Vivo is the first smartphone manufacturer to integrate a fingerprint scanner under the display. Two different versions, one from Synaptics and one from Goodix, were found to have been supplied for the under-display fingerprint scanner integrated into the Vivo X21 UD smartphone.

This reverse costing study provides insight into technological data, manufacturing cost, and selling price of the fingerprint sensor supplied by Synaptics.

This scanner uses optical fingerprint technology that allows integration under the display. With a stainless steel support and two flexible printed circuit layers, the Synaptics fingerprint sensor’s dimensions are 6.46 mm x 9.09 mm, with an application specific integrated circuit (ASIC) driver in the flex module. This image sensor is also assembled with a glass substrate where filters are deposited.

The sensor has a resolution of 30,625 pixels, with a pixel density of 777ppi. The module's light source is providing by the OLED display glasses. The fingerprint module uses a collimator layer corresponding to the layers directly deposited on the die sensor and composed of organic, metallic and silicon layers. This only allows light rays reflected at normal incidence to the collimator filter layer to pass through and reach the optical sensing elements. The sensor is connected by wire bonding to the flexible printed circuit and uses a CMOS process.

This report includes comparisons with the latest Huawei FPC1268 fingerprint touch sensor and a physical comparison with the Goodix Version of Vivo’s fingerprint scanner.

**COMPLETE TEARDOW WITH**
- Detailed photos
- Precise measurements
- Materials analysis
- Manufacturing process flow
- Supply chain evaluation
- Manufacturing cost analysis
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Huawei’s fingerprint sensor vs Vivo’s

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