
EXHIBIT B

U.S. Patent No. 8,552,978

Samsung Galaxy S7 Edge

Claim 10

A method for compensating rotations of a 3D pointing device, comprising:



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Claim 10

generating an **orientation output** associated with an orientation of the 3D pointing device associated with three coordinates in a **global reference frame associated with Earth**;

When the orientation sensor is software-based, the **orientation output** is the attitude of the device that can be represented by azimuth, pitch, and roll angles relative to the magnetic North Pole associated with a **global reference frame associated with Earth**;

Orientation

Underlying base sensor(s): Accelerometer, Magnetometer PREFERRED Gyroscope

Trigger-mode: Continuous

Wake-up sensor: No

Note: This is an older sensor type that has been deprecated in the Android SDK although not yet in the newer versions. It has been replaced by the rotation vector sensor, which is more clearly defined, requires a gyroscope, and therefore provides more accurate results. Use the rotation vector sensor over the orientation sensor whenever possible.

The orientation sensor tracks the attitude of the device. All values are angles in degrees. Orientation sensor return sensor events for all three axes at a constant rate defined by `setDelay()`.

- azimuth: angle between the magnetic north direction and the Y axis, around the Z axis (0<=azimuth<360). 0=North, 90=East, 180=South, 270=West
- pitch: Rotation around X axis (-180<=pitch<=180), with positive values when the z-axis moves towards the positive x-axis.
- roll: Rotation around Y axis (-90<=roll<=90), with positive values when the x-axis moves towards the positive z-axis.

Claim 10

generating a **first signal set** comprising axial accelerations associated with movements and rotations of the 3D pointing **spatial reference frame**;

Accelerometer

Trigger-mode: Continuous

Wake-up sensor: No

All values are in SI units (m/s²) and measure the acceleration of the device minus the force of gravity.

Acceleration sensors return sensor events for all three axes at a constant rate defined by setDelay().

- [x: Acceleration on the x-axis](#)
- [y: Acceleration on the y-axis](#)
- [z: Acceleration on the z-axis](#)

Source: https://source.android.com/devices/sensors/base_triggers.html

Sensor Coordinate System

In general, the sensor framework uses a standard 3-axis coordinate system to express data values. For most sensors, the coordinate system is defined relative to the device's screen when the device is held in its default orientation (see figure 1). When a device is held in its default orientation, the X axis is horizontal and points to the right, the Y axis is vertical and points up, and the Z axis points toward the outside of the screen face. In this system, coordinates behind the screen have negative Z values. This coordinate system is used by the following sensors:

- [Acceleration sensor](#)
- Gravity sensor
- Gyroscope
- Linear acceleration sensor
- Geomagnetic field sensor

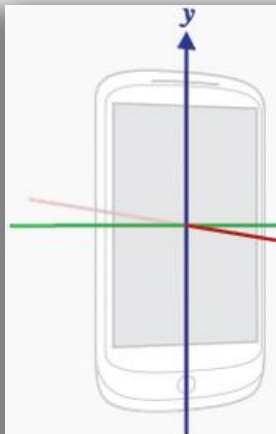


Figure 1. Coordinate system (device) that's used by the

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