



CTT Sidekick User Guide

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Every hero needs their trusty Sidekick

The CTT Sidekick is your new go-to tracking accessory for the full line of CTT radio tags, including both 434MHz and 2.4GHz frequencies. The Sidekick can detect and track all CTT LifeTags, PowerTags, HybridTags, and BlūMorpho tags and displays real time RSSI statistics, all through the companion phone app.

Package Contents

Your purchase of a CTT Sidekick comes with the following items:

- CTT Sidekick
- 2.4GHz omni antenna
- 434MHz omni antenna
- USB charging cable
- SMA port covers (2)

Add-on options include:

- 5-element 434MHz yagi antenna (with handle and connecting cable)
- 2.4GHz yagi antenna (with handle and connecting cable)

Quick-Start Guide

The new CTT Sidekick has many bells and whistles, but one of the core features is finding a tag in the field, whether on an active animal, or one which has fallen off or stopped moving. This quick-start guide will help you jump right into using the CTT Sidekick for these purposes. If you want to simply jump right in, proceed to the section on Pairing with CTT Sidekick with your CTT Sidekick. **Note that you must have installed the CTT Mobile App to proceed!**

The Hardware

LED Indicators

To turn on your Sidekick, press and hold the Power Button. You will see LEDs 1 and 2 light up. There are three LED indicators:

1. The **Pairing Indicator** blinks when searching for Bluetooth-enabled devices and stays solid when connected to a device.
2. The **Tag Detection Indicator** blinks every time a tag is detected.
3. The **Battery Charge Indicator** is solid green when connected to a charging cable and off when unplugged.

To turn off your Sidekick, press and hold the Power Button for 3 seconds (the LEDs will turn off).

Battery and Charging

Each Sidekick contains a 1000 mA-hr LiPo rechargeable battery with integrated under/over voltage protection. Battery life is as follows:

- Listening for 434MHz: **50 hours**
- Listening for 2.4GHz: **72 hours**
- Listening for both 434MHz and 2.4GHz: **30 hours**



Figure 1: CTT Sidekick LEDs

You can check the status of your battery on the CTT Mobile app. Your Sidekick is fully charged at 4.2V. To charge your Sidekick, use the included USB charging cable. When plugged in, your Sidekick will automatically turn on if it's not already. The Pairing Indicator will blink as it searches for available devices (you can pair with your phone while charging). The Battery Charge Indicator will remain on (solid green) when the Sidekick is plugged in. The Battery Charge Indicator will *remain* on as long as the device is plugged in; it does not turn off once the Sidekick is fully charged. It's important to check the battery level through the CTT Mobile app.

Antennas

Your Sidekick comes with two omnidirectional antennas, one for 434MHz (10.5cm) and one for 2.4GHz (19.5cm). Depending on your application, you can use both antennas simultaneously, or you can opt to connect only one. Make sure to connect each antenna to its corresponding port: **The longer antenna is for 2.4GHz devices while the shorter antenna is for 434MHz.**

You may have purchased our optional Yagi antenna(s) and handle(s). These can be used in place of the standard omni antenna by connecting them to their corresponding antenna port and sliding the Sidekick into the custom handle.

Storing your Sidekick

While your CTT Sidekick is very robust and field-tested, we recommend storing your Sidekick with the antennas disconnected from the SMA ports to avoid any unintended and excessive pressure on the connectors. As well, you should also use the two dust covers to protect your SMA ports when not in use.

Mobile Application - CTT Mobile

To use the CTT Sidekick, you will need to install the CTT Mobile app on your Android or iOS device. CTT Mobile is your working interface with the CTT Sidekick.

Installing CTT Mobile

CTT Mobile is available for download on the iOS AppStore and Google PlayStore.

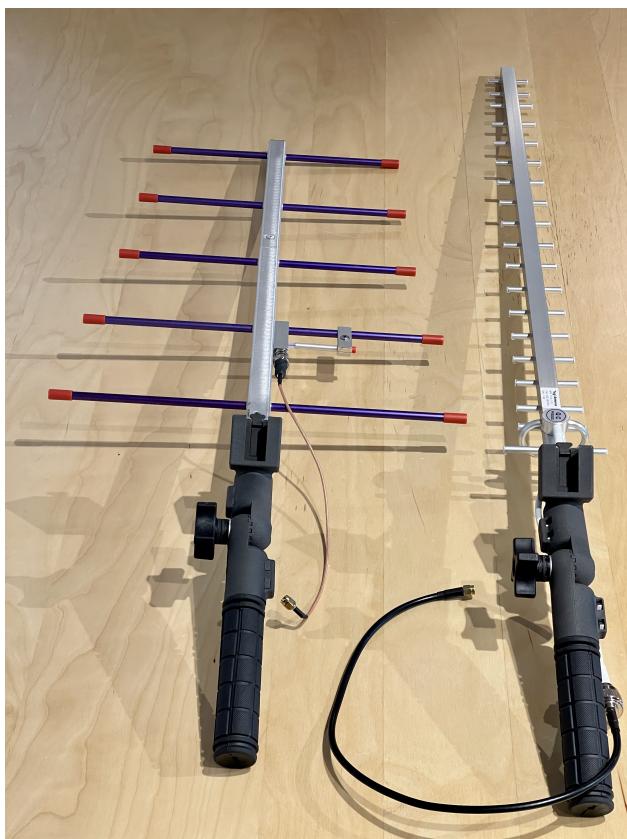


Figure 2: Optional Yagi Antennas and Handles. 434MHz (left) and 2.4GHz (right)



Figure 3: Optional 434MHz Yagi and custom handle with Sidekick locked in. *Also note the 2.4GHz omni antenna still attached.*

Pairing with CTT Sidekick

To begin using your CTT Sidekick, you'll need to pair your smartphone (or other smart device) to the Sidekick using the CTT Mobile app. Please follow the instructions below:

1. From the home screen of CTT Mobile, select the Connect Device launch tile.

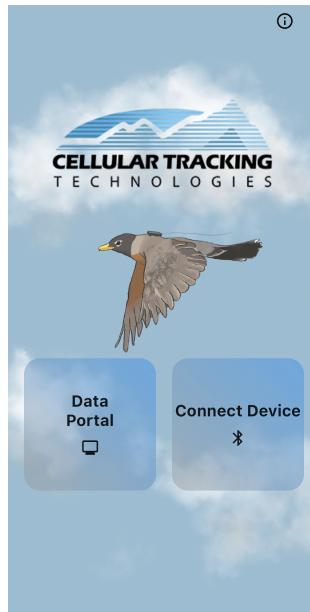
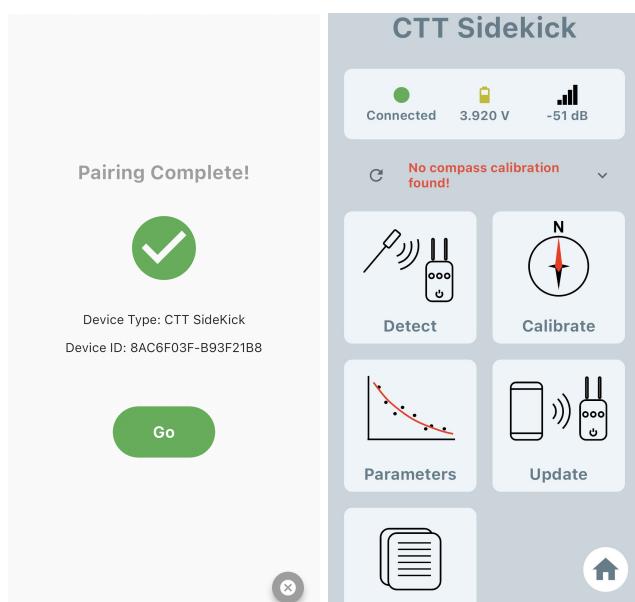


Figure 4: CTT Mobile Home Screen

2. Tap the Start Scan button and a list of available devices will appear.
3. The CTT Sidekick will be listed as **CTT Sidekick (XXXXXXXX)** in the available devices list, where XXXXXXXX is the unique identifier of your CTT Sidekick. Find the your Sidekick in the list and tap Connect.
4. Once pairing is complete, the mobile application will notify you. Tap “Go’ to continue to the CTT Sidekick Main Hub screen.



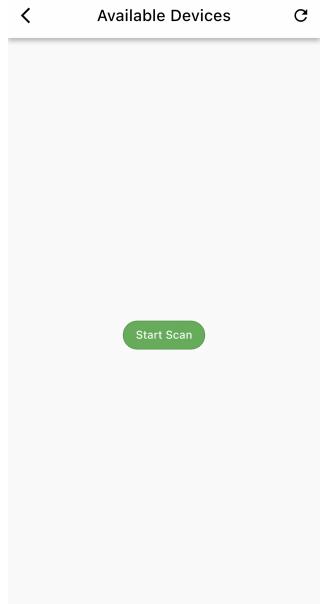


Figure 5: Start Scan Screen

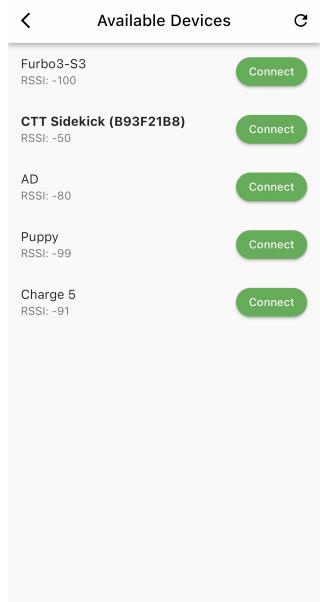
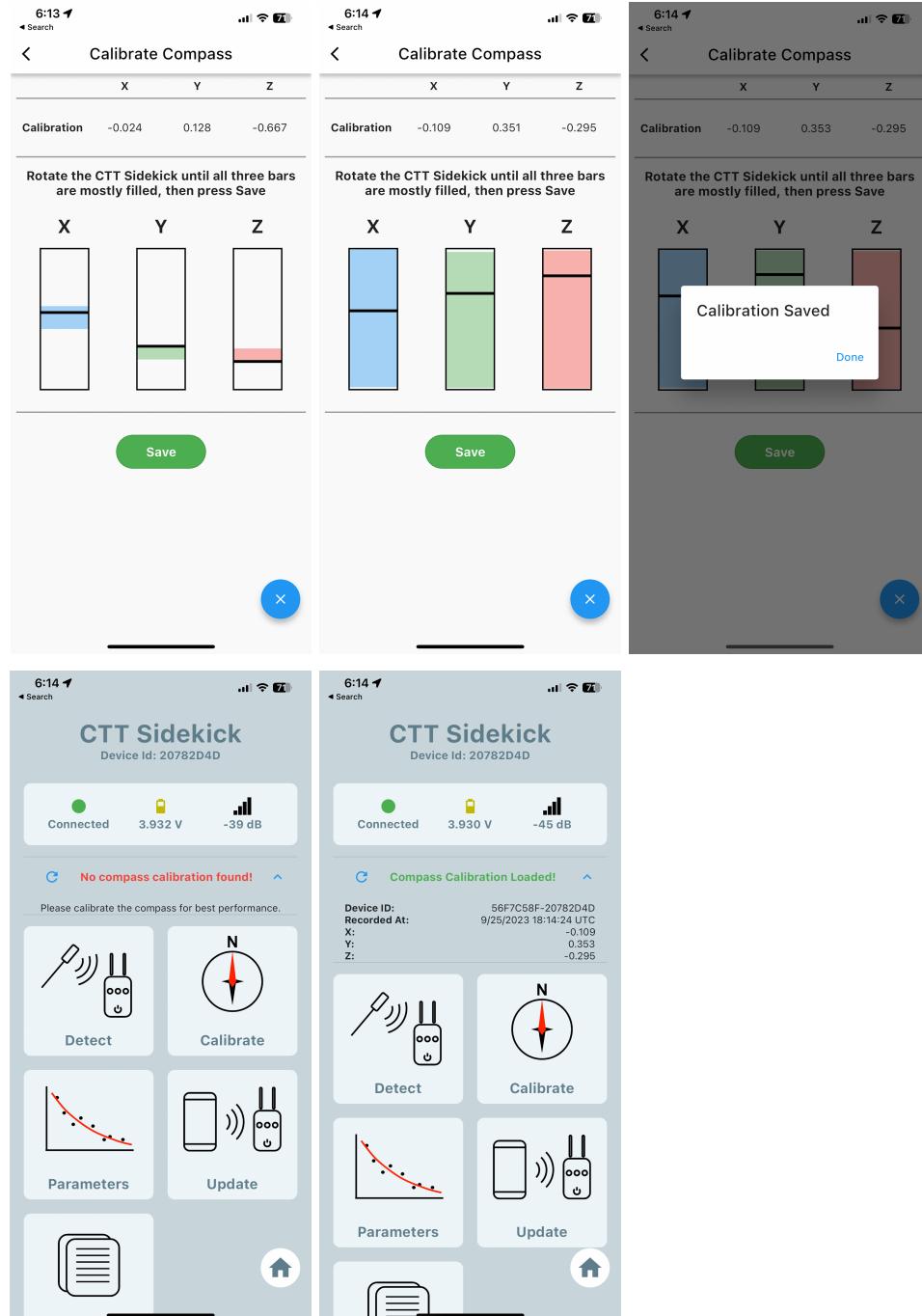


Figure 6: Device Screen

Sidekick Operation

After pairing is complete, you will see the CTT Sidekick Main Hub screen (see figure above). Please note, the Home button at the bottom right will exit the Sidekick Hub and return you to the homescreen for CTT Mobile. You will need to reconnect to your Sidekick from there.

Calibrate Compass



Detect Tags

The main feature of the CTT Sidekick is its ability to detect radio tags. From the CTT Sidekick Main Hub screen select the “Detect” launch tile to navigate to the Tag List screen.

At the very top right of the Detect Tags screen, in the header, are two small buttons:

- **X** - This button clears the Detection List. You may find this useful when you have scanned an area where you had multiple detections, but then move to a new area, just to see only the tags currently within range of your Sidekick.
- **Location Icon** - This button toggles whether you enable Location Services, which are required for localizing tags in map view, as well as for other features. You can turn this off to save battery life when you’re not actively tracking tags.

Also at the top of the Tag List screen there are three larger buttons:

- **2.4GHz** - This button toggles the 2.4GHz radio receiver on and off. When the radio is on the icon and text will be green when it is off the icon and text will be grey.
- **434MHz** - This button toggles the 434MHz radio receiver on and off. When the radio is on the icon and text will be green when it is off the icon and text will be grey.
- **Record/Stop** - This button starts and stops the recording of tag detections. When recording is in progress all tag detections will be written to a csv file along with the current location recorded from your mobile device’s GPS receiver.

Just below the row of buttons you’ll find the a row with actions for sorting and filtering the tag list:

- **Tag List Sort Options** - Tapping this button will display a list of options for sorting the tag list.

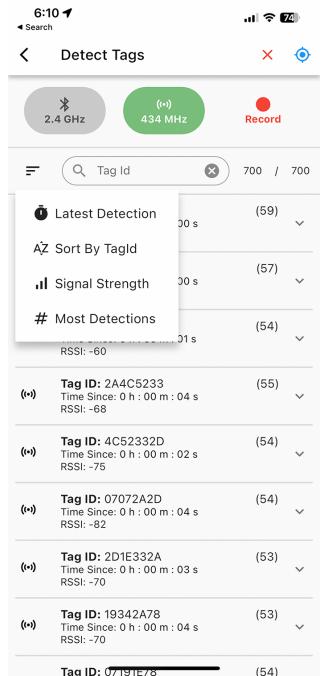


Figure 7: Tag Sort Options

- **Tag ID Search** - Use this text box to search the tag list by tag Id. You can search by partial tag Id. Search is not case-sensitive.

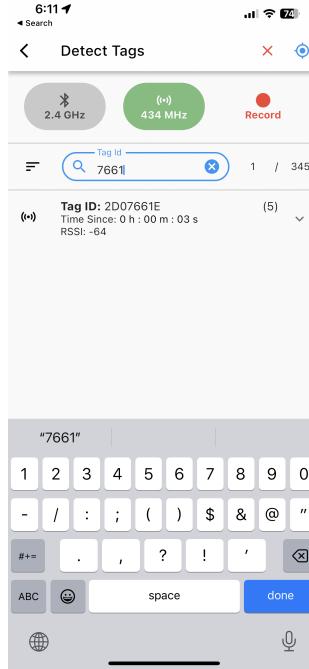


Figure 8: Tag ID Search

- **Tag Count** - You will see two numbers “X / Y”. Where Y is total number of tags detected since starting the app and X is number currently being displayed due to list filtering such as searching for a tag Id.

Clicking on an individual tag opens up the chart for that tag, as well as several more options:

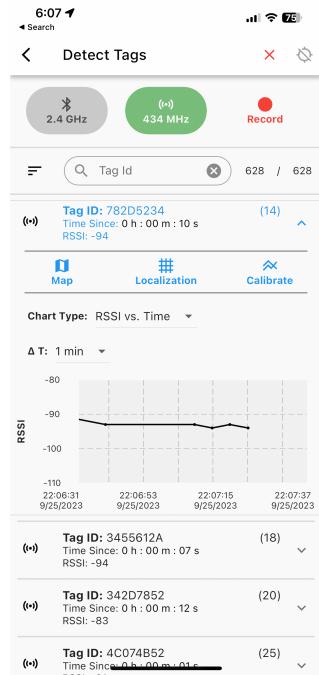


Chart Type: Options include RSSI vs. Time, RSSI Histogram, Solar Voltage, Temperature

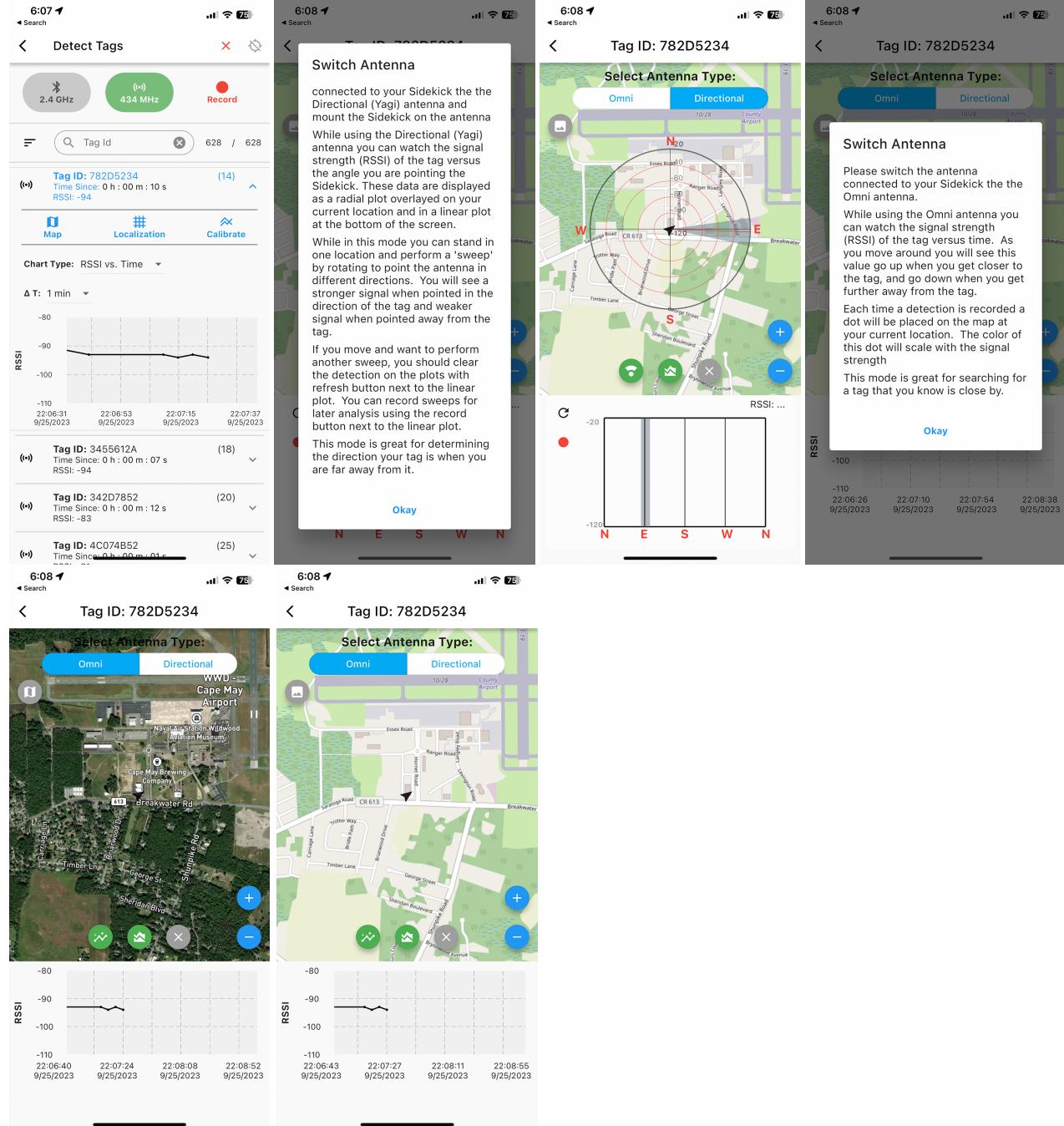
Change Over Time: Options include 10s, 30s, 1min, 2min, 5min

Map: Opens the Map window

Localization: Opens the Localization window

Calibrate: Opens the Calibration window

Map View

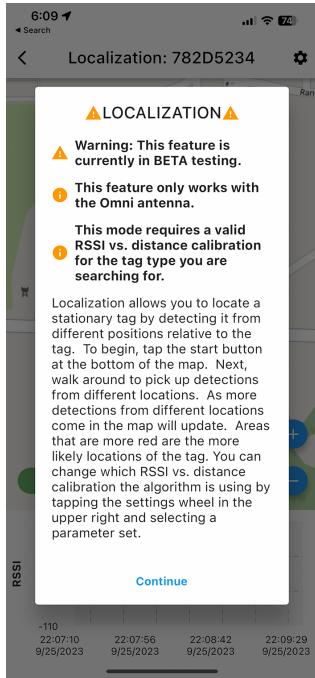


Localization

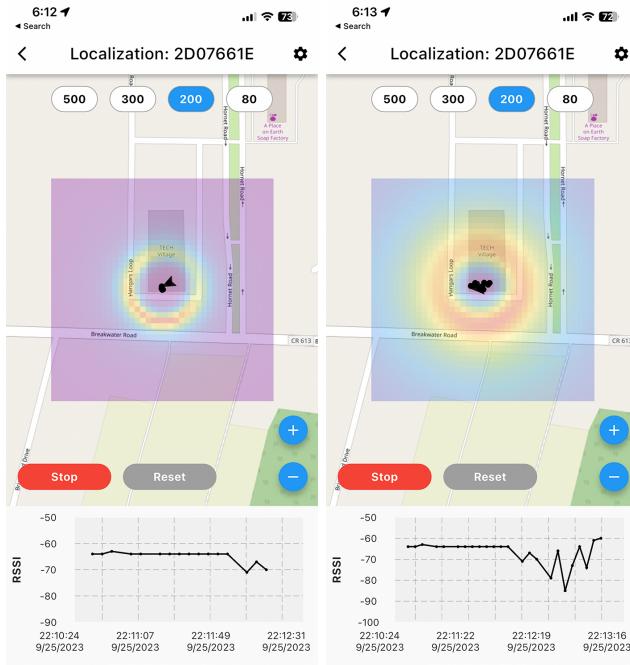
Please note the warning screen that opens when you click on the Localization button. While still a Beta feature, Localization provides you with a powerful tool for finding a stationary tag (great for relocating a

tag that has fallen off of an animal, or on an animal you suspect has died). In order to use the Localization feature you must first collect a RSSI vs. Distance calibration dataset on your tag. **This is important, because you must do so before you ever deploy the tag, so doing so should be part of your pre-deployment checklist.**

Also note that Localization only works with the Omni antenna.



The Localization screen consists of a Heatmap and an RSSI vs. Time graph. As more beeps are recorded, the heatmap begins to provide directionality of your tag. Walking a grid pattern, and keeping your Sidekick above your head, will allow the algorithm to more accurately arrive at a solution for your tag's location.



At the top of the Localization screen are four grid size options, 500m, 300m, 200m, and 80m. As you get closer

to your tag you can increase the resolution of your grid by selecting a smaller grid size. For tags located farther than 500m away, consider using the Yagi antenna with the Detect screen until you are within the grid-size-range, and then switch to the Omni antenna and use the Localization screen.

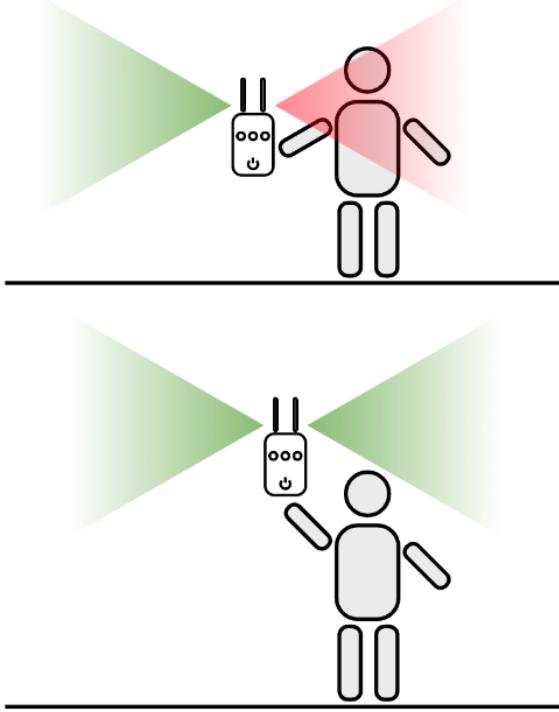


Figure 9: Example of optimal Sidekick orientation for using localization

Calibrating RSSI vs. Distance

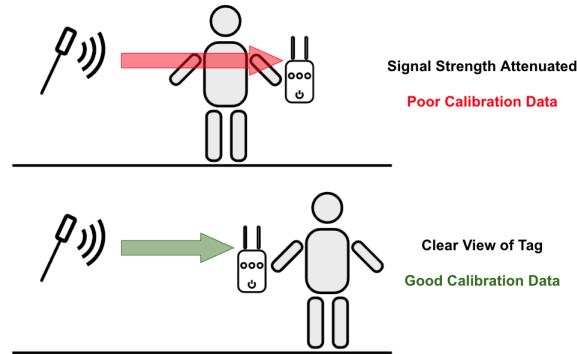
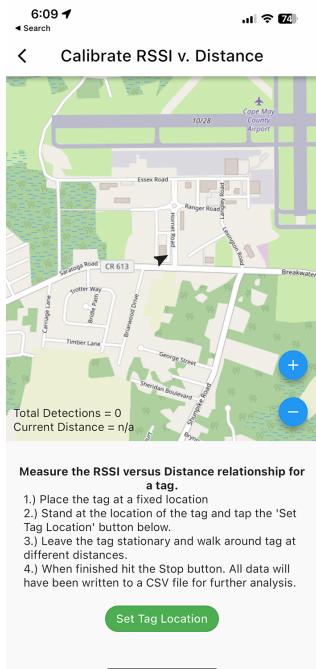
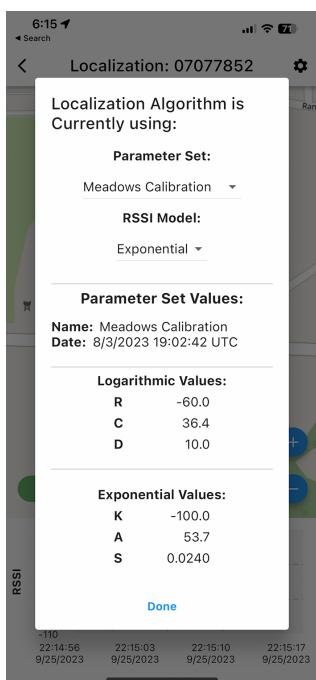
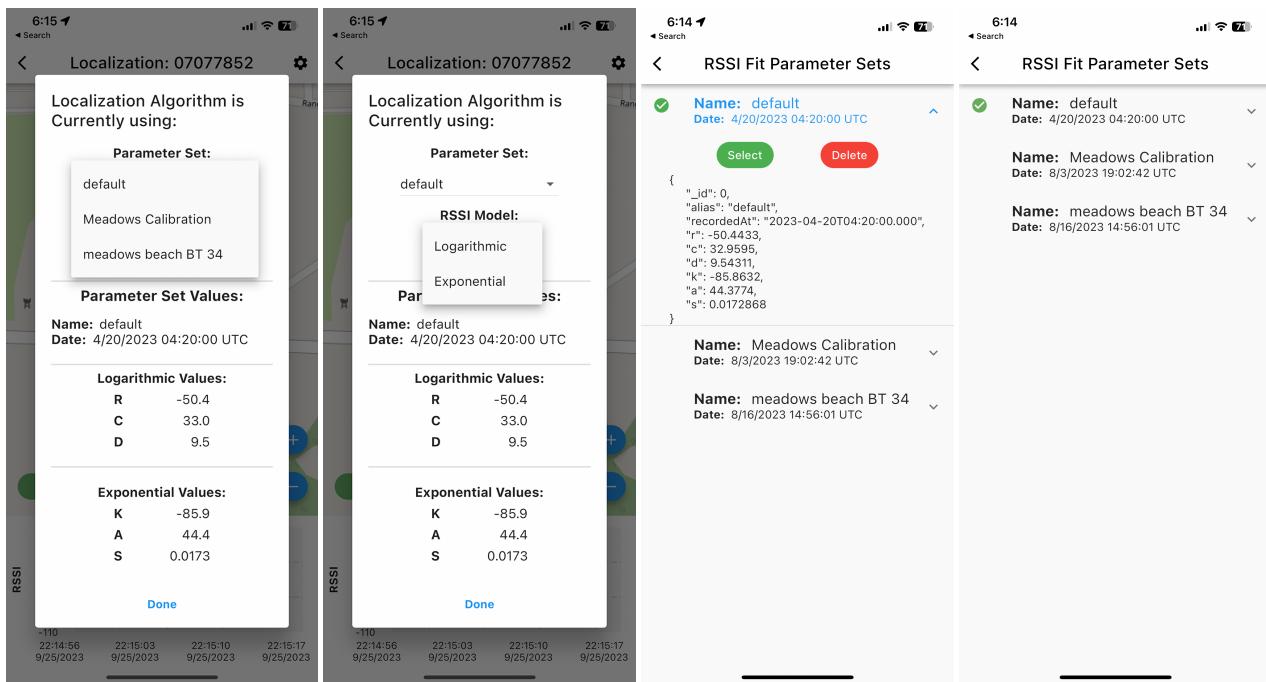


Figure 10: Example of tag calibration attenuation



RSSI vs. Distance Fit Parameters





Firmware Updates

Coming Soon

Final Thoughts

This User Guide is a living document. Your experiences and input are greatly appreciated so please don't hesitate to reach out to us regarding what you'd like to see included here. You can submit your suggestions and any errors to our **Customer Service Desk** here and we will work to incorporate them in future revisions. All material © Cellular Tracking Technologies, 2023.