MINERVA

AD904A/E   Converter Card

Performance & Burn In Test   Rev. 1.0

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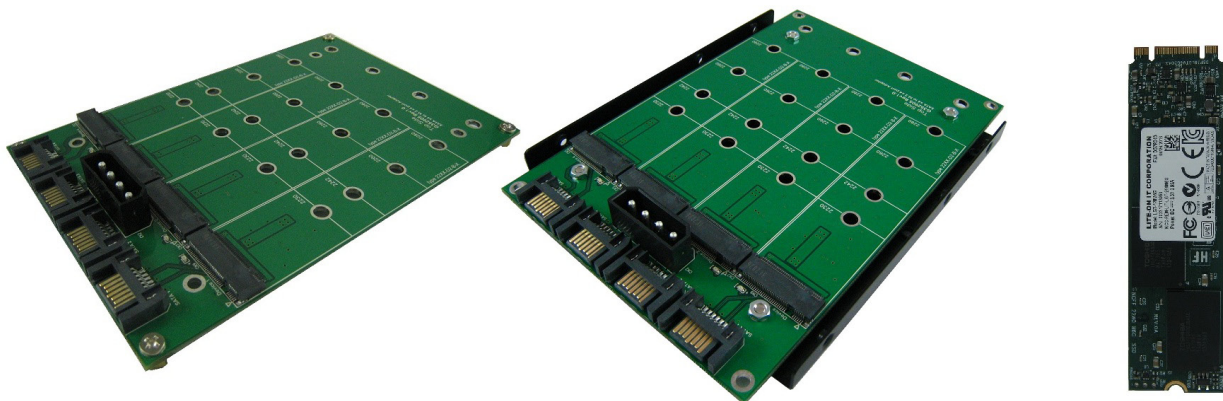# AD904A/E　Converter Card

1. Overview

AD904A/E adapter, build in M.2 B-key connector 4-port. It used SATA signal cable receptacle connector to be mated with to M/B SATA III port.

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 **KVR16N11S8⁄4,** 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: AD904A/E adapter and M.2 SSD(LITE-ON LGT-128M6G/128G)

AD904A Adapter　　　　　　　AD904E Adapter　　　　　　LITE-ON LGT-128M6G

2.3 Install Hardware
2.3.1　Insert M.2 SSDx4 into AD904A/E converter's M.2 B-key connector, and then with coppers, and screws to fix SSDs. (Please refer to the Installation Notes). Connect AD904A/E converter to **SATA III Port of ASRock Z97 Extreme 6**.

2.4 BIOS & Windows 7 OS environment setup
2.4.1　In UFEI BIOS(Basic Input/Output Setup) – Change AHCI Mode into RAID Mode
2.4.2　Setup RAIO 0 model, stripe size is 128KB.
2.4.3　Install Windows 8.1 x64 OS.

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2.5   SSD I/O Performance impact factors

    2.5.1   SATA I/O performance -- depending on the SSD Controller IC

    2.5.2   SATA I/O performance - -depending on the NAND Flash IC.
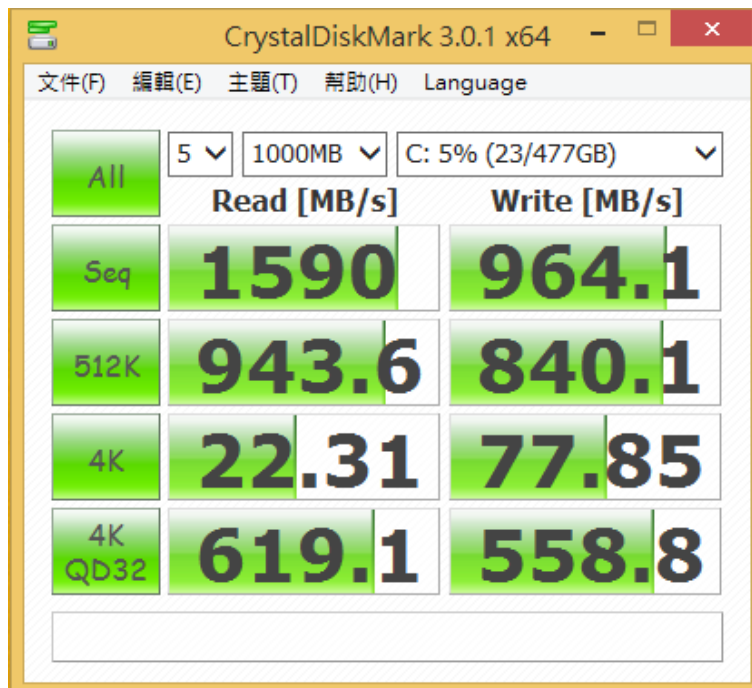
        2.5.2.1   Toggle DDR mode or ONFI synchronous NAND Flash IC, will show good performance

        2.5.2.2   Traditional asynchronous or SDR NAND Flash IC, will show poor performance

2.6   CrystalDiskMark 3.0.1 x64 performance test

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

    2.6.1   Used LITE-ON LGT-128M6G/128Gx4 in **Z97 RAID 0** performance as below:
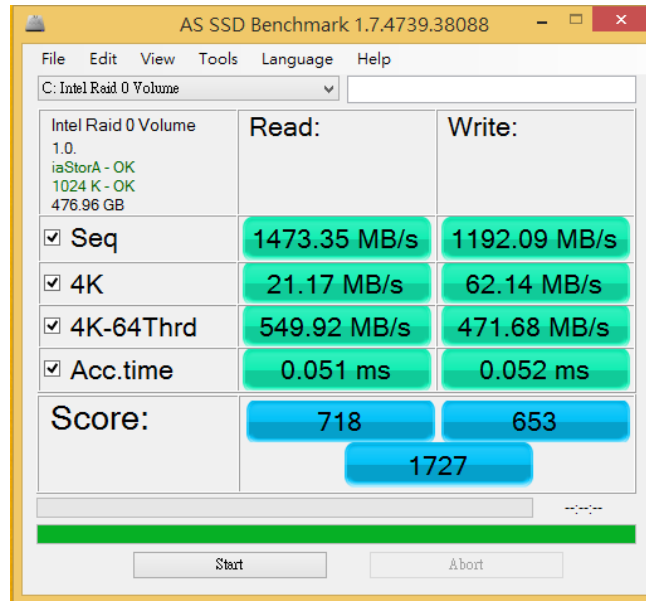
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2.7 AS SSD Benchmark 1.7 performance test

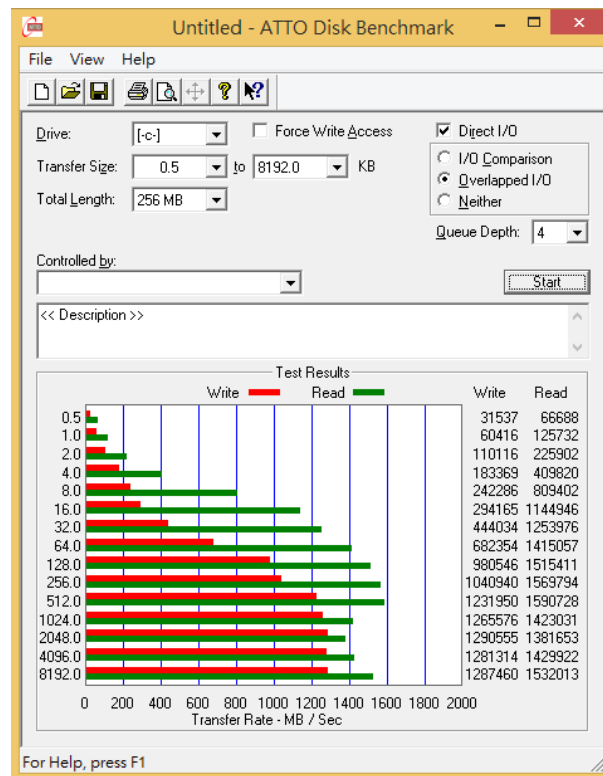※Benchmark (Read & Write by MB/s, default block size = 16MB)

2.7.1 Used LITE-ON LGT-128M6G/128Gx4 in **Z97 RAID 0** performance as below:

2.8 ATTO Disk Benchmark performance test

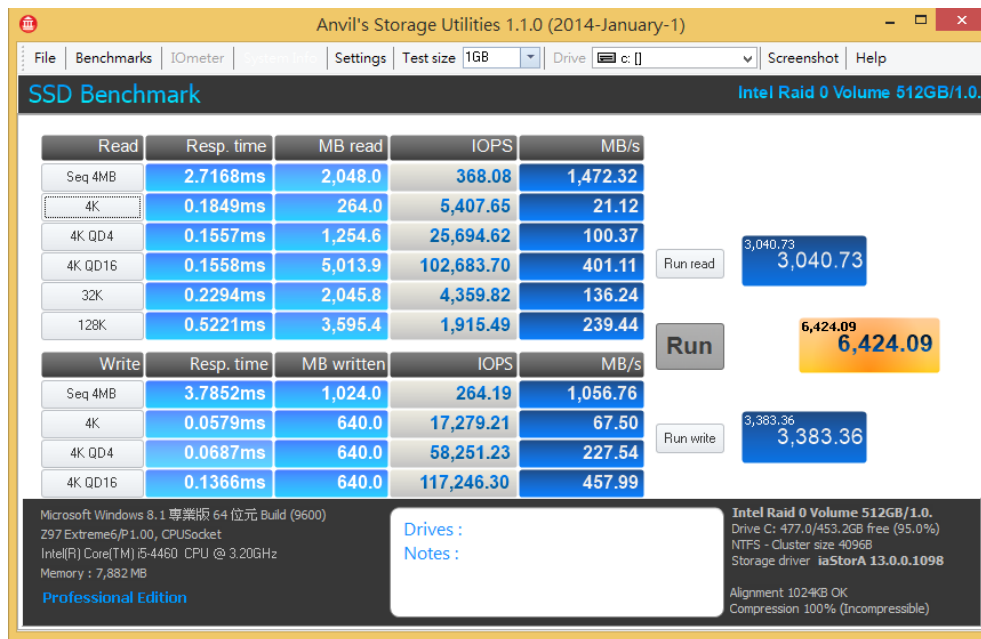※Benchmark (Sequential Read / default block size = 8MB)

2.8.1 Used LITE-ON LGT-128M6G/128Gx4 in **Z97 RAID 0** performance as below:

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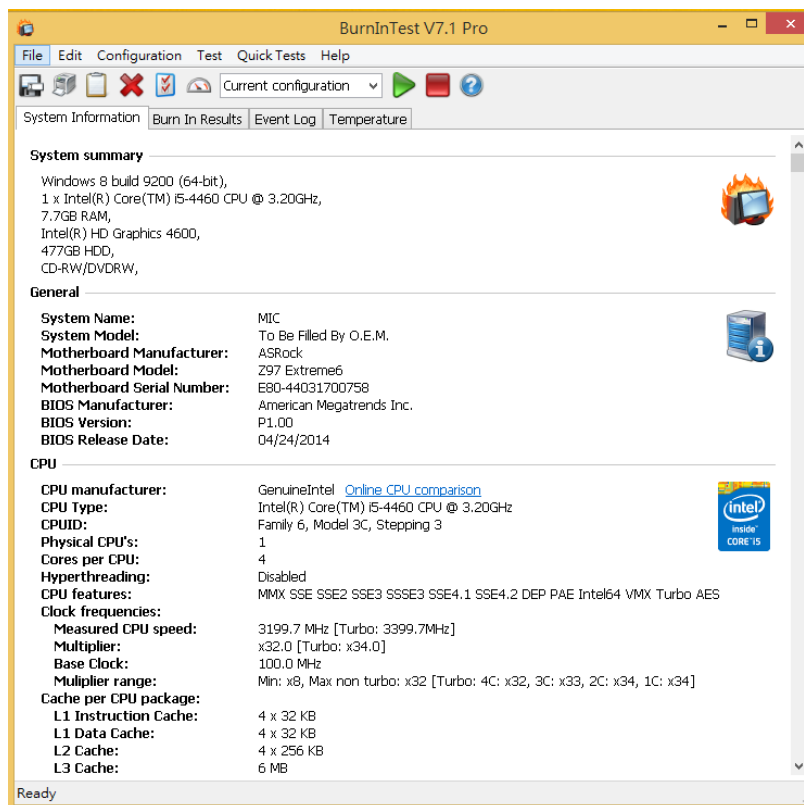
2.9   AnvilBenchmark_V110_B337

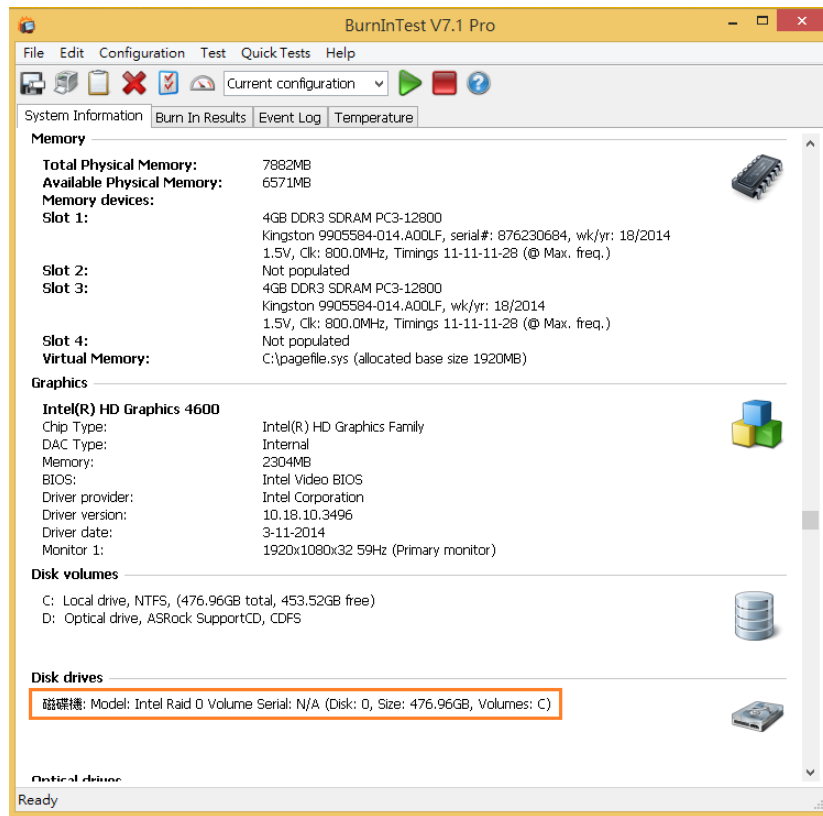   2.9.1   Used LITE-ON LGT-128M6G/128Gx4 in **Z97 RAID 0** performance as below:

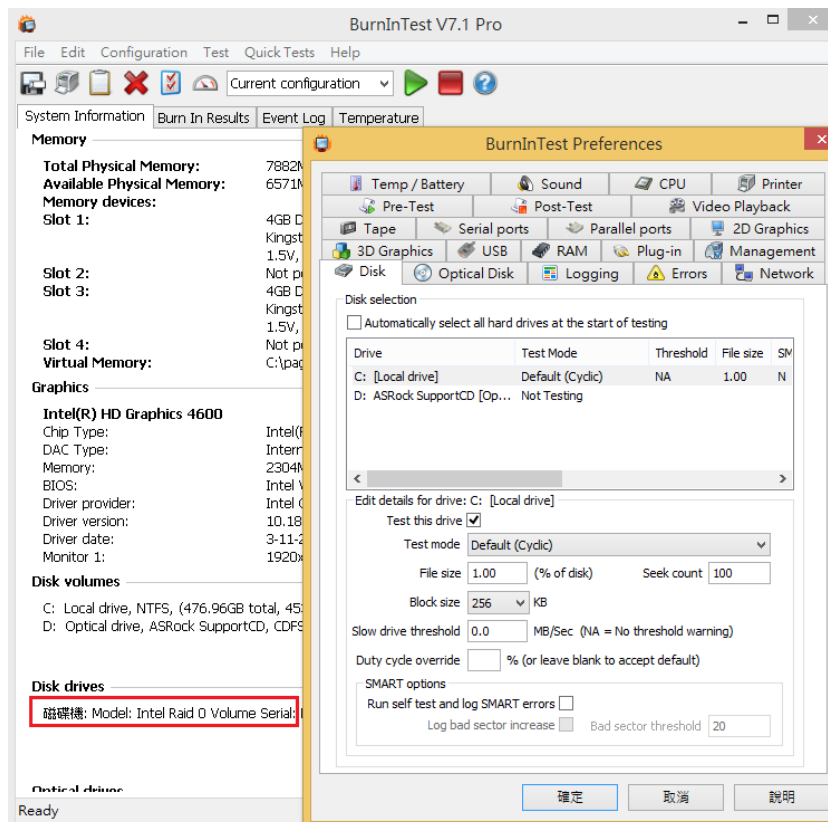
3. Burn In Tests and Results

3.1   BurnInTest v7.1 Pro

    3.1.1 **system information** for LITE-ON LGT-128M6G/128Gx4 as below:

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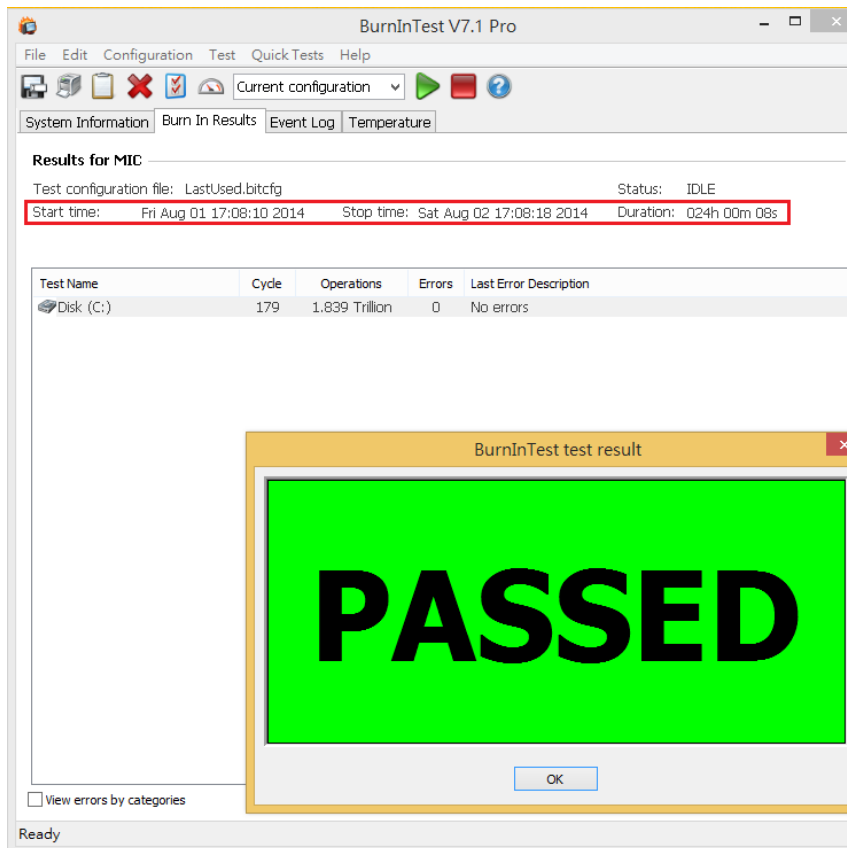

3.1.2   show LITE-ON LGT-128M6G/128Gx4 Disk test mode(default -- 10 ways cycle test)

3.1.3 show LITE-ON LGT-128M6G/128Gx4 24-hour Burn-in test PASSED

4. Summary

4.1 M.2 SSD is SATA III Interface, I/O speed, max. to 600MB/s.

4.2 AD904A/E adapter I/O performance is based on M.2 SSD.