

Samsung Exhibits 400ppi-Equivalent LCD Panel for Cell Phones

April 14 2004

Samsung Electronics Co, Ltd of Korea exhibited a variety of panels, including a 2.03-inch LCD panel with the resolution equivalent to 400ppi, and a 1.83-inch QVGA-size LCD panel with the resolution of 223ppi, at the 19th "EDEX 2004 Electronic Display Exhibition."

The 2.03-inch panel developed by Samsung features Amorphous Si TFT technology.

While the number of pixels in the panel remains 240 x 640, the high-resolution display equivalent to the VGA format (400ppi and 480 x 640 pixels) was achieved with the company's original "Four Color Rendering" (4CR) technique, according to the company. It achieves the luminance of 200cd/m², a contrast ratio of 200:1, and 262,000 colors for the display. The color reproduction area against NTSC is 70%.

Samsung's 4CR is a technique to realize high resolution with fewer pixels by utilizing RGB sub-pixels on the adjoining scan lines in color and gradient renderings.

To achieve the same purpose, there is also a technique called "field sequential (FS)," in which each pixel is divided sequentially, and colors are displayed in the order of RGB.

Although the company has already developed several LCD panels featuring the FS technique, "this time, 4CR is a kind of 'space division' technique," said Roh Nam Seok, of the company's LCD business LCD

R&D center, FPD device team senior engineer, to explain the difference from the FS technique.

Samsung introduced its first 4CR LCD panel at SID 2003, held in May 2003.

"At SID 2003, our target for the development and exhibition was LCD televisions. However, because the resolution at the time was as poor as 38ppi, we could not move to commercial production without making an improvement. This time, the resolution was raised to an equivalent of 400ppi, targeting cell phones. It used four ICs for data, timing, power control, and 4RC as the driver IC. With a view to launching mass production in the summer of 2004, we are working on integration of these ICs," Roh said.

Also, the company developed and exhibited a 1.83-inch QVGA (240 x 320) LCD panel with the resolution of 223ppi. This model features a low-temperature polycrystalline Si TFT called "single crystal like Si (SLS)," and has a contrast ratio of 250:1, and measures 33.3mm x 47.2mm x 2.9mm.

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