Samsung Develops World's Largest (32'') LCD Panel Without a Color Filter

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Samsung Electronics announced development of the largest thin-film transistor liquid crystal display (TFT LCD) panel that does not require the use of a color filter. The new filter-less 32-inch TFT-LCD for TV applications will be unveiled at FPD (Flat Panel Display) International 2005, which opens in Yokohama, Japan on October 19.

Samsung's new LCD panel employs a sequential color processing method that rapidly determines accurate color tones based on how long red, green and blue lights are emitted from the LED backlight. Pixels are

not spatially arranged throughout the LCD, eliminating the need for a color filter. Conventional LCDs require both a cold cathode fluorescent (CCFL) backlight and a color filter to separate the white light emitted by the backlight into red, green and blue (RGB) sub-pixels.

Seongsik Shin, vice president of the Samsung Electronics LCD R&D Center said, “With the independent development of the color filter-less LCD, Samsung is able to produce the highest quality LCD panels at a lower cost. This further improves our market leadership position for high-definition LCD TVs of 32”, 40” and 46” industry-standard screen sizes.” He added, “The new technology will reduce the investment cost for new facilities, shorten production process times and increase production yields, boosting Samsung’s performance and cost competitiveness in the LCD TV market.”

To achieve the “sequential” display, Samsung Electronics’ LCD R&D team used a novel RGB-emitting LED backlight. By combining the RGB light emissions from the backlight in precise sequences, the new LCD panel provides color saturation that is 110% of the NTSC standard, while the aperture ratio is an exceptionally high 78% for television with brightness at 500nit.

Moreover, the new display panel consumes only 82 watts, just 60% of the power needed by a conventional 500nit CCFL backlight. In addition, its response time is 5ms or faster, making it ideally suited for multimedia and video applications where accurate color reproduction is required.

Samsung developed its first LED backlight unit (BLU) in 2004 and completed low-power 40” and 46” versions using this BLU the same year. The breakthrough development of a 32” LCD without color filter reasserts the company’s leadership in the LCD industry.

Mass production of 32-inch panels without color filters is scheduled to begin in the second half of 2006.

Source: Samsung