



SATA SSD Test Report

MKM280-660A0000017-256G-001

256GB

| Authorized By | Issued By |
|---------------|-----------|
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1. Basic Information

| | | | | | |
|-----------------------------|----------------------------------|-----------|-----------|------------|------------|
| Product Info: | MKM280-660A0000017-256G-001 | | | | |
| Interface | SATA III | | | | |
| Form Factor | M.2 2280 | | | | |
| Controller Brand: | SMI | | | | |
| Controller IC: | SM2258XT | | | | |
| Flash Brand: | YMTC | | | | |
| Flash Part No: | JGS C3B | | | | |
| Flash Package: | BGA | | | | |
| Drive Configuration: | Drive Capacity | CH | CE | BGA | PLN |
| | 256GB | 4 | 2 | 2 | 2 |
| FW Ver.: | SM2258XT_YMTC_PKG0910A_FWT0910A0 | | | | |
| PCB S/N: | C2BSM270072B | | | | |

Test Platform Info:

- HW Info.

| | | |
|------|----------|---------------------------|
| CPU | Intel | i5-7400 |
| DRAM | Kingston | HyperX Fury DDR4-3200 x 2 |
| MB | ASUS | PRIME Z390-P |

- OS Info.

| | | |
|----------------|-------|---------------|
| Windows 10 Pro | 64bit | Build 20H2 |
| HMB | | In-box-driver |

2. Test Summary

| NO. | Test Item | Operation Description | Test Result |
|-----|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------|
| 1. | File Format Test and Check Capacity | 1. To format UUTs under Windows and Mac, and then check the capacity 2. Check Crystal Disk Info | Pass |
| 2. | Crystal Disk Mark Test | To test the performance with Crystal Disk Mark 1. v6.0 Default 1GB 3-loop 2. v7.0 Default/Read World(Mix) 1GB 3-loop | Pass |
| 3. | MK SSD Benchmark Test | To test the performance with MK SSD 1. Read/Write 2. IOPS Read/Write | Pass |
| 4. | ATTO Disk Benchmark Test | To test the performance with ATTO Disk Benchmark | Pass |
| 5. | HDTune | To test the performance with HD Tune Default Read/Write Performance | Pass |

| Capacity | CDM6.0 Default-1GB | | CDM6.0 Default-32GB | | CDM7.0 Default | | CDM7.0 Real World(Mix) | | |
|--------------|-----------------------|-------|------------------------|-------|-------------------|-------|---------------------------|-------|-------|
| | Read | Write | Read | Write | Read | Write | Read | Write | Mix |
| 256GB | 557.3 | 481.4 | 556.2 | 480.4 | 554.6 | 494.7 | 532.6 | 468.6 | 370.3 |

| Capacity | MK SSD Benchmark | | MK SSD Benchmark | | ATTO Disk Benchmark | |
|--------------|------------------|-------|------------------|------------|---------------------|-------|
| | Read | Write | Read IOPS | Write IOPS | Read | Write |
| 256GB | 523.6 | 453.0 | 41.3K | 76.1K | 531.1 | 461.2 |

| Capacity | HD Tune | | |
|--------------|---------|-------------|--------------|
| | Read | Write (SLC) | Write (Avg.) |
| 256GB | 355.5 | 285.8 | 274.2 |

3. File Format Test and Check Capacity

Test Result:

| Drive Capacity | Valid Capacity | Valid % | Test Result (Win 10) |
|----------------|----------------|---------|----------------------|
| 256GB | 238GB | 93% | Pass |

256GB

New Volume (D:) Properties ✕

ReadyBoost Previous Versions Quota Customize

General Tools Hardware Sharing Security

JGS_C3B_2258XT_QDP*2_256GB

Type: Local Disk

File system: NTFS

| | | | |
|-----------|-------------|-----------------------|--------|
| | Used space: | 105,811,968 bytes | 100 MB |
| | Free space: | 255,936,520,192 bytes | 238 GB |
| Capacity: | | 256,042,332,160 bytes | 238 GB |

Drive D: Disk Cleanup

Compress this drive to save disk space

Allow files on this drive to have contents indexed in addition to file properties

OK
Cancel
Apply

CrystalDiskInfo 8.4.1 x64

File Edit Function Theme Disk Help Language

Good 35 °C C: Good 46 °C D:

SATA SSD 256.0 GB

Health Status: Good

100 %

Temperature: 46 °C

| | | | |
|---------------|----------------------------|-------------------|---------|
| Firmware | T0910A0 | Total Host Reads | 0 GB |
| Serial Number | 2021040904000015 | Total Host Writes | 0 GB |
| Interface | Serial ATA | Total NAND Writes | 0 GB |
| Transfer Mode | SATA/600 SATA/600 | Power On Count | 3 count |
| Drive Letter | D: | Power On Hours | 0 hours |
| Standard | ACS-2 ACS-2 Revision 3 | | |
| Features | S.M.A.R.T., APM, NCQ, TRIM | | |

| ID | Attribute Name | Current | Worst | Threshold | Raw Values |
|----|---------------------------------------------|---------|-------|-----------|--------------|
| 01 | Raw Read Error Rate | 100 | 100 | 50 | 000000000000 |
| 05 | Reallocated Sectors Count | 100 | 100 | 50 | 000000000000 |
| 09 | Power-On Hours | 100 | 100 | 50 | 000000000000 |
| 0C | Power Cycle Count | 100 | 100 | 50 | 000000000003 |
| A0 | Uncorrectable Sector Count | 100 | 100 | 50 | 000000000000 |
| A1 | Valid Spare Blocks | 100 | 100 | 50 | 000000000064 |
| A3 | Initial Invalid Blocks | 100 | 100 | 50 | 000000000004 |
| A4 | Total TLC Erase Count | 100 | 100 | 50 | 000000000004 |
| A5 | Maximum TLC Erase Count | 100 | 100 | 50 | 000000000001 |
| A6 | Minimum TLC Erase Count | 100 | 100 | 50 | 000000000000 |
| A7 | Average TLC Erase Count | 100 | 100 | 50 | 000000000000 |
| A8 | Vendor Specific | 100 | 100 | 50 | 0000000013BA |
| A9 | Percentage Lifetime Remaining | 100 | 100 | 50 | 000000000064 |
| AF | Vendor Specific | 100 | 100 | 50 | 000000000000 |
| B0 | Vendor Specific | 100 | 100 | 50 | 000000000000 |
| B1 | Vendor Specific | 100 | 100 | 50 | 000000000000 |
| B2 | Vendor Specific | 100 | 100 | 50 | 000000000000 |
| B5 | Program Fail Count | 100 | 100 | 50 | 000000000000 |
| B6 | Erase Fail Count | 100 | 100 | 50 | 000000000000 |
| C0 | Power-off Retract Count | 100 | 100 | 50 | 000000000003 |
| C2 | Temperature | 100 | 100 | 50 | 00000000002E |
| C3 | Cumulative ECC Bit Correction Count | 100 | 100 | 50 | 000000000000 |
| C4 | Reallocation Event Count | 100 | 100 | 50 | 000000000000 |
| C5 | Current Pending Sector Count | 100 | 100 | 50 | 000000000000 |
| C6 | Smart Off-line Scan Uncorrectable Error ... | 100 | 100 | 50 | 000000000000 |
| C7 | Ultra DMA CRC Error Rate | 100 | 100 | 50 | 000000000000 |
| E8 | Available Reserved Space | 100 | 100 | 50 | 000000000064 |
| F1 | Total LBA Write | 100 | 100 | 50 | 000000000002 |
| F2 | Total LBA Read | 100 | 100 | 50 | 000000000000 |
| F5 | Cumulative Program NAND Pages | 100 | 100 | 50 | 000000000000 |

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4. Crystal Disk Mark Test

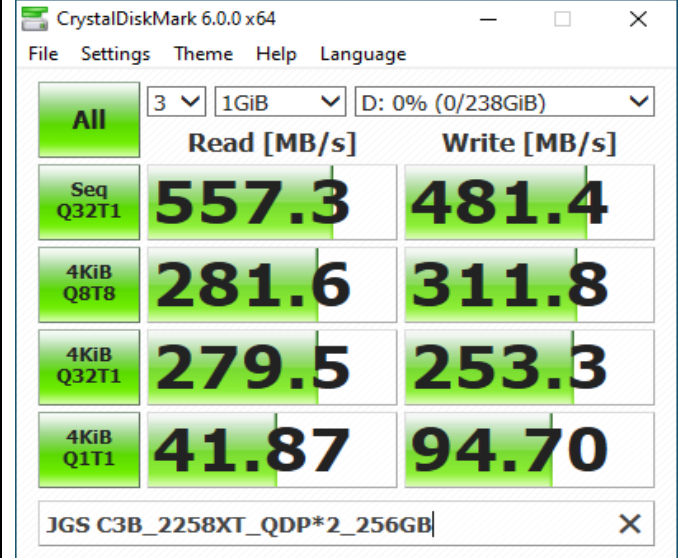
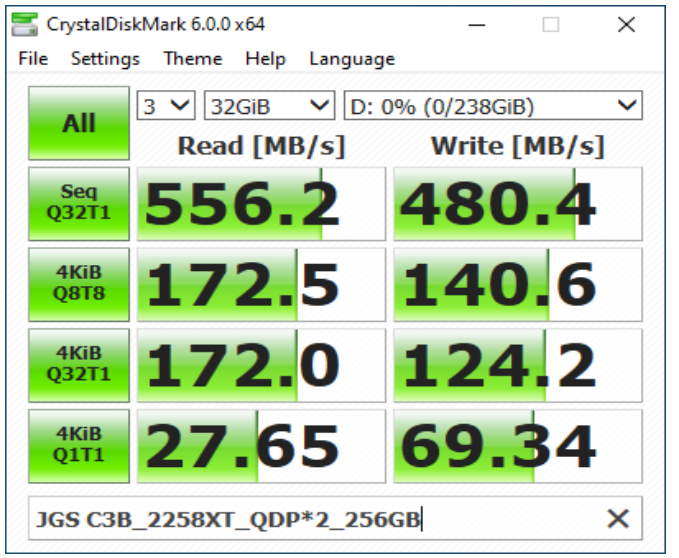
- ◆ Test Program: Crystal Disk Mark v6.0/v7.0

Test Result:

| CDM6.0 | | | | |
|----------------|----------|-----------|-----------|------------|
| Drive Capacity | Read-1GB | Write-1GB | Read-32GB | Write-32GB |
| 256GB | 557.3 | 481.4 | 556.2 | 480.4 |

Unit: MB/s

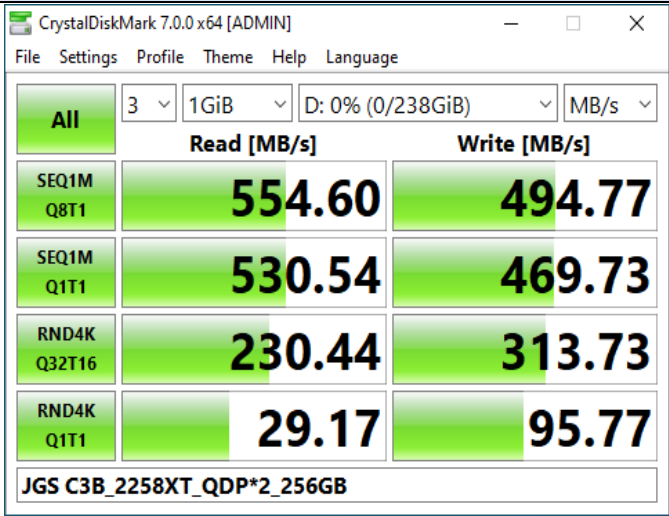
CDM6.0 Default

| 256GB | |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |

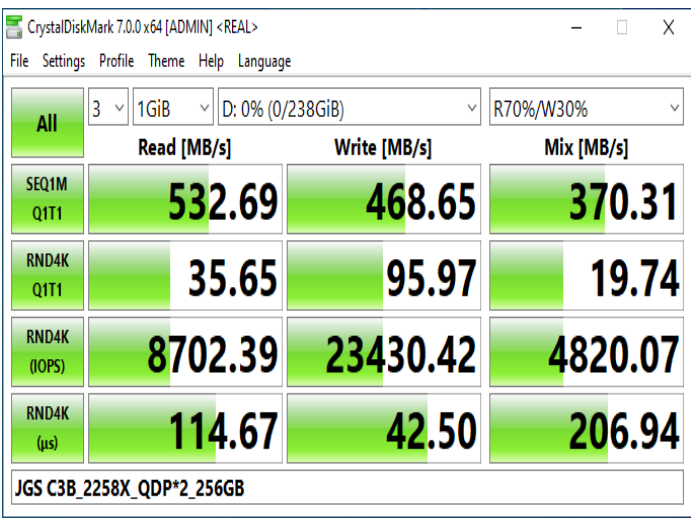
| CDM7.0 | | | | | |
|----------------|---------|-------|------------------------|-------|-------|
| Drive Capacity | Default | | Real World Performance | | |
| | Read | Write | Read | Write | Mix |
| 256GB | 554.6 | 494.7 | 532.6 | 468.6 | 370.3 |

Unit: MB/s

CDM7.0 Default

| 256GB | | | |
|-------------------------------------------------------------------------------------|-------------|--------------|------------------|
|  | | | |
| All | 3 | 1GiB | D: 0% (0/238GiB) |
| | Read [MB/s] | Write [MB/s] | |
| SEQ1M Q8T1 | 554.60 | 494.77 | |
| SEQ1M Q1T1 | 530.54 | 469.73 | |
| RND4K Q32T16 | 230.44 | 313.73 | |
| RND4K Q1T1 | 29.17 | 95.77 | |
| JGS C3B_2258XT_QDP*2_256GB | | | |

CDM7.0 Real World

| 256GB | | | |
|--------------------------------------------------------------------------------------|-------------|--------------|------------------|
|  | | | |
| All | 3 | 1GiB | D: 0% (0/238GiB) |
| | Read [MB/s] | Write [MB/s] | Mix [MB/s] |
| SEQ1M Q1T1 | 532.69 | 468.65 | 370.31 |
| RND4K Q1T1 | 35.65 | 95.97 | 19.74 |
| RND4K (IOPS) | 8702.39 | 23430.42 | 4820.07 |
| RND4K (µs) | 114.67 | 42.50 | 206.94 |
| JGS C3B_2258X_QDP*2_256GB | | | |

5. MK SSD Benchmark Test

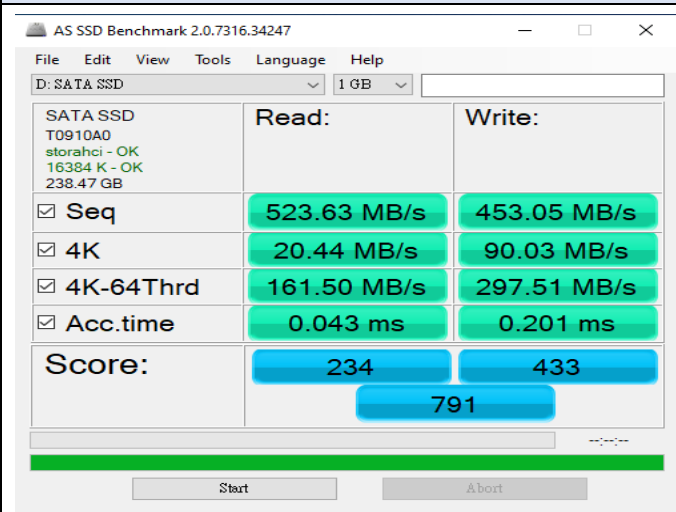
◆ Test Program: MK SSD Benchmark v2.0.7316 build34247

Test Result:

| Drive Capacity | Read | Write | Read IOPS | Write IOPS |
|----------------|-------|-------|-----------|------------|
| 256GB | 523.6 | 453.0 | 41.3K | 76.1K |

MB/s

256GB



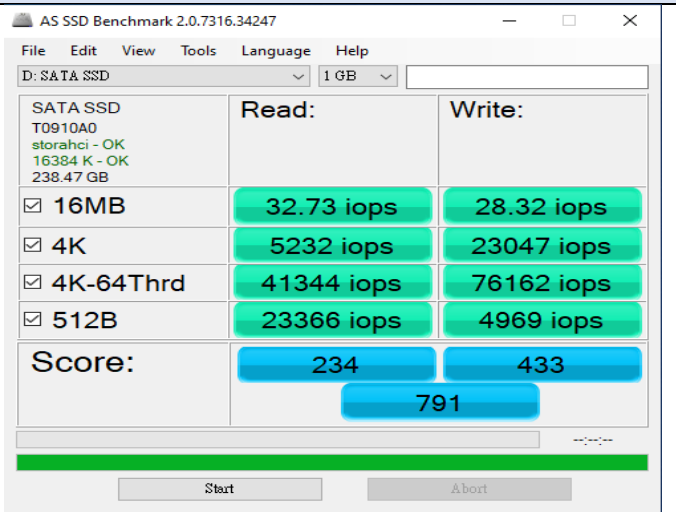
AS SSD Benchmark v2.0.7316.34247

D: SATA SSD | 1 GB

SATA SSD T0910A0
storahci - OK
16384 K - OK
238.47 GB

| | Read: | Write: |
|-----------------------------------------------|-------------|-------------|
| <input checked="" type="checkbox"/> Seq | 523.63 MB/s | 453.05 MB/s |
| <input checked="" type="checkbox"/> 4K | 20.44 MB/s | 90.03 MB/s |
| <input checked="" type="checkbox"/> 4K-64Thrd | 161.50 MB/s | 297.51 MB/s |
| <input checked="" type="checkbox"/> Acc.time | 0.043 ms | 0.201 ms |
| Score: | 234 | 433 |
| | 791 | |

Start Abort



AS SSD Benchmark v2.0.7316.34247

D: SATA SSD | 1 GB

SATA SSD T0910A0
storahci - OK
16384 K - OK
238.47 GB

| | Read: | Write: |
|-----------------------------------------------|------------|------------|
| <input checked="" type="checkbox"/> 16MB | 32.73 iops | 28.32 iops |
| <input checked="" type="checkbox"/> 4K | 5232 iops | 23047 iops |
| <input checked="" type="checkbox"/> 4K-64Thrd | 41344 iops | 76162 iops |
| <input checked="" type="checkbox"/> 512B | 23366 iops | 4969 iops |
| Score: | 234 | 433 |
| | 791 | |

Start Abort

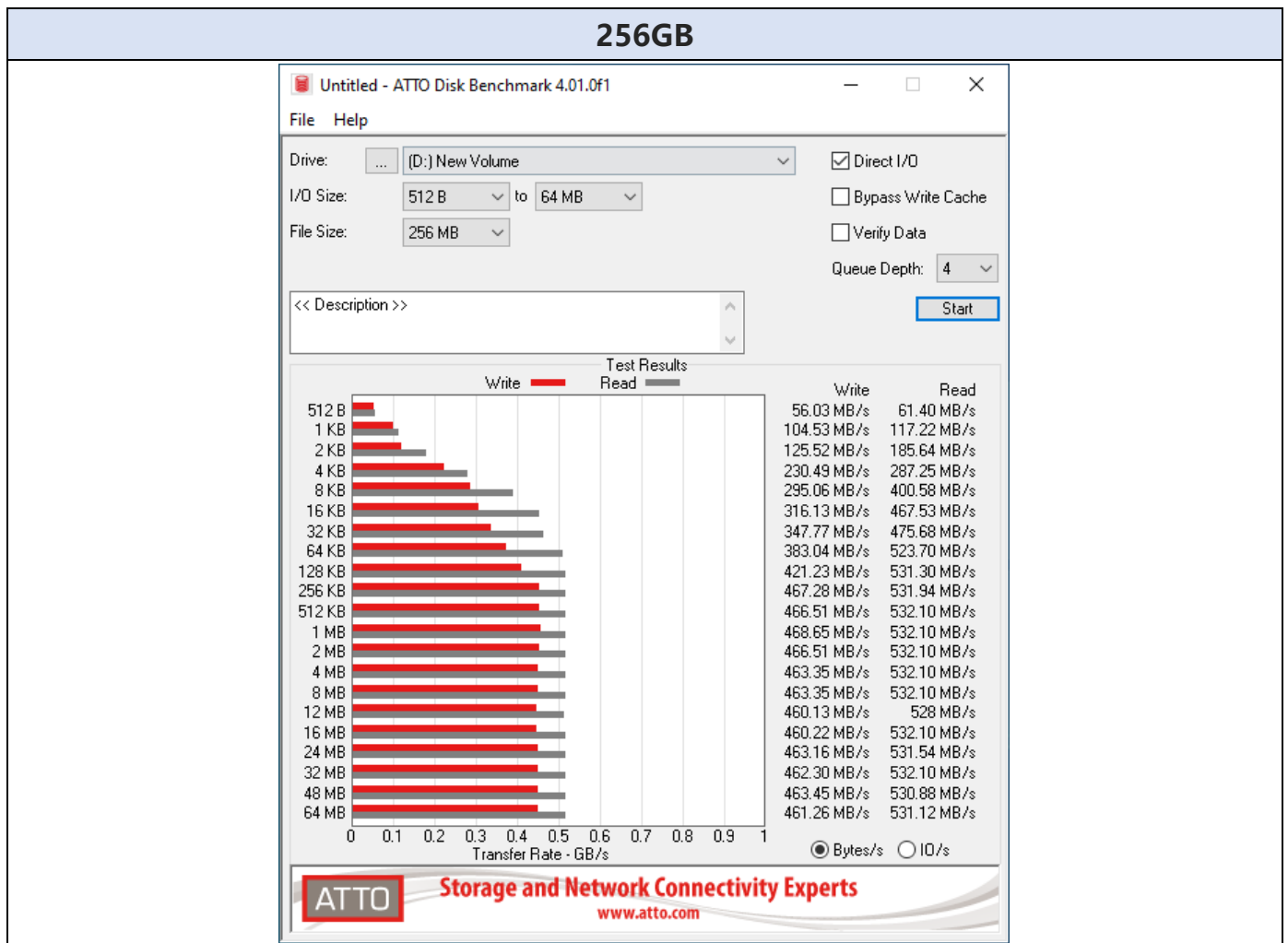
6. ATTO Disk Benchmark Test

◆ Test Program: ATTO Disk Benchmark v4.0

Test Result:

| Drive Capacity | Read | Write |
|----------------|-------|-------|
| 256GB | 531.1 | 461.2 |

MB/s



7. HD Tune

- ◆ Test program: HD Tune Pro v5.7

Test Result:

| Drive Capacity | Read | Write (SLC) | Write (Avg.) |
|----------------|-------|-------------|--------------|
| 256GB | 355.5 | 285.8 | 274.2 |

MB/s

