

Configuring the Carlson BRx7 for Esri Field Maps Using Carlson Layout and Mocked Locations

Requirements:

- 1) CT8x2 Android Tablet with a registered copy of Carlson Layout version 1.10.9 or newer
- 2) Carlson BRx7 receiver
- 3) Esri Field Maps and valid Esri ArcGIS credentials

Step 1: Enabling Mock Locations on the Android Tablet

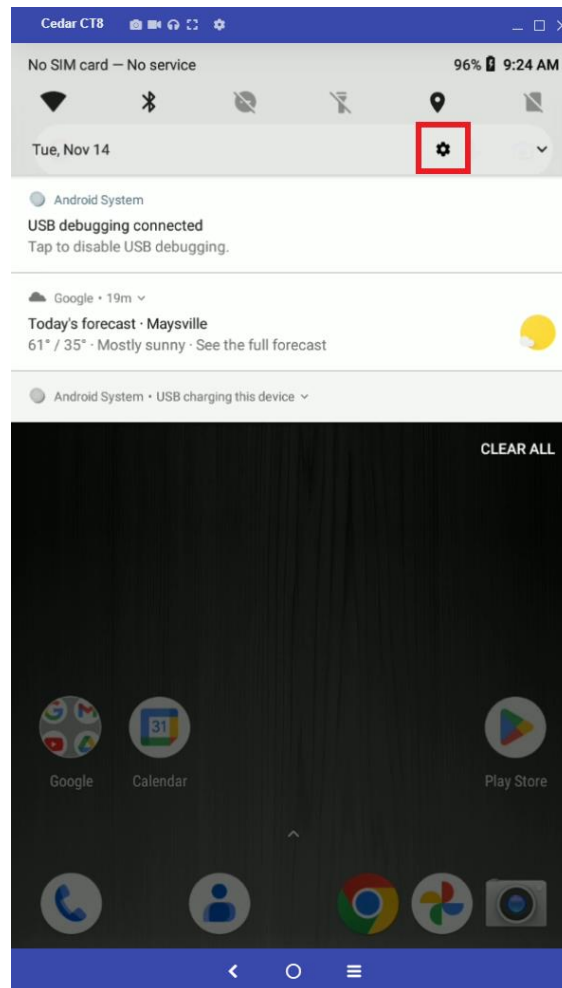
The Carlson CT8x2 tablet includes an integrated GPS chip to provide positions through the Android operating system to all installed apps with location permission. While this position is useful for applications such as google maps, higher accuracy is usually necessary for RTK quality surveys.

The Android operating system includes a standard feature called “Mocked Positions” or “Mocked Locations”. This advanced feature allows an application to replace the built in android position with a higher accuracy position. Once the mock location is enabled, every app using the device will automatically get the improved position when requesting location from the OS.

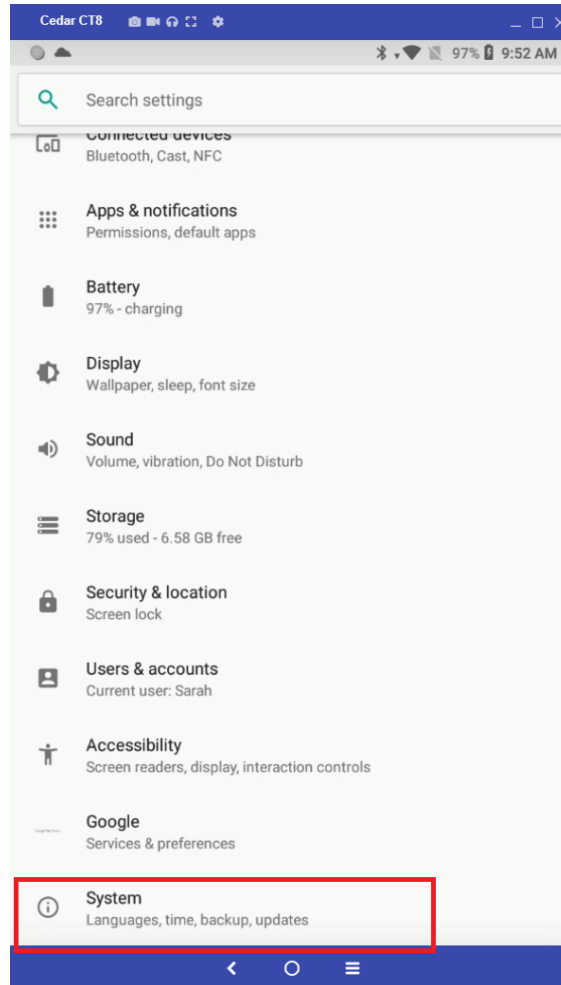
Carlson Layout has the ability to provide a Mock Location to the Android OS. This allows users to take advantage of the Layout driver library and configuration to provide high accuracy positions to other apps on the android device, such as Esri Field Maps.

The exact steps to configure the Android OS to accept mock locations vary from device to device. These instructions detail the steps to set up and use mock locations on the Carlson CT8x2. To use this device with other tablets, you may need to search on the internet for details specific to your tablet.

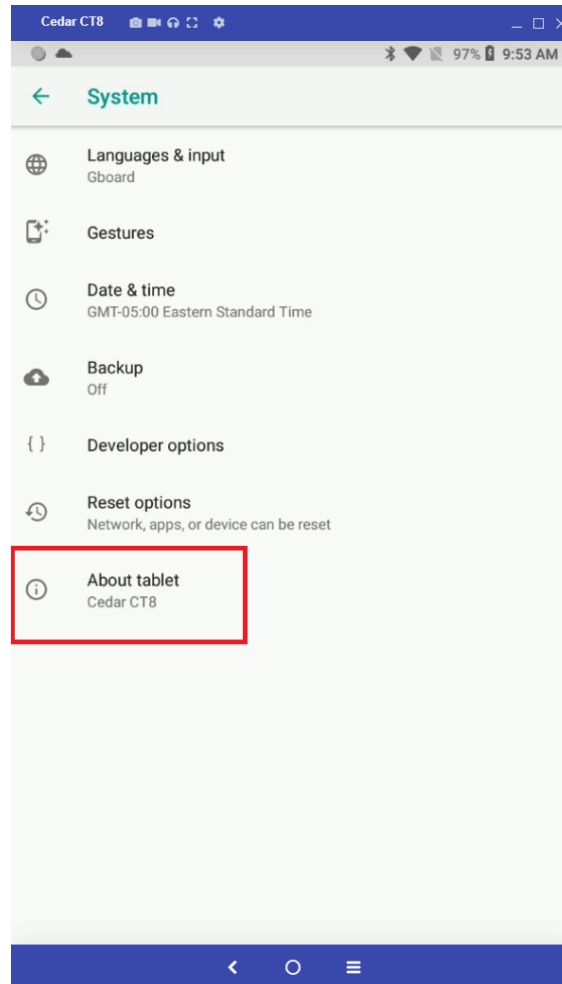
To enable mock locations on the Carlson CT8x2, you must first enter developer mode. From the home screen of the CT8x2, swipe down from the top and press the **GEAR** icon to access the tablet settings.



In Settings, scroll to the bottom and select **System**:

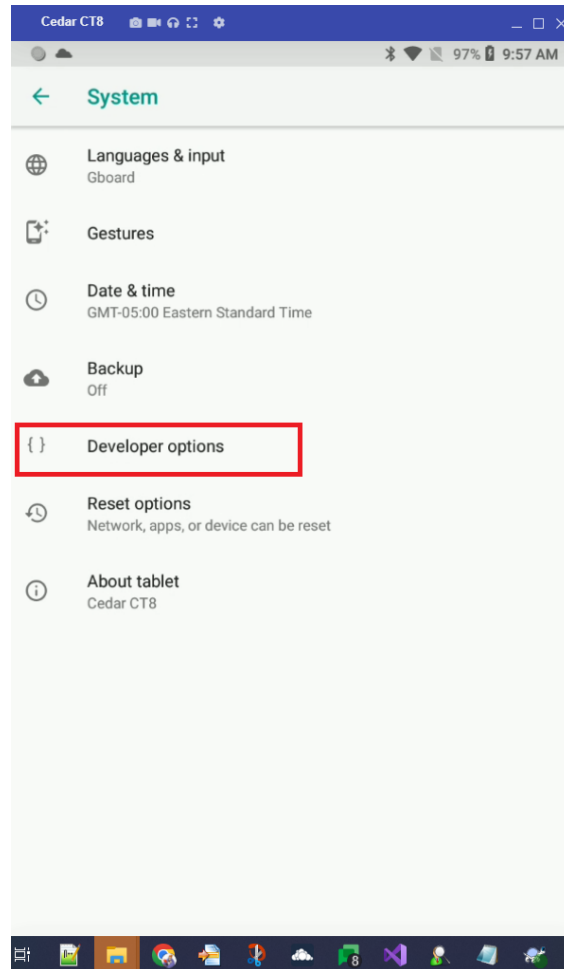


And then **About Tablet**:

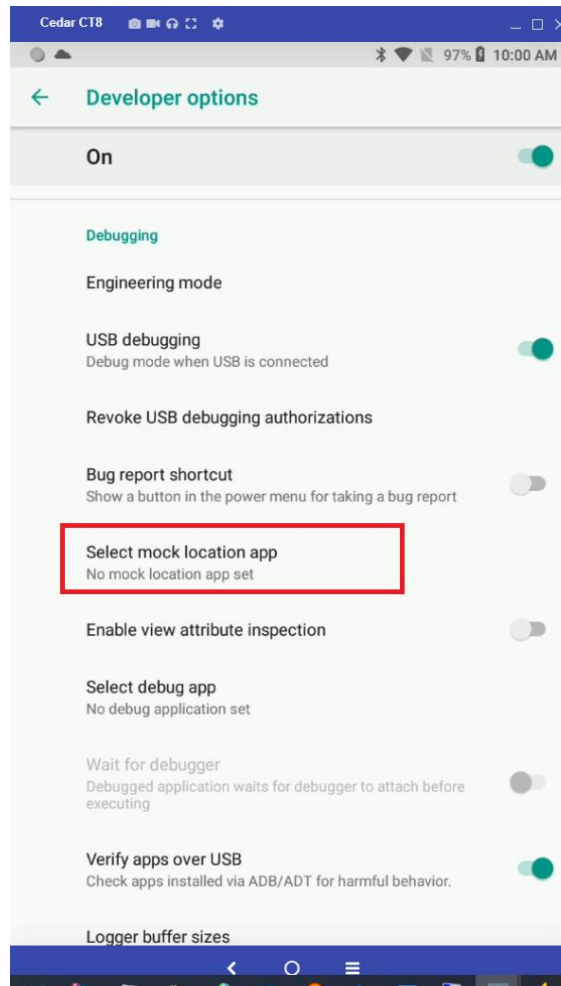


Finally, from the About Tablet section, tap five times on the **Build Number** option to enable Development Mode. You should get a pop up that says “*You are now a developer.*”

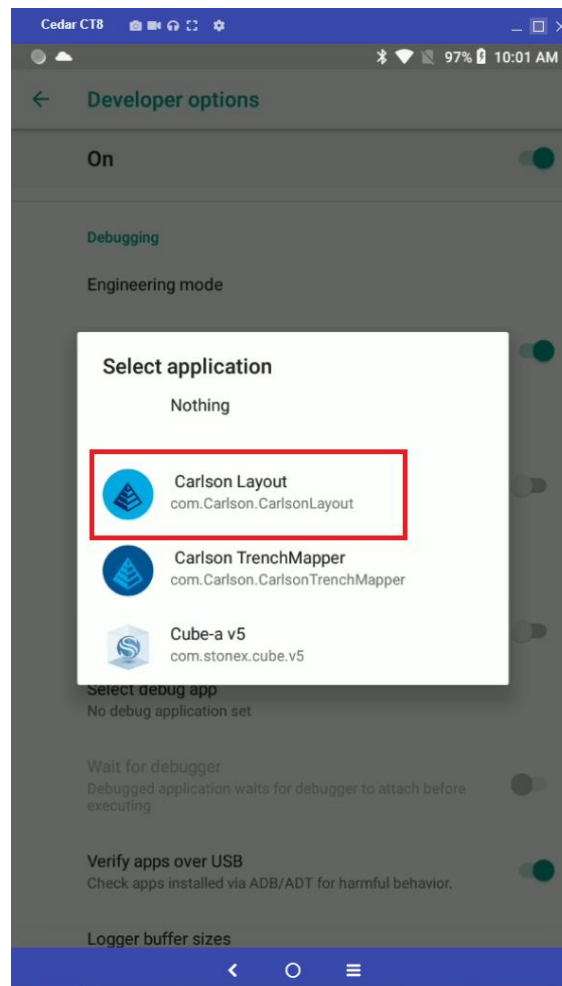
Once developer mode is active, press the back arrow to return to the previous settings screen, look for the new **Developer Options** Section and select it.



Scroll down the list and find **Set Mock Location App**.



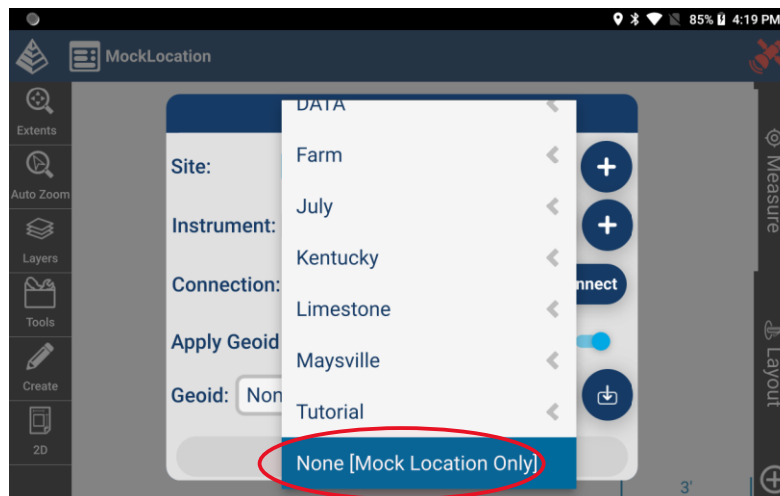
Tap on this option and choose **Carlson Layout** as your Mock Location App.



This concludes the Android OS part of the setup.

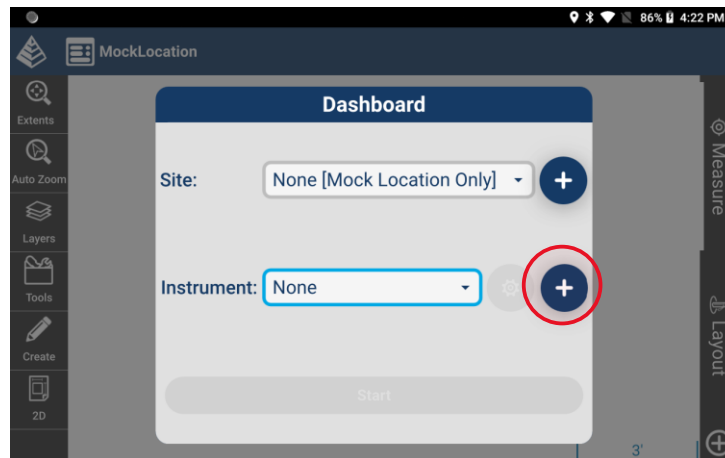
Step 2: Setting up Carlson Layout for Mock Locations

Launch Carlson Layout from your Android Home screen. Carlson Layout will open into the Dashboard. To quickly enter mock location mode, select the preinstalled site option: **“None [Mock Location Only]”** as shown.

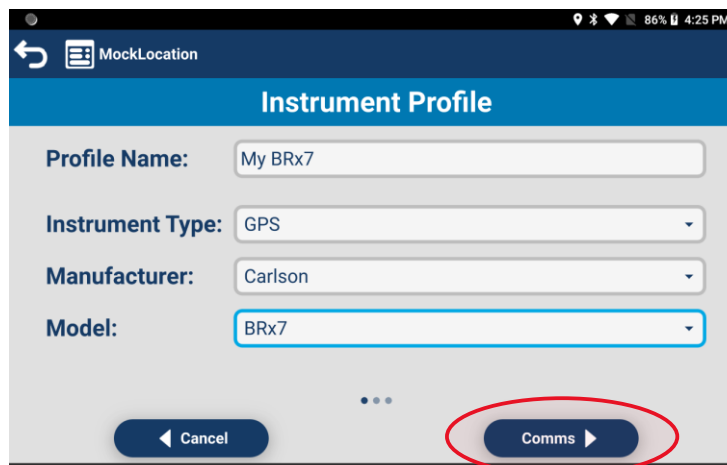


This option is a shortcut for using layout purely as a mock location provider.

If you have already configured a BRx7, select the existing configuration from the Instrument drop down, otherwise, press the plus icon to the right of the instrument selection to add a new instrument configuration.

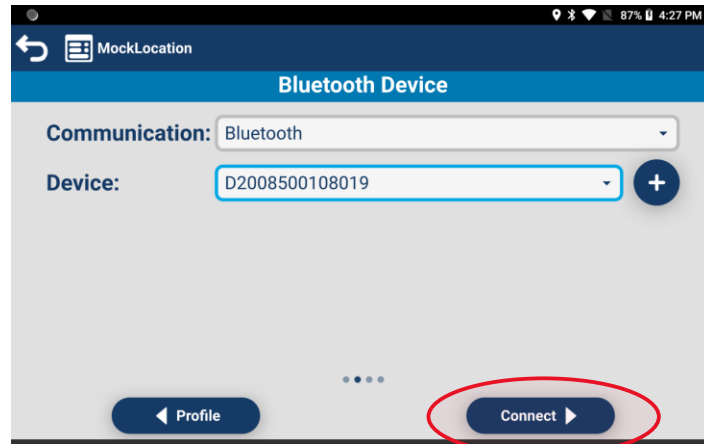


Name your new configuration, and select instrument type, manufacturer, and model.

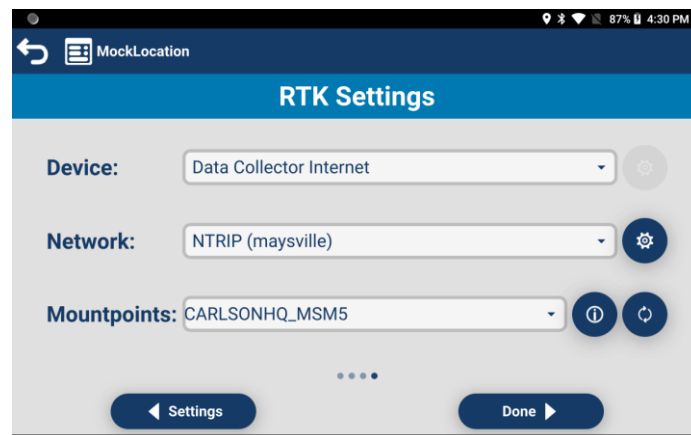


Press the blue Comms button in the bottom right to continue to instrument connection. If your desired device is already in the drop-down list, select it, otherwise press the plus icon to find and add a new Bluetooth device.

Press the blue connect icon to continue and connect to the GPS Receiver.

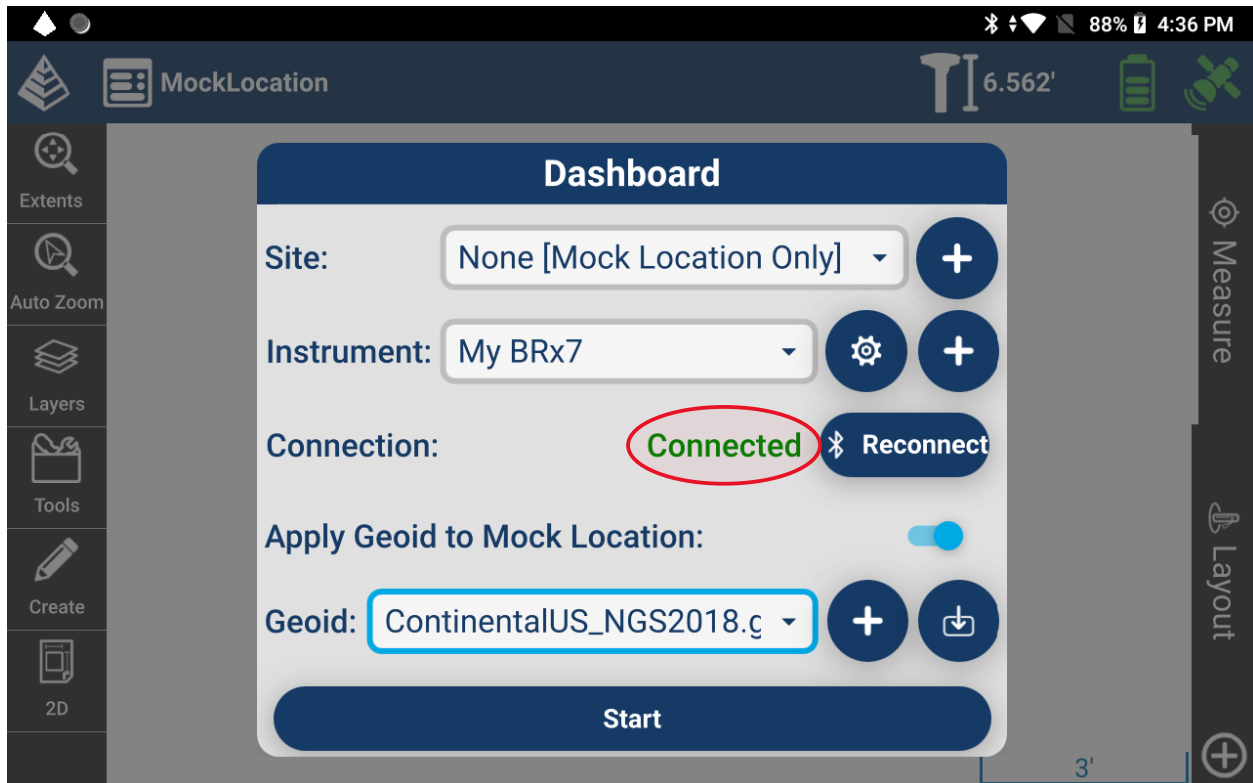


The following screen allows configuration of GPS settings such as the rod height, audio mode, elevation mask, and more. Scroll down on this screen to see all available options. Once your GPS is configured as desired, press the RTK button to continue.



The RTK Settings page allows you to configure how you will be receiving RTK Corrections. If your tablet has a SIM card inserted, or wifi is otherwise available, one method is to connect to a known NTRIP provider through the tablet. To do this, set the device to “Data Collector Internet”, and choose NTRIP for the network. Use the gear icon to the right of the Network option to enter your NTRIP credentials and download the available mount points. Alternatively, if you want to use the internal GSM of the receiver for corrections, choose device type Internal GSM. You can also use a base rover setup by choosing Device: Internal Radio. The screenshot above shows configuration using Data Collector Internet. Once your RTK configuration is complete, press the blue **Done** button to connect to the network.

The GPS receiver will be configured, and the software will return to the dashboard. Note that the connection status is now green and says “Connected”.

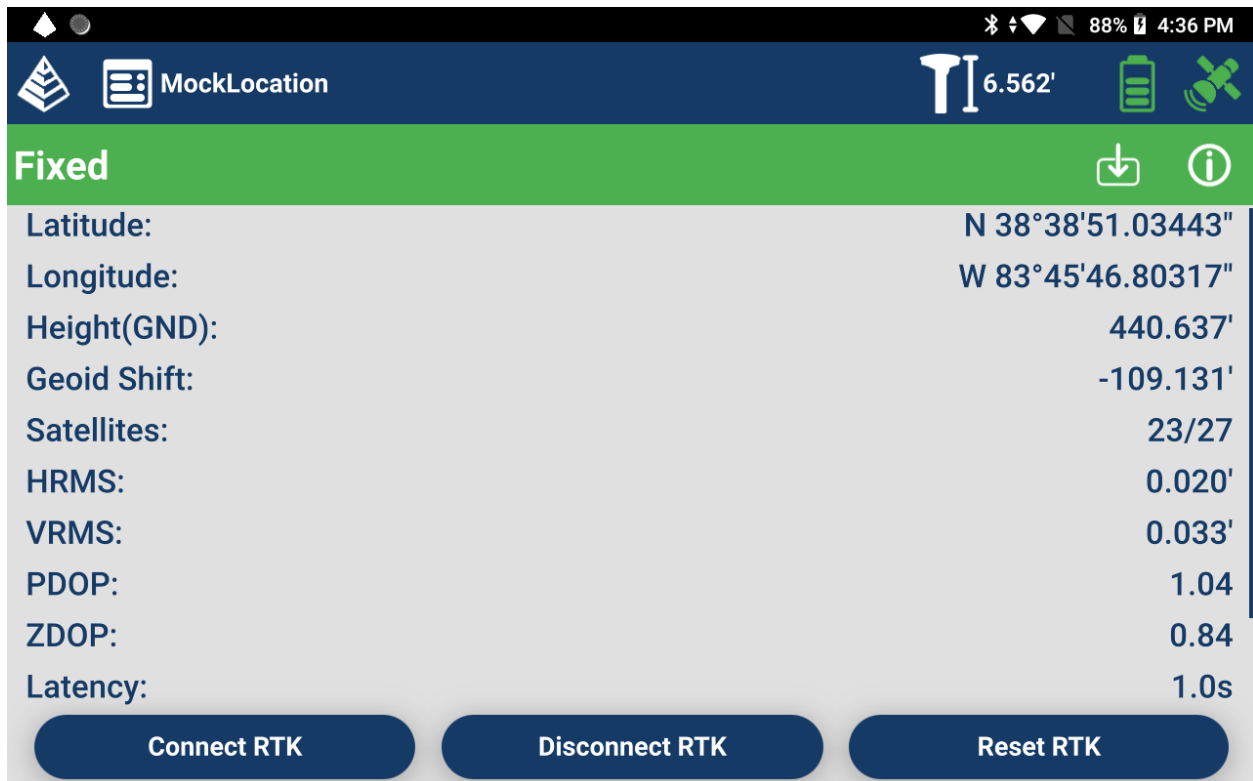


Carlson Layout can include the geoidal offset as part of the mock location broadcast. To use this option, enable the “Apply Geoid To Mock Location” option and use the download icon to the right to select an available geoid.

Note that the option to set a projection in Carlson Layout is not available or necessary in mock location mode. Latitude and Longitude in WGS84 will be broadcast, and Field Maps will handle it’s own projection.

Finally, press START to begin the mock location broadcast.

Carlson Layout will be using the mock location broadcast and display a status screen. A green top bar in this screen is a quick indicator that the GPS has a fixed RTK position.

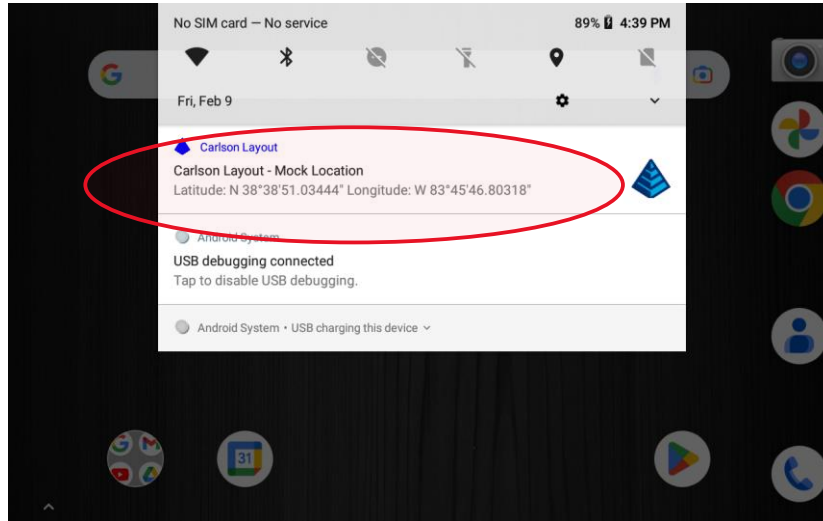


GPS rod height can be changed at any time by tapping the rod height indicator in the top bar.

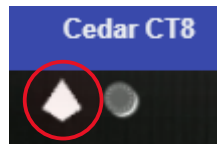


At this point, Carlson Layout can be minimized by pressing the home button on the tablet. Mock locations will continue to broadcast.

Swipe down from the top bar at any time to confirm that positions are broadcasting.

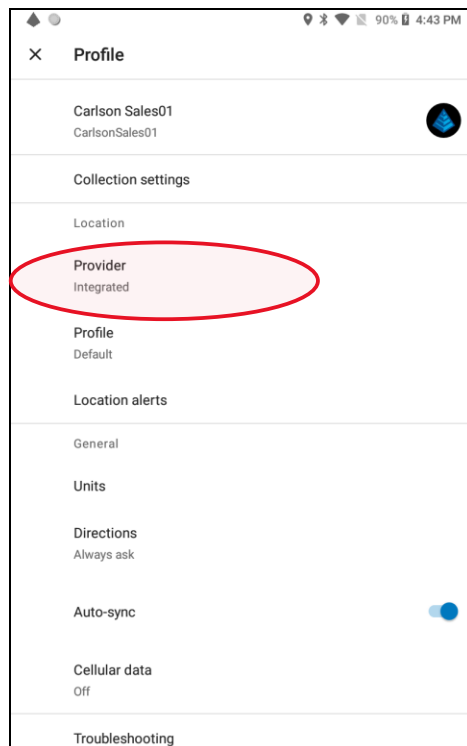


The Carlson Pyramid status indicator will also be visible in the top left corner when positions are being broadcasted.



Configuring And Using Esri Field Maps

Launch Esri Field Maps from the Android home screen. Log into the App using your Esri credentials, and your list of available maps will populate. Before choosing a map, tap the person icon in the top right corner.



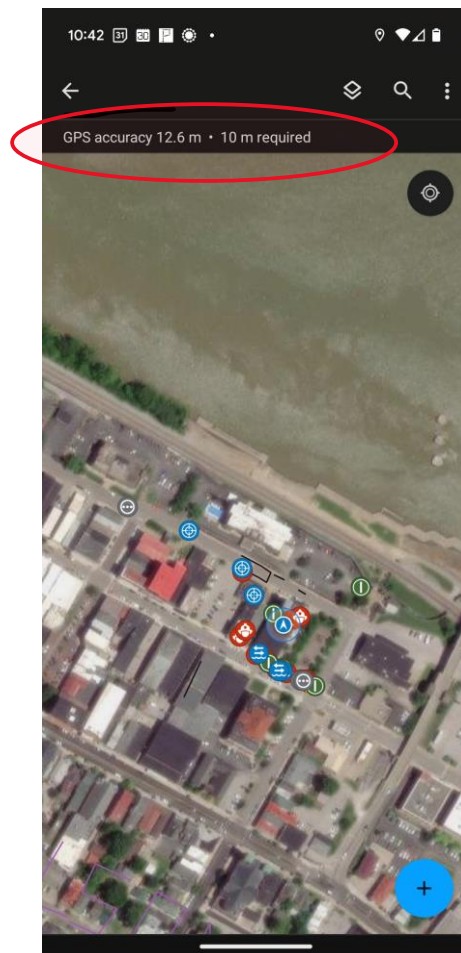
Set the provider to “Integrated”. This tells Esri Field Maps to use the integrated GPS position of the android tablet, which is now being provided by Carlson Layout.

Continue to use Esri Field Maps as normal. Further information on using Esri Field Maps can be found at the following link: <https://doc.arcgis.com/en/field-maps/android/use-maps/quick-reference.htm>

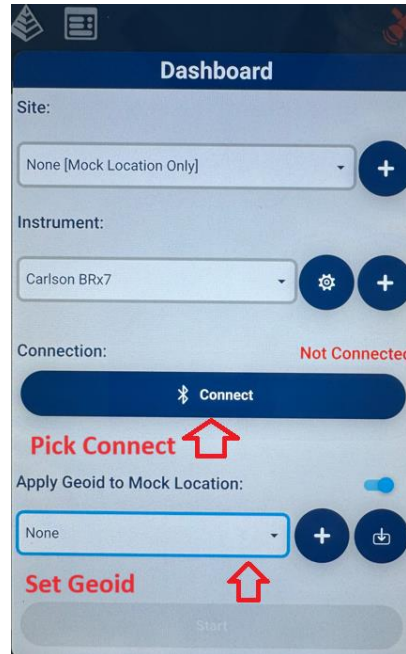
Best Practices for daily use of Esri Field maps with Layout

It is best practice to launch Esri Field maps before beginning mock locations in Layout. Log into Field Maps using your Esri credentials. Successful login will populate the list of available maps. Select the map you would like to view or modify.

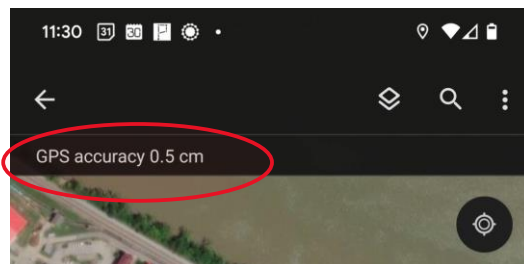
At this point, confirm Field Maps is using the integrated GPS of the tablet by waiting for a low accuracy position as shown:



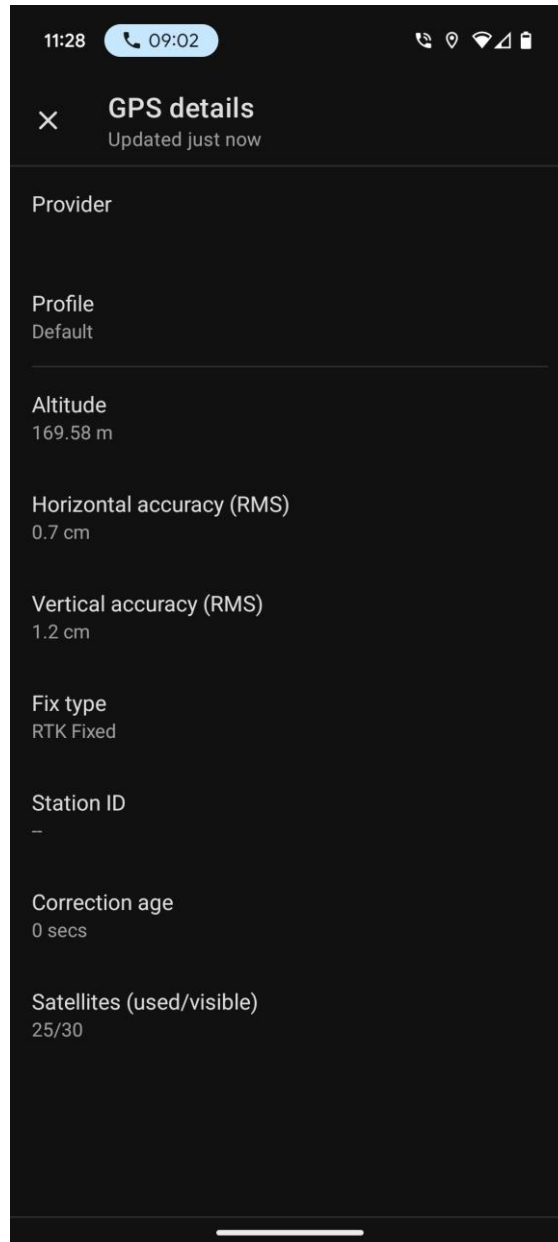
Next launch Carlson Layout from the home screen. If you have already setup the connection to the BRx7, just pick CONNECT. Make sure you set the Geoid.



Complete the setup as described in this guide, then press START. At this point, press the home button, then relaunch Field Maps to confirm that the position is now in RTK accuracy range. This is an indication that your mock location setup is successful.



Tap on the “GPS Accuracy” text for more details about your position.



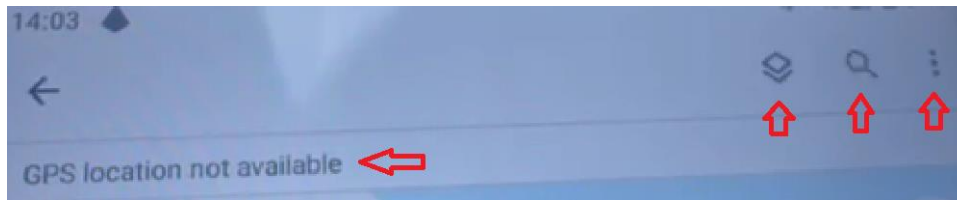
General Android commands on the CT8-2

- To fully exit Layout or Esri Field Maps press the button with the 3 lines as shown in the image, then swipe up on the app to close the app. Note that this will fully close the app and disable the mock location broadcast from Carlson Layout.
- To return to the home screen while in either Layout or Esri Field press the button with the square icon, in the center.



Troubleshooting

Launching Mock locations before launching Field Maps may cause a flickering position/icon effect in some versions of Field Maps. See below for an indication of where this flicker will be noticeable if encountered.



This error can be easily resolved by switching back into Carlson Layout (using the home button and tapping the icon), and turning OFF then ON the Enable Mock Location option as shown below.

