

SK Hynix Ships Samples of High-Performance 96-Layer 1Tb QLC 4D NAND

Seoul, May 9, 2019 – SK Hynix Inc. (or ‘the Company’, www.skhynix.com) announced today that it has delivered samples of new 1Tb (Terabit) QLC (Quadruple Level Cell) product to major SSD (Solid State Drive) Controller companies. The Company applied its own QLC technology to its world’s first 96-Layer “CTF (Charge Trap Flash) based 4D (Four-Dimensional) NAND Flash (or 4D NAND).” SK Hynix intends to expand its NAND portfolio to 96-layer-based 1Tb QLC products in time for the QLC market opening and strengthen its responsiveness to the next-generation high-density memory market.

QLC stores four bits of data in one NAND cell, allowing higher density compared to TLC (Triple Level Cell) that stores three bits per cell. Using QLC, it is possible to develop high-density products with cost competitiveness.

SK Hynix is able to secure the industry’s top-level cost competitiveness through this product, which has reduced the area to less than 90% of the existing 3D-based QLC products.

Using small-sized planes, an advantage of the Company’s 4D NAND, SK Hynix also adopted a four-Plane architecture. It increases the number of planes in a single chip from two to four, doubling data bandwidth from 32KB (kilobytes) to 64KB. With this high-performance product that can process up to 64KB of data simultaneously, SK Hynix secured both cost and performance competitiveness.

SK Hynix said that it has recently sent samples to companies that develop and sell SSD controller and NAND storage device to confirm the product’s performance. “We got QLC engineering samples from SK Hynix, and were impressed by its overall performance. The samples meet client SSD product requirements,” said Wallace Kou, Chief Executive Officer of Silicon Motion in Taiwan, a global leader in the field.

Meanwhile, SK Hynix is developing its own QLC software algorithm and controller at the same time, and plans to launch solution products in time to meet client demand.

“We plan to launch our own QLC-based SSD from next year when demand for enterprise QLC NAND is expected to become meaningful,” said Vice President Han Joo Na, Head of NAND Development Strategy Office. “In particular, we intend to establish a solid position in the market for high-density eSSD, which is replacing hard disk drives (HDD), with NAND Flash solutions as large as 16TB (terabytes) or larger.”

According to IDC, a market research institute, the proportion of QLC in the NAND Flash market is

expected to increase from 3% in 2019 to 22% in 2023. It also forecasts that the eSSD market will grow at an annual average growth rate (CAGR) of 47.9% (unit: GB), rapidly replacing HDD.