

InPhase Demos 515 Gigabits Per Square Inch Data Density

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InPhase Technologies announced today that it has demonstrated the highest data density of any commercial technology by recording 515 gigabits of data per square inch. Holographic storage is a revolutionary departure from all existing recording methods because it takes advantage of volumetric efficiencies rather than only recording on the surface of the material. To compare, magnetic disk drives allow 300 gigabits per square inch data density.

InPhase will deliver the industry's first holographic drive and media later this year. The first generation drive has a capacity of 300 gigabytes on a single disk with a 20 megabyte per second transfer rate. The first product will be followed by a family ranging from 800GB to 1.6 terabyte (TB) capacity.

Densities in holography are achieved by different factors than magnetic storage. Density depends on the number of pixels/bits in a page of data; the number of pages that are stored in a particular volumetric location; the dynamic range of the recording material; the thickness of the material, and the wavelength of the recording laser.

In this demonstration there were over 1.3 million bits per data page, and 320 data pages spaced 0.067 degrees apart were stored in the same volume of material. A collection of data pages is referred to as a book, and InPhase's PolyTopic recording architecture enables more holograms to be stored in the same volume of material by overlapping not only pages, but also books. Three tracks of overlapping books were written with a track pitch of 700 microns. The InPhase Tapestry™ material was 1.5 millimeters thick, and the laser wavelength was 407 nanometers.

“The latest results from our ongoing tests on holographic data density have surpassed expectations,” said Kevin Curtis, chief technology officer of InPhase. “We are particularly pleased at the rate of improvement. In April of 2005, we demonstrated 200 Gb/in² data density and - a year later - the density has increased more than 2.5 times. “

The write transfer rate is determined by the time required to position the laser at the correct angular address, the speed of the shutter, the laser power, and the exposure time. In this demonstration the average exposure time per page was 2.7 milliseconds, which translates into a user write transfer rate of 23 megabytes per second.

The impact that these data densities will have on future products is tremendous. For the home video fan, one disk could hold the equivalent of 106 DVD movies. For IT managers dealing with archiving millions of email messages, higher densities mean savings on space, time, and power.

Michael Mangiona, president of offsite storage provider Data Solutions, adds that “with extremely high densities of holographic storage demonstrated by InPhase, IT companies such as Data Solutions benefit, as greater storage density ultimately translates into lower storage costs for us and for our customers.”

InPhase will be presenting several holographic storage papers at the Optical Data Storage Conference from April 23-26, 2006 in Montreal, Canada.

Source: InPhase Technologies

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