New Premium Tier Smartphone designs mandate new requirements

Introduction of Bezel-Less Waterproof Smartphones

Waterproof/water resistant (no hole for sensor)

Front (Under Display)

Back (Glass, Aluminum)

Qualcomm Fingerprint Sensors are a product of Qualcomm Technologies, Inc.
Introducing new Qualcomm® Fingerprint Sensors for Display, Metal and Glass

**Under Display**
- Premium Tier Phones
- Platen: OLED up to 1200 µm

**Under Metal & Glass**
- High Tier Phones
- Platen: Glass up to 800 µm or Aluminum up to 650 µm

**Under Glass**
- Mid and Low Tier Phones
- Platen: Glass up to 800 µm
Qualcomm® Fingerprint Sensors for Display, Metal and Glass

Designed to enable underwater device wake-up and fingerprint match

Supporting IP68 devices and underwater mobile user experiences
Qualcomm® Fingerprint Sensors for Display, Metal and Glass

Powerful ultrasonics

All 3 of the ultrasonic-based sensors are engineered to easily power through common contaminants like water and oil, supporting consistent, reliable authentication.
Qualcomm® Fingerprint Sensors
for Display, Metal and Glass

Supports heartbeat and blood flow

Heartbeat detection is performed by the same sensor--no separate sensor is needed.

Detection of heartbeat and blood flow combine with existing human tissue impedance measurement designed to offer powerful liveness detection, and improved mobile authentication.
Qualcomm® Fingerprint Sensors for Display, Metal and Glass

Detection of directional gestures

A finger swipe over the sensor in a particular direction can be mapped to a specific UI function, supporting alternative forms of navigation.
Integration with Snapdragon™ Processor Security Foundation

Qualcomm Trusted Execution Environment

- Trusted operations include
- Algorithms for Fingerprint Scanning, Enrollment, & Matching as well as Payment Transactions
- Based on ARM’s TrustZone architecture

Peripherals Security
- Fingerprint Sensor SPI port protected by the Trusted Execution Environment

Storage Security
- File System Security for encrypted storage of Fingerprint Templates
More Authentication Security - Anti-spoofing

**3 Dimensional Acoustic Details**
Ultrasonic-based technology captures detail within the outer layers of the skin for complete accurate detection of fingerprint ridges, unique characteristics and sweat pores, making it difficult to spoof.

**Liveness**
Employs unique properties of ultrasonic acoustical imaging to detect Blood Flow along with impedance differences between fingers and spoofs.

- Blood Flow
- Minutiae points
- Sweat pores
- Fingerprint ridges
Qualcomm® Fingerprint Sensors for Display, Metal and Glass

Benefits to OEMs, carriers and consumers

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Mobile Industry Leadership

**First** commercially announced mobile solution to scan through up to 800 µm of cover glass and up to 650 µm of aluminum.

**First** commercially announced integrated ultrasonic-based mobile solution to detect heart beat, blood flow and gestures.

**First** commercially announced multi-functional ultrasonic solution capable of scanning through OLED displays up to 1200 µm for enrolling, matching, heart beat, blood flow, gestures.
Qualcomm® Fingerprint Sensors for Display, Metal and Glass

Availability

Compatible with the recently announced Qualcomm® Snapdragon™ 660 and 630 mobile platforms.

Designed to be compatible with future Qualcomm® Snapdragon™ mobile platforms, including Qualcomm® Snapdragon™ 800 series, 600 series, 400 series and 200 series mobile platforms, as well as non-Snapdragon platforms.

- Engineering samples for Fingerprint Sensor for Display expected to be available to OEMs in October 2017. Commercial samples expected early 2018.
- Commercial devices with Fingerprint Sensor for Display are expected to arrive in Summer of 2018.
- Commercial samples for Fingerprint Sensors for Glass and Metal expected to be available for OEMs in July 2017.
- Commercial devices with Fingerprint Sensors for Glass and Metal are expected to arrive in early 2018.
Thank you

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