MINERVA

DP8305 PCIe x8 Gen4 with ReDriver to OCulink 8i A.I.C

Performance & Burn In Test Rev 1.0

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1. Overview

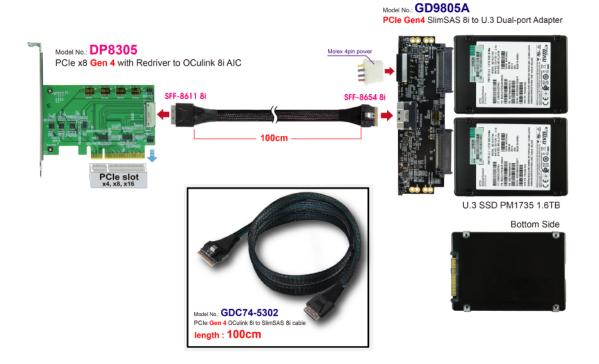
This riser card has built-in OCulink 8i(SFF-8612) 8i connector. It is designed for use by PCIe x8 to configure two x4 bifurcations or can extend PCIe x8 channel reach. The ReDriver may support CTLE to boost up to **13 dB at 8 GHz**.

2. Tools and Results of Performance Measurement

2.1 Test Platform

M/B :	GIGABYTE X570 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
Add in Card:	DP8305 PCIe x8 to Oculink 8i(SFF-8612) AIC
Cable:	PCIe Gen 4 Oculink 8i(SFF-8611) to SlimSAS(SFF-8654) 8i, 100cm Cable
Adapter:	GD9805A SlimSAS(SFF-8654) 8i to U.3 dual port adapter
OS :	Microsoft Windows 10 64bit OS

2.2 Test target: DP8305, GD9805A & SAMSUNG PM1735 U.3 NVMe SSD/ 1.6TB x2



2.3 Install Hardware

First inserts the U.3 SSD into the GD9805A SFF-8639 connector dual port and connects to the DP8305 AIC card (PCIe x8 Gen 4 to SFF-8612 8i) using the GDC74-5302 Cable, and then Plugs DP8305 AIC into GIGABYTE X570 AORUS MASTER.

- 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.



- 2.5 CrystalDiskMark 8.0.0 x64 performance test
 - ※Benchmark (Sequential Read & Write / default = 1MB)
 - 2.5.1 SAMSUNG PM1735 U.3 NVMe SSD/ 1.6TB in Drive D: performance as below:

🔚 CrystalDis	kMark 8.0.0 x64 [Admin]		– 🗆 X
檔案(F) 設定	(S) 設定檔(P) 佈曇主題(T) 說明	(H) 語言(Language)	
All	5 ~ 1GiB ~ D: 0% (0	/1490GiB) ~ MB/s ~	R70%/W30% ~
	Read (MB/s)	Write (MB/s)	Mix (MB/s)
SEQ1M	7464.11	2585.69	3979.14
Q8T1	7404.11	2303.09	<u>5979.</u> 14
SEQ1M	2653.34	2594.91	2257.88
Q1T1	2033.34	2334.31	2257.00
RND4K	54 8.68	50 2.60	54 5.23
Q32T1	J 4 0.00	502.00	J 4 J.2J
RND4K	51.53	185.12	64.73
Q1T1	51.55	105.12	04.75

SAMSUNG PM1735 U.3 NVMe SSD/ 1.6TB in Drive E: performance as below: 2.5.2 CrystalDiskMark 8.0.0 x64 [Admin] \times 檔案(F) 設定(S) 設定檔(P) 佈景主題(T) 說明(H) 語言(Language) E: 0% (0/1490GiB) 1GiB ~ | MB/s ~ R70%/W30% 5 ~ || \sim All Read (MB/s) Write (MB/s) Mix (MB/s) SEQ1M 7425.06 **2588**.58 **4027.**53 Q8T1 SEQ1M 2729.20 2601.60 2247.26 Q1T1 RND4K **55**3.62 **49**8.15 **54**3.96 Q32T1 RND4K 51.28 179.52 64.52 Q1T1

2.6 AS SSD Benchmark 2.0 performance test

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

2.6.1 SAMSUNG PM1735 U.3 NVMe SSD/ 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 stornyme - OK 1024 K - OK 1490.41 GB	Read:	Write:
⊠ Seq	5132.89 MB/s	2478.75 MB/s
⊠ 4K	50.13 MB/s	186.19 MB/s
☑ 4K-64Thrd	2024.09 MB/s	2288.44 MB/s
☑ Acc.time	0.026 ms	0.026 ms
Score:	2588	2723
	64	96
	·	
Star	t	Abort

2.6.2 SAMSUNG PM1735 U.3 NVMe SSD/ 1.6TB in Drive E: performance as below:

👛 AS SSD Benchmark 2.0.73	16.34247	- 🗆 X					
File Edit View Tools	Language Help						
E: MZXL51T6HBJR-000H3 1 GB							
MZXL51T6HBJR-000H MPK70H5Q stornyme - OK 1024 K - OK 1490.41 GB	Read:	Write:					
⊠ Seq	5091.46 MB/s	2494.97 MB/s					
⊠ 4K	49.74 MB/s	184.03 MB/s					
☑ 4K-64Thrd	2018.59 MB/s	2702.75 MB/s					
☑ Acc.time	0.027 ms	0.026 ms					
Score:	2577	3136					
	68	98					
Star	t	Abort					

2.7 ATTO Disk Benchamrk 4.01 performance test

2.7.1 SAMSUNG PM1735 U.3 NVMe SSD/ 1.6TB in Drive D: performance as below:

	•••••	
🛢 Untitled - ATTO Disk Benchmark 4.01.0f1	– 🗆 ×	
File Help		
Drive: (D:)新增磁碟區	V Direct I/O	
1/0 Size: 512 B 🗸 to 64 MB 🗸	Bypass Write Cache	
File Size: 256 MB V	Verify Data	
	Queue Depth: 4 🗸 🗸	
<< Description >>	Start	
Test Besults		
Write - Read -	Write Read	
512 B	21.67 MB/s 29.71 MB/s	
1 KB	35.80 MB/s 50.78 MB/s	
2 KB	100.37 MB/s 116.25 MB/s	
4 KB 📂	392.79 MB/s 121.01 MB/s	
8 KB	789.48 MB/s 327.81 MB/s	
16 KB	1.45 GB/s 576 MB/s	
32 KB	2.41 GB/s 978.54 MB/s	
64 KB	2.42 GB/s 1.57 GB/s	
128 KB	2.42 GB/s 2.27 GB/s 2.42 GB/s 2.91 GB/s	
512 KB	2.42 GB/s 2.51 GB/s 2.41 GB/s 3.62 GB/s	
1 MB	2.41 GB/s 3.62 GB/s 2.41 GB/s 4.71 GB/s	
2 MB	2.41 GB/s 6.33 GB/s	
4 MB	2.42 GB/s 6.80 GB/s	
8 MB	2.41 GB/s 6.65 GB/s	
12 MB	2.42 GB/s 6.85 GB/s	
16 MB	2.41 GB/s 6.78 GB/s	
24 MB	2.42 GB/s 6.22 GB/s	
32 MB	2.42 GB/s 6.82 GB/s	
48 MB	2.42 GB/s 6.80 GB/s	
64 MB	2.42 GB/s 6.73 GB/s	
0 0.8 1.6 2.4 3.2 4 4.8 5.6 6.4 7.2 Transfer Rate - GB/s	⁸ ● Bytes/s ○ IO/s	
ATTO Storage and Network Connectivi	ty Exports	
ATTO Storage and Network connectivit	cy coperts	
www.atto.com		

2.7.2 SAMSUNG PM1735 U.3 NVMe SSD/ 1.6TB in Drive E: performance as below:

📕 Untitled -	ATTO Disk Benchmark 4.	01.0f1	-	
File Help				
Drive:	(E:)新增磁碟區		V 🗹 Di	irect I/O
1/0 Size:	512 B \sim to 64 MB	\sim	🗔 By	pass Write Cache
File Size:	256 MB 🗸			erify Data
			Queu	e Depth: 4 🗸
<< Description >				
CC Description 7	~			Start
		Test Results		
	Write	Read		
	wike —	neau —	Write	
512 B			21.85 MB/s	
1 KB			31.82 MB/s	
2 KB			99.40 MB/s	
4 KB 🧮			395.72 MB/s	
8 KB 💻			787.53 MB/s	: 328.94 MB/s
16 KB	_		1.45 GB/s	574.50 MB/s
32 KB			2.39 GB/s	975.63 MB/s
64 KB			2.42 GB/s	: 1.62 GB/s
128 KB			2.41 GB/s	2.33 GB/s
256 KB			2.41 GB/s	2.82 GB/s
512 KB			2.42 GB/s	3.54 GB/s
1 MB			2.42 GB/s	
2 MB			2.41 GB/s	
4 MB			2.42 GB/s	
8 MB			2.42 GB/s	
12 MB			2.41 GB/s	
16 MB			2.42 GB/s	
24 MB			2.42 GB/s	
32 MB			2.41 GB/s	
48 MB			2.41 GB/s	
64 MB			2.42 GB/s	
		40 50 04 70		5 0.00 GD/S
0 0.3	8 1.6 2.4 3.2 4 TransferRate-Gi	4.8 5.6 6.4 7.2 B∕s	8 💿 Bytes	:/s OI0/s
	Storage and Mr	twork Connectivi	ty Exports	
	Storage and Ne	twork Connectivi	ty experts	
		www.atto.com		
P				

2.8 AnvilBenchmark_V110_B337

2.8.1 SAMSUNG PM1735 U.3 NVMe SSD/ 1.6TB in Drive D: performance as below:

Anvil's Storage U	tilities 1.1.0 (2014-J	anuary-1)				– 🗆 X
File Benchmarks	IOmeter System	n Info Settings	Test size 1GB	🔹 Drive 🖃 d: 篩	f増磁碟區]	✓ Screenshot Help
SSD Benchn	nark					MZXL51T6HBJR-000F 1600GB/MPK70H5
Read	Resp. time	MB read	IOPS	MB/s		
Seq 4MB	1.0684ms	2,048.0	936.01	3,744.06		
4K	0.0759ms	642.9	13,166.84	51.43		
4K QD4	0.0800ms	2,440.2	49,975.01	195.21		7,143.34
4K QD16	0.0890ms	8,776.2	179,735.81	702.09	Run read	7,143.34
32K	0.1051ms	4,000.0	9,514.61	297.33		
128K	0.1697ms	11,061.8	5,893.31	736.66		16,578.46
Write	Resp. time	MB written	IOPS	MB/s	Run	16,578.46
Seq 4MB	1.5859ms	1,024.0	630.54	2,522.17		
4K	0.0204ms	640.0	49,094.75	191.78		9,435.12
4K QD4	0.0286ms	640.0	140,068.07	547.14	Run write	9,435.12
4K QD16	0.0416ms	640.0	384,377.38	1,501.47		
) 企業版 64 位元 Build	(19042)	Delivery			MZXL51T6HBJR-000H3 1600GB/MPK
X570 AORUS MASTER AMD Ryzen 7 3700X			Drives : Notes :			Drive D: 1,490.4/1,490.3GB free (100.0%) NTFS - Cluster size 4096B
Memory : 32,712 MB			NUCES .			Storage driver stornvme
Professional Edi						Alignment 1024KB OK Compression 100% (Incompressible)

2.8.2 SAMSUNG PM1735 U.3 NVMe SSD/ **1.6TB** in Drive E: performance as below:

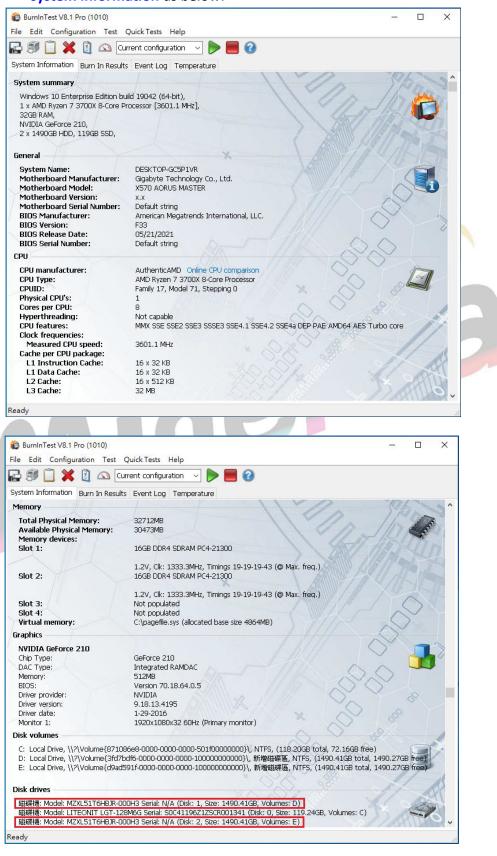
-	wil's Storage Ut				Test size 10P		彩描花碑市。		- D	>
File	Benchmarks	IOmeter	System In	to Settings	Test size 1GB	🔽 Drive 🖃 e: 🖡	所唱磁皌區」	✓ Screenshot	Help	000
SSE) Benchm	nark							1T6HBJR 0GB/MPK	
_										
	Read	Resp.		MB read	IOPS					
	Seq 4MB	1.0371		2,048.0	964.22	3,856.87				
[4K	0.0756	ôms	645.8	13,226.30	51.67				
	4K QD4	0.0801	1ms	2,439.6	49,963.37	195.17		^{7,276.55} 7,276.5		
	4K QD16	0.0888	3ms	8,801.9	180,262.48	704.15	Run read	7,276.5	5	
	32K	0.1040	Oms	4,000.0	9,615.38	300.48				
	128K	0.1678	3ms	11,189.1	5,961.17	745.15		16,693.	11	
	Write	Resp.	time I	MB written	IOPS	MB/s	Run	10	,693.11	
	Seq 4MB	1.5859		1,024.0	630.54	2,522.17				
	4K	0.0204	4ms	640.0	48,919.47	191.09		9,416.56 9,416.5	e	
	4K QD4	0.0286	ôms	640.0	139,921.89	546.57	Run write	9,410.5	0	
	4K QD16	0.0418	3ms	640.0	383,173.57	1,496.77				
							-			
Micro	osoft Windows 10	企業版 64 位	〕元 Build (19	042)	D .1			MZXL51T6HBJR-0		
	AORUS MASTER				Drives : Notes :			Drive E: 1,490.4/1,49 NTFS - Cluster size 40)96B	00.0%
	ory: 32,712 MB		-501		notes:			Storage driver stor	ivme	
	ofessional Edit	tion						Alignment 1024KB OK		
								Compression 100% (I	ncompressible)	

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3. Burn In Tests and Results

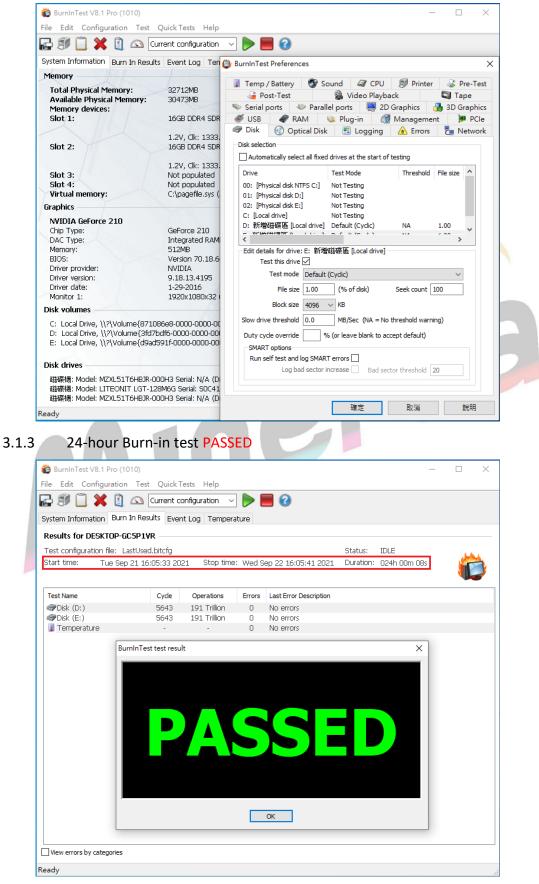
3.1 BurnInTest v8.1 Pro

3.1.1 **system information** as below:



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3.1.2 Disk test mode(10 ways cycle test)



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4. Summary

- 4.1 DP8305 AIC is PCIe x8 Gen 4 with Oculunk 8i
- 4.2 U.3 NVMe SSD is PCIe Gen 4 / 4 Lane Interface, I/O speed, max. to 64Gbps.
- 4.3 DP8305 AIC I/O performance is based on U.3 NVMe SSD.

