Capacitive Fingerprint Sensors

TMDR92 (AuthenTec-Apple), FPC1020 (Fingerprint Cards), VAL004A8-T (Synaptics) and B1202A0-01 (Synaptics)

Who risk to be deprived of its imprint in future infringement lawsuits?

WILL APPLE AND SAMSUNG CONFRONT EACH OTHER ON THE FINGERPRINT SENSOR FIELD?

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 (source: Knowmade, ‘Capacitive Fingerprint Sensors Patent Landscape’, 2015).

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).

Fingerprint Sensor Packaging

Those 4 fingerprint sensors represent different technological choices but sharing common characteristics. Thus, combining the data obtained by the tear down of each sensor performed by System Plus Consulting with the IP analysis of Knowmade, 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 provides an overview of technology data and manufacturing process of TMDR92, FPC1020, VAL004A8-T and B1202A0-01 fingerprint sensor components. A comparative study of the technology and manufacturing process of these fingerprint sensor components has been performed in order to highlight the technical similarities and differences of the product features.

**A LINK BETWEEN PRODUCTS AND PATENTS**

System Plus Consulting performed 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).

Knowmade then compared 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.

**Technology and Patent Parallel**

**IDENTIFIED PATENT FAMILIES**

- **TMDR92** (Fingerprint Card) – Company Y
- **FPC1020** (Fingerprint Cards) – Synaptics-Validity
- **VAL004A8-T** (Synaptics-Validity) and B1202A0-01 (Synaptics-Validity)

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.

**AN USEFUL PATENT DATABASE**

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

**Patent Database**

Knowmade, System Plus Consulting – November 2015

TABLE OF CONTENT

<table>
<thead>
<tr>
<th>Introduction</th>
<th>p5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope of the Study</td>
<td></td>
</tr>
<tr>
<td>Rationales for Choice</td>
<td></td>
</tr>
<tr>
<td>Key Features of the Report</td>
<td></td>
</tr>
<tr>
<td>Objectives of the Report</td>
<td></td>
</tr>
<tr>
<td>Terminology for Patent Analysis</td>
<td></td>
</tr>
<tr>
<td>Methodology</td>
<td></td>
</tr>
<tr>
<td>Patent Search Strategy</td>
<td></td>
</tr>
<tr>
<td>Companies Presentation</td>
<td>p15</td>
</tr>
<tr>
<td>AuthenTec</td>
<td></td>
</tr>
<tr>
<td>Apple</td>
<td></td>
</tr>
<tr>
<td>Fingerprints Card</td>
<td></td>
</tr>
<tr>
<td>Validity &amp; Synaptic</td>
<td></td>
</tr>
<tr>
<td>Products Presentation</td>
<td>p20</td>
</tr>
<tr>
<td>Fingerprint Sensor Supply Chain</td>
<td></td>
</tr>
<tr>
<td>TMDR92 – iPhone 5S</td>
<td></td>
</tr>
<tr>
<td>FPC1020 – Ascend Mate 7</td>
<td></td>
</tr>
<tr>
<td>VAL004A8-T – Galaxy 5S</td>
<td></td>
</tr>
<tr>
<td>B1202A0-01 – Galaxy 6</td>
<td></td>
</tr>
<tr>
<td>Executive Summary</td>
<td>p26</td>
</tr>
<tr>
<td>Tear Down</td>
<td>p31</td>
</tr>
<tr>
<td>Physical Analysis Methodology</td>
<td></td>
</tr>
<tr>
<td>Fingerprint Sensor Characteristics</td>
<td></td>
</tr>
<tr>
<td>Packaging</td>
<td></td>
</tr>
<tr>
<td>Sensing Area</td>
<td></td>
</tr>
<tr>
<td>Technology Comparison</td>
<td></td>
</tr>
<tr>
<td>Patent Analysis</td>
<td>p38</td>
</tr>
<tr>
<td>Patent Infringement Risk Potential</td>
<td></td>
</tr>
<tr>
<td>IP Portfolio</td>
<td></td>
</tr>
<tr>
<td>TMDR92 – Apple iPhone 5S</td>
<td>p41</td>
</tr>
<tr>
<td>Patent Identification</td>
<td></td>
</tr>
<tr>
<td>Patent Infringement Risk Conclusions</td>
<td></td>
</tr>
<tr>
<td>FPC1020 - Huawei Ascend Mate 7</td>
<td>p53</td>
</tr>
<tr>
<td>Patent Identification</td>
<td></td>
</tr>
<tr>
<td>Patent Infringement Risk Conclusions</td>
<td></td>
</tr>
<tr>
<td>VAL004A8-T - Samsung Galaxy 5S</td>
<td>p73</td>
</tr>
<tr>
<td>Patent Identification</td>
<td></td>
</tr>
<tr>
<td>Patent Infringement Risk Conclusions</td>
<td></td>
</tr>
<tr>
<td>B1202A0-01 - Samsung Galaxy 6</td>
<td>p93</td>
</tr>
<tr>
<td>Patent Identification</td>
<td></td>
</tr>
<tr>
<td>Patent Infringement Risk Conclusions</td>
<td></td>
</tr>
<tr>
<td>Conclusions</td>
<td>p112</td>
</tr>
<tr>
<td>Customer Satisfaction Survey</td>
<td>p116</td>
</tr>
<tr>
<td>Related Reports</td>
<td>p117</td>
</tr>
</tbody>
</table>

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ABOUT KNOWMADE

Headquartered in Sophia Antipolis, France, Knowmade is a Technology Intelligence and IP Strategy consulting company. We provide Patent Search, Patent Analysis, Patent Valuation, IP Landscape, Scientific Literature Landscape, Technology Scouting, Technology Transfer and Technology Tracking. Our service offer consists of custom studies, on-demand tracking, analysis reports and strategy consulting. We combine information search services, scientific expertise, powerful analytics and visualization tools, and proprietary methodologies for analyzing patents and scientific information. With a solid focus on Microelectronics, Compound Semiconductors, LED, MEMS, Nanotechnology and Biotechnology, Knowmade supports research laboratories, industrial companies and investors in their business development. http://www.knowmade.fr

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ORDER FORM

Capacitive Fingerprint Sensors
Technology and Patent Infringement Risk Analysis
TMDR92 (AuthenTec-Apple), FPC1020 (Fingerprint Cards),
VAL004A8-T (Synaptics) and B1202A0-01 (Synaptics)
November 2015

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ABOUT SYSTEM PLUS CONSULTING
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