

Glasses-free ultrahigh-definition 2D/3D switching display

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Toshiba Corporation has developed a new technology for glasses-free 3D displays that uses a low-crosstalk, high-definition LCD GRIN lens with a 15-inch 4K LCD panel. The technology realizes a highly portable, compact display that can switch between 3D mode with high-definition resolution and 2D mode with ultrahigh-definition 4K resolution. The technology and the new display will be unveiled at the "2015 International Consumer Electronics Show" that will be held in Las Vegas from January 6-9, 2015.

Toshiba has developed and marketed glasses-free big-screen 3D televisions and laptop computers for the consumer market. Technologies established in commercialization of these products were also used to develop specialized products for the professional business market, and culminated in the introduction of the world's first glasses-free 3D medical display on the market.

Achieving the high level 3D performance required in B2B fields has typically relied on specialized plastic lenses for professional 3D displays. However, Toshiba's specialized 3D display is also required to function as a 2D display for users who need to view 2D images. This is especially important for mobile devices, where there is a high demand for a product that allows users to easily switch between high-quality 3D and ultrahigh-definition 2D without any need for an additional display.

Toshiba met this demand by developing a new low-crosstalk high-definition [liquid crystal](#) GRIN lens system which suffers no degradation in image brightness in 3D mode and no deterioration of image quality in 2D mode. The lens system reduces the abnormal alignment of liquid crystal molecules near the boundaries of liquid crystal lens, reducing crosstalk to 2%, against 5% in conventional 3D displays. This is achieved by optimizing the orientation of the [liquid crystal molecules](#) and the angle of the liquid crystal GRIN

lens relative to the direction of polarization of the liquid crystal panel. By combining this technology with a 15-inch 4K LCD panel, 3D resolution has been increased more than fivefold, making it possible to view high-quality 3D images on the same display used for ultrahigh-definition 2D images.

Moving forward, Toshiba plans to fuse the [new technology](#) with a partial 2D/3D switching function which can be applied to any screen size and position, aiming for its rapid commercialization in B2B industrial and medical products that require glasses-free high-definition 3D displays.

Provided by Toshiba Corporation

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