Toshiba Ships First 40GB 1.8-inch Perpendicular Magnetic Recording Drive

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Toshiba Storage Device Division (SDD) announced shipment of the world's first HDD based on perpendicular magnetic recording (PMR). The new 1.8-inch HDD, used primarily in consumer electronics (CE) devices, enables up to 10,000 songs or 25,000 photos on a single 40GB platter.

The MK4007GAL HDD 1.8-inch HDD packs 40GB on a single platter – the largest single-platter capacity yet achieved in the 1.8-inch form factor. This breakthrough technology sets new benchmarks for data density with the highest areal density currently on the market at 206 megabits per square millimeter (133 gigabits per square inch). The 1.8-inch PMR HDD is now shipping in Toshiba's new Gigabeat F41, enabling the MP3 player to store up to 10,000 songs.

"Toshiba has started an exciting new frontier for the HDD industry by

leading the race to achieve this revolutionary technology, which has been the industry's aim for more than 20 years," said Scott Maccabe, vice president, Toshiba Storage Device Division. "PMR opens the door to products we haven't even begun to imagine, by removing the technical barriers inherent to packing more data on an HDD. Providing greater storage capacity on mobile disk drives allows Toshiba to give system OEMs the tools they need for next-generation digital information and entertainment devices."

Toshiba recently announced acquisition of a design center in Fremont, Calif., to help U.S.-based engineers and OEMs create new products using platforms such as PMR to span beyond the limits of today's conventional digital products. The 1.8-inch HDD form factor has been a critical component for consumer electronics products from MP3 players to handheld GPS systems and ultra-portable PCs. To date, Toshiba has shipped more than 14 million 1.8-inch HDDs since its introduction in mid-2000. The addition of PMR technology will increase capacity options for product designs beyond those currently on the market today, especially as Toshiba introduces an 80GB 1.8-inch HDD with PMR later this year.

PMR: The Technology Achievement

Toshiba is the first company in the storage industry to commercialize PMR, providing unsurpassed recording density and high operating reliability on its 1.8-inch HDD platform. The technology is based on a new magnetic disk structured to support perpendicular recording, a new high-performance perpendicular magnetic head, and disk and head integration technology that maximizes their combined performance.

Conventional longitudinal recording stores data on a magnetic disk as microscopic magnet bits aligned in plane. Although advances in magnetic coatings continue to improve data recording densities on HDD, when the densities become too extreme, the magnetic bits repulse each

other due to in-plane alignment. Squeezing more bits on to a disk will eventually reach a point in which crowding degrades recorded bit quality. As such, HDD manufacturers face fast-approaching limits on storage capacities.

By standing the magnetic bits on end, perpendicular recording reinforces magnetic coupling between neighboring bits, achieving higher and more stable recording densities and improved storage capacity.