

AD96AFB/AD96AFE Converter Card

Performance & Burn In Test Rev. 1.0

Table of Contents

1. Overview

2. Performance Measurement Tools and Results

- 2.1 Test Platform
- 2.2 Test target and Used SATA III SSD
- 2.3 Install Hardware
- 2.4 BIOS & Windows 7 OS environment setup
- 2.5 SSD I/O Performance impact factors
- 2.6 CrystalDiskMark 3.0.1 x64 performance test
- 2.7 AS SSD Benchmark 1.6 performance test
- 2.8 HD Tune Pro 5.0 performance test
- 2.9 ATTO Disk Benchmark performance test

3. Burn In Tests and Results

- 3.1 BurnInTestv7.0 Pro burn in test
- 4. Summary

1. Overview

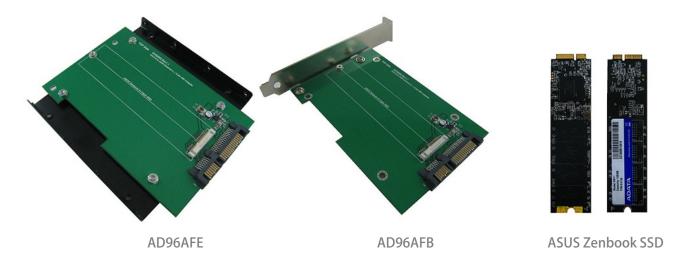
AD96AFB/FE series adapters, support 6+12pin connector to convert Asus Zenbook SATA III SSD into SATA 7+15pin standard interface.

2. Tools and Results of Performance Measurement

2.1 Test Platform

| M/B : | ASUS P8P67 |
|-------------|---|
| CPU : | Intel i5-2500, 3.3MHz/ 6G Cache/ 5GT |
| Memory : | Kingston KVR1333D3N9K2/4G, DDR3-1333MHz,4G(2GB DIMM*2) |
| ATX Power : | TC START W500, 500W ATX ,12V V2.2 Power Supplier |
| Graphic : | MSI , R6700 / AMD HD 6700 Series |
| OS : | Microsoft Windows 7 64bit OS |

2.2 Test target: (AD96AFx series adapter) and SSD(ADATA XM11-128GB)



2.3 Install Hardware

Insert SATA III SSD(<u>ADATA XM11-128GB</u>) into AD96AFB/FE converter's SATA 6+12pin connector, and then with coppers, and screws to fix SSDs. (Please refer to the Installation Notes). Connect AD96AFB/FE converter to SATA III Port of ASUS P8P67 motherboard.

- 2.4 BIOS & Windows 7 OS environment setup
 - 2.4.1 In BIOS(Basic Input/Output Setup) Change IDE Mode into AHCI Mode
 - 2.4.2 In Windows 7, formatted SSD to NTFS Mode. Don't install any program.

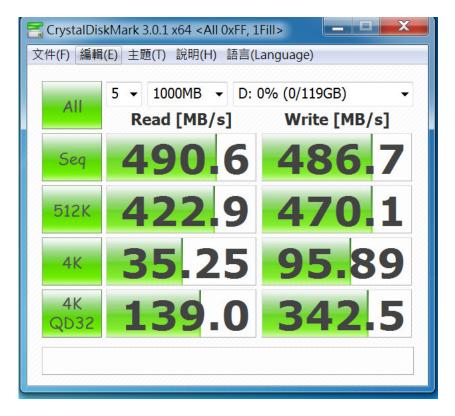
2.5 SSD I/O Performance impact factors

- 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

Suggestion:

Please use the motherboard containing native SATA 6Gb/s Port testing, can provide more correct I/O performance. (Such as Intel 6 Series chipsets or AMD 9 Series Chipsets). If you are using a motherboard plus SATA III host bus adapter, non-native 6Gb/s Port or SATA to PCI-e adapter provides 6Gb/s Port. I/O performance testing will be very much lower than the native SATA III Port.

- 2.6 CrystalDiskMark 3.0.1 x64 performance test ※Benchmark (Sequential Read & Write / default = 1MB)
 - 2.6.1 Used ADATA XM11-128GB performance as below:



2.7 AS SSD Benchmark 1.6 performance test

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

2.7.1 Used <u>ADATA XM11-128GB</u> performance as below:

| 🕍 AS SSD Benchmark 1.6.4237.30508 | | | | | | |
|---|-------------|-------------|--|--|--|--|
| File Edit View Tools Language Help | | | | | | |
| D: ADATA XM11 128GB | | | | | | |
| ADATA XM11 128GB 5.0. iaStor - OK 336896 K - OK 119.24 GB | Read: | Write: | | | | |
| ✓ Seq | 482.63 MB/s | 114.62 MB/s | | | | |
| ✓ 4K | 20.08 MB/s | 73.90 MB/s | | | | |
| 4K-64Thrd | 120.71 MB/s | 110.49 MB/s | | | | |
| Acc.time | 0.192 ms | 0.257 ms | | | | |
| Score: | 189 | 196 | | | | |
| | 47 | 71 | | | | |
| | | | | | | |
| Abort | | | | | | |

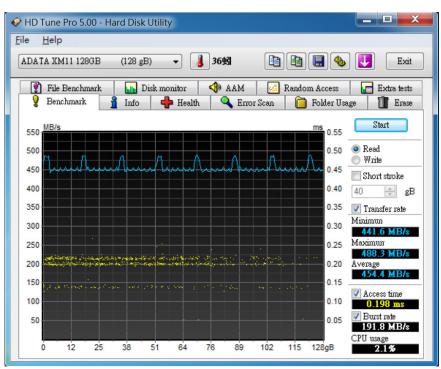
2.7.2 Used ADATA XM11-128GB IOPS as below:

| AS SSD Benchmark 1.6.4237.30508 | | | | | |
|---|------------|------------|--|--|--|
| File Edit View Tools Language Help | | | | | |
| D: ADATA XM11 128GB | | | | | |
| ADATA XM11 128GB 5.0. iaStor - OK 336896 K - OK 119.24 GB | Read: | Write: | | | |
| ☑ 16MB | 30.16 iops | 7.16 iops | | | |
| ☑ 4K | 5139 iops | 18918 iops | | | |
| 4K-64Thrd | 30903 iops | 28285 iops | | | |
| ☑ 512B | 5200 iops | 3888 iops | | | |
| Score: | 189 | 196 | | | |
| 471 | | | | | |
| | | | | | |
| Start Abort | | | | | |

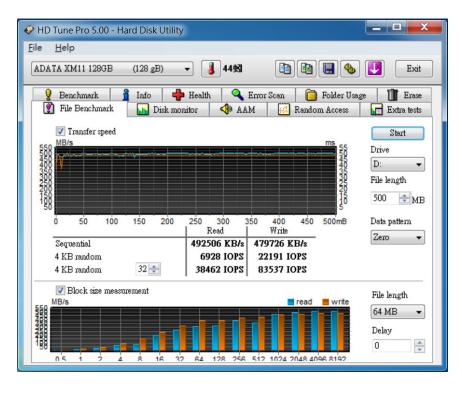
2.8 HD Tune Pro 5.0 performance test

※Benchmark (Sequential Read / default block size = 64KB)

2.8.1 Used ADATA XM11-128GB performance as below:



2.8.2 Used ADATA XM11-128GB File Benchmark as below:



2.9 ATTO Disk Benchmark

2.9.1 Used <u>ADATA XM11-128GB</u> performance as below:

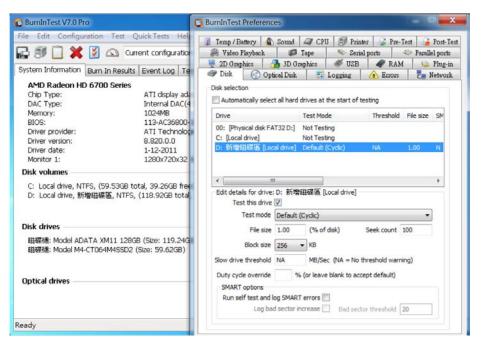
| Dirve: [-d-] Force Write ≜cccess ✓ Direct I// Transfer Sige: 0.5 jo 8192.0 KB Total Length: 256 MB ✓ 10 8192.0 KB Controlled by: ✓ Statt ✓ Statt ✓ Statt ✓ Statt ✓ Statt ✓ Statt ✓ ✓ Statt ✓ ✓ ✓ ✓ Statt ✓ ✓ ✓ Statt <t< th=""><th>Untitled - ATTO Disk Benchmark</th><th></th></t<> | Untitled - ATTO Disk Benchmark | |
|--|--|--|
| Drive: [-d-] Force Wike ≜ccess ✓ Direct I// Transfer Sige: 0.5 to 8132.0 KB Total Length: 256 MB ■ Queue Depth: 4 Controlled by: ▼ Statt Statt Vike Read Wike Read 0.5 0 0 31664 3400 0.5 0 0 31664 3400 256.0 0 0 31664 3400 256.0 0 0 31657 4300 128.0 0 0 0 31657 31512 128.0 0 0 0 512376 52887 128.0 0 0 0 523776 52378 128.0 0 0 0 523776 5388 128.0 0 0 0 523776 5388 | | |
| Total Length: 256 MB Image: Controlled by: Controlled by: Image: Controlled by: Image: Controlled by: Image: Controlled by: | | |
| Controlled by: | | Overlapped I/O Overl |
| Image: Construction and the second | Controlled bu: | Queue Depth: 4 |
| Test Results Write Read 0.5 1.0 16896 170 1.0 31664 340 670 2.0 63840 670 1316 1.6.0 31523 23817 131654 2.0 40 31523 23817 1.6.0 401649 3379 3220 256.0 52657 4511 506257 128.0 519706 4855 523518 523776 102.4.0 525057 5478 523776 5488 | provide a second s | [Start |
| Wite Read Wite Read 0.5 1.0 16896 170 1.0 31664 340 670 2.0 63840 670 25670 1316 1.0 31523 23811 31523 23811 1.0 40 59670 1316 315223 23811 1.6.0 401649 3379 32.0 474396 3951 1.28.0 506257 4551.1 506257 4551.2 5235176 523637 1.28.0 525057 5478.8 5235776 5478.8 523577 5478.8 1.02.4.0 525057 5478.8 523577 5478.8 523577 5478.8 | << Description >> | |
| 0.5 16896 170 2.0 31664 340 2.0 32667 31623 4.0 258670 1316 31523 23817 31523 16.0 315223 3291 32.0 401649 3379 32.0 50527 4511 128.0 519706 4895 256.0 523516 52377 512.0 52377 518.0 024.0 525057 5478 | | |
| | 1.0 2.0 4.0 8.0 3.2 64.0 128.0 256.0 512.0 1024.0 2048.0 4095.0 8192.0 | 31664 34048 63840 67072 259670 131620 315223 238190 401649 337950 474396 395128 506257 445128 519706 485538 523518 527387 523575 558670 525057 547827 525057 556663 527637 556663 |
| 0 100 200 300 400 500 600 700 800 900 1000 TransferRate-MB/Sec | | 00 900 1000 |

Burn In Tests and Results

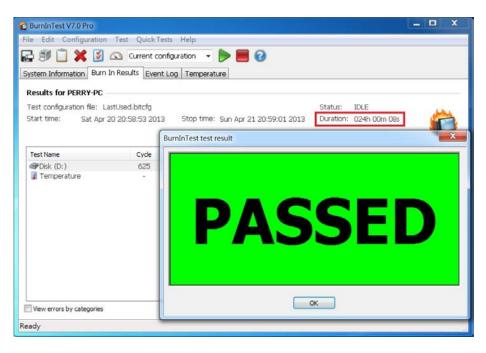
- 3.1 BurnInTest v7.0 Pro
 - 3.1.1 system information for ADATA XM11-128GB as below:

| C BurnInTest V7.0 Pro | |
|--|-----|
| File Edit Configuration Test Quick Tests Help | |
| 🔛 🗐 📋 💢 🧭 🖎 Current configuration 🕞 🍉 📕 🚷 | |
| System Information Burn In Results Event Log Temperature | |
| AMD Radeon HD 6700 Series Chip Type: ATI display adapter (0x68BA) DAC Type: Internal DAC(400H/z) Memory: 1024MB BIOS: 113-AC36800-103 Driver provider: ATI Technologies Inc. Driver version: 8.820.00 Driver date: 1-12-2011 Monitor 1: 1280x720x32 60Hz (Primary monitor) | |
| Disk volumes | |
| C: Local drive, NTFS, (59.53GB total, 39.26GB free) D: Local drive, 新増結礎種面, NTFS, (118.92GB total, 118.83GB free) | |
| Disk drives | |
| 磁碟機: Model ADATA XM11 128GB (Size: 119.24GB) 磁碟機: Model M4-CT064M4SSD2 (Size: 59.62GB) | ۵ 💜 |
| Optical drives | |
| | - |
| Ready | 11 |
| | |

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



3.1.3 show ADATA XM11-128GB 24-hour Burn-in test PASSED



4. Summary

- 4.1 ADATA XM11 Series SSD is SATA III Interface, I/O speed, max. to 600MB/s.
- 4.2 AD96AFB/FE adapter I/O performance is based on ADATA XM11 Series SSD