



MINERVA

GD2409A SlimSAS PCIe 4.0 for M.2 NVMe SSD Adapter

Performance & Burn In Test Rev. 1. 0

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1. Overview

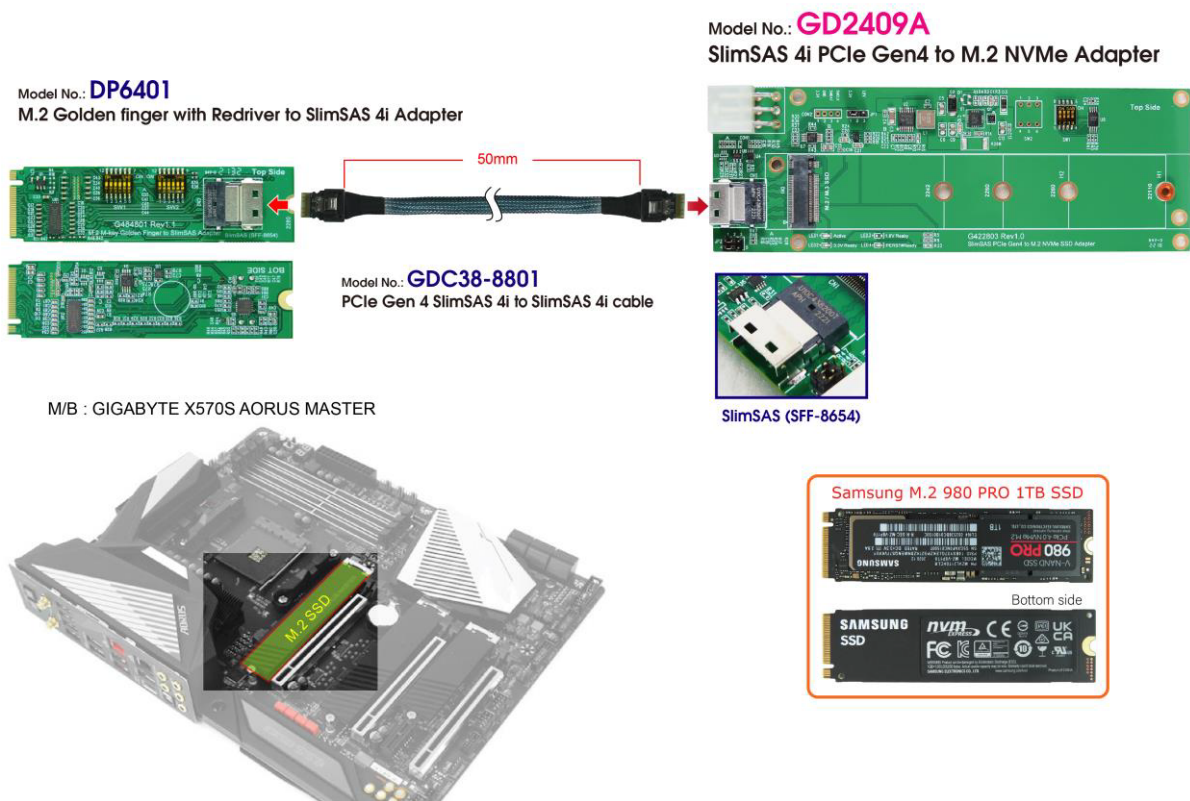
The GD2409A Adapter, providing M.2 M-key connector that can be M.2 NVMe SSD converted into SlimSAS 4i PCIe 4.0 interface.

2. Tools and Results of Performance Measurement

2.1 Test Platform

M/B : GIGABYTE **X570S AORUS MASTER**
CPU : AMD **Ryzen 7, 3700X 8-Core**
Memory : Kingston **KVR26N19D8/16, DDR4-2666MHz, 32GB**(16GB DIMM*2)
ATX Power : COOLER MASTER G750M, **750W ATX**, 12V V2.2 Power Supply
AIC: DP6401 M.2 PCIe 4.0+ReDriver to SlimSAS 4i ADD-in Card
Adapter: GD2409A SlimSAS 4i PCIe 4.0 to M.2 NVMe SSD Adapter
Cable: SlimSAS 4i(SFF-8654) male to male for PCIe 4.0, **50cm** Cable
OS : Microsoft **Windows 10 64bit OS**

2.2 Test target: GD2409A Adapter, DP6401Rev1.1 AIC & **Samsung 980 PRO 1TGB SSD**



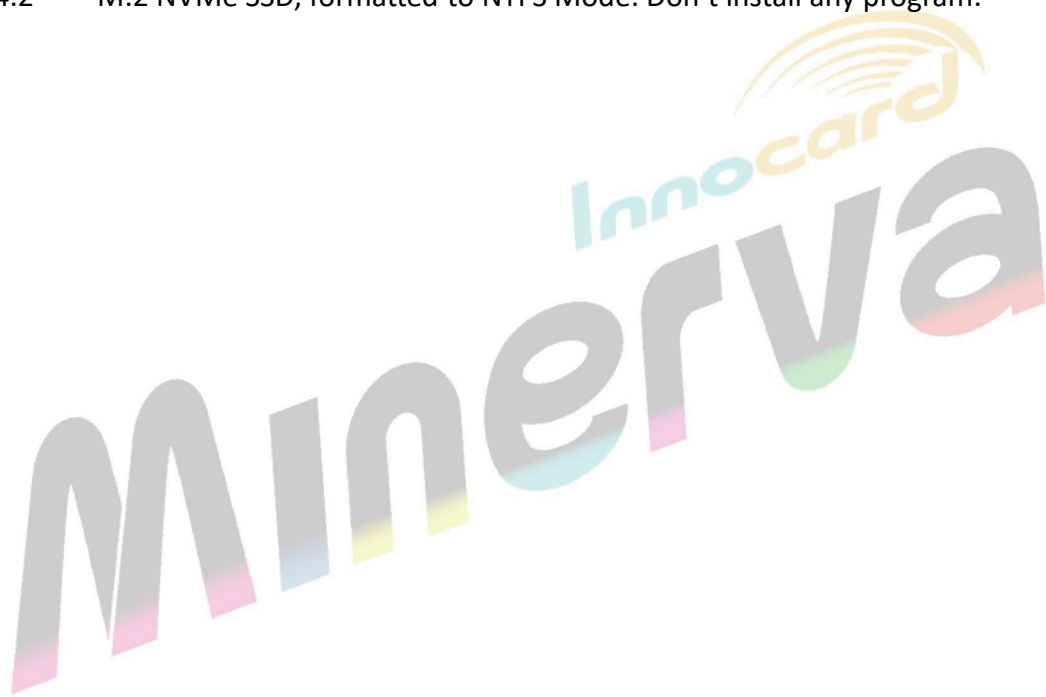
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2.3 Install Hardware

Inserts M.2 NVMe SSD into GD2409A converter's M.2 M-key connector, and then with coppers, and screws to fix SSDs. (Please refer to the Installation Notes). Connects GD2409A converter to DP6401 AIC(M.2 PCIe 4.0 with Redriver to SlimSAS 4i ADD-in Card), Using SFF-8654 4i PCIe 4.0 male to male cable and plugs DP6401 into GIGABYTE **M.2 connector of X570S AORUS MASTER**

2.4 BIOS & Windows 10 OS environment setup

- 2.4.1 Primary SATA SSD installed Windows 10 OS.
- 2.4.2 M.2 NVMe SSD, formatted to NTFS Mode. Don't install any program.



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2.5 CrystalDiskMark 8.0 x64 performance test

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

2.5.1 **Samsung 980 PRO 1TGB** performance as below:

The screenshot shows the CrystalDiskMark 8.0.0 x64 [Admin] interface. The test is configured for 'All' operations, a block size of 5, a test size of 1GiB, and a target drive of D: (0%/932GiB). The results are as follows:

	Read (MB/s)	Write (MB/s)
SEQ1M Q8T1	6743.48	4942.47
SEQ1M Q1T1	4129.39	4193.94
RND4K Q32T1	527.73	465.53
RND4K Q1T1	83.79	191.14

2.6 AS SSD Benchmark 2.0.7 performance test

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

2.6.1 **Samsung 980 PRO 1TGB** performance as below:

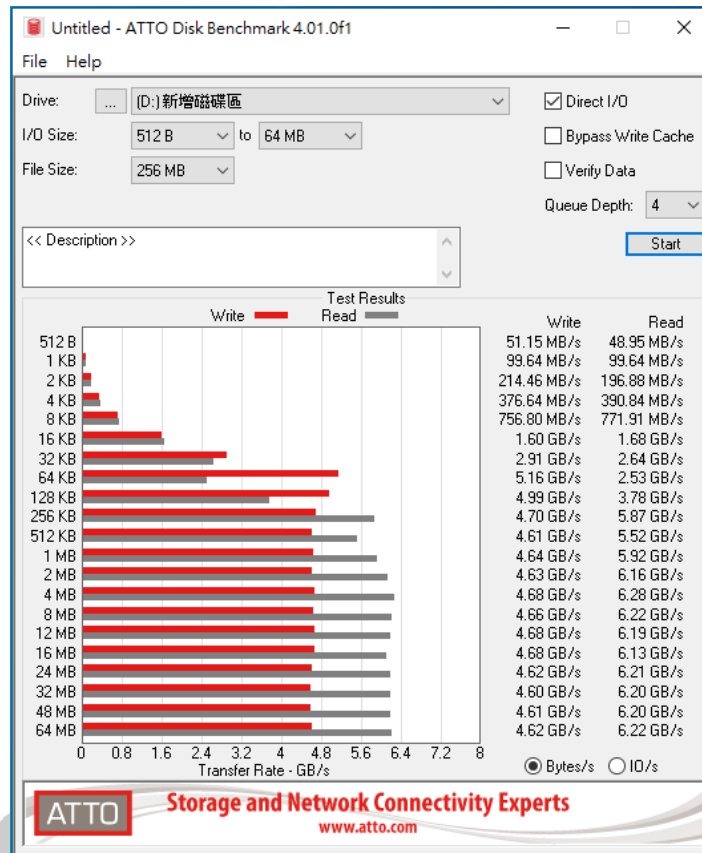
The screenshot shows the AS SSD Benchmark 2.0.7316.34247 interface. The test is configured for 'D: Samsung SSD 980 PRO 1TB' with a block size of 1 GB. The results are as follows:

	Read:	Write:
Samsung SSD 980 2B2QGXA7 stornvme - OK 1024 K - OK 931.51 GB		
<input checked="" type="checkbox"/> Seq	5333.78 MB/s	3979.13 MB/s
<input checked="" type="checkbox"/> 4K	80.14 MB/s	185.53 MB/s
<input checked="" type="checkbox"/> 4K-64Thrd	2490.32 MB/s	2935.94 MB/s
<input checked="" type="checkbox"/> Acc.time	0.019 ms	0.022 ms
Score:	3104	3519
	8147	

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2.7 ATTO Disk Benchmark 4.01 performance test

2.7.1 Samsung 980 PRO 1TGB performance as below:



2.8 AnvilBenchmark_V110_B337

2.8.1 Samsung 980 PRO 1TGB performance as below:

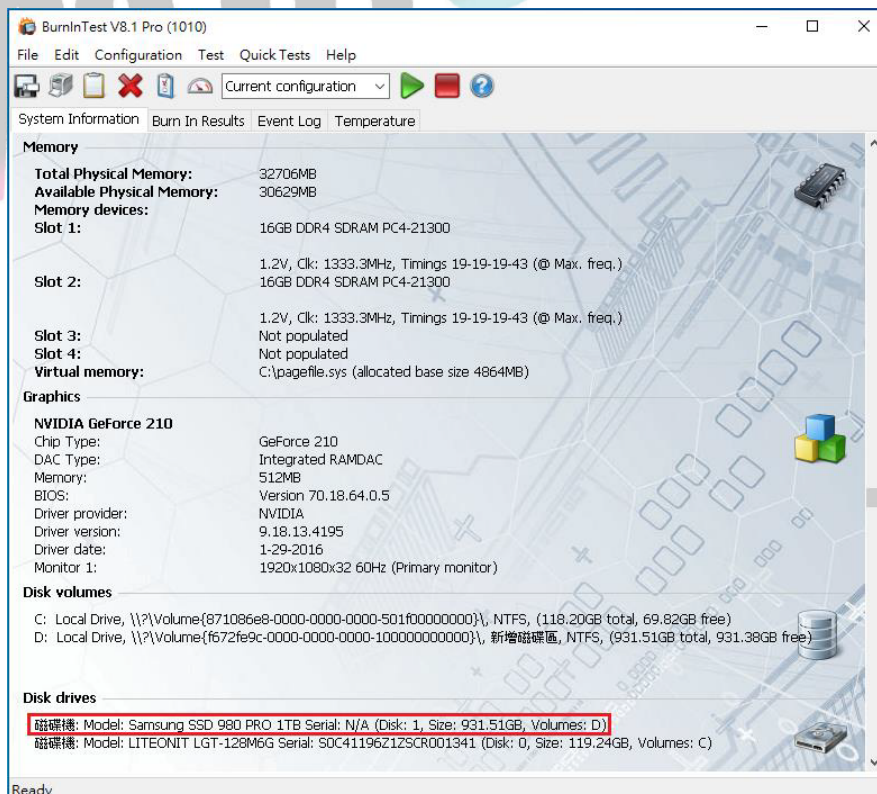
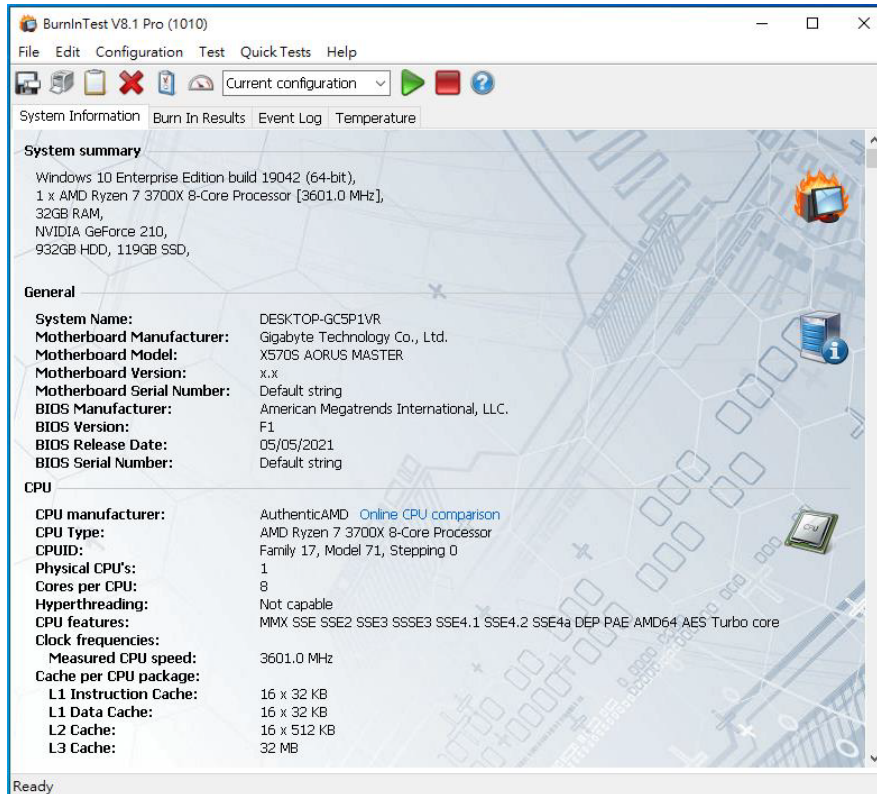


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3. Burn In Tests and Results

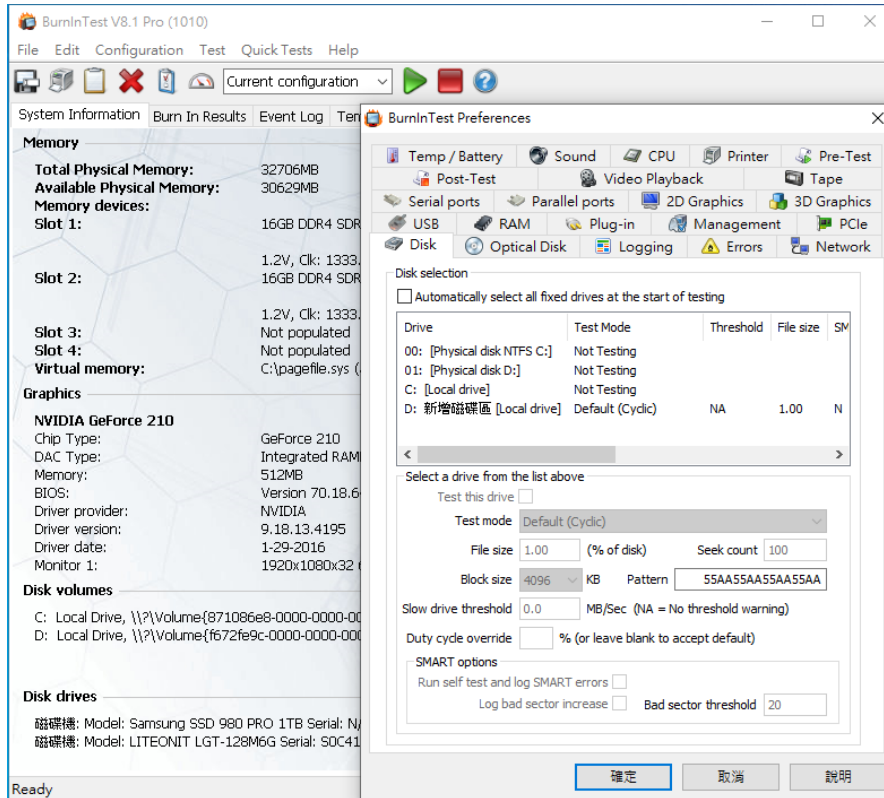
3.1 BurnInTest v8.1 Pro for Samsung 980 PRO 1TGB

3.1.1 System Information as below:

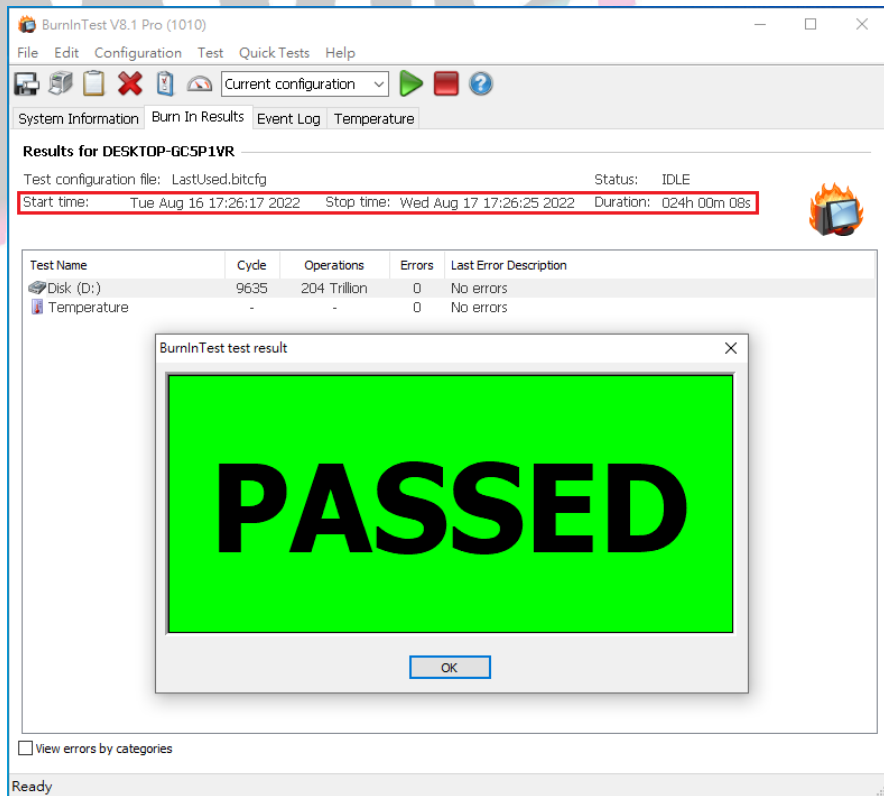


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3.1.2 Disk test mode(10 ways cycle test)



3.1.3 24-hour Burn-in test PASSED



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4. Summary

- 4.1 The M.2 NVMe SSD is PCIe Gen 4, 16GT/s , 4 Lanes Interface, I/O speed, max. to 64Gbps.
- 4.2 The GD2409A adapter I/O performance is based on M.2 NVMe SSD.

