MINERVA

PE2201   Converter Card

Performance & Burn In Test   Rev. 1.0

Table of Contents

PE2201   Interposer Card

1. Overview

PE2201 Interposer card, is M.2 (NGFF) to M.2 (NGFF) converter. It built M.2 (NGFF) 67pin B key connector, and use 22x103(mm) form factor with B + M key dual notch golden finger board. PE2201 allows 22x30(mm), 22x42(mm), 22x60(mm) , 22x80(mm) M.2 SSD inserted using.

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: PE2201 adapter and M.2 PCI-e 2 Lane SSD(PLEXTOR **PX-AG128M6e**)

PE2201 Adapter   PE2201 + M.2 PCI-e 2 Lane SSD   Plextor PX-AG128M6e

2.3   Install Hardware
Insert M.2 PCI-e 2 Lane SSD(PLEXTOR **PX-AG128M6e**) into PE2201 converter's M.2 67pin B key connector, and then with coppers, and screws to fix SSDs. Insert PE2201 converter to M.2_2 connector of ASRock Z97 Extreme 6 motherboard.

PE2201   Interposer Card

2.4   BIOS & Windows 8.1 OS environment setup
    2.4.1   In UFI BIOS(Basic Input/Output Setup) – Change IDE Mode into AHCI Mode

    2.4.2   In Windows 8.1, formatted SSD to NTFS Mode. Don't install any program. Because FAT32 previous versions do not support NCQ, recommended formatted NTFS file mode.

    2.4.3   AHCI support Queue Command
        AHCI queue command protocol allows each disk contains 32 commands. So QD (Queue Depth) is 32.

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.
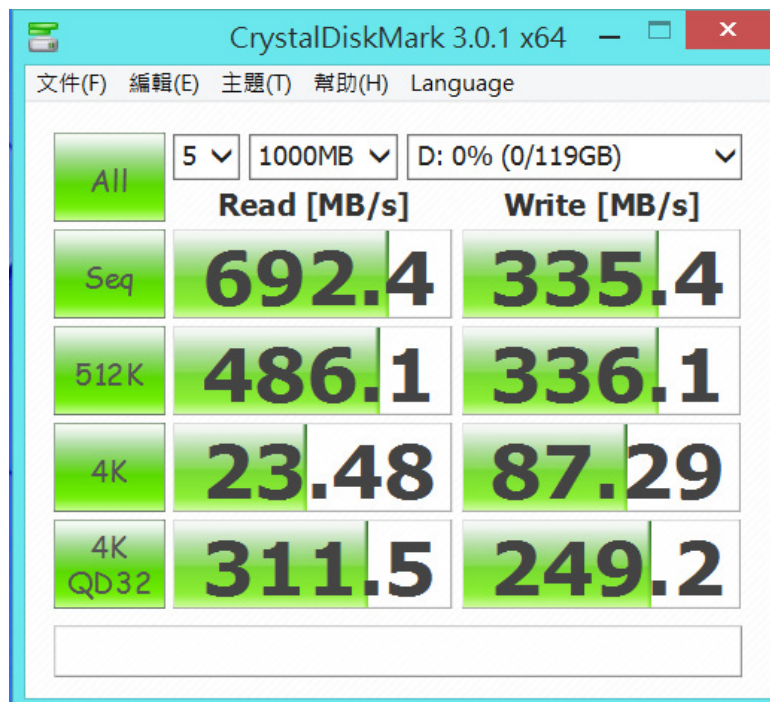   2.5.2.1   Toggle DDR mode or ONFI synchronous NAND Flash IC, will show good performance
        2.5.2.2   Traditional asynchronous or SDR NAND Flash IC, will show poor performance

2.6   CrystalDiskMark 3.0.1 x64 performance test
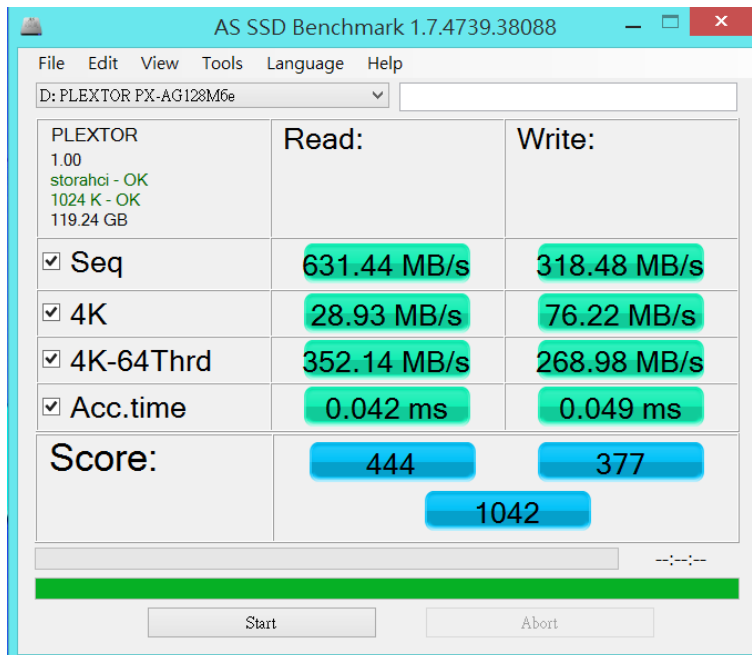   ※Benchmark (Sequential Read & Write / default = 1MB)
    2.6.1   Used PLEXTOR **PX-AG128M6e** performance as below:

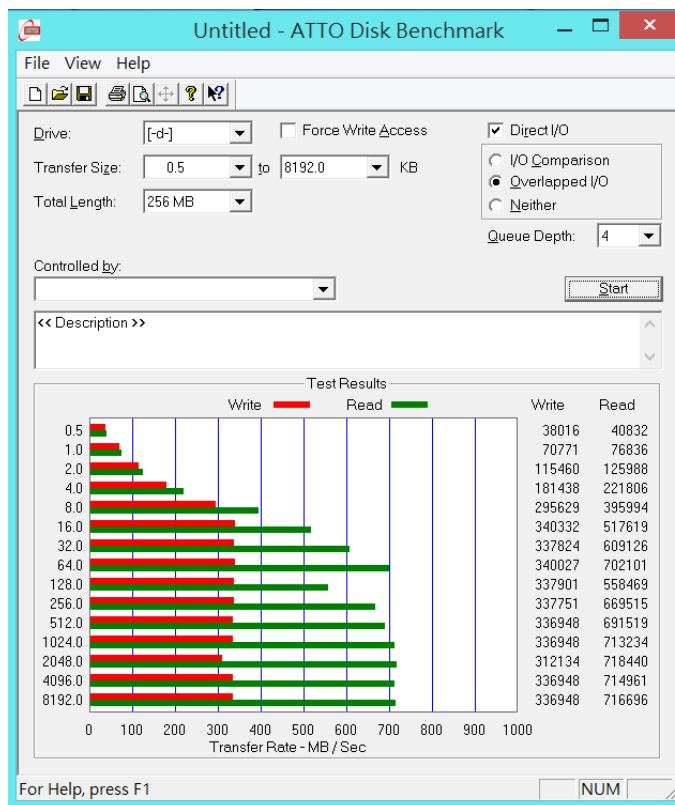2.7   <u>AS SSD Benchmark 1.7 performance test</u>
　※Benchmark (Read & Write by MB/s, default block size = 16MB)

2.7.1   Used <u>PLEXTOR **PX-AG128M6e**</u> performance as below:
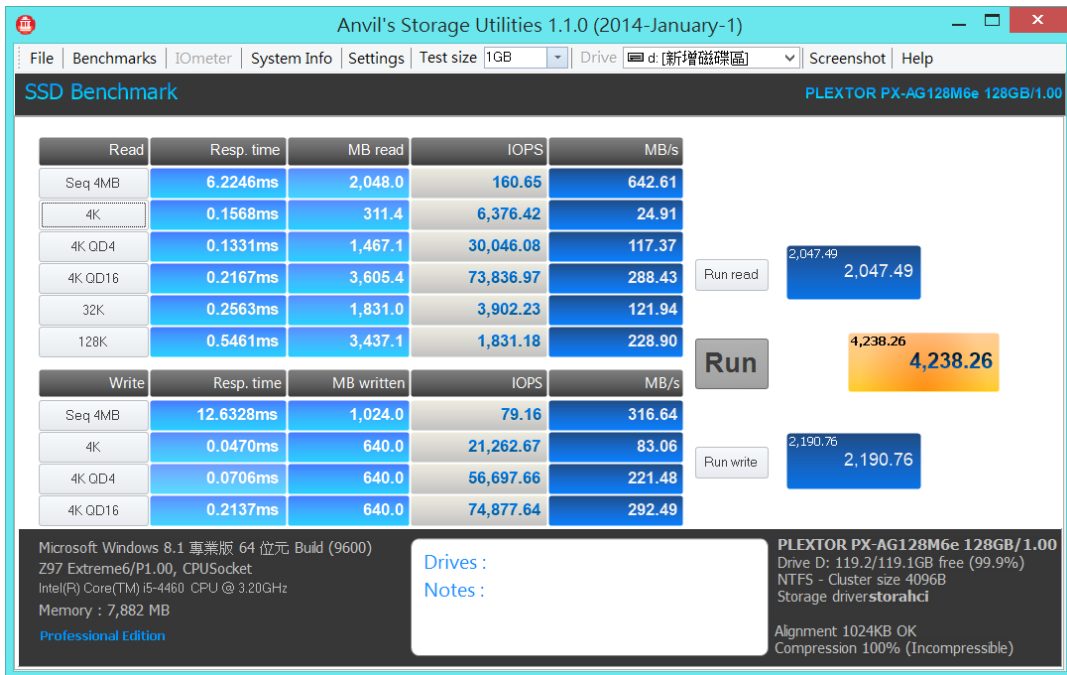
2.8   <u>ATTO Disk Benchmark 2.47 performance test</u>
2.8.1   Used <u>PLEXTOR **PX-AG128M6e**</u> performance as below:

PE2201　Interposer Card
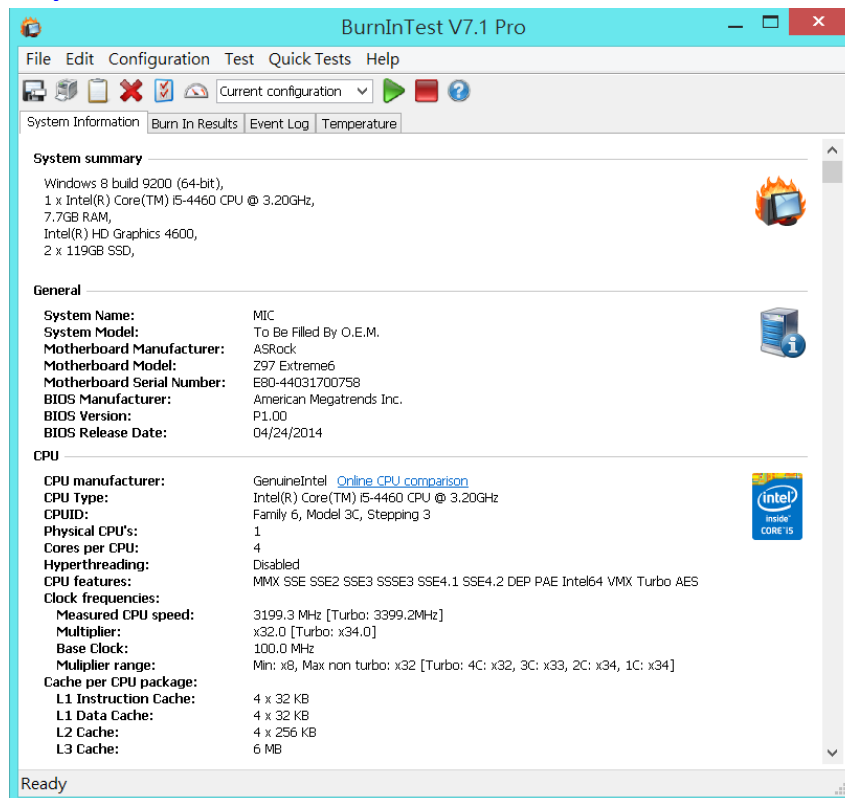
2.9　AnvilBenchmark_V110_B337

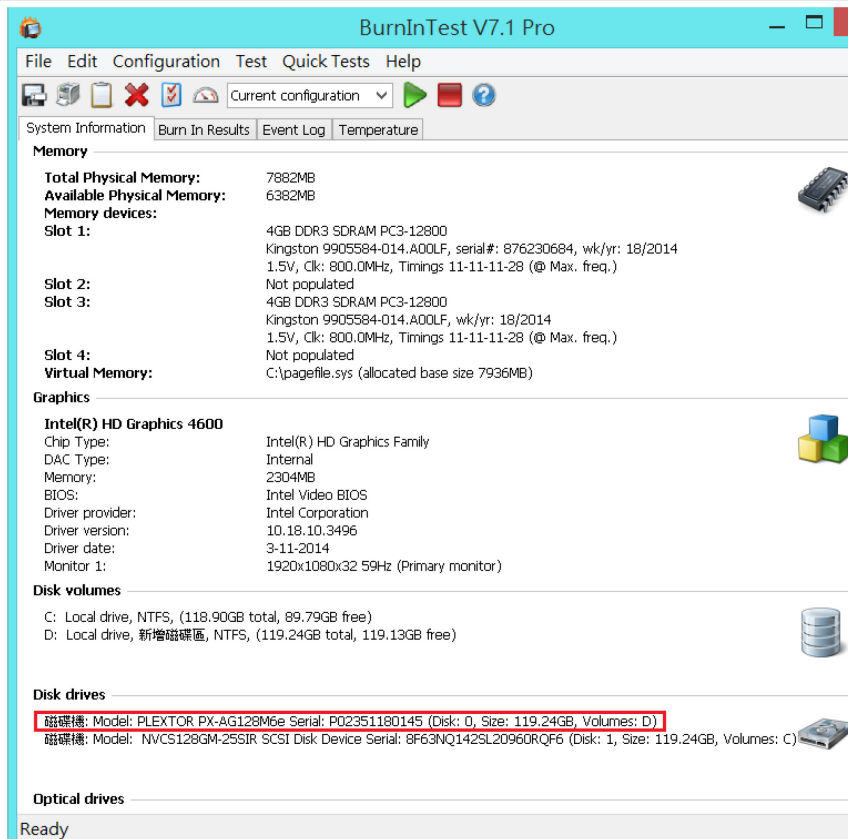2.9.1　Used PLEXTOR **PX-AG128M6e** performance as below:
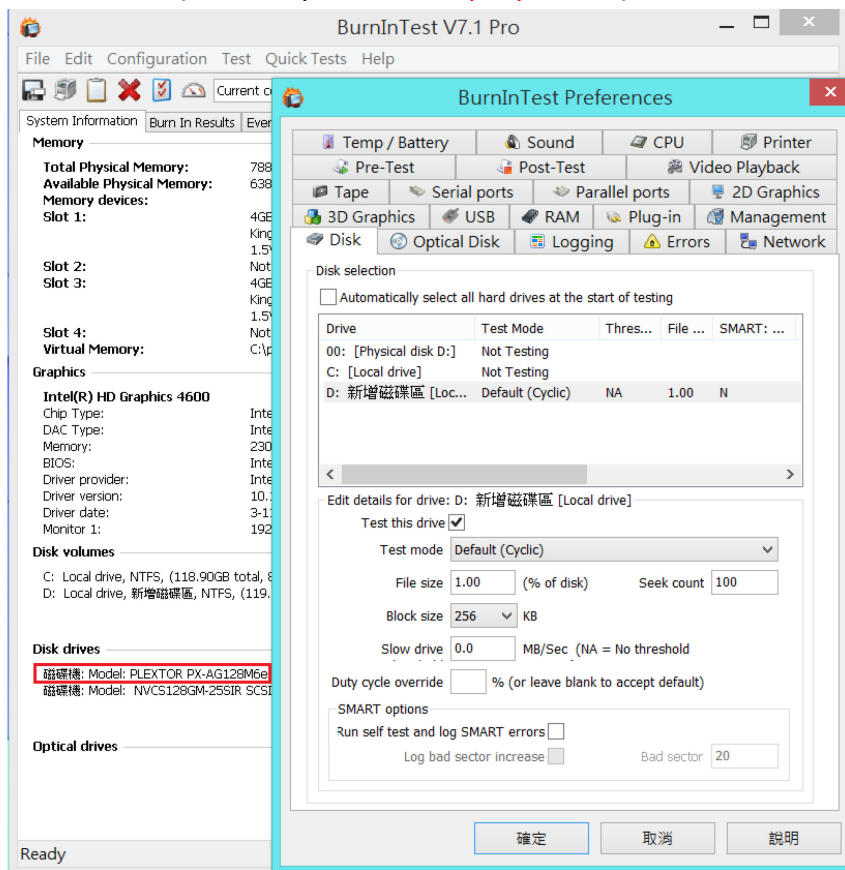

3. Burn In Tests and Results

3.1　BurnInTest v7.1 Pro

3.1.1　**system information** for PLEXTOR **PX-AG128M6e** as below:
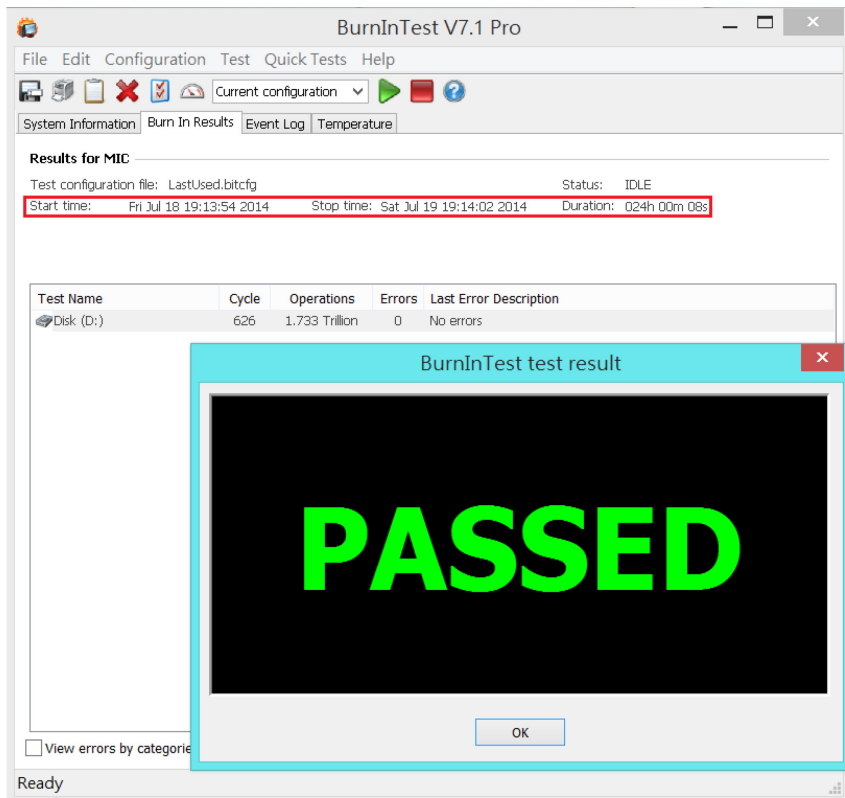
PE2201   Interposer Card

3.1.2   show Disk test mode(default cyclic -- 10 ways cycle test)

3.1.3   show PLEXTOR **PX-AG128M6e** 24-hour Burn-in test PASSED

4. Summary

4.1   PCI-e Gen 2/ 1 Lane is 5Gbs

4.2   PLEXTOR **PX-AG128M6e** SSD is PCI-e Gen 2/ 2 Lane Interface, I/O speed, max. to 800MB/s.

4.3   PE2201 adapter I/O performance is based on PLEXTOR **PX-AG128M6e** SSD