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USB Stick 성능 비교

- 더티테스트 조건은 USB flash memory 특성상 지속쓰기 저하를 체크하기 위해 최대 50GB 까지만 테스트를 진행하였음
- 더티테스트시 FAT32로 되어있을경우 4GB이상 테스트가 불가하므로 반드시 exFAT이나 NTFS로 포맷후 테스트 해야함
- USB Flash 제품중 SSD형 제품은 cache 메모리가 별도로 탑재된 제품의 경우 전체용량 테스트 진행함



벤치마크 테스트 환경은 순정 윈도우 같은 변인요소를 차단한 환경이 아닌 실사용중인 환경에서 다양한 어플리케이션을 수행하면서 동시에 USB허브에 다른 수신기나 블루투스등이 사용 중인 상태에서 벤치마크를 수행했으므로 최상의 결과가 아님을 알려드립니다. 반대로 말하면 동일한 제품을 보유하셨다면 최소한 여기에 나온 성능보다는 좋게 나와야 정상입니다.

추천제품은 **파란색** 으로 표시하였음

브랜드	제품	LED	용량	읽기속도	쓰기속도	더티테스트 평균속도	주의사항
Sandisk	Cruzer Blade	X	16 GB	20 MB/s	10 MB/s	5 MB/s	
	Ultra USB3	O	64 GB	150 MB/s	50 MB/s	53 MB/s	
	Ultra Flair USB 3.0	X	32 GB	150 MB/s	35 MB/s	23 MB/s	
eVtran	SSD	O	256 GB	350 MB/s	300 MB/s	326 MB/s	재생NAND 의심
	V03S MLC	O	128 GB	220 MB/s	150 MB/s	139 MB/s	재생NAND 의심
	V03S SLC 3.0	O	8GB	180 MB/s	110 MB/s	103 MB/s	재생NAND 의심
리뷰안	UX200	O	64 GB	210 MB/s	100 MB/s	97 MB/s	
	UX300	O	256GB	460 MB/s	280 MB/s	315 MB/s	
Orico	UFSD-I	X	512 GB	405 MB/s	350 MB/s	234 MB/s	
SONIZOON	PSSD USB3.1	O	512 GB	420 MB/s	380 MB/s	361 MB/s	재생NAND 의심
TeamGroup	X1 MAX	X	512 GB	435 MB/s	435 MB/s	380 MB/s	



USB 제품의 상세정보 내용중 요구 전력양도 상당히 중요한 요소이다. 200mA ~ 1000mA 까지 다양한데 요구 전력양이 클수록 인식이 잘 안되거나 끊기는 경우가 빈번할 수 있다. 고성능 제품의 경우 요구 전력양이 높으므로 메인보드에 직결하는것을 권장하며 연장선을 이용하여 연결하는경우 요구전력양이 작은 제품을 사용하는 것이 좋다.



알리 제품중에 성능은 좋으나 smi_flash_id 프로그램으로 조회시 아래와 같이 Original Spare Block Count : 138 Vendor Marked Bad Block : 0 Bad Block From Pretest : 92 이런 정보가 나오는것으로 보아 재생NAND를 사용하는것이 아닐까 하는 의심이 있다. 확실하지는 않다.

Sandisk Cruzer Blade



16GB

chipgenius

Description: [H:]USB 대용량 저장 장치(SanDisk Cruzer Blade)
Device Type: Mass Storage Device

Protocal Version: USB 2.00
Current Speed: High Speed
Max Current: 200mA

USB Device ID: VID = 0781 PID = 5567
Serial Number: 2006087721166A538531

Device Vendor: SanDisk
Device Name: Cruzer Blade
Device Revision: 0201

Manufacturer: SanDisk
Product Model: Cruzer Blade
Product Revision: 2.01

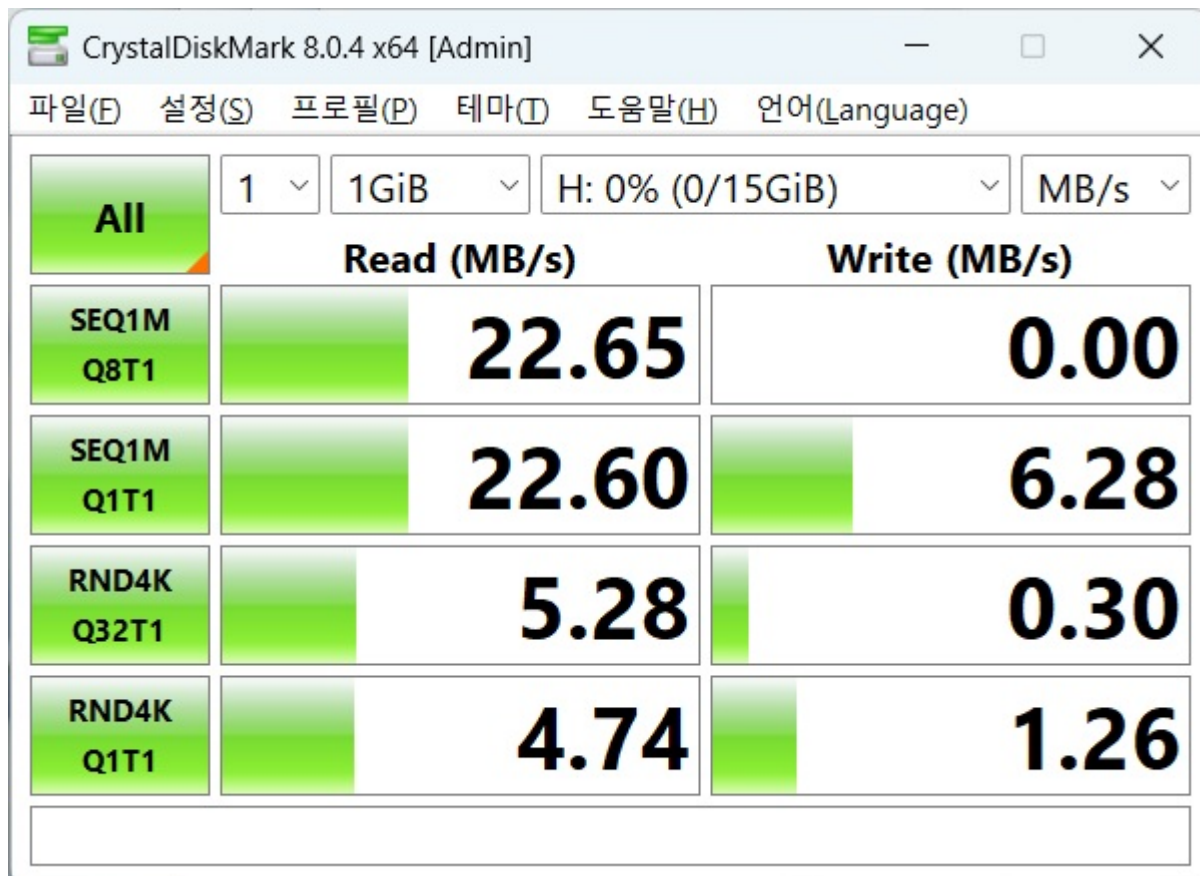
Controller Part-Number: Unknown

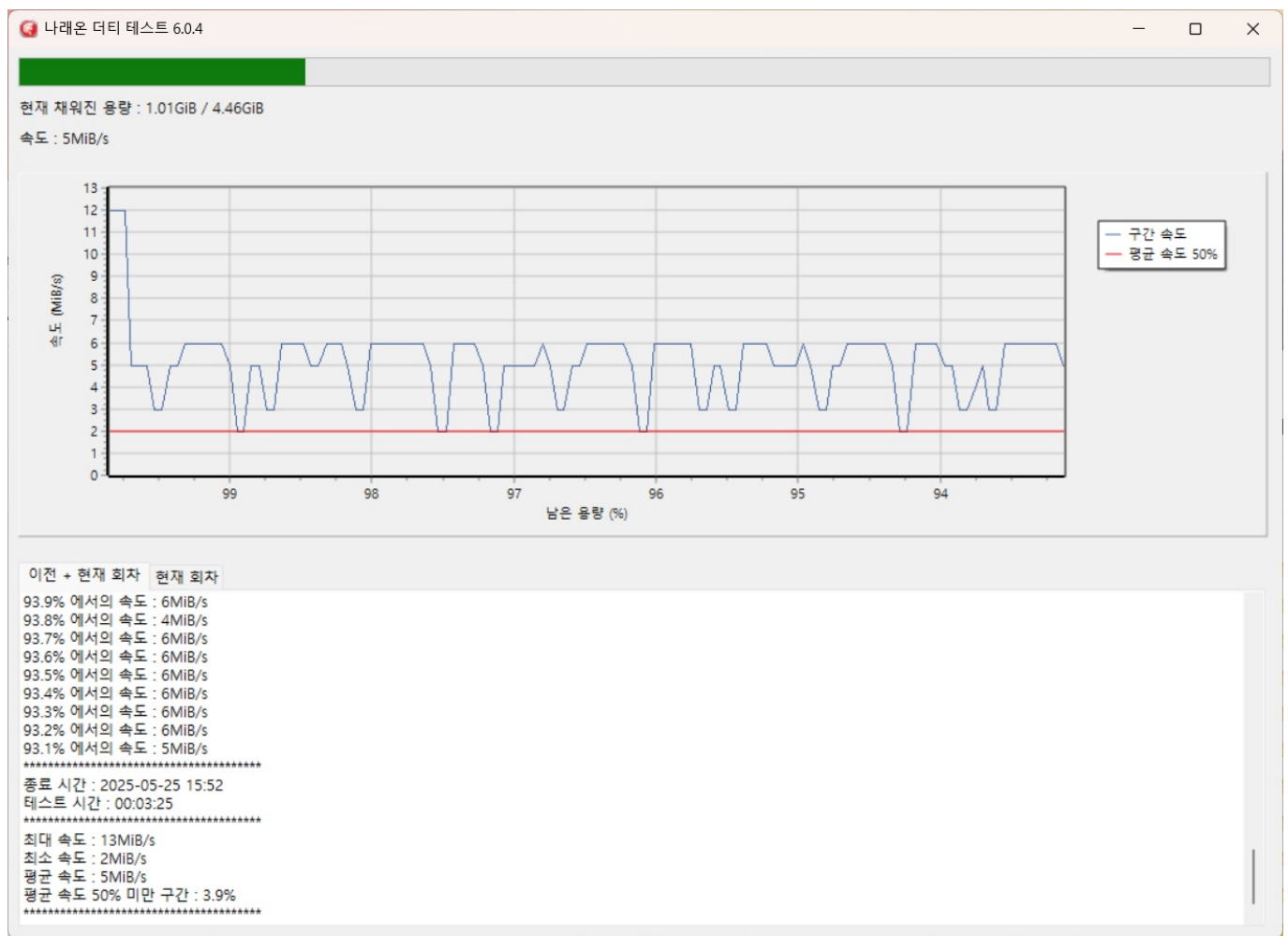
usbdriveinfo

Volume: H:
Controller: SanDisk
Possible Memory Chip(s): Not available
VID: 0781
PID: 5567
Manufacturer: SanDisk
Product: Cruzer Blade
Query Vendor ID: SanDisk
Query Product ID: Cruzer Blade
Query Product Revision: 2.01
Physical Disk Capacity: 16008609792 Bytes
Windows Disk Capacity: 15990775808 Bytes
Internal Tags: 3Y4F-8CB4
File System: FAT32
Relative Offset: 1024 KB
USB Version: 2.00
Declared Power: 200 mA
ContMeas ID: 24AC-04-00
Microsoft Windows 10 x64 Build 26100

<http://www.antspec.com/usbflashinfo/>
Program Version: 9.4.0.645

벤치결과





Sandisk Ultra USB3



64GB

chipgenius

Description: [H:]USB 대용량 저장 장치(SanDisk Ultra)
Device Type: Mass Storage Device

Protocal Version: USB 3.00
Current Speed: High Speed
Max Current: 896mA

USB Device ID: VID = 0781 PID = 5581
Serial Number: 4C531001520901109171

Device Vendor: SanDisk
Device Name: Ultra
Device Revision: 0100

Manufacturer: SanDisk
Product Model: Ultra
Product Revision: 1.00

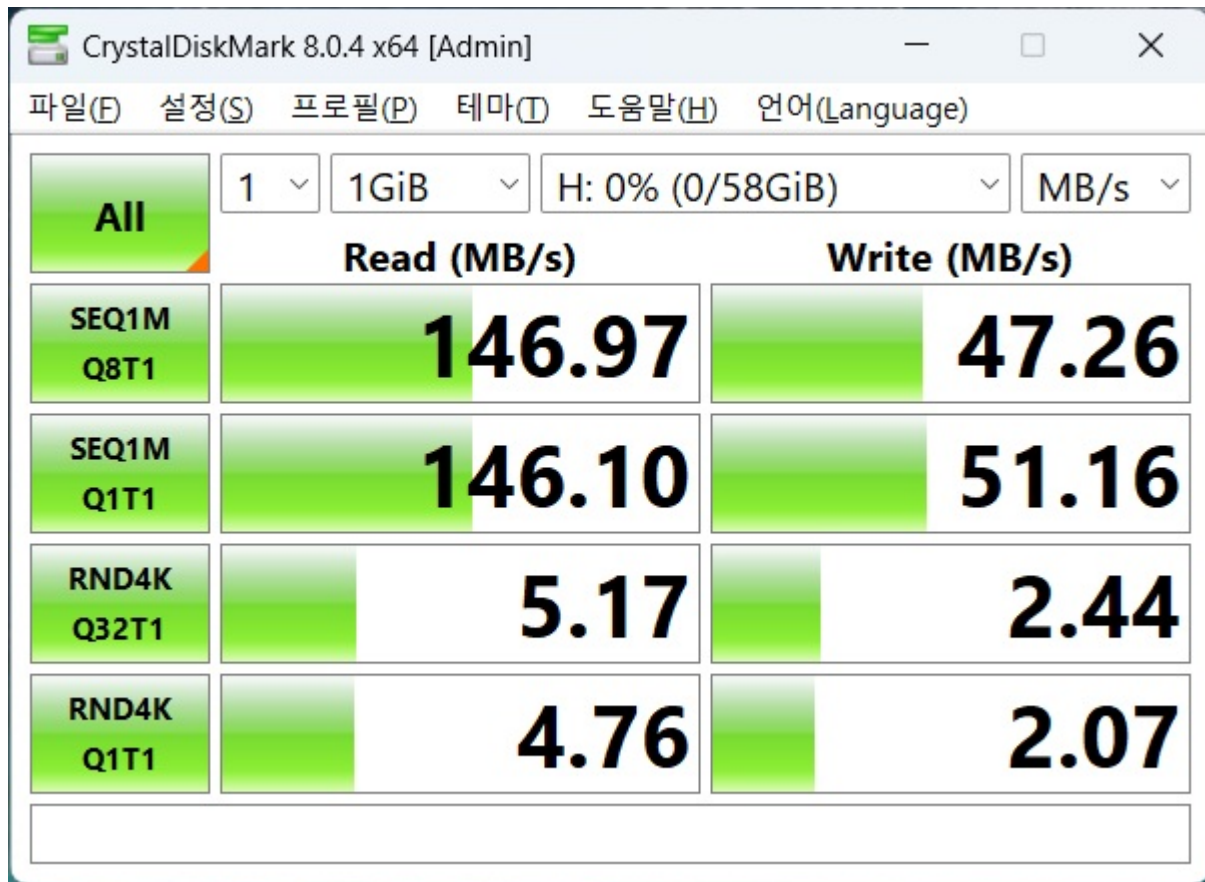
Controller Part-Number: Unknown

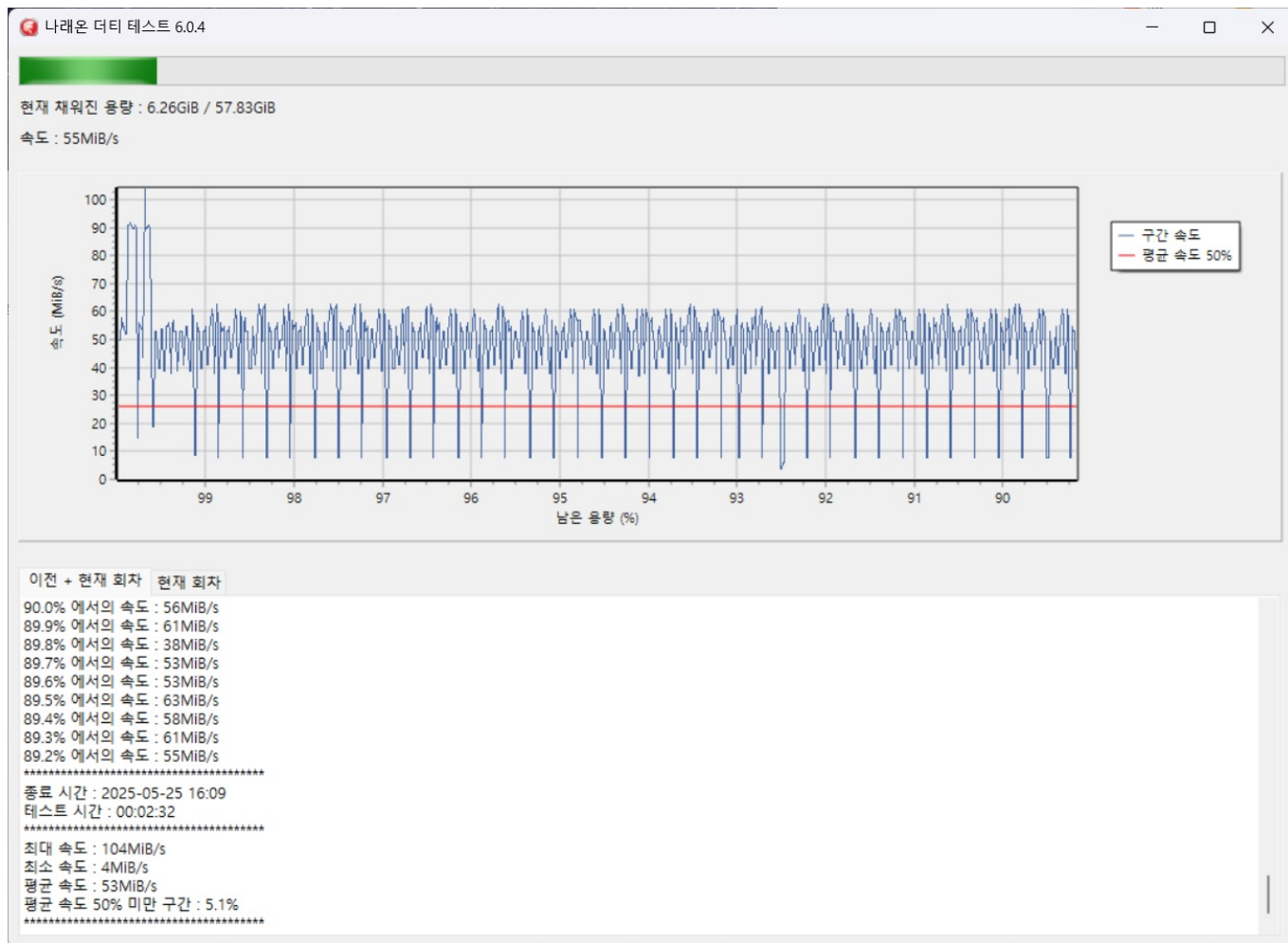
usbdriveinfo

Volume: H:
Controller: SanDisk
Possible Memory Chip(s): Not available
VID: 0781
PID: 5581
Manufacturer: SanDisk
Product: Ultra
Query Vendor ID: SanDisk
Query Product ID: Ultra
Query Product Revision: 1.00
Physical Disk Capacity: 62176362496 Bytes
Windows Disk Capacity: 62171119616 Bytes
Internal Tags: 3W4F-8CF4
File System: EXFAT
Relative Offset: 1024 KB
USB Version: 3.00
Declared Power: 896 mA
ContMeas ID: 24AC-05-00
Microsoft Windows 10 x64 Build 26100

<http://www.antspec.com/usbflashinfo/>
Program Version: 9.4.0.645

벤치결과





Sandisk Ultra Flair USB 3.0



32GB

chipgenius

Description: [F:]USB 대용량 저장 장치(USB SanDisk 3.2Gen1)

Device Type: Mass Storage Device

Protocal Version: USB 3.20

Current Speed: High Speed

Max Current: 896mA

USB Device ID: VID = 0781 PID = 5591

Serial Number:

0101E0FDD0C86576DCF0E14412CCDF0B69FC9647895746B975729694E4F9FAC0D9A100000000
000000000000447C8A7E000A0D00915581072A30C8A5

Device Vendor: USB

Device Name: SanDisk 3.2Gen1

Device Revision: 0100

Manufacturer: USB

Product Model: SanDisk 3.2Gen1

Product Revision: 1.00

Controller Part-Number: Unknown

usbdriveinfo

Volume: F:

Controller: SanDisk

Possible Memory Chip(s): Not available

VID: 0781

PID: 5591

Manufacturer: USB

Product: SanDisk 3.2Gen1

Query Vendor ID: USB

Query Product ID: SanDisk 3.2Gen1

Query Product Revision: 1.00

Physical Disk Capacity: 30784094208 Bytes

Windows Disk Capacity: 30767300608 Bytes

Internal Tags: 3Y4X-QACL

File System: FAT32

Relative Offset: 16 KB

USB Version: 3.10

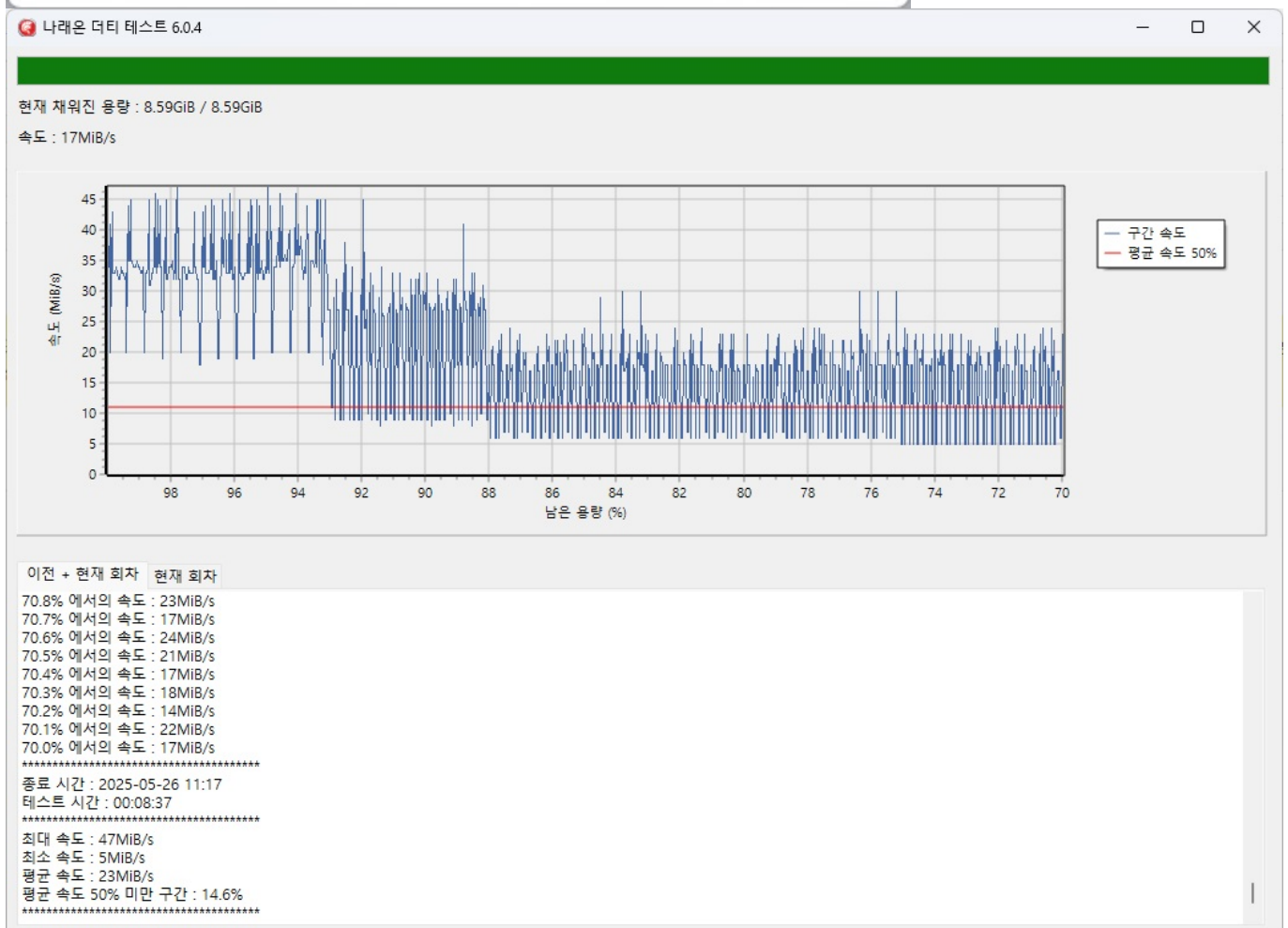
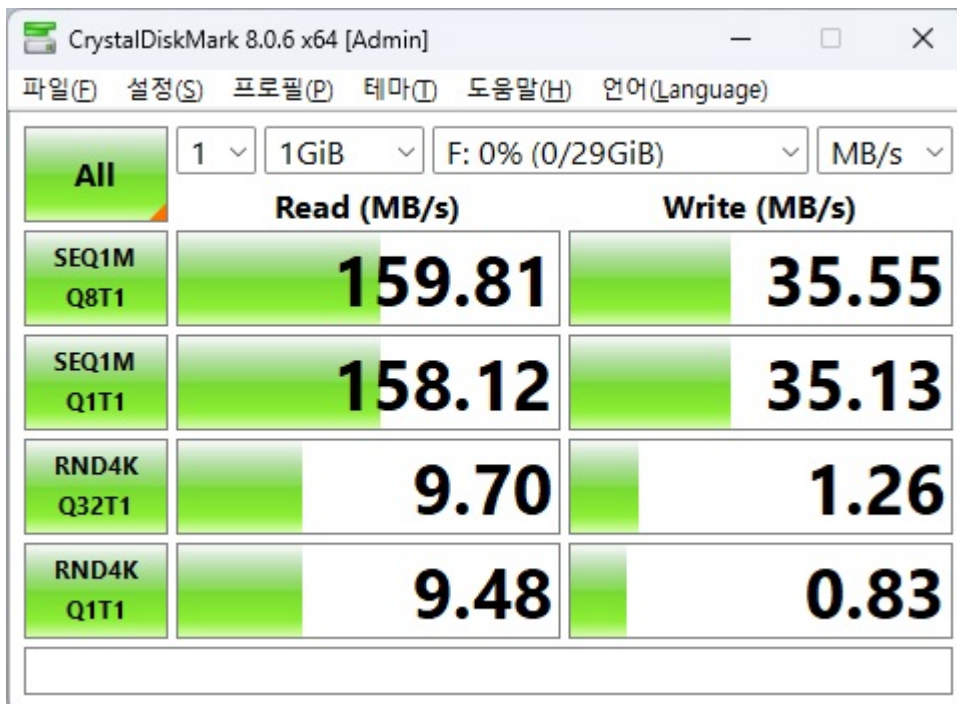
Declared Power: 896 mA

ContMeas ID: D941-03-00

Microsoft Windows 10 x64 Build 22631

<http://www.antspec.com/usbflashinfo/>
Program Version: 9.4.0.645

벤치결과



eVtran SSD 256G



Material: Aluminum alloy

Size (mm): 64*17.5*8.0

***Single USB-A Interface. Without TYPEC**

256GB

chipgeinus

Description: [J:][K:][L:]USB 대용량 저장 장치 (ASMT 2115)

Device Type: Mass Storage Device

Protocol Version: USB 3.00

Current Speed: High Speed

USB Device ID: VID = 174C PID = 55AA

Serial Number: 123456789037

Device Vendor: EVTRAN

Device Name: EVTRAN SSD

Device Revision: 0100

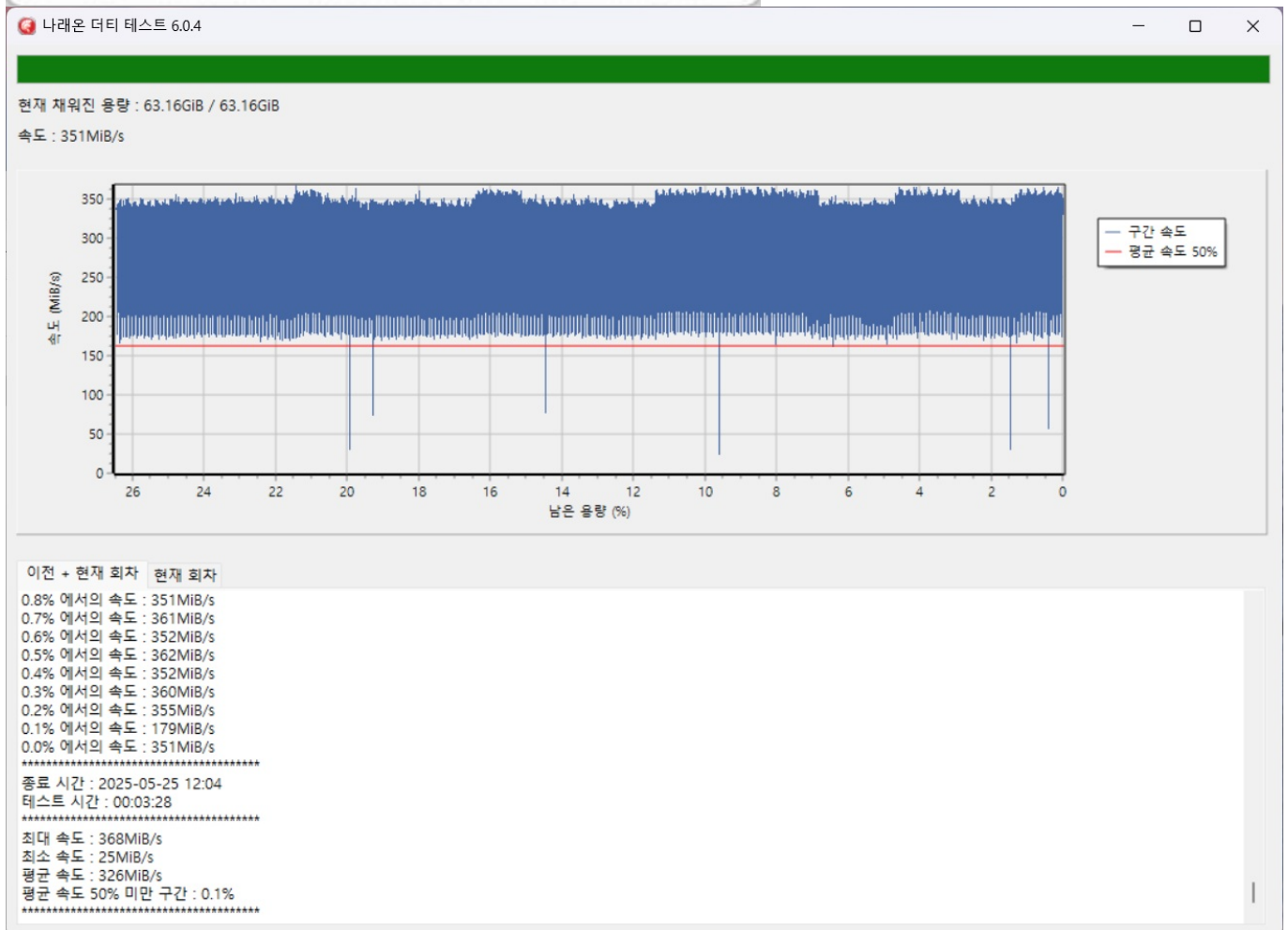
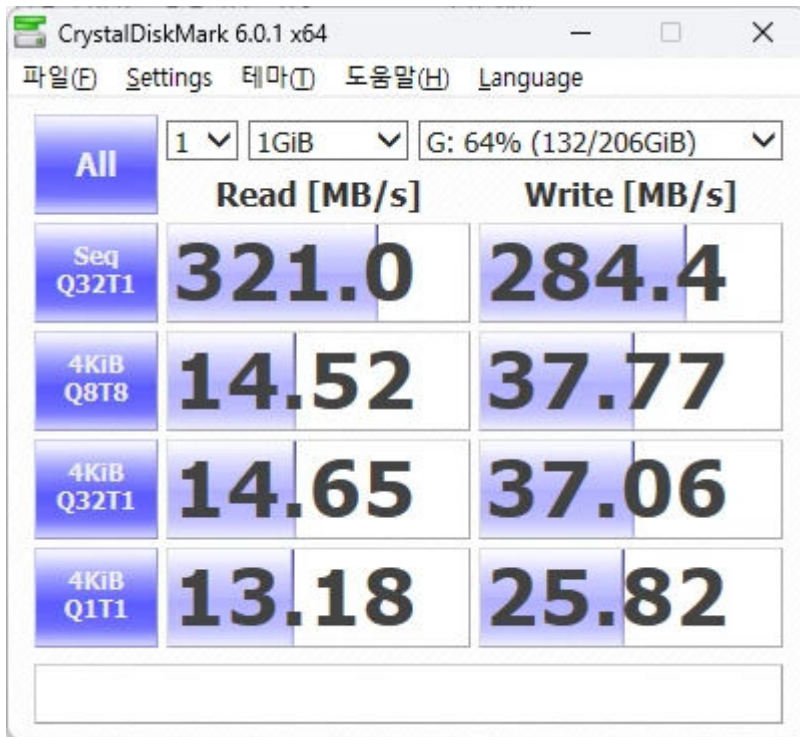
Manufacturer: ASMT

Product Model: 2115

Product Revision: 0

Controller Part-Number: Unknown

벤치결과



eVtran V03S 128G



Size:60*18*8mm

Weight : 11g

128GB

chipgeinus

Description: [H:][I:]USB 대용량 저장 장치(eVtran V03S)

Device Type: Mass Storage Device

Protocal Version: USB 3.00

Current Speed: High Speed

Max Current: 304mA

USB Device ID: VID = 1F75 PID = 0903

Serial Number: 0000000000000000143

Device Vendor: eVtran

Device Name: V03S

Device Revision: 0001

Manufacturer: eVtran

Product Model: V03S

Product Revision: 1.00

Controller Vendor: Innostor

Controller Part-Number: IS903-A5 - F/W 1.23.02.00

Flash ID code: 453A95937AD7 - SanDisk SDTNQGBMA-016G - 4CE/Dual Channel
[MLC-16K Toggle-DDR] -> Total Capacity = 128GB

Tools on web: <http://dl.mydigit.net/special/up/innostor.html>

Possible Flash Part-Number

```
-----  
[1CE]SDTNQGBMA-016G x 4 pcs/Channel x 2 Channels
```

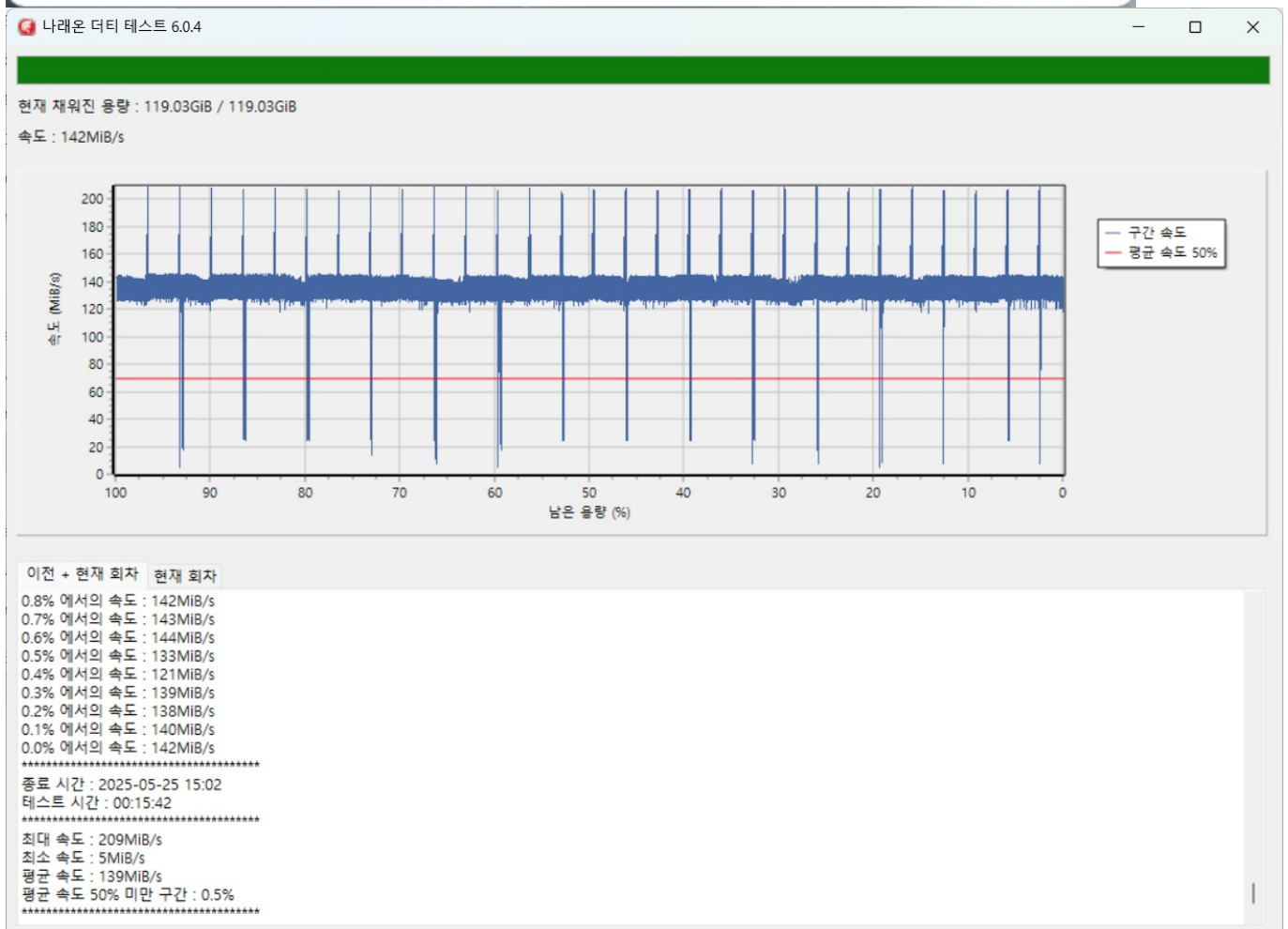
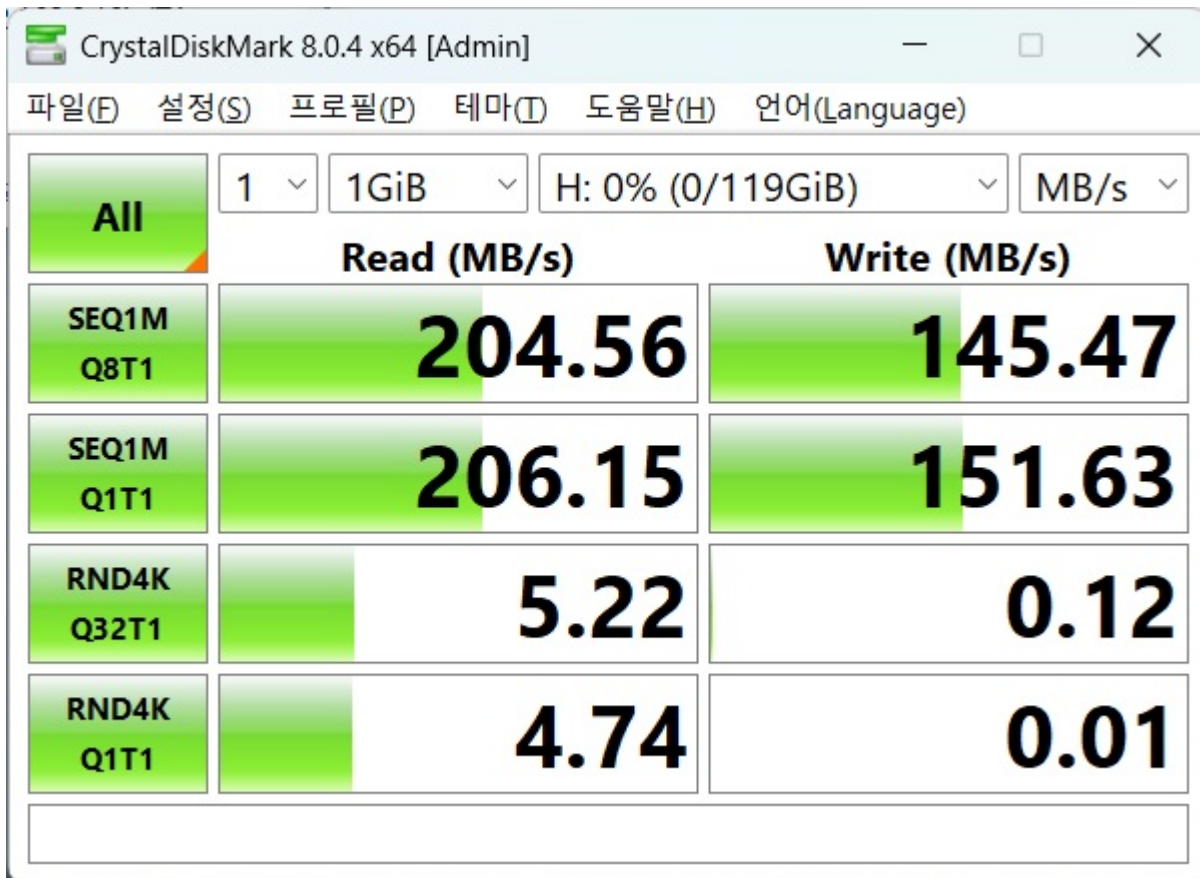
Flash ID mapping table

```
-----  
[Channel 0] [Channel 1]  
453A95937AD7    453A95937AD7  
453A95937AD7    453A95937AD7  
453A95937AD7    453A95937AD7  
453A95937AD7    453A95937AD7
```

usbdriveinfo

```
Volume: H:  
Controller: Innostor IS903 A5  
Possible Memory Chip(s):  
    SanDisk SDYNQGDMM-064G *2  
Memory Type: MLC  
Flash ID: 453A9593 7AD7  
Flash CE: 4+4  
Flash Channels: Dual  
Chip F/W: 1.23.02.00  
VID: 1F75  
PID: 0903  
Manufacturer: eVtran  
Product: V03S  
Query Vendor ID: eVtran  
Query Product ID: V03S  
Query Product Revision: 1.00  
Physical Disk Capacity: 127818226688 Bytes  
Windows Disk Capacity: 127778291712 Bytes  
Internal Tags: CW3H-QCGL  
File System: EXFAT  
Relative Offset: 1024 KB  
USB Version: 3.00  
Declared Power: 304 mA  
ContMeas ID: 24AC-02-00  
Microsoft Windows 10 x64 Build 26100  
-----  
http://www.antspec.com/usbflashinfo/  
Program Version: 9.4.0.645
```

벤치결과



eVtran V03S SLC 3.0



8GB

chipgeinus

Description: [G:]USB 대용량 저장 장치(eVtran V03S SLC)

Device Type: Mass Storage Device

Protocol Version: USB 3.00

Current Speed: High Speed

Max Current: 304mA

USB Device ID: VID = 1F75 PID = 0903

Serial Number: 1037622903

Device Vendor: eVtran

Device Name: V03S SLC

Device Revision: 0001

Manufacturer: eVtran

Product Model: V03S SLC

Product Revision: 1.00

Controller Vendor: Innostor

Controller Part-Number: IS903-A5 - F/W 1.01.02.00

Flash ID code: 98D5D02276D5 - Toshiba TH58TVG5S2FTA20 - 2CE/Dual

Channel [SLC-8K Toggle-DDR] -> Total Capacity = 8GB

Tools on web: <http://dl.mydigit.net/special/up/innostor.html>

Possible Flash Part-Number

```
-----  
[1CE]TC58TVG4S2FTA00 x 2 pcs/Channel x 2 Channels  
[2CE]TH58TVG5S2FTA20 x 1 pcs/Channel x 2 Channels
```

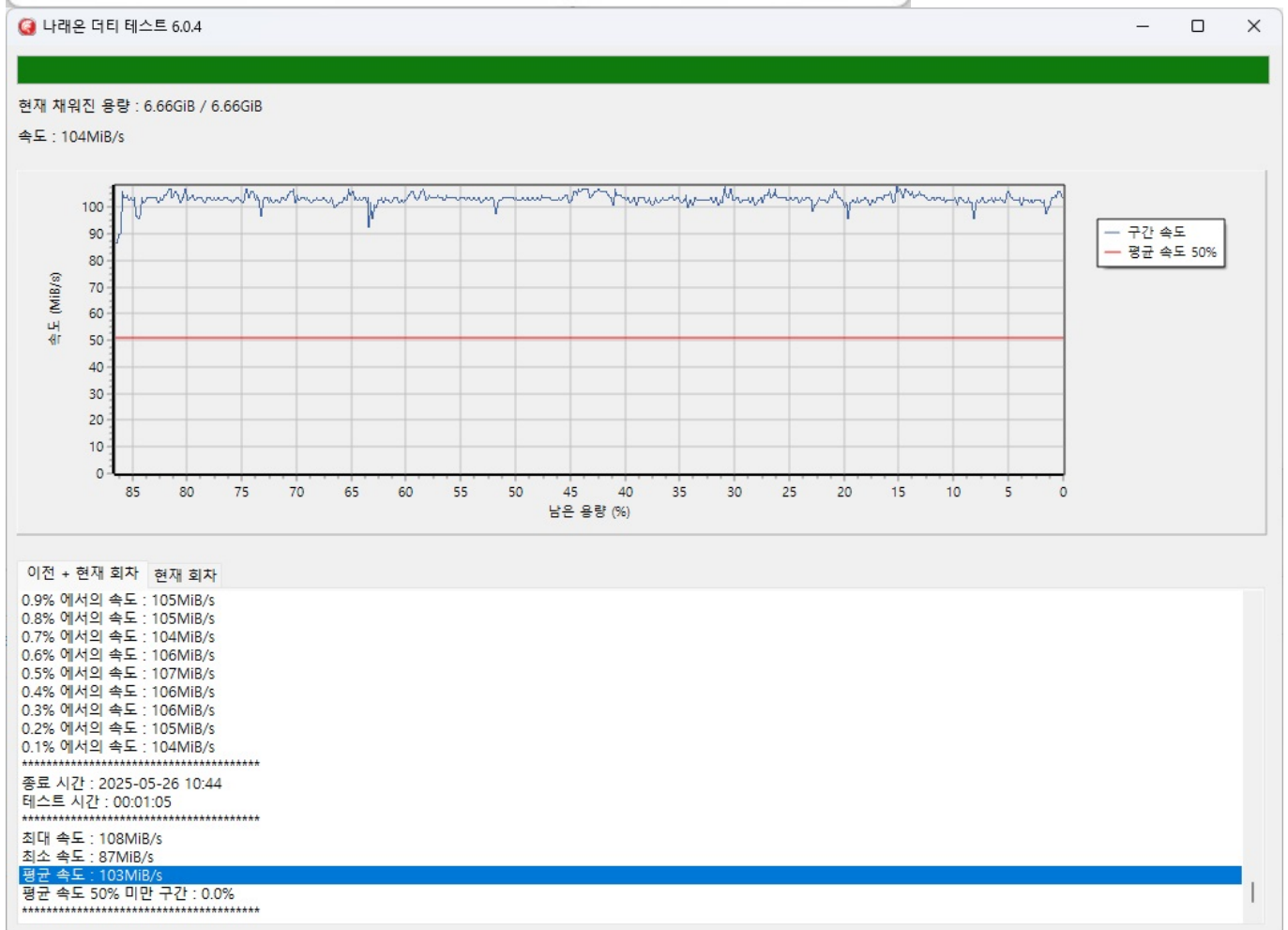
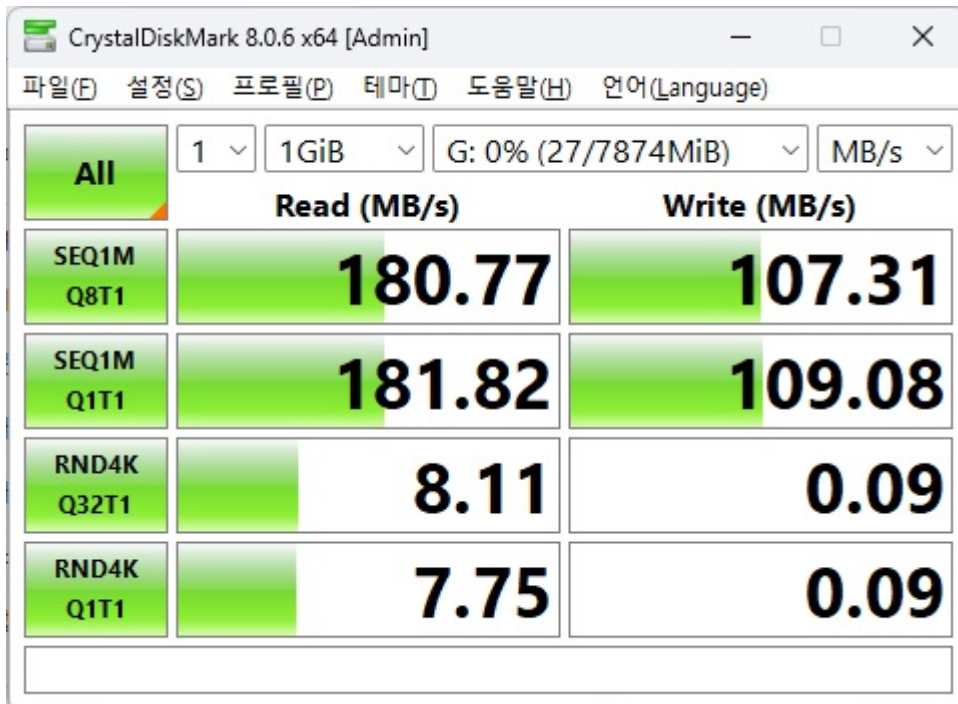
Flash ID mapping table

```
-----  
[Channel 0] [Channel 1]  
98D5D02276D5    98D5D02276D5  
98D5D02276D5    98D5D02276D5  
-----  
-----
```

usbdriveinfo

```
Volume: G:  
Controller: Innostor IS903 A5  
Possible Memory Chip(s):  
    Toshiba TH58NVG5S2FTA20 *2  
Memory Type: SLC  
Flash ID: 98D5D022 76D5  
Flash CE: 2+2  
Flash Channels: Dual  
Chip F/W: 1.01.02.00  
VID: 1F75  
PID: 0903  
Manufacturer: eVtran  
Product: V03S SLC  
Query Vendor ID: eVtran  
Query Product ID: V03S SLC  
Query Product Revision: 1.00  
Physical Disk Capacity: 8258584576 Bytes  
Windows Disk Capacity: 8256483328 Bytes  
Internal Tags: CXXH-QCH4  
File System: NTFS  
Relative Offset: 1024 KB  
USB Version: 3.00  
Declared Power: 304 mA  
ContMeas ID: D941-02-00  
Microsoft Windows 10 x64 Build 22631  
-----  
http://www.antspec.com/usbflashinfo/  
Program Version: 9.4.0.645
```

벤치결과



리뷰안 UX200



64GB

chipgenius

Description: [H:]USB 대용량 저장 장치(RevuAhn MLC USB 3.0)

Device Type: Mass Storage Device

Protocal Version: USB 3.00

Current Speed: High Speed

Max Current: 304mA

USB Device ID: VID = 1F75 PID = 0903

Serial Number: 000000000000000000E9

Device Vendor: RevuAhn

Device Name: RevuAhn UX200

Device Revision: 0001

Manufacturer: RevuAhn

Product Model: MLC USB 3.0

Product Revision: 1.00

Controller Vendor: Innostor

Controller Part-Number: IS903-A5 - F/W 1.23.01.00

Flash ID code: 8988244BA900 - Intel JS29F32B08JAME1 - 4CE/Dual Channel
[MLC-8K] -> Total Capacity = 64GB

Tools on web: <http://dl.mydigit.net/special/up/innostor.html>

Possible Flash Part-Number

```

-----
[1CE]JS29F64G08AAME1(25nm) x 4 pcs/Channel x 2 Channels
[2CE]JS29F16B08CAME1(25nm) x 2 pcs/Channel x 2 Channels
[4CE]JS29F32B08JAME1(25nm) x 1 pcs/Channel x 2 Channels

```

Flash ID mapping table

```

-----
[Channel 0] [Channel 1]
8988244BA900      8988244BA900
8988244BA900      8988244BA900
8988244BA900      8988244BA900
8988244BA900      8988244BA900

```

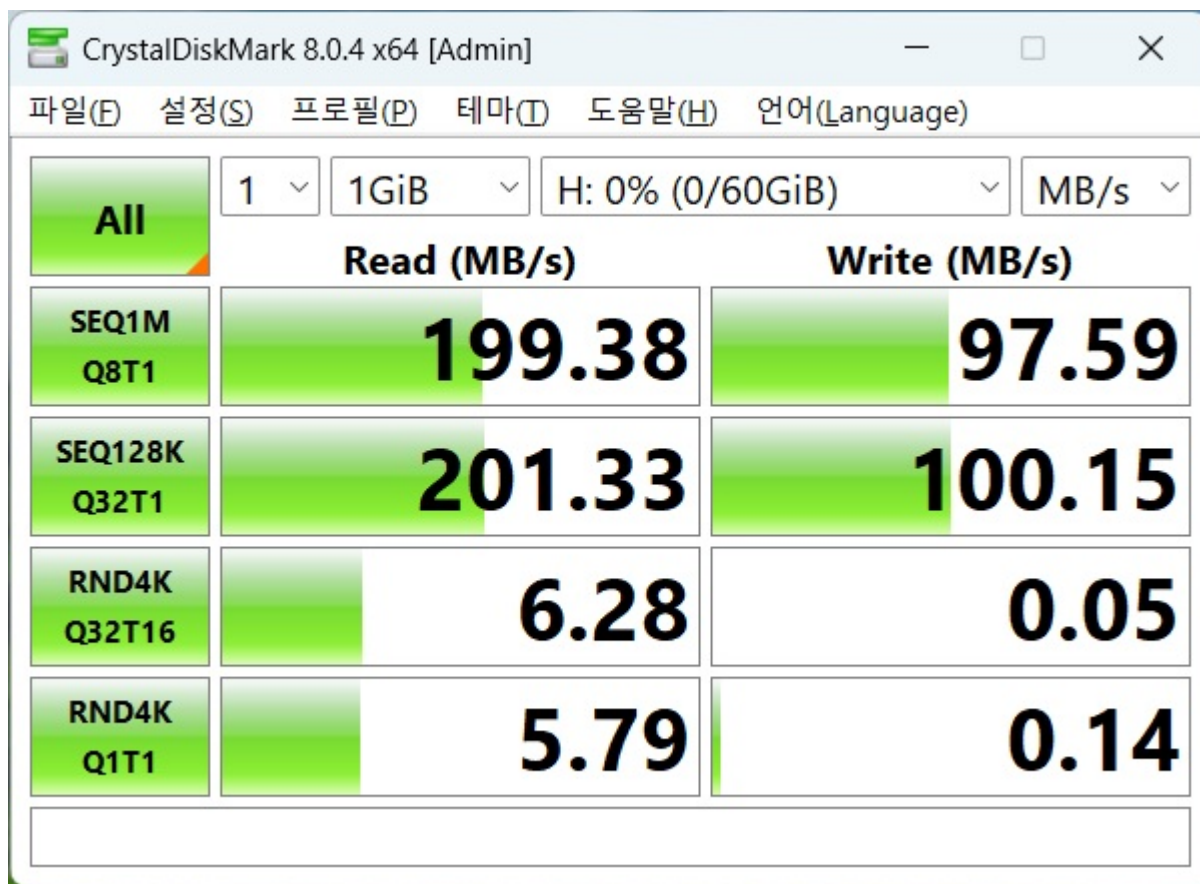
usbdriveinfo

```

Volume: H:
Controller: Innostor IS903 A5
Possible Memory Chip(s):
  Intel 29F32B08JCME2 *2
  Intel 29F32B08JCME3 *2
  Intel 29F32B16NCME1 *2
  Intel 29F32B08JAME1 *2
Memory Type: MLC
Flash ID: 8988244B A9
Flash CE: 4+4
Flash Channels: Dual
Chip F/W: 1.23.01.00
VID: 1F75
PID: 0903
Manufacturer: RevuAhn
Product: RevuAhn UX200
Query Vendor ID: RevuAhn
Query Product ID: MLC USB 3.0
Query Product Revision: 1.00
Physical Disk Capacity: 63909113344 Bytes
Windows Disk Capacity: 63904415744 Bytes
Internal Tags: CY4H-QCDL
File System: EXFAT
Relative Offset: 1024 KB
USB Version: 3.00
Declared Power: 304 mA
ContMeas ID: 24AC-03-00
Microsoft Windows 10 x64 Build 26100
-----
http://www.antspec.com/usbflashinfo/
Program Version: 9.4.0.645

```

벤치결과





리뷰안 UX300



256GB

chipgenius

Description: [F:][I:][J:]USB 대용량 저장 장치 (ASMT 2115)

Device Type: Mass Storage Device

Protocal Version: USB 3.00

Current Speed: High Speed

USB Device ID: VID = 174C PID = 1153

Serial Number: 00000000000000000000

Device Vendor: ASMedia

Device Name: AS2115

Device Revision: 0001

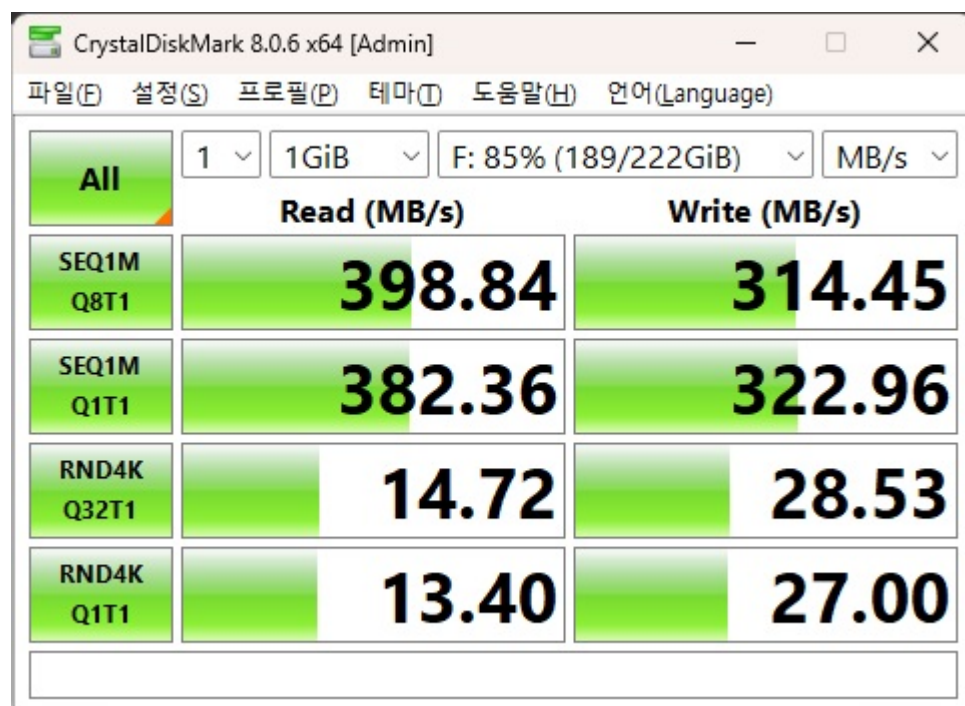
Manufacturer: ASMT

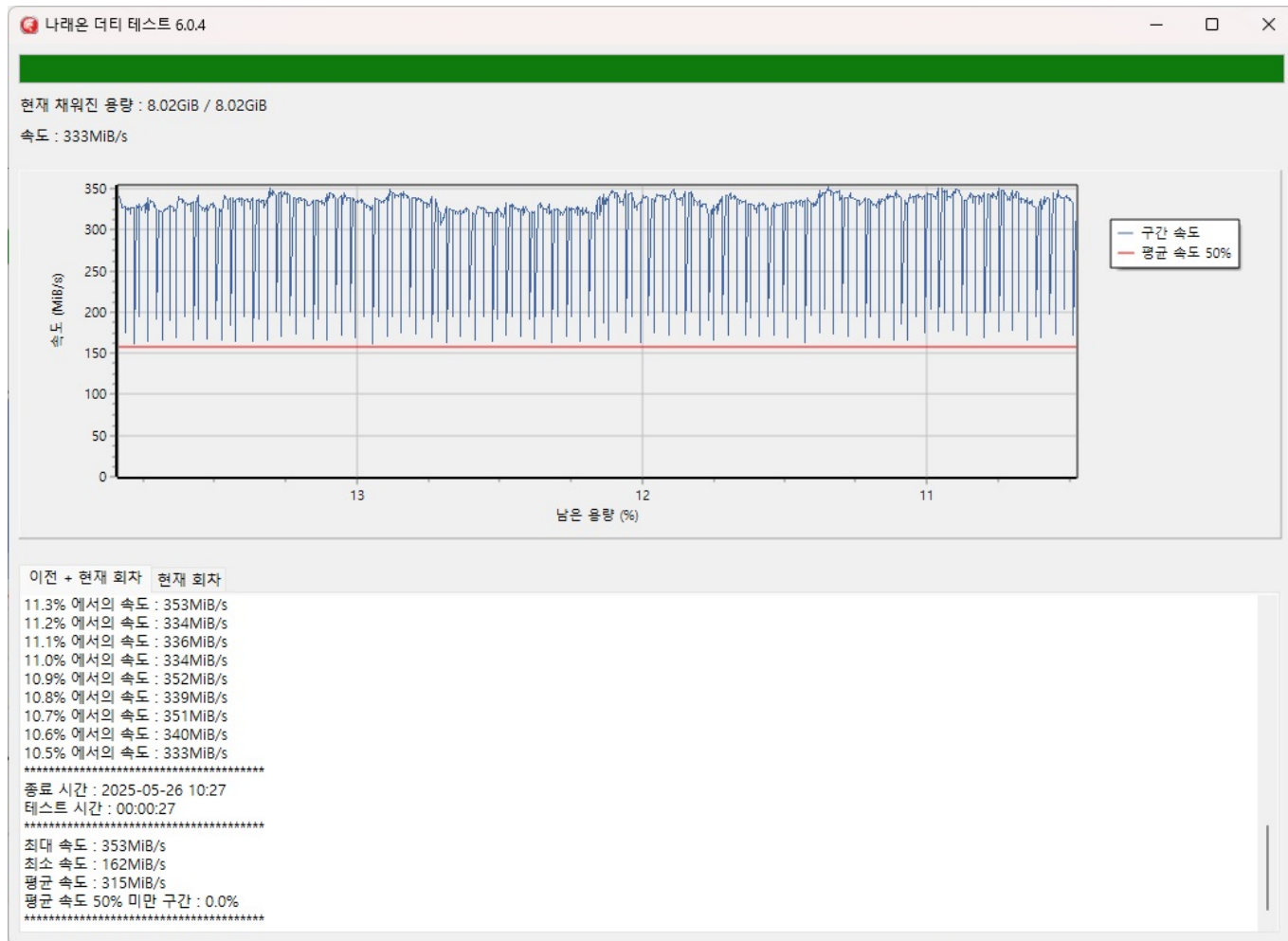
Product Model: 2115

Product Revision: 0

Controller Part-Number: Unknown

벤치결과





Orico UFSD-I



512GB

chipgenius

Description: [H:][I:]USB 대용량 저장 장치(ORICO UFSD-I)

Device Type: Mass Storage Device

Protocal Version: USB 3.20

Current Speed: High Speed

Max Current: 896mA

USB Device ID: VID = 152D PID = 0562

Serial Number: DD56419884B94

Device Vendor: ORICO

Device Name: UFSD-I

Device Revision: 0303

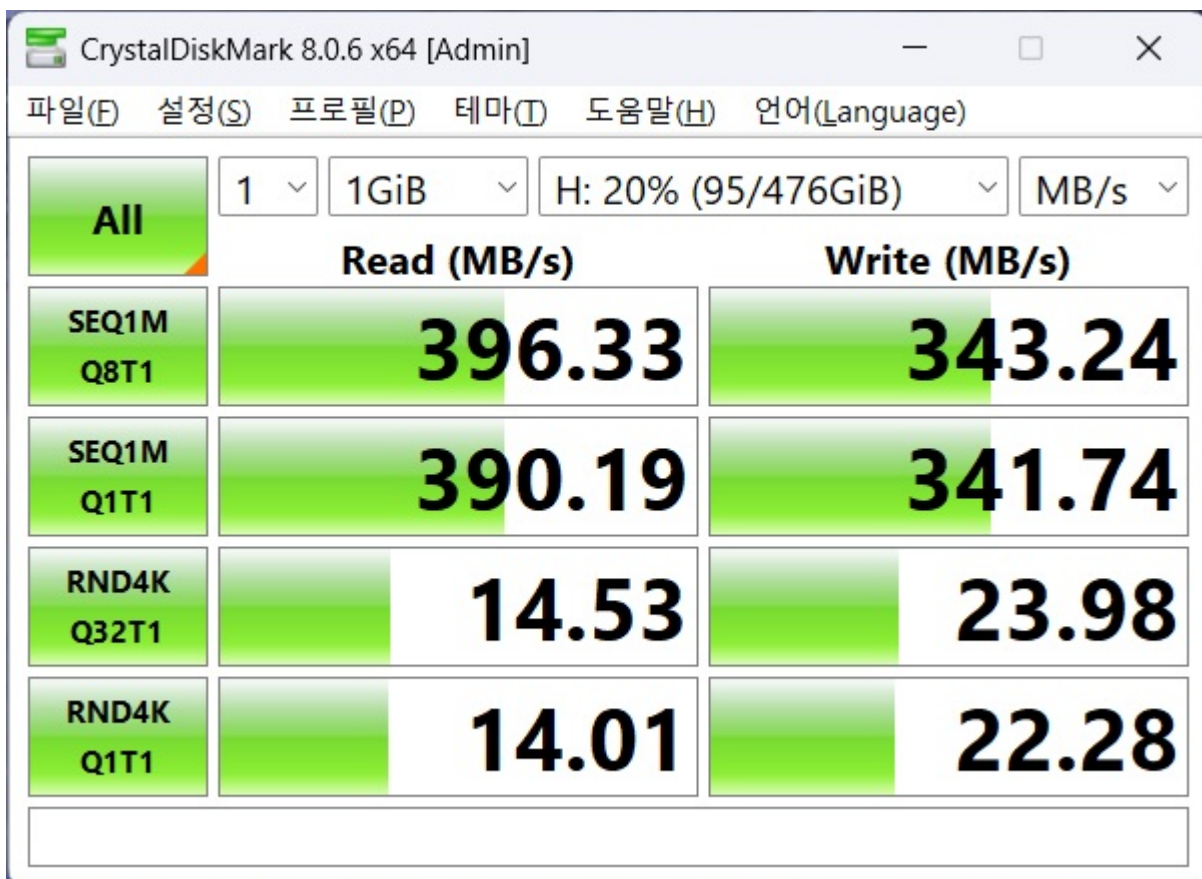
Manufacturer: ORICO

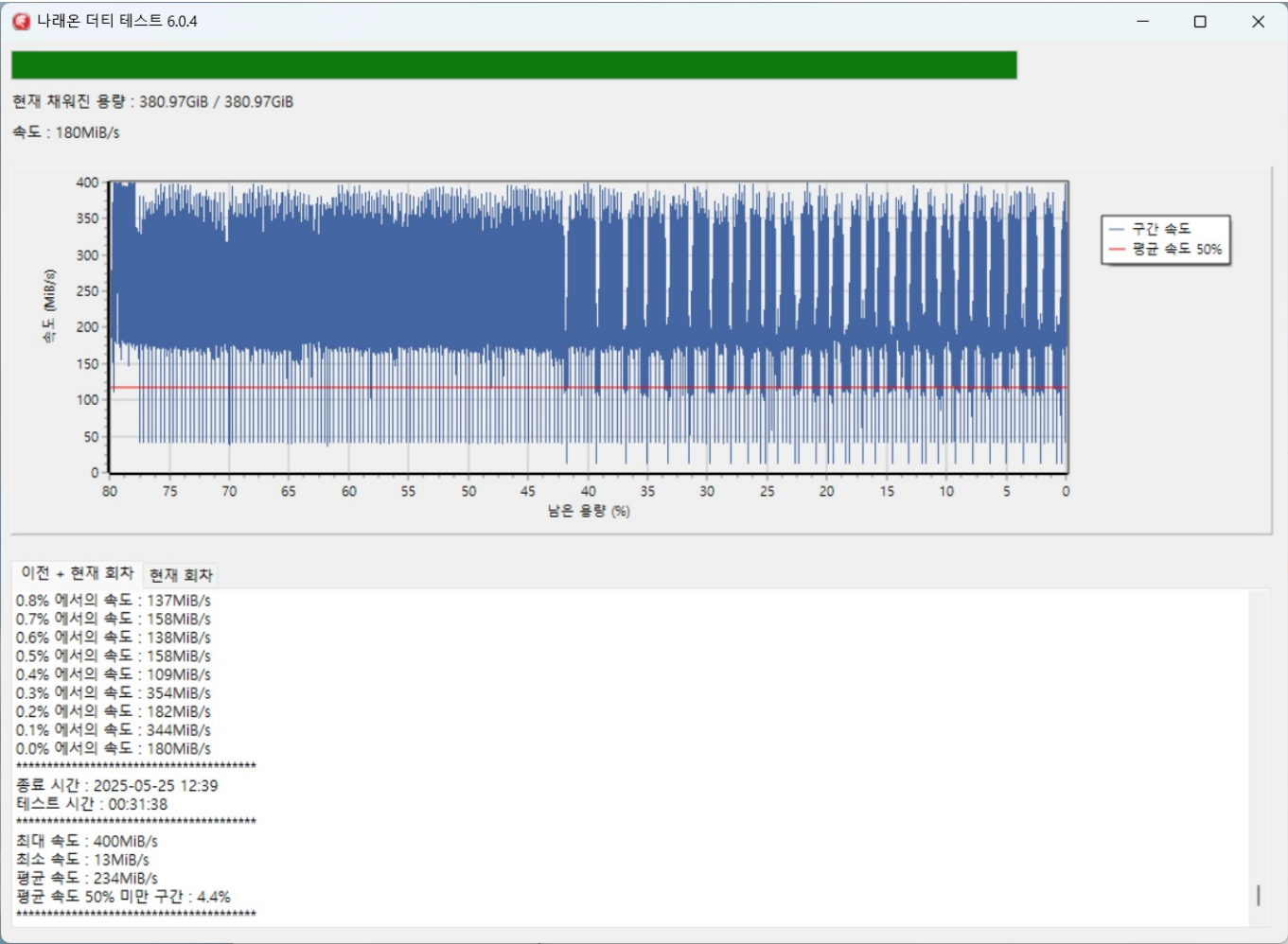
Product Model: UFSD-I

Product Revision: 0303

Controller Part-Number: Unknown

벤치결과





SONIZOON PSSD USB3.1



512GB

chipgenius

Description: [H:]UAS(USB Attached SCSI) 대용량 저장 장치(SONIZ00N M.Pssd USB3.1)

Device Type: Mass Storage Device

Protocal Version: USB 3.10

Current Speed: High Speed

USB Device ID: VID = 174C PID = 55AA

Serial Number: MSFT30SEZ223846CM0001183

Device Vendor: SONIZ00N

Device Name: M.Pssd USB3.1

Device Revision: 0100

Manufacturer: SONIZ00N

Product Model: M.Pssd USB3.1

Product Revision: 0

Controller Part-Number: Unknown

smiflashid

v0.5681a

Drive: 5(USB)

OS: 10.0 build 26100

Model: SONIZ00N

Fw : S0128A

Size : 483328 MB [506.8 GB]

From smart : [SMI2246XT] [2019-01-28\]

Controller : SM2246XT bufferless

Bank00: 0x98,0x3e,0xa6,0x93,0x7e,0xd1,0x8,0x0 - Toshiba 15nm MLC 16k
512Gb/CE 128Gb/die 2Plane/die

Bank01: 0x98,0x3e,0xa6,0x93,0x7e,0xd1,0x8,0x0 - Toshiba 15nm MLC 16k
512Gb/CE 128Gb/die 2Plane/die

Bank02: 0x98,0x3e,0xa6,0x93,0x7e,0xd1,0x8,0x0 - Toshiba 15nm MLC 16k
512Gb/CE 128Gb/die 2Plane/die

Bank03: 0x98,0x3e,0xa6,0x93,0x7e,0xd1,0x8,0x0 - Toshiba 15nm MLC 16k
512Gb/CE 128Gb/die 2Plane/die

Bank04: 0x98,0x3e,0xa6,0x93,0x7e,0xd1,0x8,0x0 - Toshiba 15nm MLC 16k
512Gb/CE 128Gb/die 2Plane/die

Bank05: 0x98,0x3e,0xa6,0x93,0x7e,0xd1,0x8,0x0 - Toshiba 15nm MLC 16k
512Gb/CE 128Gb/die 2Plane/die

Bank06: 0x98,0x3e,0xa6,0x93,0x7e,0xd1,0x8,0x0 - Toshiba 15nm MLC 16k
512Gb/CE 128Gb/die 2Plane/die

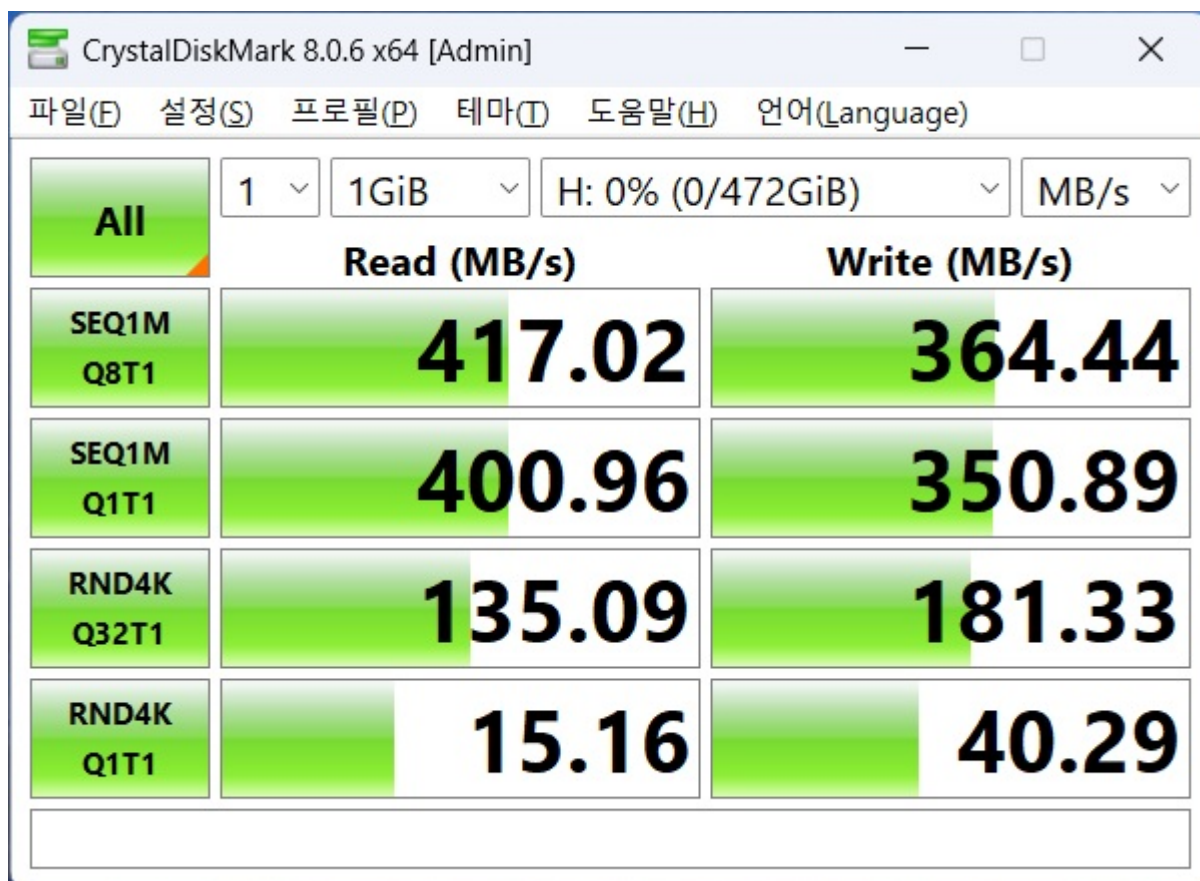
Bank07: 0x98,0x3e,0xa6,0x93,0x7e,0xd1,0x8,0x0 - Toshiba 15nm MLC 16k

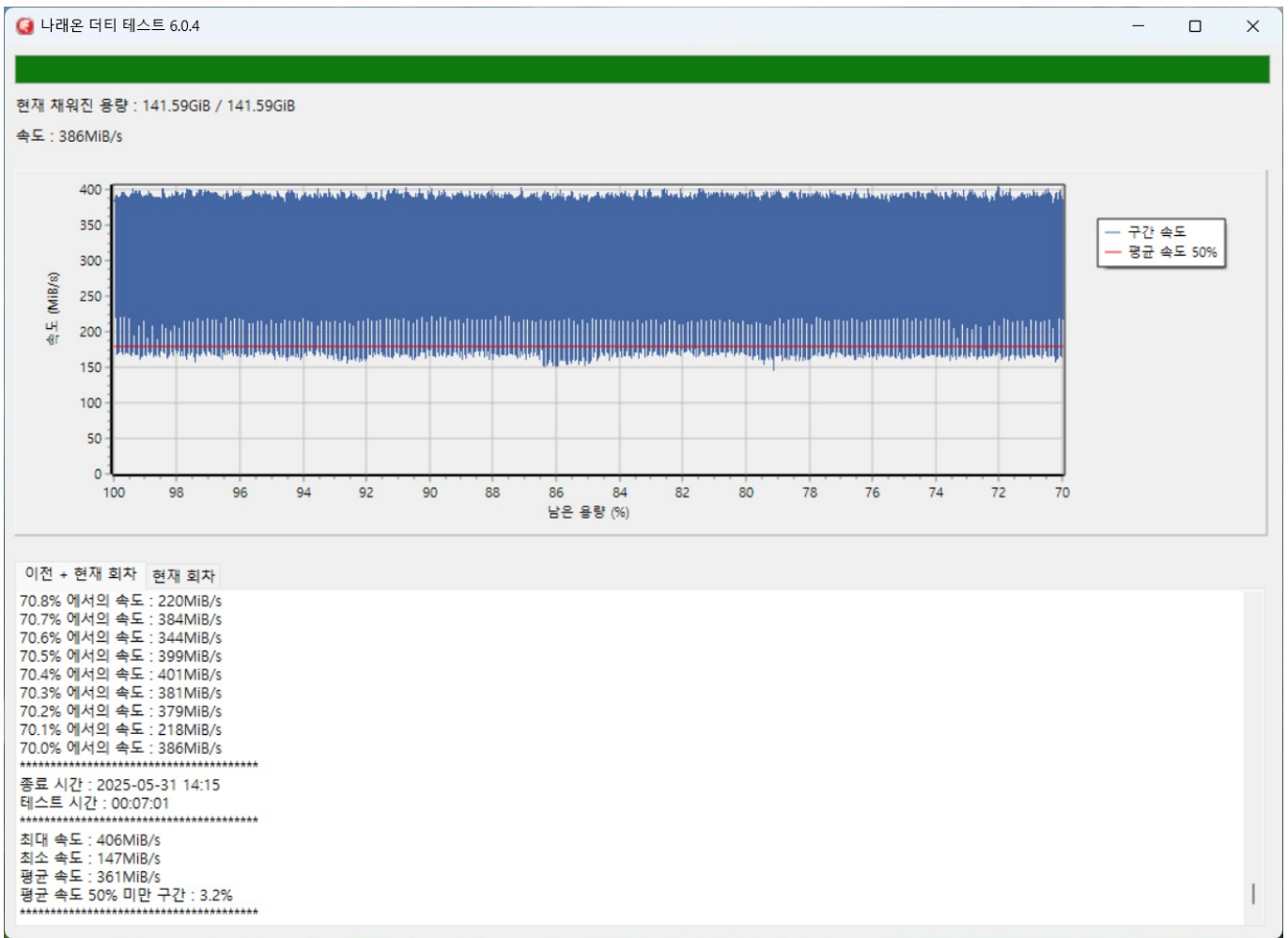
```

512Gb/CE 128Gb/die 2Plane/die
Bank26: 0x0,0x66,0x68,0x0,0x2,0x0,0x0,0x66 -
Bank27: 0x68,0x8,0x0,0x0,0x0,0x66,0x53,0x66 -
Bank28: 0x53,0x66,0x55,0x66,0x68,0x0,0x0,0x0 -
Bank29: 0x0,0x66,0x68,0x0,0x7c,0x0,0x0,0x66 -
Bank30: 0x61,0x68,0x0,0x0,0x7,0xcd,0x1a,0x5a -
Bank31: 0x32,0xf6,0xea,0x0,0x7c,0x0,0x0,0xcd -
Channel: 4
CE      : 2
TotDie  : 16
Plane   : 4
Die/Ce  : 4
Ch map  : 0x0F
CE map  : 0x03
Inter.  : 4
First Fblock : 11
Total Fblock : 2126
Total Hblock : 7552
Fblock Per Ce : 1063
Fblock Per Die: 1063
Original Spare Block Count : 138
Vendor Marked Bad Block   : 0
Bad Block From Pretest    : 92

```

벤치결과





관련 소프트웨어

USB Stick 의 정보를 조회하는 프로그램중에 ChipGenius라는 유명한 프로그램이 있는데, **1225 이후에 나온 버전은 트로이가 내장되어있으니** 가급적 사용하지 않기를 바라며 반드시 **1225 버전만** 사용하는것을 권장한다. 대신 아래 링크의 smiflashid나 usbflashinfo 프로그램을 사용하시기 바랍니다. 하지만 usbdriveinfo 의 경우 **SSD기반의 제품은 인식하지 못하는 문제**가 있다.

- <https://www.usbdev.ru/files/chipgenius/> v4.19.1225
chipgenius_v4_19_1225.zip
- <https://www.usbdev.ru/files/smi/smiflashid/> v0.5681a
smi_flash_id-v0.5681a.rar
- <http://www.antspec.com/usbflashinfo/> 여기서 다운로드:
usbdriveinfo.zip

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