Toshiba Successfully Demonstrates Nearline HDDs with Massive Capacity of Over 30 Terabytes

Realized with two next-generation large capacity recording technologies: HAMR and MAMR

Düsseldorf, Germany, 14 May 2024 – Toshiba Electronics Europe GmbH announces that Toshiba Electronic Devices & Storage Corporation (Toshiba) has successfully achieved storage capacities of over 30TB[1] with two next-generation large capacity magnetic recording technologies for hard disk drives (HDDs): Heat Assisted Magnetic Recording (HAMR*)* and Microwave Assisted Magnetic Recording (MAMR*).* The demonstration drives represent a major milestone in the advance towards commercial products based on each of these emerging recording formats.

HAMR boosts writing capabilities by locally heating the disk material with a near-field laser. Toshiba achieved 32TB on 10 disks using Shingled Magnetic Recording (SMR) – a technology that partially overlaps data tracks to increase the areal density and overall storage capacity per

disk. Toshiba plans to start shipping test sample HDDs[2] of 28 – 30TB with HAMR technology in 2025.

The other technology is MAMR, which uses microwaves to enhance magnetic recording capabilities. Toshiba was the first [3] to demonstrate its effectiveness and started mass production of first-generation drives in 2021. Toshiba achieved 31TB capacity by stacking 11 disks, using SMR technology, and improving signal processing.

These new achievements were made possible through years of close collaborative work with Resonac Corporation, a HDD media manufacturer, and TDK Corporation, a HDD head manufacturer. Toshiba and its working partners are committed to continue developing both HAMR and MAMR technologies in order to provide higher capacity HDDs to meet the growing storage demand of the cloud and datacenters.

As Larry Martinez-Palomo, Vice President, Head of Storage Products Division at Toshiba, explains: “Toshiba is concurrently advancing the development of future generation high-capacity HDDs using both HAMR and MAMR technologies. Mass production of hard disk drives incorporating HAMR will commence after the validation phase is completed. In the interim, Toshiba will continue to satisfy the demand for high-capacity, high-reliability storage devices with hard disk drives employing the field-proven MAMR technology.”

At ISC High Performance 2024, May 12th to 16th in Hamburg, Germany, Toshiba and its partners will discuss with experts, how its hard disk drive technologies and enterprise portfolio are streamlined to meet the needs of large and fast online backend storage. On the stand (G02), there will be a live demo showing the astonishing performance of Toshiba’s HDD MG Series. For more details, please visit the Toshiba website at: https://toshiba.semicon-storage.com/eu/company/exhibition/articles/storage_ISC_2024.html

For more information on Toshiba’s full line of HDD storage products please visit www.toshiba.semicon-storage.com or www.toshiba-storage.com .

[1] Definition of capacity: One terabyte (TB) = one trillion bytes, but storage capacity actually available may vary, depending on operating environment and formatting. Available storage capacity (including examples of various media files) will vary based on file size, formatting, settings, software and operating system and/or pre-installed software applications, or media content. Actual formatted capacity may vary.
[2] The test sample capacity aims for 28 to 30TB with Conventional Magnetic Recording (CMR) format.
[3] Toshiba research, as of December 24, 2021

* Information in this document, including product prices and specifications, content of services and contact information, is current and believed to be accurate as of the date of the announcement, but is subject to change without prior notice.

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About Toshiba Electronics Europe
Toshiba Electronics Europe GmbH (TEE) offers European consumers and businesses a wide variety of hard disk drive (HDD) products plus semiconductor solutions for automotive, industrial, IoT, motion control, telecoms, networking, consumer and white goods applications. Next to HDDs, the company's broad portfolio encompasses power semiconductors and other discrete devices ranging from diodes to logic ICs, optical semiconductors as well as microcontrollers and application specific standard products (ASSPs) amongst others.

In addition, TEE also offers Toshiba's SCiB™ battery cells and modules with lithium titanium oxide (LTO) for heavy-duty applications and Silicon Nitride (SiN) ceramic substrates used in power semiconductor modules, inverters and converters for their heat dissipation characteristics and strength.

TEE has its headquarters in Düsseldorf, Germany, with branch offices in France, Italy, Spain, Sweden and the United Kingdom providing marketing, sales and logistics services.

Visit Toshiba's websites at www.toshiba-storage.com, www.toshiba.semicon-storage.com, www.scib.jp/en and www.toshiba-tmat.co.jp/en/ for further company and product information.

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