

Apple patent for display panel with IR diodes refuels rumor mill over next iPhone

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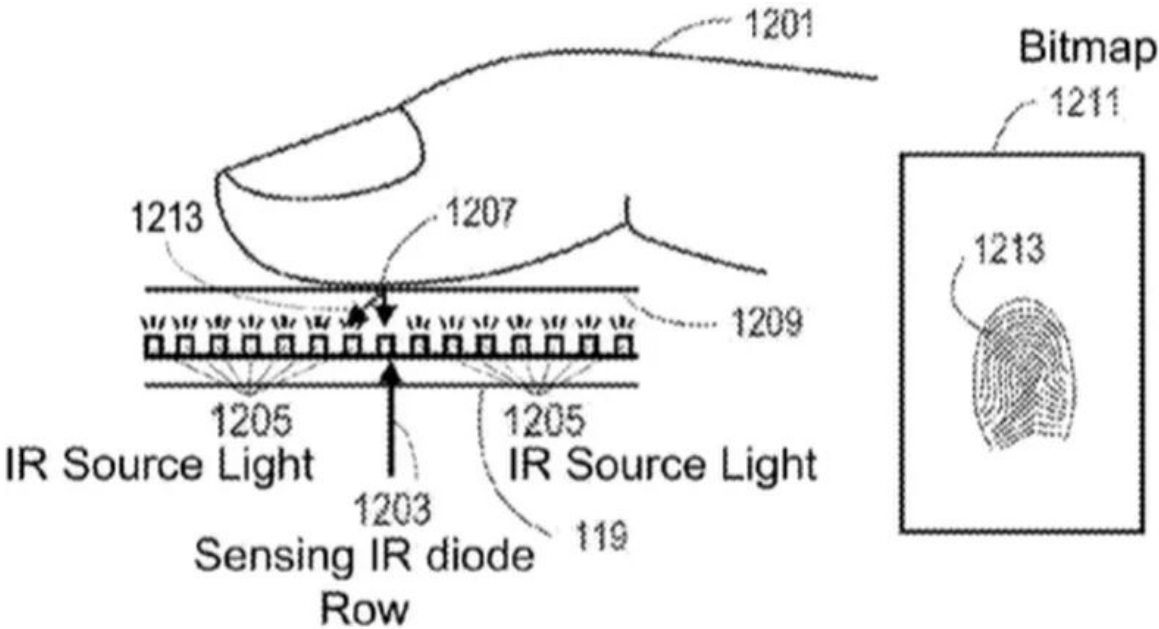


FIG. 12

Credit: United States Patent 9,570,002

(Tech Xplore)—Heard all the rumors about the iPhone home button? Your future handset might have you groping for that home button that is no longer there, according to the rumors. And fingerprint scanners will go to work under the screen.

Rumored changes in a nutshell —a full-face display and an invisible home button.

The talk about the changes stems from a [patent](#) recently published. News of a patent fueled talk about phone changes ahead. The patent filing was published by the U.S. Patent and Trademark Office on Tuesday.

"Interactive display panel with IR diodes" was filed back in June 2014.

AppleInsider had a report on the patent while other tech watching sites weighed in on the patent too.

Most of the talk is about connecting the dots between what the patent describes and what might transpire on the next iPhone, numbered 8, at least it is called iPhone 8 by watchers for the time being. This handset could include special technology for hiding the [fingerprint sensor](#) under the display, as the Touch ID sensor is built into the home button.

Rumors are also being passed that the plan is for a full-face display, "invisible" home button and Touch ID sensor.

Still confused? Here is how Steven Musil described it in CNET: "Apple has been granted a patent for an "interactive display panel with IR diodes"—a method that would let users activate a device through a virtual home button placed within the touchscreen. The technology, described in a filing made public Tuesday by the US Patent and Trade Office, could replace the physical home button that's traditionally occupied the [space](#) below the iPhone's screen."

Samuel Gibbs in *The Guardian* said the patent "details a system of using LEDs mounted underneath a display to both detect finger's position and scan its [surface](#) to be able to read a fingerprint."

Andrew Griffin in *The Independent* said Wednesday that "Apple is

planning on making the display of the new phone reach all the way across the [front](#) of the handset, according to rumours."

Mikey Campbell in *AppleInsider* similarly reported, "The company is widely rumored to launch an 'iPhone 8' model this year with an edge-to-edge display. Such a design would require the company to move, hide or delete features incorporated into its contemporary handsets, including proximity and ambient light [sensors](#), and the Touch ID fingerprint module."

Griffin further explained that if Apple were to do that, there is no space for the home button and "that button has also contained the fingerprint sensor that has let people get access to the phone quickly and securely."

There is talk of the capacitive drive ring being removed from the cover glass. The company might be creating a completely clean surface and therefore remove the drive ring altogether, reports suggested.

So where would the fingerprint sensor actually go?

Such technology would allow it to be placed underneath the screen – "allowing the display to take up the whole front," said Griffin.

This would be a "touch display that incorporates micro-LED sensing technology instead of the ubiquitous active matrix hardware seen on most mobile devices," said *AppleInsider*.

The advantage in this concept if implemented would be that it would replace "bulky capacitive sensor components with strategically placed infrared light emitters and sensors."

Hardware components have been a big hurdle standing in the way of all screen smartphones, where a user could enjoy a [display](#) that goes to the

top, bottom and edges of the handset.

AppleInsider said that all in all, "it is possible that Apple is looking to ditch Touch ID altogether as it moves to a new, more advanced system. For example, a touchscreen capable of acting as an input device and fingerprint scanner would save space and grant greater design flexibility."

But is the Apple-watching press getting a little too far in treating patent talk as if it is a leaked spec sheet for the next iPhone iteration? Considering Apple itself has made no announcement of all this, one will have to wait and see if this is not just another concept that sits somewhere with the socks you lost in your laundry over a lifetime.

Steven Musil in CNET: "As Apple marks the 10th anniversary of the original iPhone, the rumor mill is being fed by reports about big hardware changes expected on the next-[generation](#) phone many are calling the iPhone 8."

Fitting reminder from *AppleInsider*: "Whether Apple intends to bring the micro-LED technology to iPhone or another future product remains unknown."

More information: Interactive display panel with IR diodes, Sakariya, et al. [United States Patent 9,570,002](#)

Abstract

Exemplary methods and systems use a micro light emitting diode (LED) in an active matrix display to emit light and a sensing IR diode to sense light. A display panel includes a display substrate having a display region, an array of subpixel circuits, and an array of selection devices. Each subpixel circuit includes a driving circuit to operate a corresponding infrared (IR) emitting LED in a light emission mode.

Each selection device may be coupled to a corresponding sensing IR diode to operate the corresponding sensing IR diode in a light sensing mode.

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