

DP8412 PCIe x8 Gen 4 with ReTimer to SlimSAS 8i A.I.C

Performance & Burn In Test Rev 1.0

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1. Overview

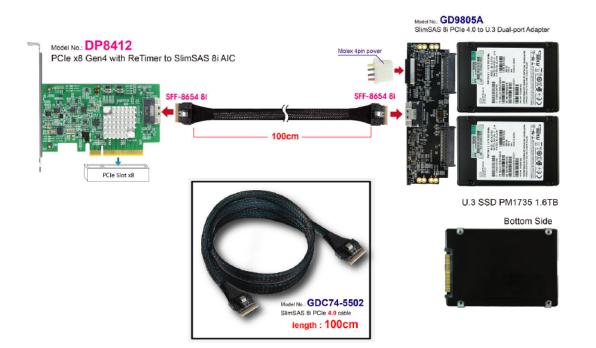
This riser card is built-in PCIe 4.0 ReTimer controller and with SlimSAS(SFF-8654) 8i connector. It is designed for use by PCIe x8 to configure two x4 bifurcations. The controller Channel insertion loss is **28 dB at 8 GHz**.

2. Tools and Results of Performance Measurement

2.1 Test Platform

M/B :	ASUS PRIME X570-PRO
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
Add in Card:	DP8412 PCIe x8 Gen4 bulit-in ReTimer to SlimSAS(SFF-8654) 8i AIC
Cable:	PCIe Gen 4 SlimSAS(SFF-8654) 8i to SlimSAS(SFF-8654) 8i, 100cm Cable
Adapter:	GD9805A SlimSAS(SFF-8654) 8i to U.3 dual ports adapter
OS :	Microsoft Windows 10 64bit OS

2.2 Test target: DP8412, GD9805A adapter with SAMSUNG U.3 1.6TB x2pcs



2.3 Install Hardware

First inserts the U.3 SSD into the GD9805A U.3 connector, then to connect the GD9805A adapter to the DP8412 AIC card (PCIe x8 Gen 4 with ReTimer to SFF-8654 8i) using the GDC74-5502, 100cm Cable, and Plugs DP8412 AIC into ASUS PRIME X570-PRO.

2.4 BIOS & Windows 10 OS environment setup

- 2.4.1 Primary SATA NVMe SSD install Windows 10 OS.
- 2.4.2 TWO U.3 NVMe SSDs, formatted to NTFS Mode. Don't install any program.



- CrystalDiskMark 8.0.0 x64 performance test 2.5 ※Benchmark (Sequential Read & Write / default = 1MB) 2.5.1 U.3 NVMe SAMSUNG / 1.6TB in Drive D: performance as below: CrystalDiskMark 8.0.0 x64 [Admin] \times 設定(S) 設定檔(P) 佈景主題(T) 說明(H) 語言(Language) 檔案(F) MB/s ~ 1GiB 5 ~ D: 0% (0/1490GiB) All Read (MB/s) Write (MB/s) SEQ1M 7451.79 2592.91 Q8T1 SEQ1M 2827.88 2604.41 Q1T1 RND4K **54**4.26 **46**4.65 Q32T1 RND4K 53.23 194.11 Q1T1
 - U.3 NVMe SAMSUNG / 1.6TB in Drive E: performance as below: 2.5.2 \overline CrystalDiskMark 8.0.0 x64 [Admin] \times 設定(S) 設定檔(P) 佈景主題(T) 說明(H) 檔案(F) 語言(Language) 1GiB \sim E: 0% (0/1490GiB) MB/s ~ 5 ~ \sim All Write (MB/s) Read (MB/s) SEQ1M 7442.64 **2590.**45 Q8T1 SEQ1M 2854.74 2599.50 Q1T1 RND4K **546.40** 463.97 Q32T1 RND4K 53.44 193.00 Q1T1

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2.6 AS SSD Benchmark 2.0 performance test

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

2.6.1 U.3 NVMe SAMSUNG / 1.6TB in Drive D: performance as below:

AS SSD Benchmark 2.0.73	16.34247	- 🗆 X
File Edit View Tools	Language Help	
D: MZXL51T6HBJR-000H3	✓ 1 GB	
MZXL51T6HBJR-000H MPK70H5Q stornvme - OK 1024 K - OK 1490.41 GB	Read:	Write:
⊠ Seq	5198.36 MB/s	2535.33 MB/s
⊠ 4K	50.40 MB/s	176.42 MB/s
☑ 4K-64Thrd	2025.22 MB/s	2518.50 MB/s
☑ Acc.time	0.027 ms	0.027 ms
Score:	2595	2948
	67	/34
	1	
Star	t	Abort

2.6.2 **U.3 NVMe SAMSUNG / 1.6TB** in **Drive E:** performance as below:

AS SSD Benchmark 2.0.73	16.34247	– 🗆 X
File Edit View Tools E: MZXL51T6HBJR-000H3	Language Help	
MZXL51T6HBJR-000H MPK70H5Q stornyme - OK 1024 K - OK 1490.41 GB	Read:	Write:
⊠ Seq	5171.66 MB/s	2530.08 MB/s
⊠ 4K	50.25 MB/s	155.53 MB/s
☑ 4K-64Thrd	1999.31 MB/s	2475.42 MB/s
☑ Acc.time	0.184 ms	0.115 ms
Score:	2567	2884
	66	27
		[]
Star	t	Abort

2.7 ATTO Disk Benchamrk 4.01 performance test

2.7.1 U.3 NVMe SAMSUNG / 1.6TB in Drive D: performance as below:

I/D Size: 512 B to 64 MB [] File Size: 256 MB [] [] (< Conscription >> [] [] Vite Read [] [] 512 B 1 KB 36.131 36.131 2 KB 370.831 370.831 370.831	Direct 1/0 Bypass Write Cache Verify Data Queue Depth: 4 ~	
I/O Size: 512 B to 64 MB [] File Size: 256 MB [] [] Test Results [] Read 23.261 1 KB 36.131 36.131 36.131 2 KB 370.831 370.831 370.831	Bypass Write Cache Verify Data	
File Size: 256 MB [] <<	Verify Data	
<		
<		
<	Gueue Denth: 14 🛛 🗸 🚽	
Test Results Write Read 36.131 2 KB 36.131 2 KB 370.831		
Write Read 23.261 512 B 23.261 36.131 1 KB 36.131 36.231 2 KB 370.831 370.831	Start	
8 KB 741.11 16 KB 24 KB 18 KB 24 KB 12 KB 24 KB 14 MB 24 KB 16 MB 24 KB 17 MB 24 KB 18 MB 24 KB 19 MB 24 KB 10 MB 24 KB 12 MB 24 KB 24	MB/s 53.58 MB/s MB/s 113.71 MB/s MB/s 110.66 MB/s MB/s 310.69 MB/s GB/s 306.99 MB/s GB/s 963.22 MB/s GB/s 2.75 GB/s GB/s 2.75 GB/s GB/s 2.75 GB/s GB/s 4.69 GB/s GB/s 6.38 GB/s GB/s 6.76 GB/s GB/s 6.70 GB/s GB/s 6.76 GB/s GB/s 6.57 GB/s	

2.7.2 U.3 NVMe SAMSUNG / 1.6TB in Drive E: performance as below:

	– 🗆 X
ile Help	
Drive: (E:)新增磁碟區	✓ 🗹 Direct I/O
/O Size: 512 B v to 64 MB v	Bypass Write Cache
ile Size: 256 MB V	🗌 Verify Data
	Queue Depth: 4 ~
<< Description >>	Start
Test Re Write —— Read —	
512 B 1 KB 2 KB 4 KB 8 KB 8 KB 16 KB 16 KB 16 KB 12 KB 16 KB 12 KB 10 KB 12 KB 10 KB 12 KB 10 KB	23.32 MB/s 30.52 MB/s 32.23 MB/s 55.28 MB/s 100.62 MB/s 1191 MB/s 374.69 MB/s 128.33 MB/s 748.92 MB/s 330.89 MB/s 1.40 GB/s 588.68 MB/s 2.40 GB/s 1001.87 MB/s 2.43 GB/s 1001.87 MB/s 2.43 GB/s 2.86 GB/s 2.39 GB/s 2.80 GB/s 2.43 GB/s 3.63 GB/s 2.40 GB/s 6.53 GB/s 2.40 GB/s 6.53 GB/s 2.40 GB/s 6.53 GB/s 2.41 GB/s 6.58 GB/s 2.40 GB/s 6.57 GB/s 2.40 GB/s 6.77 GB/s 2.40 GB/s 6.54 GB/s 2.43 GB/s 6.54 GB/s 2.43 GB/s 6.57 GB/s 2.40 GB/s 6.54 GB/s 2.43 GB/s 6.57 GB/s 2.40 GB/s 6.54 GB/s 2.40 GB/s 6.54 GB/s
ATTO Storage and Network	

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2.8 AnvilBenchmark_V110_B337

2.8.1 U.3 NVMe SAMSUNG / 1.6TB in Drive D: performance as below:

💼 An	vil's Storage U	Itilities 1.1.0 ((2014-Janua	ry-1)					- 0	×
File	Benchmarks	IOmeter	System Info	Settings	Test size 1GB	▼ Drive 🖃 d: 僚	f増磁碟區]	 ✓ Screenshot 	Help	
SSD	Benchn	nark							1T6HBJR- 0GB/MPK	
_										
	Read	Resp.		MB read	IOPS	MB/s				
	Seq 4MB	1.0371	ms	2,048.0	964.22	3,856.87				
[4K	0.0763	sms	640.1	13,110.21	51.21				
	4K QD4	0.0797	'ms	2,449.9	50,174.63	195.99		7,308.06		
	4K QD16	0.0881	ms	8,863.6	181,525.34	709.08	Run read	7,308.0	6	
	32K	0.1058	ims	4,000.0	9,481.48	296.30				
	128K	0.1638	ims 👘	11,457.8	6,104.29	763.04		16,580.	⁹⁶	
	Write	Resp.	time M	B written	IOPS	MB/s	Run	10	,580.96	
	Seq 4MB	1.5859	ms	1,024.0	630.54	2,522.17				
	4K	0.0214	lms	640.0	46,626.31	182.13	Run write	9,272.90 9,272.9	0	
	4K QD4	0.0291	ms	640.0	137,280.17	536.25	Hurl write	5,272.5		
	4K QD16	0.0425	ims 🛛	640.0	376,614.26	1,471.15				
	soft Windows 10 E X570-PRO/360		元 Build (1904	15)	Drives :			MZXL51T6HBJR-00 Drive D: 1,490.4/1,49 NTFS - Cluster size 40	90.3GB free (10	
	Ryzen 7 3700X	8-Core Proces	sor		Notes :			Storage driver storn		
	ory : 32,672 MB fessional Edi							Alignment 1024KB OK Compression 100% (Ii	ncompressible)	

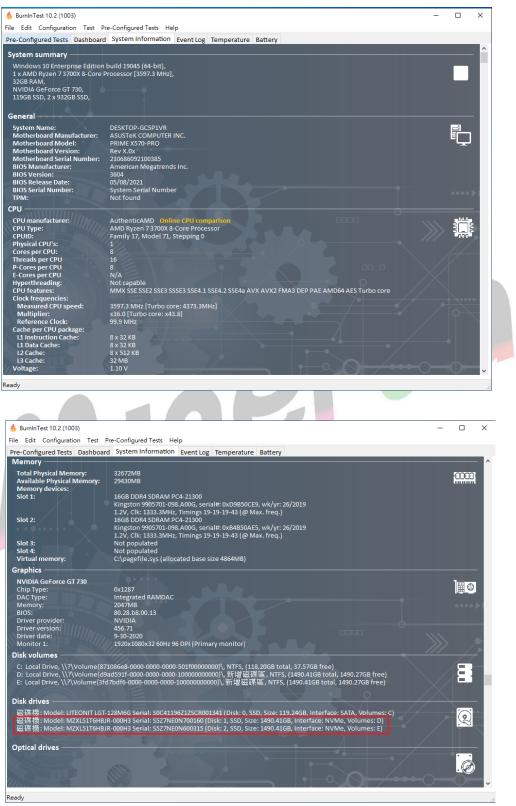
2.8.2 U.3 NVMe SAMSUNG / 1.6TB in Drive E: performance as below:

SD Benchn	nark					MZXL51T6HBJR-0 1600GB/MPK7	
Read	Resp. time	MB read	IOPS	MB/s			
Seq 4MB	1.0684ms	2,048.0	936.01	3,744.06			
4K	0.0763ms	639.9	13,104.40	51.19			
4K QD4	0.0797ms	2,449.1	50,156.99	195.93		7,178.86	
4K QD16	0.0882ms	8,855.7	181,364.10	708.45	Run read	7,178.86	
32K	0.1050ms	4,000.0	9,525.94	297.69			
128K	0.1662ms	11,293.0	6,016.92	752.11		16,476.22	
Write	Resp. time	MB written	IOPS	MB/s	Run	16,476.22	
Seq 4MB	1.5898ms	1,024.0	628.99	2,515.97			
4K	0.0214ms	640.0	46,772.63	182.71	Run write	^{9,297.37} 9,297.37	
4K QD4	0.0291ms	640.0	137,431.47	536.84	nuri wiite	5,231.31	
4K QD16	0.0423ms	640.0	378,884.16	1,480.02			
PRIME X570-PRO/360		(19045)	Drives :		0	MZXL51T6HBJR-000H3 1600GB/ Drive E: 1,490.4/1,490.3GB free (100 NTFS - Cluster size 4096B	
AMD Ryzen 7 3700X Memory : 32,672 MB	8-Lore Processor		Notes :		5	Storage driver stornvme	

3. Burn In Tests and Results

3.1 BurnInTest v10.2 Pro

3.1.1 system information as below:



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3.1.2 24-hour Burn-in test PASSED

🎂 BurnInTest 10.2 (1003)		– 🗆 X
File Edit Configuration Test Pre-Configured Tests I	Help	
Pre-Configured Tests Dashboard System Informatio	n Event Log Temperature Battery	₡₽₣₽₿ĵ?
Start time: Thu Feb 13 15:40:16	2025	碇∽╓┍╻┈
RESET Stop time: Fri Feb 14 15:40:25 20	025	
Duration: 024h 00m 09s		
Test config file: Last Used		
Disk (D:) Test: Results (1 of 2) Cycle 6636	Disk (E:) Test: Results (2 of 2)	
Cycle 6636 Operations 225 Trillion	Cycle 665 Operations 225 Trillio	
Errors 0 Last Error Description	Errors Last Error Description	0
No errors	No errors	
		•••• > >)
PASSED	PASSED	
		9
		and the second
	TECTC DACCED	
	TESTS PASSED	
	IESIS PASSED	

4. Summary

- 4.1 U.3 NVMe SSD is PCIe Gen 4 / 4 Lane Interface, I/O speed, max. to 64Gbps.
- 4.2 GD9805A adapter I/O performance is based on U.3 NVMe SSD.