KEYWATCH Mobile for Android
User Manual

Last updated September 5, 2018

Contents

Introduction

Congratulations on choosing the KEYWATCH Officer Safety system and its KEYWATCH for Android mobile application (app) software suite. This state-of-the-art software takes advantage of the flexibility and power of today's smartphones to provide audio, camera, tracking, and remote mobile device management capabilities to the law enforcement, public safety, security, and special military communities.

The KEYWATCH suite of apps has been designed to consensually monitor the location and safety of a user by enlisting a mobile device's microphone, cameras, and GPS to stream data from the device to the KEYWATCH Remote Operations Center (ROC) for remote, real-time monitoring by a health-and-safety monitoring team. The monitoring team can also (de)trigger the KEYWATCH apps on and off, and adjust their settings, using the remoteTRIGGER and remoteSETTINGS apps. Consensual users can activate each of these capabilities independently, and the data for each may be recorded to the mobile device's internal storage and/or streamed to the ROC for monitoring and recording.

The main features of the KEYWATCH suite of apps include:

Covert Capability
The user's mobile device looks and operates as a standard, unmodified mobile device while running the KEYWATCH software hidden within a fake social media app, named 'Caw'.

hotMIC Audio App
Captures audio picked up by the device's microphone to record high-quality audio to the mobile device's internal storage and/or stream the audio to the ROC for remote, real-time monitoring and/or recording.

hotCAM Photo App
Takes photos using the front and/or rear-facing camera(s) at user-configurable intervals and resolutions. These time-lapse photos can be stored to the mobile device's internal storage and/or streamed to the ROC for remote, real-time monitoring and/or recording.

vidREC Video App
Records video using the front or rear-facing camera at user-configurable resolution. Video is stored to the mobile device's internal storage (but not to the ROC). vidREC requires that the device be licensed for hotCAM.

geoTRACK Location App
Captures the mobile device's current GPS location at user-configurable time and/or distance intervals. The location can be stored on the mobile device and/or streamed to the ROC for remote, real-time monitoring using Google Maps® mapping and imagery and/or recording. Custom maps can be created using location data with third party mapping programs.

remoteTRIGGER App
Allows a ROC user to remotely activate or deactivate consensually armed hotMIC, hotCAM, vidREC, and/or geoTRACK app(s). remoteTRIGGER may not be available in all countries. Please contact your dealer for up-to-date information regarding availability.

remoteSETTINGS App
Allows a ROC user to remotely manage the settings on consensually armed hotMIC, hotCAM, vidREC, and/or geoTRACK apps. remoteSETTINGS requires that the device be licensed for remoteTRIGGER, and, like remoteTRIGGER, may not be available in all countries. Please contact your dealer for up-to-date information regarding availability.

Key Fob Remote Control
Allows a KEYWATCH mobile device user to remotely (de)trigger hotMIC and hotCAM, and send/receive distress signals to/from the ROC without directly accessing the mobile device. To learn more about the key fob and its operation, see Appendix A: Key Fob Operation.

Digital Signatures for Evidentiary Authentication
All recordings have digital signatures for evidentiary authentication. This includes all recorded hotMIC, hotCAM, vidREC, and geoTRACK data.

Using the KEYWATCH mobile app suite involves and benefits from the use of a KEYWATCH ROC that allows others to monitor the streamed audio, photo, and location data. For more details on the ROC and its operation, please refer to the KEYWATCH ROC Server User Manual.

Android Platform

This version of KEYWATCH was developed specifically for use on the Android operating system (OS). The software is fully integrated into the mobile device's OS software to provide a familiar look and feel for users experienced with Android. This manual assumes that the user is familiar with basic Android phone operation.

We recommend that KEYWATCH be used with one of the following Android devices. KEYWATCH may be used with other Android mobile devices, but KEYWATCH cannot guarantee functionality:

- Samsung S9
- Samsung S8
- Motorola Moto Z
- Motorola Moto G Plus
- Google Pixel 2

For specific questions regarding the above mobile devices, please refer to the documentation provided to you with your device.

Android OS Software

KEYWATCH is periodically updated to work with new versions of the mobile device's operating system (OS). KEYWAVE Products or your local dealer will notify you when updates are available. However, users are advised not to upgrade the OS version without first confirming with KEYWAVE Products or your local dealer that KEYWATCH has an official supported release and that Android is still allowing updates to that version. If the OS is updated without first confirming that KEYWATCH is supported for that version, KEYWATCH will be removed by the update process and may be impossible to reinstall.

	DO NOT ATTEMPT TO UPGRADE THE VERSION OF ANDROID OS ON YOUR DEVICE WITHOUT CONSULTING KEYWAVE OR YOUR LOCAL DEALER! *Note: It is critical in particular that you do not update the Android Operating System to version 9.0 (Pie).*

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	If the Android phone prompts the user to install an Over-The-Air (OTA) update, a message similar to the one below may appear for Android's newest OS version. Always select 'Remind Me Later' or 'Cancel' to prevent the device OS software from updating, and contact KEYWAVE support to check that the update will not interfere with the operation of your KEYWATCH mobile device. We recommend checking in your device's settings that it is not set to automatically update. **NEVER install an update immediately prior to an operation, as it may take some time to develop a potential fix.** *Note: Some software updates do not provide a cancellation option. In this case, we recommend simply tapping the '◁' button to exit out of the notification.*

Getting Started
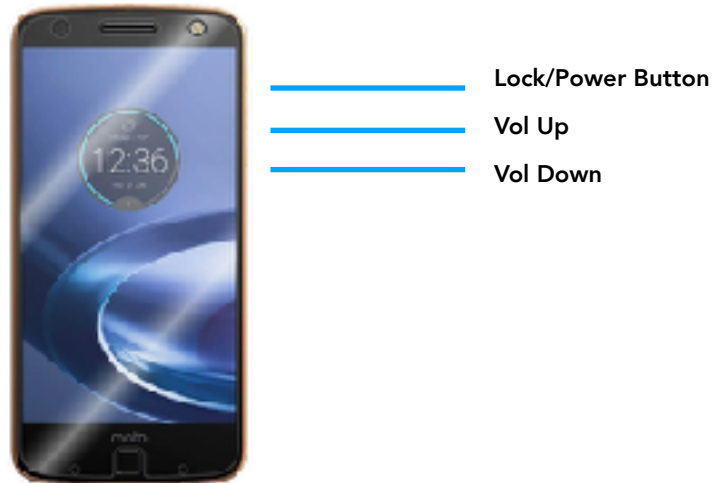
The following BUTTON nomenclature is used in this manual and may vary slightly between various phone models:

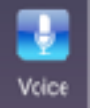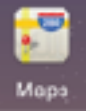**Google Pixel 2**   **Samsung S9**

Lock/Power Button

Volume Up

Volume Down

Motorola Z

Lock/Power Button

Vol Up

Vol Down
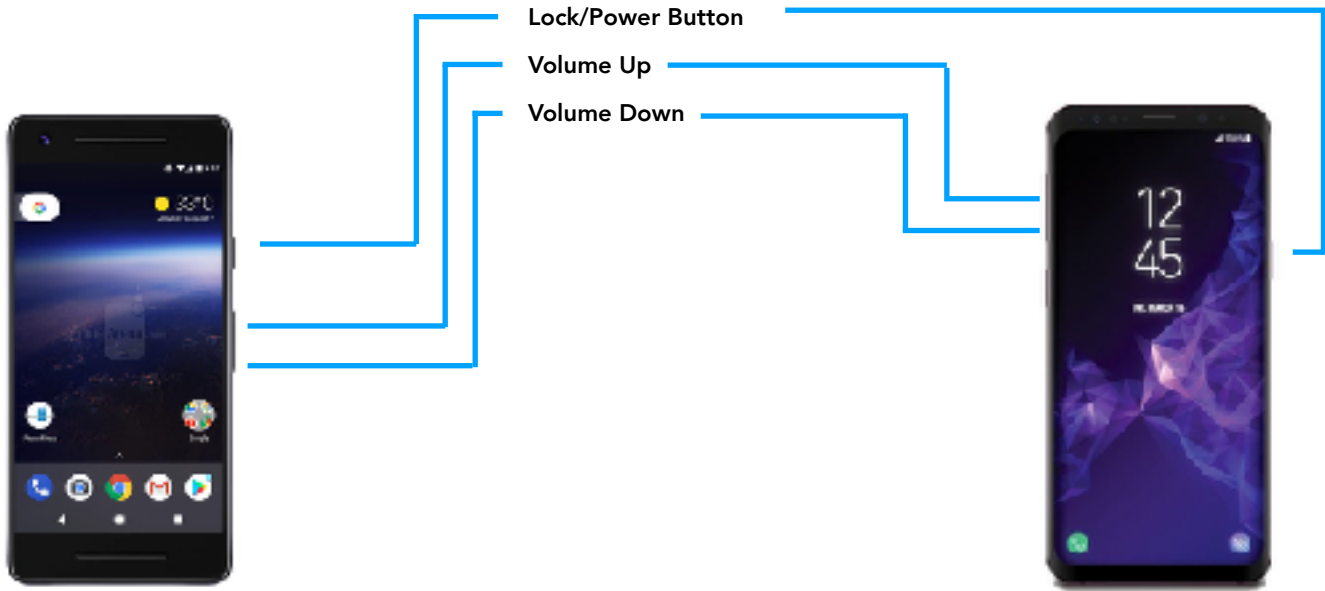
The following KEYWATCH icons are referenced in this manual. The user must manually enter them on the mobile device's home screen. The procedure to do so may vary slightly depending on the make and model of the mobile device, and/or the version of Android. On the Samsung mobile device, press on the **Home** screen briefly and swipe up. Tap and hold the 'Caw' icon, and then drag up to add to the **Home** screen. next, tap and hold on the **Home** screen for a few seconds, and then tap 'widgets'. Scroll through the folders and tap to select the 'Caw' folder. Press and hold each of the 'Voice', 'Camera', and 'Maps' widgets to save to the mobile device's home screen.

Simply tapping these widgets (the KEYWATCH icons) will launch a generic app. Tapping the 'Voice' icon should launch the default audio recording app. However, if there is no such app installed on the mobile device, tapping the icon will have no effect. In this event, the user will need to download an audio recorder app from the Google Playstore (e.g., Samsung Voice Recorder). Tapping the 'Camera' icon will launch the default camera app, and tapping the 'Maps' icon will launch Google Maps with no additional action required.

However, when the Special Access Mode (SAM) code has been entered, the mobile device will vibrate once, and then tapping the appropriate KEYWATCH icon will (de)trigger the

	CAW	This icon, used in conjunction with the SAM code, accesses the KEYWATCH app, and KW Settings.
	Voice	This icon, used in conjunction with the SAM code, (de)triggers hotMIC.
	Camera	This icon, used in conjunction with the SAM code, (de)triggers hotCAM.
	Maps	This icon, used in conjunction with the SAM code, (de)triggers geoTRACK.

KEYWATCH hotMIC, hotCAM, and/or geoTRACK apps on or off. The default SAM code is *Volume Up, Volume Up, Volume Down, Volume Down, Volume Down.*

Initial Setup

SIM Card and Voice/Data Plan

A voice and data plan is required in order for the KEYWATCH software to function. If the mobile device was not already pre-configured with a SIM card by your local dealer, please contact your local wireless service provider to purchase a SIM card and data plan. Refer to your mobile device's instruction manual for SIM card installation procedures.

Local Network Configurations

If you intend to use the mobile device over your organization's Wi-Fi network, contact your local IT staff to make sure that the network firewall is configured to:

- Allow bidirectional TCP/IP packets on ports 80, 443, 5060 and 5061
- Ports 10000 - 20000 must be set to allow triggering.

Other Recommended Software

In order to view the transferred tracking data from KEYWATCH, a third party mapping program can be used.

Settings and Configuration

Before using your KEYWATCH mobile device, please ensure that your general mobile device Settings are correctly configured with location services on, and call waiting off, and that you can access KEYWATCH Settings (KW Settings).
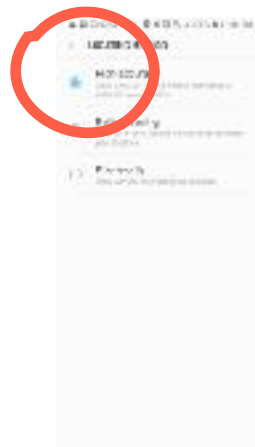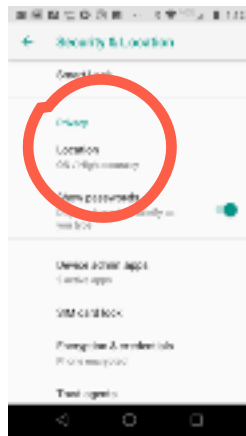
Mobile Device Settings

1. To correctly configure your mobile device's Location Services, go to Settings and then navigate to Location. Make sure the switch is toggled to 'ON' and that 'High Accuracy' is selected.

Note: Terminology and navigation may vary slightly between mobile device makes and models, e.g.,

- **Samsung S8/S9**: Settings > Connections > Location > Locating Method > [High Accuracy/Battery Saving/Phone Only]
- **Motorola z**: Settings > Security & Location > Location > Mode > [High Accuracy/Battery Saving/Phone Only]

Also Note: Setting the location services to 'High Accuracy' will increase the demands on your mobile device's battery.

2. To correctly configure your mobile device's Call Waiting, go to the green 'Phone' icon on your mobile device, select the drop down Menu (3 dots at top right of the mobile device), and navigate to Call Waiting. Make sure the switch is toggled to 'OFF'.

Note: Terminology and navigation may vary slightly between mobile device makes and models, e.g.,

- **Samsung S8/S9**: Phone > Menu > Settings > More Settings > Call Waiting and toggle the switch to 'OFF'
- **Motorola z**: Phone > Menu > Settings > Calling Accounts > [Select SIM] > Additional Settings > Call Waiting and ensure that the box is unchecked / the switch is toggled to 'OFF'
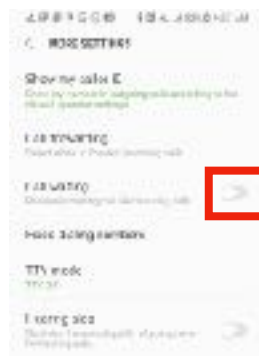
3. To correctly configure your mobile device's notifications, navigate to the 'Caw' app and ensure that 'App icon badges' and 'KEYWATCH Beacon' are enabled, and that 'Keywatch Applications' are disabled.

Note: Terminology and navigation may vary slightly between models, e.g.,

- **Samsung S8/S9** Phone > Settings > Notifications > Caw and toggle the switches to 'ON'
- **Motorola z**: Phone > Settings > Apps & notifications > App info > Caw > App notifications and toggle the switches to 'ON'
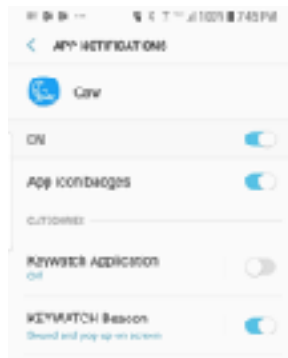
4. To correctly configure your mobile device's battery settings, navigate to your Battery settings, and ensure that the Caw app is included in the list of unmonitored apps so that it can use as much power as it wants without the battery monitor intervening.

Note: Terminology and navigation may vary slightly between models, e.g.,

- **Samsung S8/S9** Phone > Settings > Device Maintenance > Battery > Unmonitored Apps > Add Apps and select 'Caw' to add to the list
- **Motorola z**: Phone > Settings > Battery > Battery Saver and toggle the switch to 'OFF'
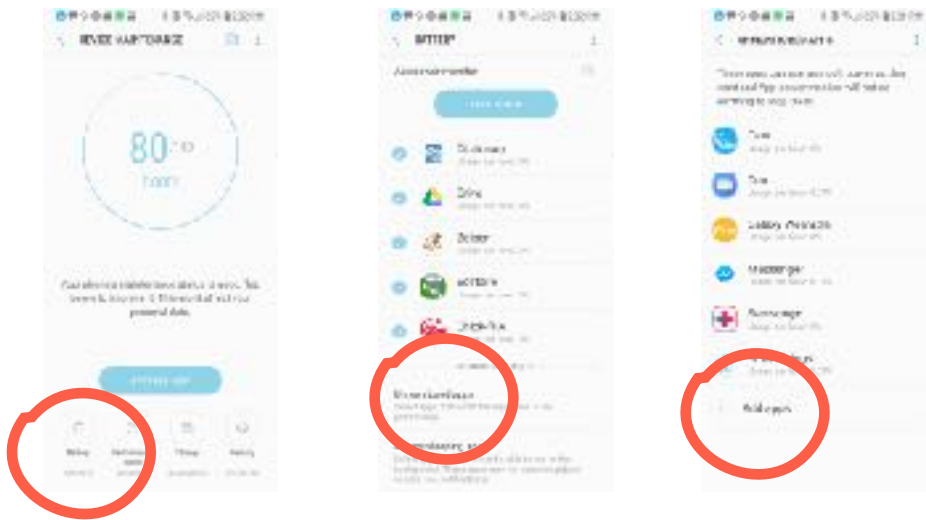
Your device should now be ready to use with the ROC server.

KEYWATCH Settings

To access KW Settings, you will need to enter the Special Access Mode (SAM) code, and locate and tap the 'CAW' icon on your mobile device. The default SAM code is *Volume Up, Volume Up, Volume Down, Volume Down, Volume Down.* From here, the KEYWATCH hotMIC, hotCAM (and vidREC), and geoTRACK apps can be accessed, as well as other settings and information.

If you cannot access KW Settings, please consult with your ROC Systems Administrator for assistance.

KW SETTINGS > General

Under the General KW Settings, the user can configure the main KEYWATCH settings, including specifying the ROC server connected to the KEYWATCH mobile device, and determining whether notifications and badging show when KEYWATCH apps are (de)triggered, distress functionality, and Special Access Mode and Distress codes.

Server Address	The domain name (e.g. demo.roclp.com) of the KEYWATCH ROC that will be used.
Alert Dialog	When enabled, a notification will appear informing the user that a KEYWATCH app has been started, stopped, or that an error has occurred. The notification will disappear without further user action.
Badging	When enabled, the user can see at a glance whether hotMIC, hotCAM, and/or geoTRACK are triggered. When a KEYWATCH app is triggered and operating normally, a small circle badge with a number '1' will appear on the top-right corner of the icon associated with the KEYWATCH app (i.e., 'Voice' for hotMIC, 'Camera' for hotCAM, and 'Maps' for geoTRACK).
Panic Triggers Apps	When enabled, entering the Distress Code on the KEYWATCH mobile device will trigger all licensed apps.
Enable Reverse Panic	When enabled, a ROC user can send a distress signal to the KEYWATCH mobile device, which will vibrate subtly five times, or if the KEYWATCH device is connected via Bluetooth to a key fob, the fob will vibrate five times. *Note: The KEYWATCH mobile device will not vibrate if hotMIC is triggered (but the key fob will).*
Change Access Code	The Special Access Mode (SAM) code enables a user to (de)trigger hotMIC, hotCAM, and/or geoTRACK on and off by tapping the relevant icon associated with the app (i.e., 'Voice' for hotMIC, 'Camera' for hotCAM, and 'Maps' for geoTRACK). The default SAM code is: *Volume Up, Volume Up, Volume Down, Volume Down, Volume Down*, but a user may assign a new custom SAM code (see below).
Change Distress Code	The Distress Code sends a distress signal to the ROC **Device** page and also sends email or SMS messages to anyone who has activated notifications for this KEYWATCH mobile device. The default Distress Code is: *Volume Down, Volume Up, Volume Up, Volume Up, Volume Down*, but a user may assign a new custom Distress Code (see below).

Changing SAM/Distress Code

The SAM and Distress codes are each made up of the *Volume Up,* and *Volume Down*. When customizing, they must:

- Contain 5-10 buttons actions
- Use each of the 2 buttons at least once

The user must press the on-screen 'soft-key' buttons rather than the actual physical buttons they represent when entering the new code.

The console window will turn red until a valid code sequence is entered (as seen in the screenshot - *Vol Down* was not used in this invalid code sequence). Reset and start a new sequence by tapping the 'Clear' button.

Once a sequence that meets the minimum requirements is entered, the window will turn green. Tap the 'Save' button. The new code is immediately saved.

KW Settings > Phone Management

Phone Management is used to view the KEYWATCH mobile device's information and license status, activate KEYWATCH apps, and upload debug logs to the ROC.

Phone Name	The name of the device that is configured by the user, i.e., by navigating to Settings > About Phone and then tapping the 'EDIT' button.
Phone Number	The phone number associated with the current SIM card in the device.
Serial Number	The factory number of the device assigned by the manufacturer.
Android Version	The mobile device's operating system version.
KEYWATCH Version	KEYWATCH software version.
hotMIC, hotCAM, vidREC, geoTRACK	'Licensed' if the software license has been activated by its ROC, 'Unlicensed' if not. 'On' if that application is triggered, 'Off' if not.
remoteTRIGGER, remoteSETTINGS	'Licensed' if the software license has been activated by its ROC, 'Unlicensed' if not.

Activate License	Used to activate KEYWATCH app licenses. This connects the KEYWATCH mobile device to the configured ROC to assign valid licenses and pull down the latest settings for KEYWATCH apps.
Upload Debug Log	Sends debug information to the KEYWATCH ROC to help diagnose problems. If you experience an issue using KEYWATCH, our support team may request that you upload the debug log file to assist in tracking down the cause of the issue.

KW Settings > Data Management

Data Management shows how many hotMIC audio recordings and hotCAM photos and videos are currently recorded on the device, the total storage space of the mobile device, and the total available space remaining for additional recordings.

KW Settings > Espresso Management

Espresso Management shows the KEYWATCH Espresso key fob's information and connection status. To learn more about the key fob and its operation, see Appendix A: Key Fob Operation.
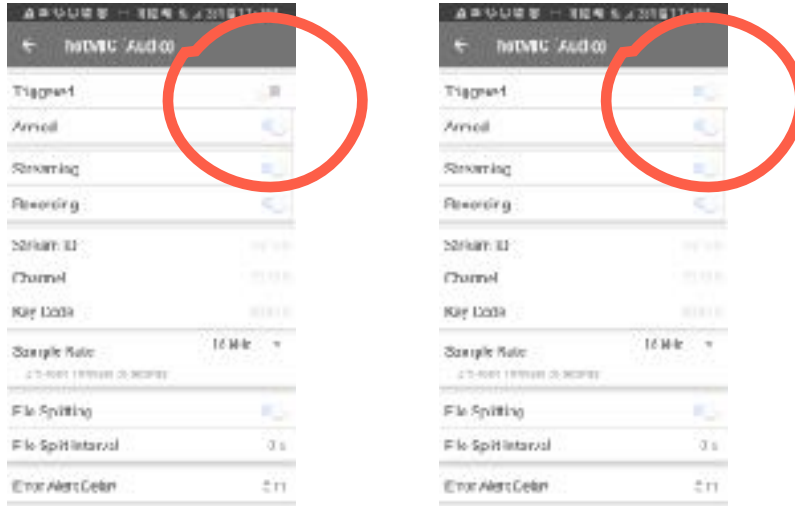

Status	Whether a key fob is connected to the KEYWATCH phone.
Serial Number	The manufacturer serial number of the connected key fob.
Firmware Version	The firmware version of the connected key fob.
Hardware Version	The hardware version of the connected key fob.
Battery Level	The percentage of battery power remaining as reported by the connected key fob.
RSSI	Received signal strength indicator, a measurement of the signal strength being received from the connected key fob. If this number is greater than -50db, then the signal strength is perfect. An RSSI of -55db or so indicates high quality, -75db medium quality, -85db low quality, and anything less than -95db is unusable or indicates a loss of connection.

Pair Espresso	Tap this button to locate and connect to a key fob. Care should be taken to remove the mobile device from the vicinity of any other key fobs in order to ensure that the mobile device pairs with the desired fob.
Vibrate Espresso	Vibrates the currently connected key fob, in order to verify connection, and identify which key fob is connected to the phone if multiple key fobs are present in the vicinity.
Refresh	Resends the signal to connect the key fob with a KEYWATCH mobile device.

hotMIC (Audio) Settings

When hotMIC is triggered, encrypted audio can be sent to the ROC where it may be monitored and/or recorded. Audio may also be recorded locally on the device.
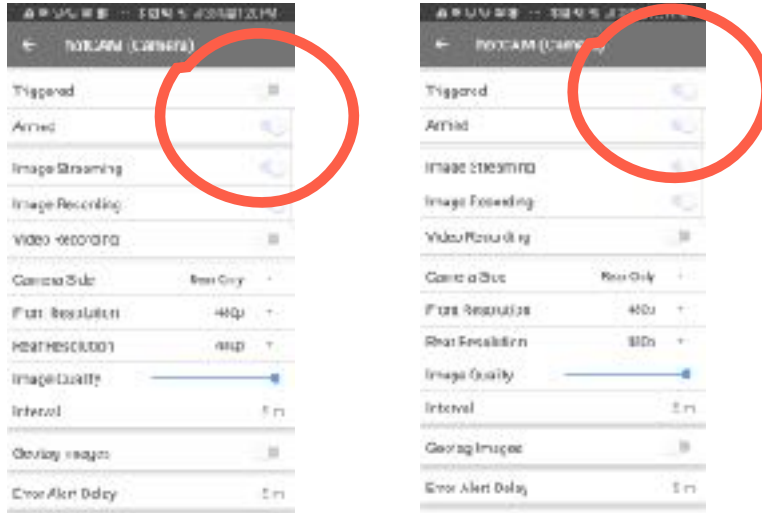

Triggered	Activates and deactivates the hotMIC app on the device after tapping the 'Back' arrow at the top of the screen to exit.
Armed	When 'Armed' is enabled for hotMIC, a ROC user can remotely trigger hotMIC from the ROC.
Streaming	Enables/disables hotMIC audio streaming over a data connection. If enabled, hotMIC streaming begins when a user triggers hotMIC. The audio is sent as a compressed, encrypted stream over the Internet to the KEYWATCH ROC, from where it can be monitored in real-time and/or recorded.
Recording	Enables/disables hotMIC audio recording to the mobile device's internal storage. If enabled, hotMIC recording begins when a user triggers hotMIC. The sample rate is user-configurable (see Sample Rate below for further information).
Stream ID (read-only)	The mobile device's streaming audio ID.
Channel (read-only)	The mobile device's streaming audio channel.

Key Code (read-only)	The mobile device's streaming audio password.
Sample Rate	Selects the audio sample rate that will be used for the audio file that is stored to the mobile device's internal storage. Available values are 16 kHz, 24 kHz, 32 kHz (i.e. FM radio quality), 40 kHz, and 44.1 kHz (i.e. CD quality). A higher sample rate captures higher pitched audio, but uses more of the available internal storage on the mobile device, and more battery power. 16 kHz is a recommended rate for normal use where the health and safety team needs to monitor the officer's speech and for general situational awareness.

Also displays the 'Recording Time', which is the amount of recording time remaining that can be stored on the mobile device based on the selected sample rate and amount of internal storage available. |
File Splitting	Enables/disables segmentation of recorded hotMIC audio into multiple files, each containing a user-specified number of minutes of audio. File Splitting can be used for long hotMIC audio recordings to limit the size of the individual files. When file splitting is enabled, each file will have its own digital signature for evidentiary authentication. Smaller file sizes generally have fewer compatibility issues when being played on consumer-grade audio devices. If this setting is disabled, files are split every twelve hours.
File Split Interval	Selects the time interval into which audio files will be split if 'File Splitting' is enabled.
Error Alert Delay	The amount of time before the device will retry audio streaming if the network connection becomes unavailable while hotMIC is triggered. Once this timeout expires, the user will be notified of the error. *Note that streaming audio is NOT buffered for retransmission. However, if hotMIC Recording is enabled, loss of network connection will not affect the audio recorded to the device's internal storage.*

hotCAM (Camera) Settings

When hotCAM is triggered, photos can be sent over an encrypted channel to the KEYWATCH ROC at user-configurable time lapse intervals. Photos and video may also be recorded locally on the device.

Triggered	Activates and deactivates the hotCAM application on the device after tapping the 'Back' arrow at the top of the screen to exit.
Armed	When 'Armed' is enabled for hotCAM, a ROC user can remotely trigger hotCAM from the ROC.
Image Streaming	Enables/disables hotCAM photo streaming over a data connection. If enabled, hotCAM streaming begins when a user triggers hotCAM. The photos are sent at user-configurable intervals to the ROC where they can be monitored in real-time and/or recorded.
Image Recording	Enables/disables hotCAM photo recording to the mobile device's internal storage. If enabled, hotCAM recording begins when a user triggers hotCAM on the mobile device. Photos captured by KEYWATCH are recorded to the mobile device's local memory but cannot be viewed through the mobile device's Photos or Gallery app.

Video Recording	Enables/disables vidREC video recording to the mobile device's internal storage. If enabled, vidREC recording begins when a user triggers hotCAM on the mobile device. vidREC recordings are stored with hotCAM photos and cannot be viewed through the mobile device's Photos or Gallery app. *Note: Only one camera (i.e., front or rear) can be active at a time for vidREC. If vidREC is enabled while both cameras are selected, the rear camera will be chosen by default.*
Camera Side	Enables/disables use of the front and/or rear camera for hotCAM. A photo will be taken by the selected camera at every 'Capture Interval'. If both cameras are enabled, then the hotCAM application will take 2 photos (one for each camera) at every 'Capture Interval'.
Front Resolution	Configures the resolution for the camera on the front of the phone. This resolution applies to both hotCAM images and vidREC recordings.
Rear Resolution	Configures the resolution for the camera on the rear of the phone. This resolution applies to both hotCAM images and vidREC recordings.
Image Quality	Configures photo compression. Lowest quality is when the slider is all the way to the left; highest quality is all the way to the right. Increasing the quality will also increase each photo's file size. This reduces the number of photos that can be stored on the device and increases the amount of time and/or bandwidth needed to stream each photo to the ROC. *Note: Use a lower quality setting for higher resolution images. The actual degredation of image quality is minimal for subjects close to the camera, and will ensure faster streaming to the ROC server.*
Interval	Configures how often a hotCAM photo is captured while hotCAM is triggered. *Note: Some camera resolutions require a minimum 'Capture Interval'. If you set the Capture Interval so that it is shorter than this minimum, KW Settings will default to the shortest possible interval.*
Geotag Images	Enables/disables embedding location information into the hotCAM photo data file. *Note: This feature will work only if BOTH hotCAM and geoTRACK are licensed for use on the device.*

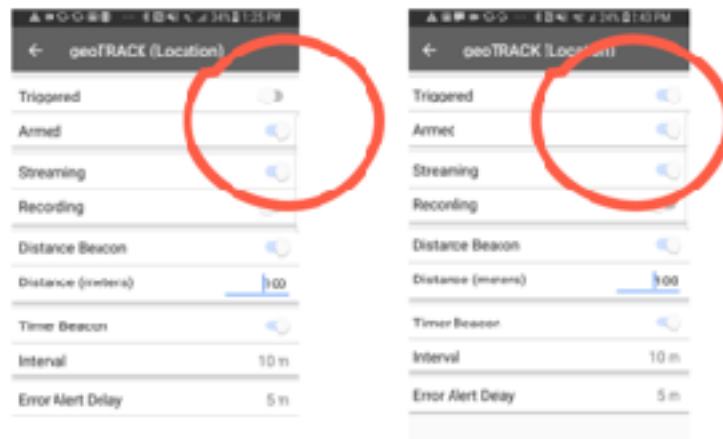|	
Error Alert Delay	The amount of time before the device will retry photo streaming if the network connection becomes unavailable while hotCAM is triggered. Once this timeout expires, the user will be notified of the error. *Note that streaming photos ARE buffered for retransmission in the case of network unavailability. If the device is turned off or hotCAM is de-triggered while the network is unavailable, those buffered images will never be streamed to the ROC, but if hotCAM Recording is enabled, loss of network connection will not affect the photos recorded to the device's internal storage.*

hotCAM Settings and Battery Life Considerations

Certain settings can significantly reduce battery life. For example, setting a short Interval for image capture or a high Image Quality when streaming requires greater power usage. Setting a longer image capture Interval and lower Image Quality can help optimize battery life and reduce the chance of transmission bottlenecks.

geoTRACK (Location) Settings

When geoTRACK is triggered, the device's current location is sent over an encrypted channel to the ROC, where it may be monitored or recorded. Location may also be recorded locally on the device.

Note: While we have found geolocation data determined by Android mobile devices to be generally dependable and more precise than that determined by the iOS,, KEYWAVE cannot guarantee the reliability or accuracy of the geoTRACK data. Moreover, if the mobile device does not have a good GPS signal, the location will be less accurate.

Triggered	Activates and deactivates the geoTRACK application on the device after tapping the 'Back' arrow at the top of the screen to exit.
Armed	When 'Armed' is enabled for geoTRACK, a ROC user can remotely trigger geoTRACK from the ROC.
Streaming	Enables/disables geoTRACK streaming over a data connection. If enabled, geoTRACK streaming begins when a user triggers geoTRACK. The geoTRACK beacons are sent at user-configurable time and distance intervals to the ROC where they can be monitored in real-time on a map and/or recorded. Custom maps can be created with third party mapping programs.
Recording	Enables/disables geoTRACK recording to the mobile device's internal storage. If enabled, recording begins when the user triggers geoTRACK on the mobile device.

Distance Beacon	Distance Beacon can be used by itself or in combination with Timer Beacon. The mobile device saves/streams a GPS beacon when its location has changed more than the value in the Distance field.
Distance (meters)	Sets the Distance at which the mobile device saves/streams a GPS beacon. The minimum value is 5 meters as measured by the GPS and affected by the GPS accuracy. GPS accuracy can be affected substantially when indoors, so care should be taken when selecting low distance settings to avoid unnecessary battery depletion.
Timer Beacon	Timer Beacon can be used by itself or in combination with Distance Beacon. The mobile device saves/sends a GPS beacon based on the Interval setting.
Interval	Sets the Interval at which the mobile device sends/streams a GPS beacon. The minimum timer Interval setting is 1 second, and the maximum setting is 23 hours, 59 minutes, and 59 seconds. Timer Interval messages can be used to regularly notify the ROC of a mobile device's location and status.
Error Alert Delay	The amount of time before the device will retry beacon streaming if the network connection becomes unavailable while geoTRACK is triggered. Once this timeout expires, the user will be notified of the error. *Note that streaming geoTRACK data IS buffered for retransmission in the case of network unavailability. If the device is turned off or geoTRACK is de-triggered while the network is unavailable, the buffered data will never be streamed to the ROC, but if geoTRACK Recording is enabled, loss of network connection will not affect the geoTRACK data recorded to the device's internal storage.*

geoTRACK Settings and Battery Life Considerations

Certain settings can significantly reduce battery life. For example, setting a short Interval and/or Distance when streaming requires greater power usage for data transfer. Setting a longer Interval and/or Distance can help optimize battery life and reduce the chance of transmission bottlenecks.

Using KEYWATCH

Special Access Mode (SAM)

Mobile devices with KEYWATCH installed appear and behave as unmodified, off-the-shelf Android devices; access to KEYWATCH is provided by entering the Special Access Mode (SAM) code, and tapping the 'Caw' icon, which appears to be a social media app. When the mobile device is in SAM, touching certain standard Android icons will also launch hidden KEYWATCH apps instead of launching the app normally associated with those icons.

Default SAM code - Place the mobile device into SAM using the following sequence of button presses:

1. *Volume Up*
2. *Volume Up*
3. *Volume Down*
4. *Volume Down*
5. *Volume Down*

The mobile device will vibrate briefly when it has been successfully placed into SAM. If the user does not initiate a SAM function within 20 seconds, the process times-out and the SAM code must be re-entered. SAM may also be canceled if the user presses the Home button or launches an app that does not have an associated SAM function (e.g., tapping Calendar would terminate the SAM). The user may change the SAM code for additional security and privacy. Changing the SAM code is addressed in the <u>Settings and Configuration</u> - <u>KW Settings > General</u> Section of this User Manual.

License Activation and Registration with the KEYWATCH ROC

KEYWATCH app(s) are licensed to a particular mobile device and must be activated and registered with a KEYWATCH ROC prior to use. For most users, this process will have been completed before you receive the system.

This License Activation and registration process only needs to be performed:

1. When the mobile device is first paired to a KEYWATCH ROC
2. If the domain name of the KEYWATCH ROC changes
3. If KEYWATCH app(s) are upgraded or reinstalled

The license activation process confirms the software license(s) and registers the device with the ROC specified in KW Settings > General. To activate the KEYWATCH license(s), the user must

navigate to KW Settings > Phone Management, and tap 'Activate License'. The KEYWATCH app(s) inform the partnered ROC of their status. A ROC administrator then authorizes the license(s) and the ROC passes the activation keys back and resets any of the device's settings. The user must then navigate back to KW Settings > Phone Management, and tap 'Activate License' again.

When the license has been activated with the ROC server, an alert dialog window will pop up to confirm that the license has been successfully activated. The user should tap 'OK'.

Using hotMIC

hotMIC uses the built-in microphone to capture audio at the Sample Rate specified by the user (16 kHz - 44.1 kHz). Audio is recorded to the mobile device's local storage when 'Recording' is enabled. When 'Streaming' is enabled and a data connection is available, audio is streamed in real time (with a 16 kHz sample rate using dynamic range speech codecs) to the ROC where it can also be recorded. Audio is recorded with digital signatures for evidentiary authentication.

There are two methods to trigger hotMIC on or off, either:

1. Navigate to KW Settings > hotMIC (Audio), toggle the switch to the right (on) or left (off), and then press the 'Back' arrow to save your changes; or
2. Enter the SAM code and tap the 'Voice' icon.

If Badging is enabled, a badge with a value of '1' appears on the 'Voice' icon when the app is triggered on.

If the mobile device is used to make or receive a voice call or if an app that requires the microphone is launched, hotMIC will be disabled for the duration of the interrupting event and automatically re-launched after the event terminates. Audio during the interrupting event will not be streamed or recorded.

Using hotCAM and vidREC

hotCAM uses the mobile device's built-in camera(s) to capture photographs and video at the Resolution, time Interval, and Image Quality configured by the device user or set remotely by the ROC. Photographs are recorded to the mobile device's local storage when 'Recording' is enabled. When 'Streaming' is enabled and a data connection is available, they are streamed in real-time to the ROC where they can also be recorded. Photographs are recorded in .JPG format and video is recorded in .MOV format with the MPEG-4 encoding. All photos and videos are recorded with digital signatures for evidentiary authentication.

There are two methods to trigger hotCAM on or off, either:

1. Navigate to KW Settings >hotCAM (Camera), toggle the switch to the right (on) or left (off), and then press the 'Back' arrow to save your changes; or
2. Enter the SAM code and tap the 'Camera' icon.

If Badging is enabled, a badge with a value of '1' appears on the 'Camera' icon when the app is triggered on.

hotCAM photos are not viewable from the Photos or Gallery apps. The user should not use the mobile device's normal Camera app while hotCAM is running.

Using geoTRACK

geoTRACK uses the mobile device's built-in GPS to capture geolocation beacon points at the user-configured Timer and Distance Interval. Beacons are recorded to the mobile device's local storage when 'Recording' is enabled. When 'Streaming' is enabled and a data connection is available, beacons are streamed in real-time to the ROC, where they can also be recorded. Beacons are recorded in a text file with digital signatures for evidentiary authentication.

Note: While we have found geolocation data determined by the the mobile devices recommended above to be generally dependable and correct, KEYWAVE cannot guarantee the reliability or accuracy of the geoTRACK data. Moreover, if the mobile device does not have a good GPS signal, the location will be less accurate.

There are two methods to trigger geoTRACK on and off, either:

1. Navigate to KW Settings > geoTRACK (Location), toggle the switch to the right (on) or left (off), and then press the 'Back' arrow to save your changes; or
2. Enter the SAM code and tap the 'Maps' icon.

If Badging is enabled, a badge with a value of '1' appears on the 'Maps' icon when the app is triggered on.
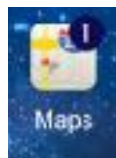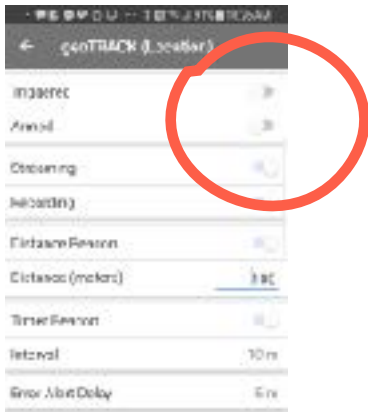
Arming a KEYWATCH Application for remoteTRIGGER and remoteSETTINGS

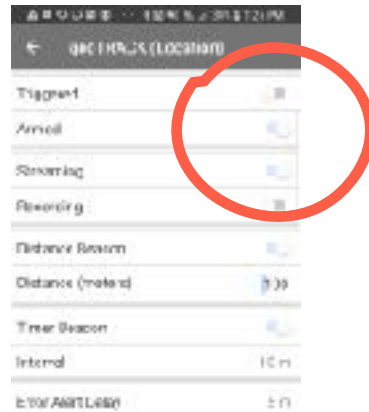If you are not using the remoteTRIGGER or remoteSETTINGS features, you may skip this section.

Please note that the remoteTRIGGER and remoteSETTINGS functionality may not be available in all countries. Please also note that in order for the remoteSETTINGS app to work, remoteTRIGGER must also be licensed. Please contact your dealer for up-to-date information regarding availability in your area.

Using remoteTRIGGER, the monitoring team will be able to (de)trigger any KEYWATCH app from the ROC after it is consensually armed on the mobile device. To arm an application on the device, enter KW Settings > [hotMIC/hotCAM/geoTRACK] and switch the 'Armed' toggle switch to 'ON' and then tap the 'Back' arrow at the top of the screen to save the changes.
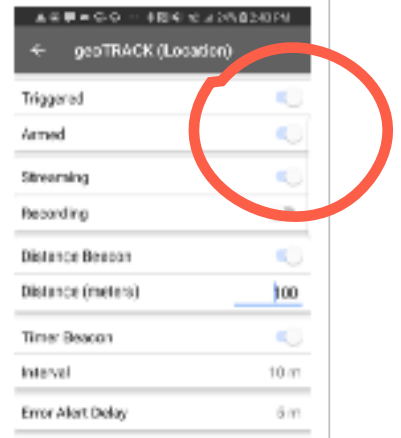
| Not Triggered & Not Armed	Not Triggered, But Armed	Triggered & Armed

Using remoteSETTINGS, the monitoring team will also be able to adjust the settings (such as recording interval, quality, and streaming/local recording) from the ROC of any KEYWATCH app that is consensually armed on the mobile device.

Downloading hotMIC, hotCAM, and geoTRACK Files to a Computer

You can securely download the recorded evidence from the device using either a Windows or Apple Mac computer. First, ensure that all KEYWATCH apps are detriggered. Files cannot be transferred while data is still streaming to them.

1. To download using a Windows computer, simply attach the KEYWATCH Android mobile device to the computer using a USB cable, tap 'allow' on the device when it asks for permission to connect to the computer, and use Windows File Explorer on the computer to navigate the device's files and folders. Drag and drop the KEYWATCH files to a folder on the computer hard drive, and then delete the files from the KEYWATCH mobile device.
2. On an Apple Mac, you will first need to install an app to transfer the files, such as Android File Transfer. Attach the KEYWATCH Android mobile device to the computer using a USB cable, and double click on the app (e.g., on Android File Transfer). Tap 'allow' on the device and 'OK' on the pop up message on the computer. From there, you can use Finder to navigate the device's files and folders. Drag and drop the KEYWATCH files to a folder on the computer hard drive, and then delete the files from the KEYWATCH mobile device.
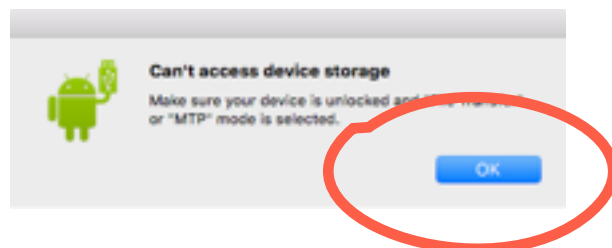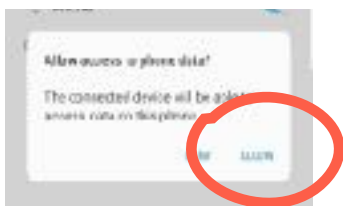
The evidence files from each app are located at Device > Phone > KEYWATCH, where you can access a hotMIC, hotCAM, and/or geoTRACK folder, containing the relevant files.

Each KEYWATCH file will generate a text file with SHA-256 digital signatures for evidentiary authentication. The evidentiary file has the same base filename as the original, but with a 'sha256' extension. The evidentiary file should always be kept with the original file.

- Each hotMIC recording creates a .WAV file and its corresponding SHA-256 file.
- Each hotCAM photograph creates a .JPG file and its corresponding SHA-256 file. The photo filename consists of 'FRONT' or 'REAR' and the date and time that the photograph was created.
- Each vidREC recording creates a .MOV file and its corresponding SHA-256 file.
- Each geoTRACK beacon creates a .LOG text file containing all the beacons that are created in one day as well as its corresponding SHA-256 file. Each beacon is shown as a line of information for each location including:

- Device UUID, Date/Time, Latitude, Longitude, Altitude, Horizontal Accuracy, Vertical Accuracy, Battery, Speed, Direction.

In addition, the following items are provided:

- A single digital authentication signature taken from the sum of all files copied off the mobile device. The name of the file includes a shortened version of this signature.
- A log of all events that occurred during the transfer process off the mobile device.
- A manifest of all files on the current ISO and all previous ISO files.
- A copy of the mobile device's event log.
- SHA-256 digital authentication signature for all of the files listed above.

Regardless of whether you use a Windows or Apple Mac computer, in order to ensure that files can be quickly and easily transferred from your KEYWATCH mobile device to a computer it is vital that the data are downloaded on a daily basis. If too much data accumulates on the KEYWATCH mobile device, efficient transfer can be seriously impeded.

Best Practices

When going on an operation, there are certain best practice procedures that should be followed:

- Field test the device in a situation resembling the intended operational use in advance of deploying it to become comfortable and proficient with its use. In particular, we recommend that you field test each KEYWATCH app using various settings, e.g.,
    - Test hotMIC using 16 kHz, and 44.1 kHz sampling rates and review the recordings to get a feel for the difference. You will likely find that 16 kHz captures enough speech, including when the talkers are not close to the device, to give good speech quality and minimum noise. You will also likely find that 44.1 kHz provides excellent audio but doesn't improve speech intelligibility enough to justify its storage and transmission demands.
    - Test geoTRACK and geoFENCE features in an area with poor coverage or carrier service and with beacons set to variable timing and distance triggers. For indoor use, we recommend that you set the distance to 100 meters because GPS accuracy indoors is only around that figure and setting it any lower results in sending unnecessary beacons and geoFENCE reports.
    - Test hotCAM at various time-lapse trigger rates of streaming images to the ROC (e.g., every 5 seconds versus every 1 minute) and at various qualities (i.e., compression rates). Find a balance between operational needs of photo frequency, storage demands, and communication bottlenecks out to any team members remotely monitoring the operation.
    - Members of the monitoring team should also practice using remoteTRIGGER and remoteSETTINGS from the ROC and be comfortable with handling delays and momentary loss of data connection to the KEYWATCH mobile device due to gaps in cellular coverage and handoffs between cellular towers.
- Consider whether the operation requires either monitoring or monitoring with recording to the ROC. Go to the Device Settings page, 'Admin SIP Settings', and toggle the switch for 'ROC Server Recording' to the desired position.
- Before the operation, make sure that evidence files from previous operations have been downloaded in order to follow proper evidence handling procedures and maximize available recording space for your upcoming operation.
- After the operation (and on a daily basis, if the operation lasts multiple days), download the hotMIC, hotCAM, and geoTRACK evidence recordings from the mobile device (see Section on Downloading hotMIC, hotCAM, and geoTRACK Files to a Computer), and from the ROC server using the download button(s). This will help control the space usage on the server as well as on the device itself, as well as help properly maintain the evidential chain of custody. Good operational security (OPSEC) requires evidence to be downloaded after each operation - doing so will ensure evidence is current and organized and the device and ROC are ready for the next operation.

Troubleshooting

1. Any app that uses the mobile device Camera may lock up when hotCAM takes a photo. We recommend not using the Camera for other purposes while using hotCAM. However, if the Camera app is restarted, it will work normally again, appearing like a glitch in that app, and does not reveal the KEYWATCH app.
2. When a remoteTRIGGER or remoteSETTINGS event reaches the mobile device while an app is playing audio, the audio may stutter and possibly mute/unmute the app. It is recommended not to use apps playing audio during an operation. Regardless, this conflict appears like a glitch in that app and does not reveal the KEYWATCH app.
3. On CDMA phones, geoTRACK and hotCAM data may not be streamed during voice calls. During voice calls, the data is recorded and buffered for transmission once the call ends, assuming network conditions, device capacity, and other settings allow.