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I. INFRINGED CLAIMS – P.R. 3-1(A)

Subject to ongoing discovery and investigation, Plaintiff asserts that TDK infringes directly pursuant to 35 U.S.C. § 271(a), and/or by inducement pursuant to 35 U.S.C. § 271(b) one or more of the following claims (collectively, “Asserted Claims”):

- Claims 37–45 of United States Patent No. RE48206 (the “**206 Patent**”)

Plaintiff reserves the right to supplement its position as to infringement following further discovery and/or claim construction.

II. IDENTIFICATION OF ACCUSED INSTRUMENTALITIES AND CLAIM CHARTS – P.R. 3-1(B)-(C)

Subject to ongoing discovery and investigation, and based on present information and belief, Plaintiff contends that the Asserted Claims of the '206 Patent are infringed by Defendants' GPS-equipped mobile devices that include the Android Operating System (Android OS), including but not limited to: (1) Samsung phones including, but not limited to, Samsung Galaxy S series (e.g., S9, S9+, S10, S10+, S10e, S20, S20+, S20 Ultra, S20 FE, S21, S21+, S21 Ultra, S21 FE, S22, S22+, S22 Ultra), Samsung Galaxy Z series (e.g., Fold4, Flip4, Fold3, Flip3, Fold2, Fold, Flip), Samsung Galaxy A series (e.g., A73, A72, A53, A52, A52s, A51, A50, A42, A33, A32, A23, A22, A20, A13, A12, A04, A04s, A04e, A03, A03S); (2) Samsung tablets including, but not limited to, Samsung Galaxy Tab A (e.g., A7, A7 Lite, A8, A10.1); Tab S (e.g., S4, S5e, S6, S6 Lite, S7, S7+, S7 FE, S8, S8 Ultra, S8+); and (3) Samsung watches including, but not limited to, Samsung Galaxy Watch Active, Watch Active 2, Watch, Watch 3, Watch 4 and Watch 5, as well as any other Samsung products with a similar structure or functionality (collectively, the “Accused Products”).

1. The Accused Products run applications that have access to Android OS. The Accused Products come preloaded with a number of features and applications developed by

Samsung. Some of these features and applications developed by Samsung use device location information (collectively, “Samsung Location Apps”), including, but not limited to, “Samsung Internet,” “Samsung Health,” and “Samsung Find my Mobile.” The Samsung Location Apps running on the Accused Products receive location information from the Android OS running on the device. For example, the Samsung Galaxy S20 (“Galaxy S20”) includes a number of Samsung Location Apps including, but not limited to Bixby.¹

Bixby

Bixby is a virtual assistant that learns, evolves, and adapts to you. It learns your routines, helps you set up reminders based on time **and location**, and is built in to your favorite apps. Visit samsung.com/us/support/owners/app/Bixby for more information.

- From a Home screen, press and hold the **Side key**.

 **TIP** You can also access Bixby from the Apps list.

Another example of a Samsung Location App on the Galaxy S20 is the “Emergency Mode Features” which allows a user to share his/her location information with emergency contacts.²

Emergency mode features

While in Emergency mode, only the following apps and features are available on the Home screen:

- **Flashlight:** Use the device’s flash as a steady source of light.
- **Emergency alarm:** Sound an audible siren.

Getting started

- **Share my **location**:** Send your location information to your emergency contacts.

¹ https://downloadcenter.samsung.com/content/UM/202002/20200215055549358/UNL_STR_SM-G981U_SM-G986U_SM-G988U_EN_UM_Q_10.0_021220_FINAL.pdf#page74 (hereinafter, “S20 User Manual”) (last visited Jan. 4, 2023) at 32.

² S20 User Manual at 52-53.

Another example of a Samsung Location App on the Galaxy S20 is the “Send SOS Messages” feature which allows a user to send a message with his/her location to designated contacts:³

Send SOS messages

Send a message with your location to designated contacts when you are in an emergency situation.

1. From Settings, tap  **Advanced features** > **Send SOS messages**, and then tap  to enable this feature.
2. Tap **Send messages to** and add recipients by creating new contacts or selecting from Contacts.
 - To include a picture from your front and rear camera, tap **Attach pictures**.
 - To include a five-second audio recording in your SOS message, tap **Attach audio recording**.
3. Press the **Side** key quickly three times to send an SOS message.

Another example of a Samsung Location App on the Galaxy S20 is the feature which attaches a GPS location tag to pictures.⁴

Useful features

- **Auto HDR:** Capture more detail in the bright and dark areas of your shots.
- **Selfie tone:** Add a warm or cool tint to your selfies.
- **Tracking auto-focus:** Keep a moving subject in focus.
- **Pictures as previewed:** Save selfies as they appear in the preview without flipping them.
- **Grid lines:** Display viewfinder grid lines to help compose a picture or video.
- **Location tags:** Attach a GPS location tag to the picture.

Another example of a Samsung Location App on the Galaxy S20 is a “Places” feature which allows a user to explore nearby business and venues using location services:⁵

³ S20 User Manual at 95.

⁴ S20 User Manual at 61.

⁵ S20 User Manual at 101.

Places

Explore nearby business and venues to get contact information and directions.

1. From  Phone, tap Places.
2. Tap a category to search nearby.
3. Tap a location to view contact information and directions.



NOTE Location services must be enabled to use this feature.

Another example of a Samsung Location App on the Galaxy S20 is a “Smart Lock” feature which unlocks the device automatically upon detecting a “trusted location”:⁶

4. Configure the following screen lock options:
 - **Smart Lock:** Unlock your device automatically when trusted locations or other devices have been detected. A secure screen lock is required for this feature.
 - **Secure lock settings:** Customize your secure lock settings. A secure screen lock is required for this feature.
 - **Always On Display:** Enable the Always On Display screen. For more information, see [Always On Display](#).

Another example of a Samsung Location App on the Galaxy S20 is the “Find my Mobile” features which uses Google’s location service.⁷

Find My Mobile

You can protect your device from loss or theft by allowing your device to be locked, tracked online, and for your data to be deleted remotely. A Samsung account is required, and Google location service must be turned on in order to use Find My Mobile. For more information, visit samsung.com/us/support/owners/app/find-my-mobile.

On information and belief, the Accused Products come preloaded with a number of third-party applications. On information and belief, some of these preloaded third-party applications use

⁶ S20 User Manual at 150.

⁷ S20 User Manual at 151.

the device location information (collectively, “Third Party Location Apps”).

For example, one of the Third Party Location Apps is Google Maps.⁸



Get directions and other location-based information. You must enable location services to use Google Maps. For more information, see [Location](#).

Visit support.google.com/maps to learn more.

On information and belief, the accused Samsung Phones include Google Maps, as manufactured, used, imported, offered for sale and/or sold in the United States.

On information and belief, the accused Samsung Tablets include Google Maps, as manufactured, used, imported, offered for sale and/or sold in the United States.

On information and belief, the accused Samsung Watches include Google Maps, as manufactured, used, imported, offered for sale and/or sold in the United States.

Another example of the Third Party Location Apps is Google Chrome.⁹

⁸ See, e.g., S20 User Manual at 112.

⁹ See, e.g., S20 User Manual at 111.

Share your location

Get more useful information from sites by letting them see your location. For example, by sharing your location, you can find food near you faster.

Let a site know your location

By default, Chrome asks you when a site wants to see your location. To let the site know where you are, choose **Allow**. Before sharing your location, review the site's privacy policy.

If you use Google as your default search engine on your phone, your location is used by default for your searches on Google.

[Android](#) [Computer](#) [iPhone & iPad](#)

Change your default location settings

1. On your Android phone or tablet, open the Chrome app .
2. To the right of the address bar, tap More  > **Settings**.
3. Tap **Site settings** > **Location**.
4. Turn **Location** on or off.

To change the settings for a specific site, tap the site name listed below.

Change Google's access to your location

When Google is your default search engine, your location is used for your searches in the address bar and on Google.

To stop the use of your location in searches:

1. On your Android phone or tablet, open the Chrome app .
2. Visit a Google search page, like [google.com](https://www.google.com).
3. To the left of the web address, tap Lock .
4. Tap **Permissions** > **Location access**.
5. Select **Block** for current search engine.

How Chrome shares your location

If you let Chrome share your location with a site, Chrome sends information to Google Location Services to get an estimate of where you are. Chrome can then share that info with the site that wants your location.

On information and belief, the accused Samsung Phones include Google Chrome, as manufactured, used, imported, offered for sale and/or sold in the United States.

On information and belief, the accused Samsung Tablets include Google Chrome, as manufactured, used, imported, offered for sale and/or sold in the United States.

On information and belief, the accused Samsung Watches include Google Chrome, as manufactured, used, imported, offered for sale and/or sold in the United States.

Another example of the Third Party Location Apps is Instagram.

[Manage Your Account](#) > [Adjust Your Account Settings](#)

How do I turn Instagram location services on or off for my iPhone?

 [Copy link](#)

To turn location services on or off:

1. Leave the Instagram app and go to your iPhone's **Settings**.
2. Tap **Privacy**, then tap **Location Services**.
3. Scroll down and tap **Instagram**.
4. Select **Never** or **While Using the App** to choose location access.

Instagram's default setting for location is off, but you can turn location on whenever you post a photo. You'll choose whether or not to allow Instagram access to your location.

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Is Instagram's 'precise location' feature tracking you?



Sean Noone

Posted: AUG 25, 2022 / 03:42 PM CDT | Updated: AUG 25, 2022 / 03:42 PM CDT

(NewsNation) — Instagram is attempting to clear the air about a new location feature amid reports claiming the social media company is tracking its users and sharing the information with others.

The new "precise location" feature does not display a user's exact location automatically in everything you post.

Instead, according to Instagram, it uses "precise location for things like location tags and maps features," the company [said on Twitter](#) Thursday.

■ [TikTok, Snapchat settle for millions in privacy lawsuits](#) →

Meaning your precise location is only available to other users if you're adding a location tag to a post or using the maps feature.

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On information and belief, the accused Samsung Phones include Instagram, as manufactured, used, imported, offered for sale and/or sold in the United States.

On information and belief, the accused Samsung Tablets include Instagram, as manufactured, used, imported, offered for sale and/or sold in the United States.

On information and belief, the accused Samsung Watches include Instagram, as manufactured, used, imported, offered for sale and/or sold in the United States.

¹⁰ <https://help.instagram.com/171821142968851> (last visited Jan. 5, 2023).

¹¹ <https://www.newsnationnow.com/business/tech/is-instagrams-precise-location-feature-tracking-you> (last visited Jan. 5, 2023).

Another example of the Third Party Location Apps is Facebook.¹²

What is Location Services?

Location Services, sometimes called Location Access, is a setting on your phone or other mobile device. When on, Location Services helps Facebook provide you with location features, including allowing you to post content that's tagged with your location, get more relevant ads and find places nearby.

You can [turn off Location Services](#) at any time.

You may still share your precise location when you use our products. For example, we may receive and store location data when you check-in, RSVP as attending an event or post photos that includes location information.

For Android 10 or newer

If your phone runs on Android 10 or newer, you can set Location Services to **Allow only while using the app**, **Ask every time** or **Deny**.

For Android 9 or earlier

If your phone runs on Android 9 or earlier, you can choose to turn Location Services on or off.

Learn more about your Location information

When Location Services is turned off, we may still estimate your location using things like check-ins, events and information about your internet connection.

Specific location information like your device's GPS signal and connection information like your Wi-Fi connection or IP address (internet protocol address) help us understand where you are. Your IP address is a unique number assigned to a device, like a phone or computer, that allows it to communicate over the internet. Numbers are assigned according to standard guidelines, or protocols. Just like you need a mailing address to receive a letter from a friend, your device needs a digital address to receive information on the internet.

We use this information to provide more relevant and personalized experiences, protect your account, and provide better ads. See our [Privacy Policy](#) and [Privacy Basics](#) to learn more about how we use your location information.

On information and belief, the accused Samsung Phones include Facebook, as manufactured, used, imported, offered for sale and/or sold in the United States.

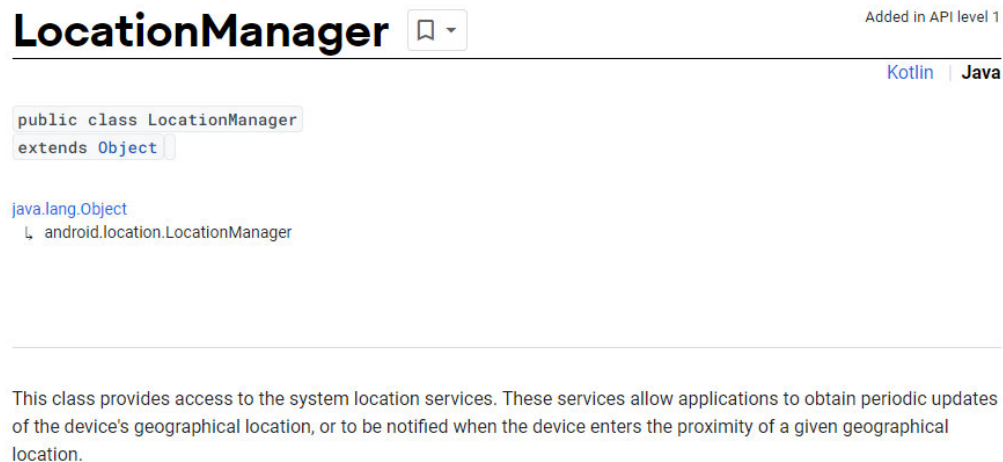
On information and belief, the accused Samsung Tablets include Facebook, as manufactured, used, imported, offered for sale and/or sold in the United States.

On information and belief, the accused Samsung Watches include Facebook, as manufactured, used, imported, offered for sale and/or sold in the United States.

On information and belief, the Samsung Location Apps and the Third Party Location Apps

¹² <https://www.facebook.com/help/337244676357509> (last visited Jan. 5, 2023).

in the Samsung Mobile Devices use the Android Framework Location APIs.¹³ The Android Framework Location APIs then hook into the next lower layer on the Android stack referred to as the Application Framework. The LocationManager software within this Application Framework controls the power to a number of sensors in the Samsung Mobile Devices including the GPS. The LocationManager allows applications to obtain periodic updates of the device's geographical location, or to be notified when the device enters the proximity of a given geographical location.¹⁴



Fused Location Provider API (hereinafter, "Fused-Location") is provided as a wrapper around the Framework Location APIs via a service module preloaded on Android Devices and referred to as Google Play Services.

On information and belief, the Accused Products as manufactured, used, imported, offered for sale and/or sold in the United States include Google Play Services.

On information and belief, Samsung has pre-loaded Fused-Location directly on a number of the Accused Products including, for example, the Samsung Galaxy S series (e.g., S9,¹⁵ S10,¹⁶

¹³ The Android Framework Location APIs are available, for example, at <https://android.googlesource.com/platform/frameworks/base/+refs/heads/master/location/java/android/location> (last visited Jan. 5, 2023).

¹⁴ <https://developer.android.com/reference/android/location/LocationManager> (last visited Jan. 5, 2023).

¹⁵ https://docs.samsungknox.com/CCMode/G960F_Q.pdf (last visited Jan. 5, 2023).

¹⁶ https://docs.samsungknox.com/CCMode/G973U_Q.pdf (last visited Jan. 5, 2023).

S20 Ultra,¹⁷ S20 FE,¹⁸ S21¹⁹) and Samsung Galaxy Z series (e.g., Flip²⁰).

Attached as **Exhibit A**, and incorporated herein in its entirety, is a chart identifying how and where each element of the Asserted Claims of the '206 Patent is met by various features or functionalities possessed by a representative Accused Product, the Samsung Galaxy S20 with Android OS. The various features and functionalities illustrated in Exhibit A are used by the Samsung applications and Third-Party Applications identified herein. Plaintiff's identification in the claim charts is exemplary and based upon public information currently available to Plaintiff.

Plaintiff further reserves the right to supplement its infringement contentions, if necessary, when it is provided with non-public documents and/or source code from third parties and/or Defendants via the discovery process.

Therefore, descriptions of the features and functionalities in the provided claim charts provide Defendants with sufficient information to identify the accused instrumentalities implicated by Plaintiff's contentions.

As described further in the provided claim charts, Exhibit A, Plaintiff accuses the Accused Products of infringing at least Claims 37–45 of the '206 Patent.

Plaintiff reserves the right to amend its asserted claims and infringement contentions pursuant to the Local Patent Rules of this Court as discovery progresses and additional information is gathered.

III. IDENTIFICATION OF TYPE OF INFRINGEMENT ASSERTED – P.R. 3-1(D)

Plaintiff contends that each element of each Asserted Claim is literally present for the Accused Instrumentalities unless otherwise indicated in the charts attached hereto as Exhibit A.

¹⁷ https://docs.samsungknox.com/CCMode/G988U_Q.pdf (last visited Jan. 5, 2023).

¹⁸ https://docs.samsungknox.com/CCMode/G781B_R.pdf (last visited Jan. 5, 2023).

¹⁹ https://docs.samsungknox.com/CCMode/G998N_5G_R.pdf (last visited Jan. 5, 2023).

²⁰ https://docs.samsungknox.com/CCMode/SCG04_Q.pdf (last visited Jan. 5, 2023).

To the extent further discovery shows an element not to be literally met or a claim construction or other Court ruling precludes a claim element from being literally met, Plaintiff reserves the right to amend its contentions to assert the doctrine of equivalents.

IV. PRIORITY DATES OF ASSERTED CLAIMS – P.R. 3-1(E)

The '206 Patent was filed on December 12, 2016 and is a reissue of U.S. Patent No. 8,022,870 and is entitled to priority to Australian Application No. 2004905024, filed on September 2, 2004.

V. PLAINTIFF'S PRODUCTS – P.R. 3-1(F)

Plaintiff is not presently relying on any assertion that its own apparatus, product, device, process, method, act, or other instrumentality practices the claimed inventions.

VI. DOCUMENT PRODUCTION ACCOMPANYING DISCLOSURE

a. Documents Responsive to P.R. 3-2(a)

Plaintiff does not presently possess any relevant, non-privileged documents responsive to P.R. 3-2(a). Plaintiff will supplement this response should any relevant, non-privileged documents be identified in the future.

b. Document Responsive to P.R. 3-2(b)

Plaintiff does not presently possess any relevant, non-privileged documents responsive to P.R. 3-2(b). Plaintiff will supplement this response should any relevant, non-privileged documents be identified in the future.

c. Document Responsive to P.R. 3-2(c)

Pursuant to P.R. 3-2(c), copies of the file histories of the asserted patents have been produced under Bates Numbers NNP00000001–NNP00000831.

VII. CONCLUSION

The information contained in these disclosures is based on Plaintiff's analysis of the facts currently known to it based on Plaintiff's review of public information reasonably available to it. Additional pertinent information about Defendants' Accused Instrumentalities is not available without engaging in further discovery. Thus, Plaintiff reserves the right to supplement, modify, and/or amend these disclosures as new information becomes available, and discovery progresses. Plaintiff anticipates that additional facts and relevant documents will be uncovered that will warrant supplementing and/or amending these disclosures.

Dated: May 16, 2023

Respectfully submitted:

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CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the above and foregoing document has been served on all counsel of record by electronic mail on May 16, 2023.

s/ Amir Alavi

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EXHIBIT A:
Nariste's Infringement Contentions for US Patent No. RE48206

Claim	Claim Element	Elements in Accused Instrumentalities
37p.	A method of acquiring a position on a mobile wireless communication device for a wireless communications network, said mobile wireless communication device possessing wireless communications capability for said wireless communications network and an embedded GPS module for GPS capability, said GPS referring to GPS-based techniques, said method comprising:	Specifications on wireless capabilities and embedded GPS functionality, as well as use of Android OS, is well known for all Samsung Smartphones past and present e.g. Galaxy S20 • Location Technology GPS, Glonass, Beidou, Galileo • Wireless Connectivity 4G TDD LTE, Wi-Fi 802.11 a/b/g/n/ac/ax 2.4G+5GHz, HE80, MIMO, 1024-QAM • OS Android Galaxy S20 Specs & Features Specs Specification Galaxy S20 Ultra 5G(128GB) Galaxy S20 Ultra 5G(512GB) Galaxy S20 Galaxy S20 5G Galaxy S20+ Galaxy S20+ 5G Galaxy S20 FE (SM-G780G) Galaxy S20 FE 5G Colours    Cosmic Gray Cosmic Black Cloud White

Claim	Claim Element	Elements in Accused Instrumentalities	
		Network/Bearer SIM size Nano-SIM (4FF), Embedded-SIM 2G GSM GSM850, GSM900, DCS1800, PCS1900 4G FDD LTE B1(2100), B2(1900), B3(1800), B4(AWS), B5(850), B7(2600), B8(900), B12(700), B13(700), B17(700), B18(800), B19(800), B20(800), B25(1900), B26(850), B28(700), B32(1500), B66(AWS-3) 5G FDD Sub6 N1(2100), N3(1800), N5(850), N7(2600), N8(900), N28(700) Infra 2G GSM, 3G WCDMA, 4G LTE FDD, 4G LTE TDD, 5G Sub6 FDD, 5G TDD Sub6 3G UMTS B1(2100), B2(1900), B4(AWS), B5(850), B8(900) 4G TDD LTE B38(2600), B39(1900), B40(2300), B41(2500) 5G TDD Sub6 N40(2300), N77(3700), N78(3500)	
		Connectivity ANT+ Yes USB Version USB 3.2 Gen1 Earjack USB Type-C Wi-Fi 802.11 a/b/g/n/ac/ax 2.4G+5GHz, HE80, MIMO, 1024-QAM Bluetooth Version Bluetooth v5.0 PC Sync. Smart Switch (PC version) USB interface USB Type-C Location Technology GPS, Glonass, Beidou, Galileo MHL No Wi-Fi Direct Yes NFC Yes	
		OS Android	

Claim	Claim Element	Elements in Accused Instrumentalities
		Source: https://www.samsung.com/au/smartphones/galaxy-s20/specs/ The location services on the Samsung Galaxy S20 use a combination of GPS, mobile network and Wi-fi to determine device location. Location Location services use a combination of GPS, mobile network and Wi-Fi to determine the location of your device. 1. From Settings, tap  Location. 2. Tap  to turn on Location services.  TIP Some apps require location services be turned on for full functionality. Location services Location services store and use your device's most recent location data. Certain apps can use this data to improve your search results based on places that you have visited. 1. From Settings, tap  Location. 2. Tap an entry under Location services to see how your location information is used. Source: S20 User Manual at 156-157. Samsung tablets (e.g. Samsung Galaxy Tab S8) include embedded GPS modules. https://deviceguides.vodafone.co.uk/samsung/galaxy-tab-s8-5g-android-12-0/apps-and-media/turn-gps-on-or-off/ Samsung watches (e.g. Samsung Galaxy Watch 5) include embedded GPS modules. https://www.samsung.com/us/support/troubleshooting/TSG01203472/ https://docs.tizen.org/application/native/guides/location-sensors/location/

Claim	Claim Element	Elements in Accused Instrumentalities
37a.	determining when said embedded GPS module should be powered on, said embedded GPS module then being powered on,	The Android OS allows applications running on the Samsung Galaxy S20 (e.g., Samsung Location Apps and the Third Party Location Apps) to control power on (and off) functionality of GPS through several attributes, e.g., one being setting the required accuracy to control whether GPS is used or not: Understand battery drain Location gathering and battery drain are directly related in the following aspects: • Accuracy: The precision of the location data. In general, the higher the accuracy, the higher the battery drain. • Frequency: How often location is computed. The more frequent location is computed, the more battery is used. • Latency: How quickly location data is delivered. Less latency usually requires more battery. Accuracy You can specify location accuracy using the <code>setPriority()</code> method, passing one of the following values as the argument: • <code>PRIORITY_HIGH_ACCURACY</code> provides the most accurate location possible, which is computed using as many inputs as necessary (it enables GPS, Wi-Fi, and cell, and uses a variety of Sensors), and may cause significant battery drain. • <code>PRIORITY_BALANCED_POWER_ACCURACY</code> provides accurate location while optimizing for power. Very rarely uses GPS. Typically uses a combination of Wi-Fi and cell information to compute device location. • <code>PRIORITY_LOW_POWER</code> largely relies on cell towers and avoids GPS and Wi-Fi inputs, providing coarse (city-level) accuracy with minimal battery drain. • <code>PRIORITY_NO_POWER</code> receives locations passively from other apps for which location has already been computed. The location needs of most apps can be satisfied using the balanced power or low power options. High accuracy should be reserved for apps that are running in the foreground and require <i>real time</i> location updates (for example, a mapping app).

Claim	Claim Element	Elements in Accused Instrumentalities
		Constants <code>public static final int PRIORITY_BALANCED_POWER_ACCURACY</code> Requests a tradeoff that is balanced between location accuracy and power usage. Constant Value: 102 <code>public static final int PRIORITY_HIGH_ACCURACY</code> Requests a tradeoff that favors highly accurate locations at the possible expense of additional power usage. Constant Value: 100 <code>public static final int PRIORITY_LOW_POWER</code> Requests a tradeoff that favors low power usage at the possible expense of location accuracy. Constant Value: 104 <code>public static final int PRIORITY_PASSIVE</code> Ensures that no extra power will be used to derive locations. This enforces that the request will act as a passive listener that will only receive "free" locations calculated on behalf of other clients, and no locations will be calculated on behalf of only this request. Constant Value: 105 Source: https://developer.android.com/guide/topics/location/battery (last visited Dec. 30, 2022) Source: https://developers.google.com/android/reference/com/google/android/gms/location/Priority#PRIORITY_HIGH_ACCURACY (last visited Jan. 6, 2023). The Android OS running on the Samsung Galaxy S20 allows an application to acquire a current radio position.

Claim	Claim Element	Elements in Accused Instrumentalities
		LocationResult  public interface LocationResult implements Result Result from getLocation(GoogleApiClient) . Public Method Summary abstract Location getLocation() Returns the current lat/lng location of the device. Inherited Method Summary  From interface com.google.android.gms.common.api.Result Public Methods public abstract Location getLocation() Returns the current lat/lng location of the device. Returns • Location if getStatus() is successful, otherwise null. <i>Source:</i> https://developers.google.com/android/reference/com/google/android/gms/awareness/snapshot/LocationResult?hl=en (last visited Dec. 30, 2022). The Android system allows a third-party App to control power on (and off) functionality of GPS through several attributes, e.g., one being setting the required accuracy to control whether GPS is used or not.

Claim	Claim Element	Elements in Accused Instrumentalities
		<i>“You can specify location accuracy using the <code>setPriority()</code> method, passing one of the following values as the argument: <code>PRIORITY_HIGH_ACCURACY</code> provides the most accurate location possible, which is computed using as many inputs as necessary (it enables GPS, Wi-Fi, and cell, and uses a variety of Sensors), and may cause significant battery drain.”</i> Source : https://developer.android.com/guide/topics/location/battery See also: <i>“The priority of the request is a strong hint to the Location Client for which location sources to use. For example, <code>PRIORITY_HIGH_ACCURACY</code> is more likely to use GPS, and <code>PRIORITY_BALANCED_POWER_ACCURACY</code> is more likely to use WIFI & Cell tower positioning, but it also depends on many other factors (such as which sources are available) and is implementation dependent.”</i> Source: https://developers.google.com/android/reference/com/google/android/gms/location/LocationRequest#setPriority(int) The Samsung Tizen operating system present on Samsung Galaxy Watch 3 smartwatches and prior supported similar GPS and location functionality to Android OS: https://docs.tizen.org/application/native/guides/location-sensors/location/
37b.	said when said embedded GPS module should be powered on being dependent on at least one of a current radio position and a position error of said mobile device determined from the wireless communications network, said wireless	The Android OS running on the Samsung Galaxy S20 also allows an application to independently get the position error (e.g., through <code>getAccuracy()</code>).

Claim	Claim Element	Elements in Accused Instrumentalities		
	communications network being different from said GPS.	getAccuracy  Added in API level 1 <pre>public float getAccuracy ()</pre> Returns the estimated horizontal accuracy radius in meters of this location at the 68th percentile confidence level. This means that there is a 68% chance that the true location of the device is within a distance of this uncertainty of the reported location. Another way of putting this is that if a circle with a radius equal to this accuracy is drawn around the reported location, there is a 68% chance that the true location falls within this circle. This accuracy value is only valid for horizontal positioning, and not vertical positioning. This is only valid if <code>hasAccuracy()</code> is true. All locations generated by the <code>LocationManager</code> include horizontal accuracy. Returns <table><tr><td>float</td><td>horizontal accuracy of this location Value is 0.0 or greater</td></tr></table>	float	horizontal accuracy of this location Value is 0.0 or greater
float	horizontal accuracy of this location Value is 0.0 or greater			
		Source: https://developer.android.com/reference/android/location/Location#getAccuracy() (last visited Dec. 30, 2022). The Android OS running on the Samsung Galaxy S20 also allows an application to independently set the required error of the position location (e.g., through <code>setAccuracy()</code>).		

Claim	Claim Element	Elements in Accused Instrumentalities				
		setAccuracy Added in API level 1 <pre>public void setAccuracy (int accuracy)</pre> Indicates the desired accuracy for latitude and longitude. Accuracy may be <code>ACCURACY_FINE</code> or <code>ACCURACY_COARSE</code>. More accurate location may consume more power and may take longer. Parameters <table><tr><td>accuracy</td><td>int: Value is <code>NO_REQUIREMENT</code>, <code>ACCURACY_FINE</code>, or <code>ACCURACY_COARSE</code></td></tr></table> Throws <table><tr><td><code>IllegalArgumentException</code></td><td>if accuracy is not one of the supported constants</td></tr></table> Source: https://developer.android.com/reference/android/location/Criteria#setAccuracy(int) (last visited Dec. 30, 2022). The Android OS running on the Samsung Galaxy S20 also allows applications to use only wireless communication networks (e.g., Wifi and/or cellular signal and not GPS) for positioning.	accuracy	int: Value is <code>NO_REQUIREMENT</code> , <code>ACCURACY_FINE</code> , or <code>ACCURACY_COARSE</code>	<code>IllegalArgumentException</code>	if accuracy is not one of the supported constants
accuracy	int: Value is <code>NO_REQUIREMENT</code> , <code>ACCURACY_FINE</code> , or <code>ACCURACY_COARSE</code>					
<code>IllegalArgumentException</code>	if accuracy is not one of the supported constants					

Claim	Claim Element	Elements in Accused Instrumentalities
		Understand battery drain Location gathering and battery drain are directly related in the following aspects: • Accuracy: The precision of the location data. In general, the higher the accuracy, the higher the battery drain. • Frequency: How often location is computed. The more frequent location is computed, the more battery is used. • Latency: How quickly location data is delivered. Less latency usually requires more battery. Accuracy You can specify location accuracy using the <code>setPriority()</code> method, passing one of the following values as the argument: • <code>PRIORITY_HIGH_ACCURACY</code> provides the most accurate location possible, which is computed using as many inputs as necessary (it enables GPS, Wi-Fi, and cell, and uses a variety of <code>Sensors</code>), and may cause significant battery drain. • <code>PRIORITY_BALANCED_POWER_ACCURACY</code> provides accurate location while optimizing for power. Very rarely uses GPS. Typically uses a combination of Wi-Fi and cell information to compute device location. • <code>PRIORITY_LOW_POWER</code> largely relies on cell towers and avoids GPS and Wi-Fi inputs, providing coarse (city-level) accuracy with minimal battery drain. • <code>PRIORITY_NO_POWER</code> receives locations passively from other apps for which location has already been computed. The location needs of most apps can be satisfied using the balanced power or low power options. High accuracy should be reserved for apps that are running in the foreground and require <i>real time</i> location updates (for example, a mapping app). Source: https://developer.android.com/guide/topics/location/battery (last visited Dec. 30, 2022). Android allows an App to acquire a current radio position e.g. <code>getLocation()</code>

Claim	Claim Element	Elements in Accused Instrumentalities
		<i>“Returns the current lat/lng location of the device”</i> Source: https://developers.google.com/android/reference/com/google/android/gms/awareness/snapshot/LocationResult?hl=en Android allows to turn on/off GPS based on location: See, Fused location provider use location to control power to the GPS switching it off/on depending on location - see discussion by Google engineers on how FusedLocation works - see “a Seamless and Smooth Location Everywhere with the new FusedLocation Provider (Google I/O'19)” https://www.youtube.com/watch?v=MEjFW_tLrFQ at 14 mins. <i>“...and we can improve battery life...how do we do this?.....turn off the sensors that are not very effective in a particular situation ...we would turn off WiFi while outdoors and we would turn off GPS while being indoors”</i> Android also allows an App to independently get the position error* e.g. through getAccuracy() <i>“Get the estimated horizontal accuracy of this location, radial, in meters.”</i> Source: https://developer.android.com/reference/android/location/Location#getAccuracy() Android also allows the App to set the required error of the position location e.g. through setAccuracy() <i>“Indicates the desired accuracy for latitude and longitude. Accuracy may be ACCURACY_FINE or ACCURACY_COARSE. More accurate location may consume more power and may take longer.”</i> Source: https://developer.android.com/reference/android/location/Criteria#setAccuracy(int) *[Note: position accuracy and position error documented as same entity in RE48,206]

Claim	Claim Element	Elements in Accused Instrumentalities
		Android allows App to use only wireless communication networks (and not GPS), that is WiFi, and/or Cell signals, for positioning. E.g., <i>“PRIORITY_BALANCED_POWER_ACCURACY provides accurate location while optimizing for power. Very rarely uses GPS. Typically uses a combination of Wi-Fi and cell information to compute device location.</i> <i>PRIORITY_LOW_POWER largely relies on cell towers and avoids GPS and Wi-Fi inputs, providing coarse (city-level) accuracy with minimal battery drain.”</i> Source: https://developers.google.com/android/reference/com/google/android/gms/location/LocationRequest#setPriority(int) See also: https://developer.android.com/training/location/change-location-settings The Samsung Tizen operating system present on Samsung Galaxy Watch 3 smartwatches and prior supported similar GPS and location functionality to Android OS: https://docs.tizen.org/application/native/guides/location-sensors/location/

38.	The method according to claim 37, wherein said powered on comprises said module powering up from a low-power mode such as a TricklePower power-down mode.	The Android system allows a third-party App to control power on (and off) functionality of the GPS module through several attributes, e.g., one being setting the required accuracy to control whether GPS is used or not. The Android system allows a third-party App to control to switch required accuracy settings, these accuracy settings correspond to power modes, including a low-power mode. Understand battery drain Location gathering and battery drain are directly related in the following aspects: • Accuracy: The precision of the location data. In general, the higher the accuracy, the higher the battery drain. • Frequency: How often location is computed. The more frequent location is computed, the more battery is used. • Latency: How quickly location data is delivered. Less latency usually requires more battery. Accuracy You can specify location accuracy using the <code>setPriority()</code> method, passing one of the following values as the argument: • <code>PRIORITY_HIGH_ACCURACY</code> provides the most accurate location possible, which is computed using as many inputs as necessary (it enables GPS, Wi-Fi, and cell, and uses a variety of Sensors), and may cause significant battery drain. • <code>PRIORITY_BALANCED_POWER_ACCURACY</code> provides accurate location while optimizing for power. Very rarely uses GPS. Typically uses a combination of Wi-Fi and cell information to compute device location. • <code>PRIORITY_LOW_POWER</code> largely relies on cell towers and avoids GPS and Wi-Fi inputs, providing coarse (city-level) accuracy with minimal battery drain. • <code>PRIORITY_NO_POWER</code> receives locations passively from other apps for which location has already been computed. The location needs of most apps can be satisfied using the balanced power or low power options. High accuracy should be reserved for apps that are running in the foreground and require <i>real time</i> location updates (for example, a mapping app).
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		Constants public static final int PRIORITY_BALANCED_POWER_ACCURACY Requests a tradeoff that is balanced between location accuracy and power usage. Constant Value: 102 public static final int PRIORITY_HIGH_ACCURACY Requests a tradeoff that favors highly accurate locations at the possible expense of additional power usage. Constant Value: 100 public static final int PRIORITY_LOW_POWER Requests a tradeoff that favors low power usage at the possible expense of location accuracy. Constant Value: 104 public static final int PRIORITY_PASSIVE Ensures that no extra power will be used to derive locations. This enforces that the request will act as a passive listener that will only receive "free" locations calculated on behalf of other clients, and no locations will be calculated on behalf of only this request. Constant Value: 105 Source: https://developer.android.com/guide/topics/location/battery (last visited Dec. 30, 2022) Source: https://developers.google.com/android/reference/com/google/android/gms/location/Priority#PRIORITY_HIGH_ACCURACY (last visited Jan. 6, 2023). <i>“You can specify location accuracy using the setPriority() method, passing one of the following values as the argument: PRIORITY_HIGH_ACCURACY provides the most accurate location possible, which is computed using as many inputs as necessary (it enables GPS, Wi-Fi, and cell, and uses a variety of Sensors), and may cause significant battery drain.”</i>
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Claim	Claim Element	Elements in Accused Instrumentalities
		See also: “<i>The priority of the request is a strong hint to the Location Client for which location sources to use. For example, PRIORITY_HIGH_ACCURACY is more likely to use GPS, and PRIORITY_BALANCED_POWER_ACCURACY is more likely to use WIFI & Cell tower positioning, but it also depends on many other factors (such as which sources are available) and is implementation dependent.</i>” Source: https://developers.google.com/android/reference/com/google/android/gms/location/LocationRequest#setPriority(int) “<i>PRIORITY_BALANCED_POWER_ACCURACY provides accurate location while optimizing for power. Very rarely uses GPS. Typically uses a combination of Wi-Fi and cell information to compute device location.</i> <i>PRIORITY_LOW_POWER largely relies on cell towers and avoids GPS and Wi-Fi inputs, providing coarse (city-level) accuracy with minimal battery drain.</i>” Source: https://developers.google.com/android/reference/com/google/android/gms/location/LocationRequest#setPriority(int) See also: https://developer.android.com/training/location/change-location-settings “<i>If your app needs to request location or receive permission updates, the device needs to enable the appropriate system settings, such as GPS or Wi-Fi scanning. Rather than directly enabling services such as the device's GPS, your app specifies the required level of accuracy/power consumption and desired update interval, and the device automatically makes the appropriate changes to system settings. These settings are defined by the LocationRequest data object.</i>” The Samsung Tizen operating system present on Samsung Galaxy Watch 3 smartwatches and prior supported similar GPS and location functionality to Android OS: https://docs.tizen.org/application/native/guides/location-sensors/location/

39.	The method according to claim 37, wherein said determining when said embedded GPS module should be powered on is also dependent on at least one of; a last satellite position; a last position determined by the GPS; and a last time determined by the GPS.	Determining when the GPS module should be powered on is dependent on at least one a last satellite position; a last position determined by the GPS; and a last time determined by the GPS. The Android system allows a third-party App to control power on (and off) functionality of the GPS module through several attributes including the time interval since a last determined location: <i>public LocationRequest setInterval (long millis)</i> <i>Set the desired interval for active location updates, in milliseconds.</i> <i>The location client will actively try to obtain location updates for your application at this interval, so it has a direct influence on the amount of power used by your application. Choose your interval wisely.</i> <i>This interval is inexact. You may not receive updates at all (if no location sources are available), or you may receive them slower than requested. You may also receive them faster than requested (if other applications are requesting location at a faster interval). The fastest rate that that you will receive updates can be controlled with setFastestInterval(long). By default this fastest rate is 6x the interval frequency.</i> <i>Applications with only the coarse location permission may have their interval silently throttled.</i> <i>An interval of 0 is allowed, but not recommended, since location updates may be extremely fast on future implementations.</i> <i>setPriority(int) and setInterval(long) are the most important parameters on a location request.</i> <i>Parameters</i> <i>desired interval in millisecond, inexact</i> <i>millis</i> <i>Returns</i> <i>the same object, so that setters can be chained</i> Source: https://developers.google.com/android/reference/com/google/android/gms/location/LocationRequest#setInterval(long) The Samsung Tizen operating system present on Samsung Galaxy Watch 3 smartwatches and prior supported similar GPS and location functionality to Android OS: https://docs.tizen.org/application/native/guides/location-sensors/location/
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Claim	Claim Element	Elements in Accused Instrumentalities
40p.	A mobile wireless communication device for a wireless communications network, said mobile wireless communication device possessing wireless communications capability for said wireless communications network and an embedded GPS module for GPS capability, said GPS referring to GPS-based techniques, said mobile wireless communication device comprising:	The Accused Products are mobile wireless communication devices. Specifications on wireless capabilities and embedded GPS functionality, as well as use of Android OS and Tizen OS, is well known for all Samsung Smartphones past and present e.g. Galaxy S20 See above at Claim 37p.

Claim	Claim Element	Elements in Accused Instrumentalities
40a.	an embedded GPS module providing a GPS capability for said mobile wireless communication device; and means for	All Samsung Accused Products include an embedded GPS module. Specifications on wireless capabilities and embedded GPS functionality, as well as use of Android OS, is well known for all Samsung Smartphones past and present e.g. Galaxy S20 • Location Technology GPS, Glonass, Beidou, Galileo • Wireless Connectivity 4G TDD LTE, Wi-Fi 802.11 a/b/g/n/ac/ax 2.4G+5GHz, HE80, MIMO, 1024-QAM • OS Android Source: https://www.samsung.com/au/smartphones/galaxy-s20/specs/ Samsung tablets (e.g. Samsung Galaxy Tab S8) include embedded GPS modules. https://deviceguides.vodafone.co.uk/samsung/galaxy-tab-s8-5g-android-12-0/apps-and-media/turn-gps-on-or-off/ Samsung watches (e.g. Samsung Galaxy Watch 5) include embedded GPS modules. https://www.samsung.com/us/support/troubleshooting/TSG01203472/ https://docs.tizen.org/application/native/guides/location-sensors/location/
40b.	determining when said embedded GPS module should be powered on, said embedded GPS module then being powered on,	See above at claim element 37a.

Claim	Claim Element	Elements in Accused Instrumentalities
40c.	said determining when said embedded GPS module should be powered on being dependent on at least one of a current radio position and a position error of said mobile device determined from the wireless communications network, said wireless communications network being different from said GPS.	<i>See above at claim element 37b.</i>
41.	The mobile device according to claim 40, wherein said powered on comprises said module powering up from a low-power mode such as a TricklePower power-down mode.	<i>See above at claim 38.</i>

Claim	Claim Element	Elements in Accused Instrumentalities
42.	The mobile device according to claim 40, wherein said determining when said embedded GPS module should be powered on is also dependent on at least one of; a last satellite position; a last position determined by the GPS; and a last time determined by the GPS.	<i>See above at claim 39.</i>

Claim	Claim Element	Elements in Accused Instrumentalities
43p.	A computer program product for a mobile wireless communication device for a wireless communication network, said mobile wireless communication device possessing wireless communications capability for said wireless communications network and an embedded GPS module for GPS capability, said GPS referring to GPS-based techniques, said computer program product embodied on computer readable storage medium, said computer program product for acquiring a GPS position on said mobile wireless communication device, comprising:	Specifications on wireless capabilities and embedded GPS functionality, as well as use of Android OS, is well known for all Samsung Smartphones past and present e.g. Galaxy S20. Android OS is a computer program embodied on a computer readable storage medium that is part of the Samsung smartphones, tablets and watches. • Location Technology GPS, Glonass, Beidou, Galileo • Wireless Connectivity 4G TDD LTE, Wi-Fi 802.11 a/b/g/n/ac/ax 2.4G+5GHz, HE80, MIMO, 1024-QAM • OS Android Source: https://www.samsung.com/au/smartphones/galaxy-s20/specs/ Samsung tablets (e.g. Samsung Galaxy Tab S8) include embedded GPS modules. https://deviceguides.vodafone.co.uk/samsung/galaxy-tab-s8-5g-android-12-0/apps-and-media/turn-gps-on-or-off/ Samsung watches (e.g. Samsung Galaxy Watch 5) include embedded GPS modules. https://www.samsung.com/us/support/troubleshooting/TSG01203472/ https://docs.tizen.org/application/native/guides/location-sensors/location/ See also, above at claim element 37p.

Claim	Claim Element	Elements in Accused Instrumentalities
43a.	a first portion designed to interface with the GPS capability of said mobile wireless communication device; and a second portion designed to determine when said embedded GPS module should be powered on,	The Android system allows a third-party App to control power on (and off) functionality of GPS through several attributes, e.g., one being setting the required accuracy to control whether GPS is used or not. <i>“You can specify location accuracy using the setPriority() method, passing one of the following values as the argument: PRIORITY_HIGH_ACCURACY provides the most accurate location possible, which is computed using as many inputs as necessary (it enables GPS, Wi-Fi, and cell, and uses a variety of Sensors), and may cause significant battery drain.”</i> Source : https://developer.android.com/guide/topics/location/battery See also: <i>“The priority of the request is a strong hint to the Location Client for which location sources to use. For example, PRIORITY_HIGH_ACCURACY is more likely to use GPS, and PRIORITY_BALANCED_POWER_ACCURACY is more likely to use WIFI & Cell tower positioning, but it also depends on many other factors (such as which sources are available) and is implementation dependent.”</i> Source: https://developers.google.com/android/reference/com/google/android/gms/location/LocationRequest#setPriority(int) See also, above at claim element 37a.

Claim	Claim Element	Elements in Accused Instrumentalities
43b.	said embedded GPS module then being powered on,	The Android system allows a third-party App to control power on (and off) functionality of GPS through several attributes, e.g., one being setting the required accuracy to control whether GPS is used or not. <i>“You can specify location accuracy using the setPriority() method, passing one of the following values as the argument: PRIORITY_HIGH_ACCURACY provides the most accurate location possible, which is computed using as many inputs as necessary (it enables GPS, Wi-Fi, and cell, and uses a variety of Sensors), and may cause significant battery drain.”</i> Source : https://developer.android.com/guide/topics/location/battery See also: <i>“The priority of the request is a strong hint to the Location Client for which location sources to use. For example, PRIORITY_HIGH_ACCURACY is more likely to use GPS, and PRIORITY_BALANCED_POWER_ACCURACY is more likely to use WIFI & Cell tower positioning, but it also depends on many other factors (such as which sources are available) and is implementation dependent.”</i> Source: https://developers.google.com/android/reference/com/google/android/gms/location/LocationRequest#setPriority(int) See also, above at claim element 37a.

Claim	Claim Element	Elements in Accused Instrumentalities
43c.	said determining when said embedded GPS module should be powered on being dependent on at least one of a current radio position and a position error of said mobile device determined from the wireless communications network, said wireless communications network being different from said GPS.	See above at claim element 37b.
44.	The computer program product according to claim 43, wherein said powered on comprises said module powering up from a low-power mode such as a TricklePower power-down mode.	See above at claim 38.

Claim	Claim Element	Elements in Accused Instrumentalities
45.	The computer program product according to claim 43, wherein said determining when said embedded GPS module should be powered on is also dependent on at least one of; a last satellite position; a last position determined by the GPS; and a last time determined by the GPS.	<i>See above at claim 39.</i>