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IN THE UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF CALIFORNIA

BELL NORTHERN RESEARCH, LLC, Plaintiff, v. HUAWEI DEVICE (DONGGUAN) CO., LTD, HUAWEI DEVICE (SHENZHEN) CO., LTD., and HUAWEI DEVICE USA, INC., Defendants.	C.A. No. 3:18-CV-01784-CAB-BLM BELL NORTHERN RESEARCH, LLC'S PATENT L.R. 3.1 DISCLOSURE OF ASSERTED CLAIMS AND INFRINGEMENT CONTENTIONS

Pursuant to Patent L.R. 3.1 and the Court's Case Management Order, Plaintiff Bell Northern Research, LLC ("BNR") hereby provides its Disclosure of Asserted Claims and Infringement Contentions, including the claim charts attached as Exhibits A-H and all Annexes thereto. This disclosure is made solely for the purpose of the above-captioned action, with respect to above-named Defendants.

Discovery in this matter is at an early stage and BNR's investigation of Defendants' infringement is ongoing. For example, Defendants have not yet produced any documents relating to the accused products; nor have they provided any deposition testimony in this action. This disclosure is therefore based upon information that BNR has been able to obtain publicly, together with BNR's current good faith beliefs regarding the Accused Instrumentalities in this matter. For example, the figures shown in the accompanying claim charts, including but not limited to those depicting the location of and identifying the presence of claim elements in the Accused Instrumentalities, are illustrative and may change after production and review of Defendants' confidential information. Accordingly, BNR explicitly reserves the right to amend and/or supplement the accompanying claim charts regarding direct and/or indirect infringement, as well as literal infringement and/or infringement under the doctrine of equivalents based on evidence uncovered in this litigation.

The claim charts attached as exhibits hereto are not designed to represent the entire scope of infringement of the Accused Instrumentalities, but are merely to illustrate examples of how the Accused Instrumentalities infringe the Asserted Claims of the Patents-in-Suit. Further, the division of claim elements in the charts attached as exhibits hereto is provided solely for purposes of convenience in presenting BNR's Infringement Contentions. The division is not meant to modify the claim language or to inform claim construction.

The following disclosures should not be construed as BNR's preliminary construction of any asserted claim or claim term. This disclosure does not represent BNR's position on whether any claim term should be or needs to be construed,

clarified, or interpreted by the Court. Further, these disclosures also are based at least in part on BNR's present understanding of the meaning and scope of the asserted claims of the patents-in-suit in the absence of claim construction proceedings for all the patents-in-suit or substantial discovery in this matter. BNR reserves the right to supplement or amend these disclosures if its understanding of the claim terms changes, including if the Court construes them.

This disclosure is given without prejudice to BNR's rights, and BNR hereby expressly reserves its rights under Patent L.R. 3.6(a) or any other applicable basis to further supplement or amend its contentions, including without limitation, to add Asserted Claims or Accused Instrumentalities as additional facts are ascertained, analyses are made, research is completed, contentions are made, claims are construed, and Defendants' confidential information is received and reviewed in discovery.

a. Asserted Claims (Patent L.R. 3.1(a)):

Based on information presently available, BNR asserts that each of the following claims is infringed by Defendants. In accordance with the Court's instructions at the October 22, 2018 Case Management Conference, BNR has limited its assertions to no more than seven claims per patent. BNR expressly reserves the right to modify, substitute, change, or amend which claims it asserts against Defendants as more information becomes available, including without limitation the parties' claim construction positions and the Court's claim construction rulings.

U.S. Patent No.	Asserted Claims
7,319,889 ("'889 Patent")	1, 2, 4, 5, 6, 8, 12
8,204,554 ("'554 Patent")	1, 2, 4, 5, 7, 8, 14
7,990,842 ("'842 Patent")	1, 3, 4, 8, 11, 14, 19
6,941,156 ("'156 Patent")	1, 2
8,416,862 ("'862 Patent")	9, 10, 12
7,957,450 ("'450 Patent")	2, 3, 11, 12, 13, 21, 22

8,792,432 ("'432 Patent")	9, 12
7,039,435 ("'435 Patent")	1, 2, 3, 6, 8

b. Accused Instrumentalities (L.P.R. 3.1(b)):

Based on information presently available, BNR identifies the Accused Instrumentalities below. Defendants infringe the Asserted Claims pursuant to § 271(a) by making, using, importing, selling, and/or offering to sell in the United States without authority these Accused Instrumentalities. The particular acts constituting infringement by Defendants' accused instrumentalities are detailed in the claim charts attached herewith as Exhibits A - H. BNR reserves the right to amend or add additional Accused Instrumentalities to these Contentions, if warranted and/or based on further investigation and discovery.

Asserted Claim	Accused Instrumentalities
'889 Patent	
1	Mate 10 Pro, Ascend XT^2, Elate, Mate 9, Mate SE, Porsche Mate 10, Sensa, Ascend Mate 2, Pronto, Vision 2, Honor 5X, Honor 6X, Honor 7X, Honor 8, Honor View 10.
2	Mate 10 Pro, Ascend XT^2, Elate, Mate 9, Mate SE, Porsche Mate 10, Sensa, Ascend Mate 2, Pronto, Vision 2, Honor 5X, Honor 6X, Honor 7X, Honor 8, Honor View 10.
4	Mate 10 Pro, Ascend XT^2, Elate, Mate 9, Mate SE, Porsche Mate 10, Sensa, Ascend Mate 2, Pronto, Vision 2, Honor 5X, Honor 6X, Honor 7X, Honor 8, Honor View 10.
5	Mate 10 Pro, Ascend XT^2, Elate, Mate 9, Mate SE, Porsche Mate 10, Sensa, Ascend Mate 2, Pronto, Vision 2, Honor 5X, Honor 6X, Honor 7X, Honor 8, Honor View 10.
8	Mate 10 Pro, Ascend XT^2, Elate, Mate 9, Mate SE, Porsche Mate 10, Sensa, Ascend Mate 2, Pronto, Vision 2, Honor 5X, Honor 6X, Honor 7X, Honor 8, Honor View 10.

MediaTek Exhibit 1015, Page 4 of 560

9	Mate 10 Pro, Ascend XT^2, Elate, Mate 9, Mate SE, Porsche Mate 10, Sensa, Ascend Mate 2, Pronto, Vision 2, Honor 5X, Honor 6X, Honor 7X, Honor 8, Honor View 10.
12	Mate 10 Pro, Ascend XT^2, Elate, Mate 9, Mate SE, Porsche Mate 10, Sensa, Ascend Mate 2, Pronto, Vision 2, Honor 5X, Honor 6X, Honor 7X, Honor 8, Honor View 10.
’554 Patent	
1	Mate 10 Pro, Ascend XT^2, Elate, Mate 9, Mate SE, Porsche Mate 10, Sensa, Ascend Mate 2, Pronto, Vision 2, Honor 5X, Honor 6X, Honor 7X, Honor 8, Honor View 10.
2	Mate 10 Pro, Ascend XT^2, Elate, Mate 9, Mate SE, Porsche Mate 10, Sensa, Ascend Mate 2, Pronto, Vision 2, Honor 5X, Honor 6X, Honor 7X, Honor 8, Honor View 10.
4	Mate 10 Pro, Ascend XT^2, Elate, Mate 9, Mate SE, Porsche Mate 10, Sensa, Ascend Mate 2, Pronto, Vision 2, Honor 5X, Honor 6X, Honor 7X, Honor 8, Honor View 10.
5	Mate 10 Pro, Ascend XT^2, Elate, Mate 9, Mate SE, Porsche Mate 10, Sensa, Ascend Mate 2, Pronto, Vision 2, Honor 5X, Honor 6X, Honor 7X, Honor 8, Honor View 10.
7	Mate 10 Pro, Ascend XT^2, Elate, Mate 9, Mate SE, Porsche Mate 10, Sensa, Ascend Mate 2, Pronto, Vision 2, Honor 5X, Honor 6X, Honor 7X, Honor 8, Honor View 10.
8	Mate 10 Pro, Ascend XT^2, Elate, Mate 9, Mate SE, Porsche Mate 10, Sensa, Ascend Mate 2, Pronto, Vision 2, Honor 5X, Honor 6X, Honor 7X, Honor 8, Honor View 10.
14	Mate 10 Pro, Ascend XT^2, Elate, Mate 9, Mate SE, Porsche Mate 10, Sensa, Ascend Mate 2, Pronto, Vision 2, Honor 5X, Honor 6X, Honor 7X, Honor 8, Honor View 10.
’842 Patent	
1	Ascend XT^2, Elate, Mate SE, Sensa, Pronto, Vision 2, Honor 5X, Honor 6X, Honor 7X, Honor View 10, MediaPad M3 Lite 10, MediaPad T1 7.0, MediaPad T1 10.0, MediaPad T3 7, MediaPad T3

MediaTek Exhibit 1015, Page 5 of 560

	8, MediaPad T3 10, MediaPad M3, MediaPad M3 Lite, MediaPad M5 8.4, MediaPad M5 10.8, MediaPad M5 Pro.
3	Ascend XT^2, Elate, Mate SE, Sensa, Pronto, Vision 2, Honor 5X, Honor 6X, Honor 7X, Honor View 10, MediaPad M3 Lite 10, MediaPad T1 7.0, MediaPad T1 10.0, MediaPad T3 7, MediaPad T3 8, MediaPad T3 10, MediaPad M3, MediaPad M3 Lite, MediaPad M5 8.4, MediaPad M5 10.8, MediaPad M5 Pro.
4	Ascend XT^2, Elate, Mate SE, Sensa, Pronto, Vision 2, Honor 5X, Honor 6X, Honor 7X, Honor View 10, MediaPad M3 Lite 10, MediaPad T1 7.0, MediaPad T1 10.0, MediaPad T3 7, MediaPad T3 8, MediaPad T3 10, MediaPad M3, MediaPad M3 Lite, MediaPad M5 8.4, MediaPad M5 10.8, MediaPad M5 Pro.
8	Ascend XT^2, Elate, Mate SE, Sensa, Pronto, Vision 2, Honor 5X, Honor 6X, Honor 7X, Honor View 10, MediaPad M3 Lite 10, MediaPad T1 7.0, MediaPad T1 10.0, MediaPad T3 7, MediaPad T3 8, MediaPad T3 10, MediaPad M3, MediaPad M3 Lite, MediaPad M5 8.4, MediaPad M5 10.8, MediaPad M5 Pro.
11	Ascend XT^2, Elate, Mate SE, Sensa, Pronto, Vision 2, Honor 5X, Honor 6X, Honor 7X, Honor View 10, MediaPad M3 Lite 10, MediaPad T1 7.0, MediaPad T1 10.0, MediaPad T3 7, MediaPad T3 8, MediaPad T3 10, MediaPad M3, MediaPad M3 Lite, MediaPad M5 8.4, MediaPad M5 10.8, MediaPad M5 Pro.
14	Ascend XT^2, Elate, Mate SE, Sensa, Pronto, Vision 2, Honor 5X, Honor 6X, Honor 7X, Honor View 10, MediaPad M3 Lite 10, MediaPad T1 7.0, MediaPad T1 10.0, MediaPad T3 7, MediaPad T3 8, MediaPad T3 10, MediaPad M3, MediaPad M3 Lite, MediaPad M5 8.4, MediaPad M5 10.8, MediaPad M5 Pro.
19	Ascend XT^2, Elate, Mate SE, Sensa, Pronto, Vision 2, Honor 5X, Honor 6X, Honor 7X, Honor View 10, MediaPad M3 Lite 10, MediaPad T1 7.0, MediaPad T1 10.0, MediaPad T3 7, MediaPad T3 8, MediaPad T3 10, MediaPad M3, MediaPad M3 Lite, MediaPad M5 8.4, MediaPad M5 10.8, MediaPad M5 Pro.
’156 Patent	
1	Mate 10 Pro, Ascend XT^2, Elate, Mate 9, Mate SE, Porsche Mate 10.

MediaTek Exhibit 1015, Page 6 of 560

2	Mate 10 Pro, Ascend XT[2], Elate, Mate 9, Mate SE, Porsche Mate 10.
’862 Patent	
9	MediaPad M3 Lite 10, MediaPad M5 8.4, MediaPad M5 10.8, MediaPad M5 Pro.
10	MediaPad M3 Lite 10, MediaPad M5 8.4, MediaPad M5 10.8, MediaPad M5 Pro.
12	MediaPad M3 Lite 10, MediaPad M5 8.4, MediaPad M5 10.8, MediaPad M5 Pro.
’450 Patent	
2	Mediapad M3 Lite 10, Mediapad M5 8.4, Mediapad M5 10.8, Mediapad M5 Pro.
3	Mediapad M3 Lite 10, Mediapad M5 8.4, Mediapad M5 10.8, Mediapad M5 Pro.
11	Mediapad M3 Lite 10, Mediapad M5 8.4, Mediapad M5 10.8, Mediapad M5 Pro.
12	Mediapad M3 Lite 10, Mediapad M5 8.4, Mediapad M5 10.8, Mediapad M5 Pro.
13	Mediapad M3 Lite 10, Mediapad M5 8.4, Mediapad M5 10.8, Mediapad M5 Pro.
21	Mediapad M3 Lite 10, Mediapad M5 8.4, Mediapad M5 10.8, Mediapad M5 Pro.
22	Mediapad M3 Lite 10, Mediapad M5 8.4, Mediapad M5 10.8, Mediapad M5 Pro.
’432 Patent	
9	Mate 10 Pro, Mate 9, Porsche Mate 10, Honor View 10.
12	Mate 10 Pro, Mate 9, Porsche Mate 10, Honor View 10.
’435 Patent	

1	Mate 10 Pro, Elate, Mate SE, Porsche Mate 10.
2	Mate 10 Pro, Elate, Mate SE, Porsche Mate 10.
3	Mate 10 Pro, Elate, Mate SE, Porsche Mate 10.
6	Mate 10 Pro, Elate, Mate SE, Porsche Mate 10.
8	Mate 10 Pro, Elate, Mate SE, Porsche Mate 10.

c. Claim Charts for the Accused Instrumentalities (Patent L.R. 3.1(c)):

U.S. Patent No.	Claim Chart(s)
'889 Patent	*See* Exhibit A
'554 Patent	*See* Exhibit B
'842 Patent	*See* Exhibit C
'156 Patent	*See* Exhibit D
'862 Patent	*See* Exhibit E
'450 Patent	*See* Exhibit F
'432 Patent	*See* Exhibit G
'435 Patent	*See* Exhibit H

d. Indirect Infringement (Patent L.R. 3.1(d)):

The Asserted Claims are directly infringed by Defendants' Accused Instrumentalities under 35 U.S.C. § 271(a).

In addition to BNR's direct infringement contentions, BNR further contends that Defendants currently induce and/or have induced their customers to directly infringe the Asserted Claims by using the Accused Instrumentalities in the manner described in Exhibits A-H as instructed by the Defendants or by using the Accused Instrumentalities in the manner programmed by the Defendants.

BNR reserves the right to amend its pleadings and these Contentions to assert additional indirect infringement claims under § 271(b) or (c) and additional theories, if

warranted, based on BNR's ongoing investigation and discovery produced by Defendants.

e. Doctrine of Equivalents (Patent L.R. 3.1(e)):

At this time, BNR contends that each element of each Asserted Claim is literally present in each Accused Instrumentality as set forth above and identified in the exhibits and annexes hereto. BNR contends that if any element of the Asserted Claims is found to be not literally present in an Accused Instrumentality, that element is present under the Doctrine of Equivalents. The claim charts attached as exhibits hereto identify illustrative support for where the equivalent feature is found under the doctrine of equivalents pursuant to the function-way-result and/or insubstantial differences tests. BNR reserves the right amend or add to these contentions to identify additional contentions under the Doctrine of Equivalents based on discovery, BNR's investigation, and claim construction.

f. Priority Dates (Patent L.R. 3.1(f)):

BNR contends that each Asserted Claim is entitled to a priority date as indicated below in the chart, based on the date of application of the patent or a parent application. BNR makes this disclosure without waiving any argument that it is entitled to an earlier date of invention based on activities predating the filing of the applications indicated below.

U.S. Patent No.	Priority Date
'889 Patent claims	At least as early as June 17, 2003
'554 Patent claims	At least as early as June 17, 2003
'842 Patent claims	At least as early as July 27, 2004
'156 Patent claims	At least as early as June 26, 2001
'862 Patent claims	At least as early as April 21, 2005
'450 Patent claims	At least as early as December 14, 2004
'432 Patent claims	At least as early as February 14, 2011

’435 Patent claims	At least as early as September 28, 2001

g. BNR Products (Patent L.R. 3.1(g)):

At this time, BNR does not own an apparatus, product, device, process, method, act, or other instrumentality that practices the claimed inventions.

h. Willful Infringement (Patent L.R. 3.1(h)):

Defendants have infringed and are continuing to infringe the Asserted Claims in a manner that is willful, wanton, malicious, bad-faith, deliberate, consciously wrongful, and flagrant. Defendants’ egregious infringement is exemplified by the following facts:

- Defendants have known of their infringement of the ’889, ’554, ’842, ’156, ’862, and ’432 Patents since no later than December 1, 2017, when Mr. Afzal Dean, President of BNR, sent Defendants a letter identifying these Patents and notifying Defendants that their products (including examples thereof) infringe the Asserted Claims of each Patent. Mr. Dean offered to meet and present a detailed presentation to Defendants, describing the infringement.
- On January 18, 2018 and February 6, 2018, BNR followed up by sending additional letters regarding Defendants’ infringement of the Asserted Claims with respect to the ’889, ’554, ’842, ’156, ’862, and ’432 Patents.
- BNR participated in meetings with Huawei on or about March 16, 2018, April 23, 2018, and June 20, 2018 in Shenzhen, China, to discuss Defendants’ infringement of the ’889, ’554, ’842, ’862, and ’432 Patents.
- On September 14, 2018, Huawei executives met with BNR executives in person and discussed, *inter alia*, Huawei’s infringement of the ’889, ’554, ’842, ’862, and ’432 Patents.
- Defendants have known of their infringement of the ’450 and ’435 Patents since no later than November 13, 2018, when the Second Amended Complaint in this action was filed.

BNR expressly reserves the right to amend or add to its willfulness contentions as more information comes to light through its investigation and discovery in this matter.

Dated: December 7, 2018

/s/ *Sadaf R. Abdullah*

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CERTIFICATE OF SERVICE

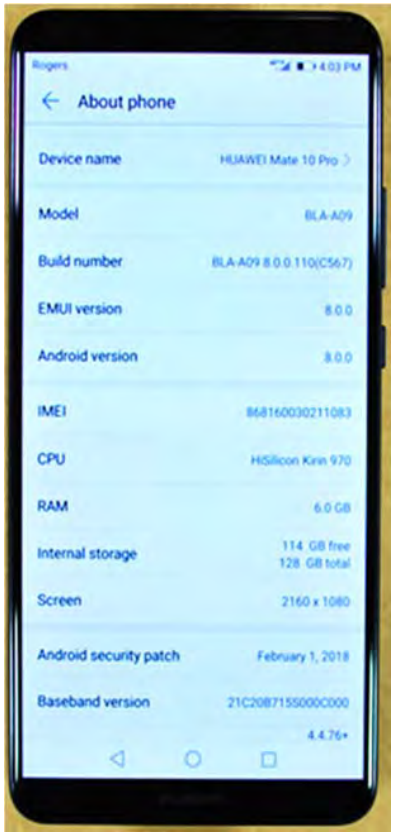
I hereby certify that on December 7, 2018, I served the foregoing document via email to the following counsel of record for the Defendants:

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/s/ *Sadaf R. Abdullah*

MediaTek Exhibit 1015, Page 13 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554

Asserted Claim Elements	Huawei Mate 10 Pro and Porsche Design Mate 10[1]
1. A mobile station, comprising:	To the extent that the preamble is found to be limiting, the Huawei Mate 10 Pro is a mobile station.  

[1] The Huawei Mate 10 Pro and the Huawei Porsche Design Mate 10 share all relevant hardware components and software functionalities. The only internal difference is that the Porsche Design Mate 10 includes more on-board storage; but this difference does not

MediaTek Exhibit 1015, Page 14 of 560

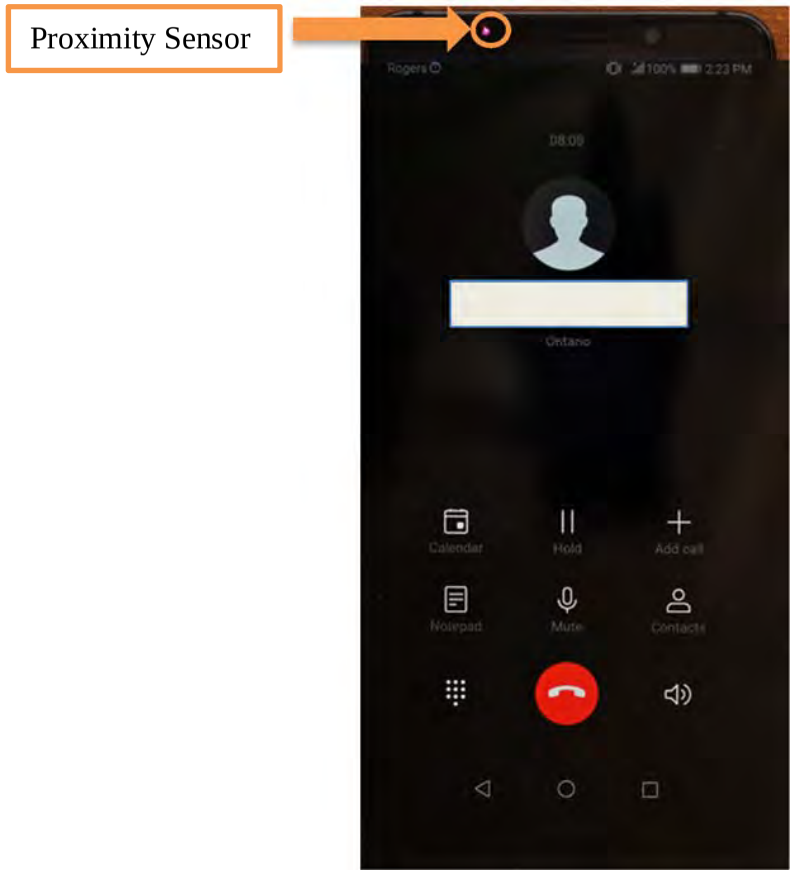
Exhibit B-1–Infringement of U.S. Patent No. 8,204,554

[i] a display;	The Huawei Mate 10 Pro includes a display.  *See* https://consumer.huawei.com/uk/support/phones/mate10-pro/ *p. 1, last accessed Nov 21, 2018.*

relate to the accused functionalities. *See* https://www.phonearena.com/news/Huawei-Mate-10-Pro-Mate-10-Porsche-Design-differences_id102298, *last accessed December 5, 2018.*

MediaTek Exhibit 1015, Page 15 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554

[ii] a proximity sensor	The Huawei Mate 10 Pro includes a proximity sensor. 

MediaTek Exhibit 1015, Page 16 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554

[iii] adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate; and	The proximity sensor of the Huawei Mate 10 Pro is adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate. By way of example only, the Huawei Mate 10 Pro is an Android phone. The Android Developer Code Website describes functioning of proximity sensors in Android phones customized and adapted by Huawei to run on their hardware. In particular, the description specifies that the proximity sensor measures the proximity of an object relative to the device: TYPE_PROXIMITY Hardware Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear. Phone position during a call. *See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.* By way of further example, the Android Developer Code Website provides files that describe the generation of a signal by the sensor. TYPE_PROXIMITY public static final int TYPE_PROXIMITY A constant describing a proximity sensor type. This is a wake up sensor. See SensorEvent.values for more details. **See also:** isWakeUpSensor() Constant Value: 8 (0x00000008) *See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.*

MediaTek Exhibit 1015, Page 17 of 560

The referenced discussion concerning the isWakeUpSensor file explains the proximity sensor (for example, whether a wake-up sensor or non-wake-up sensor) generates signals:

isWakeUpSensor

added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

In addition, the Android Developer Code provides the following exemplary code at least substantially similar to Huawei code for using the proximity sensor "to determine how far away a person's head is from the face of a handset device (for example, when a user making or receiving a phone call)."

MediaTek Exhibit 1015, Page 18 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554

	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 19 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

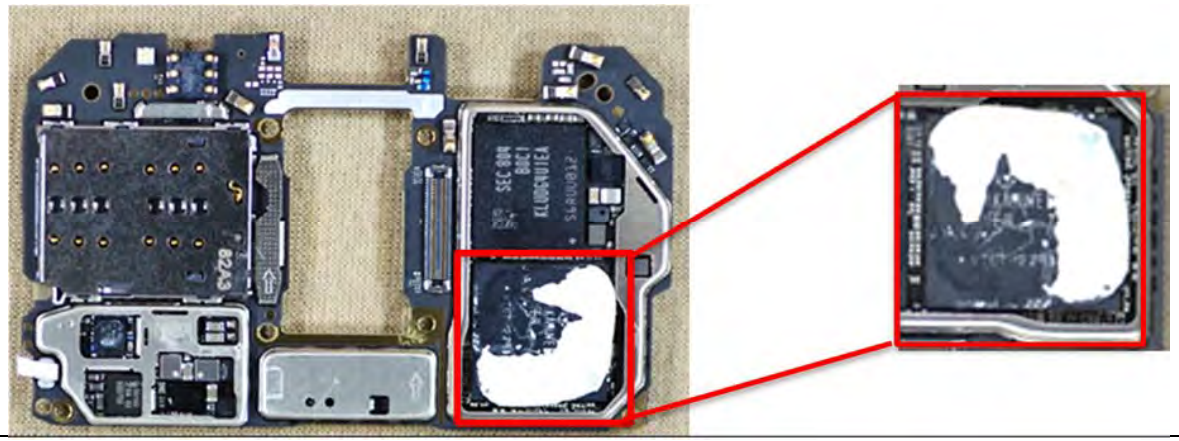
        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 20 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

[iv] a microprocessor adapted to:	The Huawei Mate 10 Pro includes at least one microprocessor. 

MediaTek Exhibit 1015, Page 21 of 560

	"**Chipset:** Huawei Kirin 970" *See https://consumer.huawei.com/en/phones/mate10-pro/specs/, last accessed Nov 21, 2018.*
(a) determine, without using the proximity sensor, the existence of a second condition independent and different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;	The microprocessor of the Huawei Mate 10 Pro is adapted to determine, without using the proximity sensor, the existence of a second condition independent and different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call. The microprocessor is able to determine when the user initiates an outgoing call or answers an incoming call.

MediaTek Exhibit 1015, Page 22 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554

	  By way of example only, the Huawei Mate 10 Pro is an Android phone. The Huawei Mate 10 Pro's microprocessor uses code substantially similar to the code described and excerpted below to (1) determine when the user initiates an outgoing call or (2) determine when the user answers an incoming call; Outgoing Call:

MediaTek Exhibit 1015, Page 23 of 560

```
/**
* Broadcast receiver to detect the outgoing calls.
*/
public class OutgoingReceiver extends BroadcastReceiver {
     public OutgoingReceiver() {
     }

     @Override
     public void onReceive(Context context, Intent intent) {
         String number = intent.getStringExtra(Intent.EXTRA_PHONE_NUMBER);

         Toast.makeText(ctx,
           "Outgoing: "+number,
           Toast.LENGTH_LONG).show();
     }
}
```

In the above, the system sends a broadcast action `android.intent.action.NEW_OUTGOING_CALL`.

Incoming Call:

```
/**
* Listener to detect incoming calls.
*/
private class CallStateListener extends PhoneStateListener {
  @Override
  public void onCallStateChanged(int state, String incomingNumber) {
      switch (state) {
          case TelephonyManager.CALL_STATE_RINGING:
          // called when someone is ringing to this phone

          Toast.makeText(ctx,
                  "Incoming: "+incomingNumber,
                  Toast.LENGTH_LONG).show();
          break;
      }
  }
}
```

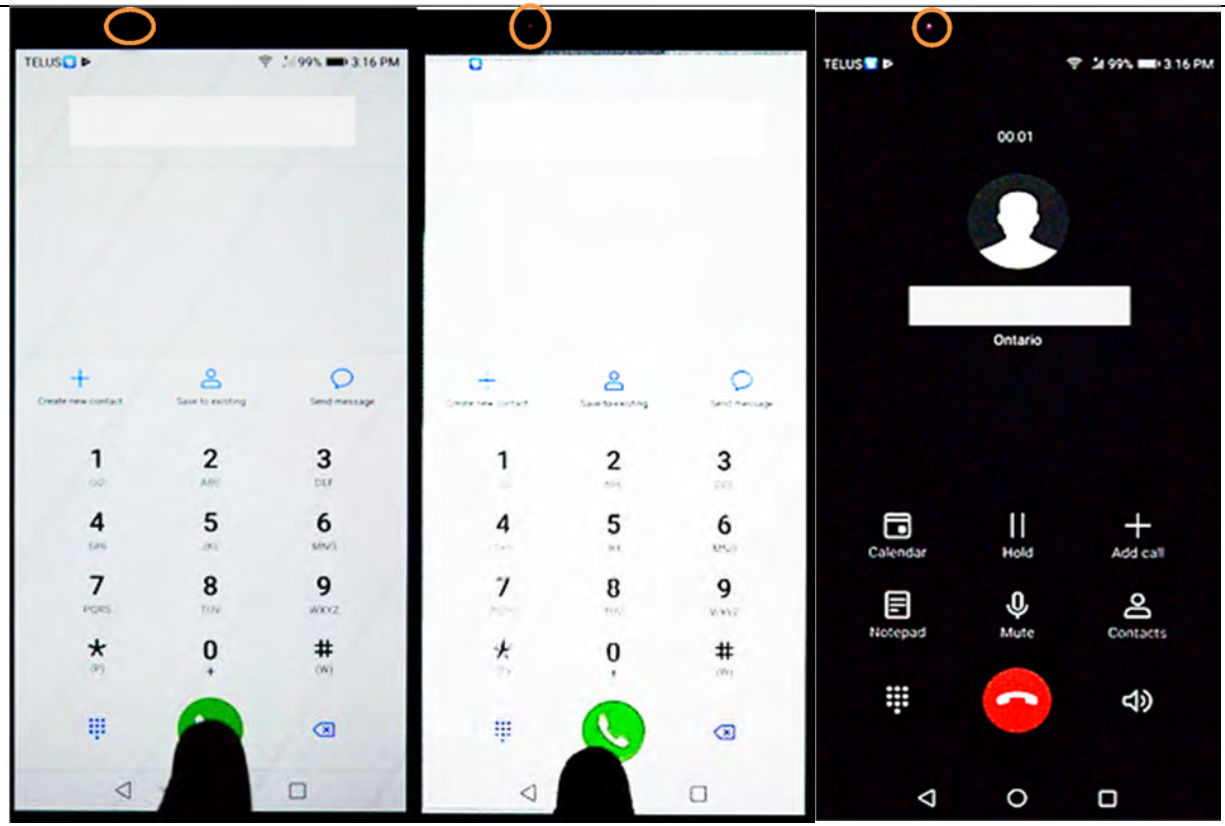
In the above, `state` is the call state, where it may be `CALL_STATE_RINGING`, `CALL_STATE_OFFHOOK`, or `CALL_STATE_IDLE`. Ringing is the state when someone is calling,

MediaTek Exhibit 1015, Page 24 of 560

	offhook is when there is active or on hold call, and idle is when nobody is calling and there is no active call. *See https://www.codeproject.com/Articles/548416/Detecting-Incoming-and-Outgoing-Phone-Calls-on-And, last accessed December 5, 2018.*
(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor,	The microprocessor of the Huawei Mate 10 Pro is adapted to, in response to a determination in step (a) that the second condition exists, activate the proximity sensor. The first image shows that when the user is about to initiate the call, at that point the proximity sensor is not activated. The second image shows the call initiated and the proximity sensor is activated. Third image shows the proximity sensor remains activated during the remainder of the call.

MediaTek Exhibit 1015, Page 25 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554



By way of example only and as shown above in claim 1(iv)(a), the microprocessor is able to determine whether a call is active according to the second condition.

The microprocessor activates the proximity sensor. By way of example only, the Android Developer Code Website describes examples of proximity sensor activation and use:

MediaTek Exhibit 1015, Page 26 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY

```
public static final int TYPE_PROXIMITY
```

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor — added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

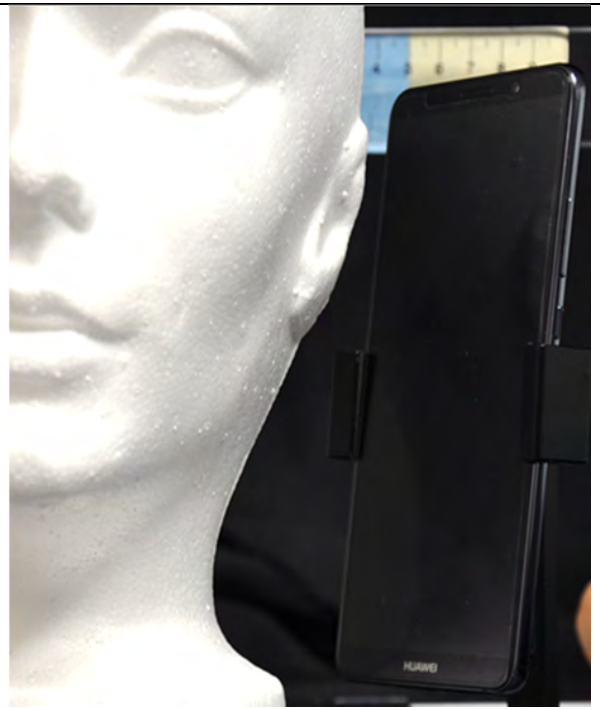
MediaTek Exhibit 1015, Page 27 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554

	Non-wake-up sensors Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually: • Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case. • Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost. **Wake-up sensors** In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details. *See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.* In the Huawei Mate 10 Pro, when the call button or answer button is pressed, the display darkens, indicating that the proximity sensor is activated.
(c) receive the signal from the activated proximity sensor, and	The microprocessor of the Huawei Mate 10 Pro is adapted to receive the signal from the activated proximity sensor. When the call button or answer button is pressed according to the above, the display darkens, indicated that the microprocessor received the signal from the activated proximity sensor that an object was proximate, and, in turn, reduced power to the display.

MediaTek Exhibit 1015, Page 28 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554

	 By way of further example only, the Android Developer Code provides files that describe the proximity sensor's signaling to the microprocessor:

MediaTek Exhibit 1015, Page 29 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY

`public static final int TYPE_PROXIMITY`

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor — added in API level 21

`public boolean isWakeUpSensor ()`

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 30 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554

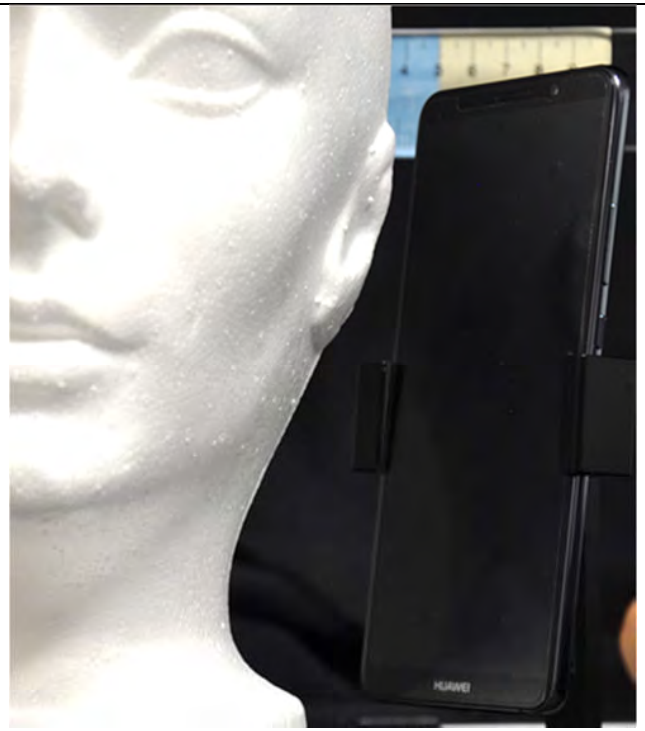
	Non-wake-up sensors Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually: • Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case. • Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost. **Wake-up sensors** In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details. *See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.*

MediaTek Exhibit 1015, Page 31 of 560

(d) reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists.	The microprocessor of the Huawei Mate 10 Pro is adapted to reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists. By way of example only, the first image shows that the Huawei Mate 10 Pro is proximate to an object, but no call has been initiated or answered, so the display is powered normally.  The second image shows that, after the call button is pressed and the ear is proximate to the Huawei Mate 10 Pro, power to the display is reduced and the display is darkened.

MediaTek Exhibit 1015, Page 32 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554

	 The third image shows that when the first condition does not exist (e.g., the ear is no longer proximate) even when a call has been initiated or answered, power to the display is not reduced and the display is powered normally.

MediaTek Exhibit 1015, Page 33 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554

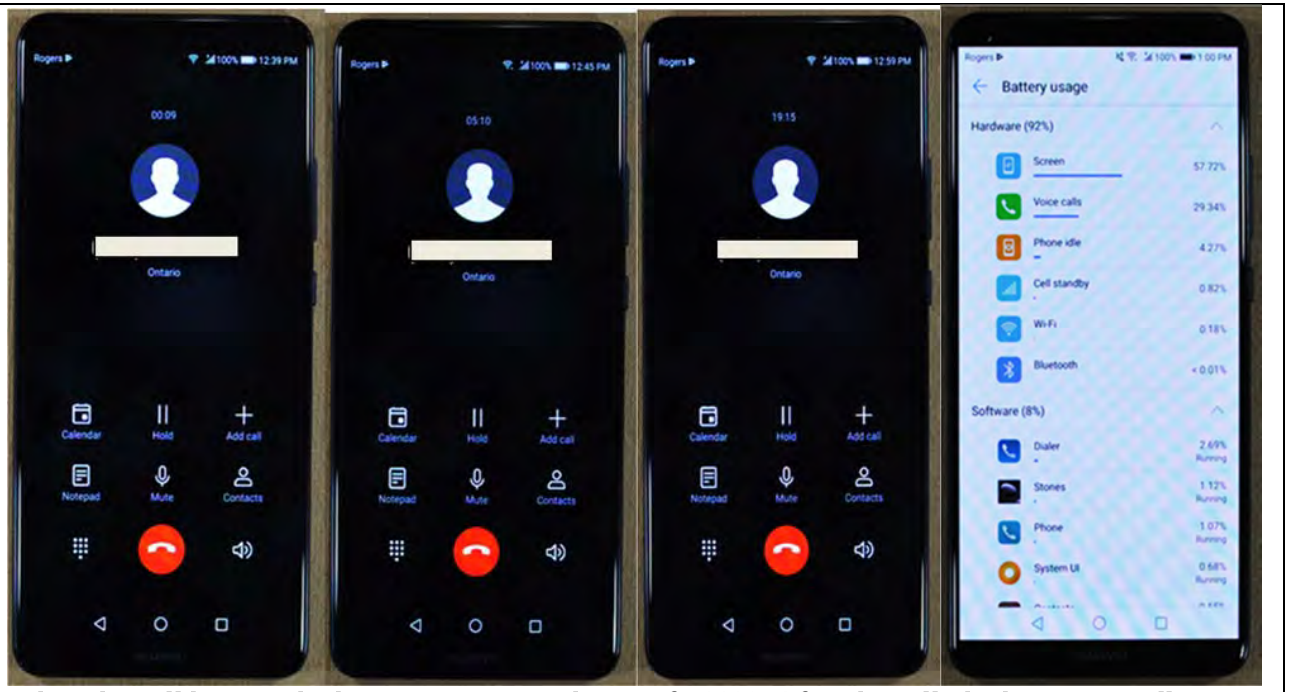


The power reduction is further shown by the difference in battery power consumption when the display is powered normally as compared to when the display is darkened during a call.

By way of example only, the following series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which no object was proximate, and the display remained powered normally.

MediaTek Exhibit 1015, Page 34 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554



When the call begins, the battery starts at a charge of 100%. After the call, the battery is still at 100%. The screen consumed 57.72% of the battery usage.

The next series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which an object was proximate and power to the display was reduced during the call.

MediaTek Exhibit 1015, Page 35 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554



When the call begins, the battery starts at a charge of 100%. After the call, the battery is still at 100%. The screen consumed 8.31% of the battery usage.

By way of example only and as shown above in claim 1(iv)(a), the microprocessor is able to determine whether a call is active.

By way of further example, the Android Developer Code Website describes the operation of a proximity sensor in order to reduce power to the display if a call is active and an object is proximate:

MediaTek Exhibit 1015, Page 36 of 560

	TYPE_PROXIMITY | Hardware | Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear. | Phone position during a call.
	
	See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.
	
	In addition, the Android Developer Code Website provides the following exemplary code at least substantially similar to Huawei code for using the proximity sensor "to determine how far away a person's head is from the face of a handset device (or example, when a user making or receiving a phone call)."
	
	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 37 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 38 of 560

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

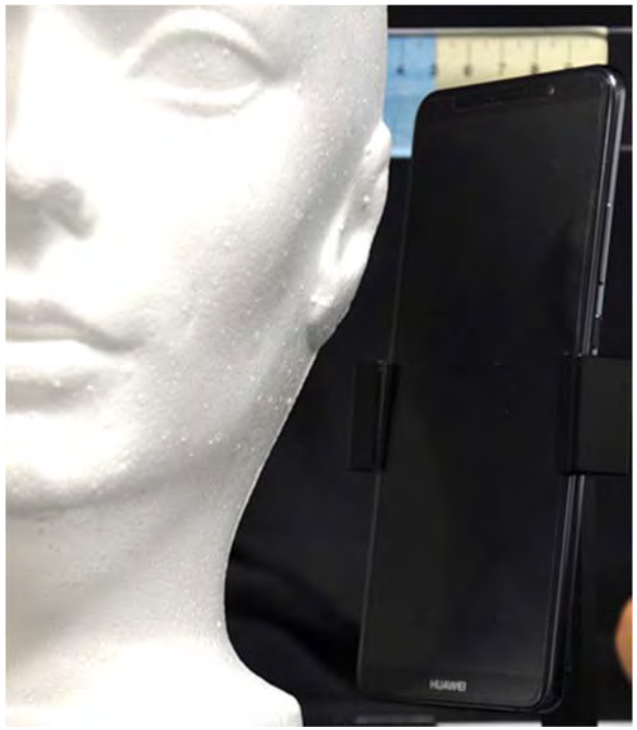
2. The mobile station of claim 1,	*See* claim 1.

MediaTek Exhibit 1015, Page 39 of 560

further comprising increasing power to the display if the signal from the activated proximity sensor indicates that the first condition no longer exists.	The microprocessor of the Huawei Mate 10 Pro increases power to the display if the signal from the activated proximity sensor indicates that the first condition no longer exists. By way of example only and as shown above in claim 1(iv)(a), the microprocessor is able to determine whether a call is active. By way of example only, the first image shows that the Huawei Mate 10 Pro is proximate to an object, but no call has been initiated or answered, so the display is powered normally.  The second image shows that, after the call button is pressed and the ear is proximate to the Huawei Mate 10 Pro, power to the display is reduced and the display is darkened.

MediaTek Exhibit 1015, Page 40 of 560

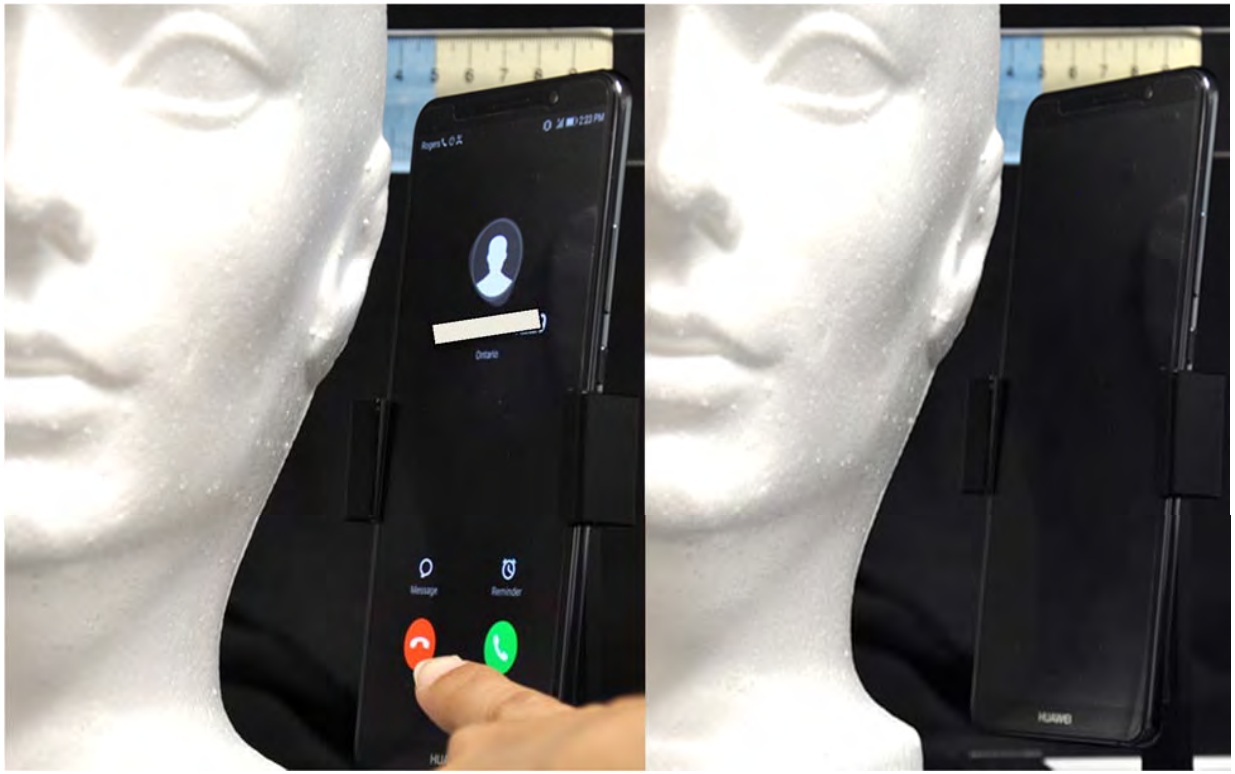
Exhibit B-1–Infringement of U.S. Patent No. 8,204,554

	 The third image shows that when the first condition does not exist (e.g., the ear is no longer proximate) even when a call has been initiated or answered, power to the display is not reduced and the display is powered normally.

MediaTek Exhibit 1015, Page 41 of 560

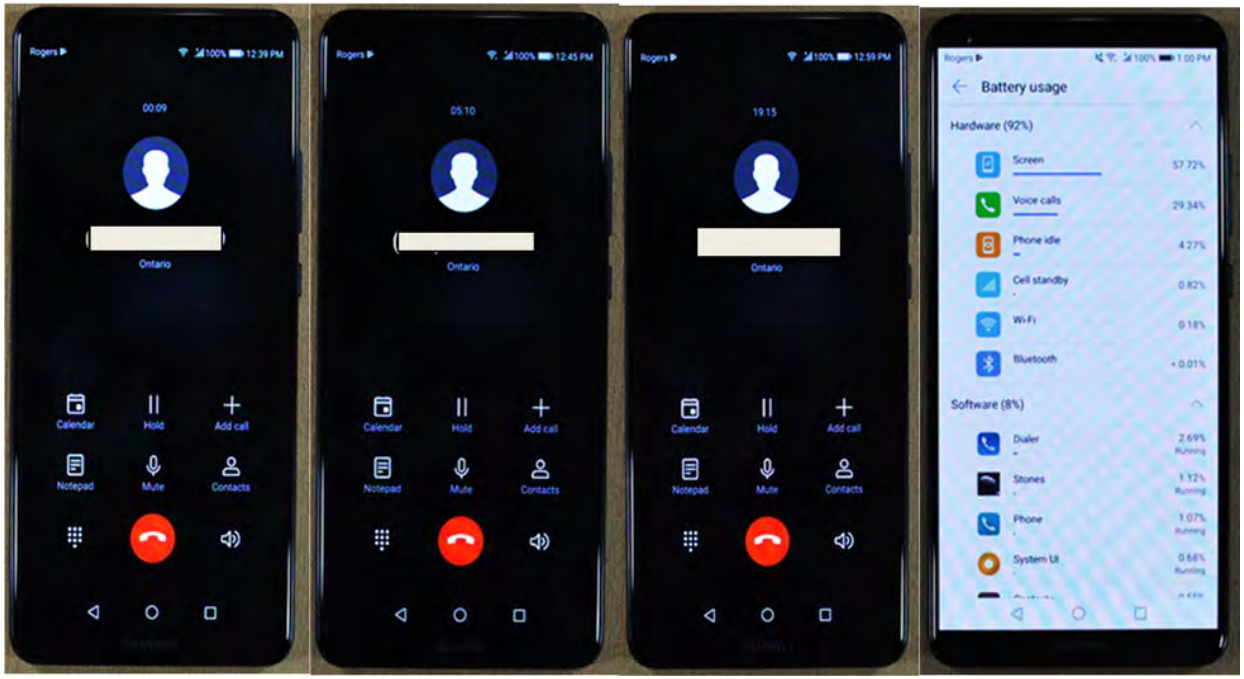
	 By way of further example, the Android Developer Code Website describes that "[t]he proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call)." *See* *https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox*, *last accessed November 30, 2018.*
4. The mobile station as recited in claim 1,	*See* claim 1.

MediaTek Exhibit 1015, Page 42 of 560

wherein the microprocessor reduces power to the display by turning off the display.	The microprocessor of the Huawei Mate 10 Pro reduces power to the display by turning off the display. When the call button or answer button is pressed and the ear is proximate to the Huawei Mate 10 Pro, power to the display is reduced and the display is turned off.  The power reduction is further shown by the difference in battery power consumption when the display is powered normally as compared to when the display is darkened during a call.

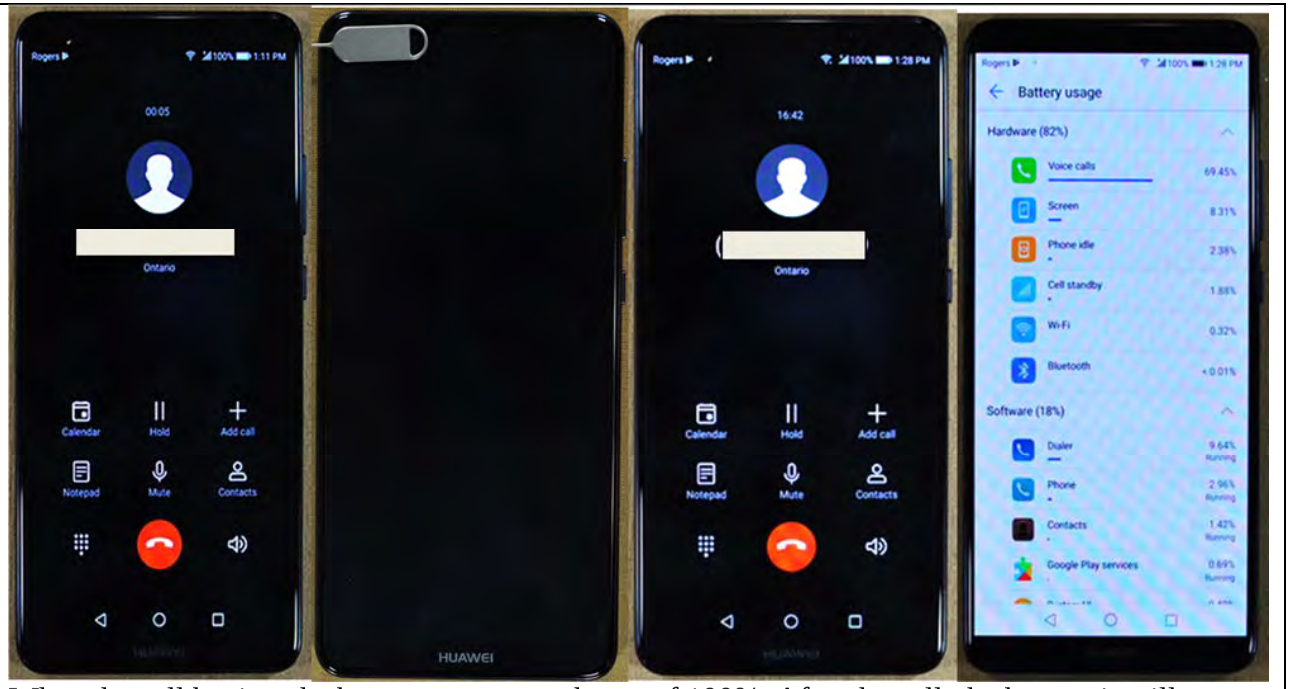
MediaTek Exhibit 1015, Page 43 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554

	By way of example only, the following series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which no object was proximate, and the display remained powered normally  When the call begins, the battery starts at a charge of 100%. After the call, the battery is still at 100%. The screen consumed 57.72% of the battery usage. The next series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which an object was proximate and power to the display was reduced during the call.

MediaTek Exhibit 1015, Page 44 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554



When the call begins, the battery starts at a charge of 100%. After the call, the battery is still at 100%. The screen consumed 8.31% of the battery usage.

By way of further example only, the Android Developer Code Website describes the proximity sensor's signaling to the microprocessor, which would turn off power to the display if a call is active and an object is proximate:

MediaTek Exhibit 1015, Page 45 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY

`public static final int TYPE_PROXIMITY`

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor — added in API level 21

`public boolean isWakeUpSensor ()`

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 46 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

See also:

Sensor	Type	Description	Common Uses
`TYPE_PROXIMITY`	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

MediaTek Exhibit 1015, Page 47 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554

Use the proximity sensor

The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:

KOTLIN JAVA

```
private lateinit var mSensorManager: SensorManager
private var mSensor: Sensor? = null
...
mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
```

The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 48 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 49 of 560

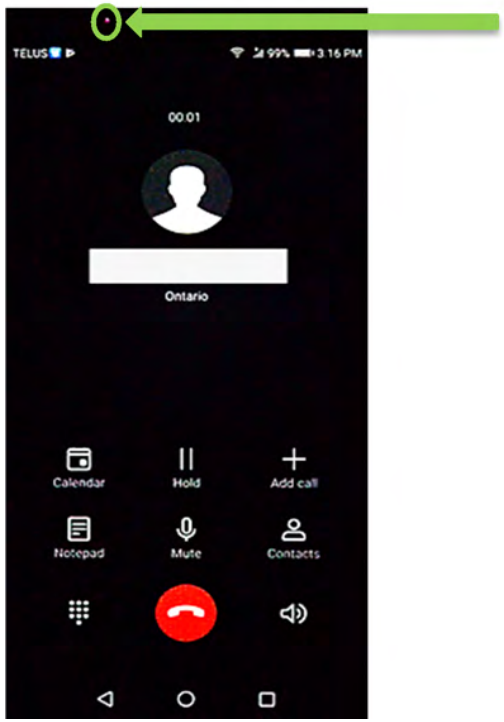
Exhibit B-1–Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

5. The mobile station as recited in claim 1,	*See* claim 1.
wherein the proximity sensor is a mechanical proximity sensor, an optical sensor, or a range-detecting sensor.	The proximity sensor of the Huawei Mate 10 Pro is a range-detecting sensor.

MediaTek Exhibit 1015, Page 50 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554

	The proximity sensor detects the range of a proximate object:  *The optical range sensing proximity sensor emits Inf Red light senses the reflection to determine if external objects are proximate* By way of example only, when an incoming call is answered, and the device is not proximate to the object, approximately 7 cm from the object the display is on. The mobile station is moved proximate to the ear, approximately 4cm the display is off.

MediaTek Exhibit 1015, Page 51 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554





By way of further example, the Android Developer Code Website describes range detection in proximity sensors:

TYPE_PROXIMITY	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

And also, the code shows distance measurement:

MediaTek Exhibit 1015, Page 52 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.
	
	The Android Developer Code Website further explains:
	
	★ **Note:** Some proximity sensors return binary values that represent "near" or "far." In this case, the sensor usually reports its maximum range value in the far state and a lesser value in the near state. Typically, the far value is a value > 5 cm, but this can vary from sensor to sensor. You can determine a sensor's maximum range by using the `getMaximumRange()` method.
	
	See id.

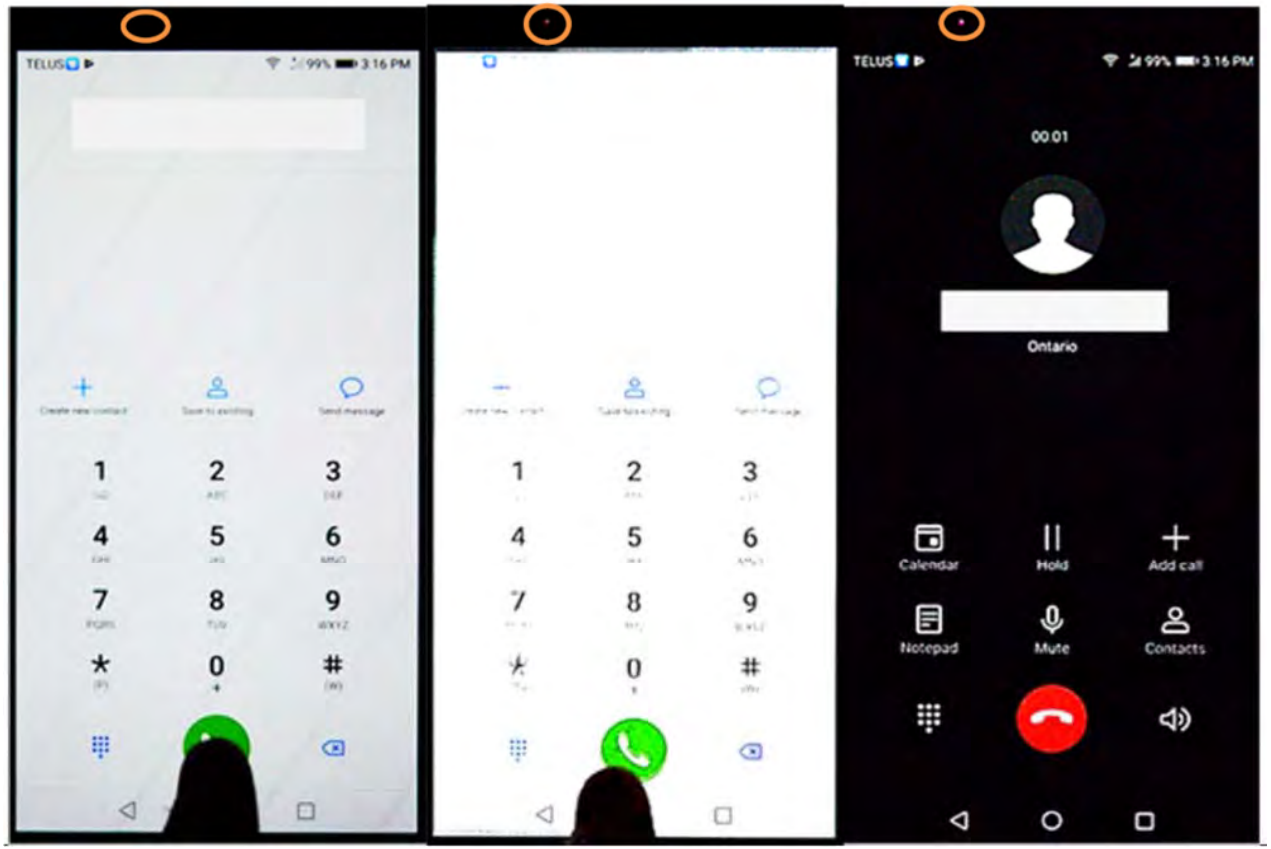
MediaTek Exhibit 1015, Page 53 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554

7. The mobile station as recited in claim 1,	*See* claim 1.
wherein the proximity sensor begins detecting whether an external object is proximate substantially concurrently with the mobile station initiating an outgoing telephone call.	The proximity sensor of the Huawei Mate 10 Pro begins detecting whether an external object is proximate substantially concurrently with the mobile station initiating an outgoing telephone call. The first image shows that when the user is about to initiate the call, at that point the proximity sensor is not activated. The second image shows the call initiated and the proximity sensor is activated. Third image shows the proximity sensor remains activated during the remainder of the call.

MediaTek Exhibit 1015, Page 54 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554



In addition, by way of further example only, the Android Developer Code Website shows how the proximity sensor is used to detect proximity substantially concurrently with initiating or receiving a call, including by providing exemplary code at least substantially similar to Huawei code:

MediaTek Exhibit 1015, Page 55 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554

Use the proximity sensor

The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:

KOTLIN JAVA

```
private lateinit var mSensorManager: SensorManager
private var mSensor: Sensor? = null
...
mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
```

The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 56 of 560

Exhibit B-1–Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 57 of 560

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*

8. A method of conserving battery power in a mobile station, the mobile station adapted to detect the existence of a proximity condition, the proximity condition being that an external object is proximate, the method comprising:	To the extent that the preamble is found to be limiting, *see* claim 1(preamble); 1[ii]-[iii]; 1(b)-(d).
the mobile station detecting the existence of an initiated call condition or an answered-call	The Huawei Mate 10 Pro detects the existence of an initiated call condition or an answered-call condition independent and different from the proximity condition, the initiated-call condition being

MediaTek Exhibit 1015, Page 58 of 560

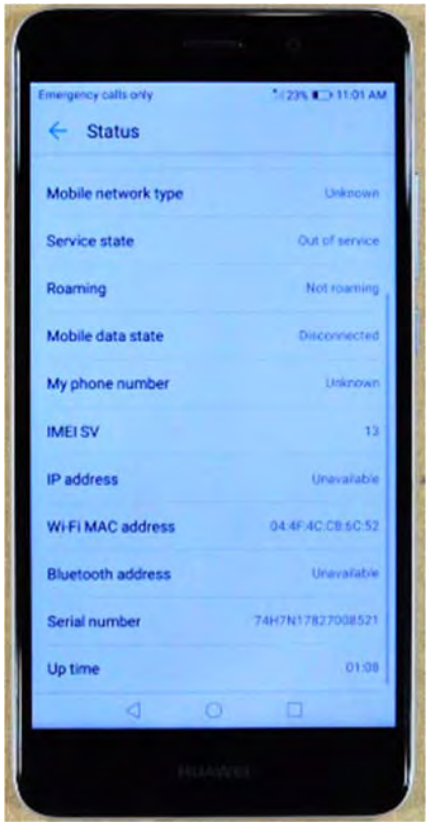
condition independent and different from the proximity condition, the initiated-call condition being that a user of the mobile station has performed an action to initiate a call, and the answered-call condition being that a user of the mobile station has performed an action to answer a call;	that a user of the mobile station has performed an action to initiate a call, and the answered-call condition being that a user of the mobile station has performed an action to answer a call. *See* claim 1(a).
the mobile station activating the proximity sensor in response to a determination that an answered-call condition or initiated-call condition exists; and	The Huawei Mate 10 Pro activates the proximity sensor in response to a determination that an answered-call condition or initiated-call condition exists. *See* claim 1(b).
the mobile station reducing power consumption of a display of the mobile station if the activated proximity sensor indicates that the proximity condition exists.	The Huawei Mate 10 Pro reduces power consumption of a display of the mobile station if the activated proximity sensor indicates that the proximity condition exists. *See* claim 1(c)-(d).
14. A mobile station, comprising:	*See* claim 1(preamble).
a display;	*See* claim 1[i].
a proximity sensor	*See* claim 1[ii].
adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate;	*See* claim 1[iii].

MediaTek Exhibit 1015, Page 59 of 560

and a microprocessor adapted to:	*See* claim[iv].
(a) determine, independently of the determination whether the external object is proximate, the existence of a second condition different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;	The microprocessor of the Huawei Mate 10 Pro is adapted to determine, independently of the determination whether the external object is proximate, the existence of a second condition different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call. *See* claim 1(a).
(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor,	*See* claim 1(b).
(c) receive the signal from the activated proximity sensor, and	*See* claim 1(c).
(d) reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists.	*See* claim 1(d).

MediaTek Exhibit 1015, Page 60 of 560

Exhibit B-2 – Infringement of U.S. Patent No. 8,204,554

Asserted Claim Elements	Huawei Ascend XT2
1. A mobile station, comprising:	To the extent that the preamble is found to be limiting, the Huawei Ascend XT2 is a mobile station.  

MediaTek Exhibit 1015, Page 61 of 560

Exhibit B-2 – Infringement of U.S. Patent No. 8,204,554

[i] a display;	The Huawei Ascend XT2 includes a display.  *See http://consumer-tkb.huawei.com/ccpgw/msa/TKB/app_0000000000011227-CcpTKBKnowOut/ctkbknowout/servlet/show/knowAttachmentServlet?knowId=en-us00350616, last accessed Nov 30, 2018.*

MediaTek Exhibit 1015, Page 62 of 560

Exhibit B-2 – Infringement of U.S. Patent No. 8,204,554

[ii] a proximity sensor	The Huawei Ascend XT2 includes a proximity sensor.  *See http://consumer-tkb.huawei.com/ccpgw/msa/TKB/app_0000000000011227-CcpTKBKnowOut/ctkbknowout/servlet/show/knowAttachmentServlet?knowId=en-us00350616, last accessed Nov 30, 2018.*

MediaTek Exhibit 1015, Page 63 of 560

Exhibit B-2 – Infringement of U.S. Patent No. 8,204,554

[iii] adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate; and	The proximity sensor of the Huawei Ascend XT2 is adapted to generate a signal indicative of existence of a first condition, the first condition being that an external object is proximate. By way of example only, the Huawei Ascend XT2 is an Android phone. The Android Developer Code Website describes functioning of proximity sensors in Android phones customized and adapted by Huawei to run on their hardware. In particular, the description specifies that the proximity sensor measures the proximity of an object relative to the device: TYPE_PROXIMITY Hardware Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear. Phone position during a call. *See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.* By way of further example, the Android Developer Code Website provides files that describe the generation of a signal by the sensor. TYPE_PROXIMITY public static final int TYPE_PROXIMITY A constant describing a proximity sensor type. This is a wake up sensor. See SensorEvent.values for more details. **See also:** isWakeUpSensor() Constant Value: 8 (0x00000008) *See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.*

MediaTek Exhibit 1015, Page 64 of 560

The referenced discussion concerning the isWakeUpSensor file explains the proximity sensor (for example, whether a wake-up sensor or non-wake-up sensor) generates signals:

isWakeUpSensor

added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

In addition, the Android Developer Code provides the following exemplary code at least substantially similar to Huawei code for using the proximity sensor "to determine how far away a person's head is from the face of a handset device (for example, when a user making or receiving a phone call)."

MediaTek Exhibit 1015, Page 65 of 560

Exhibit B-2 – Infringement of U.S. Patent No. 8,204,554

	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 66 of 560

Exhibit B-2 – Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

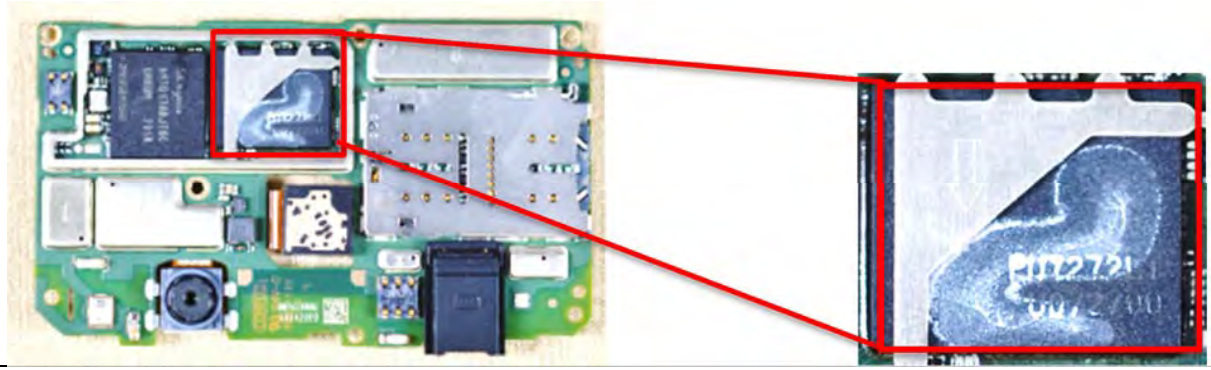
        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 67 of 560

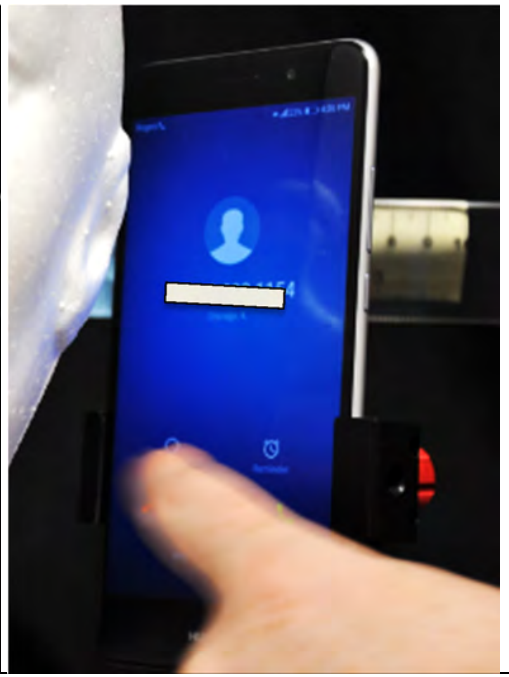
Exhibit B-2 – Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

[iv] a microprocessor adapted to:	The Huawei Ascend XT2 includes at least one microprocessor. 

MediaTek Exhibit 1015, Page 68 of 560

Exhibit B-2 – Infringement of U.S. Patent No. 8,204,554

	"**Chipset:** Qualcomm Snapdragon 435 (MSM8940) Octa-Core (4 x 1.4 GHz+4 x 1.1 GHz)" *See https://consumer.huawei.com/us/phones/ascend-xt2/specs/, last accessed Nov 30, 2018.*
(a) determine, without using the proximity sensor, the existence of a second condition independent and different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;	The microprocessor of the Huawei Ascend XT2 is adapted to determine, without using the proximity sensor, the existence of a second condition independent and different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call. The microprocessor is able to determine when the user initiates an outgoing call or answers an incoming call.  

MediaTek Exhibit 1015, Page 69 of 560

	By way of example only, the Huawei Ascend XT2 is an Android phone. The Huawei Ascend XT2's microprocessor uses code substantially similar to the code described and excerpted below to (1) determine when the user initiates an outgoing call or (2) determine when the user answers an incoming call;
	
	Outgoing Call:
	
	`/**`
	`* Broadcast receiver to detect the outgoing calls.`
	`*/`
	`public class OutgoingReceiver extends BroadcastReceiver {`
	`public OutgoingReceiver() {`
	`}`
	
	`@Override`
	`public void onReceive(Context context, Intent intent) {`
	`String number = intent.getStringExtra(Intent.EXTRA_PHONE_NUMBER);`
	
	`Toast.makeText(ctx,`
	`"Outgoing: "+number,`
	`Toast.LENGTH_LONG).show();`
	`}`
	`}`
	
	In the above, the system sends a broadcast action `android.intent.action.NEW_OUTGOING_CALL`.
	
	Incoming Call:

MediaTek Exhibit 1015, Page 70 of 560

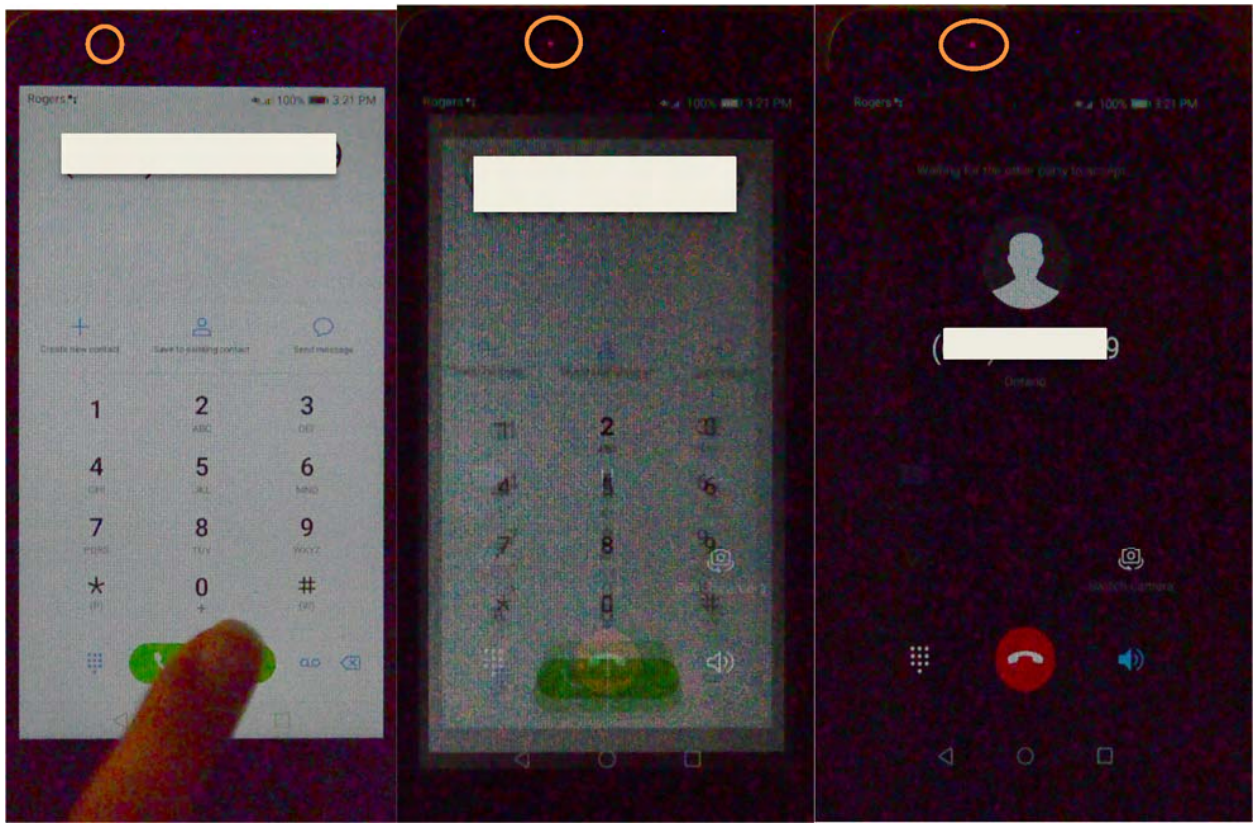
Exhibit B-2 – Infringement of U.S. Patent No. 8,204,554

	``
	/**
	* Listener to detect incoming calls.
	*/
	private class CallStateListener extends PhoneStateListener {
	  @Override
	  public void onCallStateChanged(int state, String incomingNumber) {
	  switch (state) {
	  case TelephonyManager.CALL_STATE_RINGING:
	  // called when someone is ringing to this phone
	
	  Toast.makeText(ctx,
	  "Incoming: "+incomingNumber,
	  Toast.LENGTH_LONG).show();
	  break;
	  }
	  }
	}
	``
	
	In the above, `state` is the call state, where it may be `CALL_STATE_RINGING`, `CALL_STATE_OFFHOOK`, or `CALL_STATE_IDLE`. Ringing is the state when someone is calling, offhook is when there is active or on hold call, and idle is when nobody is calling and there is no active call.
	
	See https://www.codeproject.com/Articles/548416/Detecting-Incoming-and-Outgoing-Phone-Calls-on-And, *last accessed December 5, 2018.*

(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor,	The microprocessor of the Huawei Ascend XT2 is adapted to, in response to a determination in step (a) that the second condition exists, activate the proximity sensor. The first image shows that when the user is about to initiate the call, at that point the proximity sensor is not activated. The second image shows the call initiated and the proximity sensor is activated. Third image shows the proximity sensor remains activated during the remainder of the call.

MediaTek Exhibit 1015, Page 71 of 560

Exhibit B-2 – Infringement of U.S. Patent No. 8,204,554

MediaTek Exhibit 1015, Page 72 of 560

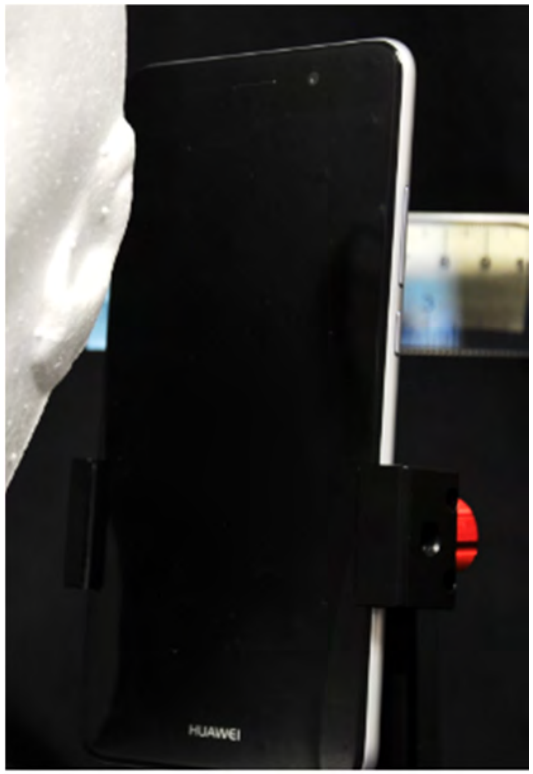
	By way of example only and as shown above in claim 1(iv)(a), the microprocessor is able to determine whether a call is active according to the second condition.
	
	The microprocessor activates the proximity sensor. By way of example only, the Android Developer Code Website describes examples of proximity sensor activation and use:
	
	TYPE_PROXIMITY
	`public static final int TYPE_PROXIMITY`
	A constant describing a proximity sensor type. This is a wake up sensor.
	See `SensorEvent.values` for more details.
	See also:
	`isWakeUpSensor()`
	Constant Value: 8 (0x00000008)
	
	See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.
	
	The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

MediaTek Exhibit 1015, Page 73 of 560

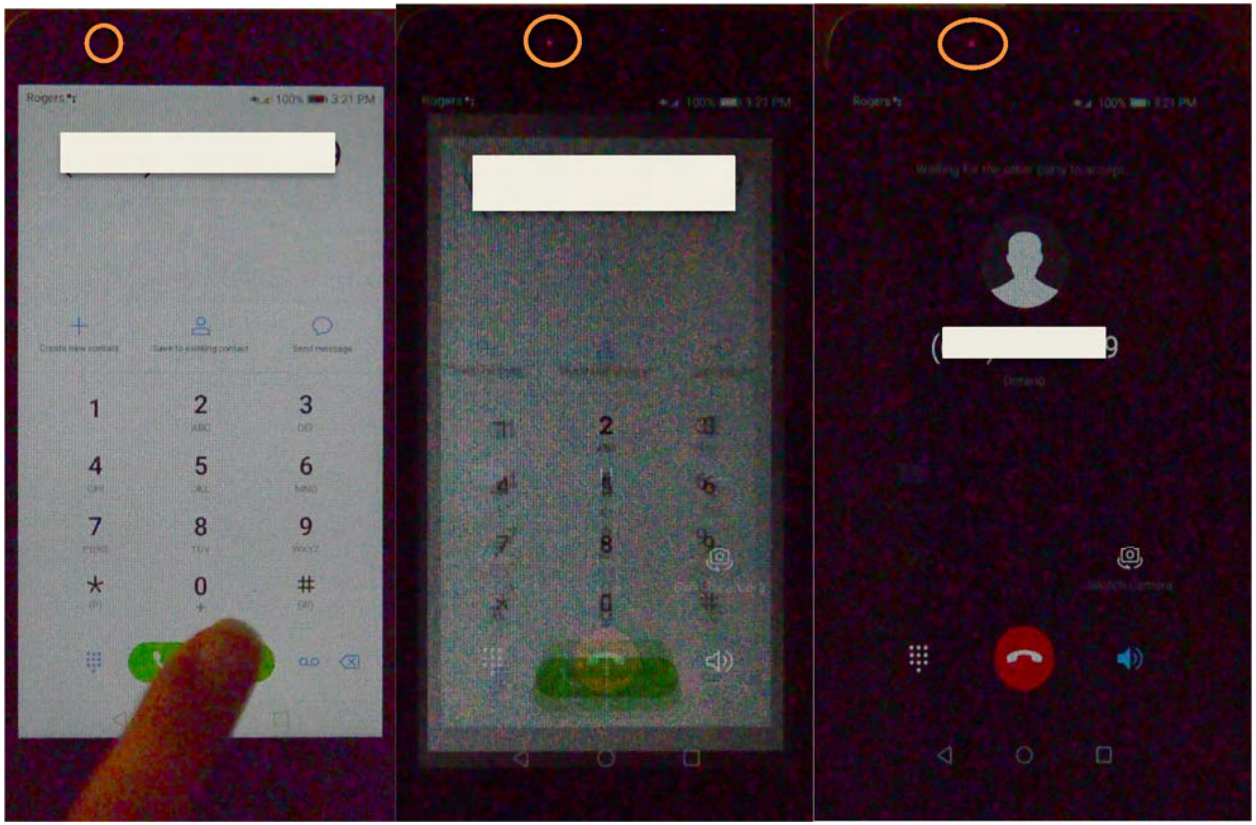
Exhibit B-2 – Infringement of U.S. Patent No. 8,204,554

	isWakeUpSensor added in API level 21 `public boolean isWakeUpSensor ()` Returns true if the sensor is a wake-up sensor. **Application Processor Power modes** Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more. **Non-wake-up sensors** Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually: • Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case. • Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost. **Wake-up sensors** In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details. *See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.* In the Huawei Ascend XT2, when the call button or answer button is pressed, the display darkens, indicating that the proximity sensor is activated.
(c) receive the signal from the activated proximity sensor, and	The microprocessor of the Huawei Ascend XT2 is adapted to receive the signal from the activated proximity sensor.

MediaTek Exhibit 1015, Page 74 of 560

(d) reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists.	The microprocessor of the Huawei Ascend XT2 is adapted to reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists. When the call button or answer button is pressed according to the above, the display darkens, indicated that the microprocessor received the signal from the activated proximity sensor that an object was proximate, and, in turn, reduced power to the display.  The first image shows that when the user is about to initiate the call, at that point the proximity sensor is not activated. The second image shows the call initiated and the proximity sensor is

MediaTek Exhibit 1015, Page 75 of 560

	activated. Third image shows the proximity sensor remains activated during the remainder of the call.  By way of further example only, the Android Developer Code provides files that describe the proximity sensor's signaling to the microprocessor:

MediaTek Exhibit 1015, Page 76 of 560

TYPE_PROXIMITY

public static final int TYPE_PROXIMITY

A constant describing a proximity sensor type. This is a wake up sensor.

See SensorEvent.values for more details.

See also:

isWakeUpSensor()

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor added in API level 21

public boolean isWakeUpSensor ()

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 77 of 560

Exhibit B-2 – Infringement of U.S. Patent No. 8,204,554

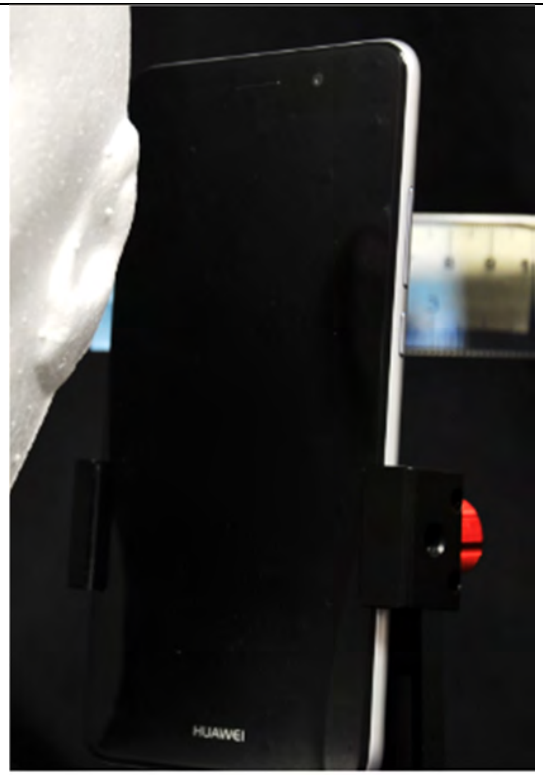
	Non-wake-up sensors Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually: • Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case. • Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost. **Wake-up sensors** In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details. *See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.*
2. The mobile station of claim 1,	*See* claim 1.

MediaTek Exhibit 1015, Page 78 of 560

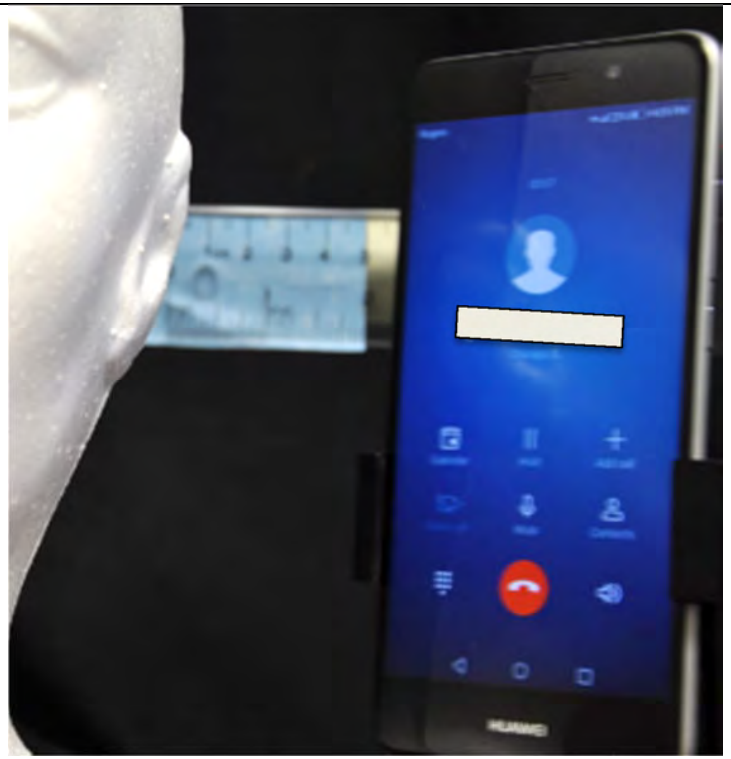
further comprising increasing power to the display if the signal from the activated proximity sensor indicates that the first condition no longer exists.	The microprocessor of the Huawei Ascend XT2 increases power to the display if the signal from the activated proximity sensor indicates that the first condition no longer exists. By way of example only and as shown above in claim 1(iv)(a), the microprocessor is able to determine whether a call is active. By way of example only, the first image shows that the Huawei Ascend XT2 is proximate to an object, but no call has been initiated or answered, so the display is powered normally.  The second image shows that, after the call button is pressed and the ear is proximate to the Huawei Ascend XT2, power to the display is reduced and the display is darkened.

MediaTek Exhibit 1015, Page 79 of 560

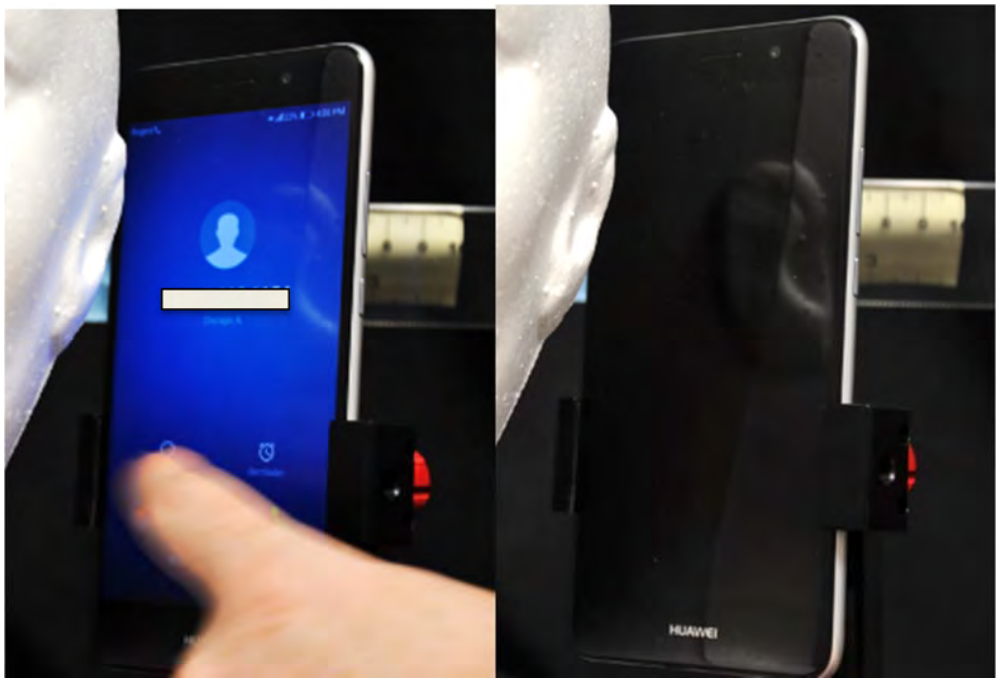
Exhibit B-2 – Infringement of U.S. Patent No. 8,204,554

	 The third image shows that when the first condition does not exist (e.g., the ear is no longer proximate) even when a call has been initiated or answered, power to the display is not reduced and the display is powered normally.

MediaTek Exhibit 1015, Page 80 of 560

	 By way of further example, the Android Developer Code Website describes that "[t]he proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call)." *See* https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 30, 2018.*
4. The mobile station as recited in claim 1,	*See* claim 1.

MediaTek Exhibit 1015, Page 81 of 560

wherein the microprocessor reduces power to the display by turning off the display.	The microprocessor of the Huawei Ascend XT2 reduces power to the display by turning off the display. When the call button or answer button is pressed and the ear is proximate to the Huawei Ascend XT2, power to the display is reduced and the display is turned off.  The power reduction is further shown by the difference in battery power consumption when the display is powered normally as compared to when the display is darkened during a call. By way of example only, the following series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which no object was proximate, and the display remained powered normally

MediaTek Exhibit 1015, Page 82 of 560

Exhibit B-2 – Infringement of U.S. Patent No. 8,204,554



When the call begins, the battery starts at a charge of 100%. After the call, the battery is at 97%. The screen consumed 49.32% of the battery.

The next series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which an object was proximate and power to the display was reduced during the call.

MediaTek Exhibit 1015, Page 83 of 560

Exhibit B-2 – Infringement of U.S. Patent No. 8,204,554



When the call begins, the battery starts at a charge of 100%. After the call, the battery is still at 100%. The screen consumed 11.27% of the battery.

By way of further example only, the Android Developer Code Website describes the proximity sensor's signaling to the microprocessor, which would turn off power to the display if a call is active and an object is proximate:

MediaTek Exhibit 1015, Page 84 of 560

TYPE_PROXIMITY

public static final int TYPE_PROXIMITY

A constant describing a proximity sensor type. This is a wake up sensor.

See SensorEvent.values for more details.

See also:

isWakeUpSensor()

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor added in API level 21

public boolean isWakeUpSensor ()

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 85 of 560

Exhibit B-2 – Infringement of U.S. Patent No. 8,204,554

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

See also:

Sensor	Type	Description	Common Uses
`TYPE_PROXIMITY`	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

MediaTek Exhibit 1015, Page 86 of 560

Exhibit B-2 – Infringement of U.S. Patent No. 8,204,554

	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 87 of 560

Exhibit B-2 – Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 88 of 560

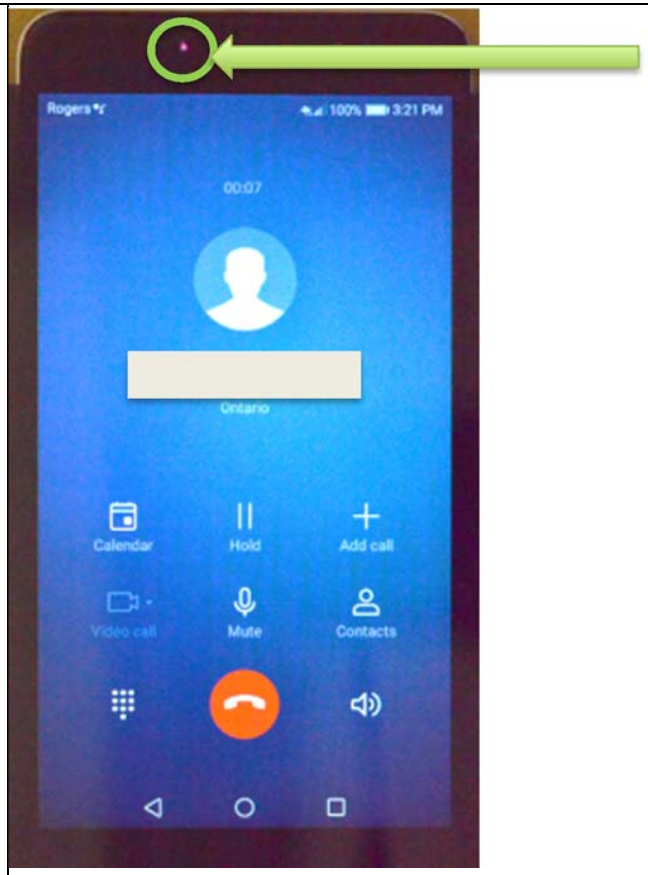
Exhibit B-2 – Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

5. The mobile station as recited in claim 1,	*See* claim 1.
wherein the proximity sensor is a mechanical proximity sensor, an optical sensor, or a range-detecting sensor.	The proximity sensor of the Huawei Ascend XT2 is a range-detecting sensor.

MediaTek Exhibit 1015, Page 89 of 560

Exhibit B-2 – Infringement of U.S. Patent No. 8,204,554



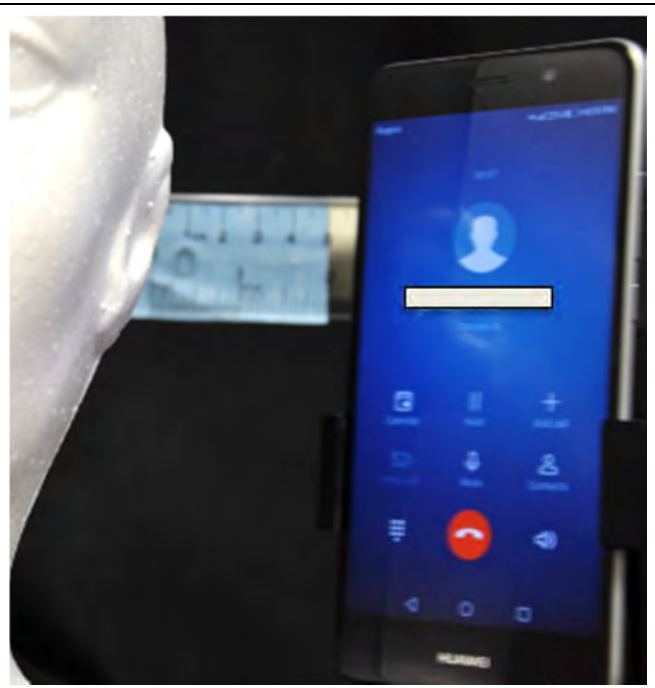
The optical range sensing proximity sensor emits Inf Red light senses the reflection to determine if external objects are proximate

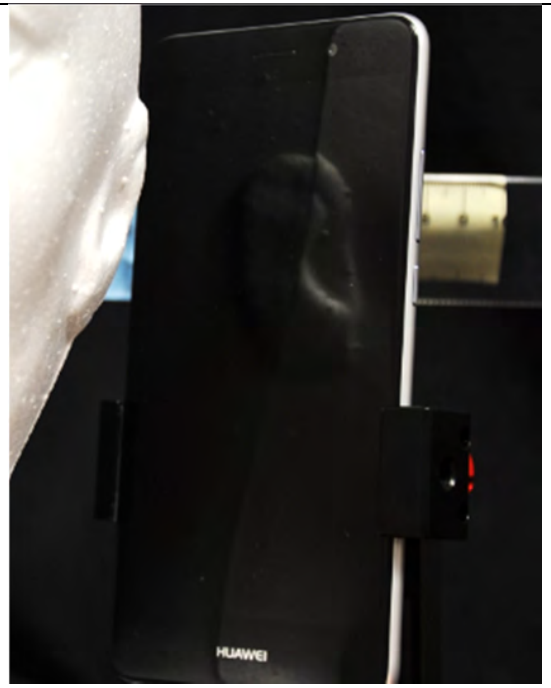
The proximity sensor detects the range of a proximate object:

By way of example only, when an incoming call is answered, and the device is not proximate to the object, approximately 7 cm from the object the display is on. The mobile station is moved proximate to the ear, approximately 4cm the display is off.

MediaTek Exhibit 1015, Page 90 of 560

Exhibit B-2 – Infringement of U.S. Patent No. 8,204,554





By way of further example, the Android Developer Code Website describes range detection in proximity sensors:

TYPE_PROXIMITY	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

And also, the code shows distance measurement:

MediaTek Exhibit 1015, Page 91 of 560

```
override fun onSensorChanged(event: SensorEvent) {
    val distance = event.values[0]
    // Do something with this sensor data.
}
```

See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

The Android Developer Code Website further explains:

> **Note:** Some proximity sensors return binary values that represent "near" or "far." In this case, the sensor usually reports its maximum range value in the far state and a lesser value in the near state. Typically, the far value is a value > 5 cm, but this can vary from sensor to sensor. You can determine a sensor's maximum range by using the `getMaximumRange()` method.

See id.

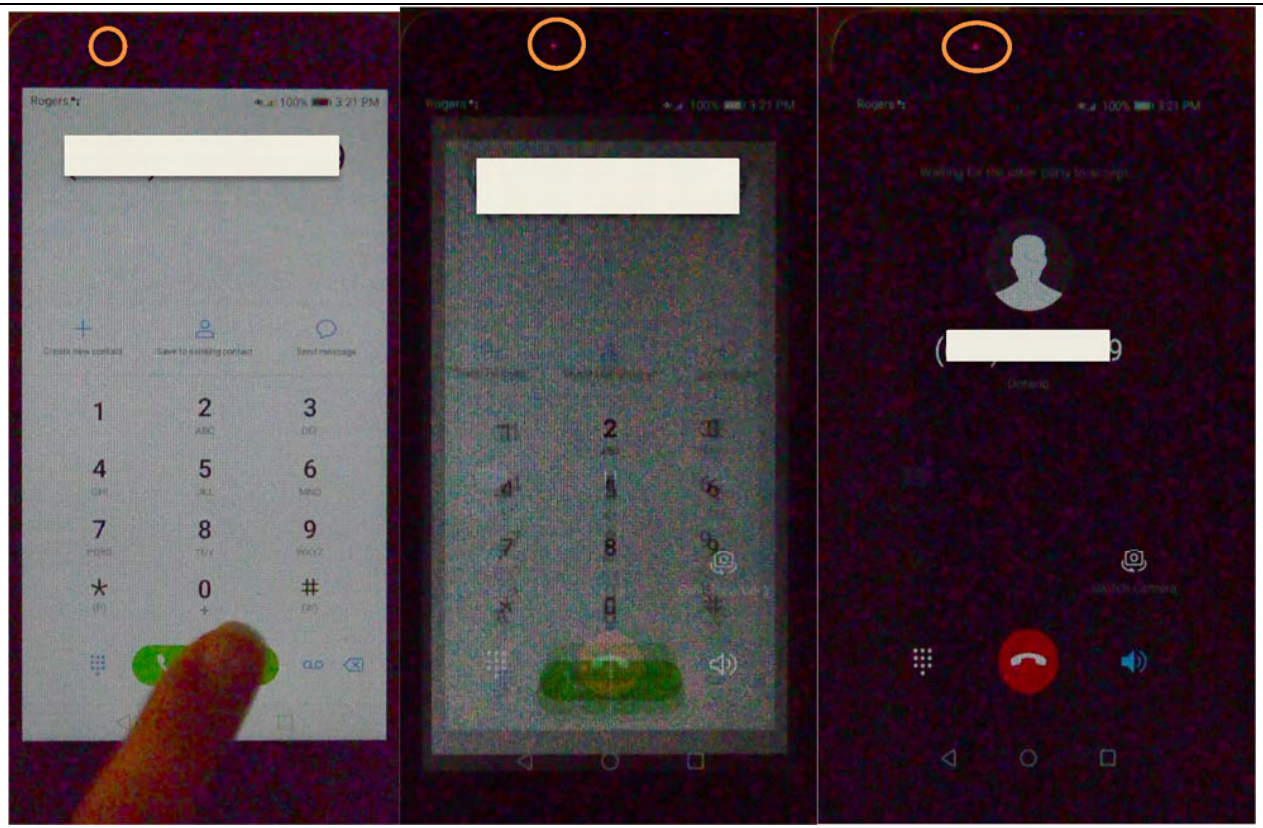
MediaTek Exhibit 1015, Page 92 of 560

Exhibit B-2 – Infringement of U.S. Patent No. 8,204,554

7. The mobile station as recited in claim 1,	*See* claim 1.
wherein the proximity sensor begins detecting whether an external object is proximate substantially concurrently with the mobile station initiating an outgoing telephone call.	The proximity sensor of the Huawei Ascend XT2 begins detecting whether an external object is proximate substantially concurrently with the mobile station initiating an outgoing telephone call. The first image shows that when the user is about to initiate the call, at that point the proximity sensor is not activated. The second image shows the call initiated and the proximity sensor is activated. Third image shows the proximity sensor remains activated during the remainder of the call.

MediaTek Exhibit 1015, Page 93 of 560

Exhibit B-2 – Infringement of U.S. Patent No. 8,204,554



In addition, by way of further example only, the Android Developer Code Website shows how the proximity sensor is used to detect proximity substantially concurrently with initiating or receiving a call, including by providing exemplary code at least substantially similar to Huawei code:

MediaTek Exhibit 1015, Page 94 of 560

Exhibit B-2 – Infringement of U.S. Patent No. 8,204,554

Use the proximity sensor

The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:

KOTLIN JAVA

```
private lateinit var mSensorManager: SensorManager
private var mSensor: Sensor? = null
...
mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
```

The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 95 of 560

Exhibit B-2 – Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 96 of 560

MediaTek Exhibit 1015, Page 97 of 560

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

8. A method of conserving battery power in a mobile station, the mobile station adapted to detect the existence of a proximity condition, the proximity condition being that an external object is proximate, the method comprising:	To the extent that the preamble is found to be limiting, *see* claim 1(preamble); 1[ii]-[iii]; 1(b)-(d).
the mobile station detecting the existence of an initiated call condition or an answered-call condition independent and different	The Huawei Ascend XT2 T detects the existence of an initiated call condition or an answered-call condition independent and different from the proximity condition, the initiated-call condition being that a user of the mobile

Exhibit B-2 – Infringement of U.S. Patent No. 8,204,554

from the proximity condition, the initiated-call condition being that a user of the mobile station has performed an action to initiate a call, and the answered-call condition being that a user of the mobile station has performed an action to answer a call;	station has performed an action to initiate a call, and the answered-call condition being that a user of the mobile station has performed an action to answer a call. *See* claim 1(a).
the mobile station activating the proximity sensor in response to a determination that an answered-call condition or initiated-call condition exists; and	The Huawei Ascend XT2 T activates the proximity sensor in response to a determination that an answered-call condition or initiated-call condition exists. *See* claim 1(b).
the mobile station reducing power consumption of a display of the mobile station if the activated proximity sensor indicates that the proximity condition exists.	The Huawei Ascend XT2 T reduces power consumption of a display of the mobile station if the activated proximity sensor indicates that the proximity condition exists. *See* claim 1(c)-(d).
14. A mobile station, comprising:	*See* claim 1(preamble).
a display;	*See* claim 1[i].
a proximity sensor	*See* claim 1[ii].
adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate;	*See* claim 1[iii].
and a microprocessor adapted to:	*See* claim[iv].

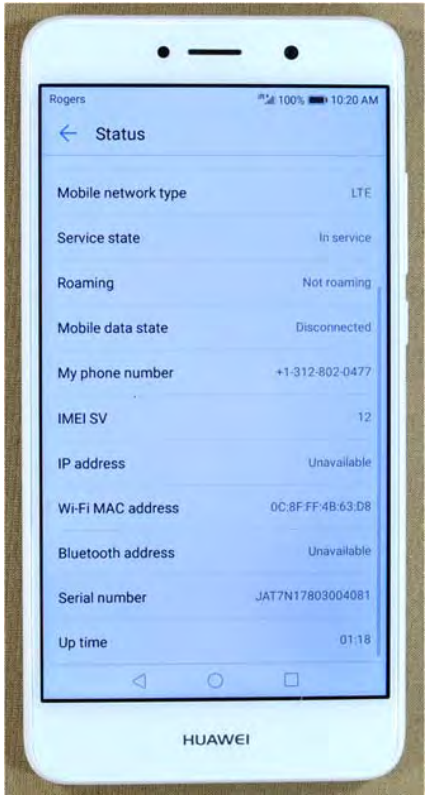
MediaTek Exhibit 1015, Page 98 of 560

Exhibit B-2 – Infringement of U.S. Patent No. 8,204,554

(a) determine, independently of the determination whether the external object is proximate, the existence of a second condition different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;	The microprocessor of the Huawei Ascend XT2 is adapted to determine, independently of the determination whether the external object is proximate, the existence of a second condition different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call. *See* claim 1(a).
(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor,	*See* claim 1(b).
(c) receive the signal from the activated proximity sensor, and	*See* claim 1(c).
(d) reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists.	*See* claim 1(d).

MediaTek Exhibit 1015, Page 99 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

Asserted Claim Elements	Huawei Elate
1. A mobile station, comprising:	To the extent that the preamble is found to be limiting, the Huawei Elate is a mobile station.  

MediaTek Exhibit 1015, Page 100 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

[i] a display;	The Huawei Elate includes a display.  *See https://www.cricketwireless.com/content/dam/aio/Support/DeviceSupport/huawei-elate/elate-user-guide.pdf, last accessed Nov 22, 2018.*

MediaTek Exhibit 1015, Page 101 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

[ii] a proximity sensor	The Huawei Elate includes a proximity sensor.  *See https://www.cricketwireless.com/content/dam/aio/Support/DeviceSupport/huawei-elate/elate-user-guide.pdf, last accessed Nov 22, 2018.*

MediaTek Exhibit 1015, Page 102 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554



See https://www.cricketwireless.com/content/dam/aio/Support/DeviceSupport/huawei-elate/elate-user-guide.pdf, p. 8 (dated 2017; last accessed Nov 22, 2018)

MediaTek Exhibit 1015, Page 103 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

[iii] adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate; and	The proximity sensor of the Huawei Elate is adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate.
	
	By way of example only, the Huawei Elate is an Android phone. The Android Developer Code Website describes functioning of proximity sensors in Android phones customized and adapted by Huawei to run on their hardware. In particular, the description specifies that the proximity sensor measures the proximity of an object relative to the device:
	
	TYPE_PROXIMITY Hardware Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear. Phone position during a call.
	
	See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.
	
	By way of further example, the Android Developer Code Website provides files that describe the generation of a signal by the sensor.
	
	TYPE_PROXIMITY
	`public static final int TYPE_PROXIMITY`
	A constant describing a proximity sensor type. This is a wake up sensor.
	See `SensorEvent.values` for more details.
	See also:
	`isWakeUpSensor()`
	Constant Value: 8 (0x00000008)
	See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

MediaTek Exhibit 1015, Page 104 of 560

The referenced discussion concerning the isWakeUpSensor file explains the proximity sensor (for example, whether a wake-up sensor or non-wake-up sensor) generates signals:

isWakeUpSensor

added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

In addition, the Android Developer Code provides the following exemplary code at least substantially similar to Huawei code for using the proximity sensor "to determine how far away a person's head is from the face of a handset device (for example, when a user making or receiving a phone call)."

MediaTek Exhibit 1015, Page 105 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 106 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 107 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

```
override fun onSensorChanged(event: SensorEvent) {
    val distance = event.values[0]
    // Do something with this sensor data.
}

override fun onResume() {
    // Register a listener for the sensor.
    super.onResume()

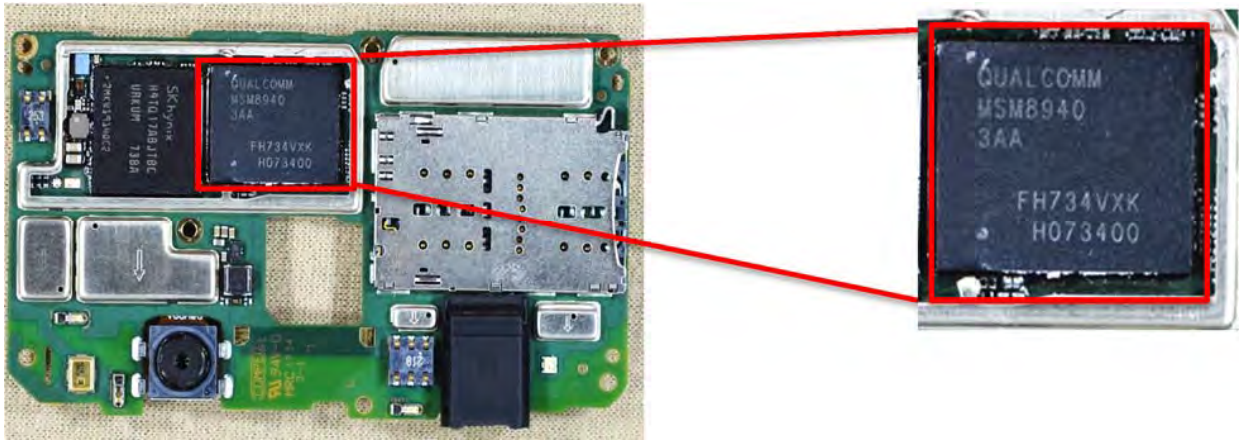
    mProximity?.also { proximity ->
        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
    }
}

override fun onPause() {
    // Be sure to unregister the sensor when the activity pauses.
    super.onPause()
    mSensorManager.unregisterListener(this)
}
```

See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

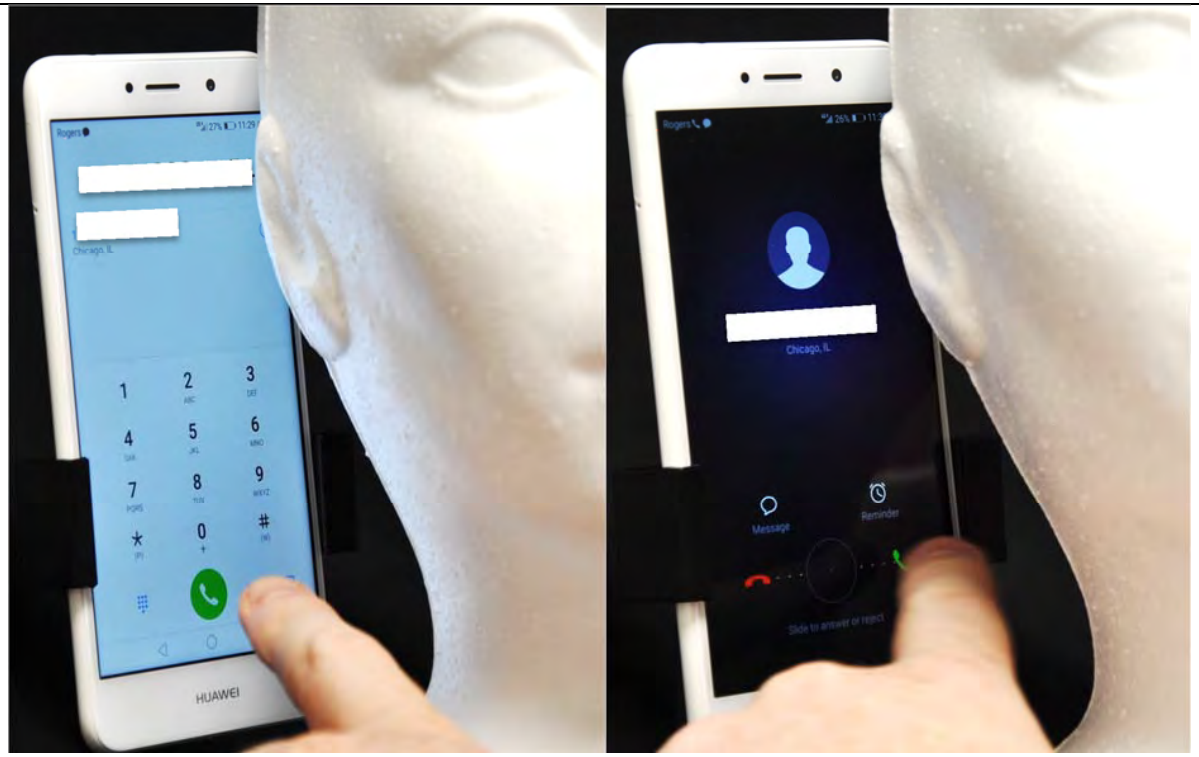
MediaTek Exhibit 1015, Page 108 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

[iv] a microprocessor adapted to:	The Huawei Elate includes at least one microprocessor.  "**Chipset:** Qualcomm Snapdragon 435 (MSM8940) Octa-Core (4 x 1.4 GHz+4 x 1.1 GHz) " *See* *https://consumer.huawei.com/us/phones/elate/specs/* (last accessed Nov 22, 2018)
(a) determine, without using the proximity sensor, the existence of a second condition independent and different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;	The microprocessor of the Huawei Elate is adapted to determine, without using the proximity sensor, the existence of a second condition independent and different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call. The microprocessor is able to determine when the user initiates an outgoing call or answers an incoming call.

MediaTek Exhibit 1015, Page 109 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554



By way of example only, the Huawei Elate is an Android phone. The Huawei Elate's microprocessor uses code substantially similar to the code described and excerpted below to (1) determine when the user initiates an outgoing call or (2) determine when the user answers an incoming call;

Outgoing Call:

MediaTek Exhibit 1015, Page 110 of 560

```
/**
* Broadcast receiver to detect the outgoing calls.
*/
public class OutgoingReceiver extends BroadcastReceiver {
     public OutgoingReceiver() {
     }

     @Override
     public void onReceive(Context context, Intent intent) {
         String number = intent.getStringExtra(Intent.EXTRA_PHONE_NUMBER);

         Toast.makeText(ctx,
           "Outgoing: "+number,
           Toast.LENGTH_LONG).show();
     }
}
```

In the above, the system sends a broadcast action `android.intent.action.NEW_OUTGOING_CALL`.

Incoming Call:

```
/**
* Listener to detect incoming calls.
*/
private class CallStateListener extends PhoneStateListener {
  @Override
  public void onCallStateChanged(int state, String incomingNumber) {
      switch (state) {
          case TelephonyManager.CALL_STATE_RINGING:
          // called when someone is ringing to this phone

          Toast.makeText(ctx,
                  "Incoming: "+incomingNumber,
                  Toast.LENGTH_LONG).show();
          break;
      }
  }
}
```

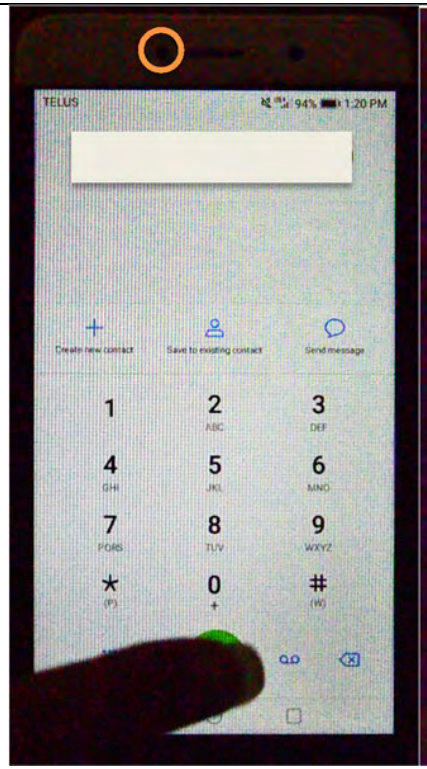
In the above, `state` is the call state, where it may be `CALL_STATE_RINGING`, `CALL_STATE_OFFHOOK`, or `CALL_STATE_IDLE`. Ringing is the state when someone is calling,

MediaTek Exhibit 1015, Page 111 of 560

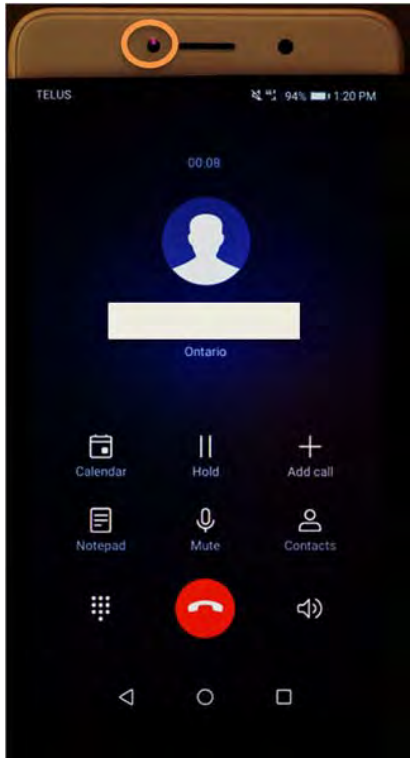
	offhook is when there is active or on hold call, and idle is when nobody is calling and there is no active call. *See https://www.codeproject.com/Articles/548416/Detecting-Incoming-and-Outgoing-Phone-Calls-on-And, last accessed December 5, 2018.*
(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor,	The microprocessor of the Huawei Elate is adapted to, in response to a determination in step (a) that the second condition exists, activate the proximity sensor. The first image shows that when the user is about to initiate the call, at that point the proximity sensor is not activated. The second image shows the call initiated and the proximity sensor is activated. Third image shows the proximity sensor remains activated during the remainder of the call.

MediaTek Exhibit 1015, Page 112 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554







By way of example only and as shown above in claim 1(iv)(a), the microprocessor is able to determine whether a call is active according to the second condition.

MediaTek Exhibit 1015, Page 113 of 560

The microprocessor activates the proximity sensor. By way of example only, the Android Developer Code Website describes examples of proximity sensor activation and use:

TYPE_PROXIMITY

`public static final int TYPE_PROXIMITY`

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor added in API level 21

`public boolean isWakeUpSensor ()`

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

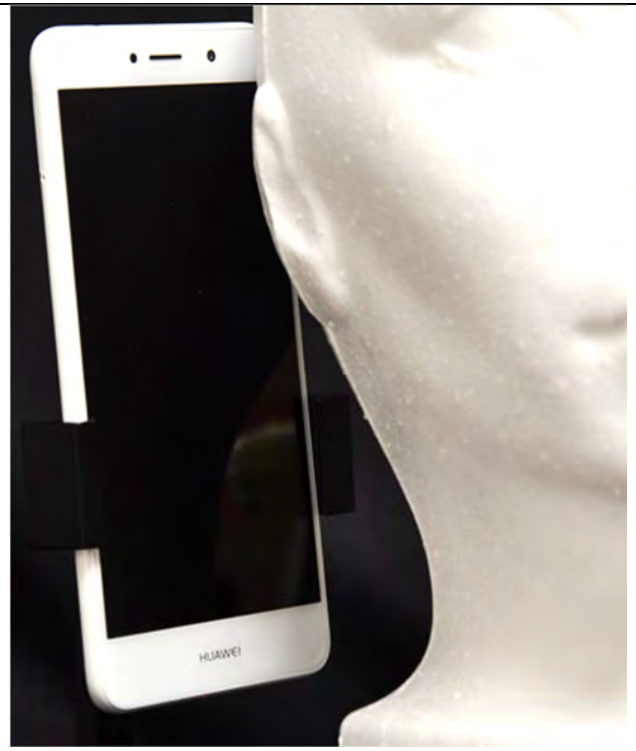
MediaTek Exhibit 1015, Page 114 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

	Non-wake-up sensors Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually: • Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case. • Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost. **Wake-up sensors** In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details. *See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.* In the Huawei Elate, when the call button or answer button is pressed, the display darkens, indicating that the proximity sensor is activated.
(c) receive the signal from the activated proximity sensor, and	The microprocessor of the Huawei Elate is adapted to receive the signal from the activated proximity sensor. When the call button or answer button is pressed according to the above, the display darkens, indicated that the microprocessor received the signal from the activated proximity sensor that an object was proximate, and, in turn, reduced power to the display.

MediaTek Exhibit 1015, Page 115 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

	 By way of further example only, the Android Developer Code provides files that describe the proximity sensor's signaling to the microprocessor:

MediaTek Exhibit 1015, Page 116 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY

`public static final int TYPE_PROXIMITY`

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor — added in API level 21

`public boolean isWakeUpSensor ()`

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

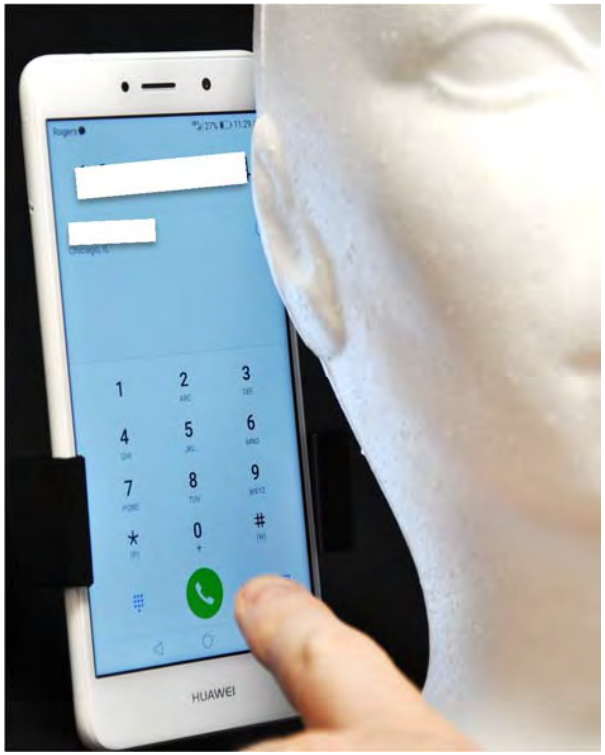
Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 117 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

	Non-wake-up sensors Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually: • Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case. • Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost. **Wake-up sensors** In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details. *See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.*

MediaTek Exhibit 1015, Page 118 of 560

(d) reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists.	The microprocessor of the Huawei Elate is adapted to reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists. By way of example only, the first image shows that the Huawei Elate is proximate to an object, but no call has been initiated or answered, so the display is powered normally.  The second image shows that, after the call button is pressed and the ear is proximate to the Huawei Elate, power to the display is reduced and the display is darkened.

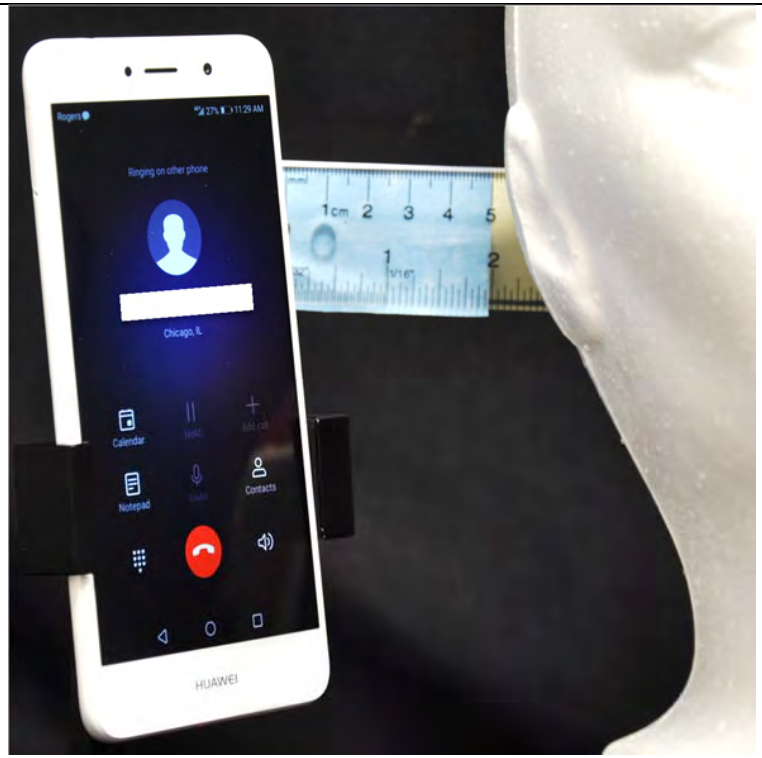
MediaTek Exhibit 1015, Page 119 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

	 The third image shows that when the first condition does not exist (e.g., the ear is no longer proximate) even when a call has been initiated or answered, power to the display is not reduced and the display is powered normally.

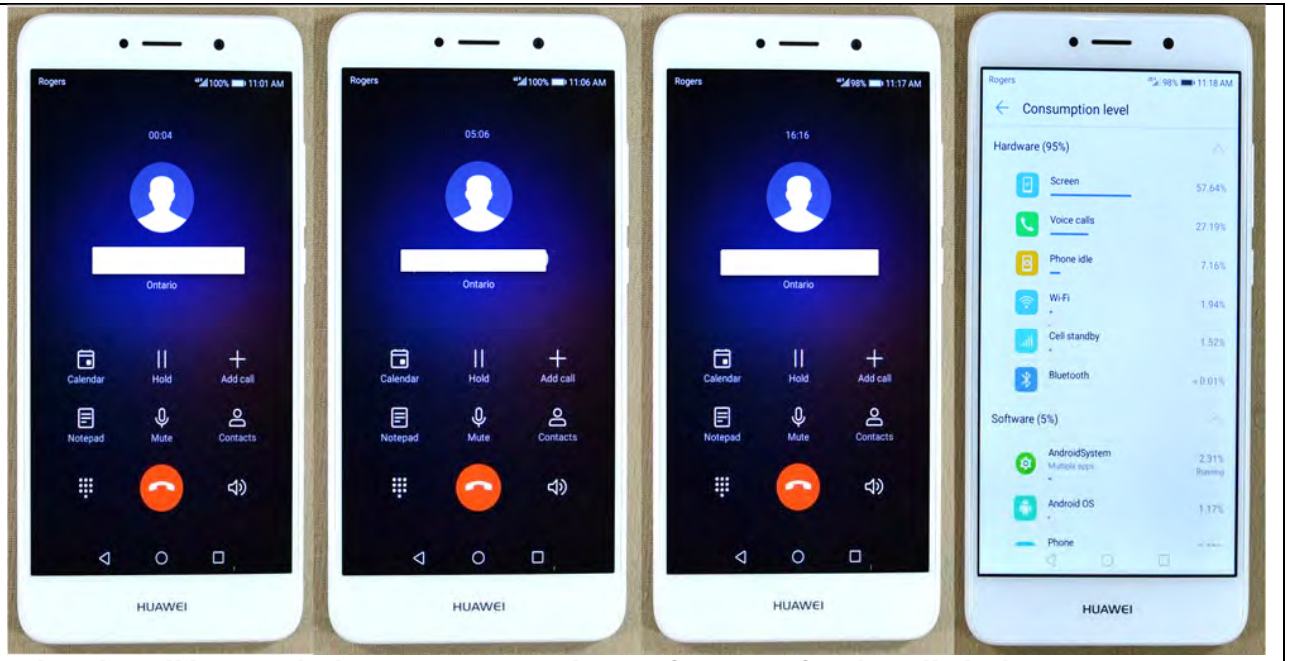
MediaTek Exhibit 1015, Page 120 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

	 The power reduction is further shown by the difference in battery power consumption when the display is powered normally as compared to when the display is darkened during a call. By way of example only, the following series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which no object was proximate, and the display remained powered normally.

MediaTek Exhibit 1015, Page 121 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554



When the call begins, the battery starts at a charge of 100%. After the call, the battery is at 98%. The screen consumed 57.64% of the battery consumption.

The next series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which an object was proximate and power to the display was reduced during the call.

MediaTek Exhibit 1015, Page 122 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554



When the call begins, the battery starts at a charge of 100%. After the call, the battery is still at 100%. The screen consumed 11.17% of the battery consumption.

By way of example only and as shown above in claim 1(iv)(a), the microprocessor is able to determine whether a call is active.

By way of further example, the Android Developer Code Website describes the operation of a proximity sensor in order to reduce power to the display if a call is active and an object is proximate:

MediaTek Exhibit 1015, Page 123 of 560

TYPE_PROXIMITY	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

In addition, the Android Developer Code Website provides the following exemplary code at least substantially similar to Huawei code for using the proximity sensor "to determine how far away a person's head is from the face of a handset device (or example, when a user making or receiving a phone call)."

Use the proximity sensor

The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:

KOTLIN JAVA

```
private lateinit var mSensorManager: SensorManager
private var mSensor: Sensor? = null
...
mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
```

The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 124 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

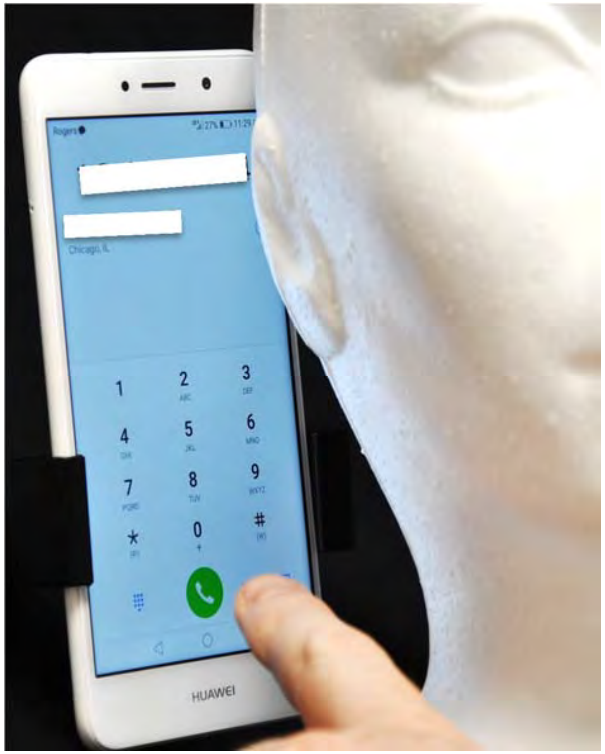
MediaTek Exhibit 1015, Page 125 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018*

2. The mobile station of claim 1,	*See* claim 1.

MediaTek Exhibit 1015, Page 126 of 560

further comprising increasing power to the display if the signal from the activated proximity sensor indicates that the first condition no longer exists.	The microprocessor of the Huawei Elate increases power to the display if the signal from the activated proximity sensor indicates that the first condition no longer exists. By way of example only and as shown above in claim 1(iv)(a), the microprocessor is able to determine whether a call is active. By way of example only, the first image shows that the Huawei Elate is proximate to an object, but no call has been initiated or answered, so the display is powered normally.  The second image shows that, after the call button is pressed and the ear is proximate to the Huawei Elate, power to the display is reduced and the display is darkened.

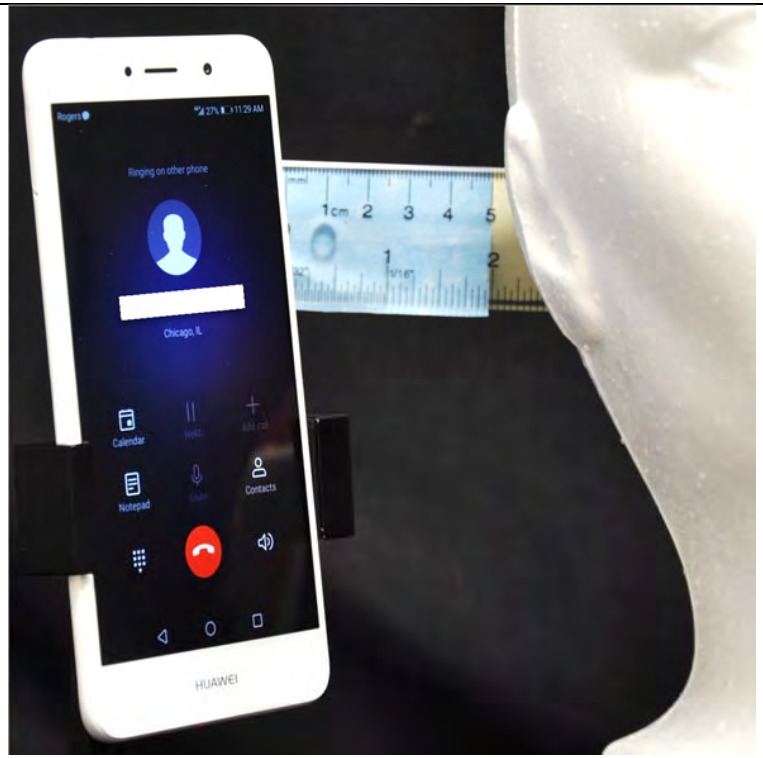
MediaTek Exhibit 1015, Page 127 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

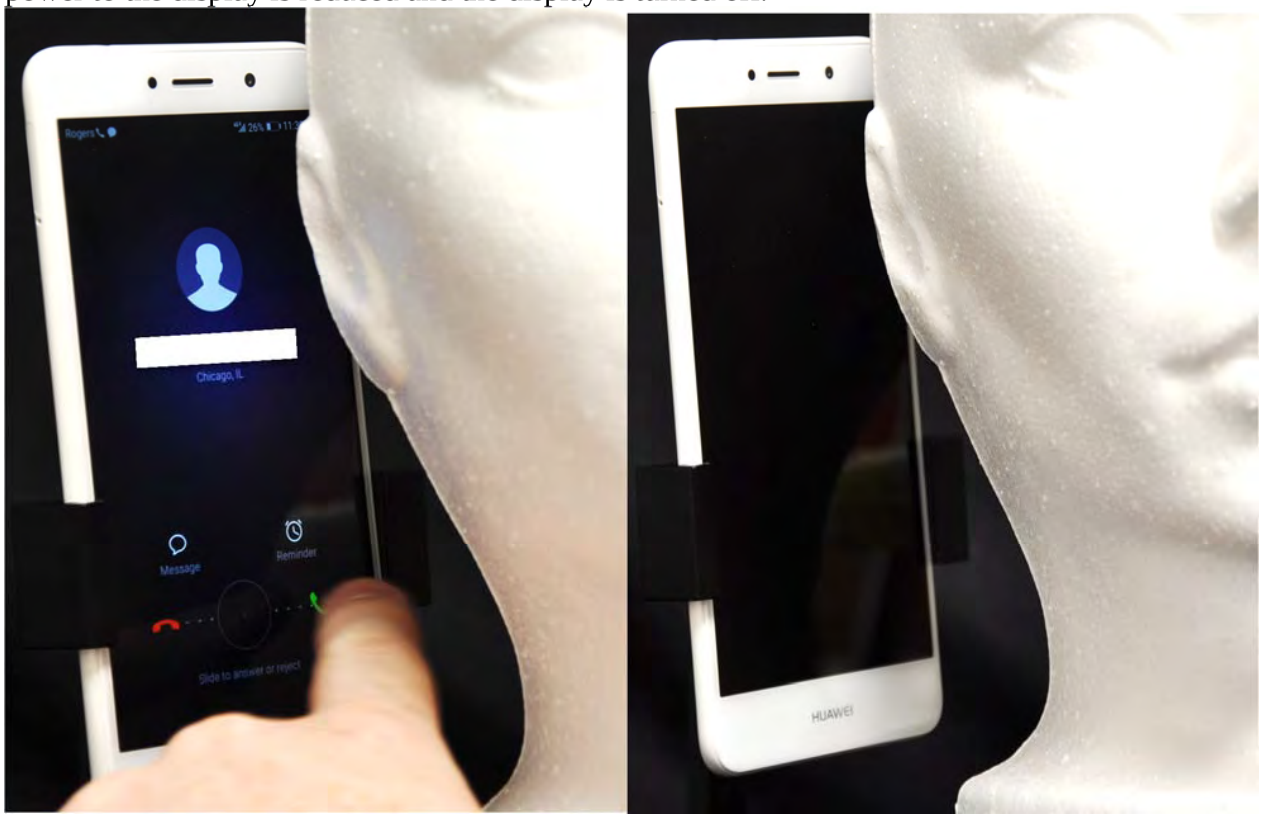
	 The third image shows that when the first condition does not exist (e.g., the ear is no longer proximate) even when a call has been initiated or answered, power to the display is not reduced and the display is powered normally.

MediaTek Exhibit 1015, Page 128 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

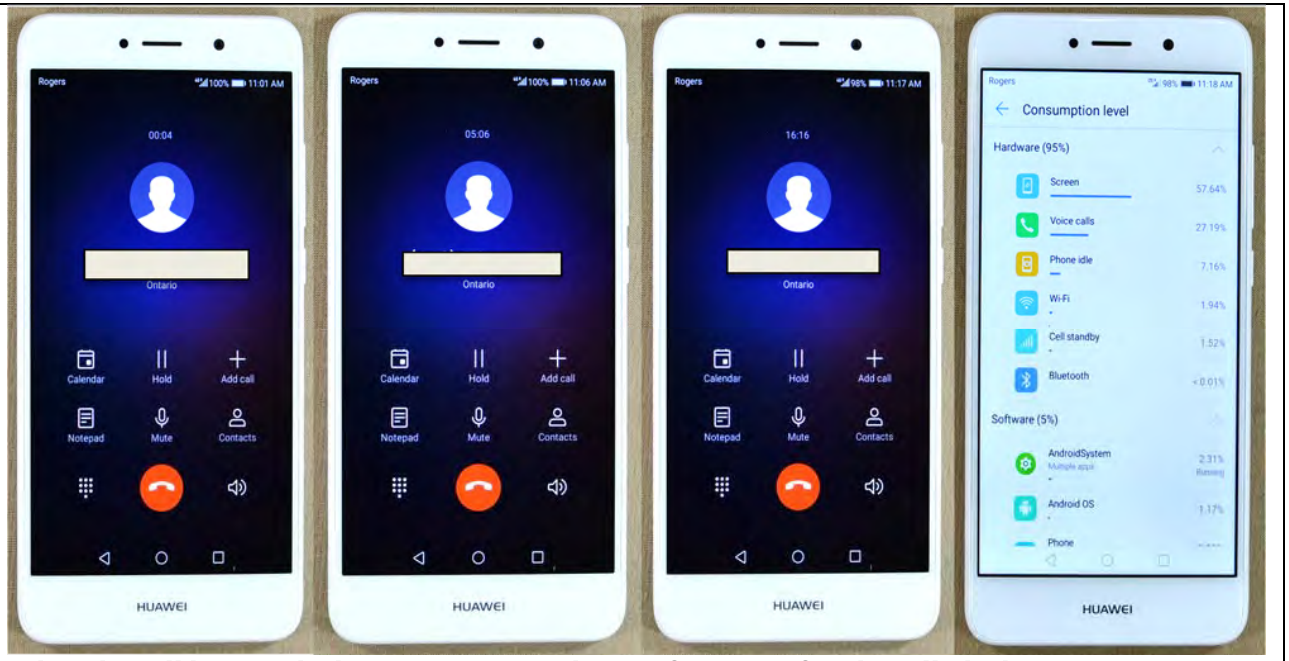
	 By way of further example, the Android Developer Code Website describes that "[t]he proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call)." *See* *https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox*, *last accessed November 30, 2018.*
4. The mobile station as recited in claim 1,	*See* claim 1.

MediaTek Exhibit 1015, Page 129 of 560

wherein the microprocessor reduces power to the display by turning off the display.	The microprocessor of the Huawei Elate reduces power to the display by turning off the display. When the call button or answer button is pressed and the ear is proximate to the Huawei Elate, power to the display is reduced and the display is turned off.  The power reduction is further shown by the difference in battery power consumption when the display is powered normally as compared to when the display is darkened during a call. By way of example only, the following series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which no object was proximate, and the display remained powered normally.

MediaTek Exhibit 1015, Page 130 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554



When the call begins, the battery starts at a charge of 100%. After the call, the battery is at 98%. The screen consumed 57.64% of the battery consumption.

The next series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which an object was proximate and power to the display was reduced during the call.

MediaTek Exhibit 1015, Page 131 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554



When the call begins, the battery starts at a charge of 100%. After the call, the battery is still at 100%. The screen consumed 11.17% of the battery consumption.

By way of further example only, the Android Developer Code Website describes the proximity sensor's signaling to the microprocessor, which would turn off power to the display if a call is active and an object is proximate:

MediaTek Exhibit 1015, Page 132 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY

`public static final int TYPE_PROXIMITY`

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor — added in API level 21

`public boolean isWakeUpSensor ()`

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 133 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

See also:

Sensor	Type	Description	Common Uses
`TYPE_PROXIMITY`	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

MediaTek Exhibit 1015, Page 134 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 135 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 136 of 560

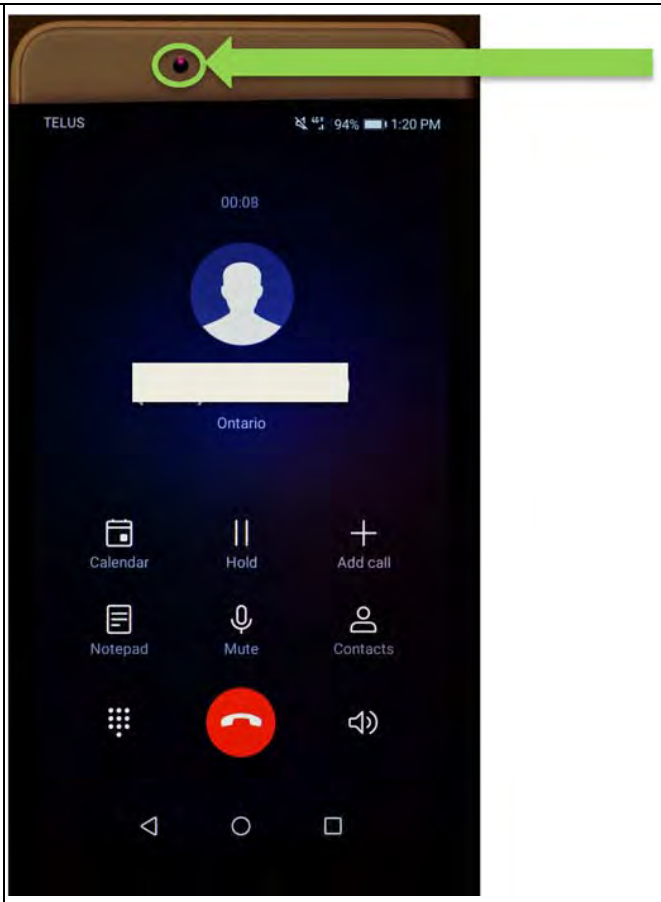
Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

5. The mobile station as recited in claim 1,	*See* claim 1.
wherein the proximity sensor is a mechanical proximity sensor, an optical sensor, or a range-detecting sensor.	The proximity sensor of the Huawei Elate is a range-detecting sensor.

MediaTek Exhibit 1015, Page 137 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

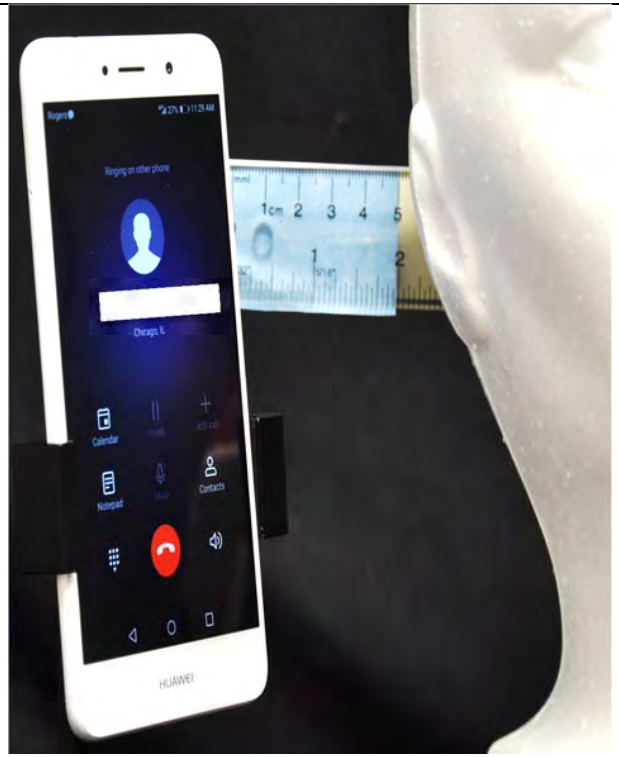


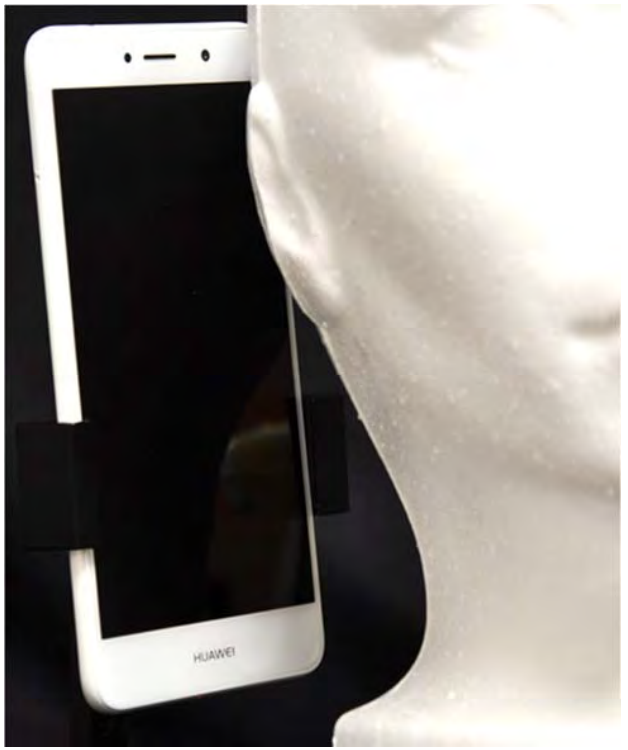
The optical range sensing proximity sensor emits Inf Red light senses the reflection to determine if external objects are proximate

The proximity sensor detects the range of a proximate object:

By way of example only, when an incoming call is answered, and the device is not proximate to the object, approximately 7 cm from the object the display is on. The mobile station is moved proximate to the ear, approximately 4cm the display is off.

MediaTek Exhibit 1015, Page 138 of 560





By way of further example, the Android Developer Code Website describes range detection in proximity sensors:

TYPE_PROXIMITY	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

And also, the code shows distance measurement:

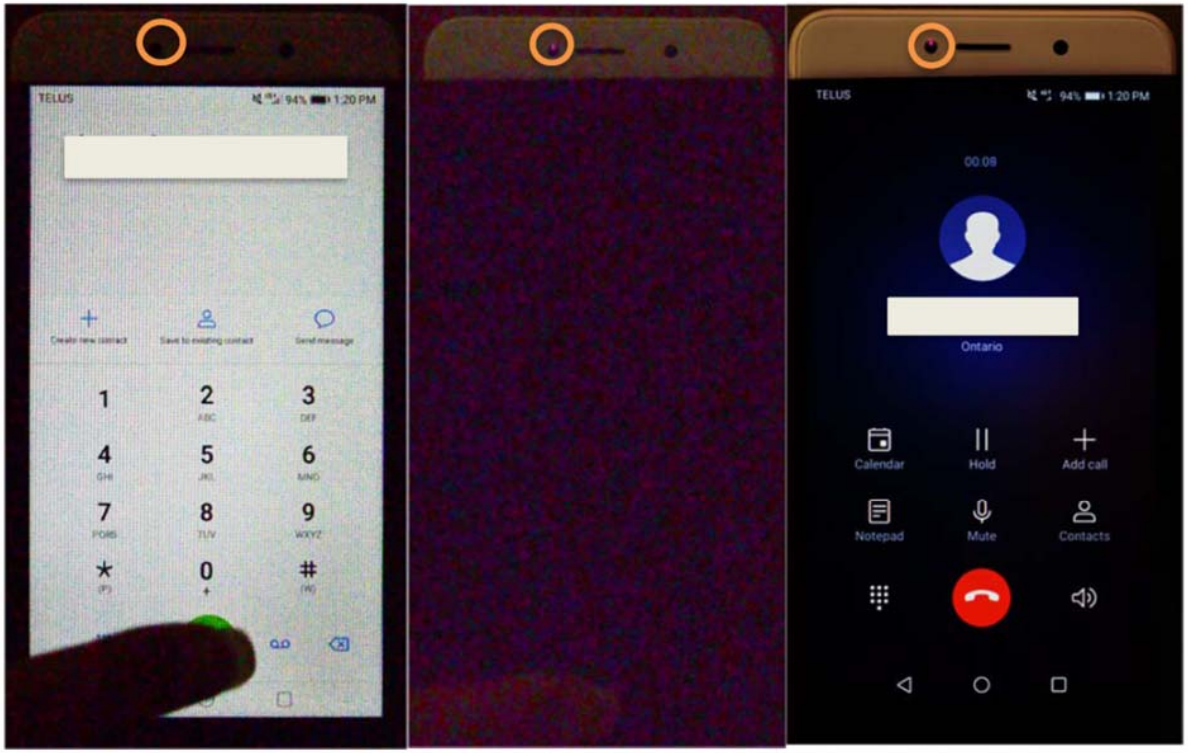
MediaTek Exhibit 1015, Page 139 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.
	
	The Android Developer Code Website further explains:
	
	Note: Some proximity sensors return binary values that represent "near" or "far." In this case, the sensor usually reports its maximum range value in the far state and a lesser value in the near state. Typically, the far value is a value > 5 cm, but this can vary from sensor to sensor. You can determine a sensor's maximum range by using the `getMaximumRange()` method.
	
	See id.

MediaTek Exhibit 1015, Page 140 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

7. The mobile station as recited in claim 1,	*See* claim 1.
wherein the proximity sensor begins detecting whether an external object is proximate substantially concurrently with the mobile station initiating an outgoing telephone call.	The proximity sensor of the Huawei Elate begins detecting whether an external object is proximate substantially concurrently with the mobile station initiating an outgoing telephone call. The first image shows that when the user is about to initiate the call, at that point the proximity sensor is not activated. The second image shows the call initiated and the proximity sensor is activated. Third image shows the proximity sensor remains activated during the remainder of the call. 

MediaTek Exhibit 1015, Page 141 of 560

In addition, by way of further example only, the Android Developer Code Website shows how the proximity sensor is used to detect proximity substantially concurrently with initiating or receiving a call, including by providing exemplary code at least substantially similar to Huawei code:

Use the proximity sensor

The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:

KOTLIN JAVA

```
private lateinit var mSensorManager: SensorManager
private var mSensor: Sensor? = null
...
mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
```

The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 142 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 143 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*

8. A method of conserving battery power in a mobile station, the mobile station adapted to detect the existence of a proximity condition, the proximity condition being that an external object is proximate, the method comprising:	To the extent that the preamble is found to be limiting, *see* claim 1(preamble); 1[ii]-[iii]; 1(b)-(d).
the mobile station detecting the existence of an initiated call condition or an answered-call	The Huawei Elate detects the existence of an initiated call condition or an answered-call condition independent and different from the proximity condition, the initiated-call condition being that a

MediaTek Exhibit 1015, Page 144 of 560

Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

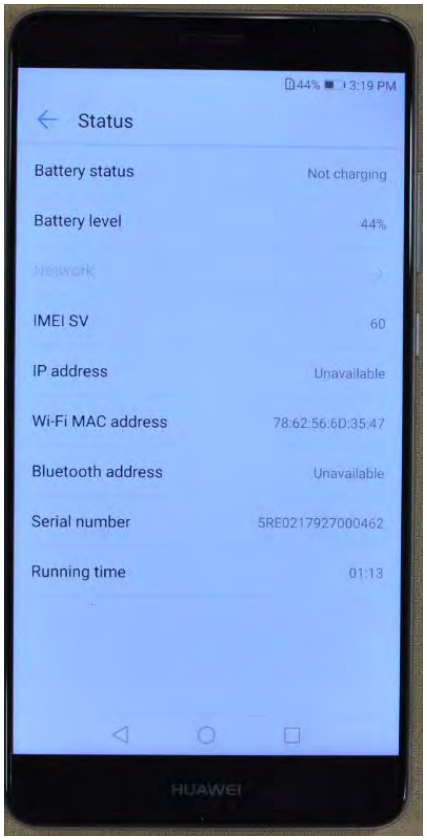
condition independent and different from the proximity condition, the initiated-call condition being that a user of the mobile station has performed an action to initiate a call, and the answered-call condition being that a user of the mobile station has performed an action to answer a call;	user of the mobile station has performed an action to initiate a call, and the answered-call condition being that a user of the mobile station has performed an action to answer a call. *See* claim 1(a).
the mobile station activating the proximity sensor in response to a determination that an answered-call condition or initiated-call condition exists; and	The Huawei Elate activates the proximity sensor in response to a determination that an answered-call condition or initiated-call condition exists. *See* claim 1(b).
the mobile station reducing power consumption of a display of the mobile station if the activated proximity sensor indicates that the proximity condition exists.	The Huawei Elate reduces power consumption of a display of the mobile station if the activated proximity sensor indicates that the proximity condition exists. *See* claim 1(c)-(d).
14. A mobile station, comprising:	*See* claim 1(preamble).
a display;	*See* claim 1[i].
a proximity sensor	*See* claim 1[ii].
adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate;	*See* claim 1[iii].

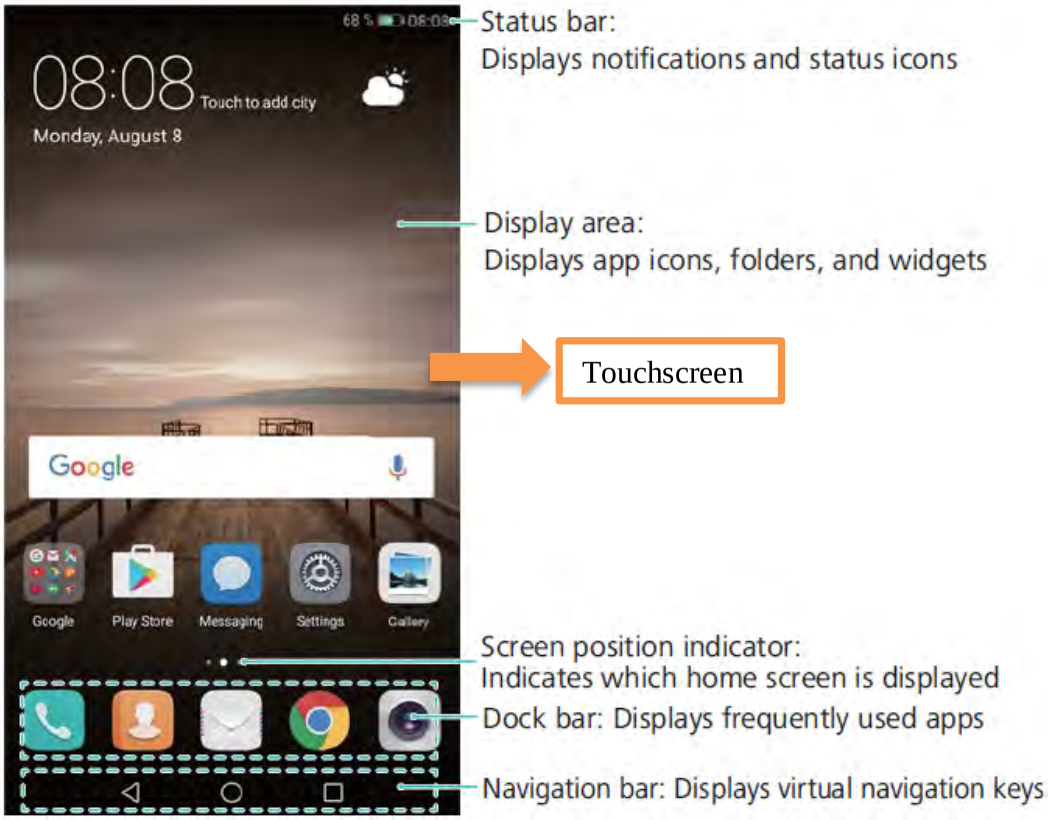
MediaTek Exhibit 1015, Page 145 of 560

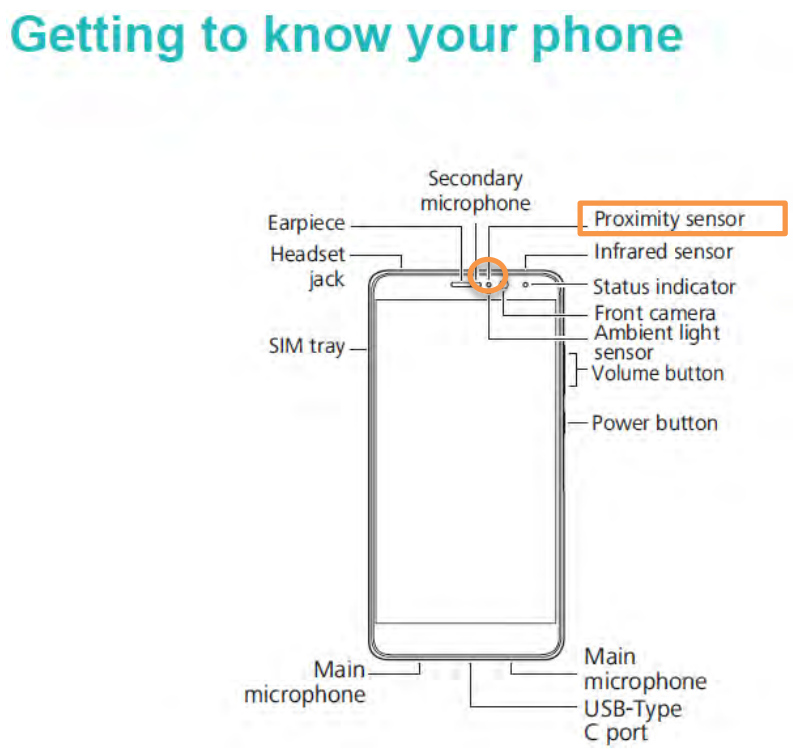
Exhibit B-3 –Infringement of U.S. Patent No. 8,204,554

and a microprocessor adapted to:	*See* claim[iv].
(a) determine, independently of the determination whether the external object is proximate, the existence of a second condition different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;	The microprocessor of the Huawei Elate is adapted to determine, independently of the determination whether the external object is proximate, the existence of a second condition different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call. *See* claim 1(a).
(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor,	*See* claim 1(b).
(c) receive the signal from the activated proximity sensor, and	*See* claim 1(c).
(d) reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists.	*See* claim 1(d).

MediaTek Exhibit 1015, Page 146 of 560

Asserted Claim Elements	Huawei Mate 9
1. A mobile station, comprising:	To the extent that the preamble is found to be limiting, the Huawei Mate 9 is a mobile station.  

[i] a display;	The Huawei Mate 9 includes a display.  “ Use simple touchscreen gestures to perform a variety of tasks,…” *See http://consumer-tkb.huawei.com/ccpgw/msa/TKB/app_0000000000011227-CcpTKBKnowOut/ctkbknowout/servlet/show/knowAttachmentServlet?knowId=en-us00456784, last accessed Nov.19, 2018.*

[ii] a proximity sensor	The Huawei Mate 9 includes a proximity sensor.  *See* *http://consumer-tkb.huawei.com/ccpgw/msa/TKB/app_0000000000011227-CcpTKBKnowOut/ctkbknowout/servlet/show/knowAttachmentServlet?knowId=en-us00456784 p. 2, last accessed Nov. 19, 2018.*
[iii] adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate; and	The proximity sensor of the Huawei Mate 9 is adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate. By way of example only, the Huawei Mate 9 is an Android phone. The Android Developer Code Website describes functioning of proximity sensors in Android phones customized and adapted by

Huawei to run on their hardware. In particular, the description specifies that the proximity sensor measures the proximity of an object relative to the device:

TYPE_PROXIMITY	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

By way of further example, the Android Developer Code Website provides files that describe the generation of a signal by the sensor.

TYPE_PROXIMITY

```
public static final int TYPE_PROXIMITY
```

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the proximity sensor (for example, whether a wake-up sensor or non-wake-up sensor) generates signals:

isWakeUpSensor added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

In addition, the Android Developer Code provides the following exemplary code at least substantially similar to Huawei code for using the proximity sensor "to determine how far away a person's head is from the face of a handset device (for example, when a user making or receiving a phone call)."

Use the proximity sensor

The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:

KOTLIN JAVA

```
private lateinit var mSensorManager: SensorManager
private var mSensor: Sensor? = null
...
mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
```

The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

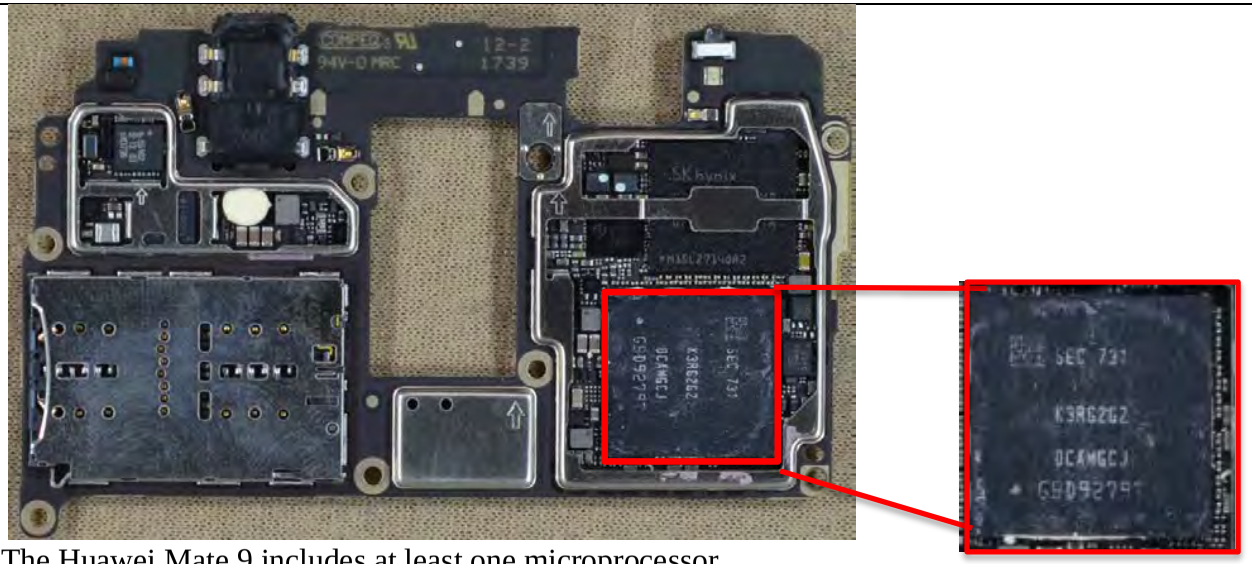
```
override fun onSensorChanged(event: SensorEvent) {
    val distance = event.values[0]
    // Do something with this sensor data.
}

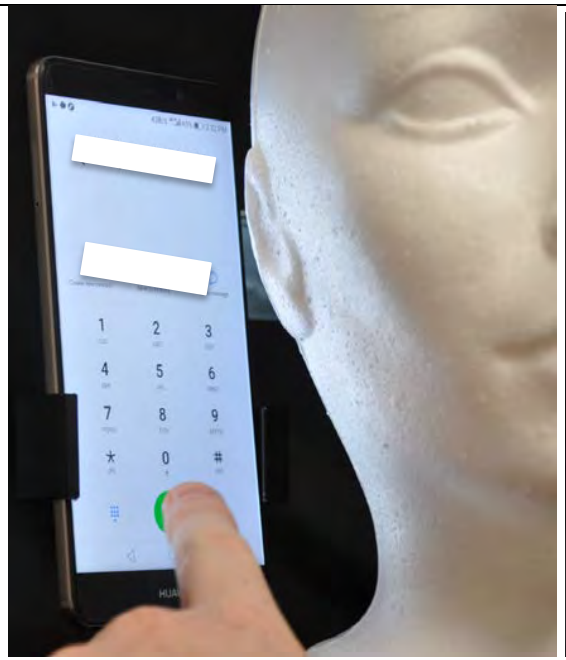
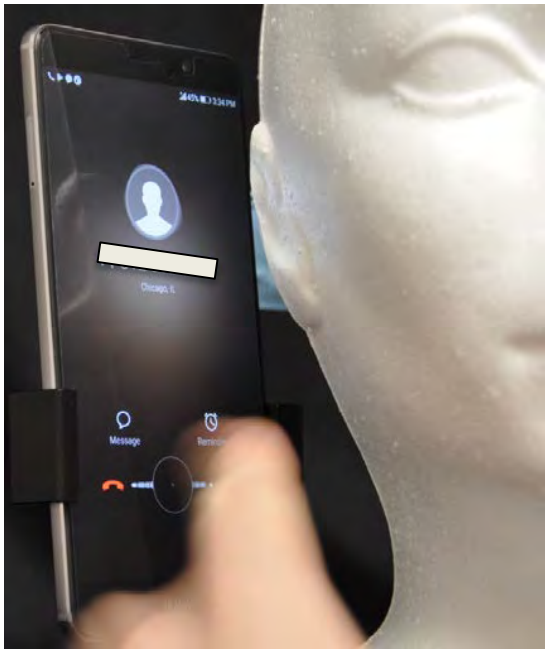
override fun onResume() {
    // Register a listener for the sensor.
    super.onResume()

    mProximity?.also { proximity ->
        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
    }
}

override fun onPause() {
    // Be sure to unregister the sensor when the activity pauses.
    super.onPause()
    mSensorManager.unregisterListener(this)
}
```

See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

[iv] a microprocessor adapted to:	 The Huawei Mate 9 includes at least one microprocessor. "**Chipset:** Huawei Kirin 960" *See https://consumer.huawei.com/us/phones/mate9/specs/, last accessed Nov. 19, 2018.*
(a) determine, without using the proximity sensor, the existence of a second condition independent and different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;	The microprocessor of the Huawei Mate 9 is adapted to determine without using the proximity sensor, the existence of a second condition independent and different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call. The microprocessor is able to determine when the user initiates an outgoing call or answers an incoming call.

	  By way of example only, the Huawei Mate 9 is an Android phone. The Huawei Mate 9's microprocessor uses code substantially similar to the code described and excerpted below to (1) determine when the user initiates an outgoing call or (2) determine when the user answers an incoming call; Outgoing Call:

```
/**
* Broadcast receiver to detect the outgoing calls.
*/
public class OutgoingReceiver extends BroadcastReceiver {
     public OutgoingReceiver() {
     }

     @Override
     public void onReceive(Context context, Intent intent) {
         String number = intent.getStringExtra(Intent.EXTRA_PHONE_NUMBER);

         Toast.makeText(ctx,
           "Outgoing: "+number,
           Toast.LENGTH_LONG).show();
     }
}
```

In the above, the system sends a broadcast action `android.intent.action.NEW_OUTGOING_CALL`.

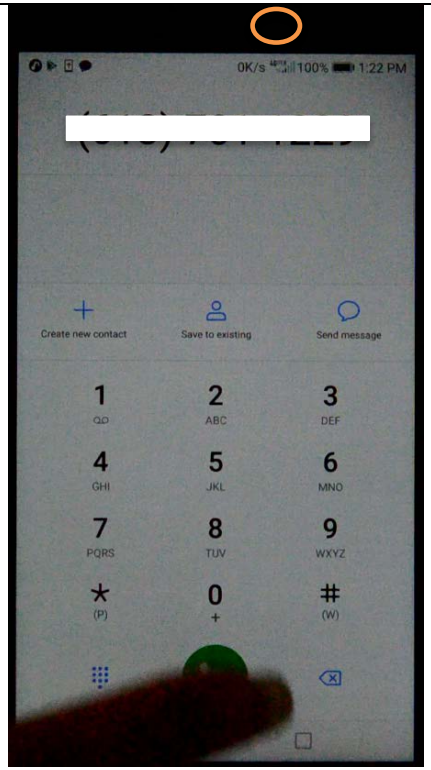
Incoming Call:

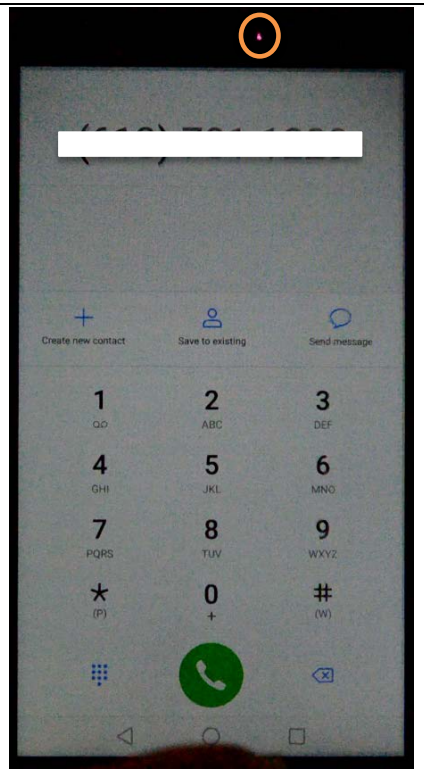
```
/**
* Listener to detect incoming calls.
*/
private class CallStateListener extends PhoneStateListener {
  @Override
  public void onCallStateChanged(int state, String incomingNumber) {
      switch (state) {
          case TelephonyManager.CALL_STATE_RINGING:
          // called when someone is ringing to this phone

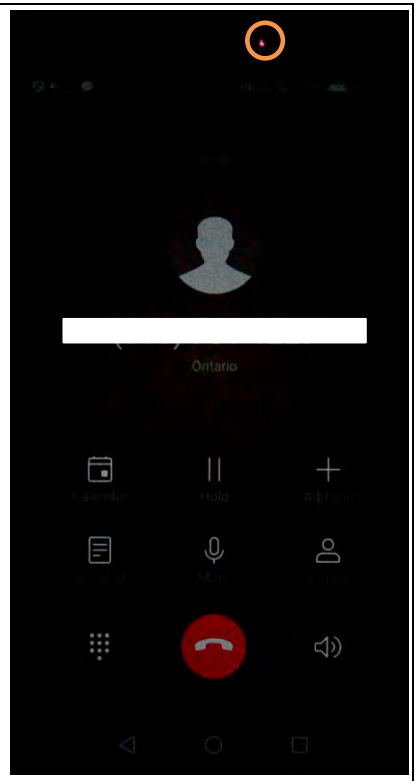
          Toast.makeText(ctx,
                  "Incoming: "+incomingNumber,
                  Toast.LENGTH_LONG).show();
          break;
      }
  }
}
```

In the above, `state` is the call state, where it may be `CALL_STATE_RINGING`, `CALL_STATE_OFFHOOK`, or `CALL_STATE_IDLE`. Ringing is the state when someone is calling,

	offhook is when there is active or on hold call, and idle is when nobody is calling and there is no active call. *See* https://www.codeproject.com/Articles/548416/Detecting-Incoming-and-Outgoing-Phone-Calls-on-And, *last accessed December 5, 2018.*
(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor,	The microprocessor of the Huawei Mate 9 is adapted to, in response to a determination in step (a) that the second condition exists, activate the proximity sensor. The first image shows that when the user is about to initiate the call, at that point the proximity sensor is not activated. The second image shows the call initiated and the proximity sensor is activated. Third image shows the proximity sensor remains activated during the remainder of the call.







By way of example only and as shown above in claim 1(iv)(a), the microprocessor is able to determine whether a call is active according to the second condition.

The microprocessor activates the proximity sensor. By way of example only, the Android Developer Code Website describes examples of proximity sensor activation and use:

TYPE_PROXIMITY

```
public static final int TYPE_PROXIMITY
```

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor

added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

	See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018. In the Huawei Mate 9, when the call button or answer button is pressed, the display darkens, indicating that the proximity sensor is activated.
(c) receive the signal from the activated proximity sensor, and	The microprocessor of the Huawei Mate 9 is adapted to receive the signal from the activated proximity sensor. When the call button or answer button is pressed according to the above, the display darkens, indicated that the microprocessor received the signal from the activated proximity sensor that an object was proximate, and, in turn, reduced power to the display.

	 By way of further example only, the Android Developer Code provides files that describe the proximity sensor's signaling to the microprocessor:

TYPE_PROXIMITY

`public static final int TYPE_PROXIMITY`

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor

added in API level 21

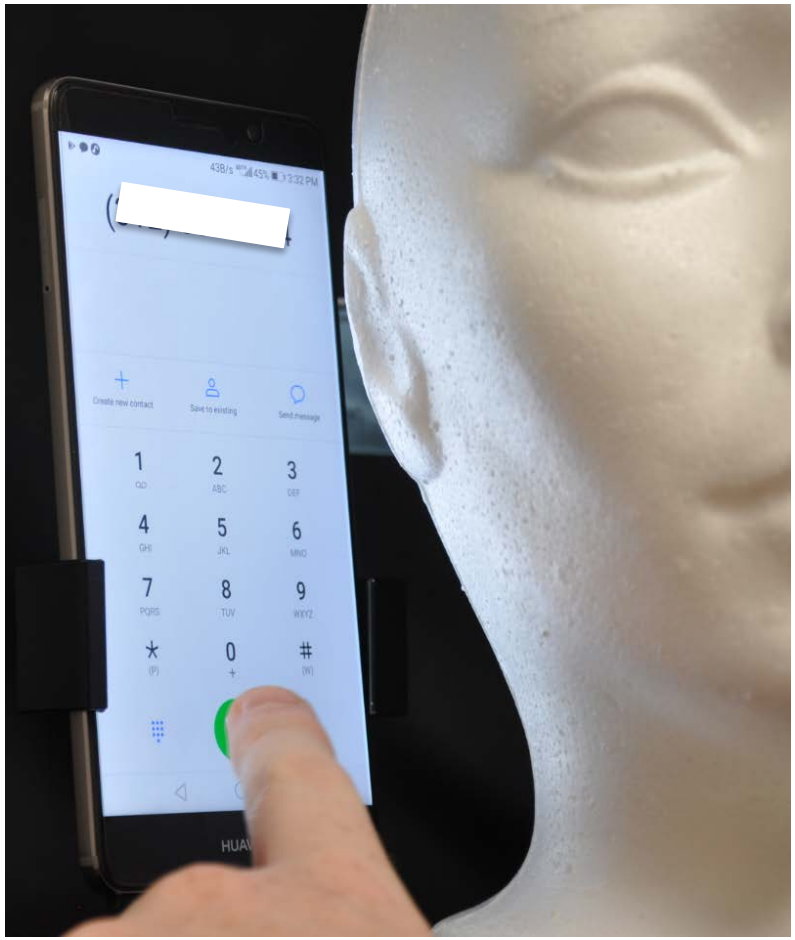
`public boolean isWakeUpSensor ()`

Returns true if the sensor is a wake-up sensor.

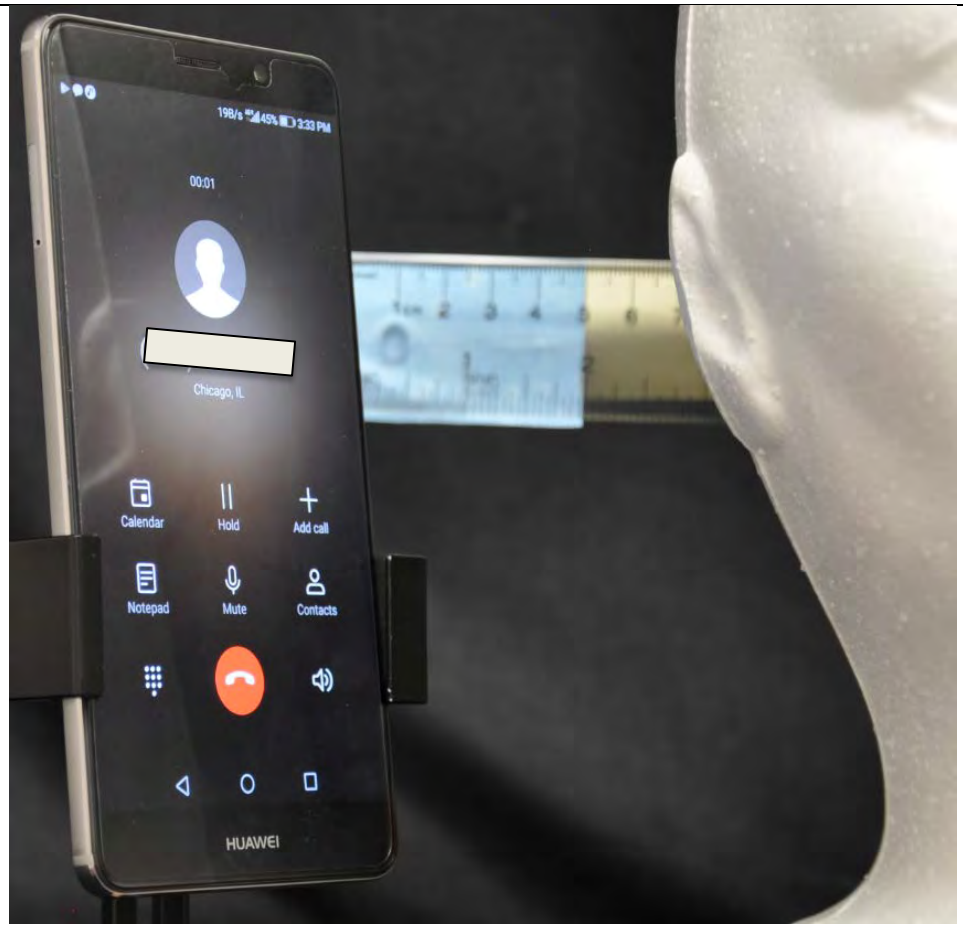
Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

	Non-wake-up sensors Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually: • Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case. • Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost. **Wake-up sensors** In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details. *See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.*

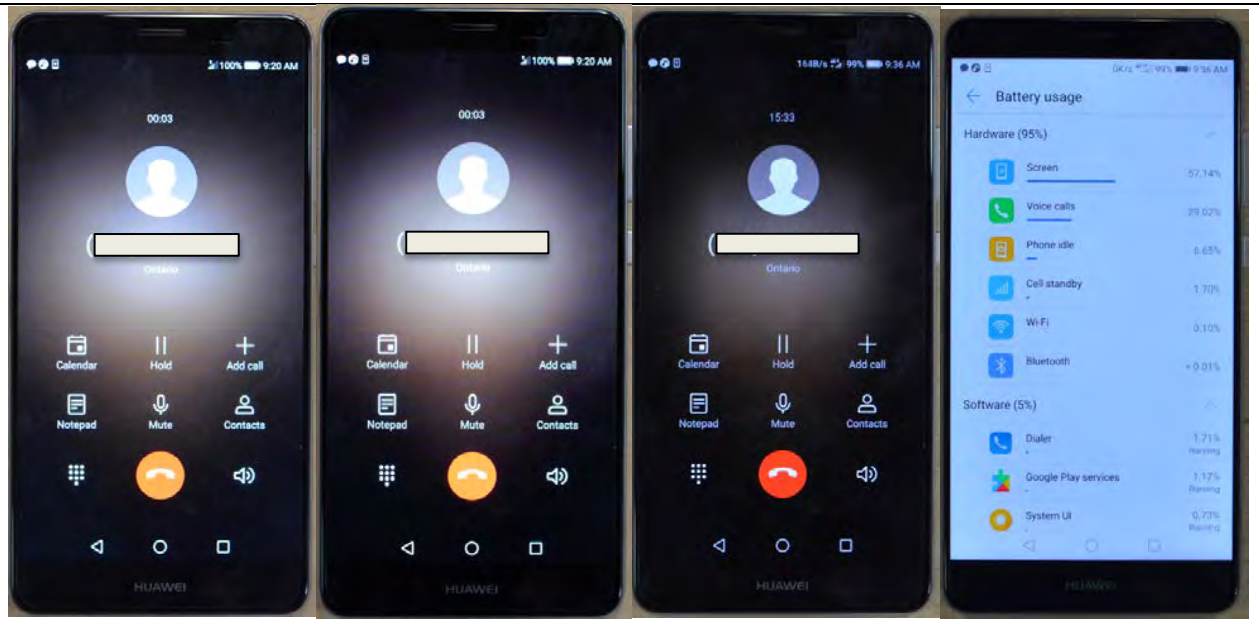
(d) reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists.	The microprocessor of the Huawei Mate 9 is adapted to reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists. By way of example only, the first image shows that the Huawei Mate 9 is proximate to an object, but no call has been initiated or answered, so the display is powered normally. 

	The second image shows that, after the call button is pressed and the ear is proximate to the Huawei Mate 9, power to the display is reduced and the display is darkened.  The third image shows that when the first condition does not exist (e.g., the ear is no longer proximate) even when a call has been initiated or answered, power to the display is not reduced and the display is powered normally.



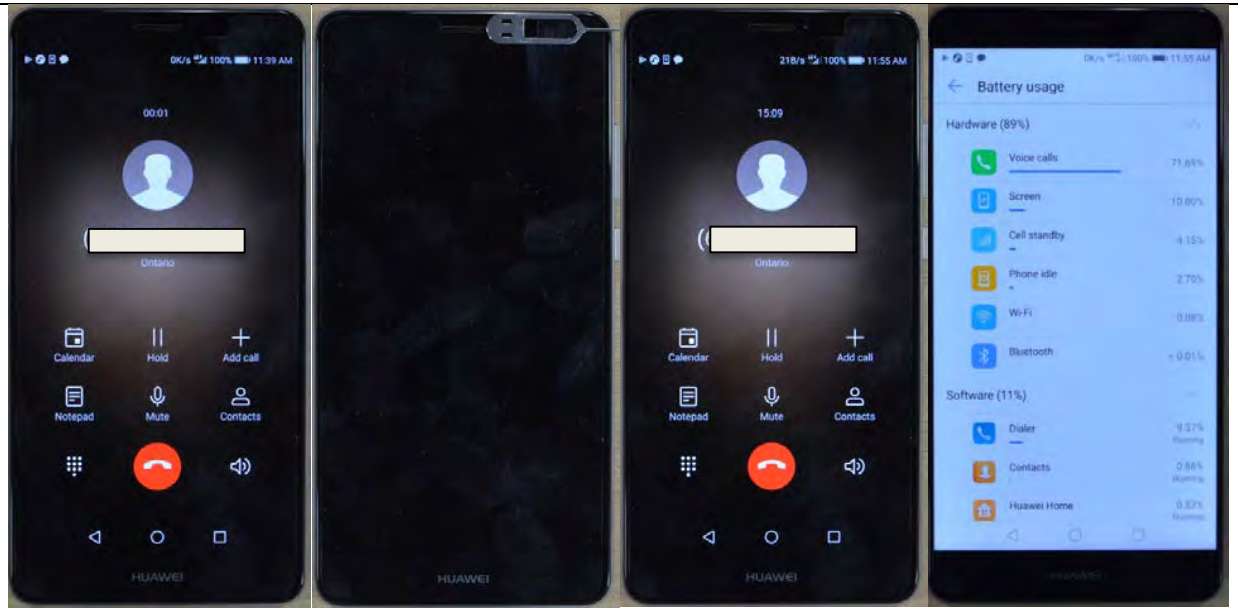
The power reduction is further shown by the difference in battery power consumption when the display is powered normally as compared to when the display is darkened during a call.

By way of example only, the following series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which no object was proximate, and the display remained powered normally.



When the call begins, the battery starts at a charge of 100%. After the call, the battery is still at 100%. The screen consumed 57.14% of the battery usage.

The next series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which an object was proximate and power to the display was reduced during the call.



When the call begins, the battery starts at a charge of 100%. After the call, the battery is still at 100%. The screen consumed 10.00% of the battery usage.

By way of example only and as shown above in claim 1(iv)(a), the microprocessor is able to determine whether a call is active.

By way of further example, the Android Developer Code Website describes the operation of a proximity sensor in order to reduce power to the display if a call is active and an object is proximate:

TYPE_PROXIMITY	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

	See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.
	
	In addition, the Android Developer Code Website provides the following exemplary code at least substantially similar to Huawei code for using the proximity sensor "to determine how far away a person's head is from the face of a handset device (or example, when a user making or receiving a phone call)."
	
	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

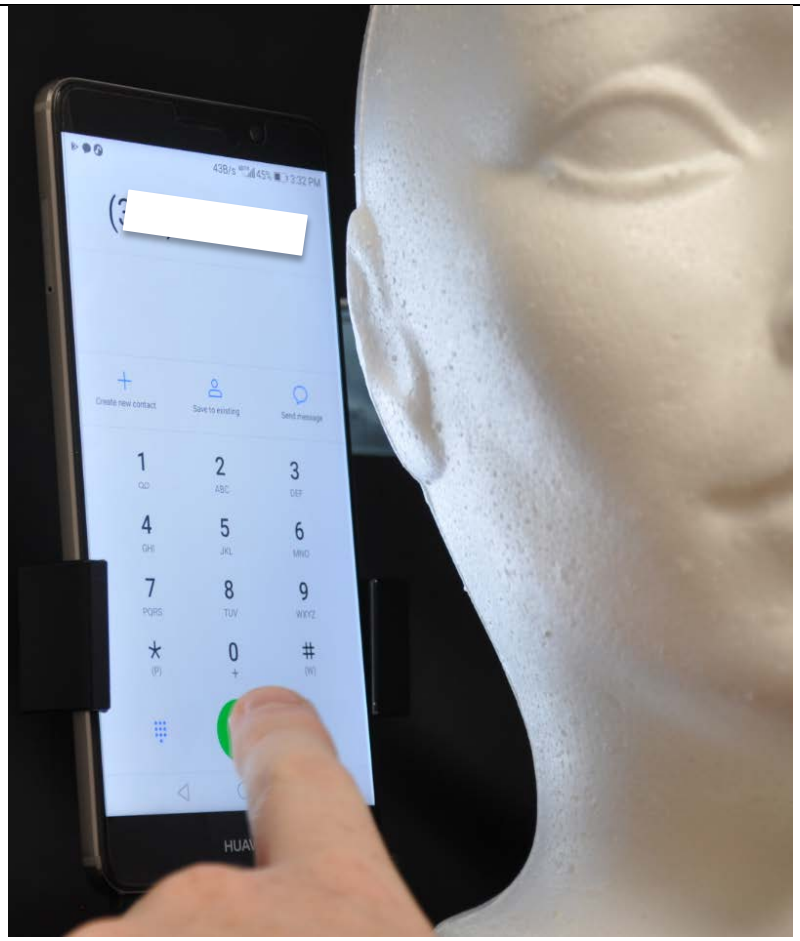
    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018

2. The mobile station of claim 1,	*See* claim 1.

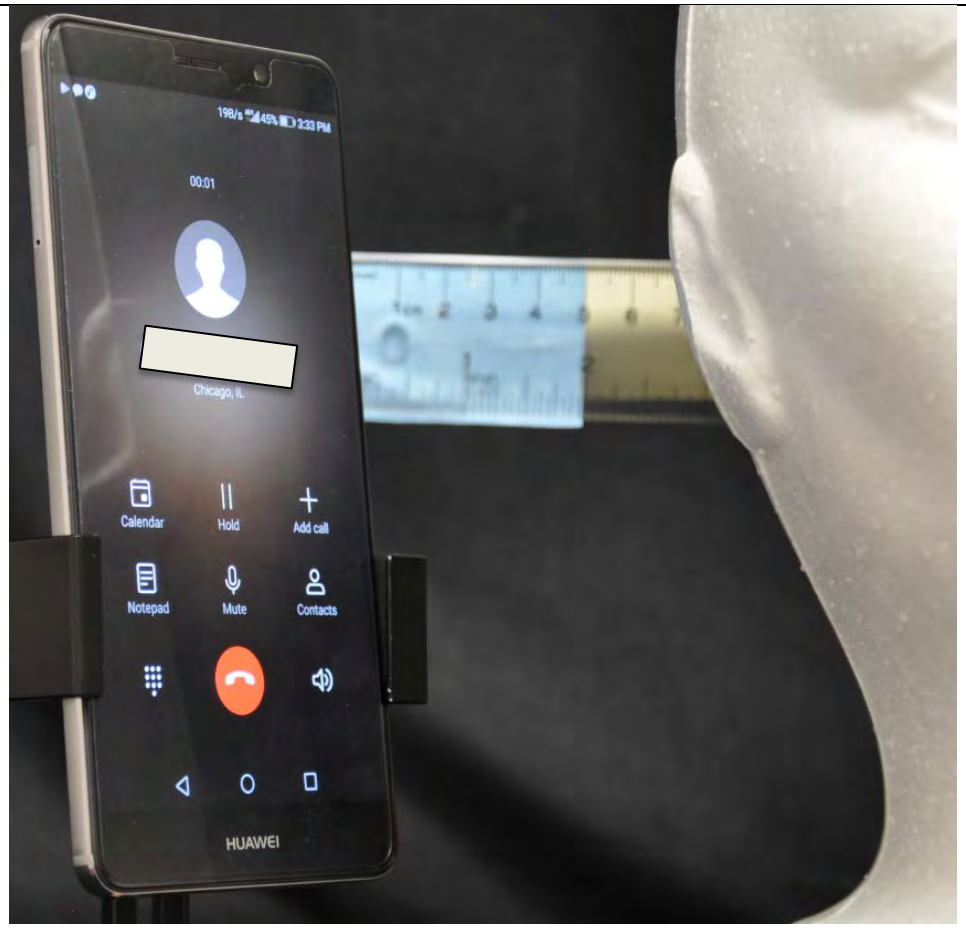
further comprising increasing power to the display if the signal from the activated proximity sensor indicates that the first condition no longer exists.	The Huawei Mate 9 increases power to the display if the signal from the activated proximity sensor indicates that the first condition no longer exists. By way of example only and as shown above in claim 1(iv)(a), the microprocessor is able to determine whether a call is active. By way of example only, the first image shows that the Huawei Mate 9 is proximate to an object, but no call has been initiated or answered, so the display is powered normally.

MediaTek Exhibit 1015, Page 173 of 560



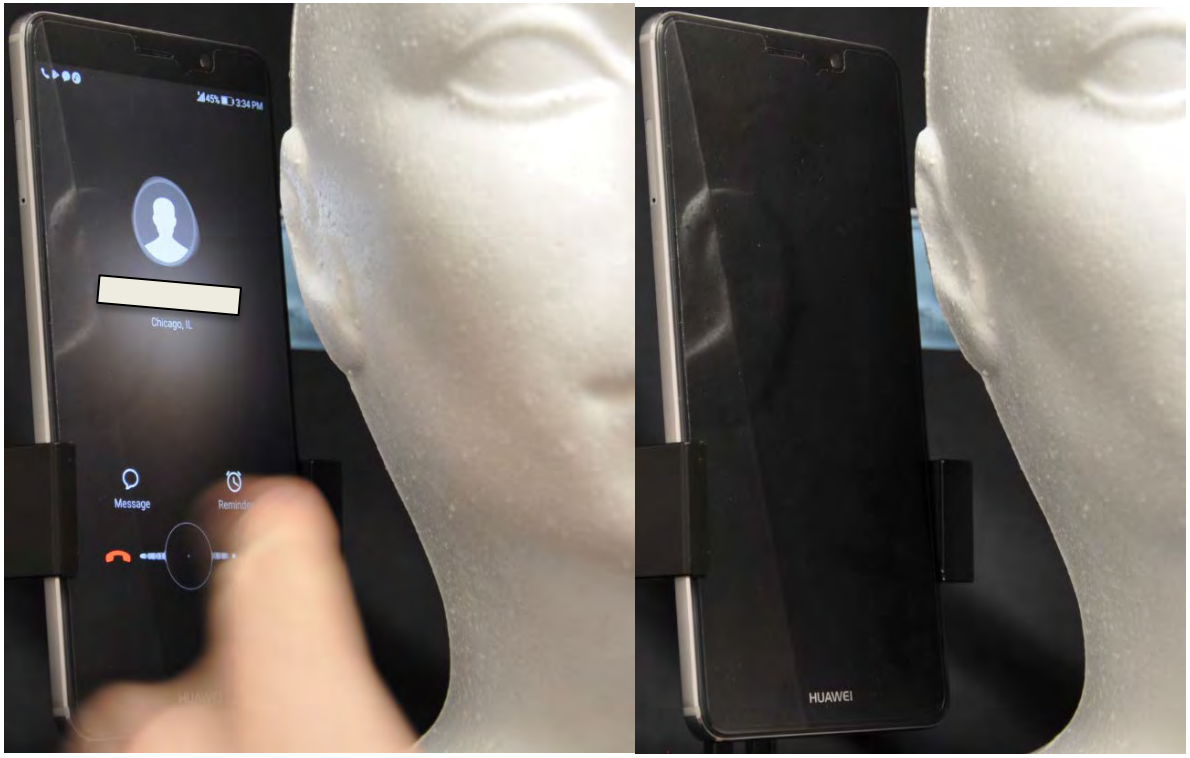
The second image shows that, after the call button is pressed and the ear is proximate to the Huawei Mate 9, power to the display is reduced and the display is darkened.

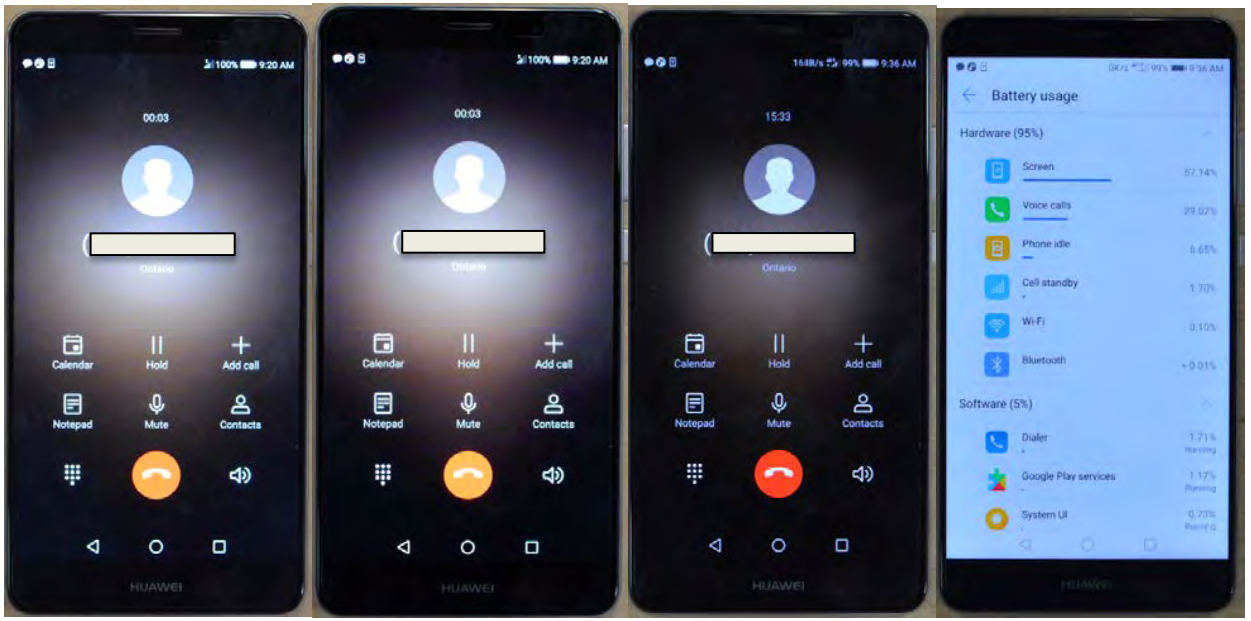
	 The third image shows that when the first condition does not exist (e.g., the ear is no longer proximate) even when a call has been initiated or answered, power to the display is not reduced and the display is powered normally.

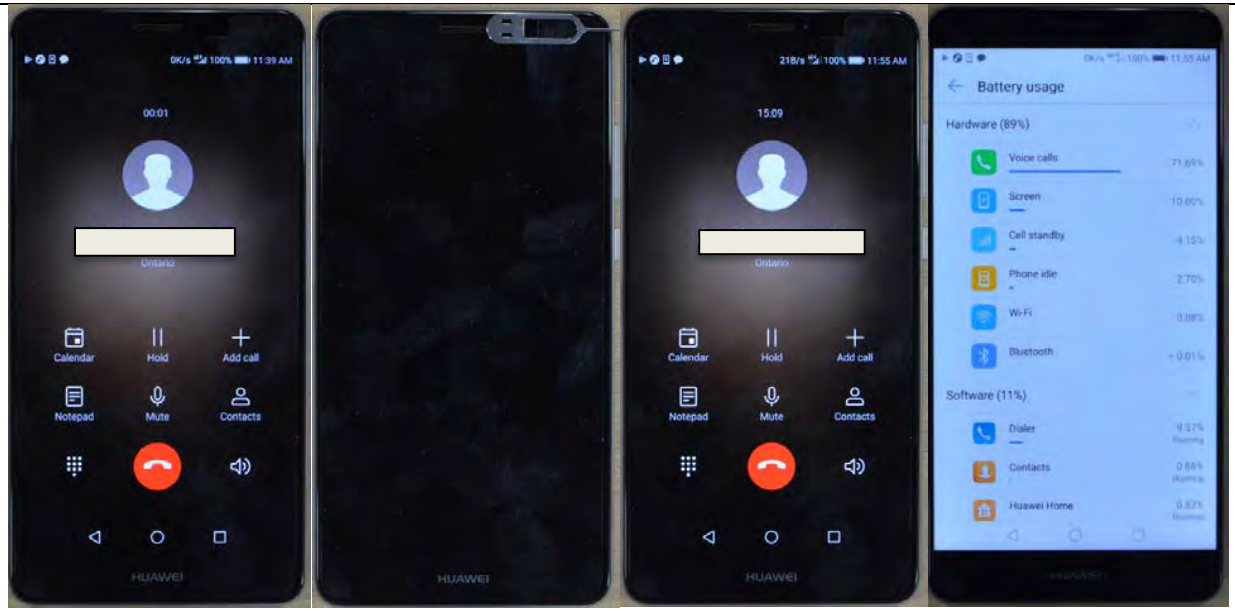


By way of further example, the Android Developer Code Website describes that "[t]he proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call)."

See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 30, 2018.

4. The mobile station as recited in claim 1,	*See* claim 1.
wherein the microprocessor reduces power to the display by turning off the display.	The microprocessor of the Huawei Mate 9 reduces power to the display by turning off the display. When the call button or answer button is pressed and the ear is proximate to the Huawei Mate 9, power to the display is reduced and the display is turned off.  The power reduction is further shown by the difference in battery power consumption when the display is powered normally as compared to when the display is darkened during a call.

	By way of example only, the following series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which no object was proximate, and the display remained powered normally  When the call begins, the battery starts at a charge of 100%. After the call, the battery is still at 100%. The screen consumed 57.14% of the battery usage. The next series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which an object was proximate and power to the display was reduced during the call.



When the call begins, the battery starts at a charge of 100%. After the call, the battery is still at 100%. The screen consumed 10.00% of the battery usage.

By way of further example only, the Android Developer Code Website describes the proximity sensor's signaling to the microprocessor, which would turn off power to the display if a call is active and an object is proximate:

TYPE_PROXIMITY

```
public static final int TYPE_PROXIMITY
```

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor

added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

See also:

Sensor	Type	Description	Common Uses
`TYPE_PROXIMITY`	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

Use the proximity sensor

The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:

KOTLIN JAVA

```
private lateinit var mSensorManager: SensorManager
private var mSensor: Sensor? = null
...
mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
```

The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

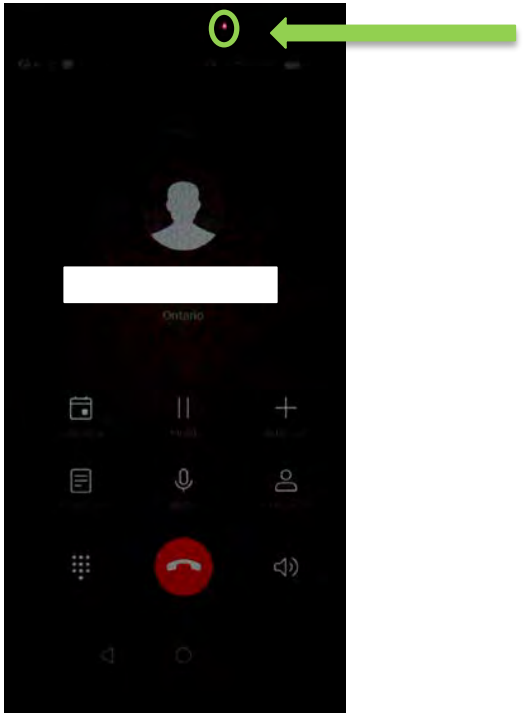
    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

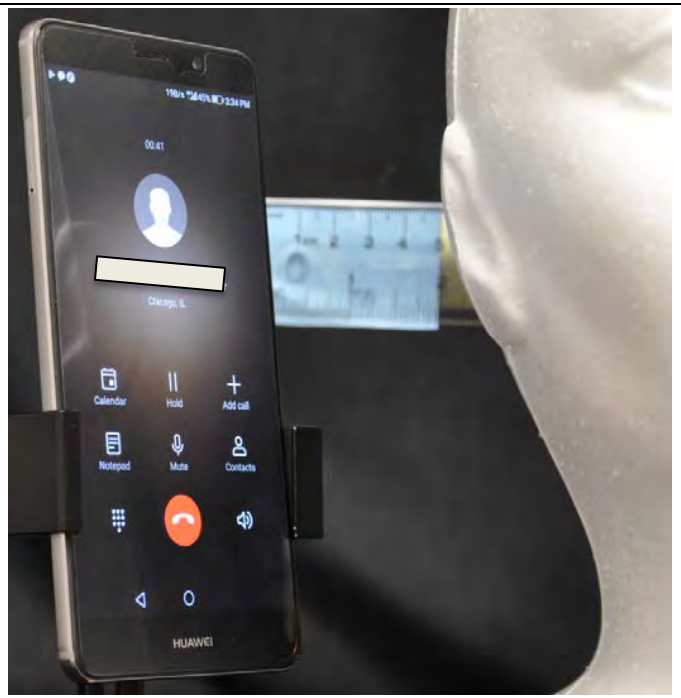
        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

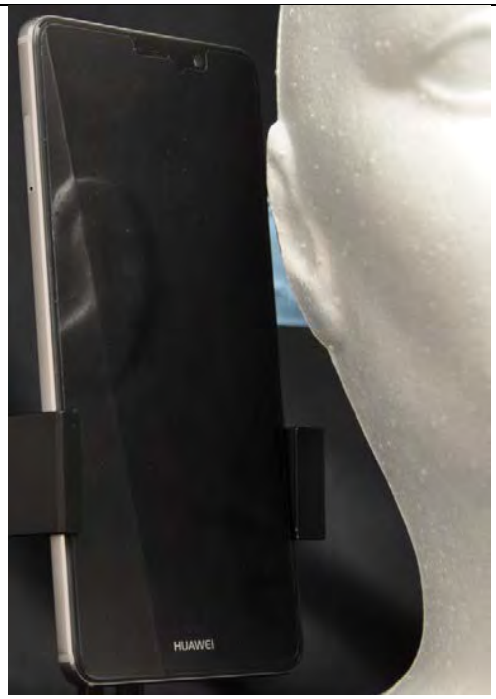
    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

5. The mobile station as recited in claim 1,	*See* claim 1.
wherein the proximity sensor is a mechanical proximity sensor, an optical sensor, or a range-detecting sensor.	The proximity sensor of the Huawei Mate 9 is a range-detecting sensor.

	The proximity sensor detects the range of a proximate object:  *The optical range sensing proximity sensor emits Inf Red light senses the reflection to determine if external objects are proximate* By way of example only, when an incoming call is answered, and the device is not proximate to the object, approximately 7 cm from the object the display is on. The mobile station is moved proximate to the ear, approximately 4cm the display is off.





By way of further example, the Android Developer Code Website describes range detection in proximity sensors:

TYPE_PROXIMITY	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

And also, the code shows distance measurement:

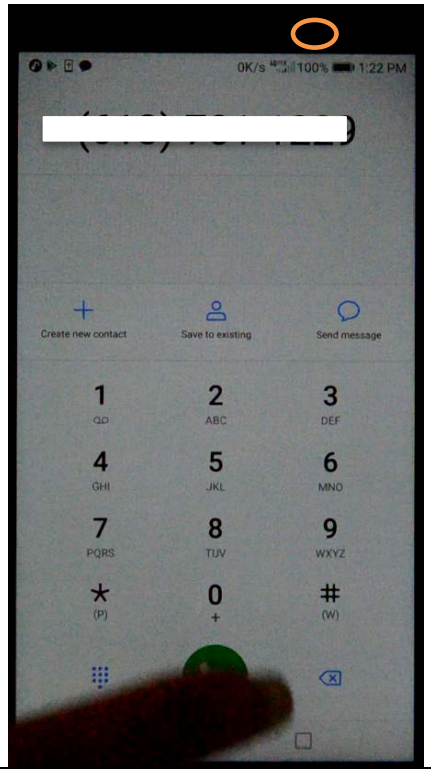
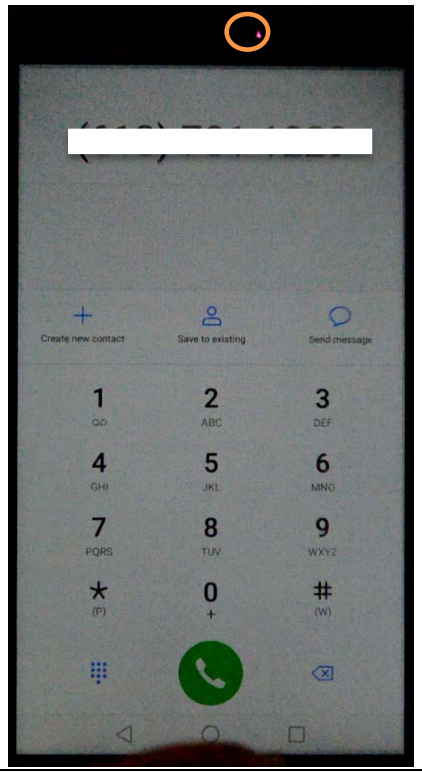
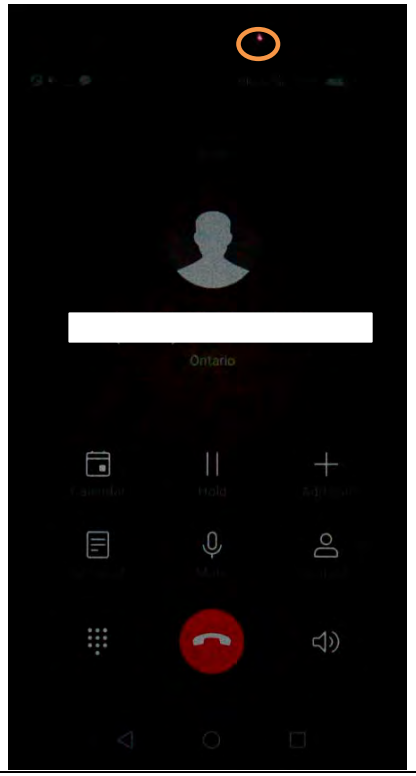
```
override fun onSensorChanged(event: SensorEvent) {
    val distance = event.values[0]
    // Do something with this sensor data.
}
```

See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

The Android Developer Code Website further explains:

> **Note:** Some proximity sensors return binary values that represent "near" or "far." In this case, the sensor usually reports its maximum range value in the far state and a lesser value in the near state. Typically, the far value is a value > 5 cm, but this can vary from sensor to sensor. You can determine a sensor's maximum range by using the `getMaximumRange()` method.

See id.

7. The mobile station as recited in claim 1,	*See* claim 1.
wherein the proximity sensor begins detecting whether an external object is proximate substantially concurrently with the mobile station initiating an outgoing telephone call.	The proximity sensor of the Huawei Mate 9 begins detecting whether an external object is proximate substantially concurrently with the mobile station initiating an outgoing telephone call. The first image shows that when the user is about to initiate the call, at that point the proximity sensor is not activated. The second image shows the call initiated and the proximity sensor is activated. Third image shows the proximity sensor remains activated during the remainder of the call.   

	In addition, by way of further example only, the Android Developer Code Website shows how the proximity sensor is used to detect proximity substantially concurrently with initiating or receiving a call, including by providing exemplary code at least substantially similar to Huawei code:
	
	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

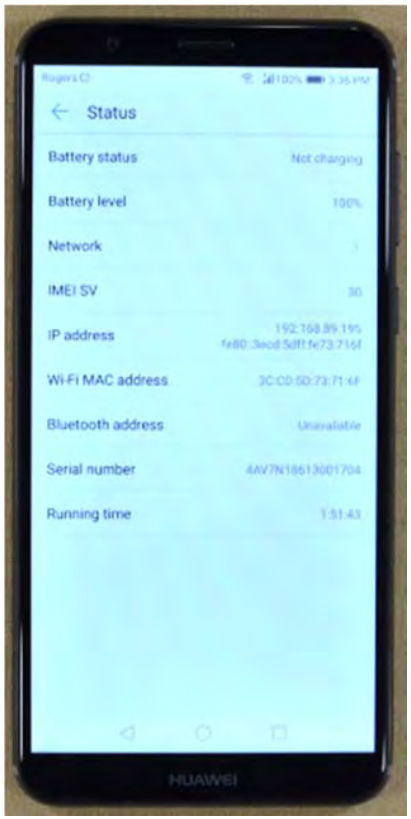
	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*

8. A method of conserving battery power in a mobile station, the mobile station adapted to detect the existence of a proximity condition, the proximity condition being that an external object is proximate, the method comprising:	To the extent that the preamble is found to be limiting, *see* claim 1(preamble); 1[ii]-[iii]; 1(b)-(d).
the mobile station detecting the existence of an initiated call condition or an answered-call condition independent and different	The Huawei Mate 9 detects the existence of an initiated call condition or an answered-call condition independent and different from the proximity condition, the initiated-call condition being that a user of the mobile station has performed an action to initiate a call, and the answered-call condition being that a user of the mobile station has performed an action to answer a call.

from the proximity condition, the initiated-call condition being that a user of the mobile station has performed an action to initiate a call, and the answered-call condition being that a user of the mobile station has performed an action to answer a call;	*See* claim 1(a).
the mobile station activating the proximity sensor in response to a determination that an answered-call condition or initiated-call condition exists; and	The Huawei Mate 9 activates the proximity sensor in response to a determination that an answered-call condition or initiated-call condition exists. *See* claim 1(b).
the mobile station reducing power consumption of a display of the mobile station if the activated proximity sensor indicates that the proximity condition exists.	The Huawei Mate 9 reduces power consumption of a display of the mobile station if the activated proximity sensor indicates that the proximity condition exists. *See* claim 1(c)-(d).
14. A mobile station, comprising:	*See* claim 1(preamble).
a display;	*See* claim 1[i].
a proximity sensor	*See* claim 1[ii].
adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate;	*See* claim 1[iii].
and a microprocessor adapted to:	*See* claim[iv].

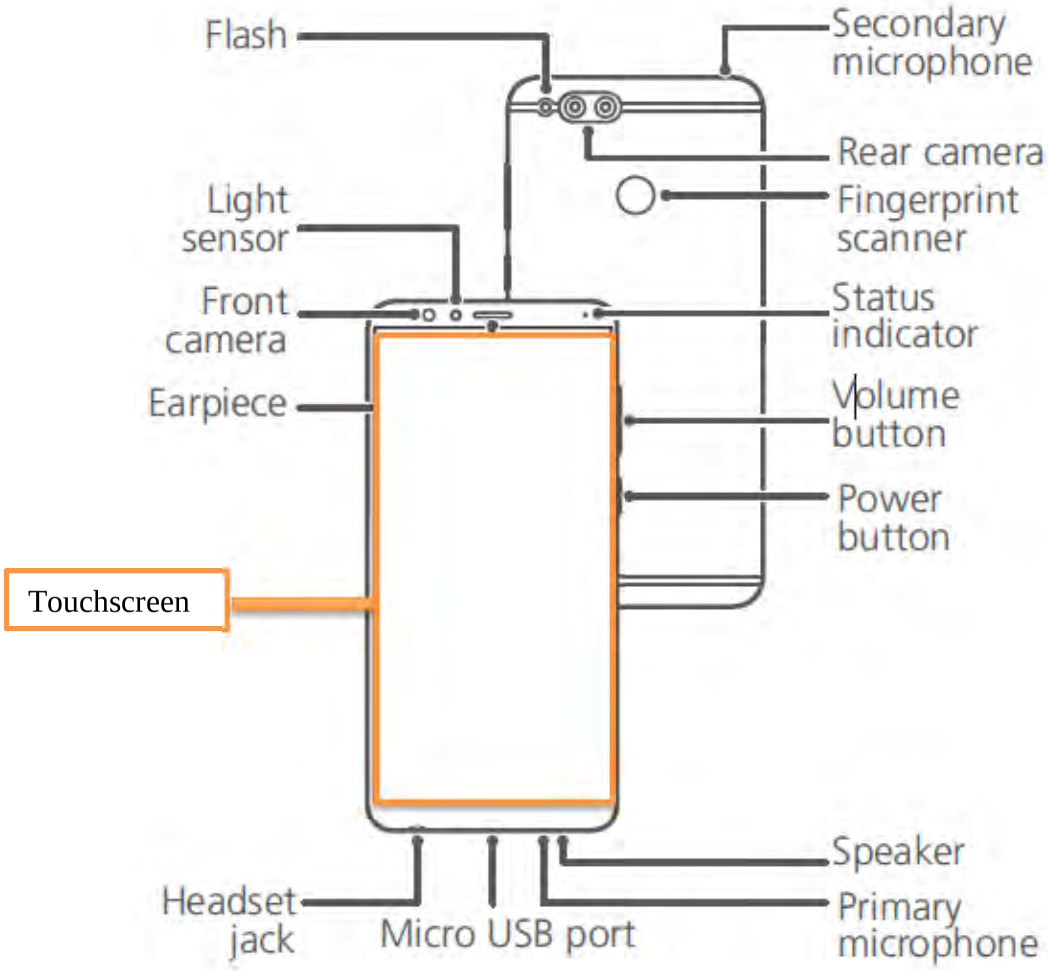
(a) determine, independently of the determination whether the external object is proximate, the existence of a second condition different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;	The microprocessor of the Huawei Mate 9 is adapted to determine, independently of the determination whether the external object is proximate, the existence of a second condition different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call. *See* claim 1(a).
(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor,	*See* claim 1(b).
(c) receive the signal from the activated proximity sensor, and	*See* claim 1(c).
(d) reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists.	*See* claim 1(d).

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

Asserted Claim Elements	Huawei Mate SE
1. A mobile station, comprising:	To the extent that the preamble is found to be limiting, the Huawei Mate SE is a mobile station.  

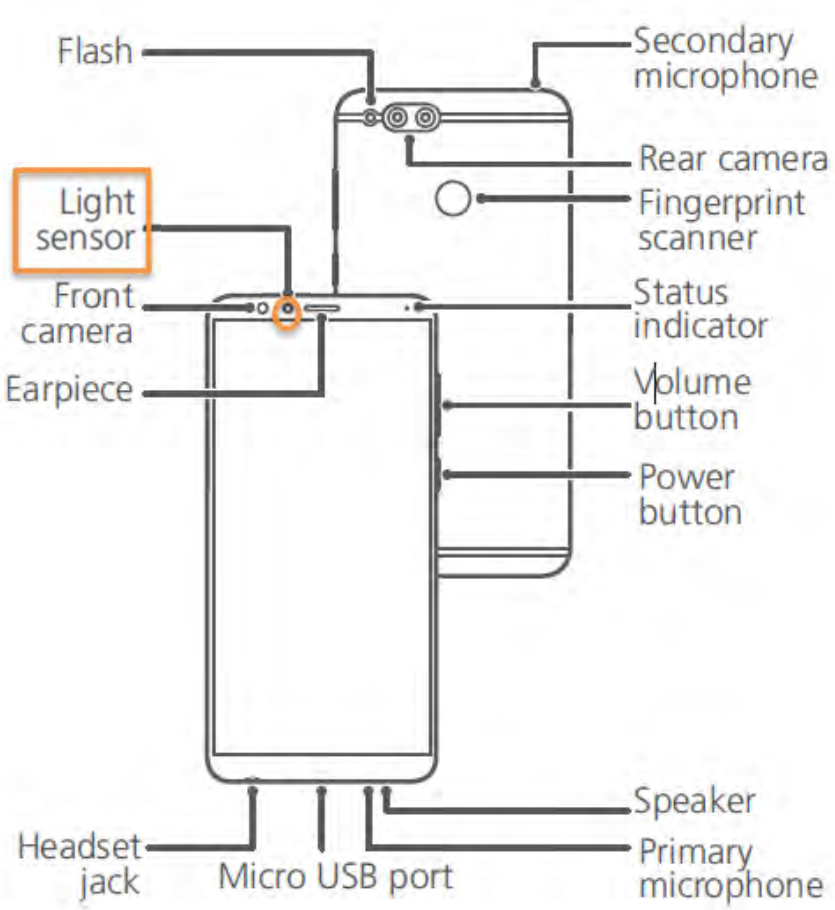
MediaTek Exhibit 1015, Page 194 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

[i] a display;	The Huawei Mate SE includes a display.  *See* http://consumer-tkb.huawei.com/ccpgw/msa/TKB/app_0000000000011227-CcpTKBKnowOut/ctkbknowout/servlet/show/knowAttachmentServlet?knowId=en-us00423632 *p. 1, last accessed Nov 22, 2018.*

MediaTek Exhibit 1015, Page 195 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

[ii] a proximity sensor	The Huawei Mate SE includes a proximity sensor.  *See http://consumer-tkb.huawei.com/ccpgw/msa/TKB/app_0000000000011227-CcpTKBKnowOut/ctkbknowout/servlet/show/knowAttachmentServlet?knowId=en-us00423632, last accessed Nov 22, 2018.*

MediaTek Exhibit 1015, Page 196 of 560

[iii] adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate; and	The proximity sensor of the Huawei Mate SE is adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate. By way of example only, the Huawei Mate SE is an Android phone. The Android Developer Code Website describes functioning of proximity sensors in Android phones customized and adapted by Huawei to run on their hardware. In particular, the description specifies that the proximity sensor measures the proximity of an object relative to the device: TYPE_PROXIMITY Hardware Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear. Phone position during a call. *See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.* By way of further example, the Android Developer Code Website provides files that describe the generation of a signal by the sensor. TYPE_PROXIMITY public static final int TYPE_PROXIMITY A constant describing a proximity sensor type. This is a wake up sensor. See SensorEvent.values for more details. **See also:** isWakeUpSensor() Constant Value: 8 (0x00000008) *See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.*

MediaTek Exhibit 1015, Page 197 of 560

The referenced discussion concerning the isWakeUpSensor file explains the proximity sensor (for example, whether a wake-up sensor or non-wake-up sensor) generates signals:

isWakeUpSensor

added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

In addition, the Android Developer Code provides the following exemplary code at least substantially similar to Huawei code for using the proximity sensor "to determine how far away a person's head is from the face of a handset device (for example, when a user making or receiving a phone call)."

MediaTek Exhibit 1015, Page 198 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 199 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 200 of 560

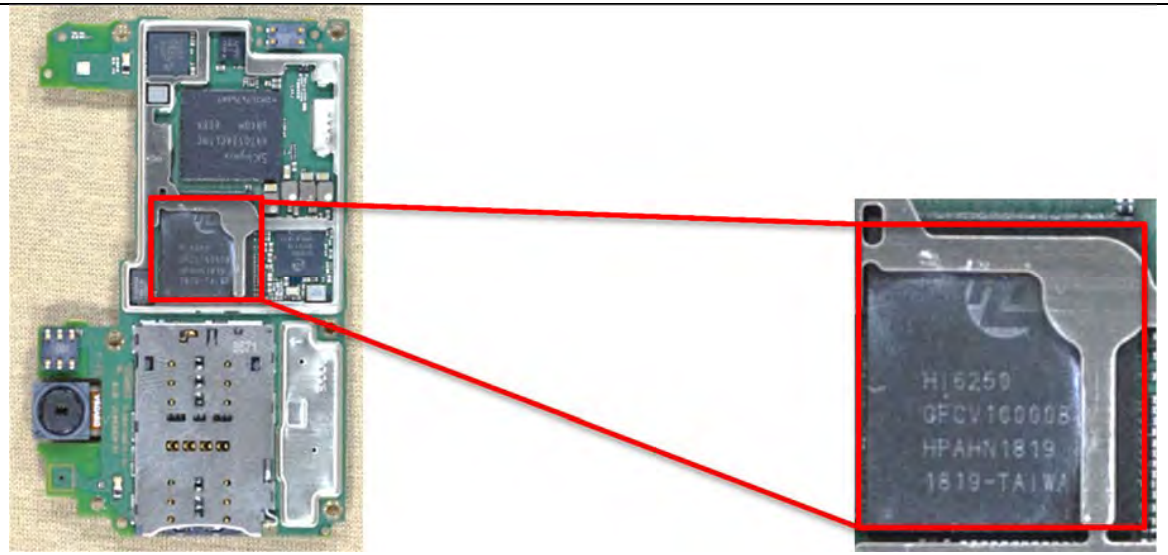
Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

[iv] a microprocessor adapted to:	The Huawei Mate SE includes at least one microprocessor.

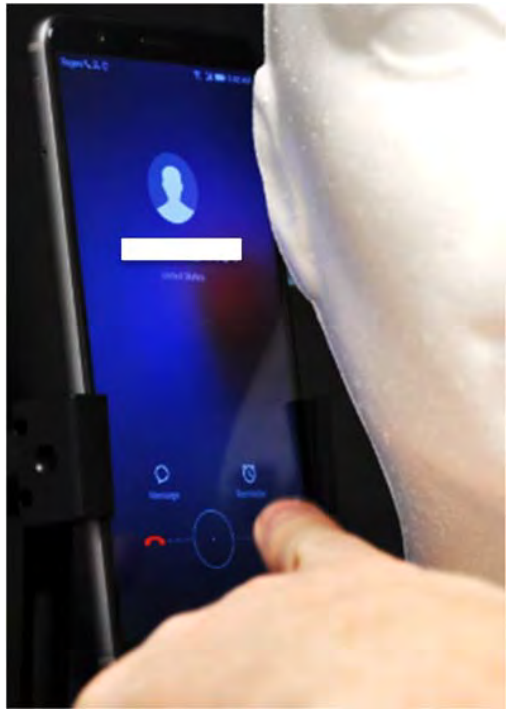
MediaTek Exhibit 1015, Page 201 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

	 "**Chipset**: Kirin 659, Octa-Core (4 x 2.36 GHz+4 x 1.7 GHz)" *See* *https://consumer.huawei.com/us/phones/mate-se/specs/* (last accessed Nov 22, 2018)
(a) determine, without using the proximity sensor, the existence of a second condition independent and different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;	The microprocessor of the Huawei Mate SE is adapted to determine without using the proximity sensor, the existence of a second condition independent and different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call. The microprocessor is able to determine when the user initiates an outgoing call or answers an incoming call.

MediaTek Exhibit 1015, Page 202 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

	  By way of example only, the Huawei Mate SE is an Android phone. The Huawei Mate SE's microprocessor uses code substantially similar to the code described and excerpted below to (1) determine when the user initiates an outgoing call or (2) determine when the user answers an incoming call; Outgoing Call:

MediaTek Exhibit 1015, Page 203 of 560

```
/**
* Broadcast receiver to detect the outgoing calls.
*/
public class OutgoingReceiver extends BroadcastReceiver {
     public OutgoingReceiver() {
     }

     @Override
     public void onReceive(Context context, Intent intent) {
         String number = intent.getStringExtra(Intent.EXTRA_PHONE_NUMBER);

         Toast.makeText(ctx,
           "Outgoing: "+number,
           Toast.LENGTH_LONG).show();
     }
}
```

In the above, the system sends a broadcast action `android.intent.action.NEW_OUTGOING_CALL`.

Incoming Call:

```
/**
* Listener to detect incoming calls.
*/
private class CallStateListener extends PhoneStateListener {
  @Override
  public void onCallStateChanged(int state, String incomingNumber) {
      switch (state) {
          case TelephonyManager.CALL_STATE_RINGING:
          // called when someone is ringing to this phone

          Toast.makeText(ctx,
                  "Incoming: "+incomingNumber,
                  Toast.LENGTH_LONG).show();
          break;
      }
  }
}
```

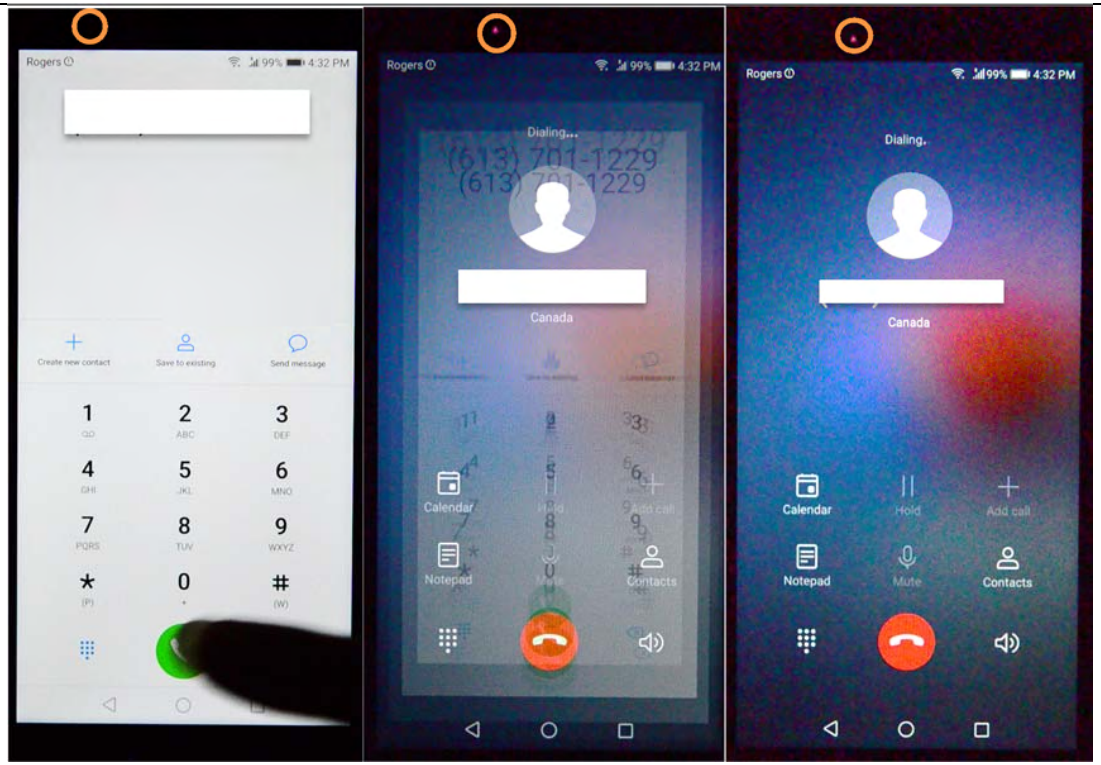
In the above, `state` is the call state, where it may be `CALL_STATE_RINGING`, `CALL_STATE_OFFHOOK`, or `CALL_STATE_IDLE`. Ringing is the state when someone is calling,

MediaTek Exhibit 1015, Page 204 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

	offhook is when there is active or on hold call, and idle is when nobody is calling and there is no active call. *See https://www.codeproject.com/Articles/548416/Detecting-Incoming-and-Outgoing-Phone-Calls-on-And, last accessed December 5, 2018.*
(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor,	The microprocessor of the Huawei Mate SE is adapted to, in response to a determination in step (a) that the second condition exists, activate the proximity sensor. The first image shows that when the user is about to initiate the call, at that point the proximity sensor is not activated. The second image shows the call initiated and the proximity sensor is activated. Third image shows the proximity sensor remains activated during the remainder of the call.

MediaTek Exhibit 1015, Page 205 of 560



By way of example only and as shown above in claim 1(iv)(a), the microprocessor is able to determine whether a call is active according to the second condition.

The microprocessor activates the proximity sensor. By way of example only, the Android Developer Code Website describes examples of proximity sensor activation and use:

MediaTek Exhibit 1015, Page 206 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY

```
public static final int TYPE_PROXIMITY
```

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor

added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

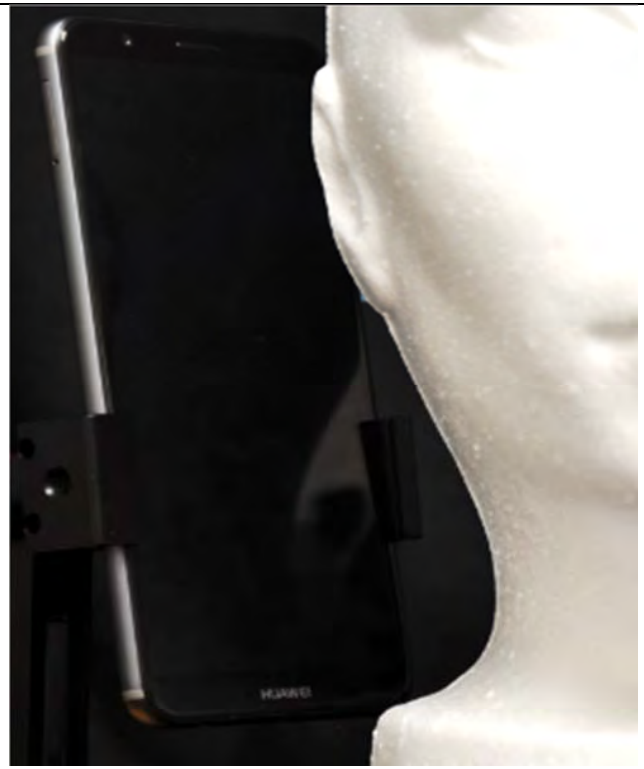
Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 207 of 560

	Non-wake-up sensors Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually: • Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case. • Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost. **Wake-up sensors** In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details. *See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.* In the Huawei Mate SE, when the call button or answer button is pressed, the display darkens, indicating that the proximity sensor is activated.
(c) receive the signal from the activated proximity sensor, and	The microprocessor of the Huawei Mate SE is adapted to receive the signal from the activated proximity sensor. When the call button or answer button is pressed according to the above, the display darkens, indicated that the microprocessor received the signal from the activated proximity sensor that an object was proximate, and, in turn, reduced power to the display.

MediaTek Exhibit 1015, Page 208 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

	 By way of further example only, the Android Developer Code provides files that describe the proximity sensor's signaling to the microprocessor:

MediaTek Exhibit 1015, Page 209 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY

`public static final int TYPE_PROXIMITY`

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor — added in API level 21

`public boolean isWakeUpSensor ()`

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 210 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

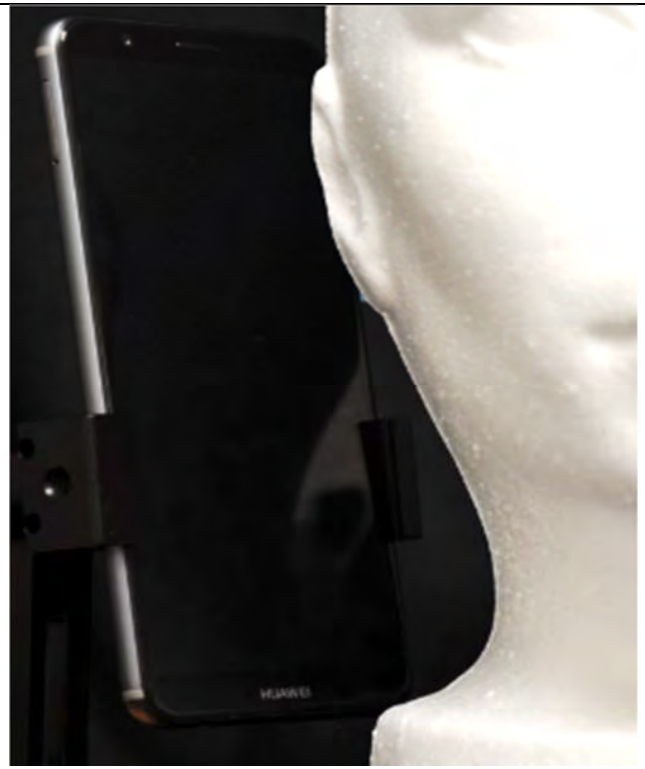
	Non-wake-up sensors Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually: • Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case. • Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost. **Wake-up sensors** In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details. *See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.*

MediaTek Exhibit 1015, Page 211 of 560

(d) reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists.	The microprocessor of the Huawei Mate SE is adapted to reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists. By way of example only, the first image shows that the Huawei Mate SE is proximate to an object, but no call has been initiated or answered, so the display is powered normally.  The second image shows that, after the call button is pressed and the ear is proximate to the Huawei Mate SE, power to the display is reduced and the display is darkened.

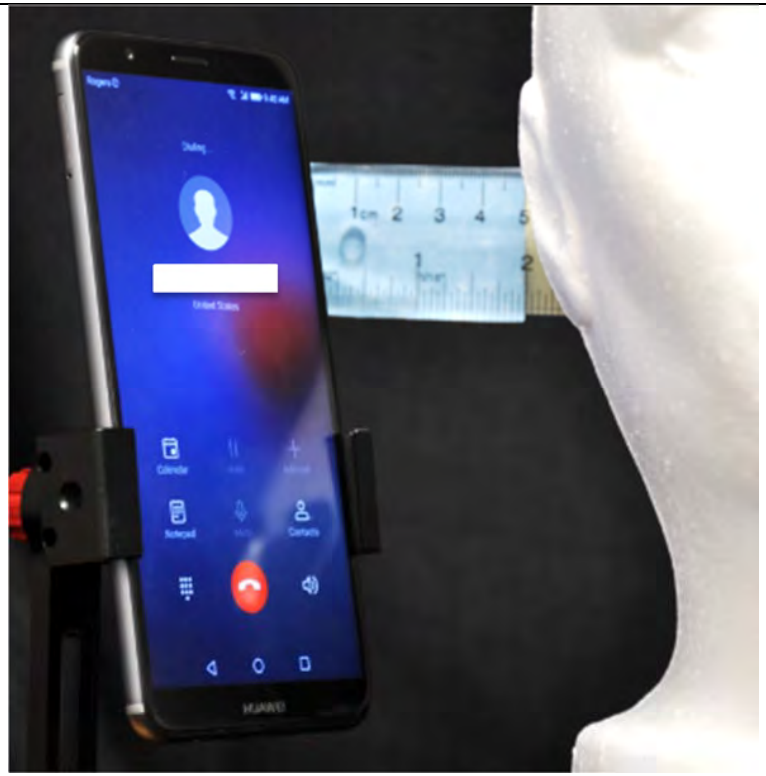
MediaTek Exhibit 1015, Page 212 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

	 The third image shows that when the first condition does not exist (e.g., the ear is no longer proximate) even when a call has been initiated or answered, power to the display is not reduced and the display is powered normally.

MediaTek Exhibit 1015, Page 213 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

	 The power reduction is further shown by the difference in battery power consumption when the display is powered normally as compared to when the display is darkened during a call. By way of example only, the following series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which no object was proximate, and the display remained powered normally.

MediaTek Exhibit 1015, Page 214 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

	 When the call begins, the battery starts at a charge of 100%. After the call, the battery is at 99%. The screen consumed 72.62% of the battery. The next series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which an object was proximate and power to the display was reduced during the call.

MediaTek Exhibit 1015, Page 215 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554



When the call begins, the battery starts at a charge of 100%. After the call, the battery is still at 100%. The screen consumed 20.13% of the battery.

By way of example only and as shown above in claim 1(iv)(a), the microprocessor is able to determine whether a call is active.

By way of further example, the Android Developer Code Website describes the operation of a proximity sensor in order to reduce power to the display if a call is active and an object is proximate:

TYPE_PROXIMITY	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

MediaTek Exhibit 1015, Page 216 of 560

	See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.
	
	In addition, the Android Developer Code Website provides the following exemplary code at least substantially similar to Huawei code for using the proximity sensor "to determine how far away a person's head is from the face of a handset device (or example, when a user making or receiving a phone call)."
	
	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 217 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

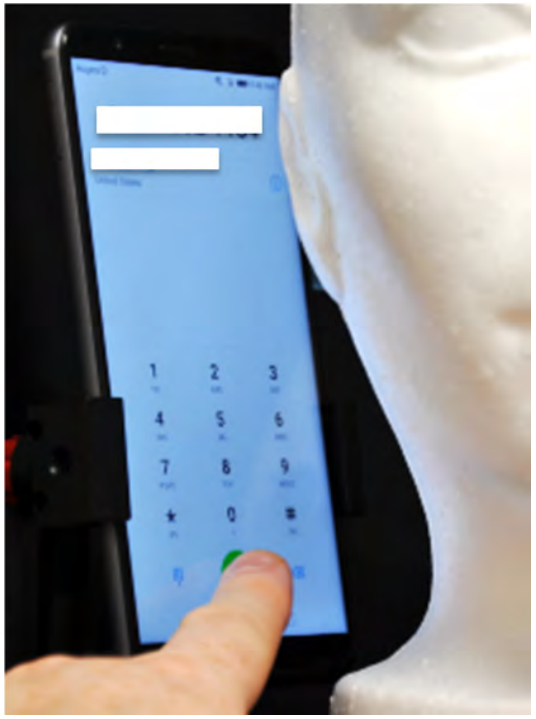
MediaTek Exhibit 1015, Page 218 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018*

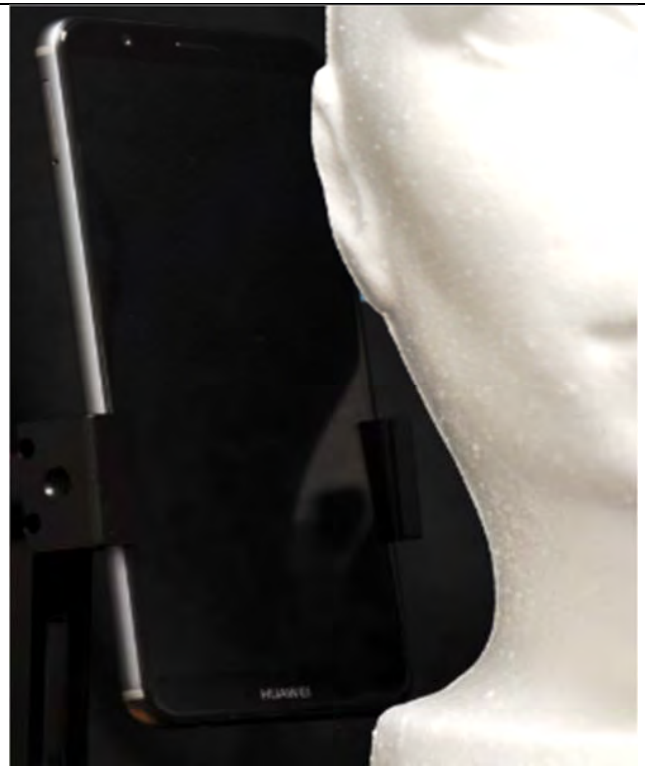
2. The mobile station of claim 1,	*See* claim 1.

MediaTek Exhibit 1015, Page 219 of 560

further comprising increasing power to the display if the signal from the activated proximity sensor indicates that the first condition no longer exists.	The microprocessor of the Huawei Mate SE increases power to the display if the signal from the activated proximity sensor indicates that the first condition no longer exists. By way of example only and as shown above in claim 1(iv)(a), the microprocessor is able to determine whether a call is active. By way of example only, the first image shows that the Huawei Mate SE is proximate to an object, but no call has been initiated or answered, so the display is powered normally.  The second image shows that, after the call button is pressed and the ear is proximate to the Huawei Mate SE, power to the display is reduced and the display is darkened.

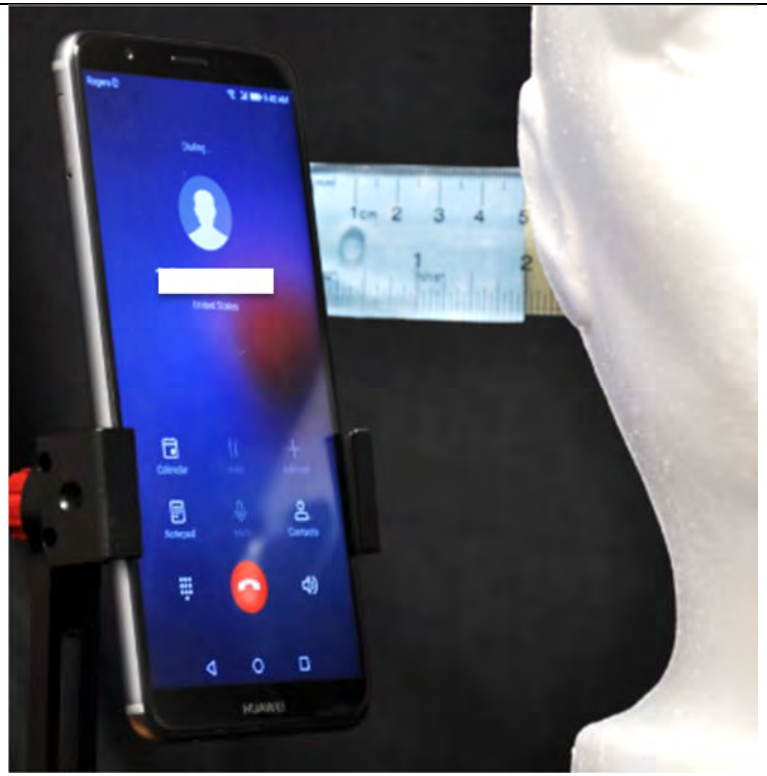
MediaTek Exhibit 1015, Page 220 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

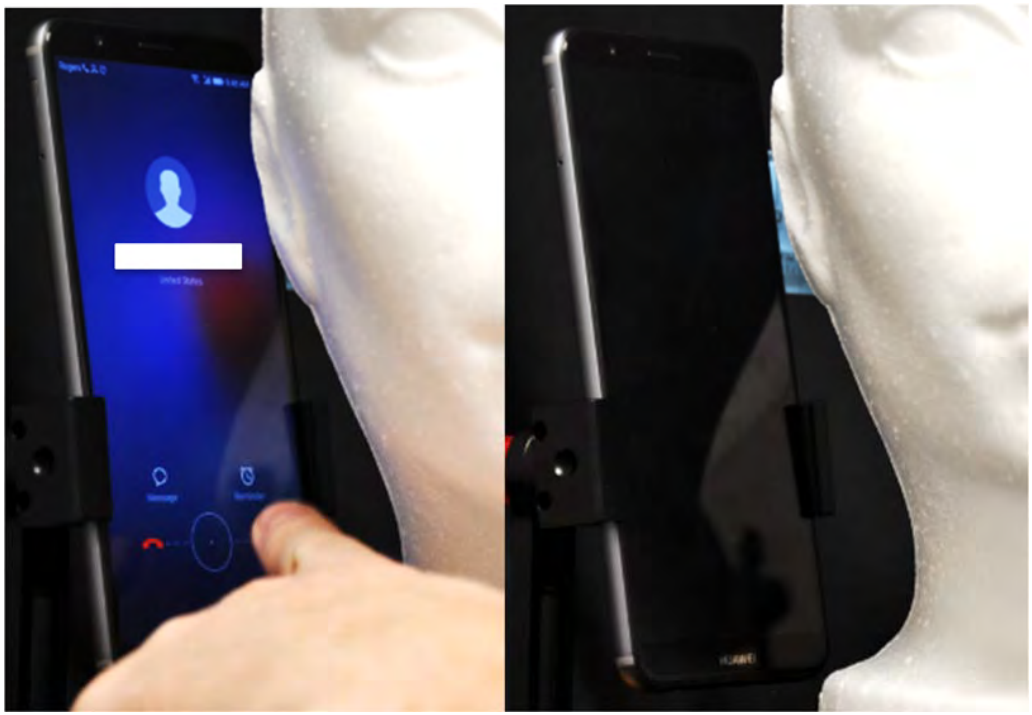
	 The third image shows that when the first condition does not exist (e.g., the ear is no longer proximate) even when a call has been initiated or answered, power to the display is not reduced and the display is powered normally.

MediaTek Exhibit 1015, Page 221 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

	 By way of further example, the Android Developer Code Website describes that "[t]he proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call)." *See* *https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox*, *last accessed November 30, 2018.*
4. The mobile station as recited in claim 1,	*See* claim 1.

MediaTek Exhibit 1015, Page 222 of 560

wherein the microprocessor reduces power to the display by turning off the display.	The microprocessor of the Huawei Mate SE reduces power to the display by turning off the display. When the call button or answer button is pressed and the ear is proximate to the Huawei Mate SE, power to the display is reduced and the display is turned off.  The power reduction is further shown by the difference in battery power consumption when the display is powered normally as compared to when the display is darkened during a call. By way of example only, the following series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which no object was proximate, and the display remained powered normally

MediaTek Exhibit 1015, Page 223 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

	 When the call begins, the battery starts at a charge of 100%. After the call, the battery is at 99%. The screen consumed 72.62% of the battery. The next series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which an object was proximate and power to the display was reduced during the call.

MediaTek Exhibit 1015, Page 224 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554



When the call begins, the battery starts at a charge of 100%. After the call, the battery is still at 100%. The screen consumed 20.13% of the battery.

By way of further example only, the Android Developer Code Website describes the proximity sensor's signaling to the microprocessor, which would turn off power to the display if a call is active and an object is proximate:

MediaTek Exhibit 1015, Page 225 of 560

TYPE_PROXIMITY

public static final int TYPE_PROXIMITY

A constant describing a proximity sensor type. This is a wake up sensor.

See SensorEvent.values for more details.

See also:

isWakeUpSensor()

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor added in API level 21

public boolean isWakeUpSensor ()

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 226 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

See also:

Sensor	Type	Description	Common Uses
`TYPE_PROXIMITY`	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

Use the proximity sensor

The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:

KOTLIN JAVA

```
private lateinit var mSensorManager: SensorManager
private var mSensor: Sensor? = null
...
mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
```

The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 228 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 229 of 560

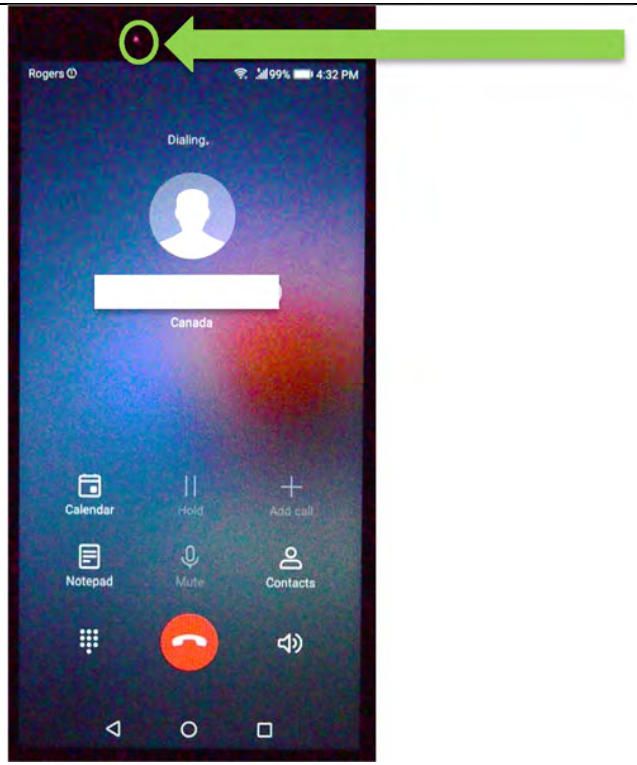
Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

5. The mobile station as recited in claim 1,	*See* claim 1.
wherein the proximity sensor is a mechanical proximity sensor, an optical sensor, or a range-detecting sensor.	The proximity sensor of the Huawei Mate SE is a range-detecting sensor.

MediaTek Exhibit 1015, Page 230 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554



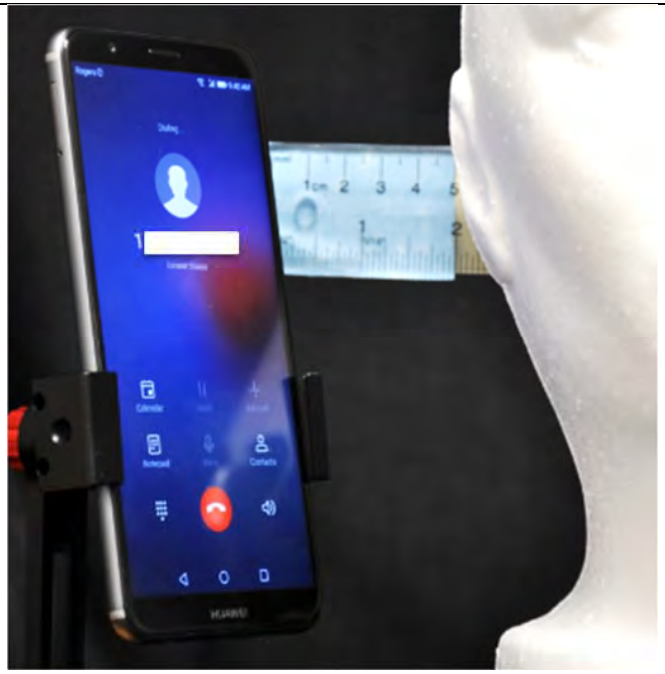
The optical range sensing proximity sensor emits Inf Red light senses the reflection to determine if external objects are proximate

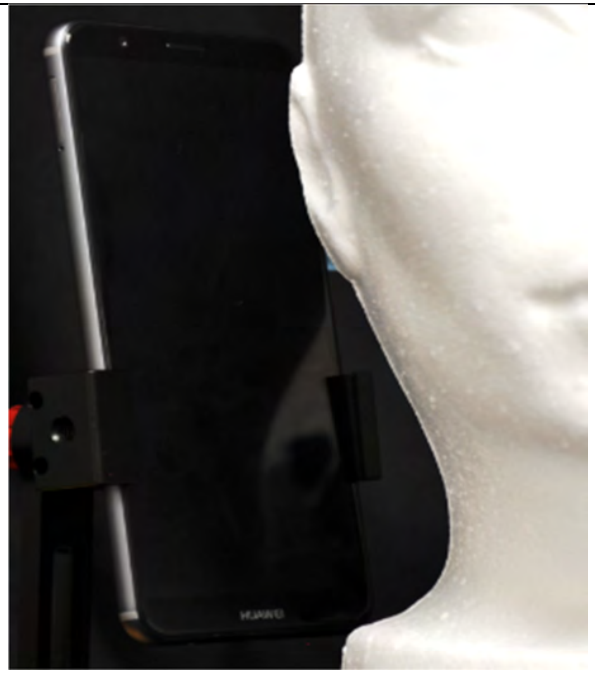
The proximity sensor detects the range of a proximate object:

By way of example only, when an incoming call is answered, and the device is not proximate to the object, approximately 7 cm from the object the display is on. The mobile station is moved proximate to the ear, approximately 4cm the display is off.

MediaTek Exhibit 1015, Page 231 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554





By way of further example, the Android Developer Code Website describes range detection in proximity sensors:

TYPE_PROXIMITY	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

And also, the code shows distance measurement:

MediaTek Exhibit 1015, Page 232 of 560

```
override fun onSensorChanged(event: SensorEvent) {
    val distance = event.values[0]
    // Do something with this sensor data.
}
```

See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

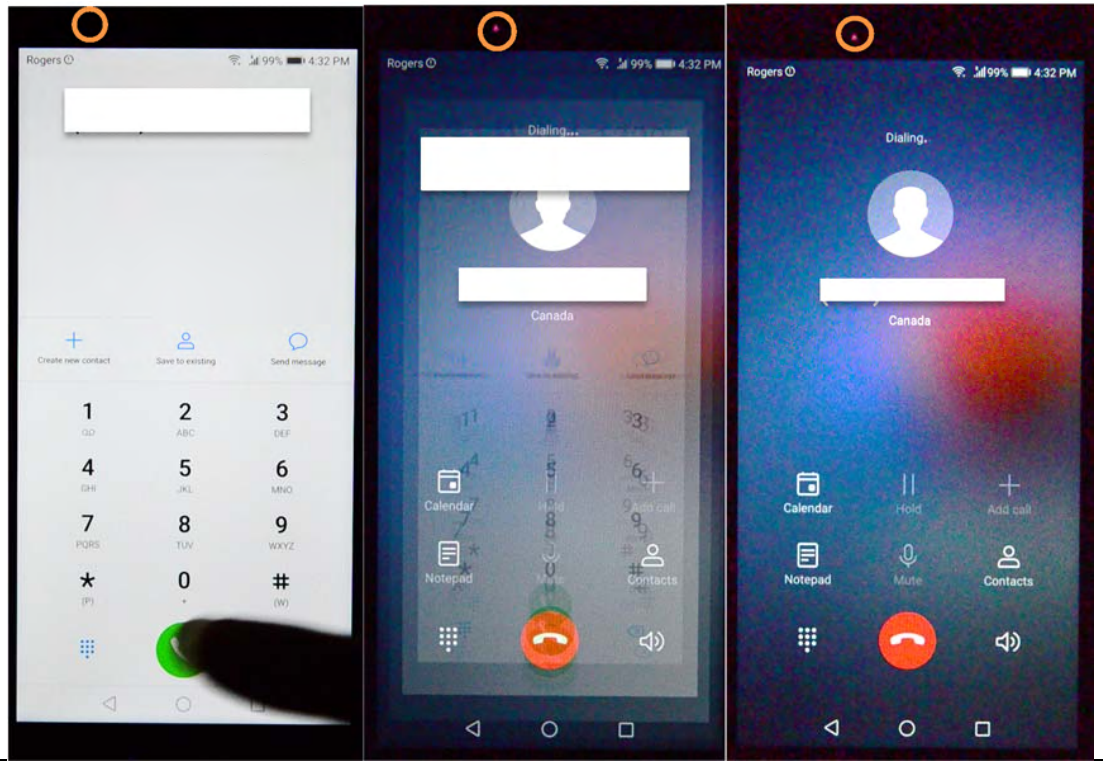
The Android Developer Code Website further explains:

> **Note:** Some proximity sensors return binary values that represent "near" or "far." In this case, the sensor usually reports its maximum range value in the far state and a lesser value in the near state. Typically, the far value is a value > 5 cm, but this can vary from sensor to sensor. You can determine a sensor's maximum range by using the `getMaximumRange()` method.

See id.

MediaTek Exhibit 1015, Page 233 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

7. The mobile station as recited in claim 1,	*See* claim 1.
wherein the proximity sensor begins detecting whether an external object is proximate substantially concurrently with the mobile station initiating an outgoing telephone call.	The proximity sensor of the Huawei Mate SE begins detecting whether an external object is proximate substantially concurrently with the mobile station initiating an outgoing telephone call. The first image shows that when the user is about to initiate the call, at that point the proximity sensor is not activated. The second image shows the call initiated and the proximity sensor is activated. Third image shows the proximity sensor remains activated during the remainder of the call. 

MediaTek Exhibit 1015, Page 234 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

	In addition, by way of further example only, the Android Developer Code Website shows how the proximity sensor is used to detect proximity substantially concurrently with initiating or receiving a call, including by providing exemplary code at least substantially similar to Huawei code:

Use the proximity sensor

The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:

KOTLIN JAVA

```
private lateinit var mSensorManager: SensorManager
private var mSensor: Sensor? = null
...
mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
```

The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 235 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 236 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*

8. A method of conserving battery power in a mobile station, the mobile station adapted to detect the existence of a proximity condition, the proximity condition being that an external object is proximate, the method comprising:	To the extent that the preamble is found to be limiting, *see* claim 1(preamble); 1[ii]-[iii]; 1(b)-(d).
the mobile station detecting the existence of an initiated call condition or an answered-call	The Huawei Mate SE detects the existence of an initiated call condition or an answered-call condition independent and different from the proximity condition, the initiated-call condition being

MediaTek Exhibit 1015, Page 237 of 560

condition independent and different from the proximity condition, the initiated-call condition being that a user of the mobile station has performed an action to initiate a call, and the answered-call condition being that a user of the mobile station has performed an action to answer a call;	that a user of the mobile station has performed an action to initiate a call, and the answered-call condition being that a user of the mobile station has performed an action to answer a call. *See* claim 1(a).
the mobile station activating the proximity sensor in response to a determination that an answered-call condition or initiated-call condition exists; and	The Huawei Mate SE activates the proximity sensor in response to a determination that an answered-call condition or initiated-call condition exists. *See* claim 1(b).
the mobile station reducing power consumption of a display of the mobile station if the activated proximity sensor indicates that the proximity condition exists.	The Huawei Mate SE reduces power consumption of a display of the mobile station if the activated proximity sensor indicates that the proximity condition exists. *See* claim 1(c)-(d).
14. A mobile station, comprising:	*See* claim 1(preamble).
a display;	*See* claim 1[i].
a proximity sensor	*See* claim 1[ii].
adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate;	*See* claim 1[iii].

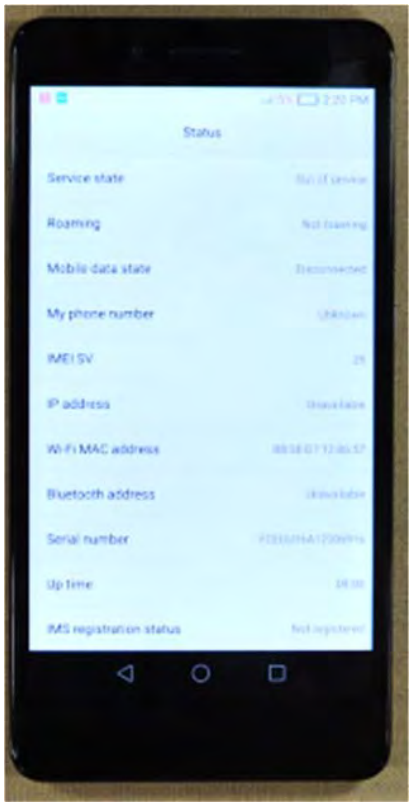
MediaTek Exhibit 1015, Page 238 of 560

Exhibit B-5 –Infringement of U.S. Patent No. 8,204,554

and a microprocessor adapted to:	*See* claim[iv].
(a) determine, independently of the determination whether the external object is proximate, the existence of a second condition different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;	The microprocessor of the Huawei Mate SE is adapted to determine, independently of the determination whether the external object is proximate, the existence of a second condition different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call. *See* claim 1(a).
(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor,	*See* claim 1(b).
(c) receive the signal from the activated proximity sensor, and	*See* claim 1(c).
(d) reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists.	*See* claim 1(d).

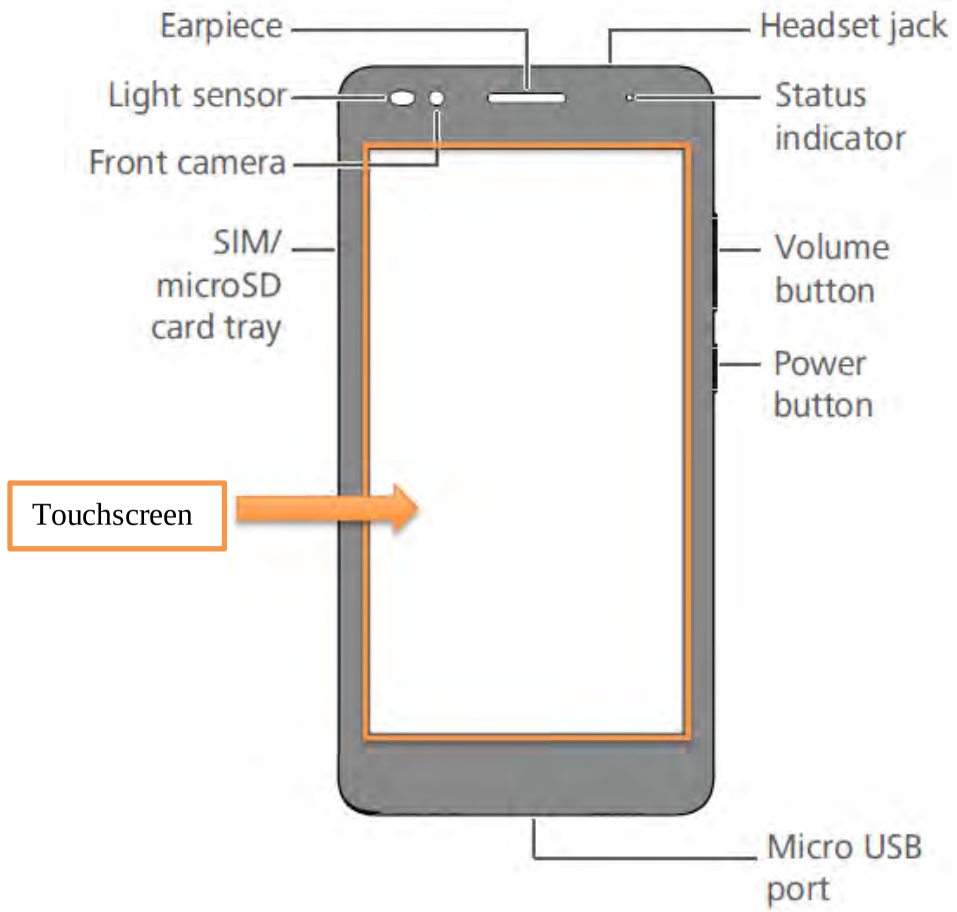
MediaTek Exhibit 1015, Page 239 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

Asserted Claim Elements	Huawei Sensa
1. A mobile station, comprising:	To the extent that the preamble is found to be limiting, the Huawei Sensa is a mobile station.  

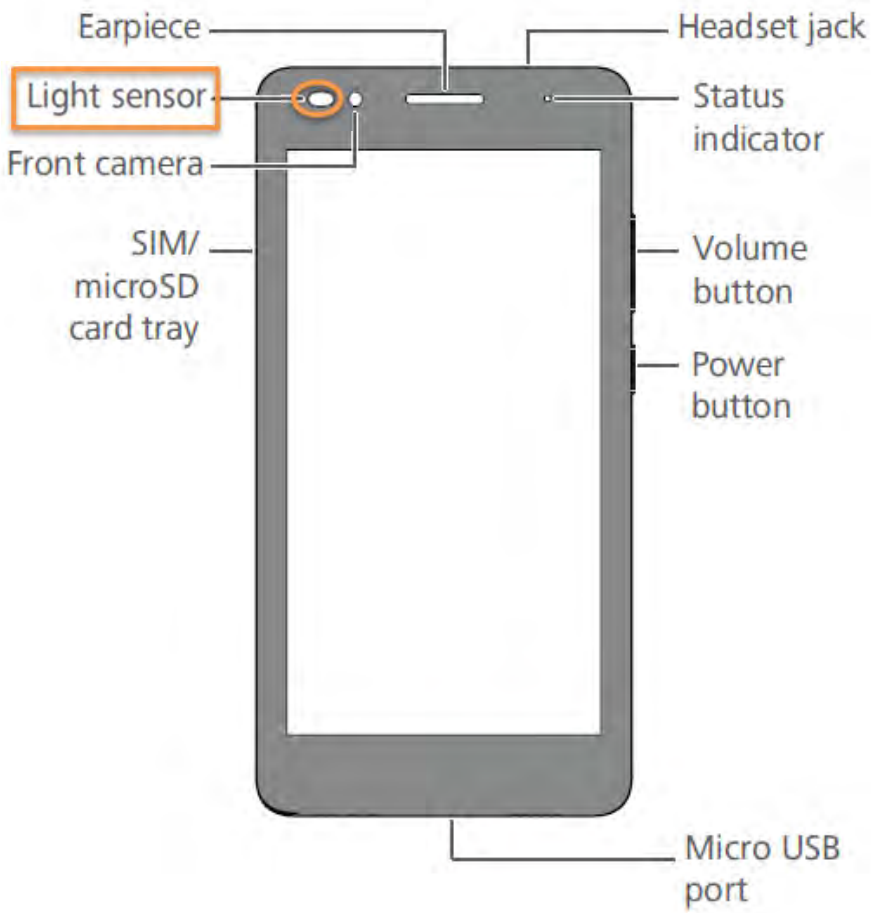
MediaTek Exhibit 1015, Page 240 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

[i] a display;	The Huawei Sensa includes a display.  "Use simple **touchscreen** gestures to perform a variety of tasks, such as open applications, scroll through lists, and zoom images."

MediaTek Exhibit 1015, Page 241 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

	See http://consumer-tkb.Huawei.com/ccpgw/msa/TKB/app_0000000000011227-CcpTKBKnowOut/ctkbknowout/servlet/show/knowAttachmentServlet?knowId=en-us00350812 pp. 1 & 8, last accessed Nov 23, 2018.
[ii] a proximity sensor	The Huawei Sensa includes a proximity sensor. 

MediaTek Exhibit 1015, Page 242 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

	See http://consumer-tkb.Huawei.com/ccpgw/msa/TKB/app_0000000000011227-CcpTKBKnowOut/ctkbknowout/servlet/show/knowAttachmentServlet?knowId=en-us00350812 p. 1, last accessed Nov 23, 2018.
[iii] adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate; and	The proximity sensor of the Huawei Sensa is adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate. By way of example only, the Huawei Sensa is an Android phone. The Android Developer Code Website describes functioning of proximity sensors in Android phones customized and adapted by Huawei to run on their hardware. In particular, the description specifies that the proximity sensor measures the proximity of an object relative to the device: TYPE_PROXIMITY Hardware Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear. Phone position during a call. *See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.* By way of further example, the Android Developer Code Website provides files that describe the generation of a signal by the sensor.

MediaTek Exhibit 1015, Page 243 of 560

TYPE_PROXIMITY

```
public static final int TYPE_PROXIMITY
```

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the proximity sensor (for example, whether a wake-up sensor or non-wake-up sensor) generates signals:

isWakeUpSensor — added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 244 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

In addition, the Android Developer Code provides the following exemplary code at least substantially similar to Huawei code for using the proximity sensor "to determine how far away a person's head is from the face of a handset device (for example, when a user making or receiving a phone call)."

MediaTek Exhibit 1015, Page 245 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 246 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

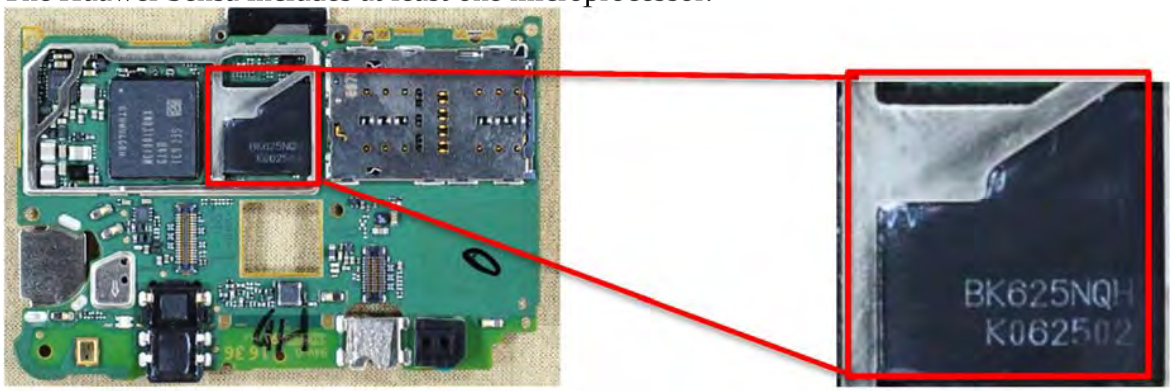
        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 247 of 560

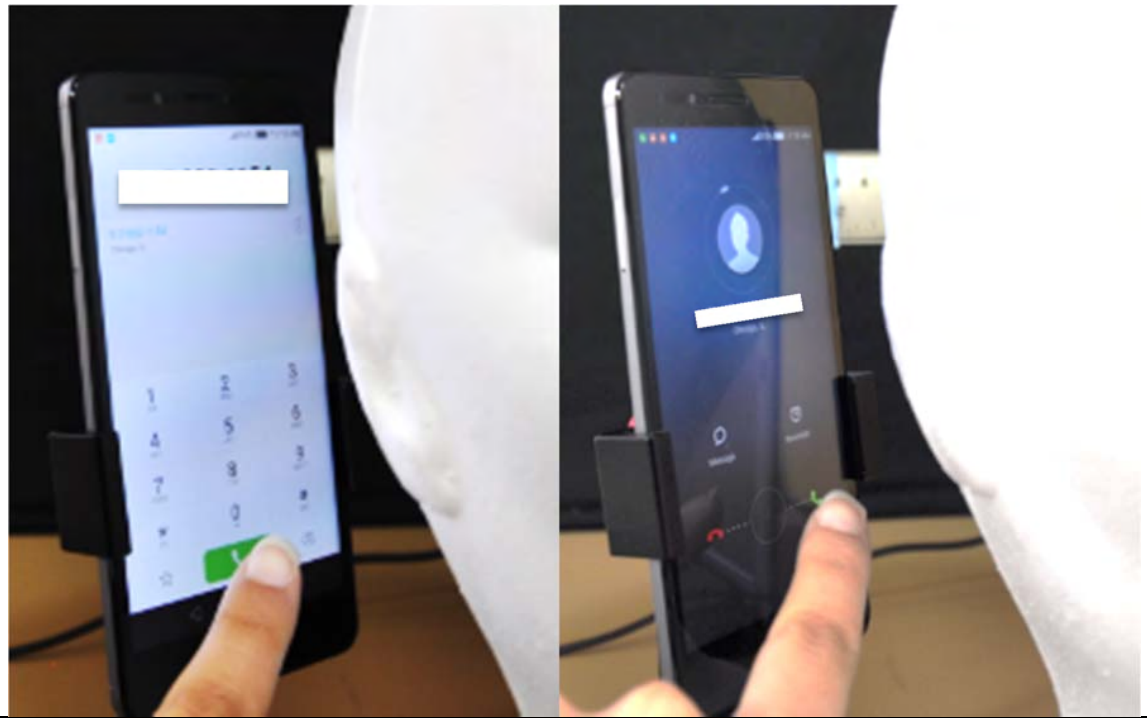
Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

[iv] a microprocessor adapted to:	The Huawei Sensa includes at least one microprocessor. 

MediaTek Exhibit 1015, Page 248 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

	"**Chipset:** QUALCOMM " *See https://www.cnet.com/products/Huawei-sensa-lte-4g-lte-16-gb-gsm-smartphone/specs/, last accessed Nov 23, 2018.*
(a) determine, without using the proximity sensor, the existence of a second condition independent and different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;	The microprocessor of the Huawei Sensa is adapted to determine, without using the proximity sensor, the existence of a second condition independent and different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call. The microprocessor is able to determine when the user initiates an outgoing call or answers an incoming call. 

MediaTek Exhibit 1015, Page 249 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

	By way of example only, the Huawei Sensa is an Android phone. The Huawei Sensa's microprocessor uses code substantially similar to the code described and excerpted below to (1) determine when the user initiates an outgoing call or (2) determine when the user answers an incoming call;
	
	Outgoing Call:
	
	`/**`
	`* Broadcast receiver to detect the outgoing calls.`
	`*/`
	`public class OutgoingReceiver extends BroadcastReceiver {`
	`  public OutgoingReceiver() {`
	`  }`
	
	`  @Override`
	`  public void onReceive(Context context, Intent intent) {`
	`  String number = intent.getStringExtra(Intent.EXTRA_PHONE_NUMBER);`
	
	`  Toast.makeText(ctx,`
	`  "Outgoing: "+number,`
	`  Toast.LENGTH_LONG).show();`
	`  }`
	`}`
	
	In the above, the system sends a broadcast action `android.intent.action.NEW_OUTGOING_CALL`.
	
	Incoming Call:

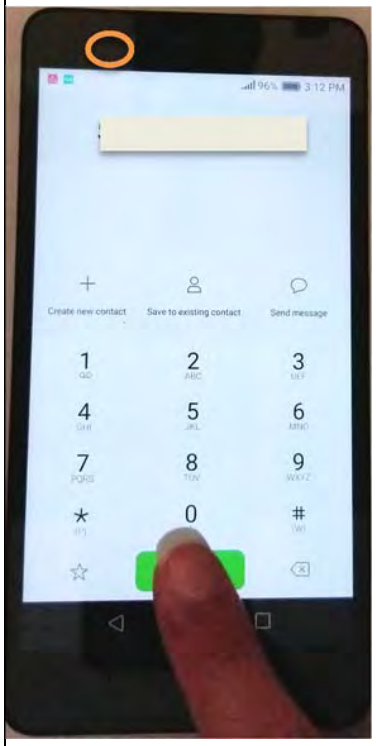
MediaTek Exhibit 1015, Page 250 of 560

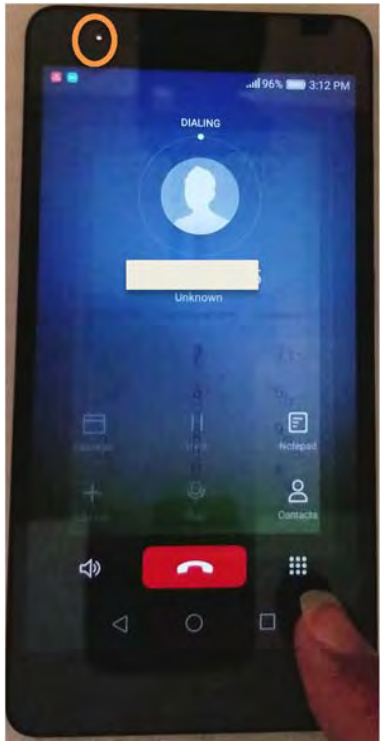
	``
	/**
	* Listener to detect incoming calls.
	*/
	private class CallStateListener extends PhoneStateListener {
	  @Override
	  public void onCallStateChanged(int state, String incomingNumber) {
	  switch (state) {
	  case TelephonyManager.CALL_STATE_RINGING:
	  // called when someone is ringing to this phone
	
	  Toast.makeText(ctx,
	  "Incoming: "+incomingNumber,
	  Toast.LENGTH_LONG).show();
	  break;
	  }
	  }
	}
	``
	
	In the above, `state` is the call state, where it may be `CALL_STATE_RINGING`, `CALL_STATE_OFFHOOK`, or `CALL_STATE_IDLE`. Ringing is the state when someone is calling, offhook is when there is active or on hold call, and idle is when nobody is calling and there is no active call.
	
	See https://www.codeproject.com/Articles/548416/Detecting-Incoming-and-Outgoing-Phone-Calls-on-And, last accessed December 5, 2018.

(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor,	The microprocessor of the Huawei Sensa is adapted to, in response to a determination in step (a) that the second condition exists, activate the proximity sensor. The first image shows that when the user is about to initiate the call, at that point the proximity sensor is not activated. The second image shows the call initiated and the proximity sensor is activated. Third image shows the proximity sensor remains activated during the remainder of the call.

MediaTek Exhibit 1015, Page 251 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554







By way of example only and as shown above in claim 1(iv)(a), the microprocessor is able to determine whether a call is active according to the second condition.

MediaTek Exhibit 1015, Page 252 of 560

The microprocessor activates the proximity sensor. By way of example only, the Android Developer Code Website describes examples of proximity sensor activation and use:

TYPE_PROXIMITY

`public static final int TYPE_PROXIMITY`

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor added in API level 21

`public boolean isWakeUpSensor ()`

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 253 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

	Non-wake-up sensors Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually: • Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case. • Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost. **Wake-up sensors** In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details. *See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.* In the Huawei Sensa, when the call button or answer button is pressed, the display darkens, indicating that the proximity sensor is activated.
(c) receive the signal from the activated proximity sensor, and	The microprocessor of the Huawei Sensa is adapted to receive the signal from the activated proximity sensor. When the call button or answer button is pressed according to the above, the display darkens, indicated that the microprocessor received the signal from the activated proximity sensor that an object was proximate, and, in turn, reduced power to the display.

MediaTek Exhibit 1015, Page 254 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

	 By way of further example only, the Android Developer Code provides files that describe the proximity sensor's signaling to the microprocessor:

MediaTek Exhibit 1015, Page 255 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY

`public static final int TYPE_PROXIMITY`

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor — added in API level 21

`public boolean isWakeUpSensor ()`

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 256 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

	Non-wake-up sensors Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually: • Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case. • Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost. **Wake-up sensors** In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details. *See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.*

MediaTek Exhibit 1015, Page 257 of 560

(d) reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists.	The microprocessor of the Huawei Sensa is adapted to reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists. By way of example only, the first image shows that the Huawei Sensa is proximate to an object, but no call has been initiated or answered, so the display is powered normally.  The second image shows that, after the call button is pressed and the ear is proximate to the Huawei Sensa, power to the display is reduced and the display is darkened.

MediaTek Exhibit 1015, Page 258 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

	 The third image shows that when the first condition does not exist (e.g., the ear is no longer proximate) even when a call has been initiated or answered, power to the display is not reduced and the display is powered normally.

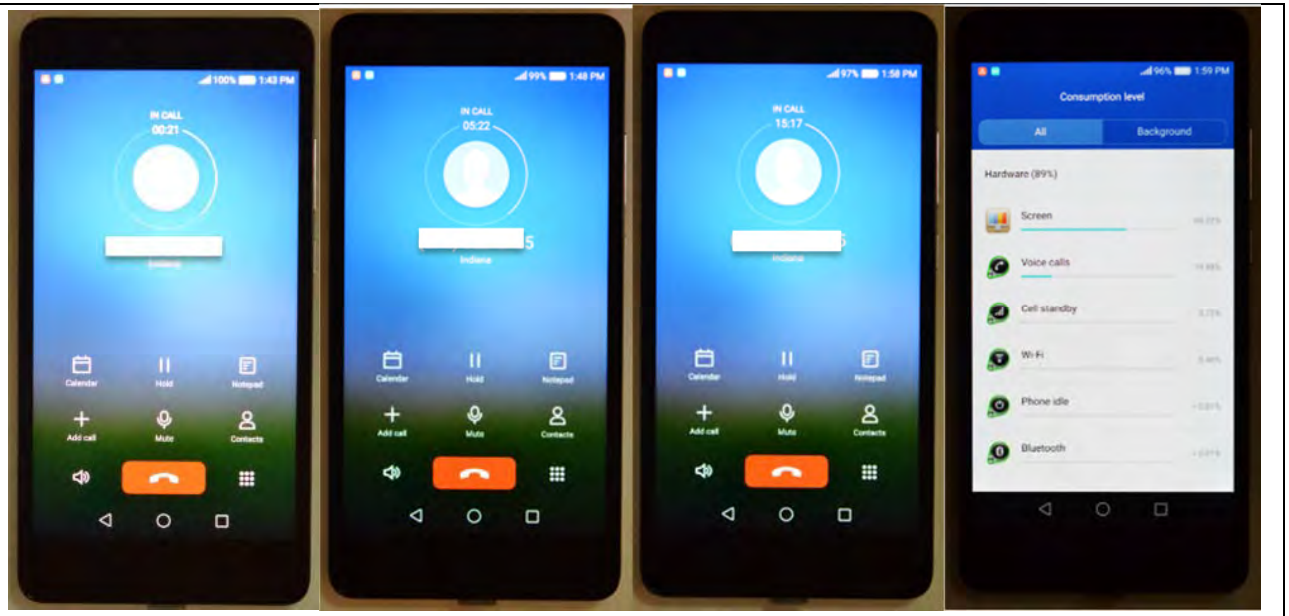
MediaTek Exhibit 1015, Page 259 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

	 The power reduction is further shown by the difference in battery power consumption when the display is powered normally as compared to when the display is darkened during a call. By way of example only, the following series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which no object was proximate, and the display remained powered normally.

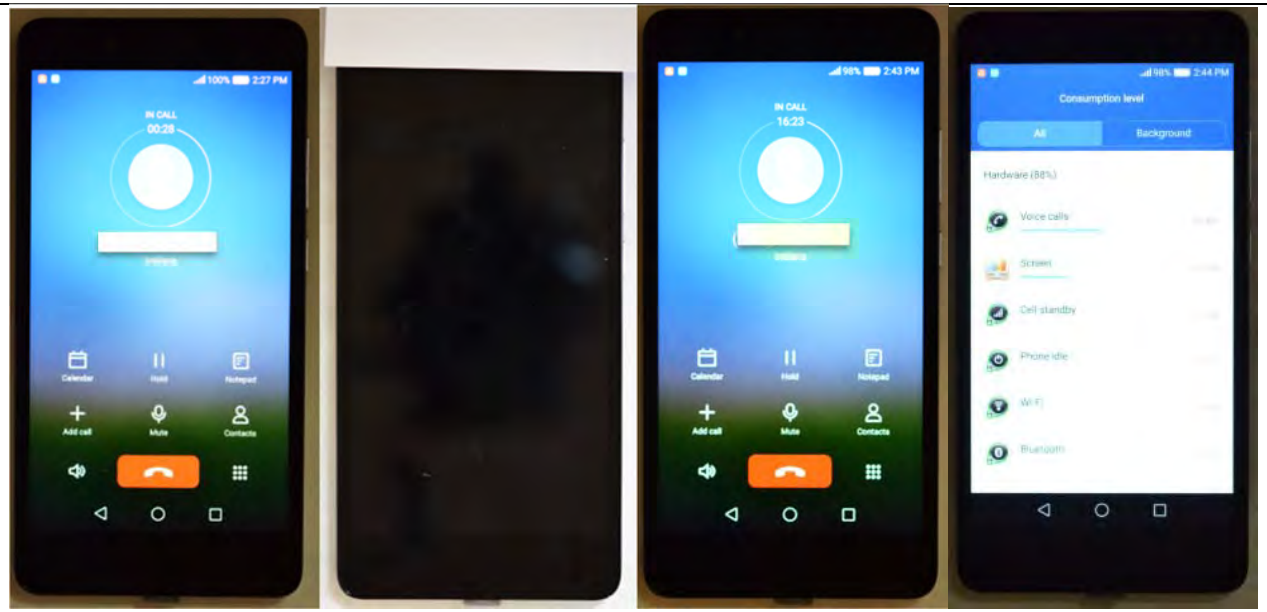
MediaTek Exhibit 1015, Page 260 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

	 When the call begins, the battery starts at a charge of 100%. After the call, the battery is at 96%. The screen consumed 68.22% of the battery. The next series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which an object was proximate and power to the display was reduced during the call.

MediaTek Exhibit 1015, Page 261 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554



When the call begins, the battery starts at a charge of 100%. After the call, the battery is at 98%. The screen consumed 31.15% of the battery.

By way of example only and as shown above in claim 1(iv)(a), the microprocessor is able to determine whether a call is active.

By way of further example, the Android Developer Code Website describes the operation of a proximity sensor in order to reduce power to the display if a call is active and an object is proximate:

TYPE_PROXIMITY	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

MediaTek Exhibit 1015, Page 262 of 560

	See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.
	
	In addition, the Android Developer Code Website provides the following exemplary code at least substantially similar to Huawei code for using the proximity sensor "to determine how far away a person's head is from the face of a handset device (or example, when a user making or receiving a phone call)."
	
	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 263 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 264 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018*

2. The mobile station of claim 1,	*See* claim 1.

MediaTek Exhibit 1015, Page 265 of 560

further comprising increasing power to the display if the signal from the activated proximity sensor indicates that the first condition no longer exists.	The microprocessor of the Huawei Sensa increases power to the display if the signal from the activated proximity sensor indicates that the first condition no longer exists. By way of example only and as shown above in claim 1(iv)(a), the microprocessor is able to determine whether a call is active. By way of example only, the first image shows that the Huawei Sensa is proximate to an object, but no call has been initiated or answered, so the display is powered normally.  The second image shows that, after the call button is pressed and the ear is proximate to the Huawei Sensa, power to the display is reduced and the display is darkened.

MediaTek Exhibit 1015, Page 266 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

	 The third image shows that when the first condition does not exist (e.g., the ear is no longer proximate) even when a call has been initiated or answered, power to the display is not reduced and the display is powered normally.

MediaTek Exhibit 1015, Page 267 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

	 By way of further example, the Android Developer Code Website describes that "[t]he proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call)." *See* *https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox*, *last accessed November 30, 2018.*
4. The mobile station as recited in claim 1,	*See* claim 1.

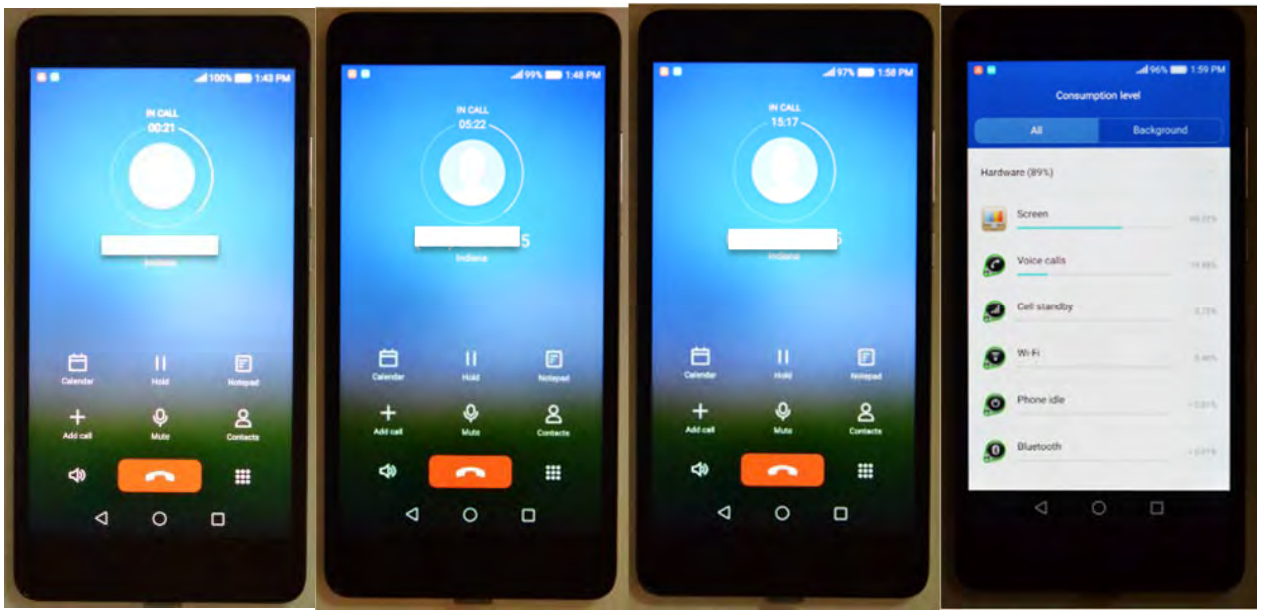
MediaTek Exhibit 1015, Page 268 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

wherein the microprocessor reduces power to the display by turning off the display.	The microprocessor of the Huawei Sensa reduces power to the display by turning off the display. When the call button or answer button is pressed and the ear is proximate to the Huawei Sensa, power to the display is reduced and the display is turned off.  The power reduction is further shown by the difference in battery power consumption when the display is powered normally as compared to when the display is darkened during a call. By way of example only, the following series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which no object was proximate, and the display remained powered normally

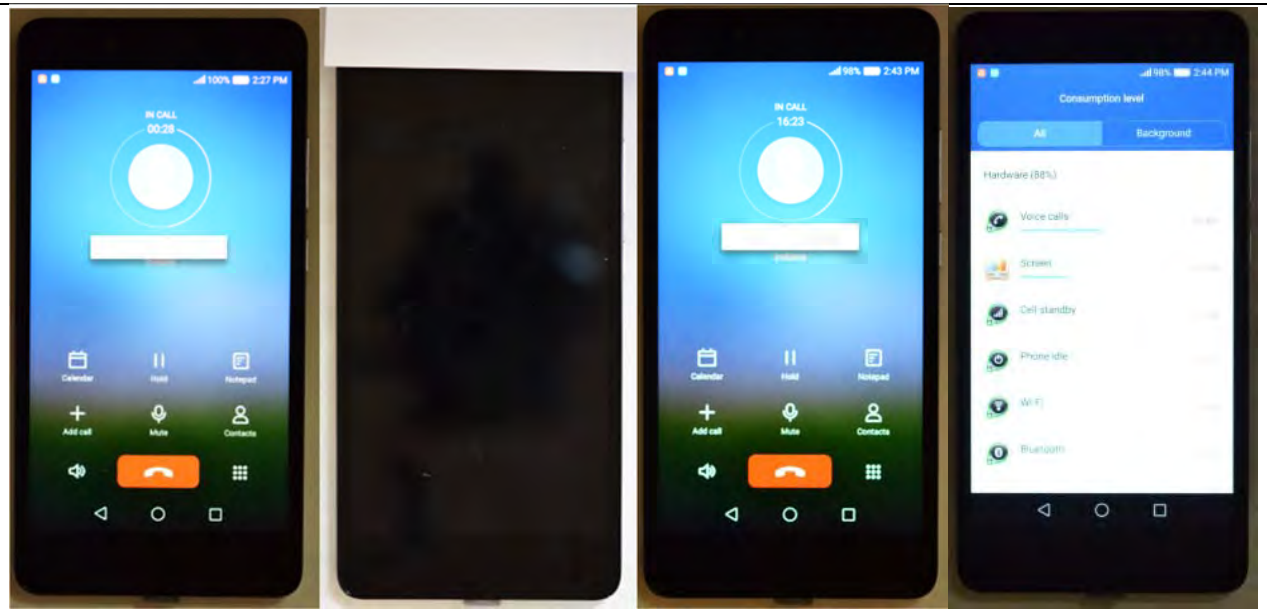
MediaTek Exhibit 1015, Page 269 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

	 When the call begins, the battery starts at a charge of 100%. After the call, the battery is at 96%. The screen consumed 68.22% of the battery. The next series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which an object was proximate and power to the display was reduced during the call.

MediaTek Exhibit 1015, Page 270 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554



When the call begins, the battery starts at a charge of 100%. After the call, the battery is at 98%. The screen consumed 31.15% of the battery.

By way of further example only, the Android Developer Code Website describes the proximity sensor's signaling to the microprocessor, which would turn off power to the display if a call is active and an object is proximate:

MediaTek Exhibit 1015, Page 271 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY

```
public static final int TYPE_PROXIMITY
```

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor — added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 272 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

See also:

Sensor	Type	Description	Common Uses
`TYPE_PROXIMITY`	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

MediaTek Exhibit 1015, Page 273 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

Use the proximity sensor

The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:

KOTLIN JAVA

```
private lateinit var mSensorManager: SensorManager
private var mSensor: Sensor? = null
...
mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
```

The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 274 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

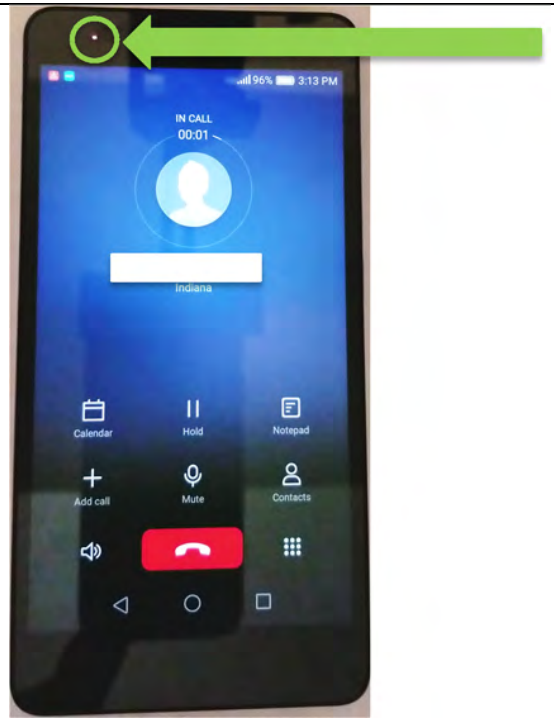
MediaTek Exhibit 1015, Page 275 of 560

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*

5. The mobile station as recited in claim 1,	*See* claim 1.
wherein the proximity sensor is a mechanical proximity sensor, an optical sensor, or a range-detecting sensor.	The proximity sensor of the Huawei Sensa is a range-detecting sensor.

MediaTek Exhibit 1015, Page 276 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554



The optical range sensing proximity sensor emits Inf Red light senses the reflection to determine if external objects are proximate

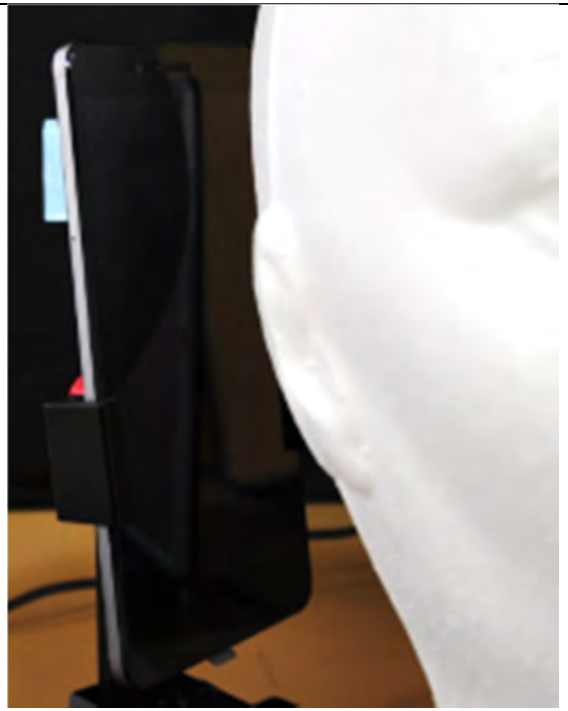
The proximity sensor detects the range of a proximate object:

By way of example only, when an incoming call is answered, and the device is not proximate to the object, approximately 7 cm from the object the display is on. The mobile station is moved proximate to the ear, approximately 4cm the display is off.

MediaTek Exhibit 1015, Page 277 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554





By way of further example, the Android Developer Code Website describes range detection in proximity sensors:

TYPE_PROXIMITY	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

And also, the code shows distance measurement:

MediaTek Exhibit 1015, Page 278 of 560

```
override fun onSensorChanged(event: SensorEvent) {
    val distance = event.values[0]
    // Do something with this sensor data.
}
```

See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

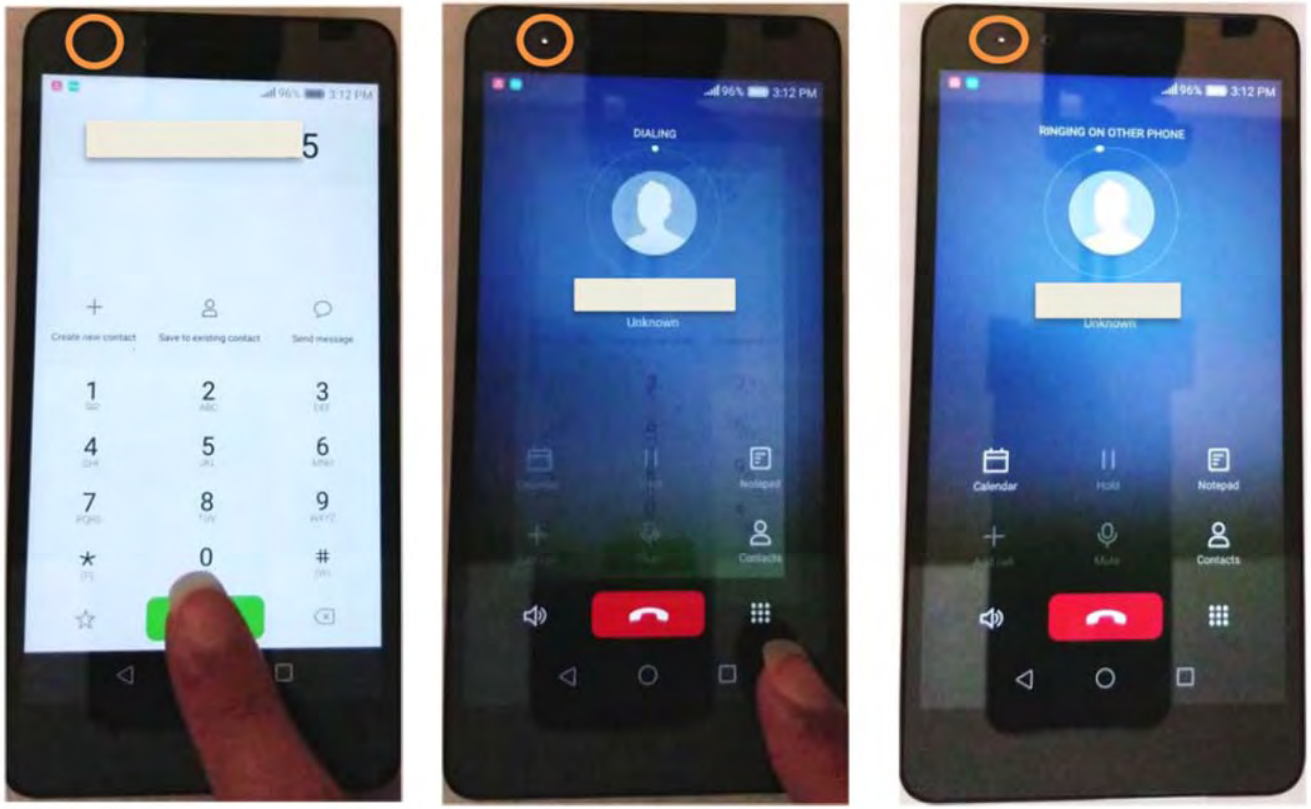
The Android Developer Code Website further explains:

> **Note:** Some proximity sensors return binary values that represent "near" or "far." In this case, the sensor usually reports its maximum range value in the far state and a lesser value in the near state. Typically, the far value is a value > 5 cm, but this can vary from sensor to sensor. You can determine a sensor's maximum range by using the `getMaximumRange()` method.

See id.

MediaTek Exhibit 1015, Page 279 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

7. The mobile station as recited in claim 1,	*See* claim 1.
wherein the proximity sensor begins detecting whether an external object is proximate substantially concurrently with the mobile station initiating an outgoing telephone call.	The proximity sensor of the Huawei Sensa begins detecting whether an external object is proximate substantially concurrently with the mobile station initiating an outgoing telephone call. The first image shows that when the user is about to initiate the call, at that point the proximity sensor is not activated. The second image shows the call initiated and the proximity sensor is activated. Third image shows the proximity sensor remains activated during the remainder of the call. 

MediaTek Exhibit 1015, Page 280 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

In addition, by way of further example only, the Android Developer Code Website shows how the proximity sensor is used to detect proximity substantially concurrently with initiating or receiving a call, including by providing exemplary code at least substantially similar to Huawei code:

Use the proximity sensor

The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:

KOTLIN JAVA

```
private lateinit var mSensorManager: SensorManager
private var mSensor: Sensor? = null
...
mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
```

The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 281 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 282 of 560

<table>
<tr><td></td><td>

```
override fun onSensorChanged(event: SensorEvent) {
    val distance = event.values[0]
    // Do something with this sensor data.
}

override fun onResume() {
    // Register a listener for the sensor.
    super.onResume()

    mProximity?.also { proximity ->
        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
    }
}

override fun onPause() {
    // Be sure to unregister the sensor when the activity pauses.
    super.onPause()
    mSensorManager.unregisterListener(this)
}
```

See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*
</td></tr>
<tr><td>**8.** A method of conserving battery power in a mobile station, the mobile station adapted to detect the existence of a proximity condition, the proximity condition being that an external object is proximate, the method comprising:</td><td>To the extent that the preamble is found to be limiting, *see* claim 1(preamble); 1[ii]-[iii]; 1(b)-(d).</td></tr>
<tr><td>the mobile station detecting the existence of an initiated call</td><td>The Huawei Sensa detects the existence of an initiated call condition or an answered-call condition independent and different from the proximity condition, the initiated-call condition being that a user of</td></tr>
</table>

MediaTek Exhibit 1015, Page 283 of 560

condition or an answered-call condition independent and different from the proximity condition, the initiated-call condition being that a user of the mobile station has performed an action to initiate a call, and the answered-call condition being that a user of the mobile station has performed an action to answer a call;	the mobile station has performed an action to initiate a call, and the answered-call condition being that a user of the mobile station has performed an action to answer a call. *See* claim 1(a).
the mobile station activating the proximity sensor in response to a determination that an answered-call condition or initiated-call condition exists; and	The Huawei Sensa activates the proximity sensor in response to a determination that an answered-call condition or initiated-call condition exists. *See* claim 1(b).
the mobile station reducing power consumption of a display of the mobile station if the activated proximity sensor indicates that the proximity condition exists.	The Huawei Sensa reduces power consumption of a display of the mobile station if the activated proximity sensor indicates that the proximity condition exists. *See* claim 1(c)-(d).
14. A mobile station, comprising:	*See* claim 1(preamble).
a display;	*See* claim 1[i].
a proximity sensor	*See* claim 1[ii].

MediaTek Exhibit 1015, Page 284 of 560

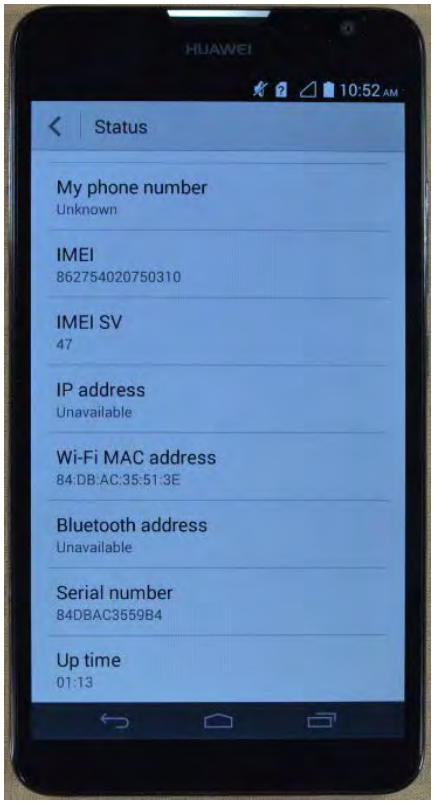
Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate;	*See* claim 1[iii].
and a microprocessor adapted to:	*See* claim[iv].
(a) determine, independently of the determination whether the external object is proximate, the existence of a second condition different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;	The microprocessor of the Huawei Sensa is adapted to determine, independently of the determination whether the external object is proximate, the existence of a second condition different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call. *See* claim 1(a).
(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor,	*See* claim 1(b).
(c) receive the signal from the activated proximity sensor, and	*See* claim 1(c).
(d) reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists.	*See* claim 1(d).

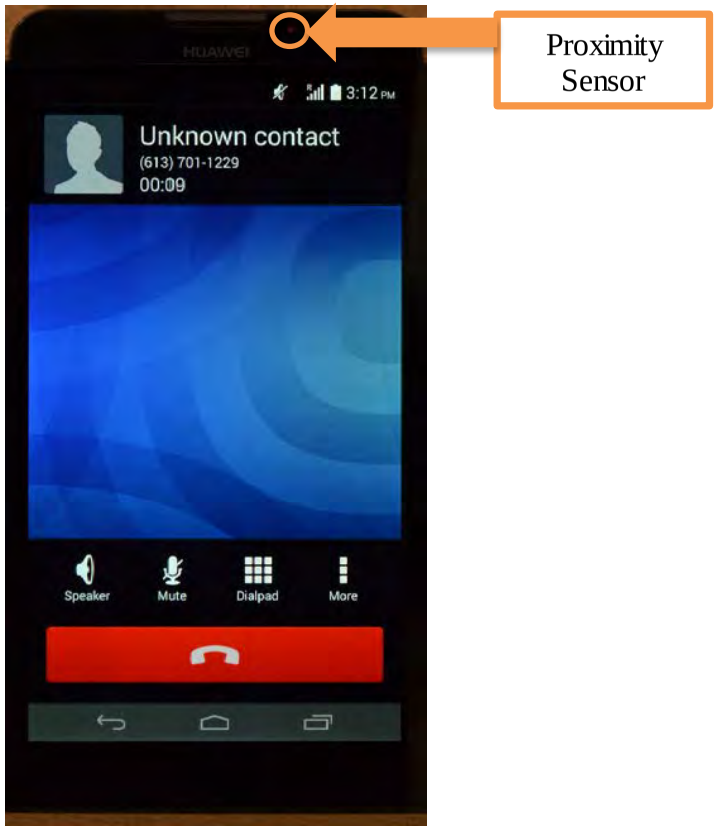
MediaTek Exhibit 1015, Page 285 of 560

Exhibit B-6 – Infringement of U.S. Patent No. 8,204,554

MediaTek Exhibit 1015, Page 286 of 560

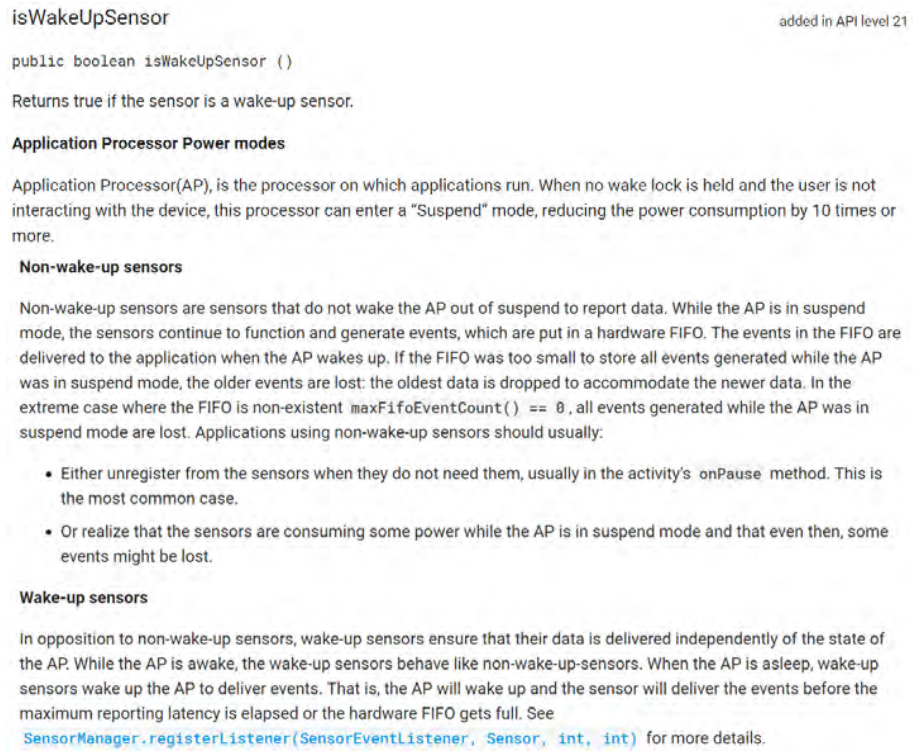
Asserted Claim Elements	Huawei Ascend Mate 2
1. A mobile station, comprising:	To the extent that the preamble is found to be limiting, the Huawei Ascend Mate 2 is a mobile station.  

[i] a display;	The Huawei Ascend Mate 2 includes a display.  *See http://consumer-tkb.huawei.com/ccpgw/msa/TKB/app_0000000000011227-CcpTKBKnowOut/ctkbknowout/servlet/show/knowAttachmentServlet?knowId=en-us00351749, last accessed Nov 29, 2018.*

[ii] a proximity sensor	The Huawei Ascend Mate 2 includes a proximity sensor. 

[iii] adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate; and	The proximity sensor of the Huawei Ascend Mate 2 is adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate. By way of example only, the Huawei Ascend Mate 2 is an Android phone. The Android Developer Code Website describes functioning of proximity sensors in Android phones customized and adapted by Huawei to run on their hardware. In particular, the description specifies that the proximity sensor measures the proximity of an object relative to the device: TYPE_PROXIMITY Hardware Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear. Phone position during a call. *See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.* By way of further example, the Android Developer Code Website provides files that describe the generation of a signal by the sensor. TYPE_PROXIMITY public static final int TYPE_PROXIMITY A constant describing a proximity sensor type. This is a wake up sensor. See SensorEvent.values for more details. **See also:** isWakeUpSensor() Constant Value: 8 (0x00000008) *See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.*

The referenced discussion concerning the isWakeUpSensor file explains the proximity sensor (for example, whether a wake-up sensor or non-wake-up sensor) generates signals:



isWakeUpSensor

added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

In addition, the Android Developer Code provides the following exemplary code at least substantially similar to Huawei code for using the proximity sensor "to determine how far away a person's head is from the face of a handset device (for example, when a user making or receiving a phone call)."

Use the proximity sensor

The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:

KOTLIN JAVA

```
private lateinit var mSensorManager: SensorManager
private var mSensor: Sensor? = null
...
mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
```

The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

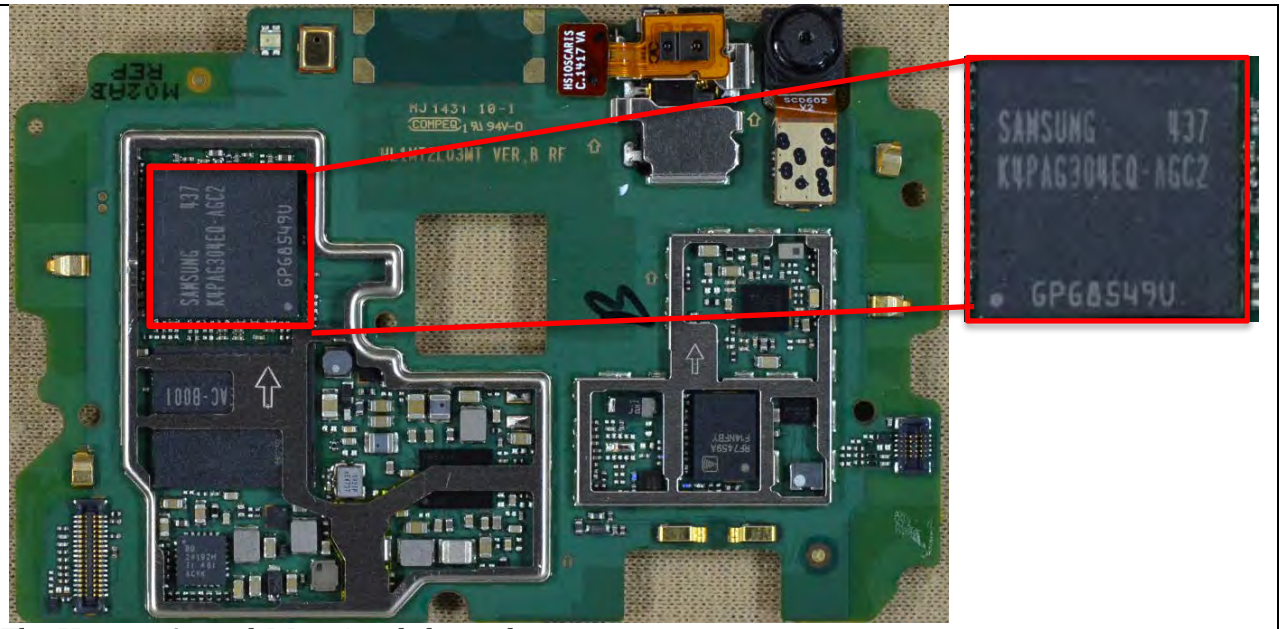
```
override fun onSensorChanged(event: SensorEvent) {
    val distance = event.values[0]
    // Do something with this sensor data.
}

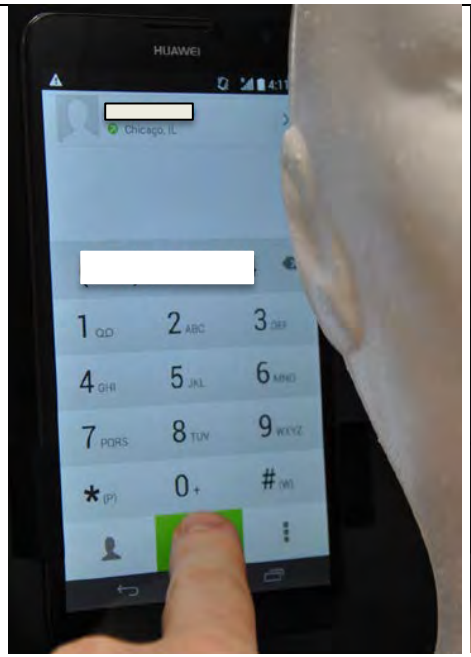
override fun onResume() {
    // Register a listener for the sensor.
    super.onResume()

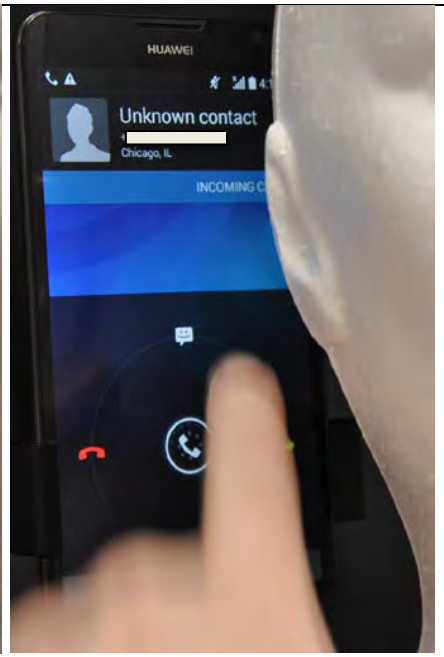
    mProximity?.also { proximity ->
        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
    }
}

override fun onPause() {
    // Be sure to unregister the sensor when the activity pauses.
    super.onPause()
    mSensorManager.unregisterListener(this)
}
```

See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

[iv] a microprocessor adapted to:	 The Huawei Ascend Mate 2 includes at least one microprocessor. "1.6GHz Qualcomm Quad-Core MSM8928" *See https://www.cnet.com/products/huawei-ascend-mate2-4g/specs/, last accessed Nov. 29, 2018.*
(a) determine, without using the proximity sensor, the existence of a second condition independent and different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;	The microprocessor of the Huawei Ascend Mate 2 is adapted to determine, without using the proximity sensor, the existence of a second condition independent and different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call.





By way of example only, the Huawei Ascend Mate 2 is an Android phone. The Huawei Ascend Mate 2's microprocessor uses code substantially similar to the code described and excerpted below to (1) determine when the user initiates an outgoing call or (2) determine when the user answers an incoming call;

Outgoing Call:

```
/**
* Broadcast receiver to detect the outgoing calls.
*/
public class OutgoingReceiver extends BroadcastReceiver {
     public OutgoingReceiver() {
     }

     @Override
     public void onReceive(Context context, Intent intent) {
         String number = intent.getStringExtra(Intent.EXTRA_PHONE_NUMBER);

         Toast.makeText(ctx,
           "Outgoing: "+number,
           Toast.LENGTH_LONG).show();
     }
}
```

In the above, the system sends a broadcast action `android.intent.action.NEW_OUTGOING_CALL`.

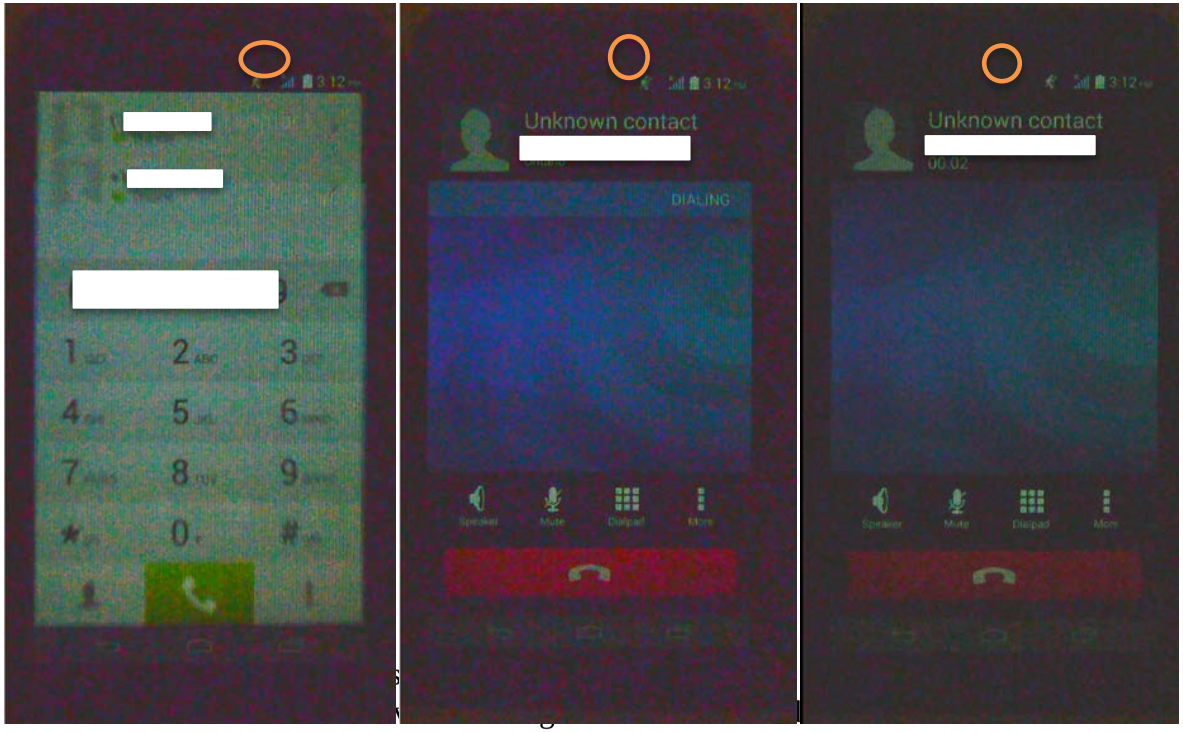
Incoming Call:

```
/**
* Listener to detect incoming calls.
*/
private class CallStateListener extends PhoneStateListener {
  @Override
  public void onCallStateChanged(int state, String incomingNumber) {
      switch (state) {
          case TelephonyManager.CALL_STATE_RINGING:
          // called when someone is ringing to this phone

          Toast.makeText(ctx,
                  "Incoming: "+incomingNumber,
                  Toast.LENGTH_LONG).show();
          break;
      }
  }
}
```

In the above, `state` is the call state, where it may be `CALL_STATE_RINGING`, `CALL_STATE_OFFHOOK`, or `CALL_STATE_IDLE`. Ringing is the state when someone is calling,

	offhook is when there is active or on hold call, and idle is when nobody is calling and there is no active call. *See https://www.codeproject.com/Articles/548416/Detecting-Incoming-and-Outgoing-Phone-Calls-on-And, last accessed December 5, 2018.*
(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor,	The microprocessor of the Huawei Ascend Mate 2 is adapted to, in response to a determination in step (a) that the second condition exists, activate the proximity sensor.

	The first image shows that when the user is about to initiate the call, at that point the proximity sensor is not activated. The second image shows the call initiated and the proximity sensor is activated. Third image shows the proximity sensor remains activated during the remainder of the call.  By way of example only and as shown above in claim 1(iv)(a), the microprocessor is able to determine whether a call is active according to the second condition. The microprocessor activates the proximity sensor. By way of example only, the Android Developer Code Website describes examples of proximity sensor activation and use:

TYPE_PROXIMITY

```
public static final int TYPE_PROXIMITY
```

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor — added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

	See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018. In the Huawei Ascend Mate 2, when the call button or answer button is pressed, the display darkens, indicating that the proximity sensor is activated.
(c) receive the signal from the activated proximity sensor, and	The microprocessor of the Huawei Ascend Mate 2 is adapted to receive the signal from the activated proximity sensor. When the call button or answer button is pressed according to the above, the display darkens, indicated that the microprocessor received the signal from the activated proximity sensor that an object was proximate, and, in turn, reduced power to the display.

	 By way of further example only, the Android Developer Code provides files that describe the proximity sensor's signaling to the microprocessor:

TYPE_PROXIMITY

`public static final int TYPE_PROXIMITY`

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor

added in API level 21

`public boolean isWakeUpSensor ()`

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

Non-wake-up sensors

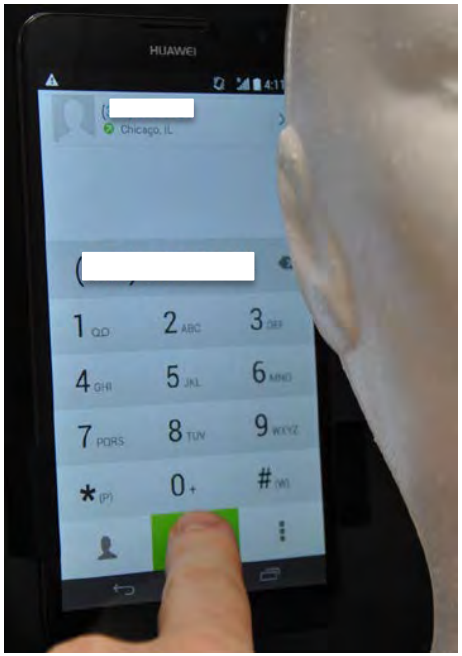
Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

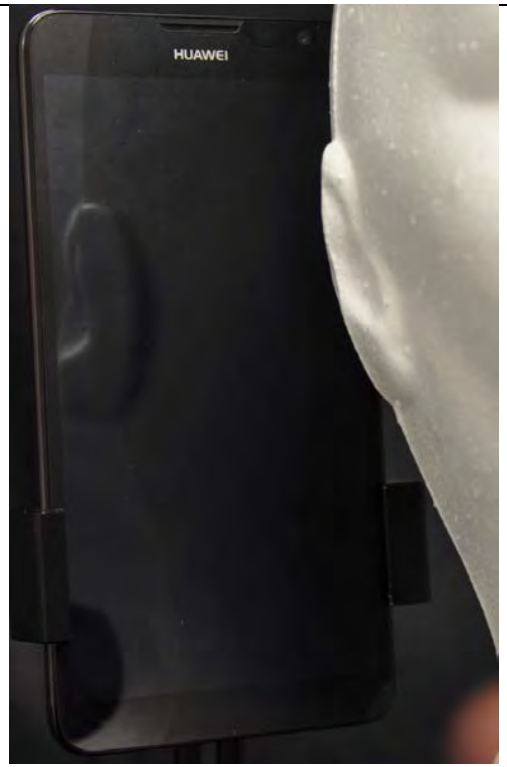
- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

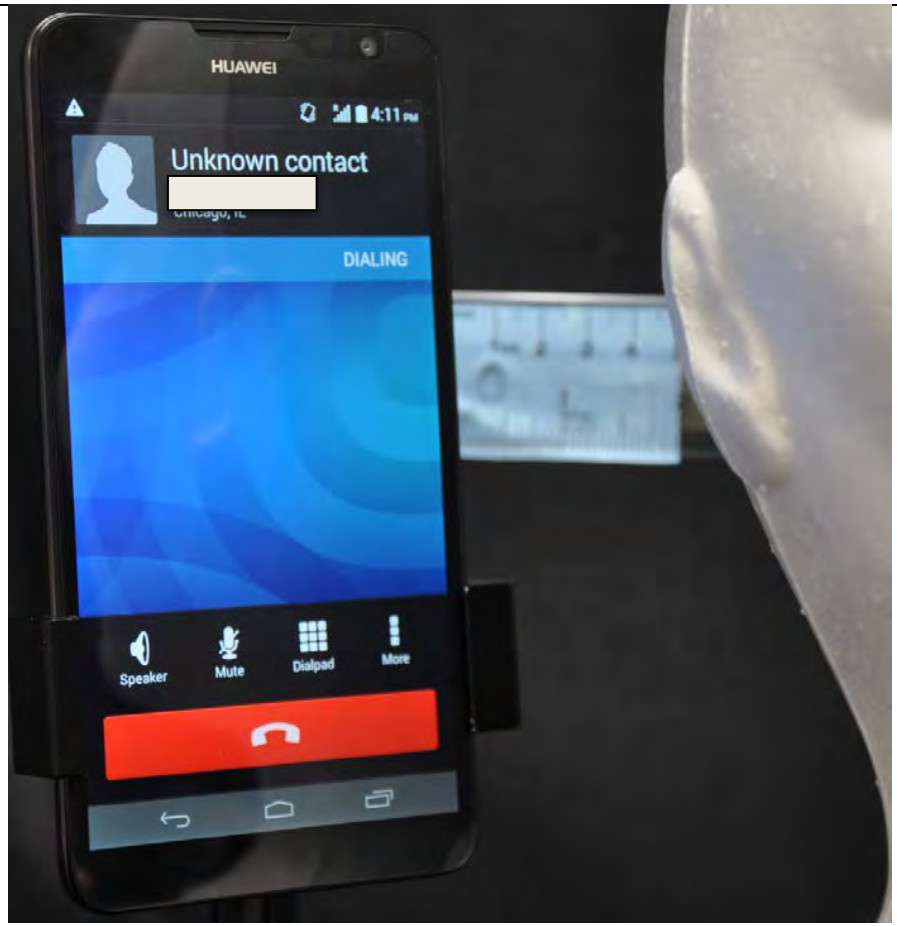
Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

(d) reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists.	The microprocessor of the Huawei Ascend Mate 2 is adapted to reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists. By way of example only, the first image shows that the Huawei Ascend Mate 2 is proximate to an object, but no call has been initiated or answered, so the display is powered normally.  The second image shows that, after the call button is pressed and the ear is proximate to the Huawei Ascend Mate 2, power to the display is reduced and the display is darkened.

	 The third image shows that when the first condition does not exist (e.g., the ear is no longer proximate) even when a call has been initiated or answered, power to the display is not reduced and the display is powered normally.



The power reduction is further shown by the difference in battery power consumption when the display is powered normally as compared to when the display is darkened during a call.

By way of example only, the following series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which no object was proximate, and the display remained powered normally.



When the call begins, the battery starts at a charge of 100%. After the call, the battery is still at 97%. The screen consumed 62% of the battery usage.

The next series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which an object was proximate and power to the display was reduced during the call.

When the call begins, the battery starts at a charge of 100%. After the call, the battery is still at 99%. The screen consumed 73% of the battery usage.



By way of example only and as shown above in claim 1(iv)(a), the microprocessor is able to determine whether a call is active.

By way of further example, the Android Developer Code Website describes the operation of a proximity sensor in order to reduce power to the display if a call is active and an object is proximate:

TYPE_PROXIMITY	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

	In addition, the Android Developer Code Website provides the following exemplary code at least substantially similar to Huawei code for using the proximity sensor "to determine how far away a person's head is from the face of a handset device (or example, when a user making or receiving a phone call)."
	
	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

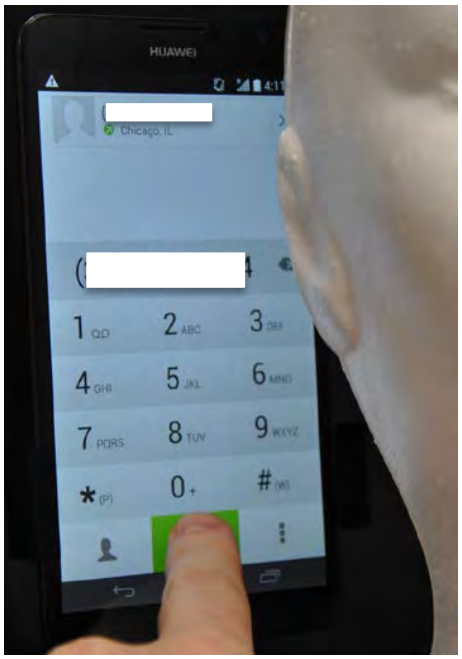
    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

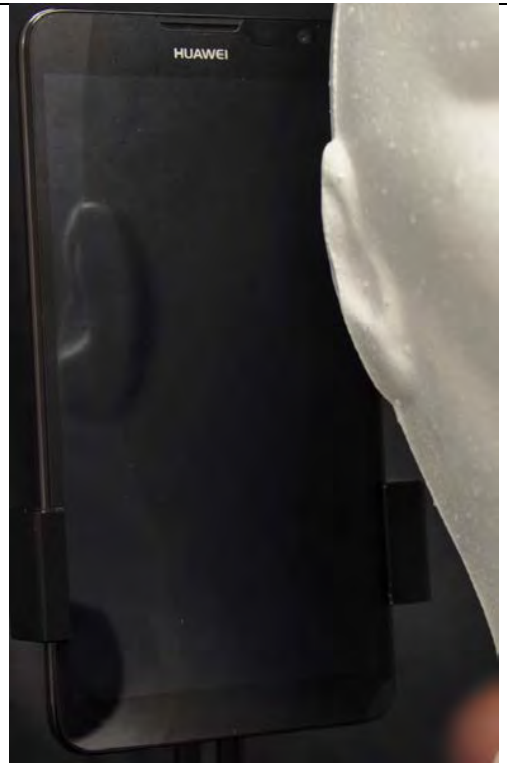
        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

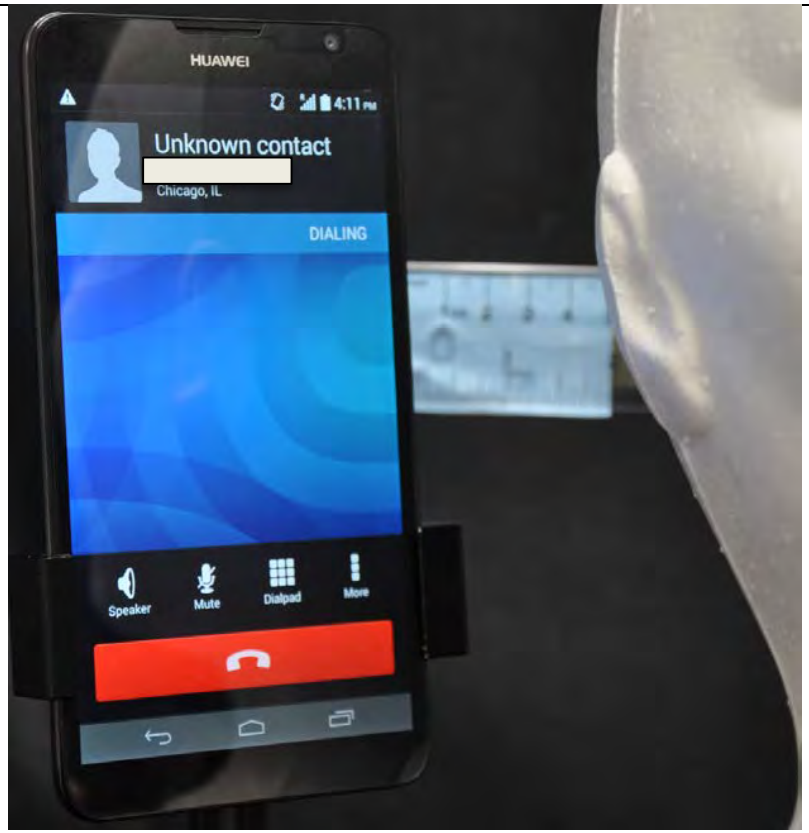
    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

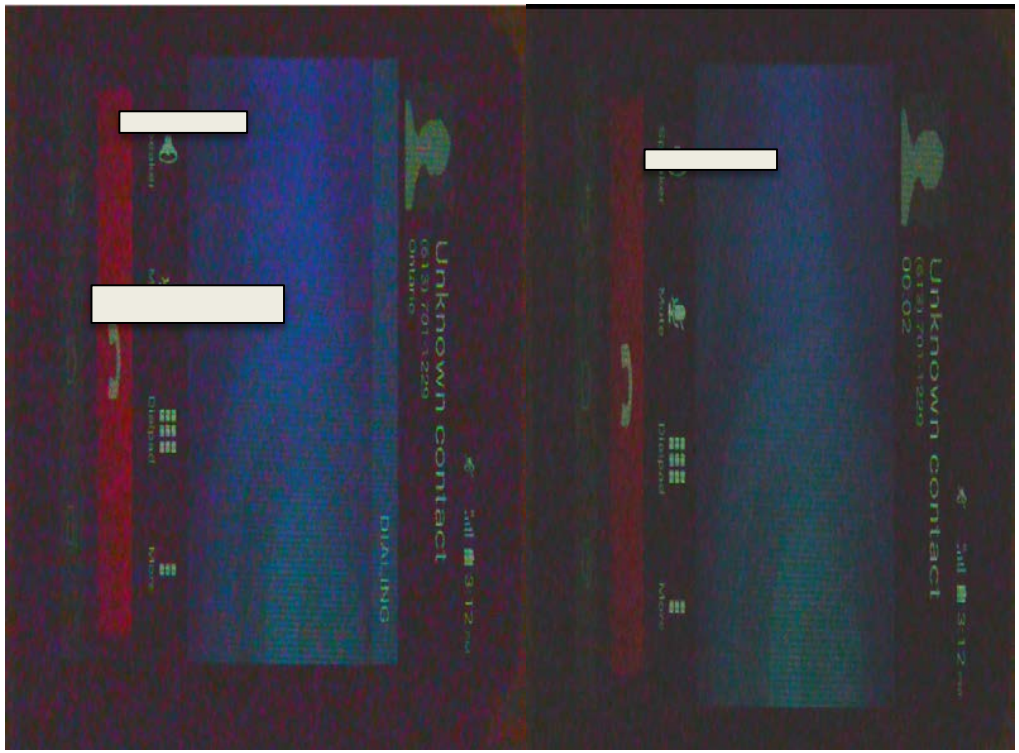
	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018*

2. The mobile station of claim 1,	*See* claim 1.

further comprising increasing power to the display if the signal from the activated proximity sensor indicates that the first condition no longer exists.	The Huawei Ascend Mate 2 increases the power to the display if the signal from the activated proximity sensor indicates that the first condition no longer exists. By way of example only and as shown above in claim 1(iv)(a), the microprocessor is able to determine whether a call is active. By way of example only, the first image shows that the Huawei Ascend Mate 2 is proximate to an object, but no call has been initiated or answered, so the display is powered normally.  The second image shows that, after the call button is pressed and the ear is proximate to the Huawei Ascend Mate 2, power to the display is reduced and the display is darkened.

	 The third image shows that when the first condition does not exist (e.g., the ear is no longer proximate) even when a call has been initiated or answered, power to the display is not reduced and the display is powered normally.

	 By way of further example, the Android Developer Code Website describes that "[t]he proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call)." *See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 30, 2018.*
4. The mobile station as recited in claim 1,	*See* claim 1.

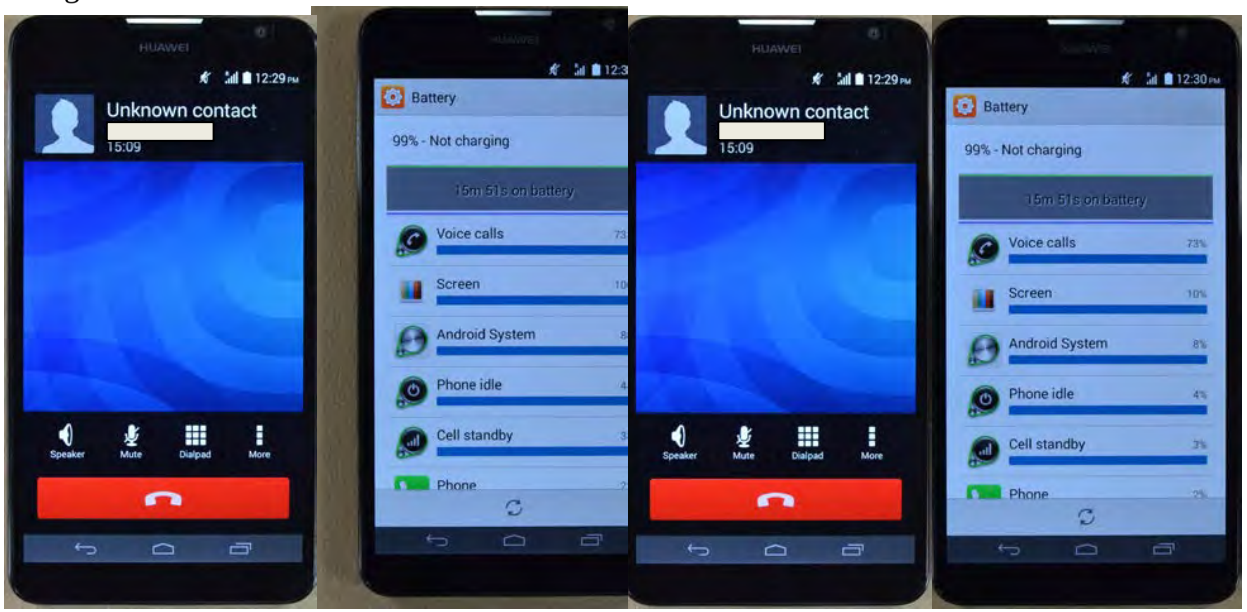
wherein the microprocessor reduces power to the display by turning off the display.	The microprocessor of the Huawei Ascend Mate 2 reduces power to the display by turning off the display. When the call button or answer button is pressed and the ear is proximate to the Huawei Ascend Mate 2, power to the display is reduced and the display is turned off.  The power reduction is further shown by the difference in battery power consumption when the display is powered normally as compared to when the display is darkened during a call.

By way of example only, the following series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which no object was proximate, and the display remained powered normally.



When the call begins, the battery starts at a charge of 100%. After the call, the battery is still at 97%. The screen consumed 62% of the battery usage.

The next series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which an object was proximate and power to the display was reduced during call.



When the call begins, the battery starts at a charge of 100%. After the call, the battery is still at 99%. The screen consumed 73% of the battery usage.

By way of further example only, the Android Developer Code Website describes the proximity sensor's signaling to the microprocessor, which would turn off power to the display if a call is active and an object is proximate:

TYPE_PROXIMITY

`public static final int TYPE_PROXIMITY`

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor — added in API level 21

`public boolean isWakeUpSensor ()`

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

See also:

Sensor	Type	Description	Common Uses
TYPE_PROXIMITY	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

Use the proximity sensor

The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:

KOTLIN JAVA

```
private lateinit var mSensorManager: SensorManager
private var mSensor: Sensor? = null
...
mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
```

The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

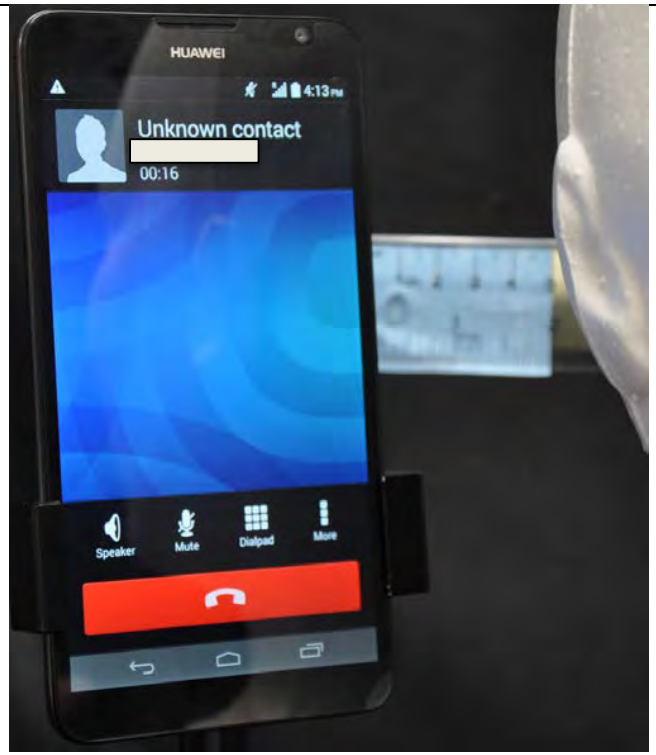
        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

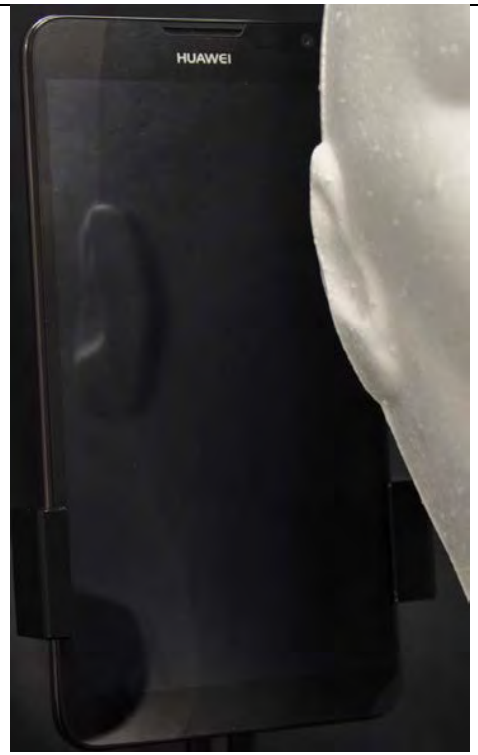
    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*

5. The mobile station as recited in claim 1,	*See* claim 1.
wherein the proximity sensor is a mechanical proximity sensor, an optical sensor, or a range-detecting sensor.	The proximity sensor of the Huawei Ascend Mate 2 is a range-detecting sensor.

	The proximity sensor detects the range of a proximate object:  *The optical range sensing proximity sensor emits Inf Red light senses the reflection to determine if external objects are proximate* By way of example only, when an incoming call is answered, and the device is not proximate to the object, approximately 8 cm from the object the display is on. The mobile station is moved proximate to the ear, approximately 4cm the display is off.





By way of further example, the Android Developer Code Website describes range detection in proximity sensors:

TYPE_PROXIMITY	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

And also, the code shows distance measurement:

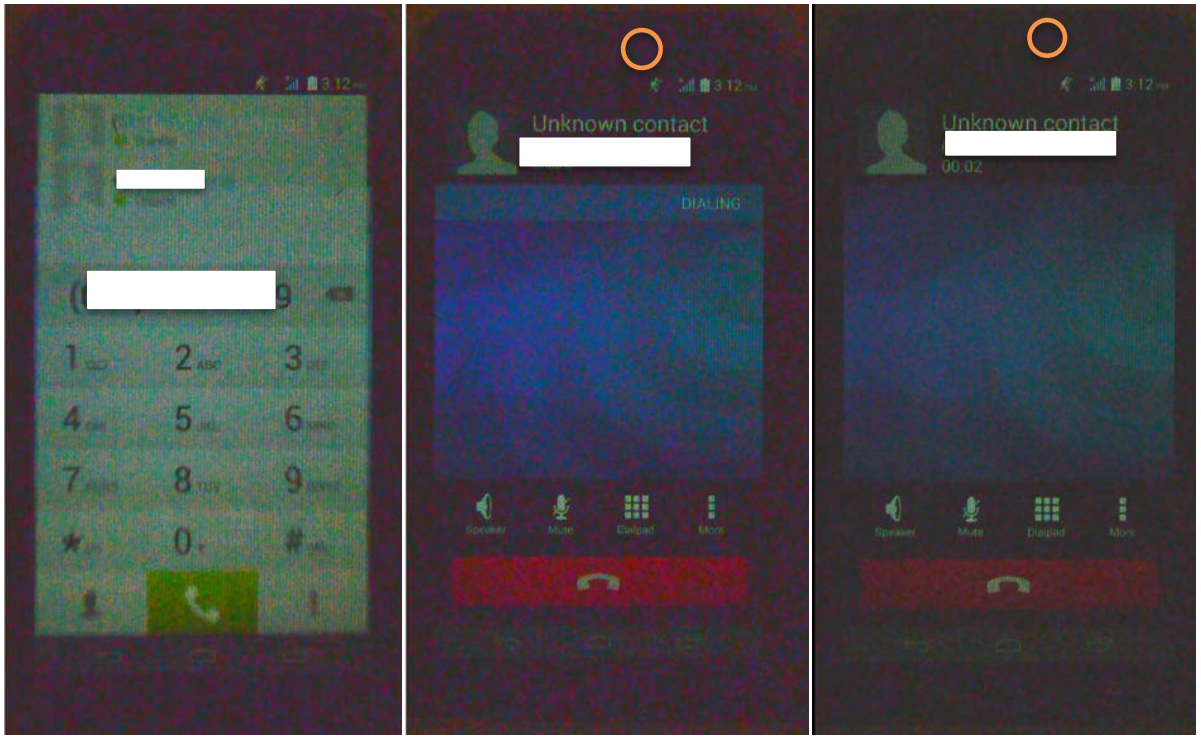
```
override fun onSensorChanged(event: SensorEvent) {
    val distance = event.values[0]
    // Do something with this sensor data.
}
```

See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

The Android Developer Code Website further explains:

> **Note:** Some proximity sensors return binary values that represent "near" or "far." In this case, the sensor usually reports its maximum range value in the far state and a lesser value in the near state. Typically, the far value is a value > 5 cm, but this can vary from sensor to sensor. You can determine a sensor's maximum range by using the `getMaximumRange()` method.

See id.

7. The mobile station as recited in claim 1,	*See* claim 1.
wherein the proximity sensor begins detecting whether an external object is proximate substantially concurrently with the mobile station initiating an outgoing telephone call.	The proximity sensor of the Huawei Ascend Mate 2 begins detecting whether an external object is proximate substantially concurrently with the mobile station initiating an outgoing telephone call. The first image shows that when the user is about to initiate the call, at that point the proximity sensor is not activated. The second image shows the call initiated and the proximity sensor is activated. Third image shows the proximity sensor remains activated during the remainder of the call. 

	In addition, by way of further example only, the Android Developer Code Website shows how the proximity sensor is used to detect proximity substantially concurrently with initiating or receiving a call, including by providing exemplary code at least substantially similar to Huawei code:
	
	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

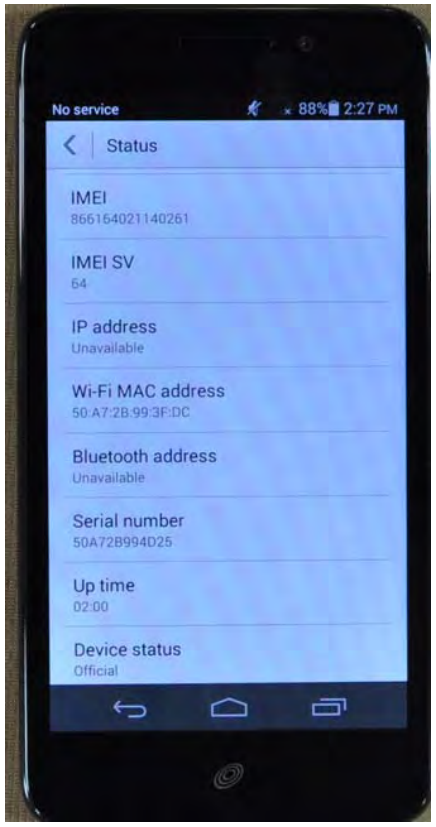
8. A method of conserving battery power in a mobile station, the mobile station adapted to detect the existence of a proximity condition, the proximity condition being that an external object is proximate, the method comprising:	To the extent that the preamble is found to be limiting, *see* claim 1(preamble); 1[ii]-[iii]; 1(b)-(d).
the mobile station detecting the existence of an initiated call condition or an answered-call condition independent and different	The Huawei Ascend Mate 2 detects the existence of an initiated call condition or an answered-call condition independent and different from the proximity condition, the initiated-call condition being that a user of the mobile station has performed an action to initiate a call, and the answered-call condition being that a user of the mobile station has performed an action to answer a call.

from the proximity condition, the initiated-call condition being that a user of the mobile station has performed an action to initiate a call, and the answered-call condition being that a user of the mobile station has performed an action to answer a call;	*See* claim 1(a).
the mobile station activating the proximity sensor in response to a determination that an answered-call condition or initiated-call condition exists; and	The Huawei Ascend Mate 2 activates the proximity sensor in response to a determination that an answered-call condition or initiated-call condition exists. *See* claim 1(b).
the mobile station reducing power consumption of a display of the mobile station if the activated proximity sensor indicates that the proximity condition exists.	The Huawei Ascend Mate 2 reduces power consumption of a display of the mobile station if the activated proximity sensor indicates that the proximity condition exists. *See* claim 1(c)-(d).
14. A mobile station, comprising:	*See* claim 1(preamble).
a display;	*See* claim 1[i].
a proximity sensor	*See* claim 1[ii].
adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate;	*See* claim 1[iii].
and a microprocessor adapted to:	*See* claim[iv].

(a) determine, independently of the determination whether the external object is proximate, the existence of a second condition different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;	The microprocessor of the Huawei Ascend Mate 2 is adapted to determine, independently of the determination whether the external object is proximate, the existence of a second condition different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call. *See* claim 1(a).
(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor,	*See* claim 1(b).
(c) receive the signal from the activated proximity sensor, and	*See* claim 1(c).
(d) reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists.	*See* claim 1(d).

BNR'S PRELIMINARY INFRINGEMENT CONTENTIONS

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

Asserted Claim Elements	Huawei Pronto
1. A mobile station, comprising:	To the extent that the preamble is found to be limiting, the Huawei Pronto is a mobile station.  

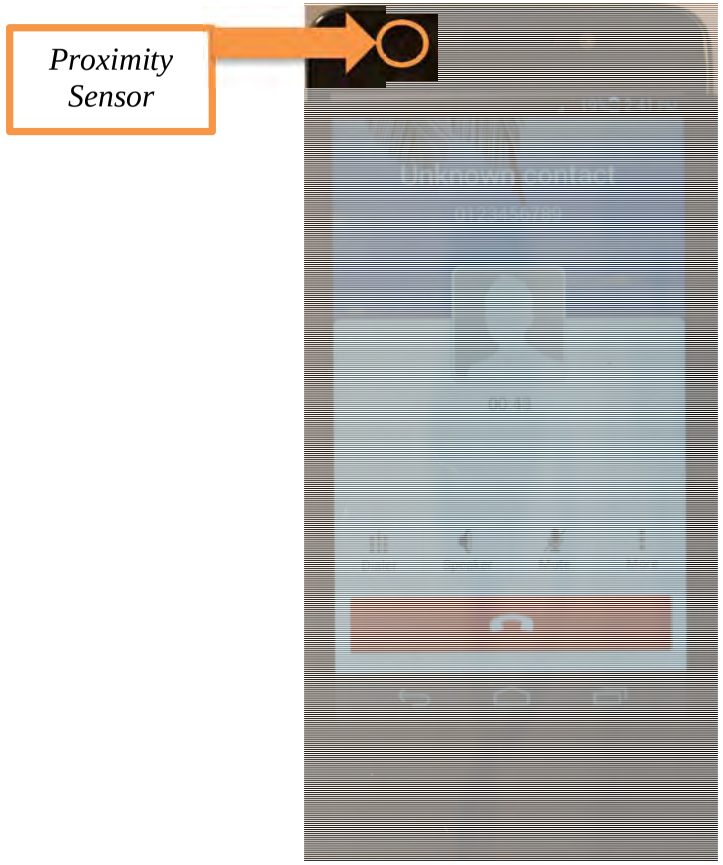
MediaTek Exhibit 1015, Page 333 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

[i] a display;	The Huawei Pronto includes a display.  *https://media.tracfone.com//wps/wcm/connect/d5a8bcde-3697-42f2-b08d-5590c1d90f6a/ST_QUAG_STH891G_ENG_F.pdf?MOD=AJPERES&CACHEID=d5a8bcde-3697-42f2-b08d-5590c1d90f6a p. 2, last accessed Nov. 28, 2018.*

MediaTek Exhibit 1015, Page 334 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

[ii] a proximity sensor	The Huawei Pronto includes a proximity sensor. 
[iii] adapted to generate a signal indicative of the existence of a first condition, the first condition being	The proximity sensor of the Huawei Pronto is adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate.

MediaTek Exhibit 1015, Page 335 of 560

that an external object is proximate; and	By way of example only, the Huawei Pronto is an Android phone. The Android Developer Code Website describes functioning of proximity sensors in Android phones customized and adapted by Huawei to run on their hardware. In particular, the description specifies that the proximity sensor measures the proximity of an object relative to the device: TYPE_PROXIMITY Hardware Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear. Phone position during a call. *See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.* By way of further example, the Android Developer Code Website provides files that describe the generation of a signal by the sensor. TYPE_PROXIMITY public static final int TYPE_PROXIMITY A constant describing a proximity sensor type. This is a wake up sensor. See SensorEvent.values for more details. **See also:** isWakeUpSensor() Constant Value: 8 (0x00000008) *See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.* The referenced discussion concerning the isWakeUpSensor file explains the proximity sensor (for example, whether a wake-up sensor or non-wake-up sensor) generates signals:

MediaTek Exhibit 1015, Page 336 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

isWakeUpSensor

added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

In addition, the Android Developer Code provides the following exemplary code at least substantially similar to Huawei code for using the proximity sensor "to determine how far away a person's head is from the face of a handset device (for example, when a user making or receiving a phone call)."

MediaTek Exhibit 1015, Page 337 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 338 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 339 of 560

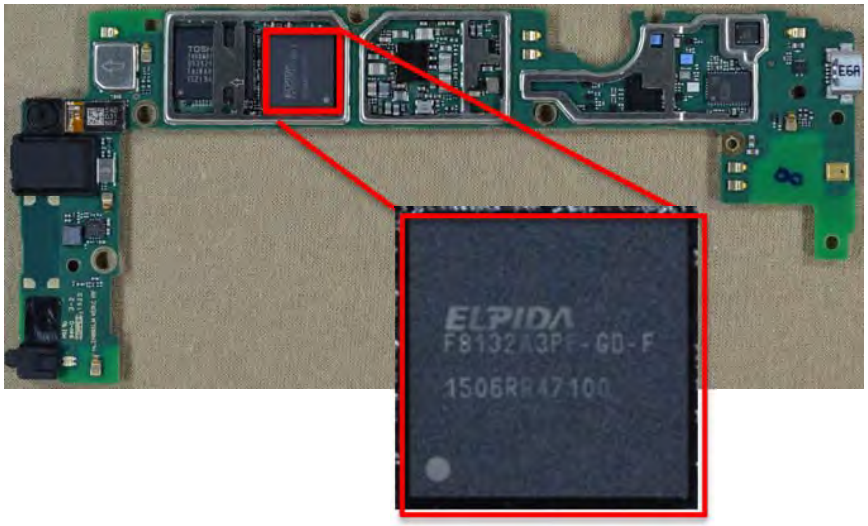
Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

[iv] a microprocessor adapted to:	The Huawei Pronto includes at least one microprocessor.

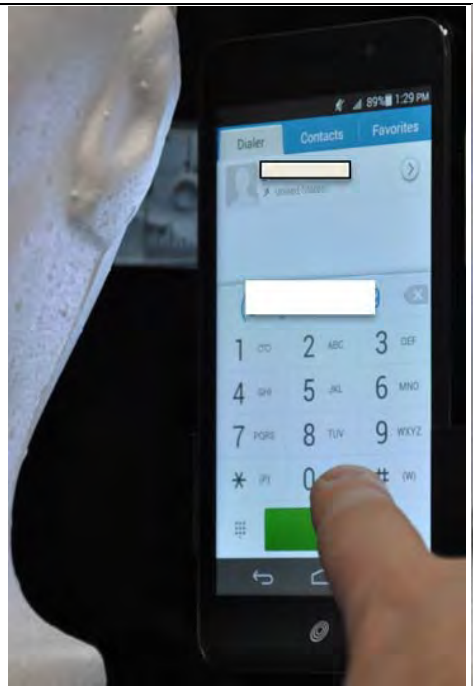
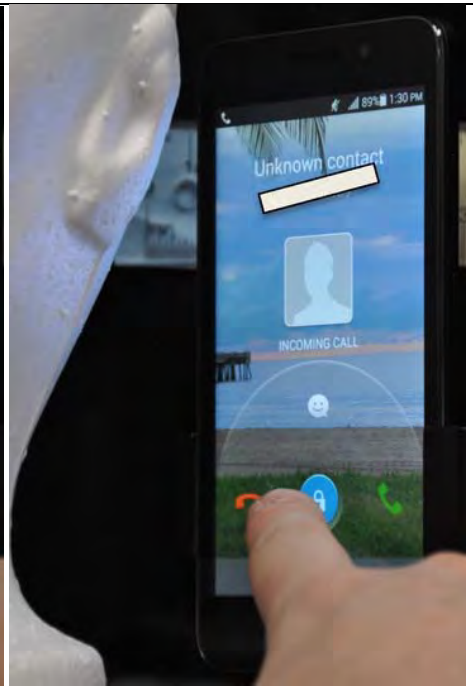
MediaTek Exhibit 1015, Page 340 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

	  *Snapdragon 400 MSM8926*
(a) determine, without using the proximity sensor, the existence of a second condition independent and different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;	The microprocessor of the Huawei Pronto is adapted to determine without using the proximity sensor, the existence of a second condition independent and different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call. The microprocessor is able to determine when the user initiates an outgoing call or answers an incoming call.

MediaTek Exhibit 1015, Page 341 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

	  By way of example only, the Huawei Pronto is an Android phone. The Huawei Pronto's microprocessor uses code substantially similar to the code described and excerpted below to (1) determine when the user initiates an outgoing call or (2) determine when the user answers an incoming call; Outgoing Call:

MediaTek Exhibit 1015, Page 342 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

```
/**
* Broadcast receiver to detect the outgoing calls.
*/
public class OutgoingReceiver extends BroadcastReceiver {
     public OutgoingReceiver() {
     }

     @Override
     public void onReceive(Context context, Intent intent) {
         String number = intent.getStringExtra(Intent.EXTRA_PHONE_NUMBER);

         Toast.makeText(ctx,
           "Outgoing: "+number,
           Toast.LENGTH_LONG).show();
     }
}
```

In the above, the system sends a broadcast action `android.intent.action.NEW_OUTGOING_CALL`.

Incoming Call:

```
/**
* Listener to detect incoming calls.
*/
private class CallStateListener extends PhoneStateListener {
  @Override
  public void onCallStateChanged(int state, String incomingNumber) {
      switch (state) {
          case TelephonyManager.CALL_STATE_RINGING:
          // called when someone is ringing to this phone

          Toast.makeText(ctx,
                  "Incoming: "+incomingNumber,
                  Toast.LENGTH_LONG).show();
          break;
      }
  }
}
```

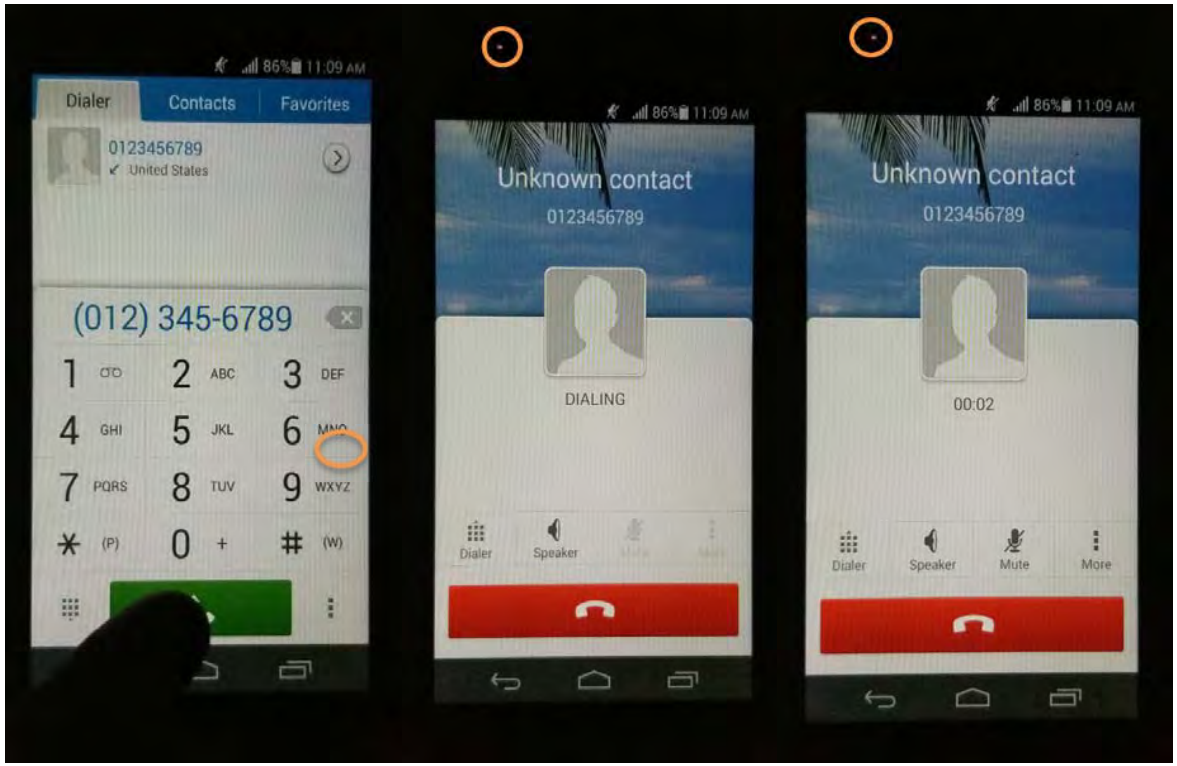
In the above, `state` is the call state, where it may be `CALL_STATE_RINGING`, `CALL_STATE_OFFHOOK`, or `CALL_STATE_IDLE`. Ringing is the state when someone is calling,

MediaTek Exhibit 1015, Page 343 of 560

	offhook is when there is active or on hold call, and idle is when nobody is calling and there is no active call. *See https://www.codeproject.com/Articles/548416/Detecting-Incoming-and-Outgoing-Phone-Calls-on-And, last accessed December 5, 2018.*
(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor,	The microprocessor of the Huawei Pronto is adapted to, in response to a determination in step (a) that the second condition exists, activate the proximity sensor. The first image shows that when the user is about to initiate the call, at that point the proximity sensor is not activated. The second image shows the call initiated and the proximity sensor is

MediaTek Exhibit 1015, Page 344 of 560

activated. Third image shows the proximity sensor remains activated during the remainder of the call.



By way of example only and as shown above in claim 1(iv)(a), the microprocessor is able to determine whether a call is active according to the second condition.

The microprocessor activates the proximity sensor. By way of example only, the Android Developer Code Website describes examples of proximity sensor activation and use:

MediaTek Exhibit 1015, Page 345 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY

```
public static final int TYPE_PROXIMITY
```

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor

added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 346 of 560

	Non-wake-up sensors Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually: • Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case. • Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost. **Wake-up sensors** In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details. *See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.* In the Huawei Pronto, when the call button or answer button is pressed, the display darkens, indicating that the proximity sensor is activated.
(c) receive the signal from the activated proximity sensor, and	The microprocessor of the Huawei Pronto is adapted to receive the signal from the activated proximity sensor. When the call button or answer button is pressed according to the above, the display darkens, indicated that the microprocessor received the signal from the activated proximity sensor that an object was proximate, and, in turn, reduced power to the display.

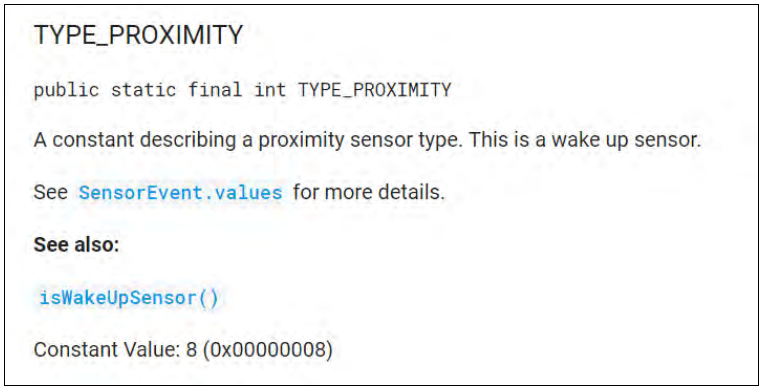
MediaTek Exhibit 1015, Page 347 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

MediaTek Exhibit 1015, Page 348 of 560

By way of further example only, the Android Developer Code provides files that describe the proximity sensor's signaling to the microprocessor:



TYPE_PROXIMITY

`public static final int TYPE_PROXIMITY`

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

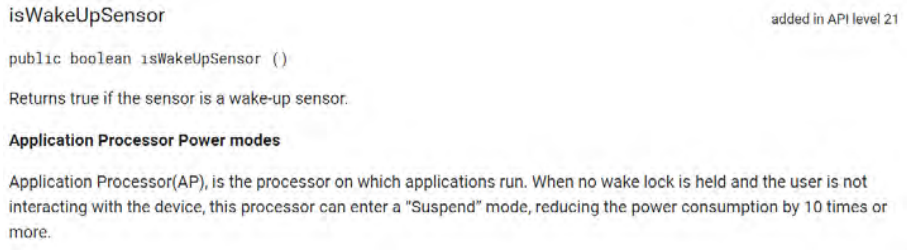
See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:



isWakeUpSensor added in API level 21

`public boolean isWakeUpSensor ()`

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

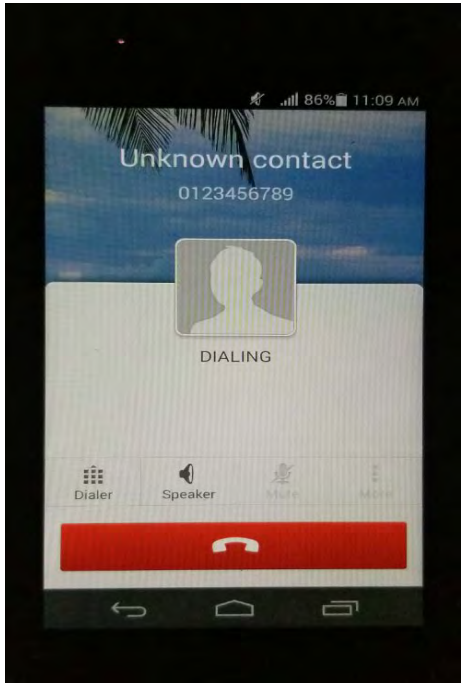
MediaTek Exhibit 1015, Page 349 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

	Non-wake-up sensors Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually: • Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case. • Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost. **Wake-up sensors** In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details. *See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.*

MediaTek Exhibit 1015, Page 350 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

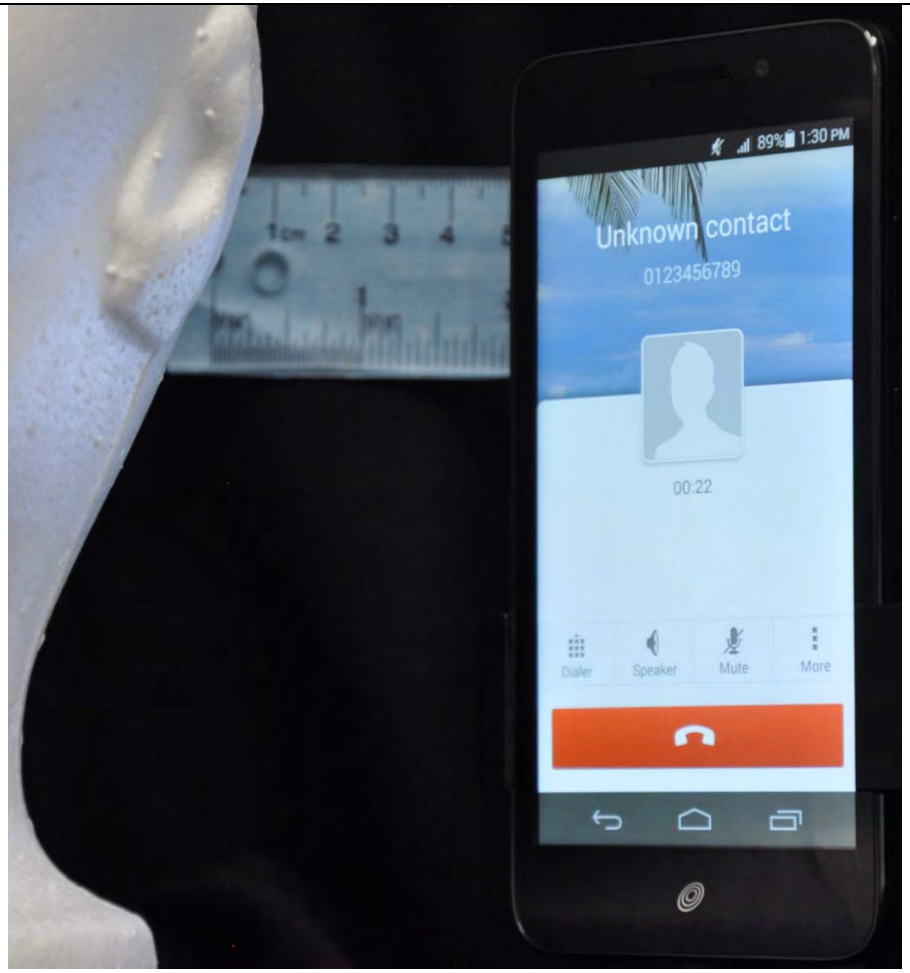
(d) reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists.	The microprocessor of the Huawei Pronto is adapted to reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists. By way of example only, the first image shows that the Huawei Pronto is proximate to an object, but no call has been initiated or answered, so the display is powered normally.  The second image shows that, after the call button is pressed and the ear is proximate to the Huawei Pronto, power to the display is reduced and the display is darkened.

MediaTek Exhibit 1015, Page 351 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

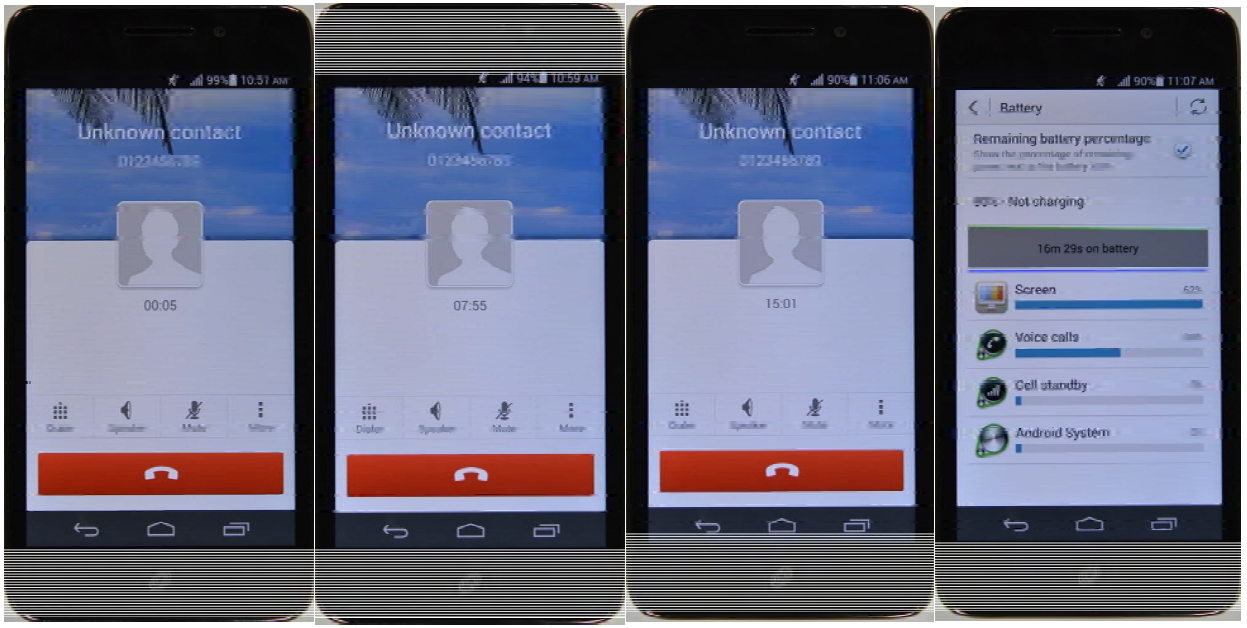
	 The third image shows that when the first condition does not exist (e.g., the ear is no longer proximate) even when a call has been initiated or answered, power to the display is not reduced and the display is powered normally.

MediaTek Exhibit 1015, Page 352 of 560

	 The power reduction is further shown by the difference in battery power consumption when the display is powered normally as compared to when the display is darkened during a call.

MediaTek Exhibit 1015, Page 353 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

	By way of example only, the following series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which no object was proximate, and the display remained powered normally.  When the call begins, the battery starts at a charge of 99%. After the call, the battery is still at 90%. The screen consumed 62% of the battery usage.

MediaTek Exhibit 1015, Page 354 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

	The next series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which an object was proximate and power to the display was reduced during the call.  When the call begins, the battery starts at a charge of 99%. After the call, the battery is still at 95%. The screen consumed 79% of the battery usage. By way of example only and as shown above in claim 1(iv)(a), the microprocessor is able to determine whether a call is active. By way of further example, the Android Developer Code Website describes the operation of a proximity sensor in order to reduce power to the display if a call is active and an object is proximate:

MediaTek Exhibit 1015, Page 355 of 560

TYPE_PROXIMITY	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

In addition, the Android Developer Code Website provides the following exemplary code at least substantially similar to Huawei code for using the proximity sensor "to determine how far away a person's head is from the face of a handset device (or example, when a user making or receiving a phone call)."

Use the proximity sensor

The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:

KOTLIN JAVA

```
private lateinit var mSensorManager: SensorManager
private var mSensor: Sensor? = null
...
mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
```

The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 356 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

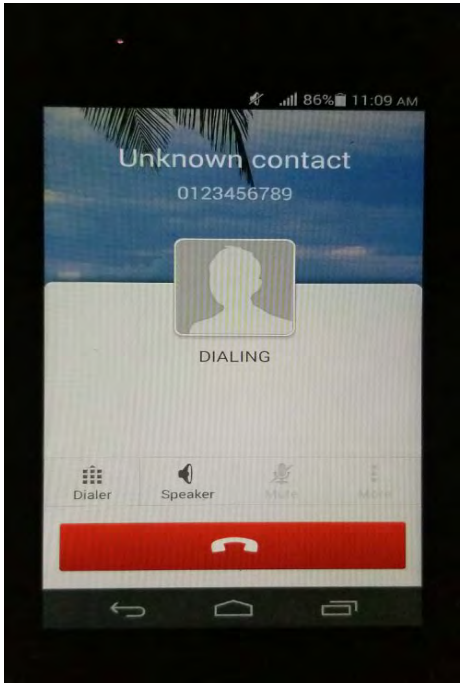
MediaTek Exhibit 1015, Page 357 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

2. The mobile station of claim 1,	*See* claim 1.

MediaTek Exhibit 1015, Page 358 of 560

further comprising increasing power to the display if the signal from the activated proximity sensor indicates that the first condition no longer exists.	The Huawei Pronto increases power to the display if the signal from the activated proximity sensor indicates that the first condition no longer exists. By way of example only and as shown above in claim 1(iv)(a), the microprocessor is able to determine whether a call is active. By way of example only, the first image shows that the Huawei Pronto is proximate to an object, but no call has been initiated or answered, so the display is powered normally.  The second image shows that, after the call button is pressed and the ear is proximate to the Huawei Pronto, power to the display is reduced and the display is darkened.

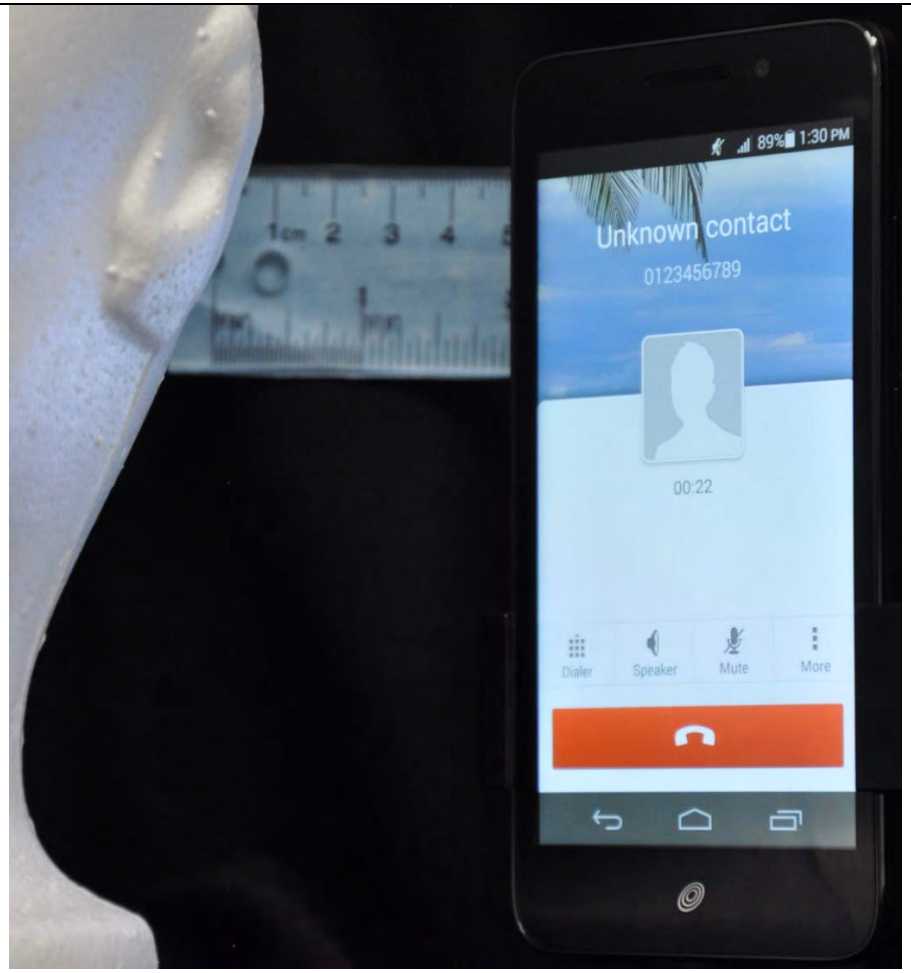
MediaTek Exhibit 1015, Page 359 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

	 The third image shows that when the first condition does not exist (e.g., the ear is no longer proximate) even when a call has been initiated or answered, power to the display is not reduced and the display is powered normally.

MediaTek Exhibit 1015, Page 360 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

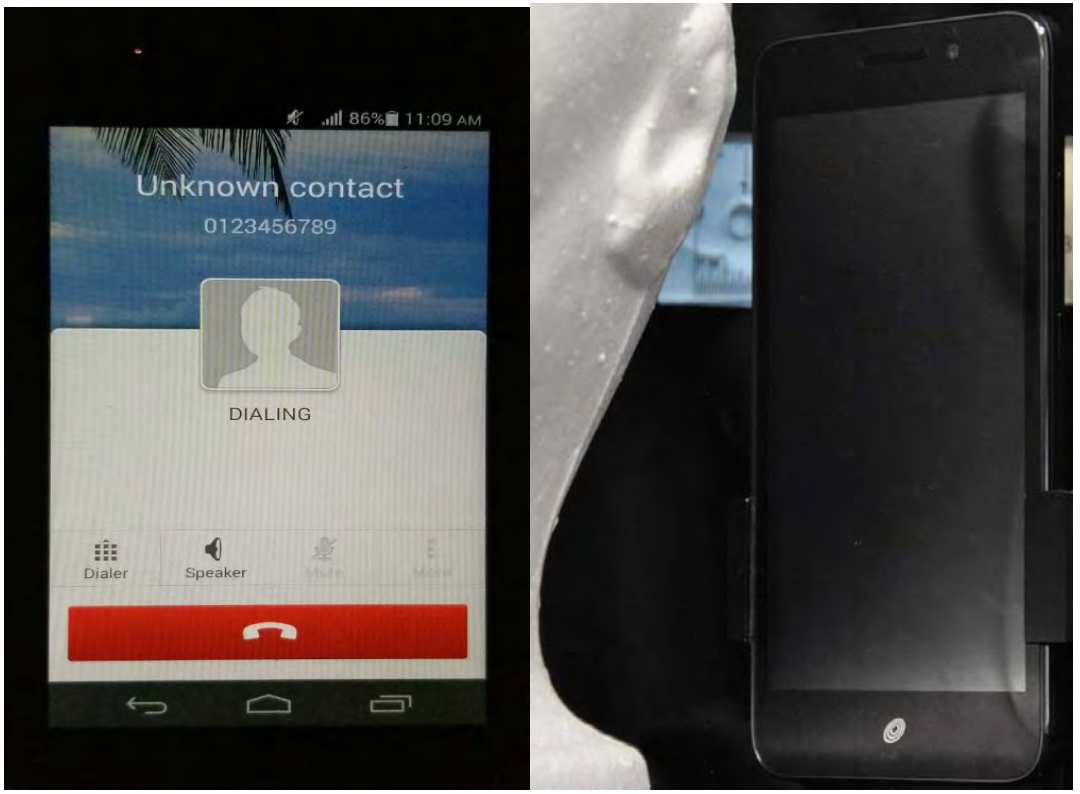


By way of further example, the Android Developer Code Website describes that "[t]he proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call)."

See *https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox*, *last accessed November 30, 2018.*

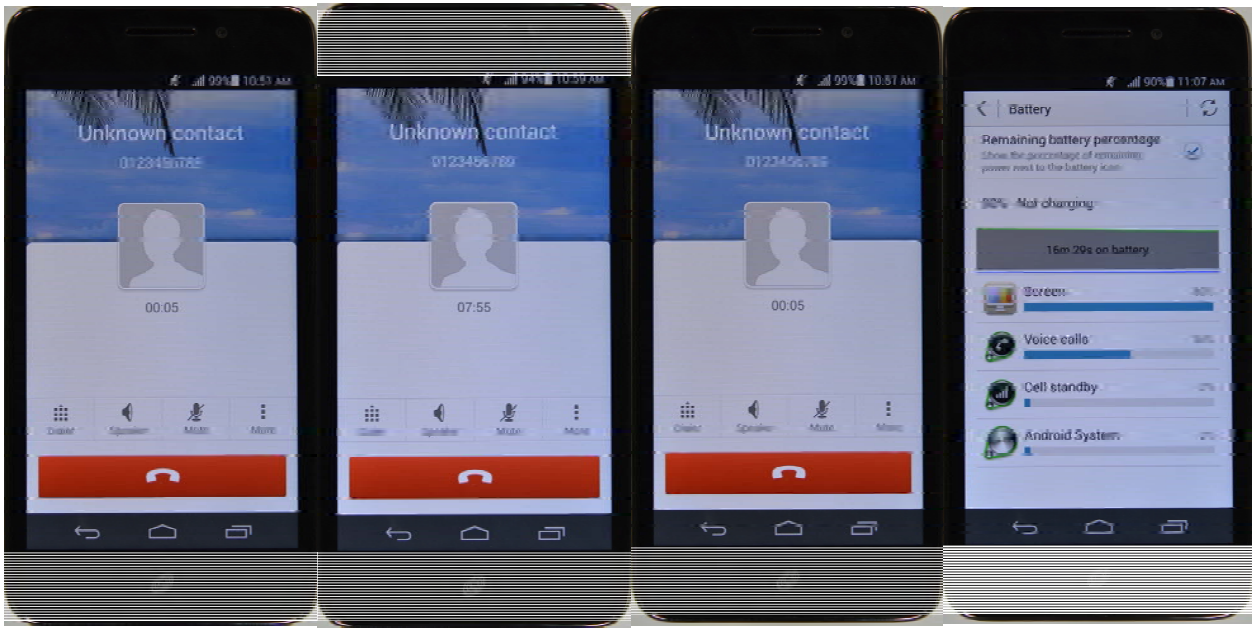
MediaTek Exhibit 1015, Page 361 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

4. The mobile station as recited in claim 1,	*See* claim 1.
wherein the microprocessor reduces power to the display by turning off the display.	The microprocessor of the Huawei Pronto reduces power to the display by turning off the display. When the call button or answer button is pressed and the ear is proximate to the Huawei Pronto, power to the display is reduced and the display is turned off.  The power reduction is further shown by the difference in battery power consumption when the display is powered normally as compared to when the display is darkened during a call.

MediaTek Exhibit 1015, Page 362 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

	By way of example only, the following series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which no object was proximate, and the display remained powered normally.  When the call begins, the battery starts at a charge of 99%. After the call, the battery is still at 90%. The screen consumed 62% of the battery usage. The next series shows computed power usage and battery power use during a call lasting approximately 15 minutes in which an object was proximate and power to the display was reduced during the call.

MediaTek Exhibit 1015, Page 363 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

	 When the call begins, the battery starts at a charge of 99%. After the call, the battery is still at 95%. The screen consumed 79% of the battery usage. By way of further example only, the Android Developer Code Website describes the proximity sensor's signaling to the microprocessor, which would turn off power to the display if a call is active and an object is proximate:

MediaTek Exhibit 1015, Page 364 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY

`public static final int TYPE_PROXIMITY`

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor added in API level 21

`public boolean isWakeUpSensor ()`

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 365 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

See also:

Sensor	Type	Description	Common Uses
`TYPE_PROXIMITY`	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

MediaTek Exhibit 1015, Page 366 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

Use the proximity sensor

The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:

KOTLIN JAVA

```
private lateinit var mSensorManager: SensorManager
private var mSensor: Sensor? = null
...
mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
```

The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 367 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 368 of 560

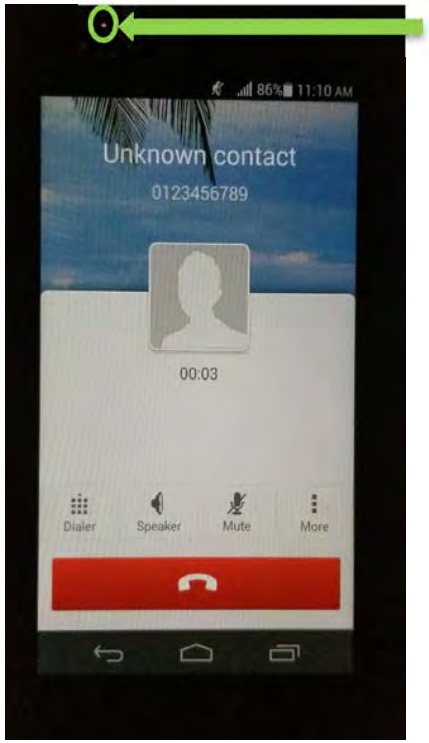
Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

5. The mobile station as recited in claim 1,	*See* claim 1.
wherein the proximity sensor is a mechanical proximity sensor, an optical sensor, or a range-detecting sensor.	The proximity sensor of the Huawei Pronto is a range-detecting sensor.

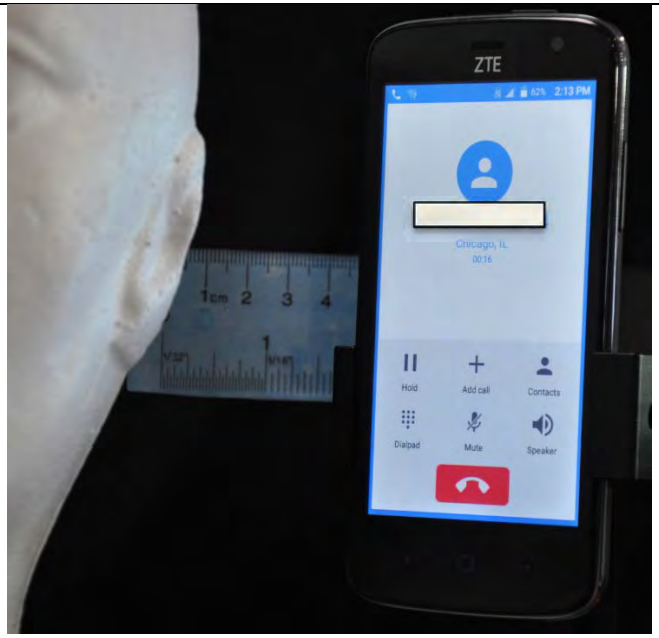
MediaTek Exhibit 1015, Page 369 of 560

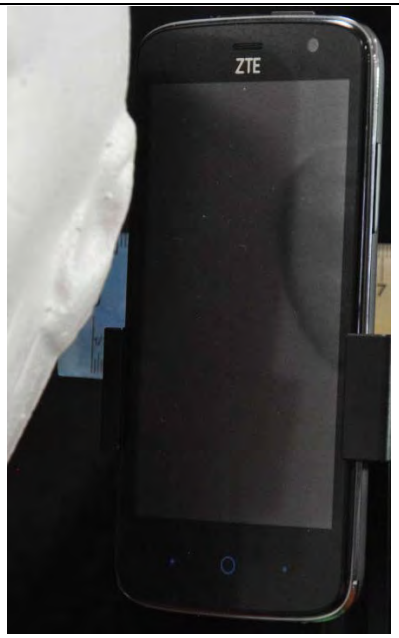
Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

	The proximity sensor detects the range of a proximate object:  *The optical range sensing proximity sensor emits Inf Red light senses the reflection to determine if external objects are proximate* By way of example only, when an incoming call is answered, and the device is not proximate to the object, approximately 6cm from the object the display is on. The mobile station is moved proximate to the ear, approximately 3cm the display is off.

MediaTek Exhibit 1015, Page 370 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554





By way of further example, the Android Developer Code Website describes range detection in proximity sensors:

TYPE_PROXIMITY	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

And also, the code shows distance measurement:

```
override fun onSensorChanged(event: SensorEvent) {
    val distance = event.values[0]
    // Do something with this sensor data.
}
```

See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

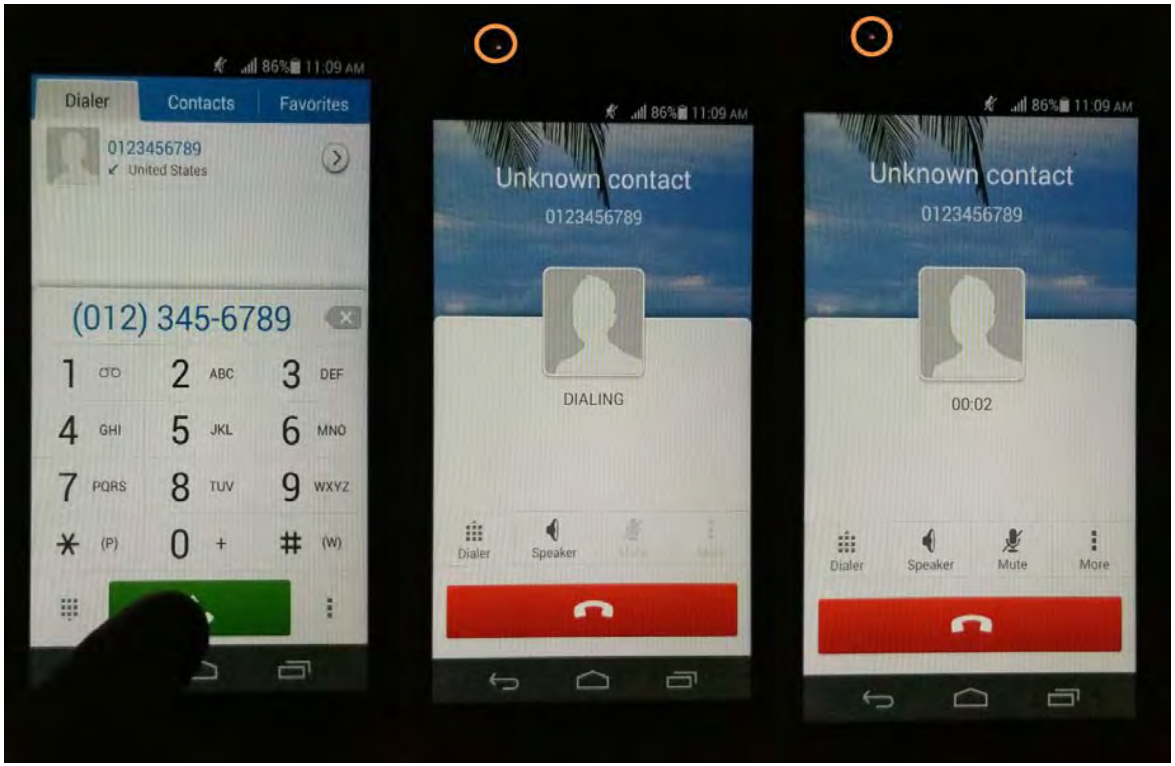
The Android Developer Code Website further explains:

> **Note:** Some proximity sensors return binary values that represent "near" or "far." In this case, the sensor usually reports its maximum range value in the far state and a lesser value in the near state. Typically, the far value is a value > 5 cm, but this can vary from sensor to sensor. You can determine a sensor's maximum range by using the `getMaximumRange()` method.

See id.

MediaTek Exhibit 1015, Page 372 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

7. The mobile station as recited in claim 1,	*See* claim 1.
wherein the proximity sensor begins detecting whether an external object is proximate substantially concurrently with the mobile station initiating an outgoing telephone call.	The proximity sensor of the Huawei Pronto begins detecting whether an external object is proximate substantially concurrently with the mobile station initiating an outgoing telephone call. The first image shows that when the user is about to initiate the call, at that point the proximity sensor is not activated. The second image shows the call initiated and the proximity sensor is activated. Third image shows the proximity sensor remains activated during the remainder of the call. 

MediaTek Exhibit 1015, Page 373 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

In addition, by way of further example only, the Android Developer Code Website shows how the proximity sensor is used to detect proximity substantially concurrently with initiating or receiving a call, including by providing exemplary code at least substantially similar to Huawei code:

Use the proximity sensor

The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:

KOTLIN JAVA

```
private lateinit var mSensorManager: SensorManager
private var mSensor: Sensor? = null
...
mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
```

The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 374 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 375 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

8. A method of conserving battery power in a mobile station, the mobile station adapted to detect the existence of a proximity condition, the proximity condition being that an external object is proximate, the method comprising:	To the extent that the preamble is found to be limiting, *see* claim 1(preamble); 1[ii]-[iii]; 1(b)-(d).
the mobile station detecting the existence of an initiated call condition or an answered-call condition independent and different	The Huawei Pronto detects the existence of an initiated call condition or an answered-call condition independent and different from the proximity condition, the initiated-call condition being that a user of the mobile station has performed an action to initiate a call, and the answered-call condition being that a user of the mobile station has performed an action to answer a call.

MediaTek Exhibit 1015, Page 376 of 560

from the proximity condition, the initiated-call condition being that a user of the mobile station has performed an action to initiate a call, and the answered-call condition being that a user of the mobile station has performed an action to answer a call;	*See* claim 1(a).
the mobile station activating the proximity sensor in response to a determination that an answered-call condition or initiated-call condition exists; and	The Huawei Pronto activates the proximity sensor in response to a determination that an answered-call condition or initiated-call condition exists. *See* claim 1(b).
the mobile station reducing power consumption of a display of the mobile station if the activated proximity sensor indicates that the proximity condition exists.	The Huawei Pronto reduces power consumption of a display of the mobile station if the activated proximity sensor indicates that the proximity condition exists. *See* claim 1(c)-(d).
14. A mobile station, comprising:	*See* claim 1(preamble).
a display;	*See* claim 1[i].
a proximity sensor	*See* claim 1[ii].
adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate;	*See* claim 1[iii].
and a microprocessor adapted to:	*See* claim[iv].

MediaTek Exhibit 1015, Page 377 of 560

Exhibit B-8 –Infringement of U.S. Patent No. 8,204,554

(a) determine, independently of the determination whether the external object is proximate, the existence of a second condition different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;	The microprocessor of the Huawei Pronto is adapted to determine, independently of the determination whether the external object is proximate, the existence of a second condition different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call. *See* claim 1(a).
(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor,	*See* claim 1(b).
(c) receive the signal from the activated proximity sensor, and	*See* claim 1(c).
(d) reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists.	*See* claim 1(d).

MediaTek Exhibit 1015, Page 378 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554

Asserted Claim Elements	Huawei Vision 2
1. A mobile station, comprising:	To the extent that the preamble is found to be limiting, the Huawei Vision 2 is a mobile station.  *See* https://www.consumercellular.com/Assets/documents/Manuals/Huawei%20Vision%202%20User%20Guide.pdf , *last accessed December 6, 2018.*

MediaTek Exhibit 1015, Page 379 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554

[i] a display;	The Huawei Vision 2 includes a display.  *See* https://www.consumercellular.com/Assets/documents/Manuals/Huawei%20Vision%202%20User%20Guide.pdf , *last accessed December 6, 2018.*

MediaTek Exhibit 1015, Page 380 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554

[ii] a proximity sensor	The Huawei Vision 2 includes a proximity sensor.  *See* https://www.consumercellular.com/Assets/documents/Manuals/Huawei%20Vision%202%20User%20Guide.pdf , *last accessed December 6, 2018.*
[iii] adapted to generate a signal indicative of the existence of a first	The proximity sensor of the Huawei Vision 2 is adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate

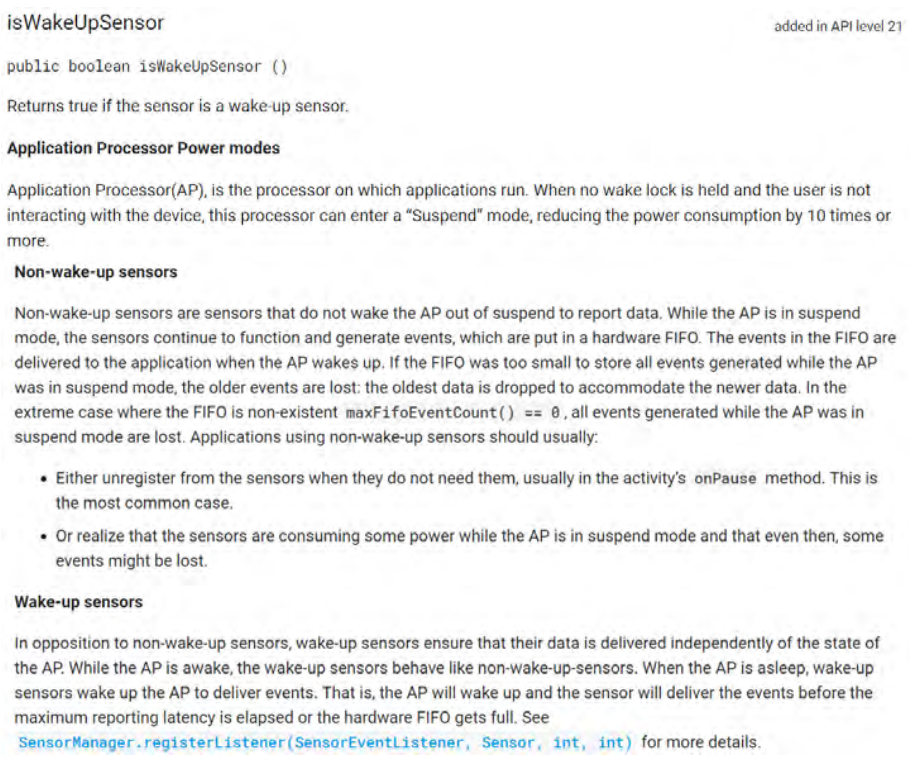
MediaTek Exhibit 1015, Page 381 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554

condition, the first condition being that an external object is proximate; and	By way of example only, the Huawei Vision 2 is an Android phone. The Android Developer Code Website describes functioning of proximity sensors in Android phones customized and adapted by Huawei to run on their hardware. In particular, the description specifies that the proximity sensor measures the proximity of an object relative to the device: TYPE_PROXIMITY | Hardware | Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear. | Phone position during a call. *See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.* By way of further example, the Android Developer Code Website provides files that describe the generation of a signal by the sensor. TYPE_PROXIMITY public static final int TYPE_PROXIMITY A constant describing a proximity sensor type. This is a wake up sensor. See SensorEvent.values for more details. **See also:** isWakeUpSensor() Constant Value: 8 (0x00000008) *See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.* The referenced discussion concerning the isWakeUpSensor file explains the proximity sensor (for example, whether a wake-up sensor or non-wake-up sensor) generates signals:

MediaTek Exhibit 1015, Page 382 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554



isWakeUpSensor

added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

In addition, the Android Developer Code provides the following exemplary code at least substantially similar to HUAWEI code for using the proximity sensor "to determine how far away a person's head is from the face of a handset device (for example, when a user making or receiving a phone call)."

MediaTek Exhibit 1015, Page 383 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554

	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 384 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 385 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554

<table>
<tr><td></td><td>

```
override fun onSensorChanged(event: SensorEvent) {
    val distance = event.values[0]
    // Do something with this sensor data.
}

override fun onResume() {
    // Register a listener for the sensor.
    super.onResume()

    mProximity?.also { proximity ->
        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
    }
}

override fun onPause() {
    // Be sure to unregister the sensor when the activity pauses.
    super.onPause()
    mSensorManager.unregisterListener(this)
}
```

See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*
</td></tr>
<tr><td>[iv] a microprocessor adapted to:</td><td>The Huawei Vision 2 includes at least one microprocessor.

Processor	Qualcomm Snapdragon 200
CPU Cores	2
Processor Speed	1.2GHz

See https://www.phonerated.com/specs-huawei_vision_2, *last accessed December 6, 2018.*</td></tr>
<tr><td>(a) determine, without using the proximity sensor, the existence of a second condition independent and</td><td>The microprocessor of the Huawei Vision 2 is adapted to determine, without using the proximity sensor, the existence of a second condition independent and different from the first condition, the</td></tr>
</table>

MediaTek Exhibit 1015, Page 386 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554

different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;	second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call.
	
	By way of example only, the Android Developer Code provides files that describe the proximity sensor's signaling to the microprocessor:
	
	TYPE_PROXIMITY
	`public static final int TYPE_PROXIMITY`
	A constant describing a proximity sensor type. This is a wake up sensor.
	See `SensorEvent.values` for more details.
	See also:
	`isWakeUpSensor()`
	Constant Value: 8 (0x00000008)
	See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.
	
	The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:
	isWakeUpSensor
	added in API level 21
	`public boolean isWakeUpSensor ()`
	Returns true if the sensor is a wake-up sensor.
	Application Processor Power modes
	Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 387 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554

	Non-wake-up sensors Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually: • Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case. • Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost. **Wake-up sensors** In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details. *See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.*
(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor,	The microprocessor of the Huawei Vision 2 is adapted to, in response to a determination in step (a) that the second condition exists, activate the proximity sensor. By way of example only and as shown above in claim 1(iv)(a), the microprocessor is able to determine whether a call is active according to the second condition. The microprocessor activates the proximity sensor. By way of example only, the Android Developer Code Website describes examples of proximity sensor activation and use:

MediaTek Exhibit 1015, Page 388 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554

	TYPE_PROXIMITY
	`public static final int TYPE_PROXIMITY`
	A constant describing a proximity sensor type. This is a wake up sensor.
	See `SensorEvent.values` for more details.
	See also:
	`isWakeUpSensor()`
	Constant Value: 8 (0x00000008)
	See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.
	
	The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:
	
	isWakeUpSensor added in API level 21
	`public boolean isWakeUpSensor ()`
	Returns true if the sensor is a wake-up sensor.
	Application Processor Power modes
	Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 389 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554

	Non-wake-up sensors Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually: • Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case. • Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost. **Wake-up sensors** In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details. *See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.* In the Huawei Vision 2, when the call button or answer button is pressed, the display darkens, indicating that the proximity sensor is activated.
(c) receive the signal from the activated proximity sensor, and	The microprocessor of the Huawei Vision 2 is adapted to receive the signal from the activated proximity sensor. By way of example only, the Android Developer Code provides files that describe the proximity sensor's signaling to the microprocessor:

MediaTek Exhibit 1015, Page 390 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY

```
public static final int TYPE_PROXIMITY
```

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor

added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 391 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554

	Non-wake-up sensors Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually: • Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case. • Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost. **Wake-up sensors** In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details. *See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.*

MediaTek Exhibit 1015, Page 392 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554

(d) reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists.	The microprocessor of the Huawei Vision 2 is adapted to reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists. By way of further example only, the Android Developer Code Website describes the operation of a proximity sensor in order to reduce power to the display if a call is active and an object is proximate: TYPE_PROXIMITY | Hardware | Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear. | Phone position during a call. *See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.* In addition, the Android Developer Code Website provides the following exemplary code at least substantially similar to HUAWEI code for using the proximity sensor "to determine how far away a person's head is from the face of a handset device (or example, when a user making or receiving a phone call)."

MediaTek Exhibit 1015, Page 393 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554

<table>
<tr>
<td></td>
<td>
<h3>Use the proximity sensor</h3>
The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
KOTLIN JAVA
<pre>
private lateinit var mSensorManager: SensorManager
private var mSensor: Sensor? = null
...
mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
</pre>
The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:
</td>
</tr>
</table>

MediaTek Exhibit 1015, Page 394 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 395 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*

2. The mobile station of claim 1,	*See* claim 1.

MediaTek Exhibit 1015, Page 396 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554

further comprising increasing power to the display if the signal from the activated proximity sensor indicates that the first condition no longer exists.	The Huawei Vision 2 increases power to the display if the signal from the activated proximity sensor indicates that the first condition no longer exists. In Huawei Vision 2, when the device is moved away from the object, the display brightens and/or lights up, indicating that, when an external object is no longer proximate to the device, the power to the display is increased. By way of example, the Android Developer Code Website describes that "[t]he proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call)." *See* *https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox*, *last accessed November 30, 2018.*
4. The mobile station as recited in claim 1,	*See* claim 1.
wherein the microprocessor reduces power to the display by turning off the display.	The microprocessor of the Huawei Vision 2 reduces power to the display by turning off the display. By way of example only, the Android Developer Code Website describes the proximity sensor's signaling to the microprocessor, which would turn off power to the display if a call is active and an object is proximate:

MediaTek Exhibit 1015, Page 397 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY

`public static final int TYPE_PROXIMITY`

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor — added in API level 21

`public boolean isWakeUpSensor ()`

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 398 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

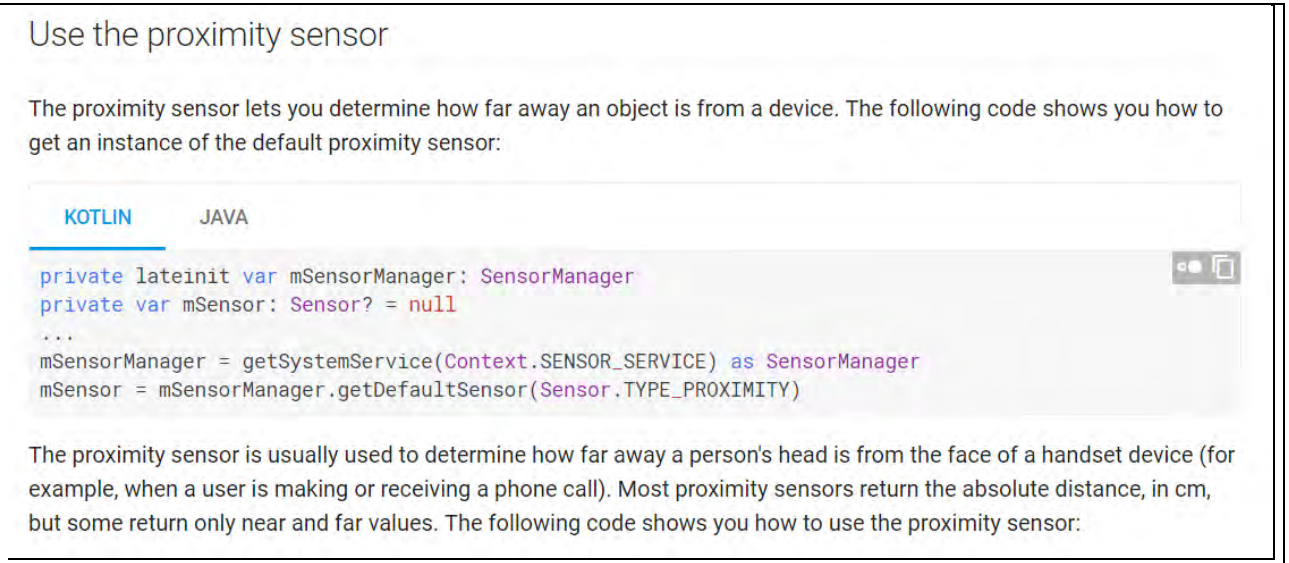
See also:

Sensor	Type	Description	Common Uses
`TYPE_PROXIMITY`	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

MediaTek Exhibit 1015, Page 399 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554



Use the proximity sensor

The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:

KOTLIN JAVA

```
private lateinit var mSensorManager: SensorManager
private var mSensor: Sensor? = null
...
mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
```

The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 400 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 401 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*

5. The mobile station as recited in claim 1,	*See* claim 1.
wherein the proximity sensor is a mechanical proximity sensor, an optical sensor, or a range-detecting sensor.	The proximity sensor of the Huawei Vision 2 is a range-detecting sensor. By way of further example, the Android Developer Code Website describes range detection in proximity sensors:

MediaTek Exhibit 1015, Page 402 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

And also, the code shows distance measurement:

```
override fun onSensorChanged(event: SensorEvent) {
    val distance = event.values[0]
    // Do something with this sensor data.
}
```

See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

The Android Developer Code Website further explains:

> **Note:** Some proximity sensors return binary values that represent "near" or "far." In this case, the sensor usually reports its maximum range value in the far state and a lesser value in the near state. Typically, the far value is a value > 5 cm, but this can vary from sensor to sensor. You can determine a sensor's maximum range by using the `getMaximumRange()` method.

See id.

MediaTek Exhibit 1015, Page 403 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554

7. The mobile station as recited in claim 1,	*See* claim 1.

wherein the proximity sensor begins detecting whether an external object is proximate substantially concurrently with the mobile station initiating an outgoing telephone call.	The proximity sensor of the Huawei Vision 2 begins detecting whether an external object is proximate substantially concurrently with the mobile station initiating an outgoing telephone call.
	
	By way of example only, the Android Developer Code Website shows how the proximity sensor is used to detect proximity substantially concurrently with initiating a call, including by providing exemplary code at least substantially similar to Huawei Code.
	
	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 404 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 405 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*

8. A method of conserving battery power in a mobile station, the mobile station adapted to detect the existence of a proximity condition, the proximity condition being that an external object is proximate, the method comprising:	To the extent that the preamble is found to be limiting, *see* claim 1(preamble); 1[ii]-[iii]; 1(b)-(d).
the mobile station detecting the existence of an initiated call condition or an answered-call	The Huawei Vision 2 detects the existence of an initiated call condition or an answered-call condition independent and different from the proximity condition, the initiated-call condition being

MediaTek Exhibit 1015, Page 406 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554

condition independent and different from the proximity condition, the initiated-call condition being that a user of the mobile station has performed an action to initiate a call, and the answered-call condition being that a user of the mobile station has performed an action to answer a call;	that a user of the mobile station has performed an action to initiate a call, and the answered-call condition being that a user of the mobile station has performed an action to answer a call. *See* claim 1(a).
the mobile station activating the proximity sensor in response to a determination that an answered-call condition or initiated-call condition exists; and	The Huawei Vision 2 activates the proximity sensor in response to a determination that an answered-call condition or initiated-call condition exists. *See* claim 1(b).
the mobile station reducing power consumption of a display of the mobile station if the activated proximity sensor indicates that the proximity condition exists.	The Huawei Vision 2 reduces power consumption of a display of the mobile station if the activated proximity sensor indicates that the proximity condition exists. *See* claim 1(c)-(d).
14. A mobile station, comprising:	*See* claim 1(preamble).
a display;	*See* claim 1[i].
a proximity sensor	*See* claim 1[ii].
adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate;	*See* claim 1[iii].

MediaTek Exhibit 1015, Page 407 of 560

Exhibit B-9 – Infringement of U.S. Patent No. 8,204,554

and a microprocessor adapted to:	*See* claim[iv].
(a) determine, independently of the determination whether the external object is proximate, the existence of a second condition different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;	The microprocessor of the Huawei Vision 2 is adapted to determine, independently of the determination whether the external object is proximate, the existence of a second condition different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call. *See* claim 1(a).
(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor,	*See* claim 1(b).
(c) receive the signal from the activated proximity sensor, and	*See* claim 1(c).
(d) reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists.	*See* claim 1(d).

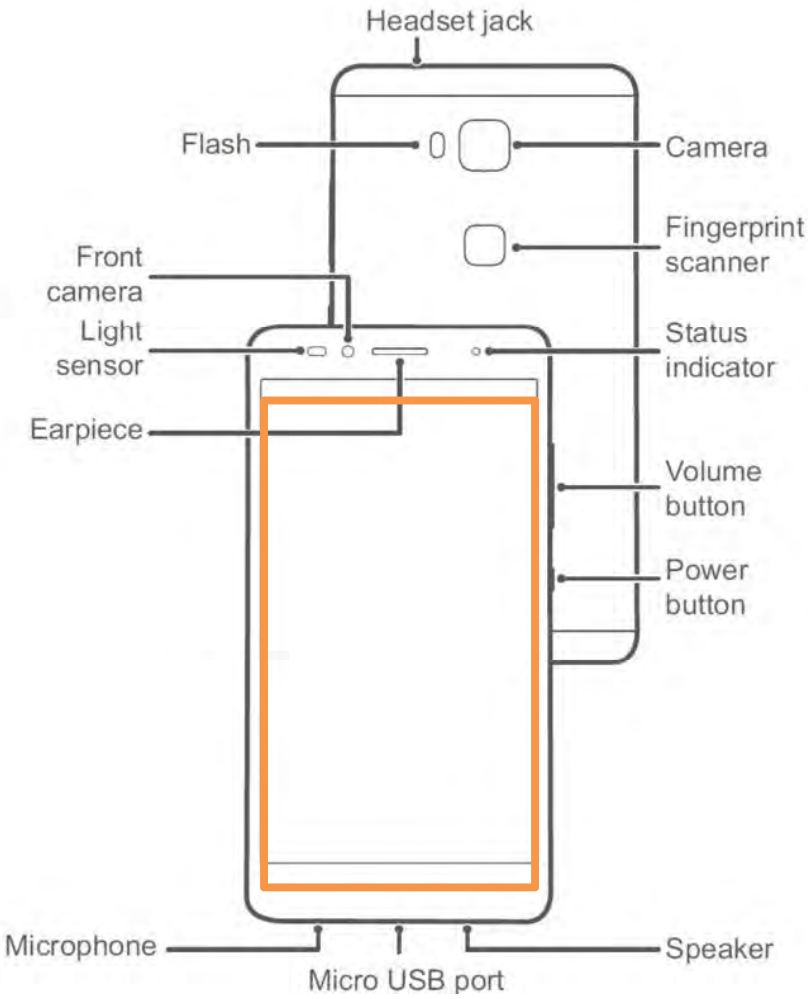
MediaTek Exhibit 1015, Page 408 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

Asserted Claim Elements	Huawei Honor 5x
1. A mobile station, comprising:	To the extent that the preamble is found to be limiting, the Huawei Honor 5x is a mobile station.  *See* https://www.hihonor.com/us/product/10001646292075.html, *last accessed December 4, 2018.*

MediaTek Exhibit 1015, Page 409 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

[i] a display;	The Huawei Honor 5x includes a display, outlined in the figure below. 

MediaTek Exhibit 1015, Page 410 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

	See http://consumer-tkb.huawei.com/ccpgw/msa/TKB/app_0000000000011227-CcpTKBKnowOut/ctkbknowout/servlet/show/knowAttachmentServlet?knowId=en-us00443446, p. 3, *last accessed December 4, 2018.*
[ii] a proximity sensor	The Huawei Honor 5x includes a proximity sensor.  *See* https://www.youtube.com/watch?v=aoCotiH4yrQ, *last accessed December 4, 2018.*

MediaTek Exhibit 1015, Page 411 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

[iii] adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate; and	The proximity sensor of the Huawei Honor 5x is adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate.
	
	By way of example only, the Huawei Honor 5X is an Android phone. The Android Developer Code Website describes functioning of proximity sensors in Android phones customized and adapted by Huawei to run on their hardware. In particular, the description specifies that the proximity sensor measures the proximity of an object relative to the device:
	
	TYPE_PROXIMITY Hardware Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear. Phone position during a call.
	
	See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.
	
	By way of further example, the Android Developer Code Website provides files that describe the generation of a signal by the sensor.
	
	TYPE_PROXIMITY
	`public static final int TYPE_PROXIMITY`
	A constant describing a proximity sensor type. This is a wake up sensor.
	See `SensorEvent.values` for more details.
	See also:
	`isWakeUpSensor()`
	Constant Value: 8 (0x00000008)
	See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

MediaTek Exhibit 1015, Page 412 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

The referenced discussion concerning the isWakeUpSensor file explains the proximity sensor (for example, whether a wake-up sensor or non-wake-up sensor) generates signals:

isWakeUpSensor

added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

In addition, the Android Developer Code provides the following exemplary code at least substantially similar to Huawei code for using the proximity sensor "to determine how far away a person's head is from the face of a handset device (for example, when a user making or receiving a phone call)."

MediaTek Exhibit 1015, Page 413 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 414 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

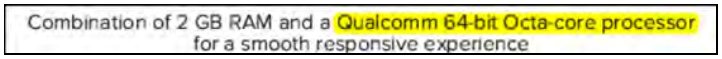
        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 415 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*

[iv] a microprocessor adapted to:	The Huawei Honor 5x includes at least one microprocessor.  *See* https://www.hihonor.com/us/product/10001646292075.html, *last accessed December 4, 2018.*
(a) determine, without using the proximity sensor, the existence of a	The microprocessor of the Huawei Honor 5x is adapted to determine, without using the proximity sensor, the existence of a second condition independent and different from the first condition, the

MediaTek Exhibit 1015, Page 416 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

second condition independent and different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;	second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call.
	
	By way of example only, the Huawei Honor 5X is an Android phone. The Huawei Honor 5X's microprocessor uses code substantially similar to the code described and excerpted below to (1) determine when the user initiates an outgoing call or (2) determine when the user answers an incoming call;
	
	Outgoing Call:
	
	`/**`
	`* Broadcast receiver to detect the outgoing calls.`
	`*/`
	`public class OutgoingReceiver extends BroadcastReceiver {`
	`  public OutgoingReceiver() {`
	`  }`
	
	`  @Override`
	`  public void onReceive(Context context, Intent intent) {`
	`  String number = intent.getStringExtra(Intent.EXTRA_PHONE_NUMBER);`
	
	`  Toast.makeText(ctx,`
	`  "Outgoing: "+number,`
	`  Toast.LENGTH_LONG).show();`
	`  }`
	`}`
	
	In the above, the system sends a broadcast action `android.intent.action.NEW_OUTGOING_CALL`.
	
	Incoming Call:

MediaTek Exhibit 1015, Page 417 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

	``
	/**
	* Listener to detect incoming calls.
	*/
	private class CallStateListener extends PhoneStateListener {
	  @Override
	  public void onCallStateChanged(int state, String incomingNumber) {
	  switch (state) {
	  case TelephonyManager.CALL_STATE_RINGING:
	  // called when someone is ringing to this phone
	
	  Toast.makeText(ctx,
	  "Incoming: "+incomingNumber,
	  Toast.LENGTH_LONG).show();
	  break;
	  }
	  }
	}
	``
	
	In the above, `state` is the call state, where it may be `CALL_STATE_RINGING`, `CALL_STATE_OFFHOOK`, or `CALL_STATE_IDLE`. Ringing is the state when someone is calling, offhook is when there is active or on hold call, and idle is when nobody is calling and there is no active call.
	
	See https://www.codeproject.com/Articles/548416/Detecting-Incoming-and-Outgoing-Phone-Calls-on-And, *last accessed December 5, 2018.*

(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor,	The microprocessor of the Huawei Honor 5x is adapted to, in response to a determination in step (a) that the second condition exists, activate the proximity sensor. By way of example only and as shown above in claim 1(iv)(a), the microprocessor is able to determine whether a call is active according to the second condition. The microprocessor activates the proximity sensor. By way of example only, the Android Developer Code Website describes examples of proximity sensor activation and use:

MediaTek Exhibit 1015, Page 418 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY

```
public static final int TYPE_PROXIMITY
```

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor — added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 419 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

	Non-wake-up sensors Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually: • Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case. • Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost. **Wake-up sensors** In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details. *See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.* In the Huawei Honor 5x, when the call button or answer button is pressed, the display darkens, indicating that the proximity sensor is activated.
(c) receive the signal from the activated proximity sensor, and	The microprocessor of the Huawei Honor 5X is adapted to receive the signal from the activated proximity sensor. By way of example only, the Android Developer Code provides files that describe the proximity sensor's signaling to the microprocessor:

MediaTek Exhibit 1015, Page 420 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY

```
public static final int TYPE_PROXIMITY
```

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor

added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 421 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

In the Huawei Honor 5X, when the call button or answer button is pressed, the display darkens, indicating that the microprocessor received the signal from the activated proximity sensor that an object was proximate.

MediaTek Exhibit 1015, Page 422 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

(d) reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists.	The microprocessor of the Huawei Honor 5X is adapted to reduce power to the display if (i) the microprocessor determines that a telephone call is active and (ii) the signal indicates the proximity of the external object. By way of example only, the Android Developer Code Website describes the operation of a proximity sensor in order to reduce power to the display if a call is active and an object is proximate: TYPE_PROXIMITY Hardware Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear. Phone position during a call. *See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.* In addition, the Android Developer Code Website provides the following exemplary code at least substantially similar to Huawei code for using the proximity sensor "to determine how far away a person's head is from the face of a handset device (or example, when a user making or receiving a phone call)."

MediaTek Exhibit 1015, Page 423 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 424 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 425 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*

2. The mobile station of claim 1,	*See* claim 1.

MediaTek Exhibit 1015, Page 426 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

further comprising increasing power to the display if the signal from the activated proximity sensor indicates that the first condition no longer exists.	The Huawei Honor 5x increases power to the display if the signal from the activated proximity sensor indicates that the first condition no longer exists. In Huawei Honor 5x, when the device is moved away from the object, the display brightens and/or lights up, indicating that, when an external object is no longer proximate to the device, the power to the display is increased. By way of example, the Android Developer Code Website describes that "[t]he proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call)." *See* https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 30, 2018.*
4. The mobile station as recited in claim 1,	*See* claim 1.
wherein the microprocessor reduces power to the display by turning off the display.	The microprocessor of the Huawei Honor 5x reduces power to the display by turning off the display. By way of example only, the Android Developer Code Website describes the proximity sensor's signaling to the microprocessor, which would turn off power to the display if a call is active and an object is proximate:

MediaTek Exhibit 1015, Page 427 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY

public static final int TYPE_PROXIMITY

A constant describing a proximity sensor type. This is a wake up sensor.

See SensorEvent.values for more details.

See also:

isWakeUpSensor()

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor added in API level 21

public boolean isWakeUpSensor ()

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 428 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

See also:

Sensor	Type	Description	Common Uses
`TYPE_PROXIMITY`	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

MediaTek Exhibit 1015, Page 429 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 430 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 431 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*

5. The mobile station as recited in claim 1,	*See* claim 1.
wherein the proximity sensor is a mechanical proximity sensor, an optical sensor, or a range-detecting sensor.	The proximity sensor of the Huawei Honor 5X is a range-detecting sensor. By way of example only, the Android Developer Code Website describes range detection in proximity sensors:

MediaTek Exhibit 1015, Page 432 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

And also, the code shows distance measurement:

```
override fun onSensorChanged(event: SensorEvent) {
    val distance = event.values[0]
    // Do something with this sensor data.
}
```

See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

The Android Developer Code Website further explains:

> **Note:** Some proximity sensors return binary values that represent "near" or "far." In this case, the sensor usually reports its maximum range value in the far state and a lesser value in the near state. Typically, the far value is a value > 5 cm, but this can vary from sensor to sensor. You can determine a sensor's maximum range by using the `getMaximumRange()` method.

See id.

MediaTek Exhibit 1015, Page 433 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

7. The mobile station as recited in claim 1,	*See* claim 1.

wherein the proximity sensor begins detecting whether an external object is proximate substantially concurrently with the mobile station initiating an outgoing telephone call.	The proximity sensor of the Huawei Honor 5X begins detecting whether an external object is proximate substantially concurrently with the mobile station initiating an outgoing telephone call.
	
	By way of example only, the Android Developer Code Website shows how the proximity sensor is used to detect proximity substantially concurrently with initiating a call, including by providing exemplary code at least substantially similar to Huawei code:
	
	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 434 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 435 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*

8. A method of conserving battery power in a mobile station, the mobile station adapted to detect the existence of a proximity condition, the proximity condition being that an external object is proximate, the method comprising:	To the extent that the preamble is found to be limiting, *see* claim 1(preamble); 1[ii]-[iii]; 1(b)-(d).
the mobile station detecting the existence of an initiated call condition or an answered-call	The Huawei Honor 5x detects the existence of an initiated call condition or an answered-call condition independent and different from the proximity condition, the initiated-call condition being

MediaTek Exhibit 1015, Page 436 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

condition independent and different from the proximity condition, the initiated-call condition being that a user of the mobile station has performed an action to initiate a call, and the answered-call condition being that a user of the mobile station has performed an action to answer a call;	that a user of the mobile station has performed an action to initiate a call, and the answered-call condition being that a user of the mobile station has performed an action to answer a call. *See* claim 1(a).
the mobile station activating the proximity sensor in response to a determination that an answered-call condition or initiated-call condition exists; and	The Huawei Honor 5x activates the proximity sensor in response to a determination that an answered-call condition or initiated-call condition exists. *See* claim 1(b).
the mobile station reducing power consumption of a display of the mobile station if the activated proximity sensor indicates that the proximity condition exists.	The Huawei Honor 5x reduces power consumption of a display of the mobile station if the activated proximity sensor indicates that the proximity condition exists. *See* claim 1(c)-(d).
14. A mobile station, comprising:	*See* claim 1(preamble).
a display;	*See* claim 1[i].
a proximity sensor	*See* claim 1[ii].
adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate;	*See* claim 1[iii].

MediaTek Exhibit 1015, Page 437 of 560

Exhibit B-10 –Infringement of U.S. Patent No. 8,204,554

and a microprocessor adapted to:	*See* claim[iv].
(a) determine, independently of the determination whether the external object is proximate, the existence of a second condition different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;	The microprocessor of the Huawei Honor 5x is adapted to determine, independently of the determination whether the external object is proximate, the existence of a second condition different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call. *See* claim 1(a).
(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor,	*See* claim 1(b).
(c) receive the signal from the activated proximity sensor, and	*See* claim 1(c).
(d) reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists.	*See* claim 1(d).

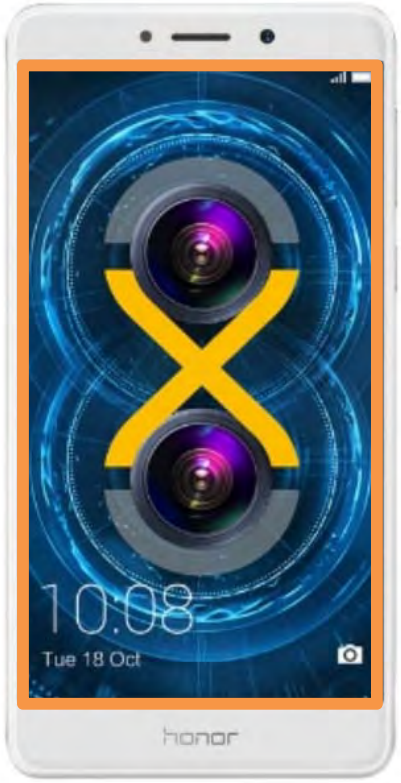
MediaTek Exhibit 1015, Page 438 of 560

Exhibit B-11 – Infringement of U.S. Patent No. 8,204,554

Asserted Claim Elements	Huawei Honor 6x
1. A mobile station, comprising:	To the extent that the preamble is found to be limiting, the Huawei Honor 6x is a mobile station.  *See* https://www.hihonor.com/us/product/10001911052020.html#1000000100082, *last accessed December 4, 2018.*

MediaTek Exhibit 1015, Page 439 of 560

Exhibit B-11 – Infringement of U.S. Patent No. 8,204,554

[i] a display;	The Huawei Honor 6x includes a display, outlined in the figure below.  *See* https://www.hihonor.com/us/product/10001911052020.html#1000000100082, *last accessed December 4, 2018.*

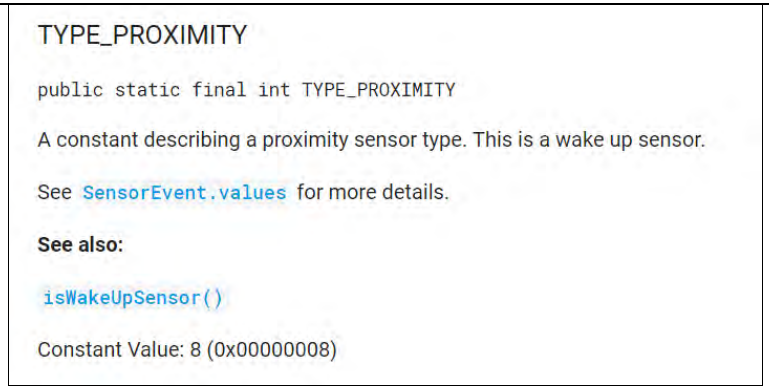
MediaTek Exhibit 1015, Page 440 of 560

Exhibit B-11 – Infringement of U.S. Patent No. 8,204,554

[ii] a proximity sensor	The Huawei Honor 6x includes a proximity sensor. **SPECIFICATIONS** SENSOR Hall effect sensor,Fingerprint sensor, Proximity sensor, Ambient light sensor, Compass, Accelerometer, Phone status indicator *See* https://www.hihonor.com/us/product/10001911052020.html#1000000100082, *last accessed December 4, 2018.*
[iii] adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate; and	The proximity sensor of the Huawei Honor 6X is adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate. By way of example only, the Huawei Honor 6X is an Android phone. The Android Developer Code Website describes functioning of proximity sensors in Android phones customized and adapted by Huawei to run on their hardware. In particular, the description specifies that the proximity sensor measures the proximity of an object relative to the device: TYPE_PROXIMITY Hardware Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear. Phone position during a call. *See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.* By way of further example, the Android Developer Code Website provides files that describe the generation of a signal by the sensor.

MediaTek Exhibit 1015, Page 441 of 560

Exhibit B-11 – Infringement of U.S. Patent No. 8,204,554



TYPE_PROXIMITY

public static final int TYPE_PROXIMITY

A constant describing a proximity sensor type. This is a wake up sensor.

See SensorEvent.values for more details.

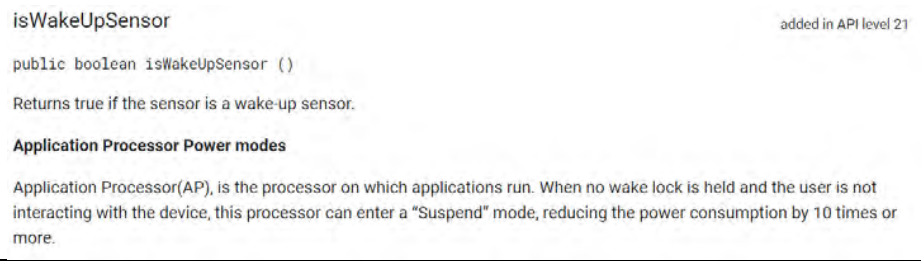
See also:

isWakeUpSensor()

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the proximity sensor (for example, whether a wake-up sensor or non-wake-up sensor) generates signals:



isWakeUpSensor

added in API level 21

public boolean isWakeUpSensor ()

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 442 of 560

Exhibit B-11 – Infringement of U.S. Patent No. 8,204,554

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

In addition, the Android Developer Code provides the following exemplary code at least substantially similar to Huawei code for using the proximity sensor "to determine how far away a person's head is from the face of a handset device (for example, when a user making or receiving a phone call)."

MediaTek Exhibit 1015, Page 443 of 560

Exhibit B-11 – Infringement of U.S. Patent No. 8,204,554

	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:	

MediaTek Exhibit 1015, Page 444 of 560

Exhibit B-11 – Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 445 of 560

Exhibit B-11 – Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*

[iv] a microprocessor adapted to:	The Huawei Honor 6x includes at least one microprocessor. CPU Model:Huawei Kirin 655,Octa-Core (4x2.1GHz+4x1.7GHz) *See* https://www.hihonor.com/us/product/10001646292075.html, *last accessed December 4, 2018.*

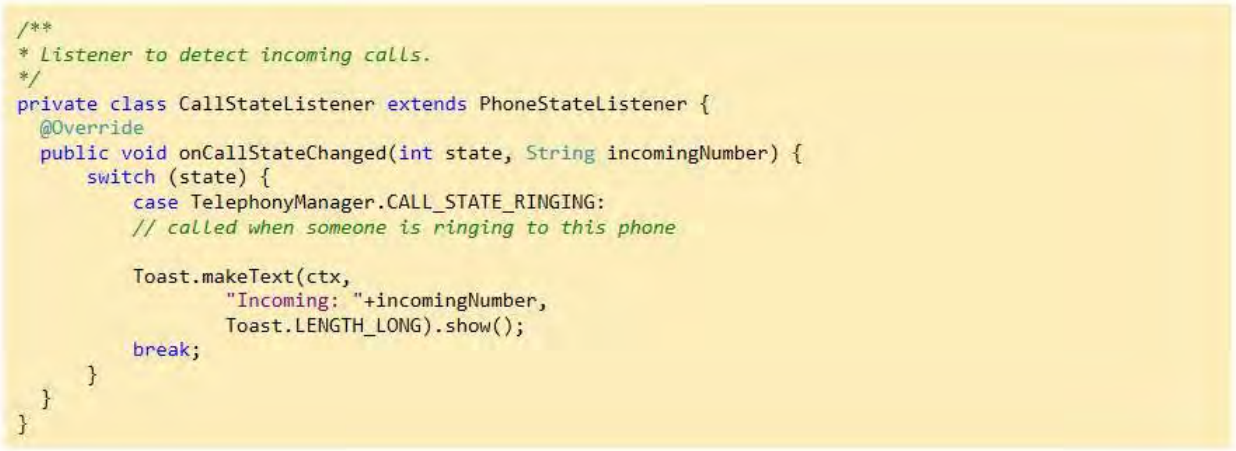
MediaTek Exhibit 1015, Page 446 of 560

Exhibit B-11 – Infringement of U.S. Patent No. 8,204,554

(a) determine, without using the proximity sensor, the existence of a second condition independent and different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;	The microprocessor of the Huawei Honor 6X is adapted to determine, without using the proximity sensor, the existence of a second condition independent and different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call.
	
	By way of example only, the Huawei Honor 6X is an Android phone. The Huawei Honor 6X's microprocessor uses code substantially similar to the code described and excerpted below to (1) determine when the user initiates an outgoing call or (2) determine when the user answers an incoming call;
	
	Outgoing Call:
	
	`/**`
	`* Broadcast receiver to detect the outgoing calls.`
	`*/`
	`public class OutgoingReceiver extends BroadcastReceiver {`
	`  public OutgoingReceiver() {`
	`  }`
	
	`  @Override`
	`  public void onReceive(Context context, Intent intent) {`
	`  String number = intent.getStringExtra(Intent.EXTRA_PHONE_NUMBER);`
	
	`  Toast.makeText(ctx,`
	`  "Outgoing: "+number,`
	`  Toast.LENGTH_LONG).show();`
	`  }`
	`}`
	
	In the above, the system sends a broadcast action `android.intent.action.NEW_OUTGOING_CALL`.
	
	Incoming Call:

MediaTek Exhibit 1015, Page 447 of 560

Exhibit B-11 – Infringement of U.S. Patent No. 8,204,554

	
	`/**`
	`* Listener to detect incoming calls.`
	`*/`
	`private class CallStateListener extends PhoneStateListener {`
	`  @Override`
	`  public void onCallStateChanged(int state, String incomingNumber) {`
	`  switch (state) {`
	`  case TelephonyManager.CALL_STATE_RINGING:`
	`  // called when someone is ringing to this phone`
	`  Toast.makeText(ctx,`
	`  "Incoming: "+incomingNumber,`
	`  Toast.LENGTH_LONG).show();`
	`  break;`
	`  }`
	`  }`
	`}`
	
	In the above, `state` is the call state, where it may be `CALL_STATE_RINGING`, `CALL_STATE_OFFHOOK`, or `CALL_STATE_IDLE`. Ringing is the state when someone is calling, offhook is when there is active or on hold call, and idle is when nobody is calling and there is no active call.
	
	See https://www.codeproject.com/Articles/548416/Detecting-Incoming-and-Outgoing-Phone-Calls-on-And, *last accessed December 5, 2018.*

(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor,	The microprocessor of the Huawei Honor 6x is adapted to, in response to a determination in step (a) that the second condition exists, activate the proximity sensor. By way of example only and as shown above in claim 1(iv)(a), the microprocessor is able to determine whether a call is active according to the second condition. The microprocessor activates the proximity sensor. By way of example only, the Android Developer Code Website describes examples of proximity sensor activation and use:

MediaTek Exhibit 1015, Page 448 of 560

Exhibit B-11 – Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY

```
public static final int TYPE_PROXIMITY
```

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor — added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 449 of 560

Exhibit B-11 – Infringement of U.S. Patent No. 8,204,554

	Non-wake-up sensors Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually: • Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case. • Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost. **Wake-up sensors** In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details. *See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.* In the Huawei Honor 6x, when the call button or answer button is pressed, the display darkens, indicating that the proximity sensor is activated.
(c) receive the signal from the activated proximity sensor, and	The microprocessor of the Huawei Honor 6X is adapted to receive the signal from the activated proximity sensor. By way of example only, the Android Developer Code provides files that describe the proximity sensor's signaling to the microprocessor:

MediaTek Exhibit 1015, Page 450 of 560

Exhibit B-11 – Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY

```
public static final int TYPE_PROXIMITY
```

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor

added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 451 of 560

Exhibit B-11 – Infringement of U.S. Patent No. 8,204,554

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

In the Huawei Honor 6X, when the call button or answer button is pressed, the display darkens, indicating that the microprocessor received the signal from the activated proximity sensor that an object was proximate.

MediaTek Exhibit 1015, Page 452 of 560

Exhibit B-11 – Infringement of U.S. Patent No. 8,204,554

(d) reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists.	The microprocessor of the Huawei Honor 6X is adapted to reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists. By way of example only, the Android Developer Code Website describes the operation of a proximity sensor in order to reduce power to the display if a call is active and an object is proximate: TYPE_PROXIMITY Hardware Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear. Phone position during a call. *See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.* In addition, the Android Developer Code Website provides the following exemplary code at least substantially similar to Huawei code for using the proximity sensor "to determine how far away a person's head is from the face of a handset device (or example, when a user making or receiving a phone call)."

MediaTek Exhibit 1015, Page 453 of 560

Exhibit B-11 – Infringement of U.S. Patent No. 8,204,554

	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 454 of 560

Exhibit B-11 – Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 455 of 560

Exhibit B-11 – Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*

2. The mobile station of claim 1,	*See* claim 1.

MediaTek Exhibit 1015, Page 456 of 560

Exhibit B-11 – Infringement of U.S. Patent No. 8,204,554

further comprising increasing power to the display if the signal from the activated proximity sensor indicates that the first condition no longer exists.	The Huawei Honor 6x increases power to the display if the signal from the activated proximity sensor indicates that the first condition no longer exists. In Huawei Honor 6x, when the device is moved away from the object, the display brightens and/or lights up, indicating that, when an external object is no longer proximate to the device, the power to the display is increased. By way of example, the Android Developer Code Website describes that "[t]he proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call)." *See* *https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox*, *last accessed November 30, 2018.*
4. The mobile station as recited in claim 1,	*See* claim 1.

wherein the microprocessor reduces power to the display by turning off the display.	The microprocessor of the Huawei Honor 6X reduces power to the display by turning off the display.
	
	By way of example only, the Android Developer Code Website describes the proximity sensor's signaling to the microprocessor, which would turn off power to the display if a call is active and an object is proximate:
	
	TYPE_PROXIMITY
	`public static final int TYPE_PROXIMITY`
	A constant describing a proximity sensor type. This is a wake up sensor.
	See `SensorEvent.values` for more details.
	See also:
	`isWakeUpSensor()`
	Constant Value: 8 (0x00000008)

MediaTek Exhibit 1015, Page 457 of 560

Exhibit B-11 – Infringement of U.S. Patent No. 8,204,554

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor

added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

See also:

MediaTek Exhibit 1015, Page 458 of 560

Exhibit B-11 – Infringement of U.S. Patent No. 8,204,554

Sensor	Type	Description	Common Uses
TYPE_PROXIMITY	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

Use the proximity sensor

The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:

KOTLIN JAVA

```
private lateinit var mSensorManager: SensorManager
private var mSensor: Sensor? = null
...
mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
```

The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 459 of 560

Exhibit B-11 – Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 460 of 560

Exhibit B-11 – Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*

5. The mobile station as recited in claim 1,	*See* claim 1.
wherein the proximity sensor is a mechanical proximity sensor, an optical sensor, or a range-detecting sensor.	The proximity sensor of the Huawei Honor 6X is a range-detecting sensor. By way of example only, the Android Developer Code Website describes range detection in proximity sensors: `TYPE_PROXIMITY` Hardware Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear. Phone position during a call.

MediaTek Exhibit 1015, Page 461 of 560

Exhibit B-11 – Infringement of U.S. Patent No. 8,204,554

	See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.
	
	And also, the code shows distance measurement:
	
	`override fun onSensorChanged(event: SensorEvent) {`
	`  val distance = event.values[0]`
	`  // Do something with this sensor data.`
	`}`
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.
	
	The Android Developer Code Website further explains:
	
	Note: Some proximity sensors return binary values that represent "near" or "far." In this case, the sensor usually reports its maximum range value in the far state and a lesser value in the near state. Typically, the far value is a value > 5 cm, but this can vary from sensor to sensor. You can determine a sensor's maximum range by using the `getMaximumRange()` method.
	
	See id.

MediaTek Exhibit 1015, Page 462 of 560

Exhibit B-11 – Infringement of U.S. Patent No. 8,204,554

7. The mobile station as recited in claim 1,	*See* claim 1.

wherein the proximity sensor begins detecting whether an external object is proximate substantially concurrently with the mobile station initiating an outgoing telephone call.	The proximity sensor of the Huawei Honor 6X begins detecting whether an external object is proximate substantially concurrently with the mobile station initiating an outgoing telephone call.
	
	By way of example only, the Android Developer Code Website shows how the proximity sensor is used to detect proximity substantially concurrently with initiating a call, including by providing exemplary code at least substantially similar to Huawei code:
	
	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 463 of 560

Exhibit B-11 – Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 464 of 560

Exhibit B-11 – Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*

8. A method of conserving battery power in a mobile station, the mobile station adapted to detect the existence of a proximity condition, the proximity condition being that an external object is proximate, the method comprising:	To the extent that the preamble is found to be limiting, *see* claim 1(preamble); 1[ii]-[iii]; 1(b)-(d).
the mobile station detecting the existence of an initiated call condition or an answered-call	The Huawei Honor 6x detects the existence of an initiated call condition or an answered-call condition independent and different from the proximity condition, the initiated-call condition being

MediaTek Exhibit 1015, Page 465 of 560

Exhibit B-11 – Infringement of U.S. Patent No. 8,204,554

condition independent and different from the proximity condition, the initiated-call condition being that a user of the mobile station has performed an action to initiate a call, and the answered-call condition being that a user of the mobile station has performed an action to answer a call;	that a user of the mobile station has performed an action to initiate a call, and the answered-call condition being that a user of the mobile station has performed an action to answer a call. *See* claim 1(a).
the mobile station activating the proximity sensor in response to a determination that an answered-call condition or initiated-call condition exists; and	The Huawei Honor 6x activates the proximity sensor in response to a determination that an answered-call condition or initiated-call condition exists. *See* claim 1(b).
the mobile station reducing power consumption of a display of the mobile station if the activated proximity sensor indicates that the proximity condition exists.	The Huawei Honor 6x reduces power consumption of a display of the mobile station if the activated proximity sensor indicates that the proximity condition exists. *See* claim 1(c)-(d).
14. A mobile station, comprising:	*See* claim 1(preamble).
a display;	*See* claim 1[i].
a proximity sensor	*See* claim 1[ii].
adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate;	*See* claim 1[iii].

MediaTek Exhibit 1015, Page 466 of 560

Exhibit B-11 – Infringement of U.S. Patent No. 8,204,554

and a microprocessor adapted to:	*See* claim[iv].
(a) determine, independently of the determination whether the external object is proximate, the existence of a second condition different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;	The microprocessor of the Huawei Honor 6x is adapted to determine, independently of the determination whether the external object is proximate, the existence of a second condition different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call. *See* claim 1(a).
(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor,	*See* claim 1(b).
(c) receive the signal from the activated proximity sensor, and	*See* claim 1(c).
(d) reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists.	*See* claim 1(d).

MediaTek Exhibit 1015, Page 467 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

Asserted Claim Elements	Huawei Honor 7x
1. A mobile station, comprising:	To the extent that the preamble is found to be limiting, the Huawei Honor 7X is a mobile station.  *See* https://www.hihonor.com/us/product/10001933050073.html#1000000100062, *last accessed December 5, 2018.*

MediaTek Exhibit 1015, Page 468 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

[i] a display;	The Huawei Honor 7X includes a display, outlined in the figure below.  *See* https://www.hihonor.com/us/product/10001933050073.html#1000000100062, *last accessed December 5, 2018.*

MediaTek Exhibit 1015, Page 469 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

[ii] a proximity sensor	The Huawei Honor 7x includes a proximity sensor. **SPECIFICATIONS** SENSOR Fingerprint sensor, Proximity sensor, Ambient light sensor, Compass, Gravity sensor, Phone status indicator *See* https://www.hihonor.com/us/product/10001933050073.html#1000000100062, *last accessed December 5, 2018.*
[iii] adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate; and	The proximity sensor of the Huawei Honor 7x is adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate. By way of example only, the Huawei Honor 7X is an Android phone. The Android Developer Code Website describes functioning of proximity sensors in Android phones customized and adapted by Huawei to run on their hardware. In particular, the description specifies that the proximity sensor measures the proximity of an object relative to the device: TYPE_PROXIMITY Hardware Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear. Phone position during a call. *See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.* By way of further example, the Android Developer Code Website provides files that describe the generation of a signal by the sensor.

MediaTek Exhibit 1015, Page 470 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY

`public static final int TYPE_PROXIMITY`

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the proximity sensor (for example, whether a wake-up sensor or non-wake-up sensor) generates signals:

isWakeUpSensor added in API level 21

`public boolean isWakeUpSensor ()`

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 471 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

In addition, the Android Developer Code provides the following exemplary code at least substantially similar to Huawei code for using the proximity sensor "to determine how far away a person's head is from the face of a handset device (for example, when a user making or receiving a phone call)."

MediaTek Exhibit 1015, Page 472 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 473 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 474 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*

[iv] a microprocessor adapted to:	The Huawei Honor 7x includes at least one microprocessor. CPU Model:Kirin 695,CPU Cores:Octa-Core(4*2.36GHz+4*1.7GHz) *See* https://www.hihonor.com/us/product/10001933050073.html#1000000100062, *last accessed December 5, 2018.*
(a) determine, without using the proximity sensor, the existence of a	The microprocessor of the Huawei Honor 7X is adapted to determine, without using the proximity sensor, the existence of a second condition independent and different from the first condition, the

MediaTek Exhibit 1015, Page 475 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

second condition independent and different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;	second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call.
	
	By way of example only, the Huawei Honor 7X is an Android phone. The Huawei Honor 7X's microprocessor uses code substantially similar to the code described and excerpted below to (1) determine when the user initiates an outgoing call or (2) determine when the user answers an incoming call;
	
	Outgoing Call:
	
	`/**`
	`* Broadcast receiver to detect the outgoing calls.`
	`*/`
	`public class OutgoingReceiver extends BroadcastReceiver {`
	`  public OutgoingReceiver() {`
	`  }`
	
	`  @Override`
	`  public void onReceive(Context context, Intent intent) {`
	`  String number = intent.getStringExtra(Intent.EXTRA_PHONE_NUMBER);`
	
	`  Toast.makeText(ctx,`
	`  "Outgoing: "+number,`
	`  Toast.LENGTH_LONG).show();`
	`  }`
	`}`
	
	In the above, the system sends a broadcast action `android.intent.action.NEW_OUTGOING_CALL`.
	
	Incoming Call:

MediaTek Exhibit 1015, Page 476 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

	``
	/**
	* Listener to detect incoming calls.
	*/
	private class CallStateListener extends PhoneStateListener {
	  @Override
	  public void onCallStateChanged(int state, String incomingNumber) {
	  switch (state) {
	  case TelephonyManager.CALL_STATE_RINGING:
	  // called when someone is ringing to this phone
	
	  Toast.makeText(ctx,
	  "Incoming: "+incomingNumber,
	  Toast.LENGTH_LONG).show();
	  break;
	  }
	  }
	}
	``
	
	In the above, `state` is the call state, where it may be `CALL_STATE_RINGING`, `CALL_STATE_OFFHOOK`, or `CALL_STATE_IDLE`. Ringing is the state when someone is calling, offhook is when there is active or on hold call, and idle is when nobody is calling and there is no active call.
	
	See https://www.codeproject.com/Articles/548416/Detecting-Incoming-and-Outgoing-Phone-Calls-on-And, *last accessed December 5, 2018.*

(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor,	The microprocessor of the Huawei Honor 7X is adapted to, in response to a determination in step (a) that the second condition exists, activate the proximity sensor. By way of example only and as shown above in claim 1(iv)(a), the microprocessor is able to determine whether a call is active according to the second condition. The microprocessor activates the proximity sensor. By way of example only, the Android Developer Code Website describes examples of proximity sensor activation and use:

MediaTek Exhibit 1015, Page 477 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY

```
public static final int TYPE_PROXIMITY
```

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor — added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 478 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

	Non-wake-up sensors Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually: • Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case. • Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost. **Wake-up sensors** In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details. *See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.* In the Huawei Honor 7X, when the call button or answer button is pressed, the display darkens, indicating that the proximity sensor is activated.
(c) receive the signal from the activated proximity sensor, and	The microprocessor of the Huawei Honor 7X is adapted to receive the signal from the activated proximity sensor. By way of example only, the Android Developer Code provides files that describe the proximity sensor's signaling to the microprocessor:

MediaTek Exhibit 1015, Page 479 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY

```
public static final int TYPE_PROXIMITY
```

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor

added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 480 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

In the Huawei Honor 7X, when the call button or answer button is pressed, the display darkens, indicating that the microprocessor received the signal from the activated proximity sensor that an object was proximate.

MediaTek Exhibit 1015, Page 481 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

(d) reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists.	The microprocessor of the Huawei Honor 7X is adapted to reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists. By way of example only, the Android Developer Code Website describes the operation of a proximity sensor in order to reduce power to the display if a call is active and an object is proximate: TYPE_PROXIMITY Hardware Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear. Phone position during a call. *See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.* In addition, the Android Developer Code Website provides the following exemplary code at least substantially similar to Huawei code for using the proximity sensor "to determine how far away a person's head is from the face of a handset device (or example, when a user making or receiving a phone call)."

MediaTek Exhibit 1015, Page 482 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 483 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 484 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*

2. The mobile station of claim 1,	*See* claim 1.

MediaTek Exhibit 1015, Page 485 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

further comprising increasing power to the display if the signal from the activated proximity sensor indicates that the first condition no longer exists.	The Huawei Honor 7x increases power to the display if the signal from the activated proximity sensor indicates that the first condition no longer exists. In Huawei Honor 7x, when the device is moved away from the object, the display brightens and/or lights up, indicating that, when an external object is no longer proximate to the device, the power to the display is increased. By way of example, the Android Developer Code Website describes that "[t]he proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call)." *See* *https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox*, *last accessed November 30, 2018.*
4. The mobile station as recited in claim 1,	*See* claim 1.
wherein the microprocessor reduces power to the display by turning off the display.	The microprocessor of the Huawei Honor 7X reduces power to the display by turning off the display. By way of example only, the Android Developer Code Website describes the proximity sensor's signaling to the microprocessor, which would turn off power to the display if a call is active and an object is proximate:

MediaTek Exhibit 1015, Page 486 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY

```
public static final int TYPE_PROXIMITY
```

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the is WakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor — added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 487 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

See also:

Sensor	Type	Description	Common Uses
`TYPE_PROXIMITY`	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

MediaTek Exhibit 1015, Page 488 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 489 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 490 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*

5. The mobile station as recited in claim 1,	*See* claim 1.
wherein the proximity sensor is a mechanical proximity sensor, an optical sensor, or a range-detecting sensor.	The proximity sensor of the Huawei Honor 7X is a range-detecting sensor. By way of example only, the Android Developer Code Website describes range detection in proximity sensors:

MediaTek Exhibit 1015, Page 491 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

And also, the code shows distance measurement:

```
override fun onSensorChanged(event: SensorEvent) {
    val distance = event.values[0]
    // Do something with this sensor data.
}
```

See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

The Android Developer Code Website further explains:

> **Note:** Some proximity sensors return binary values that represent "near" or "far." In this case, the sensor usually reports its maximum range value in the far state and a lesser value in the near state. Typically, the far value is a value > 5 cm, but this can vary from sensor to sensor. You can determine a sensor's maximum range by using the `getMaximumRange()` method.

See id.

MediaTek Exhibit 1015, Page 492 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

7. The mobile station as recited in claim 1,	*See* claim 1.

wherein the proximity sensor begins detecting whether an external object is proximate substantially concurrently with the mobile station initiating an outgoing telephone call.	The proximity sensor of the Huawei Honor 7X begins detecting whether an external object is proximate substantially concurrently with the mobile station initiating an outgoing telephone call.
	
	By way of example only, the Android Developer Code Website shows how the proximity sensor is used to detect proximity substantially concurrently with initiating a call, including by providing exemplary code at least substantially similar to Huawei code:
	
	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 493 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 494 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*

8. A method of conserving battery power in a mobile station, the mobile station adapted to detect the existence of a proximity condition, the proximity condition being that an external object is proximate, the method comprising:	To the extent that the preamble is found to be limiting, *see* claim 1(preamble); 1[ii]-[iii]; 1(b)-(d).
the mobile station detecting the existence of an initiated call condition or an answered-call	The Huawei Honor 7x detects the existence of an initiated call condition or an answered-call condition independent and different from the proximity condition, the initiated-call condition being

MediaTek Exhibit 1015, Page 495 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

condition independent and different from the proximity condition, the initiated-call condition being that a user of the mobile station has performed an action to initiate a call, and the answered-call condition being that a user of the mobile station has performed an action to answer a call;	that a user of the mobile station has performed an action to initiate a call, and the answered-call condition being that a user of the mobile station has performed an action to answer a call. *See* claim 1(a).
the mobile station activating the proximity sensor in response to a determination that an answered-call condition or initiated-call condition exists; and	The Huawei Honor 7x activates the proximity sensor in response to a determination that an answered-call condition or initiated-call condition exists. *See* claim 1(b).
the mobile station reducing power consumption of a display of the mobile station if the activated proximity sensor indicates that the proximity condition exists.	The Huawei Honor 7x reduces power consumption of a display of the mobile station if the activated proximity sensor indicates that the proximity condition exists. *See* claim 1(c)-(d).
14. A mobile station, comprising:	*See* claim 1(preamble).
a display;	*See* claim 1[i].
a proximity sensor	*See* claim 1[ii].
adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate;	*See* claim 1[iii].

MediaTek Exhibit 1015, Page 496 of 560

Exhibit B-12 –Infringement of U.S. Patent No. 8,204,554

and a microprocessor adapted to:	*See* claim[iv].
(a) determine, independently of the determination whether the external object is proximate, the existence of a second condition different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;	The microprocessor of the Huawei Honor 7x is adapted to determine, independently of the determination whether the external object is proximate, the existence of a second condition different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call. *See* claim 1(a).
(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor,	*See* claim 1(b).
(c) receive the signal from the activated proximity sensor, and	*See* claim 1(c).
(d) reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists.	*See* claim 1(d).

MediaTek Exhibit 1015, Page 497 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

Asserted Claim Elements	Huawei Honor 8
1. A mobile station, comprising:	To the extent that the preamble is found to be limiting, the Huawei Honor 8 is a mobile station.  *See* https://www.hihonor.com/global/products/smartphone/honor8/, *last accessed December 5, 2018.*

MediaTek Exhibit 1015, Page 498 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

[i] a display;	The Huawei Honor 8 includes a display, outlined in the figure below.  *See* https://www.hihonor.com/global/products/smartphone/honor8/, *last accessed December 5, 2018.*

MediaTek Exhibit 1015, Page 499 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

[ii] a proximity sensor	The Huawei Honor 8 includes a proximity sensor. *See, e.g.*, the following discussion on removing the proximity sensor from an Honor 8: Repair guide : Proximity and Light Sensor Huawei Honor 8  (https://medias.sosav.fr/images/guides/big/8dgtg0ocfl6nc0w.jpg?version=1.8) Step 28 Use the pair of tweezers and grab the proximity/light sensor and remove it.

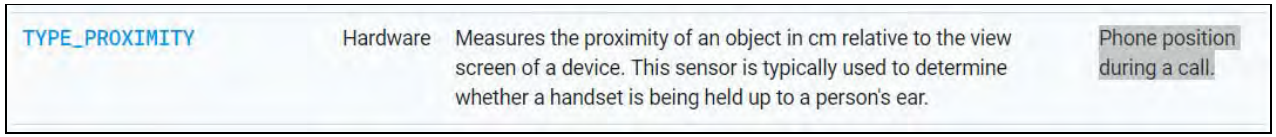
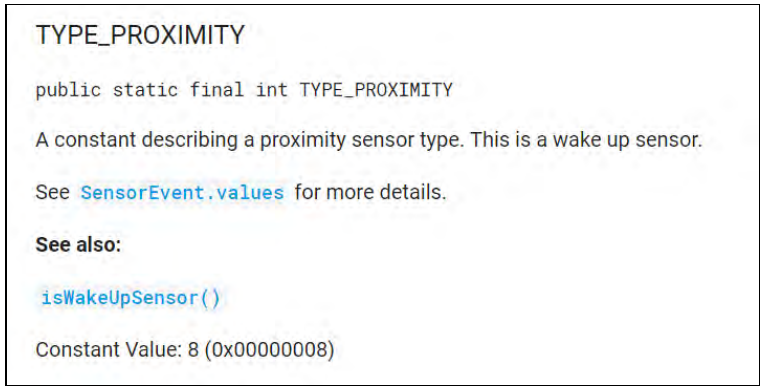
MediaTek Exhibit 1015, Page 500 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

	 (https://medias.sosav.fr/images/guides/big/njd3bn2rf7v4nah.jpg?version=1.8) Step 29 The proximity/light sensor of your Honor 8 is now disassembled. You can replace it with a new one if needed. *See* https://www.sosav.com/guides/mobiles/huawei/honor-8/proximity-light-sensor/, *last accessed December 5, 2018.*
[iii] adapted to generate a signal indicative of the existence of a first condition, the first condition being that an	The proximity sensor of the Huawei Honor 8 is adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate By way of example only, the Huawei Honor 8 is an Android phone. The Android Developer Code Website describes functioning of proximity sensors in Android phones customized and adapted by Huawei to run on their

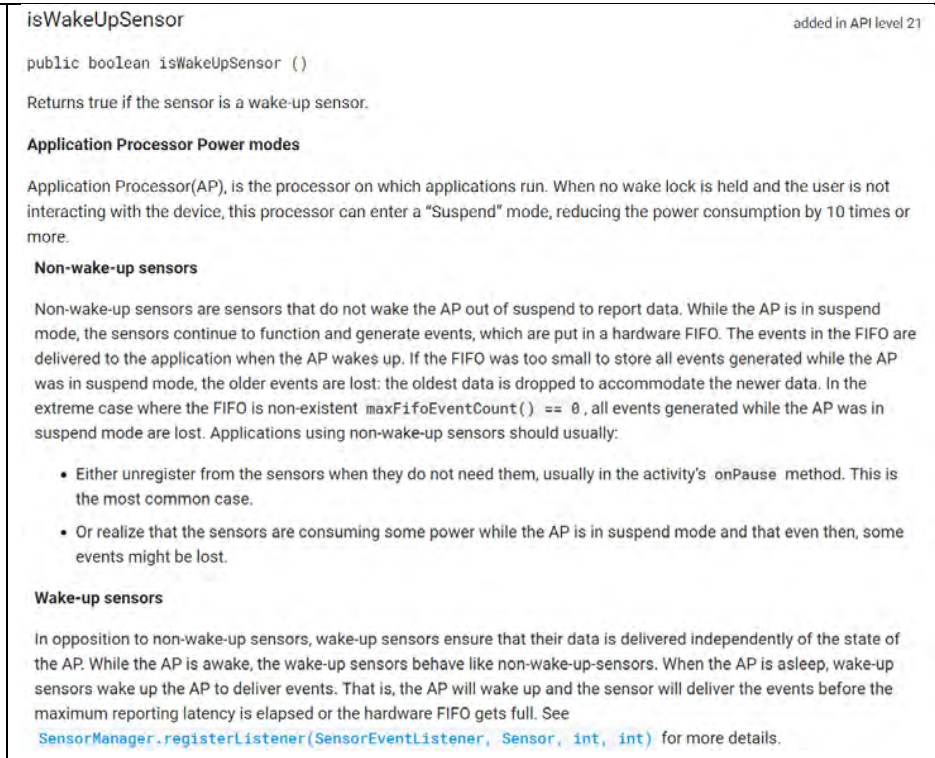
MediaTek Exhibit 1015, Page 501 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

external object is proximate; and	hardware. In particular, the description specifies that the proximity sensor measures the proximity of an object relative to the device:  *See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.* By way of further example, the Android Developer Code Website provides files that describe the generation of a signal by the sensor.  *See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.* The referenced discussion concerning the isWakeUpSensor file explains the proximity sensor (for example, whether a wake-up sensor or non-wake-up sensor) generates signals:

MediaTek Exhibit 1015, Page 502 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554



isWakeUpSensor

added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

In addition, the Android Developer Code provides the following exemplary code at least substantially similar to Huawei code for using the proximity sensor "to determine how far away a person's head is from the face of a handset device (for example, when a user making or receiving a phone call)."

MediaTek Exhibit 1015, Page 503 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:	

MediaTek Exhibit 1015, Page 504 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

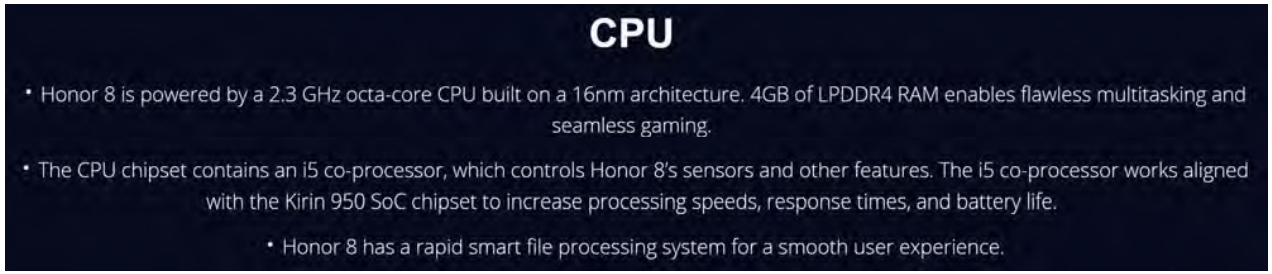
        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 505 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*

[iv] a microprocessor adapted to:	The Huawei Honor 8 includes at least one microprocessor. 

MediaTek Exhibit 1015, Page 506 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

	See https://www.hihonor.com/global/products/smartphone/honor8/, *last accessed December 5, 2018.*

(a) determine, without using the proximity sensor, the existence of a second condition independent and different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;	The microprocessor of the Huawei Honor 8 is adapted to determine, without using the proximity sensor, the existence of a second condition independent and different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call.
	
	By way of example only, the Huawei Honor 8 is an Android phone. The Huawei Honor 8's microprocessor uses code substantially similar to the code described and excerpted below to (1) determine when the user initiates an outgoing call or (2) determine when the user answers an incoming call;
	
	Outgoing Call:
	
	`/**`
	`* Broadcast receiver to detect the outgoing calls.`
	`*/`
	`public class OutgoingReceiver extends BroadcastReceiver {`
	`  public OutgoingReceiver() {`
	`  }`
	
	`  @Override`
	`  public void onReceive(Context context, Intent intent) {`
	`  String number = intent.getStringExtra(Intent.EXTRA_PHONE_NUMBER);`
	
	`  Toast.makeText(ctx,`
	`  "Outgoing: "+number,`
	`  Toast.LENGTH_LONG).show();`
	`  }`
	`}`
	
	In the above, the system sends a broadcast action `android.intent.action.NEW_OUTGOING_CALL`.
	
	Incoming Call:

MediaTek Exhibit 1015, Page 507 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

	``
	/**
	* Listener to detect incoming calls.
	*/
	private class CallStateListener extends PhoneStateListener {
	  @Override
	  public void onCallStateChanged(int state, String incomingNumber) {
	  switch (state) {
	  case TelephonyManager.CALL_STATE_RINGING:
	  // called when someone is ringing to this phone
	
	  Toast.makeText(ctx,
	  "Incoming: "+incomingNumber,
	  Toast.LENGTH_LONG).show();
	  break;
	  }
	  }
	}
	``
	
	In the above, `state` is the call state, where it may be `CALL_STATE_RINGING`, `CALL_STATE_OFFHOOK`, or `CALL_STATE_IDLE`. Ringing is the state when someone is calling, offhook is when there is active or on hold call, and idle is when nobody is calling and there is no active call.
	
	See https://www.codeproject.com/Articles/548416/Detecting-Incoming-and-Outgoing-Phone-Calls-on-And, *last accessed December 5, 2018.*

(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor,	The microprocessor of the Huawei Honor 8 is adapted to, in response to a determination in step (a) that the second condition exists, activate the proximity sensor. By way of example only and as shown above in claim 1(iv)(a), the microprocessor is able to determine whether a call is active according to the second condition. The microprocessor activates the proximity sensor. By way of example only, the Android Developer Code Website describes examples of proximity sensor activation and use:

MediaTek Exhibit 1015, Page 508 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY

```
public static final int TYPE_PROXIMITY
```

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor — added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 509 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

	Non-wake-up sensors Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually: • Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case. • Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost. **Wake-up sensors** In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details. *See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.* In the Huawei Honor 8, when the call button or answer button is pressed, the display darkens, indicating that the proximity sensor is activated.
(c) receive the signal from the activated proximity sensor, and	The microprocessor of the Huawei Honor 8 is adapted to receive the signal from the activated proximity sensor. By way of example only, the Android Developer Code provides files that describe the proximity sensor's signaling to the microprocessor:

MediaTek Exhibit 1015, Page 510 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY

```
public static final int TYPE_PROXIMITY
```

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor

added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 511 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

	Non-wake-up sensors Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually: • Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case. • Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost. **Wake-up sensors** In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details. *See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.*

MediaTek Exhibit 1015, Page 512 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

(d) reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists.	The microprocessor of the Huawei Honor 8 is adapted to reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists. By way of example only, the following excerpted document shows that when the Huawei Honor 8 is proximate to an object, and a call has been initiated or answered, power to the display is reduced and the display is darkened. Is possible to turn off proximity sensor on Honor 8? October 22, 2017 by Anonymous (https://webcazine.com/author/answersanonymoususer/) « Back to Previous Page (https://webcazine.com/forums/) Tags: Honor8 (https://webcazine.com/forums/?cmatag=honor-8) Huawei (https://webcazine.com/forums/?cmatag=huawei) When I'm on a call, my phone will turn off automatically when the proximity sensor detects the phone is near my face/ear. Is it possible to turn off this feature? I need to do so for testing purpose. *See* https://webcazine.com/forums/is-possible-to-turn-off-proximity-sensor-on-honor-8/, *last accessed December 5, 2018.* By way of further example only, the Android Developer Code Website describes the operation of a proximity sensor in order to reduce power to the display if a call is active and an object is proximate: TYPE_PROXIMITY Hardware Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear. Phone position during a call.

MediaTek Exhibit 1015, Page 513 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

	See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.
	
	In addition, the Android Developer Code Website provides the following exemplary code at least substantially similar to Huawei code for using the proximity sensor "to determine how far away a person's head is from the face of a handset device (or example, when a user making or receiving a phone call)."
	
	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 514 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 515 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*

2. The mobile station of claim 1,	*See* claim 1.

MediaTek Exhibit 1015, Page 516 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

further comprising increasing power to the display if the signal from the activated proximity sensor indicates that the first condition no longer exists.	The Huawei Honor 8 increases power to the display if the signal from the activated proximity sensor indicates that the first condition no longer exists. In Huawei Honor 8, when the device is moved away from the object, the display brightens and/or lights up, indicating that, when an external object is no longer proximate to the device, the power to the display is increased. By way of example, the Android Developer Code Website describes that "[t]he proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call)." *See* https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 30, 2018.*
4. The mobile station as recited in claim 1,	*See* claim 1.
wherein the microprocessor reduces power to the display by turning off the display.	The microprocessor of the Huawei Honor 8 reduces power to the display by turning off the display. By way of example only, the following excerpted document shows the Huawei Honor 8 reducing power and turning off the screen. Is possible to turn off proximity sensor on Honor 8? October 22, 2017 by Anonymous (https://webcazine.com/author/answersanonymoususer/) « Back to Previous Page (https://webcazine.com/forums/) Tags: Honor8 (https://webcazine.com/forums/?cmatag=honor-8) Huawei (https://webcazine.com/forums/?cmatag=huawei) When I'm on a call, my phone will turn off automatically when the proximity sensor detects the phone is near my face/ear. Is it possible to turn off this feature? I need to do so for testing purpose.

MediaTek Exhibit 1015, Page 517 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

See https://webcazine.com/forums/is-possible-to-turn-off-proximity-sensor-on-honor-8/, *last accessed December 5, 2018.*

By way of further example only, the Android Developer Code Website describes the proximity sensor's signaling to the microprocessor, which would turn off power to the display if a call is active and an object is proximate:

TYPE_PROXIMITY

```
public static final int TYPE_PROXIMITY
```

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor — added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 518 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

See also:

Sensor	Type	Description	Common Uses
`TYPE_PROXIMITY`	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

MediaTek Exhibit 1015, Page 519 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:	

MediaTek Exhibit 1015, Page 520 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 521 of 560

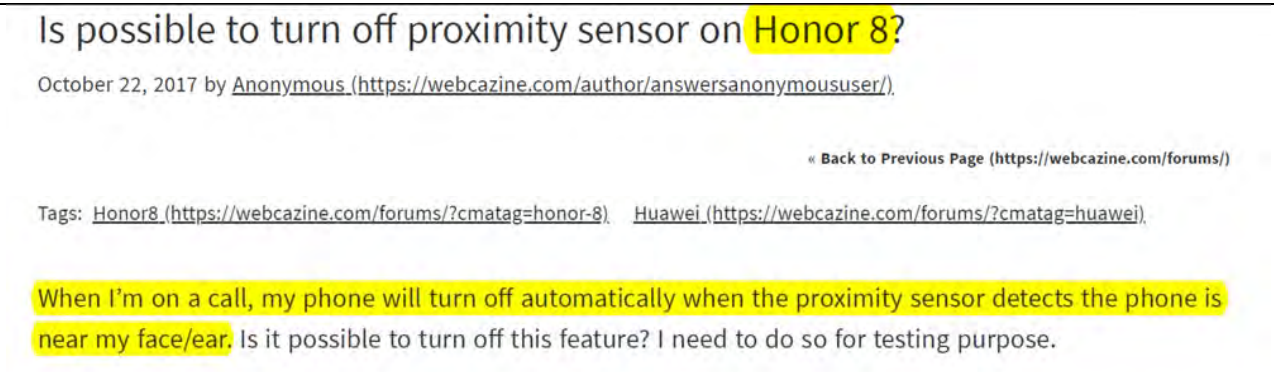
Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*

5. The mobile station as recited in claim 1,	*See* claim 1.
wherein the proximity sensor is a mechanical proximity sensor, an optical sensor, or a range-detecting sensor.	The proximity sensor of the Huawei Honor 8 is a range-detecting sensor. The proximity sensor detects the range of a proximate object. By way of example only, when an incoming call is answered, the mobile station's display is on or off depending on the range of a proximate object.

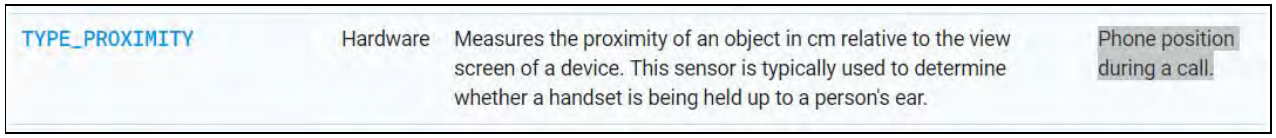
MediaTek Exhibit 1015, Page 522 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554



See https://webcazine.com/forums/is-possible-to-turn-off-proximity-sensor-on-honor-8/, *last accessed December 5, 2018.*

By way of further example only, the Android Developer Code Website describes range detection in proximity sensors:



See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

And also, the code shows distance measurement:

```
override fun onSensorChanged(event: SensorEvent) {
    val distance = event.values[0]
    // Do something with this sensor data.
}
```

See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

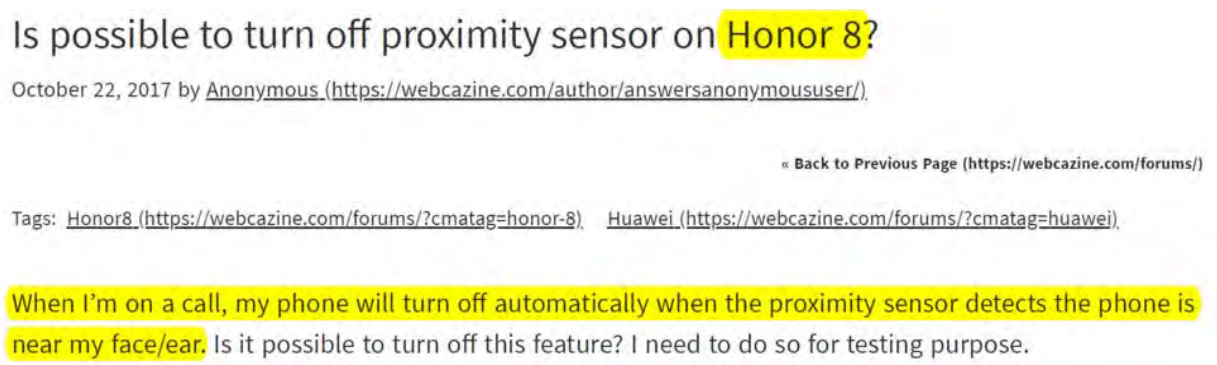
MediaTek Exhibit 1015, Page 523 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

	The Android Developer Code Website further explains: **Note:** Some proximity sensors return binary values that represent "near" or "far." In this case, the sensor usually reports its maximum range value in the far state and a lesser value in the near state. Typically, the far value is a value > 5 cm, but this can vary from sensor to sensor. You can determine a sensor's maximum range by using the `getMaximumRange()` method. *See id.*

MediaTek Exhibit 1015, Page 524 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

7. The mobile station as recited in claim 1,	*See* claim 1.
wherein the proximity sensor begins detecting whether an external object is proximate substantially concurrently with the mobile station initiating an outgoing telephone call.	The proximity sensor of the Huawei Honor 8 begins detecting whether an external object is proximate substantially concurrently with the mobile station initiating an outgoing telephone call. By way of example only, the following excerpted document suggests the Huawei Honor 8 reduces power and darkens the display due to object proximity substantially concurrently with an initiated wireless telephone call.  Is possible to turn off proximity sensor on Honor 8? October 22, 2017 by Anonymous (https://webcazine.com/author/answersanonymoususer/) « Back to Previous Page (https://webcazine.com/forums/) Tags: Honor8 (https://webcazine.com/forums/?cmatag=honor-8) Huawei (https://webcazine.com/forums/?cmatag=huawei) When I'm on a call, my phone will turn off automatically when the proximity sensor detects the phone is near my face/ear. Is it possible to turn off this feature? I need to do so for testing purpose. *See* https://webcazine.com/forums/is-possible-to-turn-off-proximity-sensor-on-honor-8/, *last accessed December 5, 2018.* By way of further example only, the Android Developer Code Website shows how the proximity sensor is used to detect proximity substantially concurrently with initiating or receiving a call, including by providing exemplary code at least substantially similar to Huawei code:

MediaTek Exhibit 1015, Page 525 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 526 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 527 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*

8. A method of conserving battery power in a mobile station, the mobile station adapted to detect the existence of a proximity condition, the proximity condition being that an external object is proximate, the method comprising:	To the extent that the preamble is found to be limiting, *see* claim 1(preamble); 1[ii]-[iii]; 1(b)-(d).
the mobile station detecting the existence of an initiated call condition or an answered-call	The Huawei Honor 8 detects the existence of an initiated call condition or an answered-call condition independent and different from the proximity condition, the initiated-call condition being

MediaTek Exhibit 1015, Page 528 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

condition independent and different from the proximity condition, the initiated-call condition being that a user of the mobile station has performed an action to initiate a call, and the answered-call condition being that a user of the mobile station has performed an action to answer a call;	that a user of the mobile station has performed an action to initiate a call, and the answered-call condition being that a user of the mobile station has performed an action to answer a call. *See* claim 1(a).
the mobile station activating the proximity sensor in response to a determination that an answered-call condition or initiated-call condition exists; and	The Huawei Honor 8 activates the proximity sensor in response to a determination that an answered-call condition or initiated-call condition exists. *See* claim 1(b).
the mobile station reducing power consumption of a display of the mobile station if the activated proximity sensor indicates that the proximity condition exists.	The Huawei Honor 8 reduces power consumption of a display of the mobile station if the activated proximity sensor indicates that the proximity condition exists. *See* claim 1(c)-(d).
14. A mobile station, comprising:	*See* claim 1(preamble).
a display;	*See* claim 1[i].
a proximity sensor	*See* claim 1[ii].
adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate;	*See* claim 1[iii].

MediaTek Exhibit 1015, Page 529 of 560

Exhibit B-13 –Infringement of U.S. Patent No. 8,204,554

and a microprocessor adapted to:	*See* claim[iv].
(a) determine, independently of the determination whether the external object is proximate, the existence of a second condition different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;	The microprocessor of the Huawei Honor 8 is adapted to determine, independently of the determination whether the external object is proximate, the existence of a second condition different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call. *See* claim 1(a).
(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor,	*See* claim 1(b).
(c) receive the signal from the activated proximity sensor, and	*See* claim 1(c).
(d) reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists.	*See* claim 1(d).

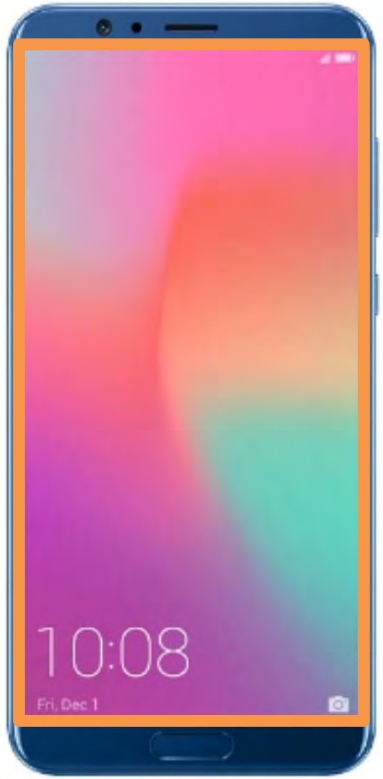
MediaTek Exhibit 1015, Page 530 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

Asserted Claim Elements	Huawei Honor View10
1. A mobile station, comprising:	To the extent that the preamble is found to be limiting, the Huawei Honor View10 is a mobile station.  *See* https://www.hihonor.com/us/product/10001859603314.html#1000000100132, *last accessed December 5, 2018.*

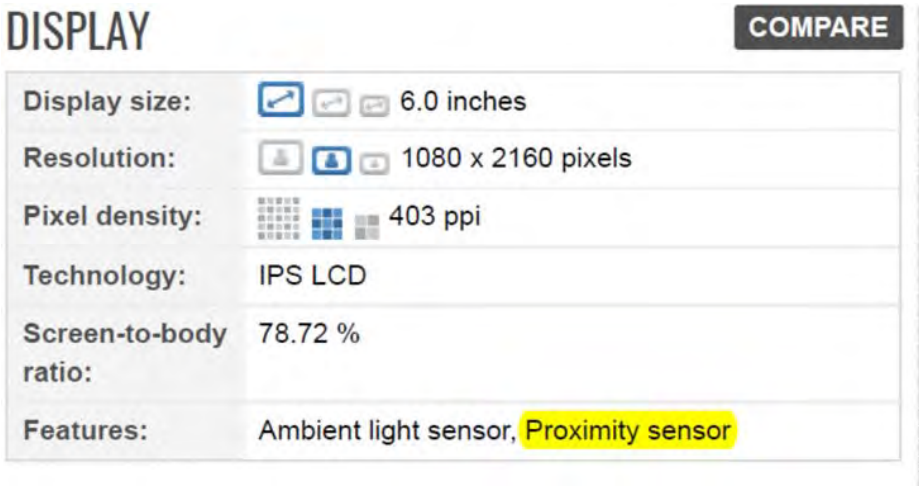
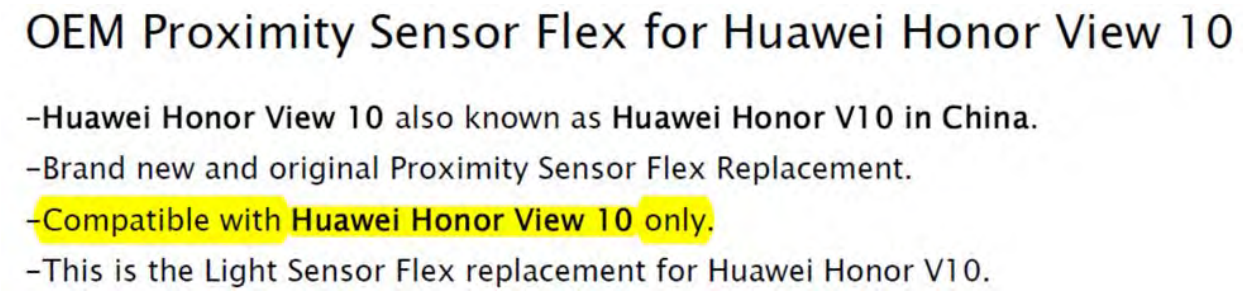
MediaTek Exhibit 1015, Page 531 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

[i] a display;	The Huawei Honor View10 includes a display, outlined in the figure below.  *See* https://www.hihonor.com/us/product/10001859603314.html#1000000100132, *last accessed December 5, 2018.*

MediaTek Exhibit 1015, Page 532 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

[ii] a proximity sensor	The Huawei Honor View10 includes a proximity sensor.  *See* https://www.phonearena.com/phones/Honor-View-10_id10752, last accessed December 6, 2018. See also OEM replacement part for proximity sensor compatible only with Huawei View 10: 

MediaTek Exhibit 1015, Page 533 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

	See https://www.witrigs.com/oem-proximity-sensor-flex-for-huawei-honor-view-10, last accessed December 6, 2018.
[iii] adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate; and	The proximity sensor of the Huawei Honor View10 is adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate . By way of example only, the Huawei Honor View10 is an Android phone. The Android Developer Code Website describes functioning of proximity sensors in Android phones customized and adapted by Huawei to run on their hardware. In particular, the description specifies that the proximity sensor measures the proximity of an object relative to the device: TYPE_PROXIMITY Hardware Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear. Phone position during a call. *See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.* By way of further example, the Android Developer Code Website provides files that describe the generation of a signal by the sensor. TYPE_PROXIMITY public static final int TYPE_PROXIMITY A constant describing a proximity sensor type. This is a wake up sensor. See SensorEvent.values for more details. **See also:** isWakeUpSensor() Constant Value: 8 (0x00000008)

MediaTek Exhibit 1015, Page 534 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

	See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018. The referenced discussion concerning the isWakeUpSensor file explains the proximity sensor (for example, whether a wake-up sensor or non-wake-up sensor) generates signals: isWakeUpSensor added in API level 21 `public boolean isWakeUpSensor ()` Returns true if the sensor is a wake-up sensor. **Application Processor Power modes** Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more. **Non-wake-up sensors** Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually: • Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case. • Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost. **Wake-up sensors** In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details. *See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.* In addition, the Android Developer Code provides the following exemplary code at least substantially similar to Huawei code for using the proximity sensor "to determine how far away a

MediaTek Exhibit 1015, Page 535 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

	person's head is from the face of a handset device (for example, when a user making or receiving a phone call)."
	
	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 536 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 537 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*

[iv] a microprocessor adapted to:	The Huawei Honor View10 includes at least one microprocessor. SPECIFICATIONS CHIPSET 4*Cortex A73 2.36GHz + 4*Cortex A53 1.8GHz

MediaTek Exhibit 1015, Page 538 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

	See https://www.hihonor.com/us/product/10001859603314.html#1000000100132 , *last accessed December 5, 2018.*

(a) determine, without using the proximity sensor, the existence of a second condition independent and different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;	The microprocessor of the Huawei Honor View 10 is adapted to determine, without using the proximity sensor, the existence of a second condition independent and different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call.
	
	By way of example only, the Huawei Honor View 10 is an Android phone. The Huawei Honor View 10's microprocessor uses code substantially similar to the code described and excerpted below to (1) determine when the user initiates an outgoing call or (2) determine when the user answers an incoming call;
	
	Outgoing Call:
	
	`/**`
	`* Broadcast receiver to detect the outgoing calls.`
	`*/`
	`public class OutgoingReceiver extends BroadcastReceiver {`
	`public OutgoingReceiver() {`
	`}`
	
	`@Override`
	`public void onReceive(Context context, Intent intent) {`
	`String number = intent.getStringExtra(Intent.EXTRA_PHONE_NUMBER);`
	
	`Toast.makeText(ctx,`
	`"Outgoing: "+number,`
	`Toast.LENGTH_LONG).show();`
	`}`
	`}`
	
	In the above, the system sends a broadcast action `android.intent.action.NEW_OUTGOING_CALL`.

MediaTek Exhibit 1015, Page 539 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

	Incoming Call:
	
	`/**`
	`* Listener to detect incoming calls.`
	`*/`
	`private class CallStateListener extends PhoneStateListener {`
	`  @Override`
	`  public void onCallStateChanged(int state, String incomingNumber) {`
	`  switch (state) {`
	`  case TelephonyManager.CALL_STATE_RINGING:`
	`  // called when someone is ringing to this phone`
	
	`  Toast.makeText(ctx,`
	`  "Incoming: "+incomingNumber,`
	`  Toast.LENGTH_LONG).show();`
	`  break;`
	`  }`
	`  }`
	`}`
	
	In the above, `state` is the call state, where it may be `CALL_STATE_RINGING`, `CALL_STATE_OFFHOOK`, or `CALL_STATE_IDLE`. Ringing is the state when someone is calling, offhook is when there is active or on hold call, and idle is when nobody is calling and there is no active call.
	
	See https://www.codeproject.com/Articles/548416/Detecting-Incoming-and-Outgoing-Phone-Calls-on-And, *last accessed December 5, 2018.*

(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor,	The microprocessor of the Huawei Honor View10 is adapted to, in response to a determination in step (a) that the second condition exists, activate the proximity sensor. By way of example only and as shown above in claim 1(iv)(a), the microprocessor is able to determine whether a call is active according to the second condition. The microprocessor activates the proximity sensor. By way of example only, the Android Developer Code Website describes examples of proximity sensor activation and use:

MediaTek Exhibit 1015, Page 540 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

	TYPE_PROXIMITY
	`public static final int TYPE_PROXIMITY`
	A constant describing a proximity sensor type. This is a wake up sensor.
	See `SensorEvent.values` for more details.
	See also:
	`isWakeUpSensor()`
	Constant Value: 8 (0x00000008)
	See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.
	
	The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:
	isWakeUpSensor added in API level 21
	`public boolean isWakeUpSensor ()`
	Returns true if the sensor is a wake-up sensor.
	Application Processor Power modes
	Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 541 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

	Non-wake-up sensors Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually: • Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case. • Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost. **Wake-up sensors** In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details. *See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.* In the Huawei Honor View10, when the call button or answer button is pressed, the display darkens, indicating that the proximity sensor is activated.
(c) receive the signal from the activated proximity sensor, and	The microprocessor of the Huawei Honor View10 is adapted to receive the signal from the activated proximity sensor. By way of example only, the Android Developer Code provides files that describe the proximity sensor's signaling to the microprocessor:

MediaTek Exhibit 1015, Page 542 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY

```
public static final int TYPE_PROXIMITY
```

A constant describing a proximity sensor type. This is a wake up sensor.

See `SensorEvent.values` for more details.

See also:

`isWakeUpSensor()`

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor

added in API level 21

```
public boolean isWakeUpSensor ()
```

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 543 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

In the Huawei Honor View 10, when the call button or answer button is pressed, the display darkens, indicating that the microprocessor received the signal from the activated proximity sensor that an object was proximate.

MediaTek Exhibit 1015, Page 544 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

(d) reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists.	The microprocessor of the Huawei Honor View10 is adapted to reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists . By way of example only, the Android Developer Code Website describes the operation of a proximity sensor in order to reduce power to the display if a call is active and an object is proximate: TYPE_PROXIMITY Hardware Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear. Phone position during a call. *See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.* In addition, the Android Developer Code Website provides the following exemplary code at least substantially similar to Huawei code for using the proximity sensor "to determine how far away a person's head is from the face of a handset device (or example, when a user making or receiving a phone call)."

MediaTek Exhibit 1015, Page 545 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 546 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 547 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*

2. The mobile station of claim 1,	*See* claim 1.

MediaTek Exhibit 1015, Page 548 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

further comprising increasing power to the display if the signal from the activated proximity sensor indicates that the first condition no longer exists.	The Huawei Honor View10 increases power to the display if the signal from the activated proximity sensor indicates that the first condition no longer exists. In Huawei Honor View10, when the device is moved away from the object, the display brightens and/or lights up, indicating that, when an external object is no longer proximate to the device, the power to the display is increased. By way of example, the Android Developer Code Website describes that "[t]he proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call)." *See* *https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox*, *last accessed November 30, 2018.*
4. The mobile station as recited in claim 1,	*See* claim 1.
wherein the microprocessor reduces power to the display by turning off the display.	The microprocessor of the Huawei Honor View10 reduces power to the display by turning off the display. By way of example only, the Android Developer Code Website describes the proximity sensor's signaling to the microprocessor, which would turn off power to the display if a call is active and an object is proximate:

MediaTek Exhibit 1015, Page 549 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY

public static final int TYPE_PROXIMITY

A constant describing a proximity sensor type. This is a wake up sensor.

See SensorEvent.values for more details.

See also:

isWakeUpSensor()

Constant Value: 8 (0x00000008)

See https://developer.android.com/reference/android/hardware/Sensor#TYPE_PROXIMITY, last accessed November 29, 2018.

The referenced discussion concerning the isWakeUpSensor file explains the signal delivery from the proximity sensor (for example, whether from a wake-up sensor or non-wake-up sensor) to the application processor (AP), i.e., the processor on which an application is run:

isWakeUpSensor added in API level 21

public boolean isWakeUpSensor ()

Returns true if the sensor is a wake-up sensor.

Application Processor Power modes

Application Processor(AP), is the processor on which applications run. When no wake lock is held and the user is not interacting with the device, this processor can enter a "Suspend" mode, reducing the power consumption by 10 times or more.

MediaTek Exhibit 1015, Page 550 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

Non-wake-up sensors

Non-wake-up sensors are sensors that do not wake the AP out of suspend to report data. While the AP is in suspend mode, the sensors continue to function and generate events, which are put in a hardware FIFO. The events in the FIFO are delivered to the application when the AP wakes up. If the FIFO was too small to store all events generated while the AP was in suspend mode, the older events are lost: the oldest data is dropped to accommodate the newer data. In the extreme case where the FIFO is non-existent `maxFifoEventCount() == 0`, all events generated while the AP was in suspend mode are lost. Applications using non-wake-up sensors should usually:

- Either unregister from the sensors when they do not need them, usually in the activity's `onPause` method. This is the most common case.
- Or realize that the sensors are consuming some power while the AP is in suspend mode and that even then, some events might be lost.

Wake-up sensors

In opposition to non-wake-up sensors, wake-up sensors ensure that their data is delivered independently of the state of the AP. While the AP is awake, the wake-up sensors behave like non-wake-up-sensors. When the AP is asleep, wake-up sensors wake up the AP to deliver events. That is, the AP will wake up and the sensor will deliver the events before the maximum reporting latency is elapsed or the hardware FIFO gets full. See `SensorManager.registerListener(SensorEventListener, Sensor, int, int)` for more details.

See https://developer.android.com/reference/android/hardware/Sensor.html#isWakeUpSensor(), last accessed November 29, 2018.

See also:

Sensor	Type	Description	Common Uses
TYPE_PROXIMITY	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

MediaTek Exhibit 1015, Page 551 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 552 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 553 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*

5. The mobile station as recited in claim 1,	*See* claim 1.
wherein the proximity sensor is a mechanical proximity sensor, an optical sensor, or a range-detecting sensor.	The proximity sensor of the Huawei Honor View10 is a range-detecting sensor. By way of example only, the Android Developer Code Website describes range detection in proximity sensors:

MediaTek Exhibit 1015, Page 554 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

TYPE_PROXIMITY	Hardware	Measures the proximity of an object in cm relative to the view screen of a device. This sensor is typically used to determine whether a handset is being held up to a person's ear.	Phone position during a call.

See https://developer.android.com/guide/topics/sensors/sensors_overview, last accessed November 29, 2018.

And also, the code shows distance measurement:

```
override fun onSensorChanged(event: SensorEvent) {
    val distance = event.values[0]
    // Do something with this sensor data.
}
```

See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, last accessed November 29, 2018.

The Android Developer Code Website further explains:

> **Note:** Some proximity sensors return binary values that represent "near" or "far." In this case, the sensor usually reports its maximum range value in the far state and a lesser value in the near state. Typically, the far value is a value > 5 cm, but this can vary from sensor to sensor. You can determine a sensor's maximum range by using the `getMaximumRange()` method.

See id.

MediaTek Exhibit 1015, Page 555 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

7. The mobile station as recited in claim 1,	*See* claim 1.

wherein the proximity sensor begins detecting whether an external object is proximate substantially concurrently with the mobile station initiating an outgoing telephone call.	The proximity sensor of the Huawei Honor View10 begins detecting whether an external object is proximate substantially concurrently with the mobile station initiating an outgoing telephone call .
	
	By way of example only, the Android Developer Code Website shows how the proximity sensor is used to detect proximity substantially concurrently with initiating or receiving a call, including by providing exemplary code at least substantially similar to Huawei code:
	
	Use the proximity sensor
	
	The proximity sensor lets you determine how far away an object is from a device. The following code shows you how to get an instance of the default proximity sensor:
	
	KOTLIN JAVA
	
	`private lateinit var mSensorManager: SensorManager`
	`private var mSensor: Sensor? = null`
	`...`
	`mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager`
	`mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)`
	
	The proximity sensor is usually used to determine how far away a person's head is from the face of a handset device (for example, when a user is making or receiving a phone call). Most proximity sensors return the absolute distance, in cm, but some return only near and far values. The following code shows you how to use the proximity sensor:

MediaTek Exhibit 1015, Page 556 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

KOTLIN JAVA

```kotlin
class SensorActivity : Activity(), SensorEventListener {

    private lateinit var mSensorManager: SensorManager
    private var mProximity: Sensor? = null

    public override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main)

        // Get an instance of the sensor service, and use that to get an instance of
        // a particular sensor.
        mSensorManager = getSystemService(Context.SENSOR_SERVICE) as SensorManager
        mProximity = mSensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY)
    }

    override fun onAccuracyChanged(sensor: Sensor, accuracy: Int) {
        // Do something here if sensor accuracy changes.
    }
```

MediaTek Exhibit 1015, Page 557 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

	``
	override fun onSensorChanged(event: SensorEvent) {
	    val distance = event.values[0]
	    // Do something with this sensor data.
	}
	
	override fun onResume() {
	    // Register a listener for the sensor.
	    super.onResume()
	
	    mProximity?.also { proximity ->
	        mSensorManager.registerListener(this, proximity, SensorManager.SENSOR_DELAY_NORMAL)
	    }
	}
	
	override fun onPause() {
	    // Be sure to unregister the sensor when the activity pauses.
	    super.onPause()
	    mSensorManager.unregisterListener(this)
	}
	``
	
	See https://developer.android.com/guide/topics/sensors/sensors_position#sensors-pos-prox, *last accessed November 29, 2018.*

8. A method of conserving battery power in a mobile station, the mobile station adapted to detect the existence of a proximity condition, the proximity condition being that an external object is proximate, the method comprising:	To the extent that the preamble is found to be limiting, *see* claim 1(preamble); 1[ii]-[iii]; 1(b)-(d).
the mobile station detecting the existence of an initiated call condition or an answered-call	The Huawei Honor View10 detects the existence of an initiated call condition or an answered-call condition independent and different from the proximity condition, the initiated-call condition being

MediaTek Exhibit 1015, Page 558 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

condition independent and different from the proximity condition, the initiated-call condition being that a user of the mobile station has performed an action to initiate a call, and the answered-call condition being that a user of the mobile station has performed an action to answer a call;	that a user of the mobile station has performed an action to initiate a call, and the answered-call condition being that a user of the mobile station has performed an action to answer a call. *See* claim 1(a).
the mobile station activating the proximity sensor in response to a determination that an answered-call condition or initiated-call condition exists; and	The Huawei Honor View10 activates the proximity sensor in response to a determination that an answered-call condition or initiated-call condition exists. *See* claim 1(b).
the mobile station reducing power consumption of a display of the mobile station if the activated proximity sensor indicates that the proximity condition exists.	The Huawei Honor View10 reduces power consumption of a display of the mobile station if the activated proximity sensor indicates that the proximity condition exists. *See* claim 1(c)-(d).
14. A mobile station, comprising:	*See* claim 1(preamble).
a display;	*See* claim 1[i].
a proximity sensor	*See* claim 1[ii].
adapted to generate a signal indicative of the existence of a first condition, the first condition being that an external object is proximate;	*See* claim 1[iii].

MediaTek Exhibit 1015, Page 559 of 560

Exhibit B-14 –Infringement of U.S. Patent No. 8,204,554

and a microprocessor adapted to:	*See* claim[iv].
(a) determine, independently of the determination whether the external object is proximate, the existence of a second condition different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;	The microprocessor of the Huawei Honor View10 is adapted to determine, independently of the determination whether the external object is proximate, the existence of a second condition different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call. *See* claim 1(a).
(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor,	*See* claim 1(b).
(c) receive the signal from the activated proximity sensor, and	*See* claim 1(c).
(d) reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists.	*See* claim 1(d).

MediaTek Exhibit 1015, Page 560 of 560