

# Global and China Flat Panel TV and 3D TV Industry Report, 2009-2010

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## Abstracts

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The 3D industry chain covers 3D programming, 3D program channels and 3D software in the upstream; in the midstream, it covers 3D program storage and play which includes Blu-Ray Player and DVD-R, as well as 3D signal transmission interfaces including internal transmission interfaces such as eDP and LVDS and external transmission interfaces such as HDMI 1.4A and Display Port 1.2; in the downstream, it covers 3D image display devices including TV, digital camera and laptop as well as panel manufacturers.

The emergence of 3D TV has benefited six types of manufacturers most. The first beneficiary is Sony, which dominates the 3D programming equipment market. The big shot possesses full range of products from lens to TV, and is the undisputable leader in the Blu-Ray player and HDMI market. Meanwhile, it also owns 3D sources.

LITE-ON IT Corporation and NVIDIA are the second largest beneficiaries. As a Blu-Ray player OEM, LITE-ON will see an increase in the sale of Blu-ray players and win more outsourcing orders. NVIDIA, a 3D graphics producer, is engaged in the promotion of 3D games and 3D desktop displays. The fever of 3D movie and 3D TV will stimulate the 3D game and 3D desktop display market, where NVIDIA holds a dominant position.

The third beneficiary is TCON manufacturers. It is an ideal solution for 3D TV to be applied in 240Hz and 1080P flat panel TVs. High resolution requires more complicated and more expensive TCON. Therefore, it is competitive and low-cost to integrate 240Hz



into TCON. TCON enterprises including Samsung, TLI, Novatek and Himax get benefits.

The forth beneficiary is HDMI vendors, who collect US\$0.5 as the license fee for each HDMI, to say nothing of the one-off certification fee.

The fifth is 3D movie device manufacturers like TI, ReaID, XPAND, MASTERIMAGE and Dolby. XPAND is specialized in the design of shutter spectacles. Its customers include Sony and Samsung.

The sixth is 3D spectacles producers, mainly shutter 3D spectacles producers. Polarized spectacles feature low price, small shipment and lower value, while shutter spectacles are more expensive (at least US\$140 each), and the shipment is large, since almost each 3D TV is delivered with two pairs of shutter spectacles. However, there are few manufacturers concentrating on this field, and many of them are in small scale.

In fact, people started the research and development of 3D TV in the era of CRT, and TV manufactures never stop their craving for 3D. However, as the video refresh rate at that time was so low that the pictures would flicker if shutter 3D was applied. In the flat panel TV era, the emergence of 120Hz refresh rate and the Avatar effect have expedited the smooth introduction of shutter 3D. The flat panel TV with 120Hz refresh rate can realize 3D effect though small changes and 3D shutter spectacles. The additional cost is very low, but the prices can be high, and the profit is considerable. After years of price reduction, the profit of flat panel TV has become increasingly low. Therefore, manufacturers are enthusiastic about 3D. And it is just the right time for manufacturers to turn their eyes to 3D software despite people's concern about scarce content. With the improvement of the computing performance of TV's core processors, Toshiba's latest TV CELL processor is almost not inferior to Intel's dual core processor. The FPGA of ALTERA can enable the 2D-3D real-time transformation software that could only run on computers in the past, to say nothing of CELL. It is expected that the penetration rate of 3D TV will reach 100% in the future.

For now, it's impossible for people to watch 3D TV without spectacles and all the 3D TV in mass production are shutter types. However, it won't be a dream for people to watch 3D TV with naked eyes if 4K\*2K definition can be realized. Toshiba, Panasonic and Sharp had 4K\*2K definition prototypes as early as before 2009, but the price was exorbitant. 3D TV, requiring spectacles or not, will become the mainstream in the future market.



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