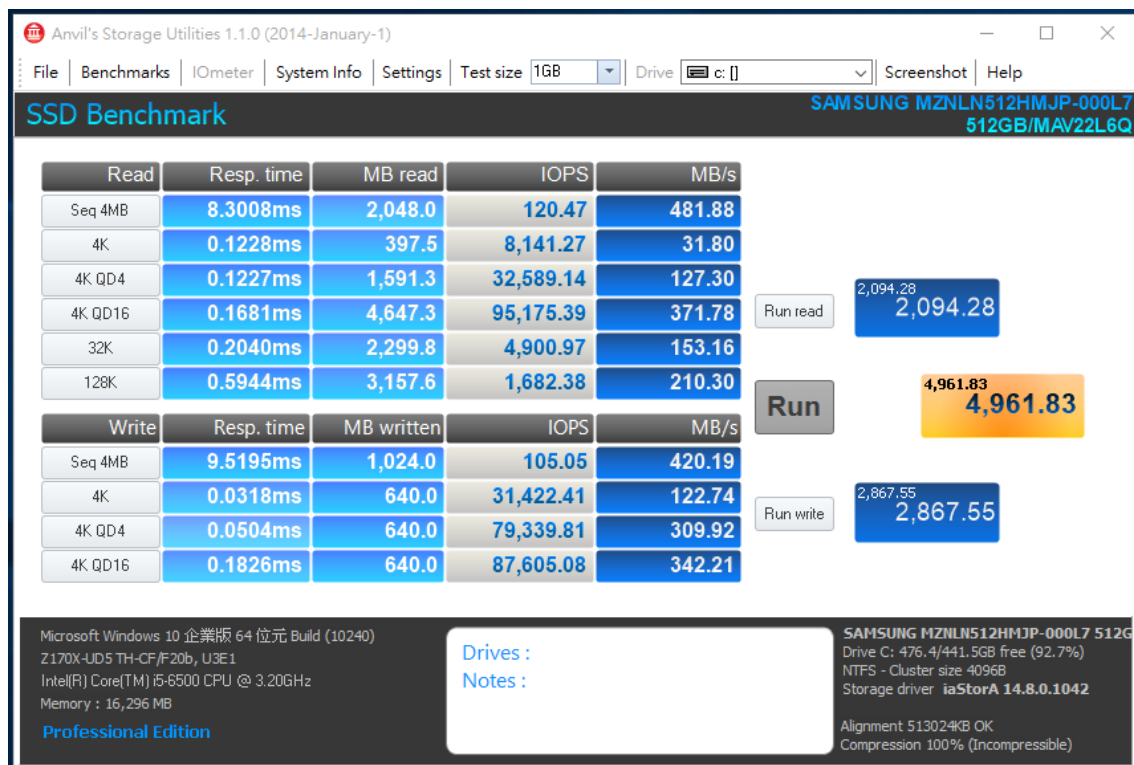
2.7 ATTO Disk Benchmark 2.47 performance test

2.7.1 Show **Samsung CM871a M.2 SATA/512GB** performance as below:



2.8 AnvilBenchmark_V110_B337

2.8.1 Show **Samsung CM871a M.2 SATA/512GB** performance as below:

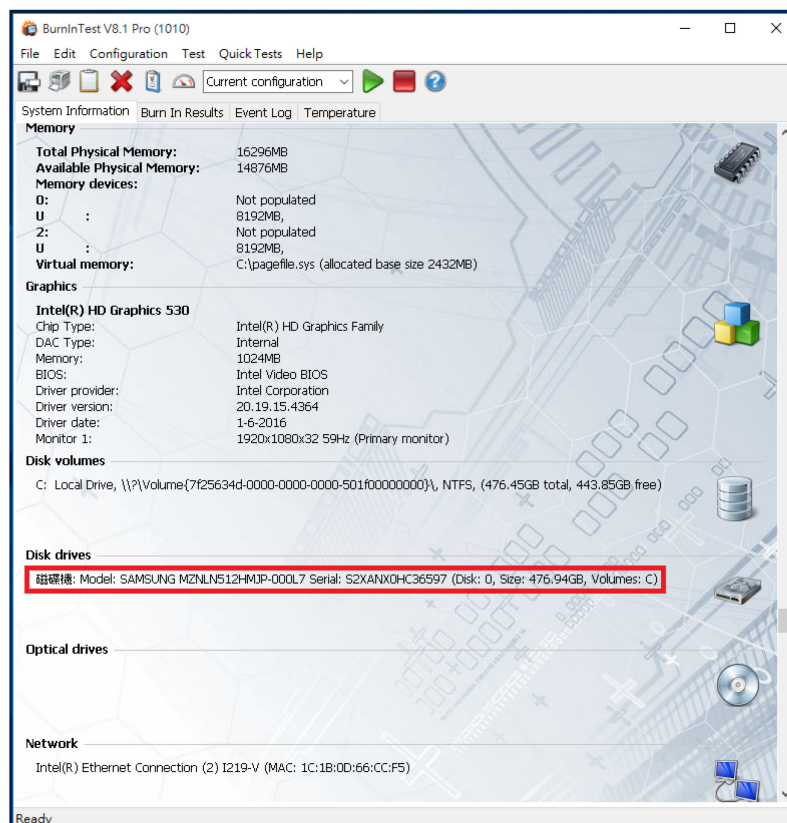
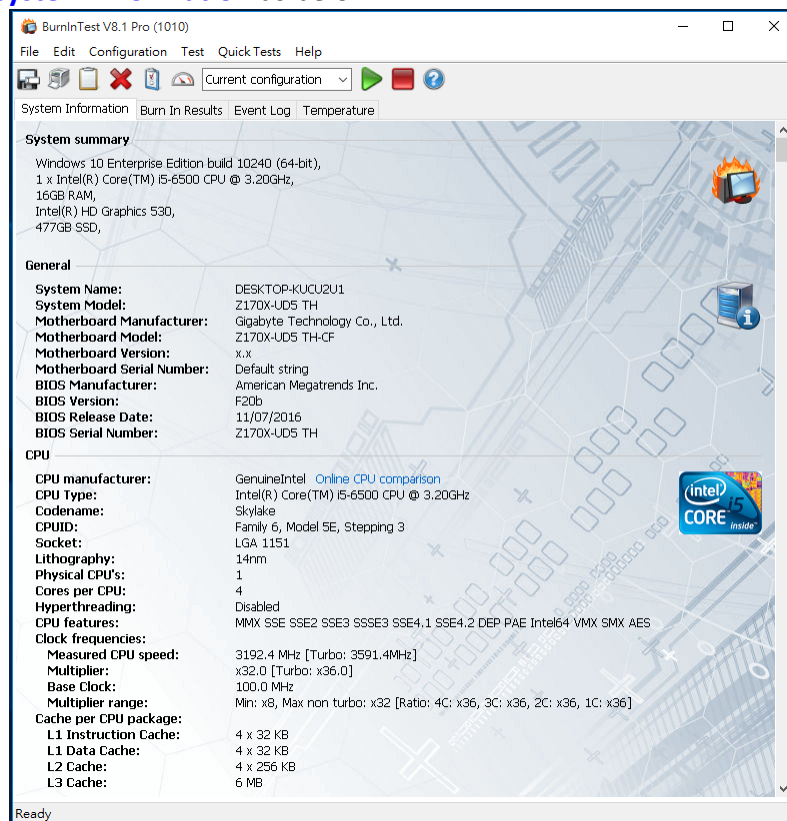


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3. Burn In Tests and Results

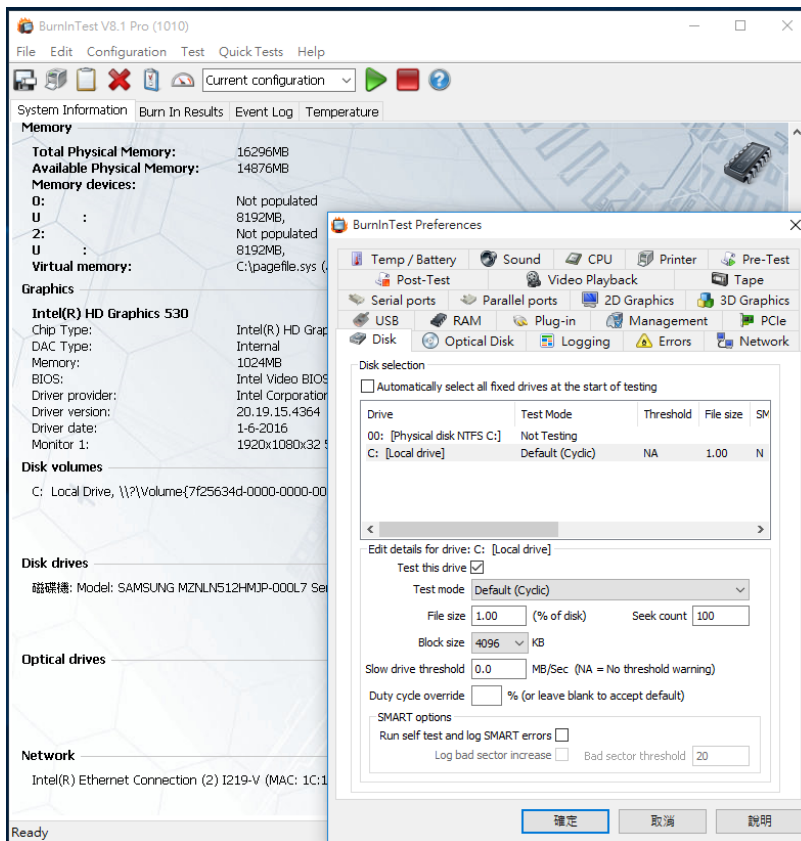
3.1 BurnInTest v8.1 Pro

3.1.1 system information as below:

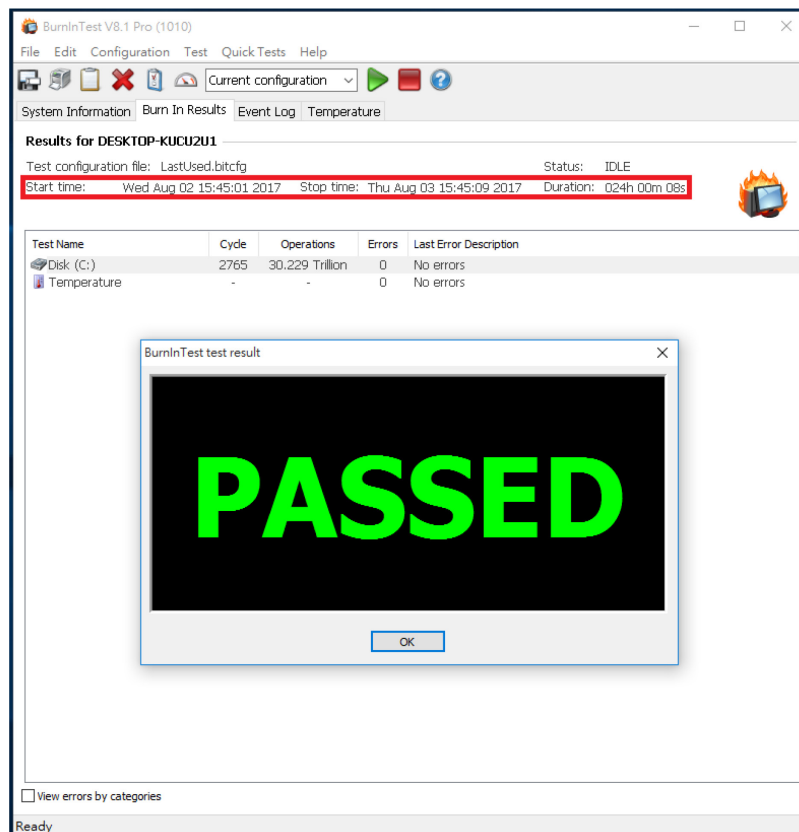


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3.1.2 show Disk test mode (10 ways cycle test)



3.1.3 show 24-hour Burn-in test PASSED



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4. Summary

- 4.1 M.2 SATA SSD is SATA 3 Interface, I/O speed, max. to 6Gbps.
- 4.2 CS411A adapter I/O performance is based on M.2 SATA SSD.