Capacitive Fingerprint Sensors Technology and Patent Infringement Risk Analysis

Description: Fingerprint sensors using capacitive technology represent a fast growing market, especially in smartphones. The fingerprint sensor vendor Idex forecasts an increase of 360% of the number of fingerprint sensor units in mobile devices and of the fingerprint sensor market between 2014 and 2017 (source: N+1 Singer, Idex, 2014). A new generation of capacitive fingerprint sensors has emerged in the last few years and have been incorporated in the last generations of smartphones of companies like Apple, Samsung or Huawei. The market growth for fingerprint sensors is also supported by a new phase of IP development, revealed by an increase in the number of new patents related to capacitive fingerprint sensor published since 2012. Fingerprint sensors are greatly appreciated by smartphone's users. Indeed, such biometric authentication mode is easier and quicker than a password to access the device. It also allows to give selected access to applications for each user of the device. Thus the fingerprint sensor needs to be trustworthy.

In a patent infringement action, the potential sales volume plays a major role for assessing the damage award. Thereby, this study is naturally focused on the fingerprint sensor components designed by 3 leaders of fingerprint sensing solutions and integrated in the devices of 3 major smartphone vendors: TMDR92 (AuthenTec, Apple iPhone 5S), FPC1020 (Fingerprint Cards, Huawei Ascend Mate 7), VAL004A8-T (Synaptics-Validity, Samsung Galaxy S5) and B1202A0-01 (Synaptics-Validity, Samsung Galaxy S6). Those 4 fingerprint sensors represent different technological choices but sharing common characteristics. Thus, combining the data obtained by the tear down of each sensor, this report highlights the IP behind each fingerprint sensor and analyzes the risk of patent infringement between AuthenTec-Apple, Fingerprint Cards and Synaptics-Validity. It appears that main risks concern the packaging and the integration of the fingerprint sensor in the device.

This report performs a tear down of 4 devices including a fingerprint sensor: Apple iPhone 5S (TMDR92, AuthenTec-Apple), Huawei Ascend Mate 7 (FPC1020, Fingerprint Cards), Samsung Galaxy S5 (VAL004A8-T, Synaptics-Validity) and Samsung Galaxy S6 (B1202A0-01, Synaptics-Validity). The report then compares the features of each fingerprint sensor revealed by the teardown to the IP portfolio of the technology owner. The selected features are mainly related to the fingerprint sensor die, its packaging and the assembly of the fingerprint sensor in the mobile phone. Key patents held by AuthenTec-Apple, Fingerprint Cards, and Synaptics-Validity related to these technology features have been identified. For each product feature, the links between the patented technologies and the target product have been established.

The potential infringing parties of the target product have been identified. The contents of patents have been compared with actual technological solutions used in the marketed target products TMDR92 (AuthenTec-Apple), FPC1020 (Fingerprint Cards), VAL004A8-T (Synaptics-Validity) and B1202A0-01 (Synaptics-Validity), in order to highlight, for each fingerprint sensor component, the potential risks of patent infringement and related patents requiring more in-depth legal assessments. This report provides discussions on the potential risks of patent infringement by comparing relevant patent claim elements to the target product features. We have identified several potential risks of patent infringements in some technology features from target products TMDR92, FPC1020, VAL004A8-T and B1202A0-01. Key patents requiring more in-depth legal assessment have been identified.

The report also includes an Excel database with all patents analyzed in this study (26 patent families composed of 100+ patents) This database allows multi-criteria searches and includes:

- Patent publication number
- Hyperlinks to the original documents
- Priority date
- Title
- Abstract
- Applicants
- Legal status for each patent

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7. Conclusions

8. Related Reports

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