

NVMe Health Check

Sandisk WDC WDS250G2B0C-00PXH0 250GB

NVMe Health Check is a short Test Suite that verifies drive health and wear by running the drive diagnostic, reviewing SMART data, and checking the Self-Test history.



August 17, 2022



EPIC NVMe Utilities

www.epicutils.com

SUMMARY

NVMe Health Check is a short Test Suite that verifies drive health and wear by running the drive diagnostic, reviewing SMART data, and checking the Self-Test history. The NVMe tested was the Sandisk WDC WDS250G2B0C-00PXH0 250GB installed in a HP system, model HP Z1 Entry Tower G5.

The user provided information that this NVMe drive is a client drive with 5 year warranty and 150TB TBW.

A total of 6 tests were run that attempted to verify 20 unique requirements.



REQUIREMENTS 20

PASSED 18

FAIL 2

STARTED Aug 17, 2022 - 18:13:19.974

ENDED Aug 17, 2022 - 18:15:11.495

DURATION 0:01:51.521

TEST	RESULT
TEST 10: Drive Info	PASS
TEST 12: Drive Wear	FAIL

RQMT 112: Percentage Written shall be less than 80%	FAIL
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TEST 13: Drive Health	FAIL
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RQMT 117: Critical composite temperature time shall be 0	FAIL
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TEST 14: Drive Features	PASS
TEST 15: Drive Diagnostic	PASS
TEST 900: Drive Parameter Change	PASS

NVME INFORMATION

VENDOR	MODEL	SIZE	VERSION
Sandisk	WDC WDS250G2B0C-00PXH0	250 GB	1.4.0

PARAMETER	VALUE
Serial Number	2035A0805352
Number Of Namespaces	1
Namespace 1 EUI64	001b44-8b49bc0ecb
Namespace 1 NGUID	e8238fa6bf530001-001b44-8b49bc0ecb
Namespace 1 Size	250 GB
Namespace 1 LBA Size	512
Firmware	211070WD
Firmware Slots	2
Firmware Activation Without Reset	Supported
Host Memory Buffer	Enabled. Size = 8,192 pages
Autonomous Power State Transition	Supported and Enabled
Volatile Write Cache	Enabled
Host Throttle Threshold TMT1	Disabled
Host Throttle Threshold TMT2	Disabled
Drive Throttle Threshold WCTEMP	80 C
Drive Throttle Threshold CCTEMP	85 C

Power States

STATE	NOP	MAX POWER	ENTRY LATENCY	EXIT LATENCY
0	False	3.5 Watts	Not Reported	Not Reported
1	False	2.4 Watts	Not Reported	Not Reported
2	False	1.9 Watts	Not Reported	Not Reported
3	True	0.02 Watts	3,900 uS (0.003 sec)	11,000 uS (0.011 sec)
4	True	0.005 Watts	5,000 uS (0.005 sec)	39,000 uS (0.039 sec)

PCIe

PCI	VENDOR	VID	DID	WIDTH	SPEED	ADDRESS
Endpoint	Sandisk	0x15B7	0x5009	x4	Gen3 8.0GT/s	Bus 1, device 0, function 0
Root		0x8086	0xA340			Bus 0, device 27, function 0

SMART ATTRIBUTES

PARAMETER	START	END	DELTA
Available Spare	100 %	100 %	
Available Spare Threshold	10 %	10 %	
Controller Busy Time	15,937 Min	15,937 Min	
Critical Composite Temperature Time	2 Min	2 Min	
Data Read	356,901.852 GB	356,901.852 GB	
Data Units Read	697,073,929	697,073,929	
Data Units Written	236,226,636	236,226,636	
Data Written	120,948.038 GB	120,948.038 GB	
Host Read Commands	9,314,262,073	9,314,262,073	
Host Write Commands	5,212,102,971	5,212,102,971	
Media and Data Integrity Errors	0	0	
Number of Error Information Log Entries	1	1	
Percentage Used	17 %	17 %	
Power Cycles	153	153	
Power On Hours	1,779	1,779	
Thermal Management Temperature 1 Count	0	0	
Thermal Management Temperature 1 Time	0 Sec	0 Sec	
Thermal Management Temperature 2 Count	0	0	
Thermal Management Temperature 2 Time	0 Sec	0 Sec	
Unsafe Shutdowns	23	23	
Warning Composite Temperature Time	53 Min	53 Min	
Time Throttled	3300	3300	

SYSTEM INFORMATION

PARAMETER	VALUE
Supplier	HP
Model	HP Z1 Entry Tower G5
BIOS	R01 Ver. 02.12.00
Hostname	fedora
OS	Fedora Linux 35 (Workstation Edition)

TEST 10: DRIVE INFO

REQUIREMENTS	0
PASSED	0 0.0%
FAILED	0 0.0%

STARTED	ENDED	DURATION
Aug 17, 2022 - 18:13:19.974	Aug 17, 2022 - 18:13:20.110	0:00:00.136

ID	REQUIREMENT	RESULT

DESCRIPTION

This test verifies the drive information can be read without errors. The NVMe information is read using the Get Log Page, Get Feature, Identify Controller, and Identify Namespace Admin Commands. If any Admin Command returns an error code the test fails.

RESULTS

All requirements passed verification.

TEST 12: DRIVE WEAR



REQUIREMENTS	4	
PASSED	3	75.0%
FAILED	1	25.0%

STARTED	ENDED	DURATION
Aug 17, 2022 - 18:13:20.111	Aug 17, 2022 - 18:13:20.133	0:00:00.022

ID	REQUIREMENT	RESULT
110	Percentage Used shall be less than 80%	PASS
111	Available Spare shall be 100%	PASS
112	Percentage Written shall be less than 80%	FAIL
113	Percentage Warranty Used shall be less than 80%	PASS

DESCRIPTION

This test verifies the drive is not “worn out” prior to beginning a test run. Drive wear is determined by reading SMART attributes from log page 2. The Percentage Used SMART attribute is the primary reference of drive wear.

If the user provided information on the warranty and TBW then the Percentage Data Written and Percentage Warranty Used are verified. Percentage Data Written is defined as $100 * (\text{Data Written} / \text{TBW})$ where TBW (Terabytes Written) is the total amount of data that can be written to the drive during the warranty period. Data Written is the SMART attribute that reports the data written to the drive.

Percentage Warranty Used is defined as $100 * (\text{Power On Hours} / \text{Warranty Hours})$ where warranty hours is the number of days in the warranty multiplied by 8 hours for client drives or 24 hours for enterprise drives.

RESULTS

One or more requirements failed verification and are listed in the table above.

PARAMETER	VALUE	NOTE
Percentage Used	17%	SMART attribute
Percentage Data Written	80.6%	Calculated
Percentage Warranty Used	12.2%	Calculated
Data Written	120.948 TB	SMART attribute
Terabytes Written (TBW)	150 TB	User Input
Warranty	5 years	User input
Power On Hours	1,779	SMART attribute
Warranty Hours	14,600	$5 * 365 * 8\text{hr}$

TEST 13: DRIVE HEALTH



REQUIREMENTS	5	
PASSED	4	80.0%
FAILED	1	20.0%

STARTED	ENDED	DURATION
Aug 17, 2022 - 18:13:20.134	Aug 17, 2022 - 18:13:20.156	0:00:00.022

ID	REQUIREMENT	RESULT
001	There shall be no critical warnings	PASS
114	Previous Self-Test failures shall be 0	PASS
115	SMART media and integrity errors shall be 0	PASS
116	Percentage throttled shall be less than 1.0%	PASS
117	Critical composite temperature time shall be 0	FAIL

DESCRIPTION

This test verifies drive health by looking for failed self-test results, critical warnings, media and data integrity errors, and excessive thermal throttling. Self-test results are read from Log Page 6. All other results are SMART attributes from Log Page 2.

This test defines excessive thermal throttling as a failure but excessive throttling could indicate an environment or system issue.

RESULTS

One or more requirements failed verification and are listed in the table above.

A total of 20 prior self-test results were found and none failed. There were no critical warnings or media errors. Excessive thermal throttling was detected and should be reviewed.

PARAMETER	VALUE	NOTE
Critical Warnings	No	
Media and Integrity Errors	0	
Self-test failures	0	
Percentage Throttled	0.1%	Must be less than 1%
Power On Hours	1,779	
Throttled Hours	0.92	0.1% of Power On Hours
Thermal Management Temperature 1 Time	0 sec	0.00 Hours
Thermal Management Temperature 2 Time	0 sec	0.00 Hours
Warning Composite Temperature Time	53 min	0.88 Hours
Critical Composite Temperature Time	2 min	0.03 Hours

TEST 14: DRIVE FEATURES

REQUIREMENTS	0
PASSED	0 0.0%
FAILED	0 0.0%

STARTED	ENDED	DURATION
Aug 17, 2022 - 18:13:20.158	Aug 17, 2022 - 18:13:20.184	0:00:00.025

ID	REQUIREMENT	RESULT
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DESCRIPTION

This test verifies a set of requirements, specific to the drive being tested, that are defined by the tester. This allows the tester to verify features and limits that are specific for their environment. For example, the tester can verify a specific feature, such as crypto-erase, is supported. Another example, the tester can verify the maximum power for Power State 0 is less than their system's power target.

RESULTS

All requirements passed verification.

PARAMETER	VALUE	NOTE
PCI Width	x4	Must be x2
PCI Speed	Gen3 8.0GT/s	Must be Gen3 8.0GT/s
Firmware Activation Without Reset	Supported	Must be supported
RTD3 Entry Latency	1,000,000 uS	Must be less than 10,000,000 uS
RTD3 Resume Latency	500,000 uS	Must be less than 1,000,000 uS
Power State 0 Maximum Power	3.5 Watts	Must be less than 8 Watts

TEST 15: DRIVE DIAGNOSTIC



REQUIREMENTS	5
PASSED	5
FAILED	0

STARTED	ENDED	DURATION
Aug 17, 2022 - 18:13:20.187	Aug 17, 2022 - 18:15:11.319	0:01:51.132

ID	REQUIREMENT	RESULT
200	Short Self-test result is 0 (no errors)	PASS
201	Short Self-test run time less than specified	PASS
202	Short Self-test progress is monotonic	PASS
203	Short Self-test progress is roughly linear (Coeff > 0.8)	PASS
204	Short Self-test Power-On Hours match hours reported in log page 2	PASS

DESCRIPTION

The short Self-test is a diagnostic testing sequence that tests the integrity and functionality of the controller and may include testing of the media associated with namespaces. The run time is 2 minutes or less. The results are reported in Log Page 6 during and after the self-test.

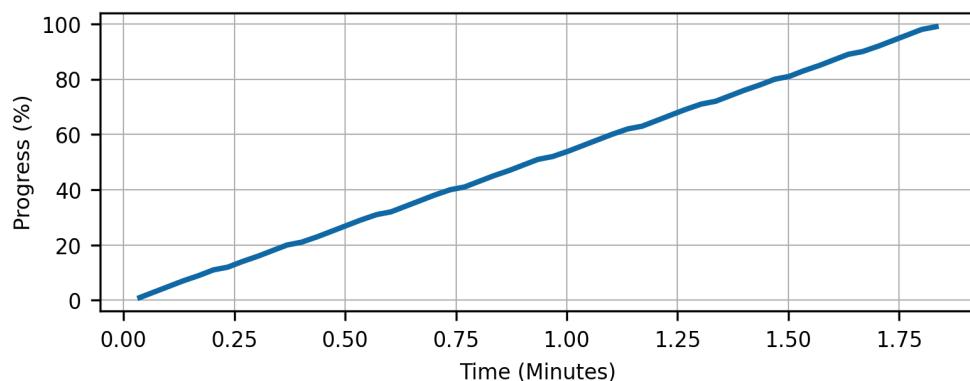
RESULTS

All requirements passed verification.

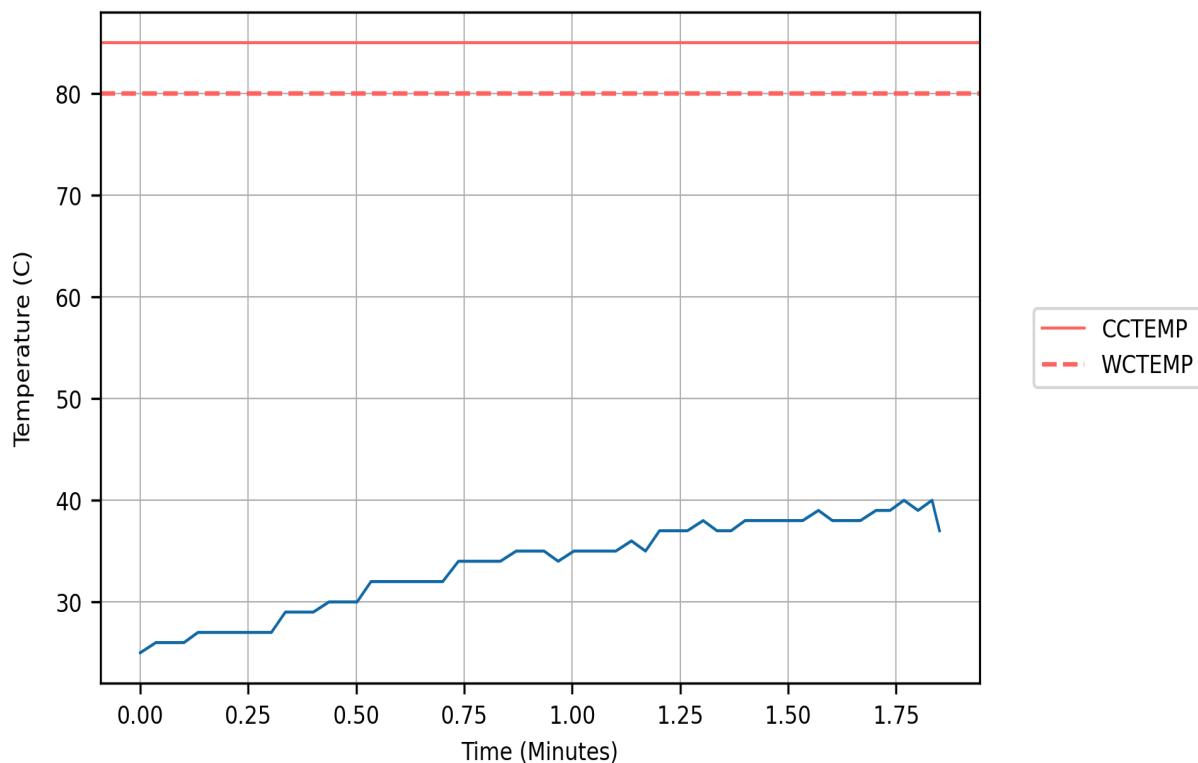
The diagnostics passed and completed within the expected 2 minute run time. The progress reported was monotonic and roughly linear (having a Pearson product-moment correlation coefficient greater than 0.9).

PARAMETER	VALUE	NOTE
Run Time	1.851 Min	Must be less than 2 minutes
Monotonicity	Monotonic	Must be monotonic
Linearity	1.000	Must be greater than 0.9

This plot shows the progress reported in Log Page 6 during the diagnostic.



This plot shows the NVMe composite temperature during the diagnostic. The horizontal red lines are the throttle temperature limits for reference.



TEST 900: DRIVE PARAMETER CHANGE



REQUIREMENTS	7
PASSED	7
FAILED	0

STARTED	ENDED	DURATION
Aug 17, 2022 - 18:15:11.322	Aug 17, 2022 - 18:15:11.495	0:00:00.173

ID	REQUIREMENT	RESULT
001	There shall be no critical warnings	PASS
002	Static parameters, such as Model Number, shall not change	PASS
003	SMART counters, such as Data Written, shall not reset or decrement	PASS
004	Media and Data Integrity Errors shall not increase	PASS
007	Change in Power On Hours shall be within 1 hour of actual time change	PASS
162	Admin Command average latency shall be less than 50 mS	PASS
163	Admin Command maximum latency shall be less than 500 mS	PASS

DESCRIPTION

This test verifies drive parameters change as expected across two readings. Static parameters, such as Model and Serial Number, are verified not to change. SMART counter parameters, such as Power-On Hours, are verified not to decrease or reset.

For the complete list of parameters, refer to the file nvme.info.json. In this file, static parameters have the compare type 'exact' and counter parameters 'counter'.

RESULTS

All requirements passed verification.

The start information was read at the beginning of this test run on August 17, 2022 at 18:13:20. The end information was read on August 17, 2022 at 18:15:11. The time difference between the two reads is 0:01:51. The reported difference in Power On Hours is 0.030925833333333333.

A total of 302 static parameters were verified not to change. A total of 22 counter parameters were verified not to decrement or reset.

No Critical Warnings were asserted. Media and Data Integrity Errors did not increase.

APPENDIX A: REQUIREMENT RESULTS

A requirement can be verified multiple times within a test run or even within a test. The table below lists the results for each attempt to verify a requirement.

ID	NAME	PASS	FAIL
001	There shall be no critical warnings	2	0
002	Static parameters, such as Model Number, shall not change	1	0
003	SMART counters, such as Data Written, shall not reset or decrement	1	0
004	Media and Data Integrity Errors shall not increase	1	0
007	Change in Power On Hours shall be within 1 hour of actual time change	1	0
110	Percentage Used shall be less than 80%	1	0
111	Available Spare shall be 100%	1	0
112	Percentage Written shall be less than 80%	0	1
113	Percentage Warranty Used shall be less than 80%	1	0
114	Previous Self-Test failures shall be 0	1	0
115	SMART media and integrity errors shall be 0	1	0
116	Percentage throttled shall be less than 1.0%	1	0
117	Critical composite temperature time shall be 0	0	1
162	Admin Command average latency shall be less than 50 mS	1	0
163	Admin Command maximum latency shall be less than 500 mS	1	0
200	Short Self-test result is 0 (no errors)	1	0
201	Short Self-test run time less than specified	1	0
202	Short Self-test progress is monotonic	1	0
203	Short Self-test progress is roughly linear (Coeff > 0.8)	1	0
204	Short Self-test Power-On Hours match hours reported in log page 2	1	0

APPENDIX B: REFERENCES

1. nvmetools, python package distributed on PYPI that generated this report.

APPENDIX C: PARAMETER VALUES

NAME	DESCRIPTION	VALUE
128-bit Host Identifier	Controller support for 128-bit Host Identifier, from CTRATT	Not Supported
ANA Group Identifier Maximum (ANAGRPMAX)	Maximum value of a valid ANA Group Identifier for any controller in the NVM subsystem	Not Supported
ANA Transition Time (ANATT)	Maximum seconds for transition between ANA states or that the controller reports the ANA change state	Not Supported
Abort Command Limit (ACL)	Maximum number of concurrently executing Abort commands supported by the controller	5
Admin Vendor Specific command handling	Admin Vendor Specific Commands use standard format or vendor specific format, from AVSCC	Not Vendor Specific
Aggregation Threshold (THR)	Feature 08h: Recommended minimum number of completion queue entries to aggregate per interrupt vector before signaling an interrupt to the host	1
Aggregation Time (TIME)	Feature 08h: Recommended maximum time that a controller may delay an interrupt due to interrupt coalescing	No Delay
Arbitration Burst (AB)	Feature 01h: Number of commands that may be executed at one time from a particular Submission Queue as power of 2 (2^n)	4 ($2^4=16$)
Associated Function Type	Controller associated with SR-IOV virtual function or PCI function type from CMIC	PCI
Asymmetric Namespace Access Change Notices	Controller support for asynchronous events Asymmetric Namespace Access Change Notices, from OAES	Not Supported
Asymmetric Namespace Access Reporting	Support for Asymmetric Namespace Access Reporting from CMIC	Not Supported
Asynchronous Event Request Limit (AERL)	Maximum number of concurrently outstanding Asynchronous Event Request commands supported by the controller	8
Atomic Write Unit Normal (AWUN)	Size of write in logical blocks guaranteed to be written atomically across all namespaces with any supported namespace format during normal operation	1
Atomic Write Unit Power Fail (AWUPF)	Size of write in logical blocks guaranteed to be written atomically across all namespaces with any supported namespace format during a power fail or error condition	1
Autonomous Power State Transition	Autonomous Power State Transition support, from APSTA	Supported
Autonomous Power State Transition Enable (APSTE)	Feature 0Ch: Autonomous power state transitions. Also see APSTA	Enabled

Available Space Below Threshold	Critical Warning: Available spare space has fallen below the threshold	No
Available Spare	Normalized percentage (0 to 100%) of the remaining spare capacity available	100 %
Available Spare Threshold	Available spare threshold indicated as a normalized percentage (0 to 100%)	10 %
Block Erase Sanitize	Controller support for block sanitize, from SANICAP	Supported
Command Retry Delay Time 1 (CRDT1)	If DNR is 0 and CRD is 01b in the Completion Queue Entry, indicates the command retry delay time	0 (0 mS)
Command Retry Delay Time 2 (CRDT2)	If DNR is 0 and CRD is 10b in the Completion Queue Entry, indicates the command retry delay time	0 (0 mS)
Command Retry Delay Time 3 (CRDT3)	If DNR is 0 and CRD is 11b in the Completion Queue Entry, indicates the command retry delay time	0 (0 mS)
Commands Supported and Effects Log Page	Controller support for log page attribute Commands Supported and Effects Log Page, from LPA	Supported
Compare NVM Command	Controller support for the Compare NVM command, from ONCS	Supported
Compare and Write Fused Operation	Controller support for the Compare and Write fused operation, from FUSES	Not Supported
Composite Temperature	Current composite temperature of the controller and namespace(s) associated with that controller	25 C
Composite Temperature Over Threshold	Feature 04h: Composite Temperature over threshold limit	80 C
Composite Temperature Under Threshold	Feature 04h: Composite Temperature under threshold limit	-5 C
Controller Busy Time	Time the controller is busy with I/O commands	15,937 Min
Controller ID (CNTRLID)	NVM subsystem unique controller identifier associated with the controller	1
Controller Type (CNTRLTYPE)	Specifies the controller type (I/O, Discovery, or Administrator)	I/O Controller
Controller Vendor	Controller vendor from PCI lookup: https://pcisig.com/membership/member-companies	Sandisk
Critical Composite Temperature Threshold (CCTEMP)	Temperature that indicates a critical overheating condition (e.g. possible data loss, device shutdown, extreme throttling, or permanent damage)	85 C
Critical Composite Temperature Time	Time controller is operational and Composite Temperature is greater than the Critical Composite Temperature Threshold	2 Min
Critical Warnings	Controller has asserted one or more critical warnings	No

Crypto Erase	Crypto erase supported as part of secure erase, from FNA	Not Supported
Crypto Erase Sanitize	Controller support for crypto sanitize, from SANICAP	Not Supported
Current Number Of Errors	Current number of error entries in Log Page 1	0
Current Number Of Self-Tests	Current number of self tests reported in log page 6	20
Current Power State (PS)	Feature 02h: Current power state of the controller	4
Current Self-Test Completion	Percentage of the device self-test operation that is complete	0
Current Self-Test Operation	Status of the current device self-test operation	No Test In Progress
Data Read	Data Read in GB calculated from Data Units Read	356,901.852 GB
Data Units Read	Number of 512,000 byte data units read from the controller; does not include metadata	697,073,929
Data Units Written	Number of 512,000 byte data units written to the controller; does not include metadata	236,226,636
Data Written	Data Written in GB calculated from Data Units Written	120,948.038 GB
Dataset Management NVM Command	Controller support for the Dataset Management NVM command, from ONCS	Supported
Deallocated or Unwritten Logical Block Error Enable (DULBE)	Feature 05h: Deallocated or Unwritten Logical Block error enabled for the namespace	Disabled
Device Self-test Command	Controller support for Device Self-test Command, from OACS	Supported
Directive Send and Directive Receive Commands	Controller support for Directive Send and Directive Receive Commands, from OACS	Not Supported
Disable Normal (DN)	Feature 0Ah: Host specifies AWUN and NAWUN are not required and controller shall only honor AWUPF and NAWUPF	Not Supported
Doorbell Buffer Config Command	Controller support for Doorbell Buffer Config Command, from OACS	Not Supported
EG Available Space Below Threshold	Critical Warning: One or more Endurance Groups available spare space has fallen below the threshold	No
EG Critical Warnings	One or more Endurance Groups has asserted one or more critical warnings	No
EG Reliability Degraded	Critical Warning: One or more Endurance Groups reliability degraded due to significant media or internal errors	No
EG in Read Only	Critical Warning: One or more Endurance Groups media has been placed in read only mode	No
Enable Host Memory (EHM)	Feature 0Dh: Controller may use host memory buffer when enabled. See HMPRE	Enabled

Endurance Group Event Log Page Change Notices	Controller support for asynchronous events Endurance Group Event Log Page Change Notices, from OAES	Not Supported
Endurance Group Identifier Maximum (ENDGIDMAX)	Maximum value of a valid Endurance Group Identifier for any controller in the NVM subsystem	0
Endurance Groups	Controller support for Endurance Groups, from CTRATT	Not Supported
Error Log Page Entries (ELPE)	Maximum number of Error Information log entries stored by the controller	256
Extended Data for Get Log Page	Controller support for log page attribute Extended Data for Get Log Page, from LPA	Supported
Extended Device Self-test Time (EDSTT)	Nominal time in minutes to complete extended device self-test when in power state 0	44 Min
FRU Globally Unique Identifier (FGUID)	Globally unique identifier for the Field Replaceable Unit (FRU)	000000-00000000 0000000000000000 00
Firmware Activation Notices	Controller support for asynchronous events Firmware Activation Notices, from OAES	Supported
Firmware Activation Notices Enable	Feature 0Bh: Asynchronous event notification sent to host for Firmware Activation Starting. Also see OAES	Enabled
Firmware Activation Without Reset	Controller support for firmware activation without a reset, from FRMW	Supported
Firmware Active Slot	Firmware slot that loaded the active firmware, from AFI	1
Firmware Commit and Image Download Commands	Controller support for Firmware Commit and Image Download Commands, from OACS	Supported
Firmware Pending Slot	Firmware slot to be activated at the next controller reset, from AFI	Not Reported
Firmware Revision (FR)	Currently active firmware revision	211070WD
Firmware Slot 1 Read Status	Firmware slot 1 read only or read/write, from FRMW	Read/Write
Firmware Slot 1 Revision	Revision of firmware in this slot, see Firmware Revision for Slot # (FRS#)	211070WD
Firmware Slot 2 Revision	Revision of firmware in this slot, see Firmware Revision for Slot # (FRS#)	
Firmware Slots	Number of firmware slots supported by controller, from FRMW	2
Firmware Update Granularity (FWUG)	Minimum granularity and alignment of the data provided in the Firmware Image Download command	4 KiB
Format All Namespaces	Format (excluding secure erase) applies to all namespaces in an NVM subsystem, from FNA	Not Supported

Format NVM Command	Controller support for Format NVM Command, from OACS	Supported
Get LBA Status capability	Controller support for the Get LBA Status capability, from OACS	Not Supported
High Priority Weight (HPW)	Feature 01h: Number of commands that may be executed from the high priority service class in each arbitration round	1
Highest Version Detected	Highest NVMe version detected based on supported features	1.4.0
Host Controlled Thermal Management (HCTMA)	Controller support for host controlled thermal management	Supported
Host Memory Buffer Minimum Descriptor Entry Size (HMMINDS)	Minimum usable size of a Host Memory Buffer Descriptor Entry	No limitations
Host Memory Buffer Minimum Size (HMMIN)	Minimum size that the host is requested to allocate for the Host Memory Buffer feature in 4KiB units	823 (3,292 KiB)
Host Memory Buffer Preferred Size (HMPRE)	Preferred size that the host is requested to allocate for the Host Memory Buffer feature in 4KiB units	51,200 (204,800 KiB)
Host Memory Buffer Size (HSIZE)	Feature 0Dh: Size of host memory buffer allocated in memory page size units	8,192
Host Memory Descriptor List Address (HMDLAL)	Feature 0Dh: Lower 32 bits of the physical location of the Host Memory Descriptor List for the Host Memory Buffer	0x2DF08000
Host Memory Descriptor List Address (HMDLAU)	Feature 0Dh: Upper 32 bits of the physical location of the Host Memory Descriptor List for the Host Memory Buffer	0x00000002
Host Memory Descriptor List Entry Count (HMDLEC)	Feature 0Dh: Number of valid Host Memory Descriptor Entries	8
Host Memory Maximum Descriptors Entries (HMMAXD)	Number of usable Host Memory Buffer Descriptor Entries	8
Host Read Commands	Number of read commands completed by the controller	9,314,262,073
Host Timestamp	Host number of milliseconds since midnight, 01-Jan-1970, UTC	1,660,785,200,052 mS
Host Timestamp Decoded	Host date and time	2022-08-17 18:13:20.052 DST
Host Write Commands	Number of write commands completed by the controller	5,212,102,971

IEEE OUI Identifier (IEEE)	Organization Unique Identifier (OUI) for the controller vendor: http://standards-oui.ieee.org/oui/oui.txt	00-1b-44
Keep Alive Support (KAS)	Granularity of the Keep Alive Timer	Not Supported
LBA Status Information Notices	Controller support for asynchronous events LBA Status Information Notices, from OAES	Not Supported
Low Priority Weight (LPW)	Feature 01h: Number of commands that may be executed from the low priority service class in each arbitration round	1
Maximum Completion Queue Entry Size	Maximum Completion Queue entry size when using the NVM Command Set in bytes reported as a power of two (2^n), from CQES	4 ($2^4=16$)
Maximum Data Transfer Size (MDTS)	Maximum data transfer size between host and controller in units of minimum memory page size as a power of two (2^n)	7 ($2^7=128$)
Maximum Number Allowed Namespaces (MNAN)	Maximum number of namespaces supported by the NVM subsystem	0
Maximum Outstanding Commands (MAXCMD)	Maximum number of commands that the controller processes at one time for a particular queue	Not Supported
Maximum Submission Queue Entry Size	Maximum Submission Queue entry size when using the NVM Command Set in bytes reported as a power of two (2^n), from SQES	6 ($2^6=64$)
Maximum Thermal Management Temperature (MXTMT)	Maximum temperature host may request in the Thermal Management Temperature 1 and 2 fields of Set Features command	85 C
Maximum Time for Firmware Activation (MTFA)	Maximum time the controller temporarily stops processing commands to activate the firmware image	5,000 mS
Media and Data Integrity Errors	Number of occurrences where the controller detected an unrecovered data integrity error	0
Media in Read Only	Critical Warning: Media has been placed in read only mode	No
Medium Priority Weight (MPW)	Feature 01h: Number of commands that may be executed from the medium priority service class in each arbitration round	1
Minimum Thermal Management Temperature (MNTMT)	Minimum temperature host may request in the Thermal Management Temperature 1 and 2 fields of Set Features command	0 C
Model Number (MN)	Model number for the NVM subsystem assigned by the vendor	WDC WDS250G2B 0C-00PXH0
NVM Set Identifier Maximum (NSETIDMAX)	Maximum value of a valid NVM Set Identifier for any controller in the NVM subsystem	0
NVM Sets	Controller support for NVM Sets, from CTRATT	Not Supported

NVM Subsystem Controllers	Single or multiple controllers contained in NVM subsystem from CMIC	Single
NVM Subsystem NVMe Qualified Name (SUBNQN)	The NVM Subsystem NVMe Qualified Name	nqn.2018-01.com.wdc:nguid:E8238FA6BF53-0001-001B448B49BC0ECB
NVM Subsystem PCIe Ports	Single or multiple PCIE ports contained in NVM subsystem from CMIC	Single
NVME MI Send/Receive Commands	Controller support for NVME MI Send/Receive Commands, from OACS	Not Supported
Namespace 1 ANA Group Identifier (ANAGRPID)	ANA Group Identifier of the ANA group of which the namespace is a member	Not Reported
Namespace 1 Active LBA Format	Index of LBA format that namespace is formatted with, from FLBAS	0
Namespace 1 Atomic Boundary Offset (NABO)	The LBA on this namespace where the first atomic boundary starts	7
Namespace 1 Atomic Boundary Size Normal (NABSN)	Atomic boundary size in logical blocks for this namespace for the NAWUN value	7
Namespace 1 Atomic Boundary Size Power Fail (NABSPF)	Atomic boundary size for this namespace specific to the Namespace Atomic Write Unit Power Fail value	7
Namespace 1 Atomic Compare & Write Unit (NACWU)	Namespace specific size of the write operation in logical blocks guaranteed to be written atomically for a Compare and Write fused command	Same as ACWU
Namespace 1 Atomic Write Unit Normal (NAWUN)	Namespace specific size of the write operation in logical blocks guaranteed to be written atomically during normal operation	7
Namespace 1 Atomic Write Unit Power Fail (NAWUPF)	Namespace specific size of the write operation in logical blocks guaranteed to be written atomically during a power fail or error condition	7
Namespace 1 Atomic Writes	If supported NAWUN, NAWUPF, and NACWU used instead of AWUN, AWUPF, and ACWU fields, from NSFEAT	Supported
Namespace 1 Capacity (NCAP)	The maximum number of logical blocks that may be allocated in the namespace	488,397,168
Namespace 1 Deallocate Bit in Write Zeros	Controller support for the Deallocate bit in the Write Zeros command for this namespace, from DLFEAT	Supported
Namespace 1 Deallocate Guard Field	Guard field for deallocated logical blocks that contain protection information is set to the CRC for the value read from the deallocated logical block, from DLFEAT	Not Supported

Namespace 1 Deallocate Logical Block Value	Values read from a deallocated logical block and its metadata, from DLFEAT	All 00h
Namespace 1 Endurance Group Identifier (ENDGID)	Endurance Group with which this namespace is associated	Not Supported
Namespace 1 Exclusive Access All Registrants Reservation	Namespace supports the Exclusive Access - All Registrants reservation type, from RESCAP	Not Supported
Namespace 1 Exclusive Access Registrants Only Reservation	Namespace supports the Exclusive Access - Registrants Only reservation type, from RESCAP	Not Supported
Namespace 1 Exclusive Access Reservation	Namespace supports the Exclusive Access reservation type, from RESCAP	Not Supported
Namespace 1 Extended Data LBA	If supported metadata is transferred at the end of the data LBA, creating an extended data LBA, from FLBAS	Not Supported
Namespace 1 Format Percent Complete	Percentage of the Format NVM command that remains to be completed, from FPI	0
Namespace 1 Format Progress Indicator	Namespace supports the Format Progress Indicator, from FPI	Supported
Namespace 1 Globally Unique Identifier (NGUID)	128-bit value that is globally unique and assigned to the namespace	e8238fa6bf530001-001b44-8b49bc0ecb
Namespace 1 IEEE Extended Unique Identifier (EUI64)	64-bit IEEE Extended Unique Identifier (EUI-64) that is globally unique and assigned to the namespace	001b44-8b49bc0ecb
Namespace 1 IO Optimize Fields	Fields NPWG, NPWA, NPDG, NPDA, and NOWS are defined for namespace and should be used for I/O optimization, from NSFEAT	Not Supported
Namespace 1 Ignore Existing Key Specification	Ignore Existing Key is used as defined in revision 1.2.1 or 1.3+ of NVMe specification, from RESCAP	1.2.1 or earlier
Namespace 1 LBA 0 Data Size (LBADS)	LBA data size in power of two (2^n)	9 ($2^9=512$) *
Namespace 1 LBA 0 Relative Performance (RP)	Relative performance of this LBA format relative to other LBA formats	Good Performance *
Namespace 1 LBA 1 Data Size (LBADS)	LBA data size in power of two (2^n)	12 ($2^{12}=4096$)
Namespace 1 LBA 1 Relative Performance (RP)	Relative performance of this LBA format relative to other LBA formats	Better Performance

Namespace 1 Logical Block Error	Controller support for the Deallocated or Unwritten Logical Block error for this namespace, from NSFEAT	Not Supported
Namespace 1 Metadata Transfer Buffer	Metadata transferred as part of a separate buffer that is specified in the Metadata Pointer, from MC	Not Supported
Namespace 1 Metadata Transfer Extended LBA	Metadata being transferred as part of an extended data LBA, from MC	Not Supported
Namespace 1 NGUID/EUID Not Reused	If supported non-zero NGUID and EUI64 fields for this namespace are never reused by the controller, from NSFEAT	Not Supported
Namespace 1 NVM Capacity (NVMCAP)	Total size of the NVM allocated to this namespace in bytes	250,059,350,016
Namespace 1 NVM Set Identifier (NVMSETID)	The NVM Set with which this namespace is associated	Not Supported
Namespace 1 Number of LBA Formats (NLBAF)	Number of supported LBA data size and metadata size combinations supported by the namespace	2
Namespace 1 Optimal IO Boundary (NOIOB)	Optimal IO boundary in logical blocks for this namespace	Not Reported
Namespace 1 Optimal Write Size (NOWS)	Size in logical blocks for optimal write performance for this namespace	1
Namespace 1 Persist Through Power Loss	Namespace supports the Persist Through Power Loss capability, from RESCAP	Not Supported
Namespace 1 Preferred Deallocate Alignment (NPDA)	Recommended alignment in logical blocks for the Dataset Management command with the Attribute ■Deallocate bit set to 1	1
Namespace 1 Preferred Deallocate Granularity (NPDG)	Recommended granularity in logical blocks for the Dataset Management command with the Attribute ■Deallocate bit set to 1	1
Namespace 1 Preferred Write Alignment (NPWA)	Recommended write alignment in logical blocks for this namespace	1
Namespace 1 Preferred Write Granularity (NPWG)	Smallest recommended write granularity in logical blocks for this namespace	1
Namespace 1 Protection First	Namespace supports protection information transferred as first eight bytes of metadata, from DPC	Not Supported

Namespace 1 Protection Information Enabled	Type of Protection Information enabled, if any, from DPS	Disabled
Namespace 1 Protection Information First	Protection information, if enabled, is transferred as the first eight bytes of metadata, from DPS	Last 8 Bytes
Namespace 1 Protection Last	Namespace supports protection information transferred as the last eight bytes of metadata, from DPC	Not Supported
Namespace 1 Protection Type 1	Namespace supports Protection Information Type 1, from DPC	Not Supported
Namespace 1 Protection Type 2	Namespace supports Protection Information Type 2, from DPC	Not Supported
Namespace 1 Protection Type 3	Namespace supports Protection Information Type 3, from DPC	Not Supported
Namespace 1 Shared	Namespace may be attached to two or more controllers in the NVM subsystem concurrently (i.e., may be a shared namespace), from NMIC	Not Supported
Namespace 1 Size	Total calculated size of the namespace in GB	250 GB
Namespace 1 Size in GiB	Total calculated size of the namespace in GiB (1024*1024*1024)	232.9 GiB
Namespace 1 Size in LBA (NSZE)	Total size of this namespace in logical blocks	488,397,168
Namespace 1 Thin Provisioning	If supported the Namespace Capacity reported may be less than the Namespace Size, from NSFEAT	Not Supported
Namespace 1 Utilization (NUSE)	Current number of logical blocks allocated in the namespace	488,397,168
Namespace 1 Write Exclusive All Registrants Reservation	Namespace supports the Write Exclusive - All Registrants reservation type, from RESCAP	Not Supported
Namespace 1 Write Exclusive Registrants Only Reservation	Namespace supports the Write Exclusive - Registrants Only reservation type, from RESCAP	Not Supported
Namespace 1 Write Exclusive Reservation	Namespace supports the Write Exclusive reservation type, from RESCAP	Not Supported
Namespace 1 Write Protected	Namespace is currently write protected due to any condition	No
Namespace Attribute Notices	Controller support for asynchronous events Namespace Activation Notices, from OAES	Not Supported
Namespace Granularity	Controller support for reporting of Namespace Granularity, from CTRATT	Not Supported

Namespace Management and Attachment Commands	Controller support for Namespace Management and Attachment Commands, from OACS	Not Supported
No-Deallocate Inhibited (NDI)	Controller support for No-Deallocate Inhibited (NDI), from SANICAP	Supported
No-Deallocate Modifies Media After Sanitize (NODMMAS)	Indicates if media is modified by controller after a sanitize command started with No-Deallocate After Sanitize bit set to 1, from SANICAP	Media not modified
Non-Operational Power State Permissive Mode	Controller support for temporary exceeding power in non-operational power state for background operation, from CTRATT	Supported
Non-Operational Power State Permissive Mode Enable (NOPPME)	Feature 11h: Controller may temporarily exceed the power limits of any non-operational power state to run controller initiated background operations	Enabled
Non-zero ANAGRIPID	Controller support for a non-zero value in the ANAGRIPID field of the Namespace Management command, from ANACAP	Not Supported
Number Of Failed Self-Tests	Number of self tests that failed in log page 6	0
Number of ANA Group Identifiers (NANAGRIPID)	Number of ANA groups supported by this controller	Not Supported
Number of Error Information Log Entries	Number of Error Information log entries over the life of the controller	1
Number of Namespaces (NN)	Number of valid namespaces present for the controller	1
Number of Power States Support (NPSS)	Number of NVM Express power states supported by the controller	5
OS Location	Drive location reported by the Operating System	/dev/nvme0
One Self-Test	Support for one device self-test at a time per system or per controller, from DSTO	Per System
Overwrite Sanitize	Controller support for overwrite sanitize, from SANICAP	Not Supported
PCI Device ID	PCI device identifier assigned for the device	0x5009
PCI Location	PCI bus address in the system	Bus 1, device 0, function 0
PCI Rated Speed	Maximum PCI bus speed the device is rated for	Gen3 8.0GT/s
PCI Rated Width	Maximum PCI bus width the device is rated for	x4
PCI Speed	Current PCI bus speed	Gen3 8.0GT/s
PCI Subsystem Vendor ID (SSVID)	Company vendor identifier assigned by PCI SIG for the subsystem	0x15B7
PCI Vendor ID (VID)	Company vendor identifier assigned by PCI SIG for the controller	0x15B7

PCI Width	Current PCI bus width in lanes	x4
PCIe Management Endpoint (PCIEME)	NVME MI: NVM Subsystem contains a Management Endpoint on a PCIe port	Not Supported
Percentage Used	Vendor specific estimate of the percentage life used, can exceed 100%	17 %
Permanent Write Protect	Controller support for the Permanent Write Protect state, from NWPC	Not Supported
Persistent Event Log	Controller support for log page attribute Persistent Event Log, from LPA	Supported
Persistent Event Log Size (PELS)	Maximum reportable size for the Persistent Event Log	64 KiB
Persistent Memory Unreliable	Critical Warning: Persistent Memory Region has become read-only or unreliable	No
Power Cycles	Number of power cycles	153
Power On Hours	Number of power on hours	1,779
Power State 0 Active Power (ACTP)	Largest average power over 10 seconds in this power state with workload from Active Power Workload (APW)	1.8 Watts
Power State 0 Active Power Workload (APW)	Workload used to calculate maximum power for the active power state	Workload #2
Power State 0 Entry Latency (ENLAT)	Maximum entry latency in microseconds associated with entering this power state	Not Reported
Power State 0 Exit Latency (EXLAT)	Maximum exit latency in microseconds associated with exiting this power state	Not Reported
Power State 0 Idle Power (IDLP)	Typical power consumed over 30 seconds in this power state when idle	0.63 Watts
Power State 0 Idle Time Prior to Transition (ITPT)	Feature 0Ch: Idle time that occurs in this power state prior to transitioning to the Idle Transition Power State in milliseconds	100 mS
Power State 0 Idle Transition Power State (ITPS)	Feature 0Ch: Power state to autonomously transition to after exceeding Idle Time Prior to Transition (ITPT)	3
Power State 0 Maximum Power (MP)	Maximum power consumed in this power state	3.5 Watts
Power State 0 Non-Operational State (NOPS)	Controller does not process I/O commands in a Non-Operational State	False
Power State 0 Relative Read Latency (RRL)	Relative read latency associated with this power state	0
Power State 0 Relative Read Throughput (RRT)	Relative read throughput associated with this power state	0

Power State 0 Relative Write Latency (RWL)	Relative write latency associated with this power state	0
Power State 0 Relative Write Throughput (RWT)	Relative write throughput associated with this power state	0
Power State 1 Active Power (ACTP)	Largest average power over 10 seconds in this power state with workload from Active Power Workload (APW)	1.6 Watts
Power State 1 Active Power Workload (APW)	Workload used to calculate maximum power for the active power state	Workload #2
Power State 1 Entry Latency (ENLAT)	Maximum entry latency in microseconds associated with entering this power state	Not Reported
Power State 1 Exit Latency (EXLAT)	Maximum exit latency in microseconds associated with exiting this power state	Not Reported
Power State 1 Idle Power (IDLP)	Typical power consumed over 30 seconds in this power state when idle	0.63 Watts
Power State 1 Idle Time Prior to Transition (ITPT)	Feature 0Ch: Idle time that occurs in this power state prior to transitioning to the Idle Transition Power State in milliseconds	100 mS
Power State 1 Idle Transition Power State (ITPS)	Feature 0Ch: Power state to autonomously transition to after exceeding Idle Time Prior to Transition (ITPT)	3
Power State 1 Maximum Power (MP)	Maximum power consumed in this power state	2.4 Watts
Power State 1 Non-Operational State (NOPS)	Controller does not process I/O commands in a Non-Operational State	False
Power State 1 Relative Read Latency (RRL)	Relative read latency associated with this power state	0
Power State 1 Relative Read Throughput (RRT)	Relative read throughput associated with this power state	0
Power State 1 Relative Write Latency (RWL)	Relative write latency associated with this power state	0
Power State 1 Relative Write Throughput (RWT)	Relative write throughput associated with this power state	0
Power State 2 Active Power (ACTP)	Largest average power over 10 seconds in this power state with workload from Active Power Workload (APW)	1.5 Watts

Power State 2 Active Power Workload (APW)	Workload used to calculate maximum power for the active power state	Workload #2
Power State 2 Entry Latency (ENLAT)	Maximum entry latency in microseconds associated with entering this power state	Not Reported
Power State 2 Exit Latency (EXLAT)	Maximum exit latency in microseconds associated with exiting this power state	Not Reported
Power State 2 Idle Power (IDLP)	Typical power consumed over 30 seconds in this power state when idle	0.63 Watts
Power State 2 Idle Time Prior to Transition (ITPT)	Feature 0Ch: Idle time that occurs in this power state prior to transitioning to the Idle Transition Power State in milliseconds	100 mS
Power State 2 Idle Transition Power State (ITPS)	Feature 0Ch: Power state to autonomously transition to after exceeding Idle Time Prior to Transition (ITPT)	3
Power State 2 Maximum Power (MP)	Maximum power consumed in this power state	1.9 Watts
Power State 2 Non-Operational State (NOPS)	Controller does not process I/O commands in a Non-Operational State	False
Power State 2 Relative Read Latency (RRL)	Relative read latency associated with this power state	0
Power State 2 Relative Read Throughput (RRT)	Relative read throughput associated with this power state	0
Power State 2 Relative Write Latency (RWL)	Relative write latency associated with this power state	0
Power State 2 Relative Write Throughput (RWT)	Relative write throughput associated with this power state	0
Power State 3 Active Power (ACTP)	Largest average power over 10 seconds in this power state with workload from Active Power Workload (APW)	Not Reported
Power State 3 Active Power Workload (APW)	Workload used to calculate maximum power for the active power state	No workload
Power State 3 Entry Latency (ENLAT)	Maximum entry latency in microseconds associated with entering this power state	3,900 uS (0.003 sec)
Power State 3 Exit Latency (EXLAT)	Maximum exit latency in microseconds associated with exiting this power state	11,000 uS (0.011 sec)
Power State 3 Idle Power (IDLP)	Typical power consumed over 30 seconds in this power state when idle	0.02 Watts

Power State 3 Idle Time Prior to Transition (ITPT)	Feature 0Ch: Idle time that occurs in this power state prior to transitioning to the Idle Transition Power State in milliseconds	2,000 mS
Power State 3 Idle Transition Power State (ITPS)	Feature 0Ch: Power state to autonomously transition to after exceeding Idle Time Prior to Transition (ITPT)	4
Power State 3 Maximum Power (MP)	Maximum power consumed in this power state	0.02 Watts
Power State 3 Non-Operational State (NOPS)	Controller does not process I/O commands in a Non-Operational State	True
Power State 3 Relative Read Latency (RRL)	Relative read latency associated with this power state	3
Power State 3 Relative Read Throughput (RRT)	Relative read throughput associated with this power state	3
Power State 3 Relative Write Latency (RWL)	Relative write latency associated with this power state	3
Power State 3 Relative Write Throughput (RWT)	Relative write throughput associated with this power state	3
Power State 4 Active Power (ACTP)	Largest average power over 10 seconds in this power state with workload from Active Power Workload (APW)	Not Reported
Power State 4 Active Power Workload (APW)	Workload used to calculate maximum power for the active power state	No workload
Power State 4 Entry Latency (ENLAT)	Maximum entry latency in microseconds associated with entering this power state	5,000 uS (0.005 sec)
Power State 4 Exit Latency (EXLAT)	Maximum exit latency in microseconds associated with exiting this power state	39,000 uS (0.039 sec)
Power State 4 Idle Power (IDLP)	Typical power consumed over 30 seconds in this power state when idle	0.005 Watts
Power State 4 Idle Time Prior to Transition (ITPT)	Feature 0Ch: Idle time that occurs in this power state prior to transitioning to the Idle Transition Power State in milliseconds	Disabled
Power State 4 Maximum Power (MP)	Maximum power consumed in this power state	0.005 Watts
Power State 4 Non-Operational State (NOPS)	Controller does not process I/O commands in a Non-Operational State	True

Power State 4 Relative Read Latency (RRL)	Relative read latency associated with this power state	4
Power State 4 Relative Read Throughput (RRT)	Relative read throughput associated with this power state	4
Power State 4 Relative Write Latency (RWL)	Relative write latency associated with this power state	4
Power State 4 Relative Write Throughput (RWT)	Relative write throughput associated with this power state	4
Predictable Latency Event Log Change Notices	Controller support for asynchronous events Predictable Latency Event Log Change Notices, from OAES	Not Supported
Predictable Latency Mode	Controller support for Predictable Latency Mode, from CTRATT	Not Supported
RTD3 Entry Latency (RTD3E)	Typical latency to enter Runtime D3 in microseconds	1,000,000 uS (1.000 sec)
RTD3 Resume Latency (RTD3R)	Typical latency resuming from Runtime D3 in microseconds	500,000 uS (0.500 sec)
Read Recovery Levels	Controller support for Read Recovery Levels, from CTRATT	Not Supported
Read Recovery Levels Supported (RRLS)	Controller supported Read Recovery Levels	0x0000
Recommended Arbitration Burst (RAB)	Recommended number of commands that may be executed at one time from a particular Submission Queue as a power of two (2^n)	4 ($2^4=16$)
Reliability Degraded	Critical Warning: Reliability degraded due to significant media or internal errors	No
Replay Protected Memory Blocks (RPMBS)	Replay Protected Memory Blocks store data to a specific memory area in an authenticated and replay protected manner	Not Supported
Report ANA Change state	Controller is able to report ANA Change state, from ANACAP	Not Supported
Report ANA Inaccessible state	Controller is able to report ANA Inaccessible state, from ANACAP	Not Supported
Report ANA Non-Optimized state	Controller is able to report ANA Non-Optimized state, from ANACAP	Not Supported
Report ANA Optimized state	Controller is able to report ANA Optimized state, from ANACAP	Not Supported
Report ANA Persistent Loss state	Controller is able to report ANA Persistent Loss state, from ANACAP	Not Supported

Required Completion Queue Entry Size	Required Completion Queue entry size when using the NVM Command Set in bytes reported as a power of two (2^n), from CQES	4 ($2^4=16$)
Required Submission Queue Entry Size	Required Submission Queue entry size when using the NVM Command Set in bytes reported as a power of two (2^n), from SQES	6 ($2^6=64$)
Reservations	Controller support for reservations, from ONCS	Not Supported
Root PCI Device ID	PCI device identifier assigned for the root device	0xA340
Root PCI Location	PCI bus address for the root device	Bus 0, device 27, function 0
Root PCI Vendor ID	PCI vendor identifier assigned for the root device	0x8086
SGL support in NVM command	SGL support for the NVM Command Set	Not Supported
SMART Critical Warning Notices Enable	Feature 0Bh: Asynchronous event notifications sent to host for SMART Critical Warnings	0x00
SMART/Health Log Page per Namespace	Controller support for log page attribute SMART/Health Log Page per Namespace, from LPA	Not Supported
SMBus Management Endpoint (SMBUSME)	NVME MI: NVM Subsystem contains a Management Endpoint on an SMBus/I2C port	Not Supported
SQ Associations	Controller support for SQ Associations, from CTRATT	Not Supported
Save/Select Fields in Features Command	Controller support for Save and Select Fields in Features Command, from ONCS	Supported
Secure Erase All Namespaces	Secure erase applies to all namespaces in an NVM subsystem, from FNA	Not Supported
Security Send and Security Receive Command	Controller support for Security Send and Security Receive Command, from OACS	Supported
Self-Test 1 Power On Hours	Number of power-on hours at the time the device self-test operation was completed or aborted	1,771
Self-Test 1 Result	Result of Self-Test	Passed
Self-Test 1 Result Code	Numeric code returned by Self-Test	0
Self-Test 1 Type	Type of Self-Test (short, extended or vendor)	Short Test
Self-Test 10 Power On Hours	Number of power-on hours at the time the device self-test operation was completed or aborted	1,764
Self-Test 10 Result	Result of Self-Test	Passed
Self-Test 10 Result Code	Numeric code returned by Self-Test	0
Self-Test 10 Type	Type of Self-Test (short, extended or vendor)	Short Test

Self-Test 11 Power On Hours	Number of power-on hours at the time the device self-test operation was completed or aborted	1,764
Self-Test 11 Result	Result of Self-Test	Passed
Self-Test 11 Result Code	Numeric code returned by Self-Test	0
Self-Test 11 Type	Type of Self-Test (short, extended or vendor)	Short Test
Self-Test 12 Power On Hours	Number of power-on hours at the time the device self-test operation was completed or aborted	1,764
Self-Test 12 Result	Result of Self-Test	Passed
Self-Test 12 Result Code	Numeric code returned by Self-Test	0
Self-Test 12 Type	Type of Self-Test (short, extended or vendor)	Short Test
Self-Test 13 Power On Hours	Number of power-on hours at the time the device self-test operation was completed or aborted	1,764
Self-Test 13 Result	Result of Self-Test	Passed
Self-Test 13 Result Code	Numeric code returned by Self-Test	0
Self-Test 13 Type	Type of Self-Test (short, extended or vendor)	Short Test
Self-Test 14 Power On Hours	Number of power-on hours at the time the device self-test operation was completed or aborted	1,764
Self-Test 14 Result	Result of Self-Test	Passed
Self-Test 14 Result Code	Numeric code returned by Self-Test	0
Self-Test 14 Type	Type of Self-Test (short, extended or vendor)	Short Test
Self-Test 15 Power On Hours	Number of power-on hours at the time the device self-test operation was completed or aborted	1,764
Self-Test 15 Result	Result of Self-Test	Passed
Self-Test 15 Result Code	Numeric code returned by Self-Test	0
Self-Test 15 Type	Type of Self-Test (short, extended or vendor)	Short Test
Self-Test 16 Power On Hours	Number of power-on hours at the time the device self-test operation was completed or aborted	1,764
Self-Test 16 Result	Result of Self-Test	Passed
Self-Test 16 Result Code	Numeric code returned by Self-Test	0
Self-Test 16 Type	Type of Self-Test (short, extended or vendor)	Short Test
Self-Test 17 Power On Hours	Number of power-on hours at the time the device self-test operation was completed or aborted	1,764
Self-Test 17 Result	Result of Self-Test	Passed
Self-Test 17 Result Code	Numeric code returned by Self-Test	0
Self-Test 17 Type	Type of Self-Test (short, extended or vendor)	Short Test

Self-Test 18 Power On Hours	Number of power-on hours at the time the device self-test operation was completed or aborted	1,764
Self-Test 18 Result	Result of Self-Test	Passed
Self-Test 18 Result Code	Numeric code returned by Self-Test	0
Self-Test 18 Type	Type of Self-Test (short, extended or vendor)	Short Test
Self-Test 19 Power On Hours	Number of power-on hours at the time the device self-test operation was completed or aborted	1,764
Self-Test 19 Result	Result of Self-Test	Passed
Self-Test 19 Result Code	Numeric code returned by Self-Test	0
Self-Test 19 Type	Type of Self-Test (short, extended or vendor)	Short Test
Self-Test 2 Power On Hours	Number of power-on hours at the time the device self-test operation was completed or aborted	1,771
Self-Test 2 Result	Result of Self-Test	Passed
Self-Test 2 Result Code	Numeric code returned by Self-Test	0
Self-Test 2 Type	Type of Self-Test (short, extended or vendor)	Short Test
Self-Test 20 Power On Hours	Number of power-on hours at the time the device self-test operation was completed or aborted	1,764
Self-Test 20 Result	Result of Self-Test	Passed
Self-Test 20 Result Code	Numeric code returned by Self-Test	0
Self-Test 20 Type	Type of Self-Test (short, extended or vendor)	Short Test
Self-Test 3 Power On Hours	Number of power-on hours at the time the device self-test operation was completed or aborted	1,767
Self-Test 3 Result	Result of Self-Test	Passed
Self-Test 3 Result Code	Numeric code returned by Self-Test	0
Self-Test 3 Type	Type of Self-Test (short, extended or vendor)	Extended Test
Self-Test 4 Power On Hours	Number of power-on hours at the time the device self-test operation was completed or aborted	1,766
Self-Test 4 Result	Result of Self-Test	Passed
Self-Test 4 Result Code	Numeric code returned by Self-Test	0
Self-Test 4 Type	Type of Self-Test (short, extended or vendor)	Extended Test
Self-Test 5 Power On Hours	Number of power-on hours at the time the device self-test operation was completed or aborted	1,766
Self-Test 5 Result	Result of Self-Test	Passed
Self-Test 5 Result Code	Numeric code returned by Self-Test	0
Self-Test 5 Type	Type of Self-Test (short, extended or vendor)	Short Test

Self-Test 6 Power On Hours	Number of power-on hours at the time the device self-test operation was completed or aborted	1,766
Self-Test 6 Result	Result of Self-Test	Passed
Self-Test 6 Result Code	Numeric code returned by Self-Test	0
Self-Test 6 Type	Type of Self-Test (short, extended or vendor)	Short Test
Self-Test 7 Power On Hours	Number of power-on hours at the time the device self-test operation was completed or aborted	1,764
Self-Test 7 Result	Result of Self-Test	Passed
Self-Test 7 Result Code	Numeric code returned by Self-Test	0
Self-Test 7 Type	Type of Self-Test (short, extended or vendor)	Short Test
Self-Test 8 Power On Hours	Number of power-on hours at the time the device self-test operation was completed or aborted	1,764
Self-Test 8 Result	Result of Self-Test	Passed
Self-Test 8 Result Code	Numeric code returned by Self-Test	0
Self-Test 8 Type	Type of Self-Test (short, extended or vendor)	Short Test
Self-Test 9 Power On Hours	Number of power-on hours at the time the device self-test operation was completed or aborted	1,764
Self-Test 9 Result	Result of Self-Test	Passed
Self-Test 9 Result Code	Numeric code returned by Self-Test	0
Self-Test 9 Type	Type of Self-Test (short, extended or vendor)	Short Test
Serial Number (SN)	Serial number for the NVM subsystem assigned by the vendor	2035A0805352
Size	Total calculated size in GB	250 GB
Size in GiB	Total calculated size in GiB (1024*1024*1024)	232.9 GiB
Subsystem Vendor	Subsystem vendor from PCI lookup: https://pcisig.com/membership/member-companies	Sandisk
Telemetry Log Notices	Controller support for log page attribute Telemetry Log Notices, from LPA	Supported
Telemetry Log Notices Enable	Feature 0Bh: Asynchronous event notification sent to host for when telemetry data available. Also see LPA	Disabled
Temperature Over/Under Threshold	Critical Warning: A temperature is over or under a temperature threshold	No
Thermal Management Temperature 1 (TMT1)	Feature 10h: Temperature the controller transitions to lower active power states or other vendor specific actions while minimizing the impact on performance	Disabled
Thermal Management Temperature 1 Count	Number of times the controller transitioned to lower power active power states or performed vendor specific thermal management actions while minimizing the impact on performance	0

Thermal Management Temperature 1 Time	Number of seconds controller had transitioned to lower power active power states or performed vendor specific thermal management actions while minimizing the impact on performance	0 Sec
Thermal Management Temperature 2 (TMT2)	Feature 10h: Temperature the controller transitions to lower active power states or other vendor specific actions regardless of the impact on performance	Disabled
Thermal Management Temperature 2 Count	Number of times the controller transitioned to lower power active power states or performed vendor specific thermal management actions regardless of the impact on performance	0
Thermal Management Temperature 2 Time	Number of seconds controller had transitioned to lower power active power states or performed vendor specific thermal management actions regardless of the impact on performance	0 Sec
Time Limited Error Recovery (TLER)	Feature 05h: Limited retry timeout value	No Timeout
Timestamp	Feature 0Eh: Number of milliseconds since controller reset or host value (midnight, 01-Jan-1970, UTC)	1,660,748,704,813 mS
Timestamp Decoded	Feature 0Eh: Either date or time since controller reset depending on timestamp origin	2022-08-17 08:05:04.813 DST
Timestamp Feature	Controller support for Timestamp in Features Command, from ONCS	Supported
Timestamp Origin	Feature 0Eh: Timestamp is time from controller reset or host programmed value	Host Programmed
Timestamp Stopped	Feature 0Eh: Timestamp may have stopped counting in some conditions (e.g. non-operational power states)	True
Traffic Based Keep Alive Support	Controller support for restarting the Keep Alive Timer if an Admin command or an I/O command is processed during the Keep Alive Timeout Interval, from CTRATT	Not Supported
UUID List	Controller support for reporting of a UUID List, from CTRATT	Not Supported
Unchanged ANAGRPID	ANAGRPID field does not change while the namespace is attached to any controller, from ANACAP	Not Supported
Unsafe Shutdowns	Number of unsafe shutdowns	23
Vendor Specific Command Configuration	NVM Vendor Specific Commands use vendor specific or other format defined in NVMe specification, from NVSCC	Not Vendor Specific
Verify NVM Command	Controller support for Verify NVM Command, from ONCS	Not Supported
Version (VER)	NVMe version: https://nvmexpress.org/developers/nvme-specification/	1.4.0
Virtualization Mgt Command	Controller support for Virtualization Mgt Command, from OACS	Not Supported
Volatile Backup Failed	Critical Warning: Volatile memory backup device, if present, has failed	No

Volatile Write Cache (VWC)	Presence of a volatile write cache, from VWC	Supported
Volatile Write Cache Enable (WCE)	Feature 06h: Volatile write cache enable	Enabled
Volatile Write Cache Flush All NSID	Volatile Write Cache (VWC) flush command behavior if the NSID value is set to FFFFFFFFh, from VWC	Supported
Warning Composite Temperature Threshold (WCTEMP)	Temperature that indicates an overheating condition where controller operation continues	80 C
Warning Composite Temperature Time	Time controller is operational and Composite Temperature is greater than or equal to Warning Composite Temperature Threshold and less than the Critical Composite Temperature Threshold	53 Min
Workload Hint (WH)	Feature 02h: Type of workload expected for a given power state	0
Write Protect Namespace States	Controller support for No Write Protect and Write Protect namespace write protection states and may support the Write Protect Until Power Cycle state and Permanent Write Protect namespace write protection states, from NWPC	Not Supported
Write Protect Until Power Cycle	Controller support for the Write Protect Until Power Cycle state, from NWPC	Not Supported
Write Uncorrectable NVM Command	Controller support for the Write Uncorrectable NVM command, from ONCS	Supported
Write Zeroes NVM Command	Controller support for the Write Zeroes NVM command, from ONCS	Supported
Time Throttled	Total time throttled in seconds	3300
Namespace 1 Active LBA Size	Size in bytes of the active LBA for Namespace 1	512