



MINERVA

PA801A SSF-8643 8 Lanes to M.3 NF1 NVMe 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 M.3 NVMe SSD

2.3 Install Hardware

2.4 BIOS & Windows 10 OS environment setup

2.5 CrystalDiskMark 6.02 x64 performance test

2.6 AS SSD Benchmark 2.0.6 performance test

2.7 ATTO Disk Benchamrk 3.05 performance test

2.8 AnvilBenchmark_V110_B337 Benchmark performance test

3. Burn In Tests and Results

3.1 BurnInTestv8.1 Pro burn in test

4. Summary

PA801A Rev1.0 Converter Card

1. Overview

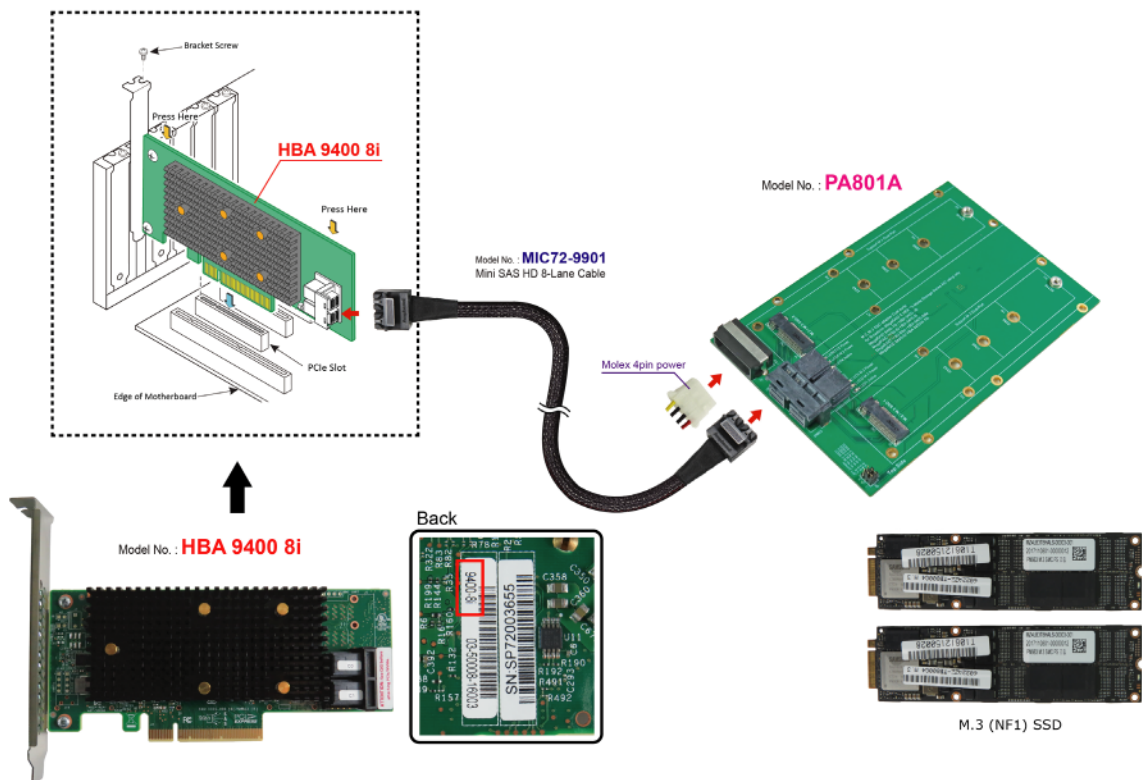
This riser card has built-in SFF-8643 8x connector and M.2 M-KEY connector, which can be inserted into M.2 or M.3 NVMe SSD. It is designed for use by Broadcom MegaRAID and HBA series, and can be set as needed for independent drive, or merge into RAID mode.

2. Tools and Results of Performance Measurement

2.1 Test Platform

- M/B : GIGABYTE **Z270-Gaming 8**
- CPU : Intel **i7-7700**, 3.6GHz/ 8M Cache/ LGA1151
- Memory : Kingston **KVR21N15D8/8**, **DDR4-2133MHz**, **16GB**(8GB DIMM*2)
- ATX Power : COOLER MASTER G750M, **750W ATX**, 12V V2.2 Power Supply
- Graphic : Z270 Chipsets built-in **HD Graphics 630**
- AIC: Broadcom HBA-9400-8i Tri-mode Storage Adapter
- Adapter: PA801A SFF-8643(MINI SAS hd) 8-Lane to M.2/M.3 Adapter
- Cable: SFF-8643(MINI SAS HD) 8-Lane to SFF-8643(MINI SAS HD) 8-Lane Cable
- OS : Microsoft **Windows 10 64bit OS**

2.2 Test target: PA801A adapter and M.3 NF1 **Samsung MZ4LB3T8HALS-000 4TB NVMe SSD**



PA801A Rev1.0 Converter Card

2.3 Install Hardware

First insert the M.3 NF1 SSD into the PA801A riser card M.2 connector, then with copper nuts, and screws to fix SSDs. (Please refer to the Installation Notes). To connect the PA801A adapter to the Broadcom HBA 9400-8i AIC card using the MIC72-9901 Cable, and Plugs HBA 9400-8i AIC card into GIGABYTE GIGABYTE **Z270-Gaming 8**.

2.4 BIOS & Windows 10 OS environment setup

2.4.1 Primary NVMe SSD install Windows 10 OS.

2.4.2 Two M.3 NF1 NVMe SSD , formatted to NTFS Mode. Don't install any program.

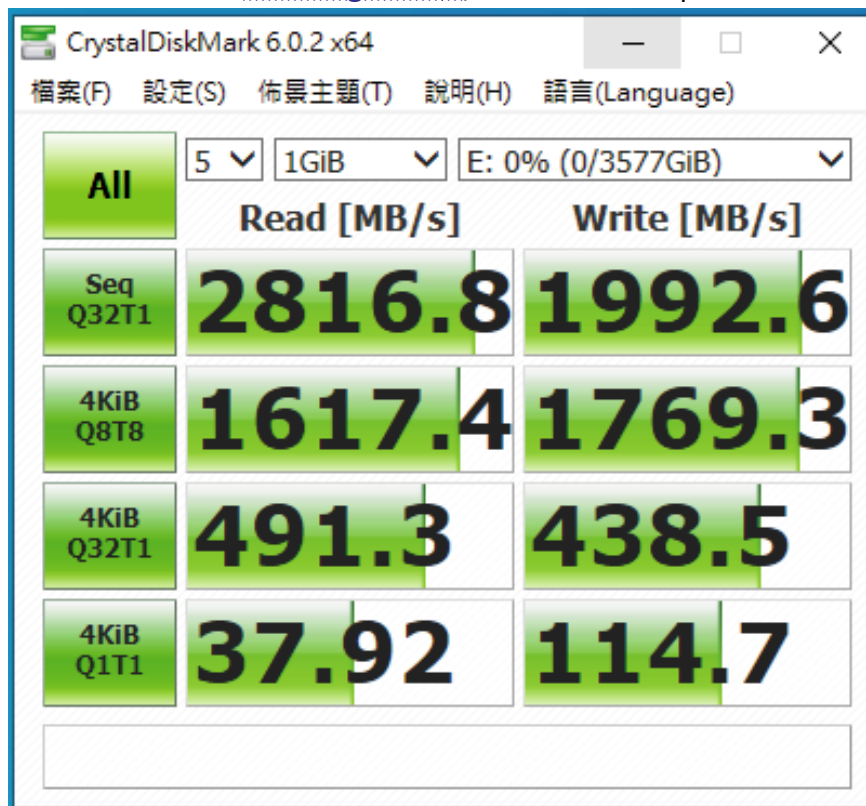


PA801A Rev1.0 Converter Card

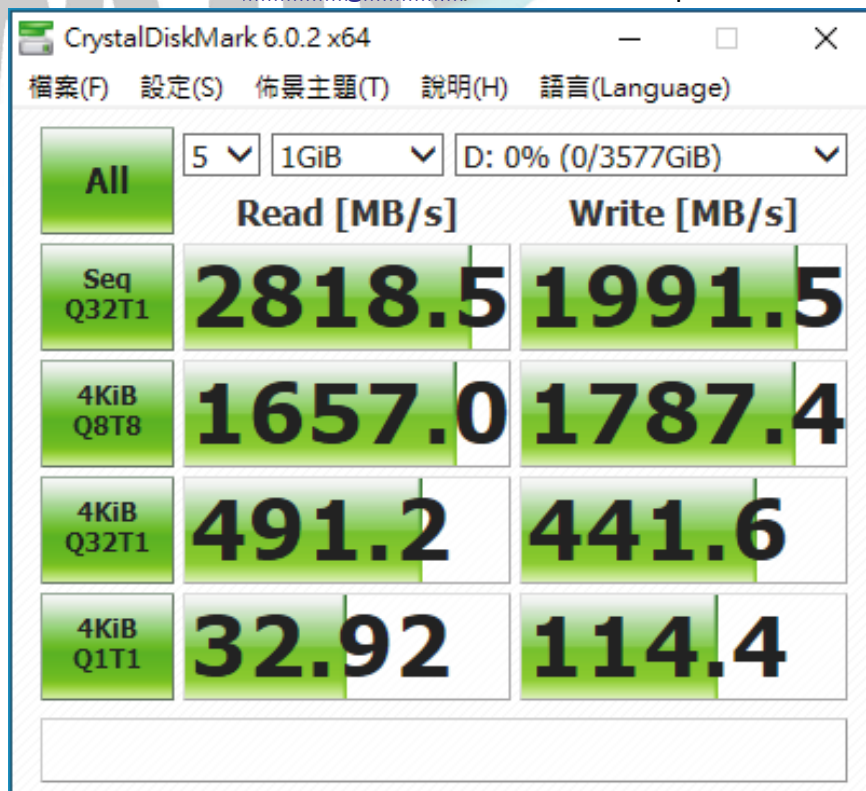
2.5 CrystalDiskMark 6.0.2 x64 performance test

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

2.5.1 M.3 NF1 NVMe Samsung PM983/4TB in Drive D: performance as below:



2.5.2 M.3 NF1 NVMe Samsung PM983/4TB in Drive E: performance as below:

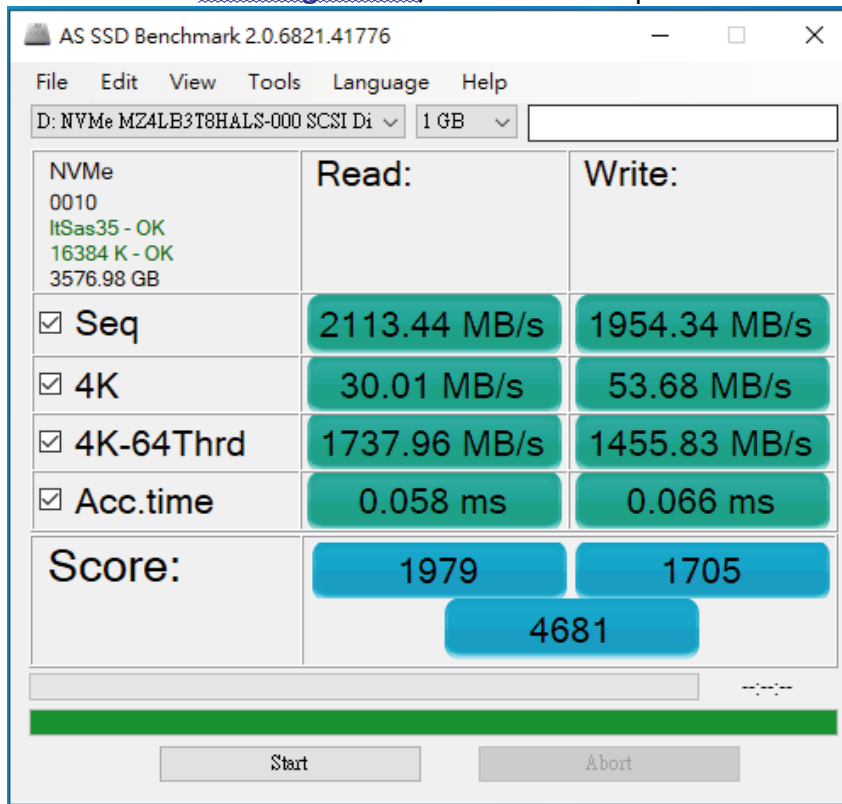


PA801A Rev1.0 Converter Card

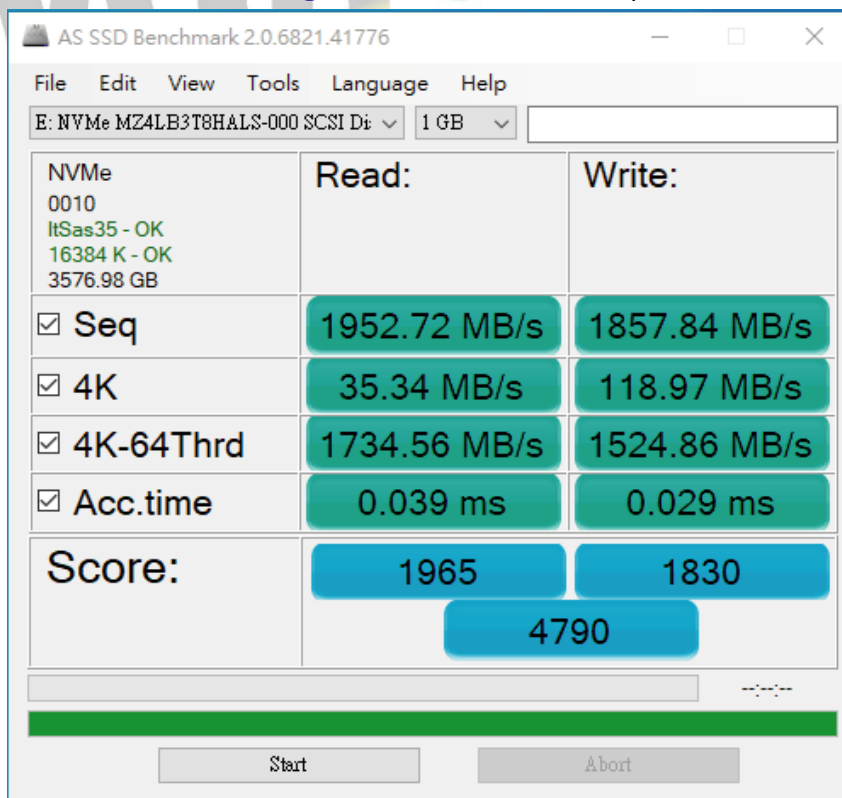
2.6 AS SSD Benchmark 1.9 performance test

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

2.6.1 **M.3 NF1 NVMe Samsung PM983/4TB** in Drive D: performance as below:



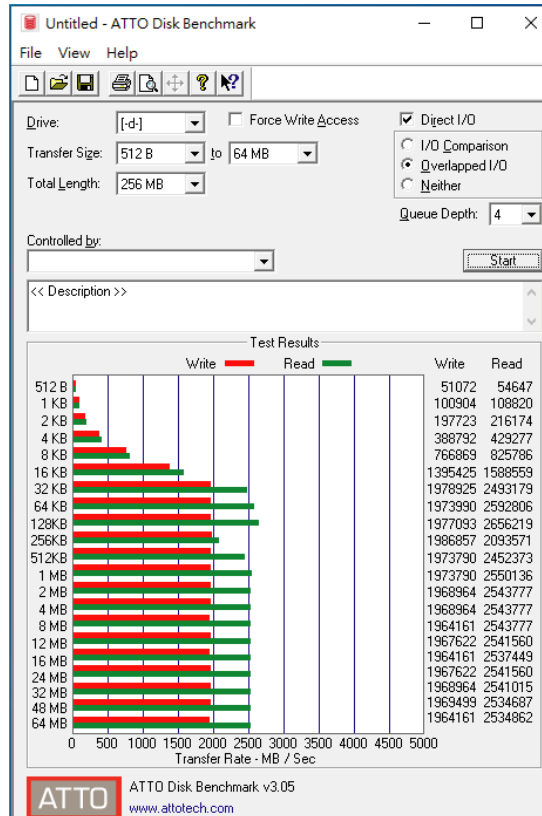
2.6.2 **M.3 NF1 NVMe Samsung PM983/4TB** in Drive E: performance as below:



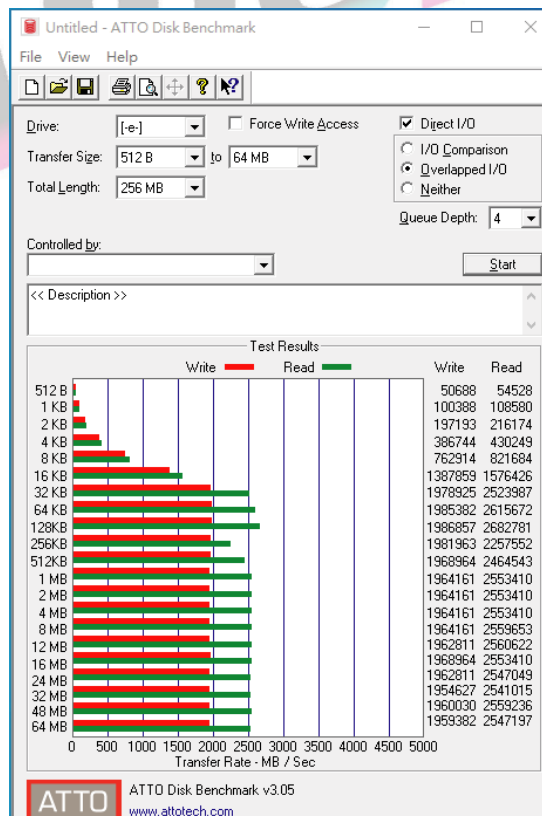
PA801A Rev1.0 Converter Card

2.7 ATTO Disk Benchmark 3.05 performance test

2.7.1 M.3 NF1 NVMe Samsung PM983/4TB in Drive D: performance as below:



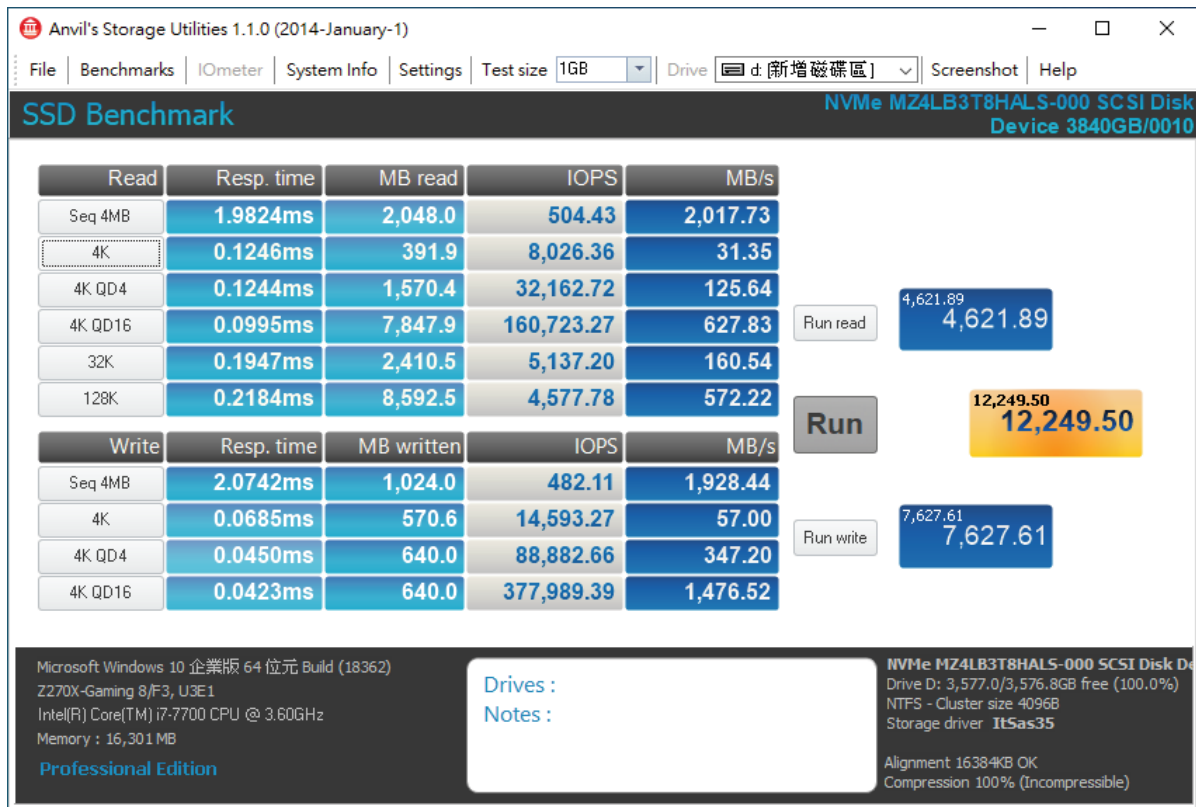
2.7.2 M.3 NF1 NVMe Samsung PM983/4TB in Drive E: performance as below:



PA801A Rev1.0 Converter Card

2.8 AnvilBenchmark_V110_B337

2.8.1 M.3 NF1 NVMe Samsung PM983/4TB in Drive D: performance as below:



2.8.2 M.3 NF1 NVMe Samsung PM983/4TB in Drive E: performance as below:



PA801A Rev1.0 Converter Card

3. Burn In Tests and Results

3.1 BurnInTest v8.1 Pro

3.1.1 system information as below:

The screenshot shows the 'System summary' window of BurnInTest V8.1 Pro. The system is running Windows 10 Enterprise Edition build 18362 (64-bit) on a desktop system. The hardware includes an Intel(R) Core(TM) i7-7700 CPU @ 3.60GHz, 16GB RAM, Intel(R) HD Graphics 630, and two 3577GB HDDs. The motherboard is a Gigabyte Z270X-Gaming 8. The CPU is an Intel Core i7-7700, 4-core, 4-threads, running at 4003.0 MHz. The system has 16301MB of physical memory and 13811MB available. The virtual memory is set to C:\pagefile.sys with an allocated base size of 2944MB.

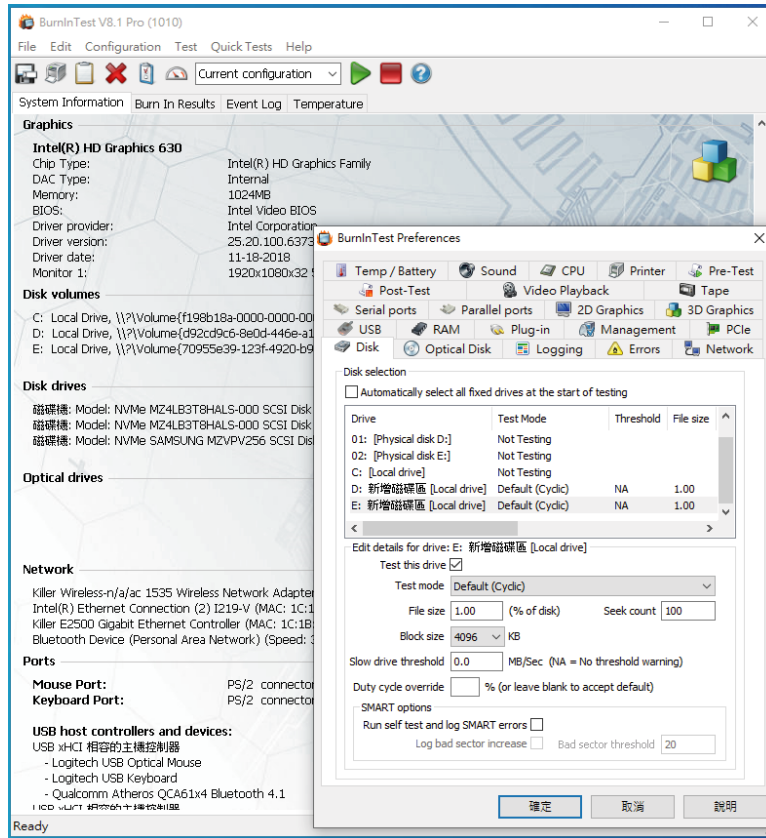
Category	Item	Value
System summary	Windows 10 Enterprise Edition build 18362 (64-bit), 1 x Intel(R) Core(TM) i7-7700 CPU @ 3.60GHz, 16GB RAM, Intel(R) HD Graphics 630, 2 x 3577GB HDD, 238GB HDD,	
	General	
System Name:	DESKTOP-A77DCD3	
Motherboard Manufacturer:	Gigabyte Technology Co., Ltd.	
Motherboard Model:	Z270X-Gaming 8	
Motherboard Version:	x.x	
Motherboard Serial Number:	Default string	
BIOS Manufacturer:	American Megatrends Inc.	
BIOS Version:	F3	
BIOS Release Date:	12/13/2016	
BIOS Serial Number:	Z270X-Gaming 8	
CPU	CPU manufacturer:	GenuineIntel Online CPU comparison
	CPU Type:	Intel(R) Core(TM) i7-7700 CPU @ 3.60GHz
	CPUID:	Family 6, Model 9E, Stepping 9
	Physical CPU's:	1
	Cores per CPU:	4
	Hyperthreading:	Enabled
	CPU features:	MMX SSE SSE2 SSE3 SSSE3 SSE4.1 SSE4.2 DEP PAE Intel64 VMX SMX AES
	Clock frequencies:	
	Measured CPU speed:	4003.0 MHz
	Cache per CPU package:	
	L1 Instruction Cache:	4 x 32 KB
	L1 Data Cache:	4 x 32 KB
L2 Cache:	4 x 256 KB	
L3 Cache:	8 MB	
Memory	Total Physical Memory:	16301MB
	Available Physical Memory:	13811MB
	Memory devices:	
	0:	Not populated
	2:	Not populated
Virtual memory:	C:\pagefile.sys (allocated base size 2944MB)	

The screenshot shows the 'Graphics' and 'Disk drives' windows of BurnInTest V8.1 Pro. The Graphics window displays details for the Intel(R) HD Graphics 630, including chip type, DAC type, memory, BIOS, driver provider, driver version, driver date, and monitor information. The Disk drives window lists three drives: C: (Local Drive, NTFS, 237.93GB total, 194.19GB free), D: (Local Drive, NTFS, 3576.97GB total, 3576.76GB free), and E: (Local Drive, NTFS, 3576.97GB total, 3576.76GB free). The disk drives section is highlighted with a red box, showing the following information:

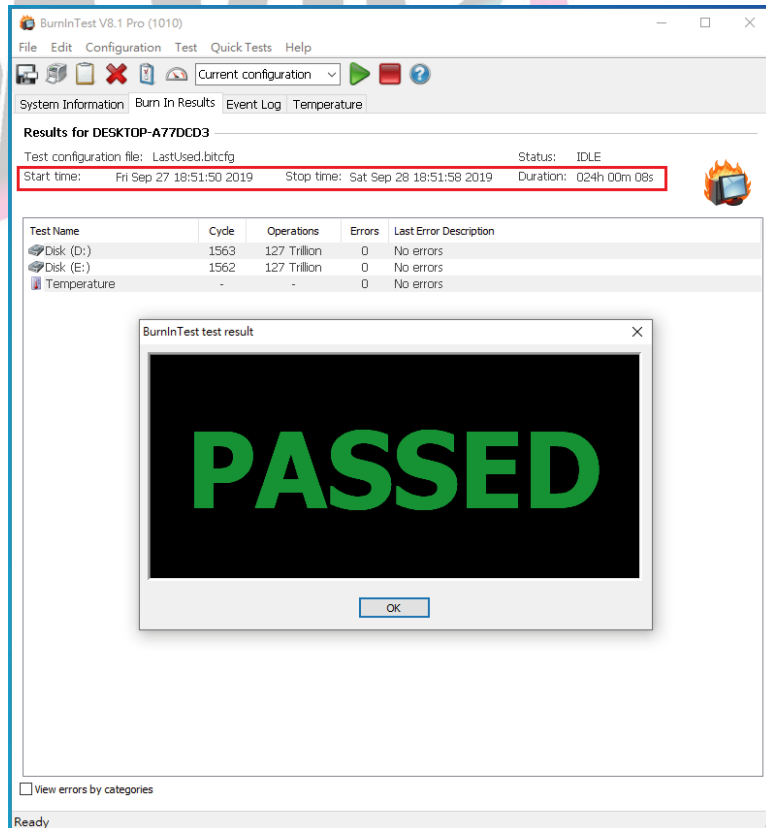
Model	Size	Volumes
Model: NVMe M24L83T8HALS-000 SCSI Disk Device Serial: N/A (Disk: 2, Size: 3576.98GB, Volumes: E)	3576.98GB	E
Model: NVMe M24L83T8HALS-000 SCSI Disk Device Serial: N/A (Disk: 1, Size: 3576.98GB, Volumes: D)	3576.98GB	D
Model: NVMe SAMSUNG MZVP256 SCSI Disk Device Serial: N/A (Disk: 0, Size: 238.47GB, Volumes: C)	238.47GB	C

PA801A Rev1.0 Converter Card

3.1.2 Disk test mode (10 ways cycle test)



3.1.3 24-hour Burn-in test PASSED



4. Summary

- 4.1 M.3 NF1 NVMe SSD is PCI-e Gen 3 / 4 Lane Interface, I/O speed, max. to 32Gbps.
- 4.3 PA801A adapter I/O performance is based on M.3 NF1NVMe SSD.

