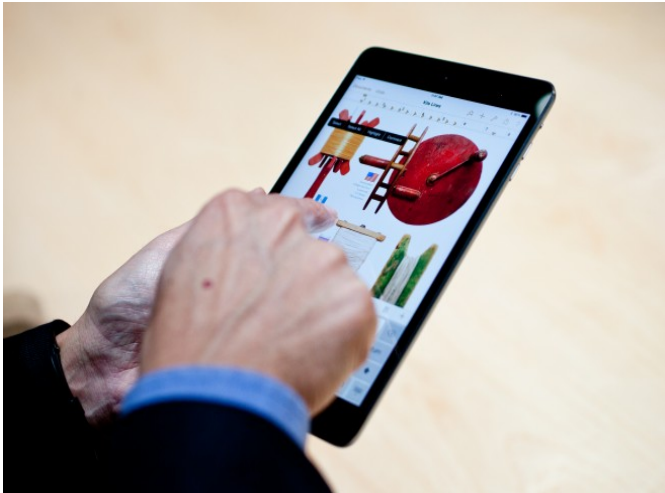


Behind the New iPad's Display

Written by Bob Snyder
20 March 2012

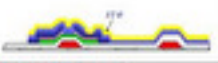
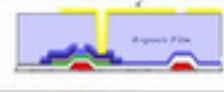


No longer the iPad3 but the “new” iPad features no enhancement more prominent than its Retina display with improved resolution (2048 × 1536 and 264 pixels per inch vs 1024 x 768 resolution and 132 pixels per inch).

Charles Annis, VP Manufacturing Research for **DisplaySearch** explains how Apple quadrupled the amount of pixels on iPad2's display.: a pixel-design technique called **Super High Aperture**

SHA increases aperture ratio “by applying approximately a 3mm thick photo-definable acrylic resin layer to planarize the device and increase the vertical gap between the indium tin oxide pixel electrodes and signal lines.”

Conventional to SHA Pixel Design Comparison

Overcoat Process	Normal	UMA/SHA
Structure		
Advantage	• Easy process (Normal)	• High aperture ratio
Application	• Conventional	• High brightness (light efficiency) • High resolution • Transflective/Reflective modes

Source: [DisplaySearch TFT-LCD Process Roadmap Report](#)

Note: Image refers to VA type SHA pixel

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This “reduces unwanted capacitive coupling and enables the electrode to be extended over the gate and data lines without causing cross talk or affecting image quality—thus increasing aperture area.”

To achieve the proper effect, the new iPad also needs more backlighting: DisplaySearch says the new iPad has “at least twice as many” LEDs lighting the display as the previous version, the iPad 2, which had 36 LEDs. *(That might suggest higher power consumption, but Apple says the battery life for wi-fi in the new iPad remains unchanged.)*

DisplaySearch says this technique isn't new (Apple didn't invent it) and engineers at Sharp and JSR, a Japanese display materials manufacturer, came up with it.

Go [4X the Number of Pixels for the New iPad Retina Display](#)

Watch [Apple's “New” iPad](#)