

DP7105 PCIe x16 Gen4 + ReDriver to SFF-8673(1x2,4X)dual port

## Performance & Burn In Test Rev 1.0

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### 1. Overview

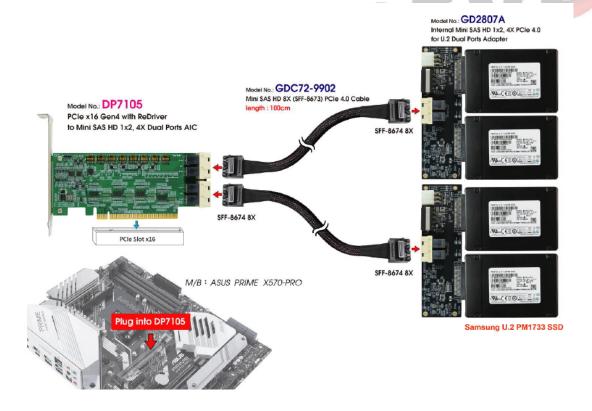
The DP7105 AIC has built-in ReDriver and is with MiniSAS HD(SFF-8673) dual port connector. It is designed for use by PCIe x16 to be bifurcated four x4 link width or can extend PCIe x16 signals channel reach. The PCIe 4.0 ReDriver may support CTLE boosts up to **13 dB**.

### 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, <b>750W ATX</b> , 12V V2.2 Power Supply
Add in Card:	DP7105 PCIe x16 to MiniSAS HD(SFF-8673) dual port AIC
Cable:	PCIe 4.0 SFF-8673 8X, 100cm Cable
Adapter:	GD2807A MiniSAS HD(SFF-8673) to U.2 dual ports adapter
OS :	Microsoft Windows 10 64bit OS

#### 2.2 Test target: DP7105, GD2807A adapter with SAMSUNG U.2 4



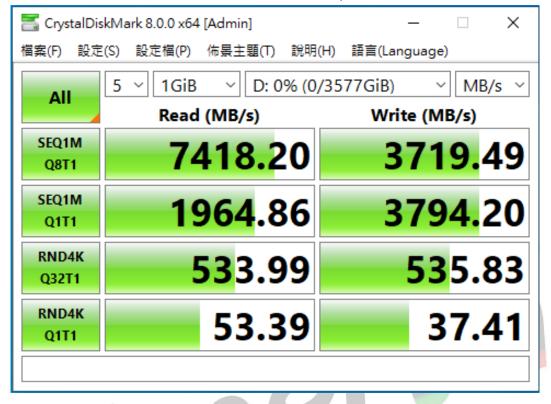
#### 2.3 Install Hardware

First inserts the U.2 SSD into the GD2807A U.2 connector and connects the GD2807A adapter to the DP7105 AIC card (PCIe x16 Gen 4 to SFF-8673 dual port), using the GDC72-9902 Cable, and Plugs DP7105 AIC into ASUS PRIME X570-PRO.

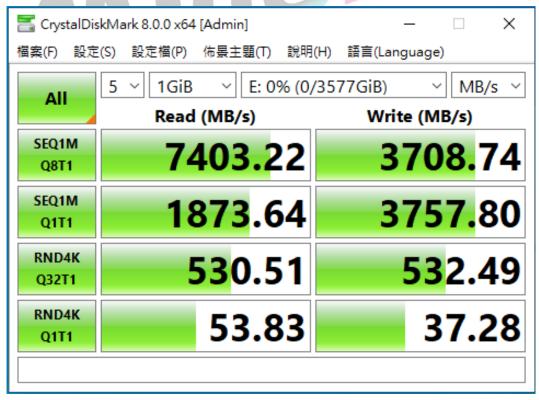
- 2.4 BIOS & Windows 10 OS environment setup
  - 2.4.1 Primary SATA NVMe SSD install Windows 10 OS.
  - 2.4.2 U.2 NVMe SSDs , formatted to NTFS Mode. Don't install any program.



- 2.5 CrystalDiskMark 8.0.0 x64 performance test
   ※Benchmark (Sequential Read & Write / default = 1MB)
  - 2.5.1 SAMSUNG PM1733 U.2 / 4TB in Drive D: performance as below:

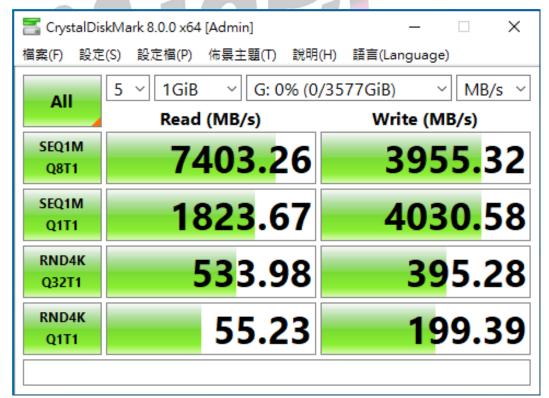


72.5.2 SAMSUNG PM1733 U.2 / 4TB in Drive E: performance as below:



CrystalDiskMark 8.0.0 x64 [Admin]       –         檔案(F) 設定(S) 設定檔(P) 佈景主題(T) 說明(H) 語言(Language)         All       5 ~ 1GiB ~ F: 0% (0/3577GiB) ~ MB/s         Read (MB/s)       Write (MB/s)         SEQ1M       73988.29       3937.6         SEQ1M       1950.03       4010.5         RnD4K       534.56       400.0							
All       5 ~ 1GiB ~ F: 0% (0/3577GiB) ~ MB/s         Read (MB/s)       Write (MB/s)         SEQ1M       7398.29       3937.6         Q8T1       1950.03       4010.5         SEQ1M       19534.56       400.0	«Mark 8.0.0 x64 [Admin] — 🗌 🗙						
All         Read (MB/s)         Write (MB/s)           SEQ1M         7398.29         3937.6           Q8T1         7398.29         4010.5           SEQ1M         1950.03         4010.5           RND4K         534.56         400.0							
Read (MB/s)         Write (MB/s)           SEQ1M Q8T1         7398.29         3937.6           SEQ1M Q1T1         1950.03         4010.5           RND4K Q32T1         534.56         400.0	$\sim$						
Q8T1         7398.29         3937.6           SEQ1M Q1T1         1950.03         4010.5           RND4K Q32T1         534.56         400.0							
SEQ1M Q1T1         1950.03         4010.5           RND4K Q32T1         534.56         400.0	Λ						
Q1T1         1950.03         4010.5           RND4K         534.56         400.0	U						
RND4K Q32T1 534.56 400.0	2						
Q32T1 534.56 400.0							
	1						
<b>G1T1</b> 56.02 201.1	0						

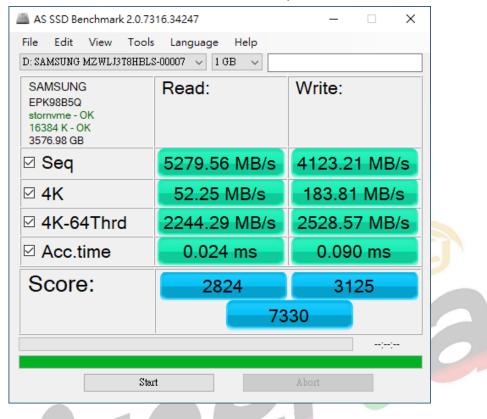
2.5.4 SAMSUNG PM1733 U.2 / 4TB in Drive G: performance as below:



## 2.6 AS SSD Benchmark 2.0 performance test

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

2.6.1 SAMSUNG PM1733 U.2 / 4TB in **Drive D:** performance as below:



#### 2.6.2 SAMSUNG PM1733 U.2 / 4TB in Drive E: performance as below:

AS SSD Benchmark 2.0.7316.34247 - X File Edit View Tools Language Help								
E: SAMSUNG MZWLJ3T8HBLS SAMSUNG EPK98B5Q stornvme - OK 16384 K - OK 3576.98 GB	-00007 v 1 GB v	Write:						
⊠ Seq	5300.74 MB/s	4217.24 MB/s						
⊠ 4K	52.06 MB/s	164.47 MB/s						
☑ 4K-64Thrd	2232.16 MB/s	2453.04 MB/s						
☑ Acc.time	0.030 ms	0.098 ms						
Score:	2814	3039						
7233								
Start Abort								

### 2.6.3 SAMSUNG PM1733 U.2 / 4TB in **Drive F:** performance as below:

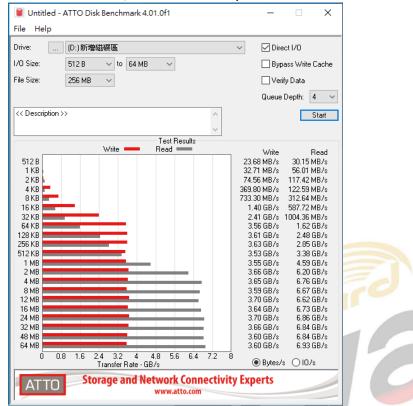
🚢 AS SSD Benchmark 2.0.7316.34247 — 🗆 🗙								
File Edit View Tools Language Help								
F: SAMSUNG MZWLJ3T8HBLS	-00007 ~ 1 GB ~							
SAMSUNG EPK98B5Q stornyme - OK 16384 K - OK 3576.98 GB	Read:	Write:						
⊠ <mark>Seq</mark>	5367.45 MB/s	4004.58 MB/s						
⊠ 4K	52.36 MB/s	175.40 MB/s						
☑ 4K-64Thrd	2214.88 MB/s	2470.23 MB/s						
Acc.time	0.024 ms	0.090 ms						
Score:	2804	3046						
7210								
Start Abort								

## 2.6.4 SAMSUNG PM1733 U.2 / 4TB in Drive G: performance as below:

AS SSD Benchmark 2.0.7316.34247 - X								
File Edit View Tools Language Help G: SAMSUNG MZWLJ3T8HBLS-00007 V 1 GB V								
SAMSUNG M2/WL318HBLs SAMSUNG EPK98B5Q stornyme - OK 16384 K - OK 3576.98 GB	Read:	Write:						
⊠ Seq	5340.59 MB/s	4189.31 MB/s						
⊠ 4K	52.33 MB/s	183.93 MB/s						
☑ 4K-64Thrd	2221.10 MB/s	2479.36 MB/s						
☑ Acc.time	0.024 ms	0.090 ms						
Score:	2807	3082						
7262								
Start Abort								

#### 2.7 ATTO Disk Benchamrk 4.01 performance test

2.7.1 SAMSUNG PM1733 U.2 / 4TB in Drive D: performance as below:



#### 2.7.2 SAMSUNG PM1733 U.2 / 4TB in Drive E: performance as below:

🔋 Untitled - A	ATTO Disk Be	enchmark 4.0	)1.0f1			_		×
File Help								
Drive:	(E:)新增磁碟	區			$\sim$	🗹 Dire	ct 1/0	
1/0 Size:	512 B 🔷 🚿	v to 64 MB	$\sim$			🗌 Вура	ass Write (	Cache
File Size:	256 MB	1				🗌 Verif	y Data	
						Queue I	Depth: 4	~
<< Description >:	>			< >			9	itart
		/rite 💻	Test Res Read					
512 B 1 KB 2 KB 8 KB 8 KB 16 KB 32 KB 64 KB 128 KB 128 KB 1 MB 256 KB 512 KB 1 MB 2 MB 4 MB 8 MB 12 MB				•	20.2 24.2 100.3 129.9 254.5 3.4 3.5 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6	Write 12 MB/s 26 MB/s 26 MB/s 26 MB/s 26 MB/s 26 MB/s 26 MB/s 26 MB/s 27 GB/s 24 GB/s 24 GB/s 26 GB/s 26 GB/s 25 GB/s 26 GB/s 27 GB/s 26 GB/s 26 GB/s 27 GB/s 26 GB/s	6.96 M 13.85 M 33.61 M 116.83 M 118.39 M 118.39 M 118.39 M 233.80 M 996.57 M 1.64 G 2.46 G 2.46 G 3.39 G 3.39 G 6.67 G 6.67 G 6.67 G 6.67 G 6.68 G 6.89 G	18/s 18/s 18/s 18/s 18/s 18/s 18/s 18/s
32 MB 48 MB						56 GB/s 52 GB/s	6.82 G 6.84 G	
64 MB					3.6	62 GB/s	6.90 0	
0 0.8		3.2 4 nsferRate-GB	4.8 5.6 }/s	6.4 7.2	8 @	🖲 Bytes/s	010/s	
ATTO	Storag	ge and Ne	twork C www.atto	onnectivi 	ty Exp	erts		

### 2.7.3 SAMSUNG PM1733 U.2 / 4TB in **Drive F:** performance as below:

🛢 Untitled - ATTO Disk Benchmark 4.01.0f1	– 🗆 X
File Help	
Drive: (F:) 新增磁碟區	V Direct I/D
1/0 Size: 512 B v to 64 MB v	Bypass Write Cache
File Size: 256 MB 🗸	Verify Data
	Queue Depth: 4 🗸
<< Description >>	Start
Test Results	
Write —— Read ——	Write Read
512 B 1 KB	22.95 MB/s 30.64 MB/s 37.02 MB/s 53.22 MB/s
2 KB	73.28 MB/s 114.29 MB/s
4 KB	368.88 MB/s 121.98 MB/s
8 KB	735.36 MB/s 310.69 MB/s
16 KB	1.37 GB/s 525 MB/s
32 KB	2.40 GB/s 1004.36 MB/s 3.54 GB/s 1.68 GB/s
128 KB	3.66 GB/s 2.47 GB/s
256 KB	3.64 GB/s 2.78 GB/s
512 KB	3.58 GB/s 3.21 GB/s
1 MB	3.59 GB/s 4.56 GB/s
2 MB	3.66 GB/s 6.31 GB/s 359 GB/s 6.73 GB/s
4 MB 8 MB	3.59 GB/s 6.73 GB/s 3.59 GB/s 6.65 GB/s
12 MB	3.64 GB/s 6.61 GB/s
16 MB	3.65 GB/s 6.72 GB/s
24 MB	3.67 GB/s 6.88 GB/s
32 MB	3.62 GB/s 6.90 GB/s
48 MB	3.59 GB/s 6.89 GB/s 3.54 GB/s 6.89 GB/s
	8
ATTO Storage and Network Connectivity www.atto.com	ty Experts

## 2.7.4 SAMSUNG PM1733 U.2 / 4TB in Drive G: performance as below:

	🔋 Untitled - /	ATTO Disk	Benchn	nark 4.0	1.0f1				_		$\times$
A V 8	File Help										
	Drive:	(G:)新增码	蒶礏區					$\sim$	🗹 Dire	ect I/O	
	1/O Size:	512 B	∼ to	64 MB	$\sim$				🗌 Вур	ass Writ	e Cache
	File Size:	256 MB	$\sim$						Ver	ify Data	
									Queue	Depth:	4 ~
	<< Description >	>					$\sim$				Start
					- Test Re						
	512 B		Write <		Read =	-			Write 17 MB/s		Read MB/s
	1 KB 2 KB								91 MB/s 43 MB/s	54.31 115.47	MB/s MB/s
	4 KB 🧮								23 MB/s	117.80	
	8 KB 💻	_							02 MB/s	311.86	
	16 KB								28 GB/s	595.53	
	32 KB									1009.64	MB/s 2 GB/s
	64 KB 128 KB								51 GB/s 65 GB/s		GB/s GB/s
	256 KB								59 GB/s		GB/s
	512 KB	_							58 GB/s		) GB/s
	1 MB								54 GB/s		GB/s
	2 MB	_				- 1			71 GB/s		GB/s
	4 MB	_							64 GB/s		GB/s
	8 MB								73 GB/s		GB/s
	12 MB				_			3.	66 GB/s	6.64	GB/s
	16 MB			_		_		3.	59 GB/s	6.72	2 GB/s
	24 MB				_	_			70 GB/s		3 GB/s
	32 MB					_			59 GB/s		'GB/s
	48 MB				-				65 GB/s		GB/s
	64 MB		1						59 GB/s	6.91	GB/s
	0 0.8		.4 3.2 Transfer F		l.8 5.6 /s	6.4	7.2	8 (	● Bytes/	s () IO	/s
	ATTO	Sto	rage a	nd Ne	www.att		ectivi	ty Exp	perts		

### 2.8 AnvilBenchmark\_V110\_B337

### 2.8.1 SAMSUNG PM1733 U.2 / **4TB** in **Drive D:** performance as below:

🙆 Ar	nvil's Storage U	tilities 1.1.0 (	(2014-Janua	ry-1)					- 0	×
File	Benchmarks	IOmeter	System Info	Settings	Test size 1GB	🔹 Drive 🔳 d: 🕅	新増磁碟區]	<ul> <li>✓ Screenshot</li> </ul>	Help	
SSD Benchmark SAM SUNG MZWLJ3T8HBLS-0000 3840GB/EPK98B50										
_										
	Read	Resp. t		MB read	IOPS	MB/s				
	Seq 4MB	1.0996	ims	2,048.0	909.41	3,637.66				
	4K	0.0742	2ms	658.2	13,480.69	52.66				
	4K QD4	0.0797	'ms	2,450.8	50,192.83	196.07		7,360. <u>6</u> 4		
	4K QD16	0.0866	ims	9,023.2	184,793.68	721.85	Run read	7,360.6	4	
	32K	0.1000	ms	4,000.0	10,002.34	312.57				
	128K	0.1368	Bms	13,724.9	7,312.13	914.02	Run	17,594. <b>17</b>	.594.65	
	Write	Resp. t	time 🛛 🕅	1B written	IOPS	MB/s	Kun		,001100	
	Seq 4MB	1.0977	'ms	1,024.0	911.03	3,644.13				
	4K	0.0206	ims	640.0	48,632.27	189.97		10,234.02 10,234.0	2	
	4K QD4	0.0283	ims	640.0	141,493.91	552.71	Run write	10,234.0	2	
	4K QD16	0.0450	)ms	640.0	356,000.23	1,390.63				
PRIN AME	osoft Windows 10 ME X570-PRO/360 ) Ryzen 7 3700X Iory : 32,672 MB	)4, AM4		45)	Drives : Notes :			SAMSUNG MZWLD3 Drive D: 3,577.0/3,57 NTFS - Cluster size 40 Storage driver store	76.8GB free (10 1968	
Pro	ofessional Edi	tion						Alignment 16384KB OI Compression 100% (I		

## 2.8.2 SAMSUNG PM1733 U.2 / 4TB in Drive E: performance as below:

📵 Anvil's Storage U	Itilities 1.1.0 (2014-Ja	anuary-1)				- 🗆 ×
File Benchmarks	IOmeter System	n Info Settings	Test size 1GB	🔹 Drive 🖃 e: 篩	増磁碟區]	✓ Screenshot Help
SSD Benchn	nark				SA	MSUNG MZWLJ3T8HBLS-000 3840GB/EPK98B
Read	Resp. time	MB read	IOPS	MB/s		
	1.1289ms		885.81			
Seq 4MB		2,048.0		3,543.25		
4K	0.0749ms	651.6	13,345.05	52.13		
4K QD4	0.0809ms	2,414.5	49,448.27	193.16		7,151.48
4K QD16	0.0867ms	9,013.8	184,600.85	721.10	Run read	7,151.48
32K	0.1091ms	4,000.0	9,163.15	286.35		
128K	0.1449ms	12,955.8	6,902.37	862.80		17,316.51
Write	Resp. time	MB written	IOPS	MB/s	Run	17,316.51
Seq 4MB	0.9766ms	1,024.0	1,024.00	4,096.00		
4K.	0.0233ms	640.0	42,983.75	167.91		10,165.03
4K QD4	0.0337ms	640.0	118,702.09	463.68	Run write	10,165.03
4K QD16	0.0468ms	640.0	341,876.87	1,335.46		
Microsoft Windows 10	)企業版 64 位元 Build	(19045)				SAMSUNG MZWLJ3T8HBLS-00007 38
PRIME X570-PRO/360			Drives :			Drive E: 3,577.0/3,576.8GB free (100.0% NTFS - Cluster size 4096B
AMD Ryzen 7 3700X Memory : 32,672 MB	8-Lore Processor		Notes :			Storage driver <b>stornvme</b>
Professional Edi	ition					Alignment 16384KB OK
						Compression 100% (Incompressible)

Anvil's Storage U	tilities 1.1.0 (2014-Ja	anuary-1)				– – ×
	IOmeter System		Test size 1GB	▼ Drive 🖃 f: 新	増磁碟區]	✓ Screenshot Help
SSD Benchn	nark				SA	MSUNG MZWLJ3T8HBLS-000 3840GB/EPK98B
Read	Resp. time	MB read	IOPS	MB/s		
Seq 4MB	1.0977ms	2,048.0	911.03	3,644.13		
4K	0.0732ms	667.0	13,659.69	53.36		
4K QD4	0.0792ms	2,464.8	50,479.46	197.19		7,397.79
4K QD16	0.0858ms	9,109.7	186,564.72	728.77	Run read	7,397.79
32K	0.1001ms	4,000.0	9,989.85	312.18		
128K	0.1355ms	13,851.5	7,380.09	922.51	D	18,079.25 <b>18,079.25</b>
Write	Resp. time	MB written	IOPS	MB/s	Run	10,079.25
Seq 4MB	0.9766ms	1,024.0	1,024.00	4,096.00		
4K	0.0207ms	640.0	48,206.33	188.31	Dura unita	10,681.46 10,681.46
4K QD4	0.0287ms	640.0	139,582.44	545.24	Run write	10,001.40
4K QD16	0.0447ms	640.0	358,101.31	1,398.83		
PRIME X570-PRO/360 AMD Ryzen 7 3700X		(19045)	Drives : Notes :			SAMSUNG MZWLJ3T8HBLS-00007 38 Drive F: 3,577.0/3,576.8GB free (100.0% NTFS - Cluster size 4096B Storage driver stornvme
Memory : 32,672 MB Professional Edi						Alignment 16384KB OK Compression 100% (Incompressible)

### 2.8.3 SAMSUNG PM1733 U.2 / 4TB in Drive F: performance as below:

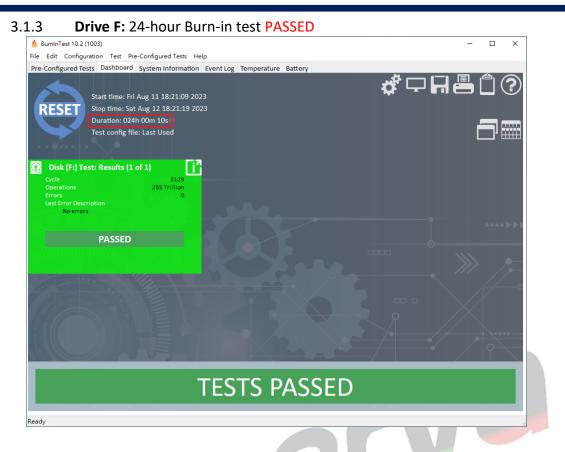
#### 2.8.4 SAMSUNG PM1733 U.2 / 4TB in Drive G: performance as below:



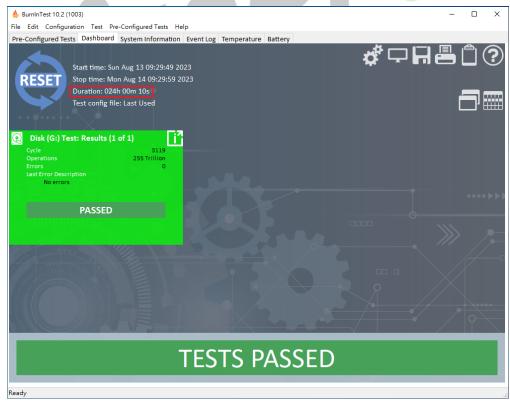
### 3. Burn In Tests and Results

- 3.1 BurnInTest v10.2 Pro
  - 3.1.1 Drive D: 24-hour Burn-in test PASSED burninTest 10.2 (1003) × \_ File Edit Configuration Test Pre-Configured Tests Help Pre-Configured Tests Dashboard System Information Event Log Temperature Battery ┌ ┠ 🖶 🗋 ? RESET Stop time: Wed Aug 9 13:46:19 2023 Duration: 024h 00m 09s Test config file: Last Used Q Disk (D:) Test: Results (1 of 1) [i] ror Description No errors PASSED **TESTS PASSED** Rea in E. 24 hour Durn 3.1.2

1.2 <b>Drive E:</b> 24-nour Burn-In test PASSED	
🗄 BurnInTest 10.2 (1003)	– 🗆 X
File Edit Configuration Test Pre-Configured Tests Help	
Pre-Configured Tests Dashboard System Information Event Log Temperature Battery	
	₡ृ॑₽₽₽₽₿₿
Start time: Wed Aug 9 14:28:10 2023	❣∽◧◓∟◡
RESET Stop time: Thu Aug 10 14:28:20 2023	
Duration: 024h 00m 10s	
Test config file: Last Used	
Q Disk (E:) Test: Results (1 of 1)	
Cycle 3147	
Operations 257 Trillion	
Errors 0 Last Error Description	
No errors	
	•••• >>>
PASSED	
	-
TESTS PASSEI	
Ready	



### 3.1.4 Drive G: 24-hour Burn-in test PASSED



#### 4. Summary

- 4.1 U.2 NVMe SSD is PCIe Gen 4 / 4 Lane Interface, I/O speed, max. to 64Gbps.
- 4.2 DP7105 AIC & GD2807A Adapter I/O performance is based on NVMe SSD.