

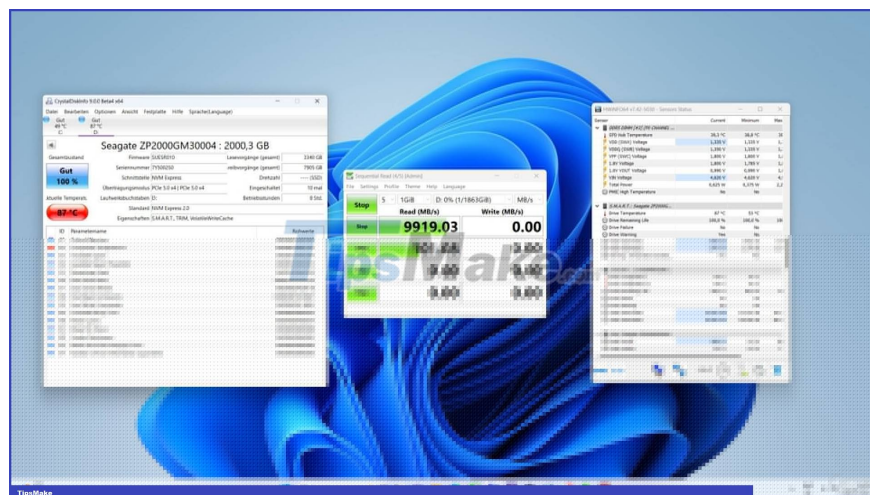
# PCIe 5 NVMe SSD vulnerable to thermal throttling, shutting down due to overheating

A solid-state drive (SSD) is a critical component that plays a large role in the overall performance of most modern PC systems today.

Even SATA SSDs offer much faster speeds than hard drives (HDDs). While the NVMe SSD standard takes that to the next level with faster PCIe interfaces. However, no technology is 100% perfect. The NAND flash memory inside an SSD is much more sensitive to heat than a mechanical hard drive. And with the latest generation (Gen5), there are a number of commercial NVMe SSD models experiencing overheating, thermal throttling, and even downtime.

The most typical is the case of the PCIe 5 NVMe T700 (Crucial) or MP700 (Corsair) SSD models. Both times were considered inefficient operations due to the huge amount of heat generated that the NAND chip couldn't handle. The problem is with Phison's PS5026-E26 controller, which is quite common in PCIe Gen5 SSD products on the market and therefore, it is likely that other SSD models using the E26 driver may also be affected. .

German technology site ComputerBase (CB) conducted a test of the Seagate FireCuda 540 and discovered that the hard drive suffered severe throttling under heavy load and eventually stopped working completely due to overheating. As can be seen in the image below, the recorded heat reached 87 degrees Celsius. The read speed of the drive dropped sharply when reaching such high temperatures. Also, after a complete shutdown, the FireCuda 540 requires a manual cold reboot because, as usual, a simple boot cannot get the hard drive back up and running.



Previously, Phison stated that heat dissipation is a must for PCIe 5.0 SSDs. The company explained in a statement that:

'It's important to note that all E26 SSDs that ship without a heatsink are used with a heatsink. Most motherboards that support PCIe Gen5 also include a cooling system specifically designed for Gen5 SSDs. We offer a 'bare drive' option to allow customers to use their existing cooling products'.

Phison once suggested that Gen5 NVMe drives might even need active fan cooling.

In fact, the long-standing question for those looking to upgrade to a new generation SSD is the impact of temperature on high-end drives, with read and write speeds of up to tens of GB per day. second. However, the results that several computer hardware review websites have given so far do not seem to be very positive. Therefore, the performance of the SSD PCIe Gen 5 will depend a lot on the heat dissipation of the PC system

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