

# **MINERVA**

DP8811 PCIe x8 Gen4 with Redriver to SFF-8673 1x2,4X A.I.C.

### Performance & Burn In Test Rev 1.0

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#### 1. Overview

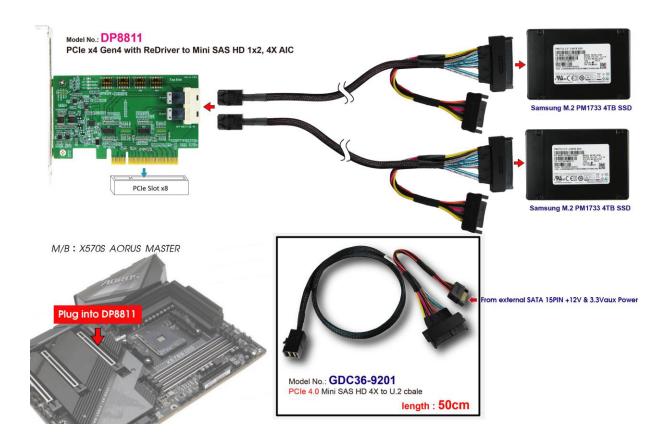
This riser card has built-in SFF-8673 1x2, 4X (internal Mini SAS HD) connector. It is designed for use by PCIe x8 to be bifurcated two x4 link width or can extend PCIe x8 channel reach. The ReDriver may support CTLE boosts up to 13 dB at 8 GHz.

### 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, <b>750W ATX</b> , 12V V2.2 Power Supply   |
| Add in Card:   | DP8811 PCIe x8 with ReDriver to SFF-8673 1x2, 4X AIC           |
| Cable:         | PCIe 4.0 Internal Mini SAS HD 1x1, 4X to U.2, 50cm Cable x2pcs |
| OS :           | Microsoft Windows 10 64bit OS                                  |
| Test target: [ | 0P8811 & U.2 NVMe SSD  |

#### 2.2 Test target: DP8811 & U.2 NVMe SSD



#### 2.3 Install Hardware

First inserts the U.2 SSD into the SFF-8673 1x1, 4X to U.2, 100cm Cable and then the cable connects to DP8711 AIC, Plugs DP8811 AIC into PCIe x16 slot of GIGABYTE **X570S AORUS MASTER**.

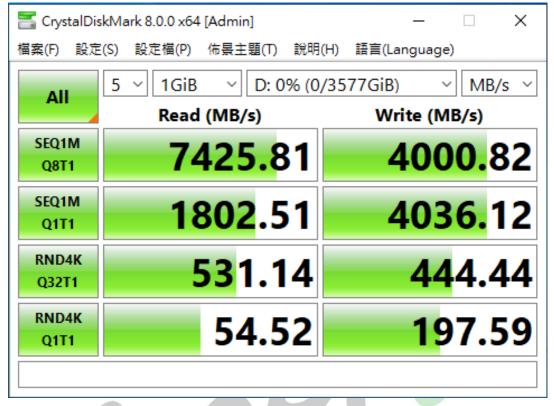
- 2.4 BIOS & Windows 10 OS environment setup
  - 2.4.1 Primary SATA NVMe SSD install Windows 10 OS.
  - 2.4.2 Two U.2 NVMe SSDs, formatted to NTFS Mode. Don't install any program.



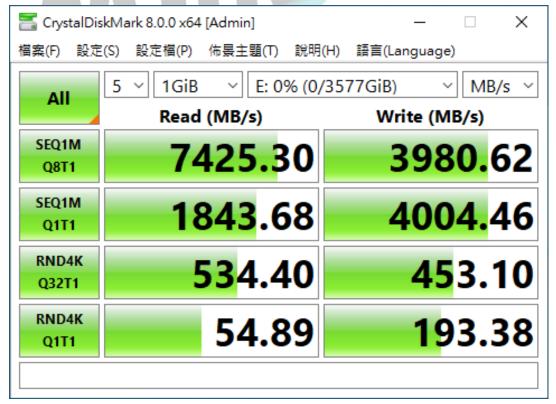
2.5 CrystalDiskMark 8.0.0 x64 performance test

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

2.5.1 Samsung PM1733 U.2 SSD /4TB in Drive D: performance as below:



2.5.2 Samsung PM1733 U.2 SSD /4TB in Drive E: 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 SSD /4TB in Drive D: performance as below:

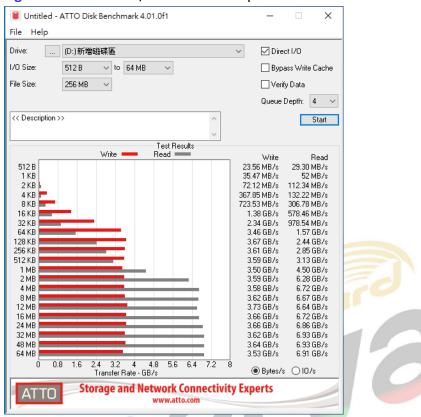
| AS SSD Benchmark 2.0.73  | 16.34247        | – 🗆 X        |   |  |  |
|--|-----------------|--------------|---|--|--|
| File Edit View Tools   |                 |              |   |  |  |
| D: SAMSUNG MZWLJ3T8HBLS  | -00007 ~ 1 GB ~ |              |   |  |  |
| SAMSUNG<br>EPK98B5Q<br>stornvme - OK<br>16384 K - OK<br>3576.98 GB | Read:           | Write:       |   |  |  |
| ⊠ Seq  | 5338.76 MB/s    | 4026.70 MB/s |   |  |  |
| ⊠ 4K   | 51.57 MB/s      | 184.20 MB/s  |   |  |  |
| ☑ 4K-64Thrd  | 2238.96 MB/s    | 2418.19 MB/s |   |  |  |
| ☑ Acc.time   | 0.025 ms        | 0.092 ms     | 2 |  |  |
| Score:   | 2824            | 3005         |   |  |  |
|  | 7202            |              |   |  |  |
|  |                 |              | 0 |  |  |
| Star   | t               | Abort        |   |  |  |

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

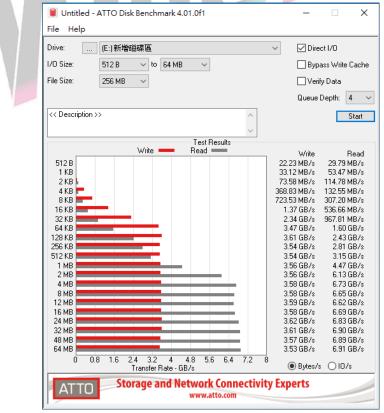
| SAMSUNG<br>EPK98B5Q<br>stornvme - OK<br>16384 K - OK<br>3576.98 GB | Read:        | Write:       |  |  |  |
|--|--------------|--------------|--|--|--|
| ⊠ Seq  | 5316.30 MB/s | 4151.98 MB/s |  |  |  |
| ⊠ 4K   | 51.77 MB/s   | 185.05 MB/s  |  |  |  |
| ☑ 4K-64Thrd  | 2217.57 MB/s | 2458.74 MB/  |  |  |  |
| ☑ Acc.time   | 0.024 ms     | 0.091 ms     |  |  |  |
| Score:   | 2801         | 3059         |  |  |  |
|  | 7228         |              |  |  |  |

#### 2.7 ATTO Disk Benchamrk 4.01 performance test

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



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



#### 2.8 AnvilBenchmark\_V110\_B337

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

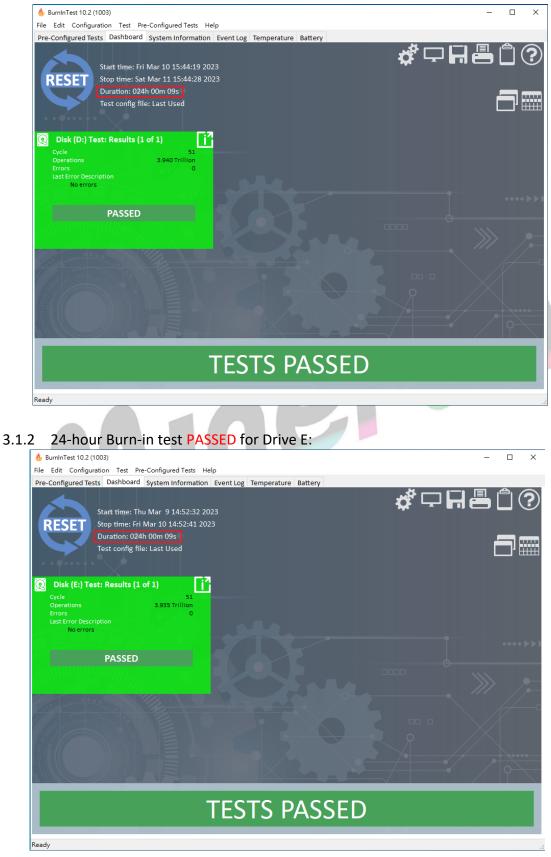
| 💼 An               | vil's Storage U  | Jtilities 1.1.0 (            | (2014-Janua | ary-1)      |                     |                |           |  | -                  |        | × |
|--------------------|--|------------------------------|-------------|-------------|---------------------|----------------|-----------|--|--------------------|--------|---|
| File               | Benchmarks   | IOmeter                      | System Inf  | o Settings  | Test size 1GB       | 🔹 Drive 🖃 d: 僚 | 増磁碟區]     | <ul> <li>✓ Screenshot</li> </ul>   | Help               |        |   |
| SSD                | Benchn   | nark                         |             |             |                     |                | SA        | MSUNG MZWL   | J3T8HE<br>IOGB/E   |        |   |
| _                  |  |                              |             |             |                     |                |           |  |                    |        |   |
|                    | Read   | Resp. 1                      | time        | MB read     | IOPS                | MB/s           |           |  |                    |        |   |
|                    | Seq 4MB  | 1.0996                       | õms         | 2,048.0     | 909.41              | 3,637.66       |           |  |                    |        |   |
|                    | 4K   | 0.0740                       | )ms         | 660.2       | 13,520.38           | 52.81          |           |  |                    |        |   |
|                    | 4K QD4   | 0.0759                       | )ms         | 2,573.7     | 52,708.56           | 205.89         |           | 7,408.60   |                    |        |   |
| -                  | 4K QD16  | 0.0834                       | lms         | 9,362.0     | 191,733.66          | 748.96         | Run read  | 7,408.6  | 0                  |        |   |
|                    | 32K  | 0.1005                       | īms         | 4,000.0     | 9,953.34            | 311.04         |           |  |                    |        |   |
|                    | 128K   | 0.1394                       | lms         | 13,467.9    | 7,175.21            | 896.90         |           | 18,253.  | 57<br>, <b>253</b> |        |   |
|                    | Write  | Resp. 1                      | time N      | /IB written | IOPS                | MB/s           | Run       | 18   | ,253               | .57    |   |
|                    | Seq 4MB  | 0.9766                       |             | 1,024.0     | 1,024.00            | 4,096.00       |           |  |                    |        |   |
|                    | 4K   | 0.0203                       | Bms         | 640.0       | 49,283.69           | 192.51         |           | 10,844.98<br>10,844.9  | 0                  |        |   |
|                    | 4K QD4   | 0.0244                       | lms         | 640.0       | 164,217.93          | 641.48         | Run write | 10,044.8   | 0                  |        |   |
|                    | 4K QD16  | 0.0463                       | 8ms         | 640.0       | 345,983.22          | 1,351.50       |           |  |                    |        |   |
|                    |  |                              |             |             |                     |                |           |  |                    |        |   |
| <b>x570</b><br>AMD | soft Windows 10<br>S AORUS MASTE<br>Ryzen 7 3700X<br>ory : 32,706 MB | ER/F1, AM4<br>(8-Core Proces |             | 945)        | Drives :<br>Notes : |                |           | SAMSUNG MZWLD3<br>Drive D: 3,577.0/3,5<br>NTFS - Cluster size 40<br>Storage driver store | 76.8GB fr<br>)96B  |        |   |
|                    | fessional Ed   |                              |             |             |                     |                |           | Alignment 16384KB O<br>Compression 100% (I   |                    | sible) |   |

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

|   | Jtilities 1.1.0 (2014-J |                   |               |              |           |   | ×      |
|---|-------------------------|-------------------|---------------|--------------|-----------|---|--------|
| File Benchmarks                         | IOmeter System          | n Info   Settings | Test size 1GB | Drive 🖃 e: 🗊 |           | _ ∨ Screenshot Help   |        |
| SSD Benchn                              | nark                    |                   |               |              | SA        | MSUNG MZWLJ3T8HBL:<br>3840GB/EPH                                |        |
|   |                         |                   |               |              |           |   |        |
| Read                                    | Resp. time              | MB read           | IOPS          | MB/s         |           |   |        |
| Seq 4MB                                 | 1.0977ms                | 2,048.0           | 911.03        | 3,644.13     |           |   |        |
| 4K                                      | 0.0739ms                | 661.0             | 13,537.06     | 52.88        |           |   |        |
| 4K QD4                                  | 0.0758ms                | 2,576.2           | 52,761.31     | 206.10       |           | 7,423.50  |        |
| 4K QD16                                 | 0.0832ms                | 9,385.8           | 192,219.32    | 750.86       | Run read  | 7,423.50  |        |
| 32K                                     | 0.0999ms                | 4,000.0           | 10,014.87     | 312.96       |           |   |        |
| 128K                                    | 0.1391ms                | 13,491.1          | 7,187.60      | 898.45       |           | 18,028.66   | -      |
| Write                                   | Resp. time              | MB written        | IOPS          | MB/s         | Run       | 18,028.6  | b      |
| Seq 4MB                                 | 1.0391ms                | 1,024.0           | 962.41        | 3,849.62     |           |   |        |
| 4K                                      | 0.0204ms                | 640.0             | 49,130.35     | 191.92       |           | 10,605.16   |        |
| 4K QD4                                  | 0.0244ms                | 640.0             | 164,150.56    | 641.21       | Run write | 10,605.16   |        |
| 4K QD16                                 | 0.0462ms                | 640.0             | 346,814.80    | 1,354.75     |           |   |        |
|   |                         |                   |               |              |           |   |        |
| Microsoft Windows 10                    | 0 企業版 64 位元 Build       | (19045)           |               |              |           | SAMSUNG MZWLJ3T8HBLS-00   |        |
| X570S AORUS MASTE                       |                         |                   | Drives :      |              |           | Drive E: 3,577.0/3,576.8GB free (:<br>NTFS - Cluster size 4096B | 100.0% |
| AMD Ryzen 7 3700X<br>Memory : 32,706 MB | 8-Core Processor        |                   | Notes :       |              |           | Storage driver <b>stornvme</b>                                  |        |
| Professional Edi                        | ition                   |                   |               |              |           | Alignment 16384KB OK  |        |
| r roressional Eu                        |                         |                   |               |              |           | Compression 100% (Incompressible                                |        |

#### 3. Burn In Tests and Results

- 3.1 BurnInTest v10.2 Pro
  - 3.1.1 24-hour Burn-in test PASSED for Drive D:



#### 4. Summary

- 4.1 The U.2 NVMe SSD is PCIe 4.0 Interface, I/O speed, max. to 64Gbps.
- 4.2 The DP8811 AIC I/O performance is based on U.2 NVMe SSD.

