Samsung V-NAND SSD 990 EVO

2024 Data Sheet

Revision 1.1

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TECHNICAL SPECIFICATIONS

Samsung SSD 990 EVO				
Usage Application	Client PCs			
Interface	PCIe® 4.0 x4 / 5.0 x2 NVMe™ 2.0			
Hardware Information	Capacity[1]		1TB	2TB
	Controller		Samsung in-house Controller	
	NAND Flash Memory		Samsung V-NAND TLC	
	Cache Memory		HMB(Host Memory Buffer)	
	Dimension		Max 80.15 x Max 22.15 x Max 2.38 (mm)	
	Form Factor		M.2 (2280)	
Performance (Up to.)[2] [3] [4]	Sequential Read		5,000MB/s	5,000MB/s
	Sequential Write		4,200MB/s	4,200MB/s
	QD 1 Thread 1	Ran. Read	20KIOPS	20KIOPS
		Ran. Write	90KIOPS	90KIOPS
	QD 32 Thread 16	Ran. Read	680KIOPS	700KIOPS
		Ran. Write	800KIOPS	800KIOPS
Power Consumption	Active [5] (Avg.)	Read	4.9W	5.5W
		Write	4.5W	4.7W
	Idle (Typical)	PS3(APST on)	60mW	
		PS4 (L1.2)	5 mW	
Reliability	Temp.	Operating	0°C to 70°C (Measured by S.M.A.R.T. Temperature Proper airflow recommended)	
		Non-Operating	-40°C to 85°C	
	Humidity		5% to 95% non-condensing	
	Shock	Non-Operating	1,500G(Gravity), duration: 0.5ms, 3 axis	
	Vibration	Non-Operating	20~2,000Hz, 20G	
	MTBF		1.5 million hours	
Warranty[6]	TBW		600TB	1,200TB
	Period		5 years limited	
Supporting Features	TRIM (Required OS support), Garbage Collection, S.M.A.R.T			
Data Security	AES 256-bit Full Disk Encryption, TCG/Opal V2.0, Encrypted Drive (IEEE1667)			

1) 1GB = 1,000,000,000 bytes by IDEMA. A certain portion of capacity may be used for system file and maintenance use, thus the actual available capacity may differ from the labeled capacity.
2) 990 EVO is backward compatible with PCIe 4.0 x4 and 3.0 x4.
3) Sequential and random performance measurements are based on IOmeter1.1.0. Performance may vary based on SSD's firmware version, system hardware & configuration. Test System: AMD Ryzen 9 7950X 16-Core Processor CPU@4.50GHz, DDR5 4800MHz 16GBx2, OS-Windows 11 Pro 64bit, Chipset-ASRock-X670E-Taichi.
4) Sequential and random write performance was measured with Intelligent TurboWrite technology being activated. Intelligent TurboWrite operates only within a specific data transfer size. For detailed information, please contact your local service center.
5) Active power consumption is measured with IOmeter1.1.0 version with AMD Ryzen 9 7950X 16-Core Processor CPU@4.50GHz, DDR5 4800MHz 16GBx2, OS-Windows 11 Pro 64bit, Chipset-ASRock-X670E-Taichi.
6) All documented endurance test results are in compliance with JESD218 Standards. Please visit www.jedec.org for detailed information on JESD218 Standards. TBW means Terabytes Written, Warranty provides coverage for the stated time period or the TBW, whichever comes first. Please refer to the detailed warranty statement here at http://www.samsung.com/samsungssd

PRODUCT LINEUP

Density	Model Name	Box Contents	Model Code
1TB (1,000GB*)	MZ-V9E1T0	Samsung SSD 990 EVO 1TB Warranty Statement	MZ-V9E1T0BW MZ-V9E1T0B/AM
2TB (2,000GB*)	MZ-V9E2T0	Samsung SSD 990 EVO 2TB Warranty Statement	MZ-V9E2T0BW MZ-V9E2T0B/AM

* GB: 1GB = 1,000,000,000 bytes. The actual usable capacity may be less than the labeled capacity.

For more information, including but not limited to the warranty provided for this product, and to download the latest software & manuals, please visit www.samsung.com/ssd and www.samsungssd.com.

TEST CONFIGURATION

Below you will find a list of system configurations Samsung used to obtain the results reported in this Data Sheet. Performance/power data was measured with the SSD as a secondary drive in a fan cooling desktop system.

	Read/Write Performance	Power Consumption
Interface	PCIe 4.0 x4 / 5.0 x2	PCIe 4.0 x4 / 5.0 x2
OS	Windows 11 Pro 64bit	Windows 11 Pro 64bit
CPU	AMD Ryzen9 7950x 16-Core Processor CPU@4.5GHz	AMD Ryzen9 7950x 16-Core Processor CPU@4.5GHz
Memory	DDR5 4800MHz 16GBx2	DDR5 4800MHz 16GBx2
Chipset	ASRock-X670E-Taichi	ASRock- X670E-Taichi
Test Program	IOmeter 1.1.0	IOmeter 1.1.0

Revision History

Revision Number	Description	Revision Date
1.0	Initial Release	January, 2024
1.1	Minor Update – Interface Notations and Dimension	January, 2024