Using GammaGuard with External Detector

Do not uninstall GammaGuard unless absolutely necessary. This will clear all calibration and settings data. App updates however will not result in any lost data.

The external detectors of the GammaGuard Complete system can be used in stand-alone mode but are intended to be connected to the GammaGuard Complete app. This provides a rich user interface (UI). This is described in this section.

1. Quick start

The **Quick Start** section is for quick and general use. More in depth operation is described in the rest of the manual.

a. Connect to your Detector

First ensure that the detector is powered on by long pressing the button. Open the external detector page to scan for your detector (name/address) and tap to connect to it. The connection process may takes few seconds. After connection, you will be sent to the external detector home screen.

b. Measurement of Radiation Level

The first screen after connection is the dose rate registered from your detector. You can tap between different screen to see more information (see the **Home Screen** section). You can also save data to your phone's storage if desired, see **Data Logging** in the **Settings** menu.

c. Counts Tone

Each beep represents a detected count. You can disable this in the **Settings** menu.

d. Alarm

Your phone and detector can be set to alarm when detecting a higher radiation level than the alarm threshold. The alarm is disabled by default. Users can enable the alarm and set their own thresholds in the settings menu.

e. Disconnecting

Press the "Disconnect" button on the bottom of the page to disconnect from your detector. Make sure you also turn off the external detector by long pressing the button.

f. Exit app

To ensure that the App closes double press on the iOS devices home button to enter multitasking and swipe up on the GammaGuard app.

4. Alarms

GammaGuard has two ways of notifying the user when the radiation levels are over pre-set thresholds.

a. Alarm

The primary alarm in GammaGuard will trigger a notification when it’s dose rate threshold has been exceeded. This will play an alarm siren (as long as the volume on your phone isn’t turned down). This can be configured with the Alarm and Alarm Level settings.

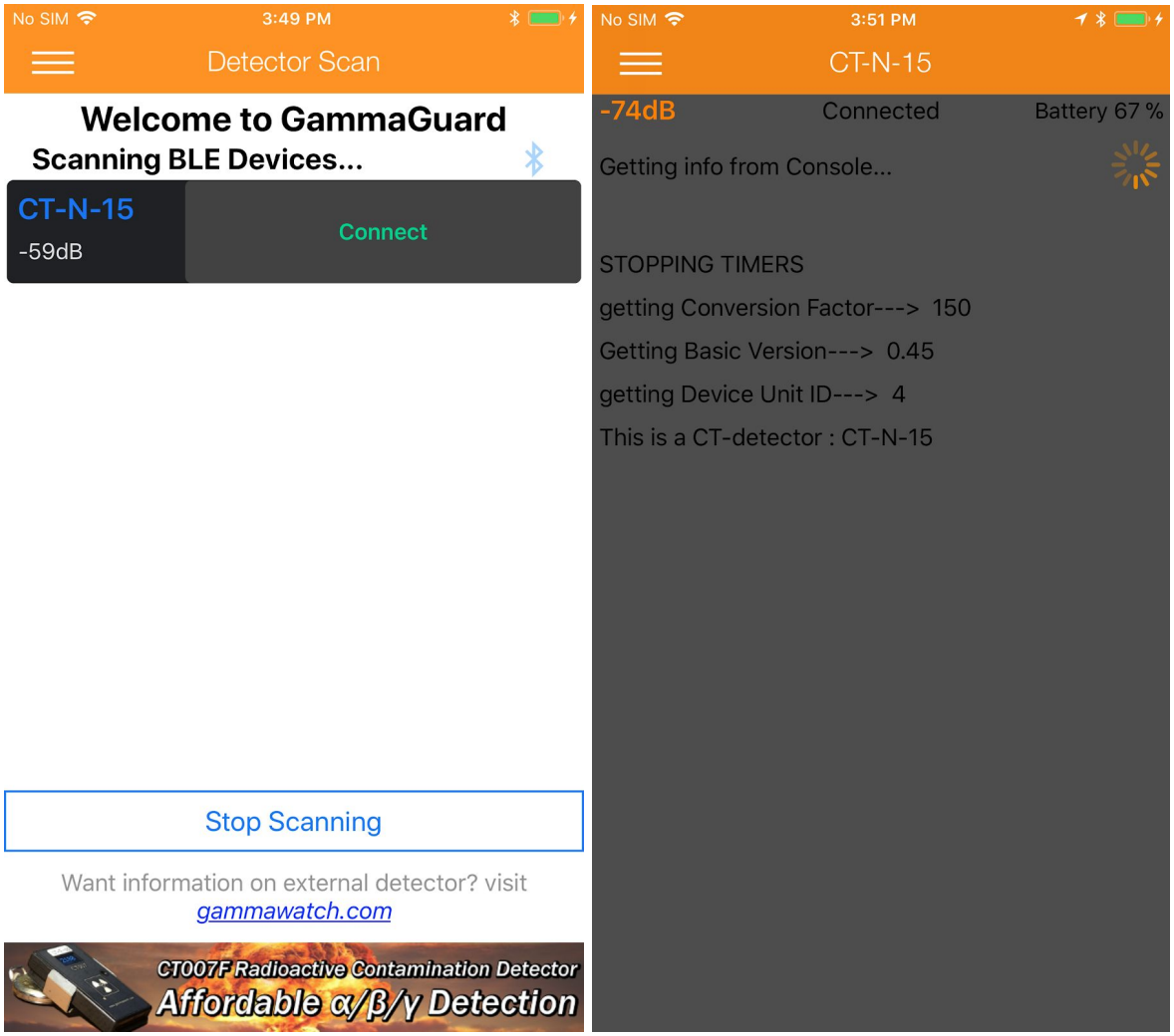
b. Warning Level

As a visual cue, the top panel of GammaGuard will change color as the radiation levels rise. At a low radiation level, the panel will be green. As levels rise it will change to yellow, and then to red. The threshold levels for these changes can be configured with the Yellow Warning Level and Red Warning Level settings.

5. App Screens

a. Home Screen

This is the screen you will see when first opening GammaGuard. From here you can select an external detector. To navigate through GammaGuard, you can open the navigation drawer by clicking the three line icon on the top left.



You can connect to a detector by clicking on it. Once connected, you will be taken to the data views. There are four data views, each with a unique way of representing your data. You can change between these views by clicking on the tab of the view you want to see. Every view has a toggle switch labeled “Mode” in the top right corner, this allows you to switch between “Gamma Mode” or “Contamination Mode” which will be indicated on the title bar. Gamma Mode shows data in Dose Rate(μSv/h) while Contamination Mode shows data in Count Rate(CPM). You can disconnect from the detector on any of the first three data view by pressing the “Disconnect” button. This will take you back to the home screen.

b. Simple View

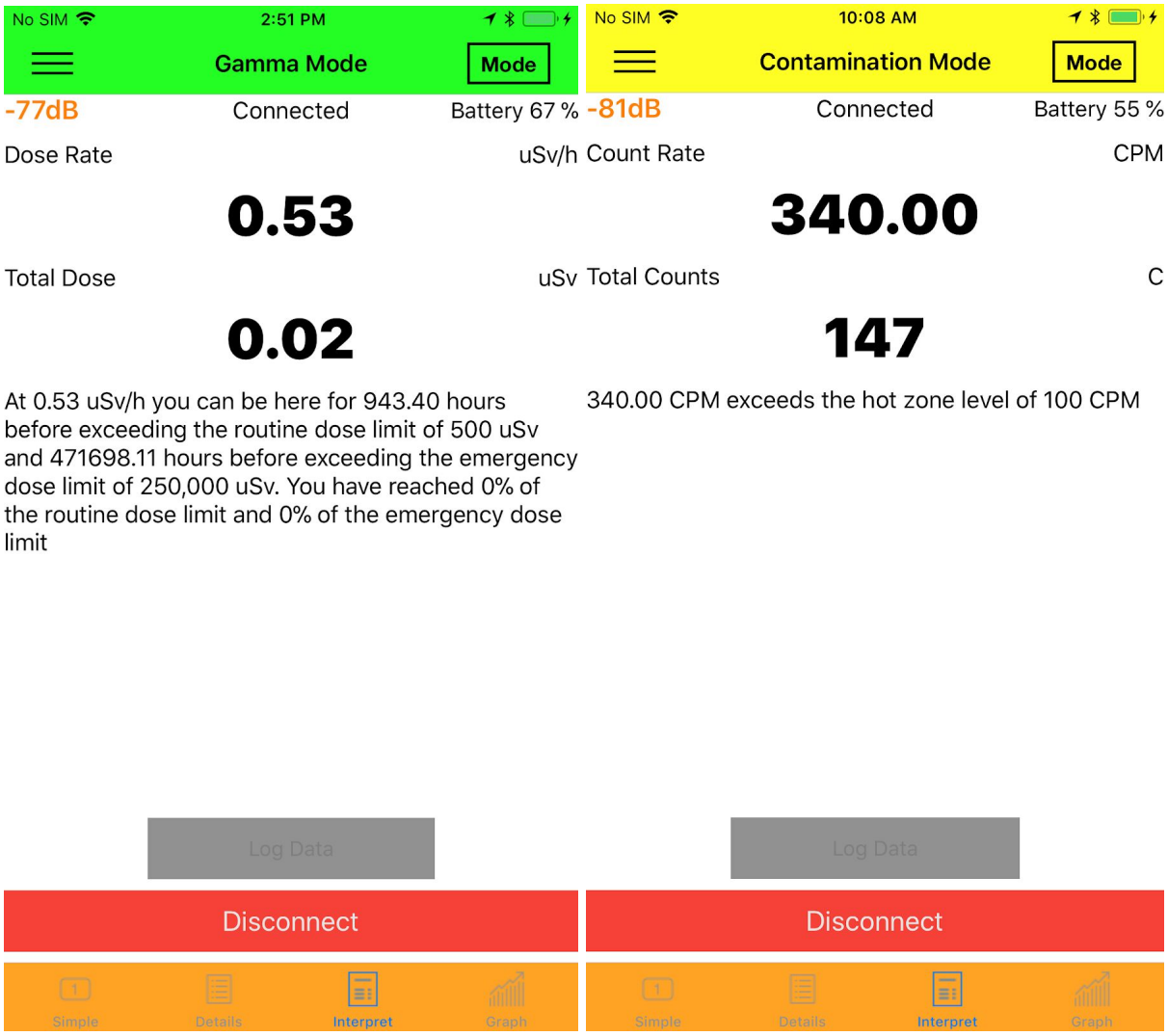
Here the dose rate (or another unit, chosen in the settings menu) is displayed, large enough to be easily read at a distance. This view also features an analog dial to provide an easy visual indicator.

c. Details View

This view gives the most detailed information. It shows the live counts as they come in, dose rate, total dose, and the total accumulated counts.

d. Interpret View

This view interprets your current dose rate. Letting you know how many hours you can stay there before exceeding a limit, or when in contamination mode will determine if it exceeds the hot zone limit.



e. Graph View

This view plots the history of Counts received by the detector . The graph shows the data in the form of CPM which is calculated using the same method as in the other three views. This view uses a separate value for response time and minimum counts that are variable through the use of sliders. This allows you to visually see how setting the response time and minimum counts can affect your data. The data is shown with CPM in the Y-Axis and time of day in the X-Axis. You can tap on a point of the graph to see the CPM value, Time of day, as well as GPS coordinates of that specific point. Once a value is selected you can also tap the “Open Map” button to open the gps coordinates on a map.

6. Settings

The settings can be accessed at any time through the navigation drawer. Once you enter the settings menu, you will be prompted for a password. If the correct password is entered, all settings are displayed. If the wrong password is entered or if the user hits "Cancel" only the settings that do not require authentication are displayed.

a. Display Units

This changes the primary unit that doses and dose rates are displayed in.

b. Device Alarm

Toggle this setting to enable/disable alarm warnings. Note: This plays from iOS device. This will be set off when exceeding the red warning level.

c. Device Sound

Toggle this setting to enable/disable beeps to notify when a count is detected. Note: This plays from iOS Device.

d. Data Logging

When enabled, dose data is periodically logged to a file on the phone.

e. Logging Interval

This is the interval (in seconds) at which data is logged.

f. Send Log File By E-Mail

This will open up an email prompt, as long as you have an email account logged in on your device, allowing you to send the log file.

g. Detector Alarm Buzzer

When enabled, the detector itself will beep when the dose rate exceeds the Alarm threshold

h. Detector Count Tones

When enabled, the detector itself will make tones when a count is detected

i. Detector Response Time

Set the response time of the detector. Time over which the dose rate is averaged(1-30 seconds). Enter 0 for auto. Automatic mode works by going through the last 30 readings stored as counts, and will stop as soon as it has either read all 30 or the sum of all read counts has met the Minimum Counts requirement

j. Minimum Counts

Minimum counts is used when the Response time is automatic(set to 0).

k. Yellow Warning Level

There are two settings for this, one for Gamma Mode and one for Contamination Mode. Under the Gamma Mode Alert Levels heading this sets the dose rate level at which the title bar will turn from green to yellow when a radiation measurement is in progress. Under the Contamination Mode Alert Levels heading this sets the count rate rate level at which the title bar will turn from green to yellow when a radiation measurement is in progress.

l. Red Warning Level

There are two settings for this, one for Gamma Mode and one for Contamination Mode. Under the Gamma Mode Alert Levels heading this sets the dose rate level at which the title bar will turn from yellow to red when a radiation measurement is in progress. Under the Contamination Mode Alert Levels heading this sets the count rate rate level at which the title bar will turn from yellow to red when a radiation measurement is in progress.

m. Full Scale Warning Level

There are two settings for this, one for Gamma Mode and one for Contamination Mode. Under the Gamma Mode Alert Levels heading this sets the maximum dose rate level where the gauge is at full scale when a radiation measurement is in progress. Under the Contamination Mode Alert Levels heading this sets the maximum count rate level where the gauge is at full scale when a radiation measurement is in progress.

n. Live Graph

This toggles the live graph feature. While enabled the graph tab will be added to the tab bar while connected to a device, and the graph data will be recorded to the Graph Archive. Vise versa for when it is disabled.

7. Updating GammaGuard

We recommend checking periodically to make sure you have the latest version of GammaGuard. You can always find the latest version of Gammaguard on the Apple App Store.

It is important that you do not uninstall your current version of GammaGuard before installing the newest version. Uninstallation will result in losing your settings data. Always install the new version as an update.

8. FAQ

Q. Why is the Graph tab not on the Tab Bar?

A. By default GammaGuard has the Live Graph feature disabled.

Q. Why are my values jumping around so much? Why does my value take so long to react to a source?

A. Play around with your response time and minimum counts setting to find something with a good balance of stable and responsive. A good method is using the graph to visually see how the different values will affect your data.