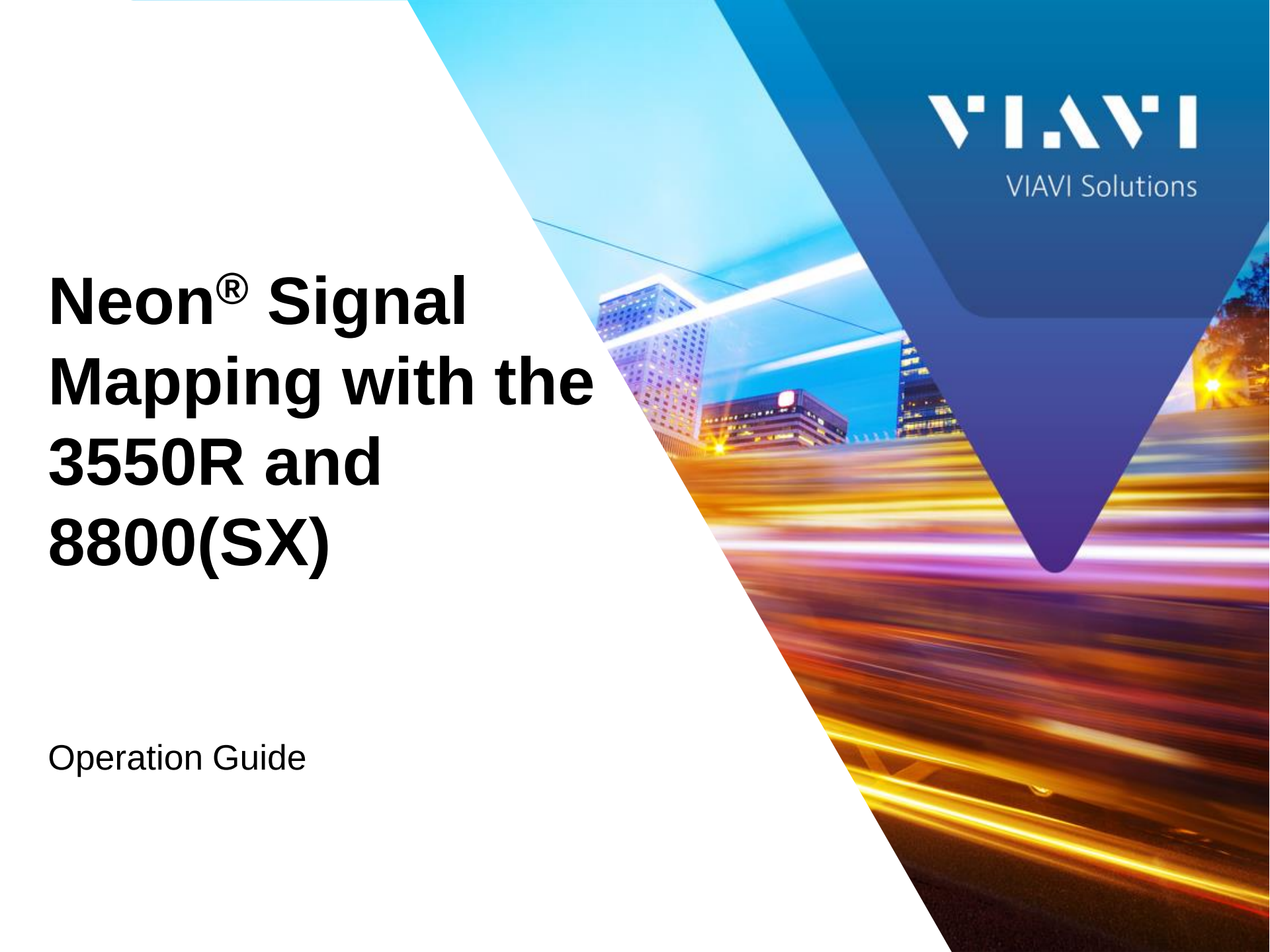


Neon® Signal Mapping with the 3550R and 8800(SX)

Operation Guide

Neon Signal Mapping

Table of Contents

HOW TO SETUP YOUR NEON ACCOUNT

Setting Up Your Neon Account

Welcome to NEON!

Welcome to NEON!

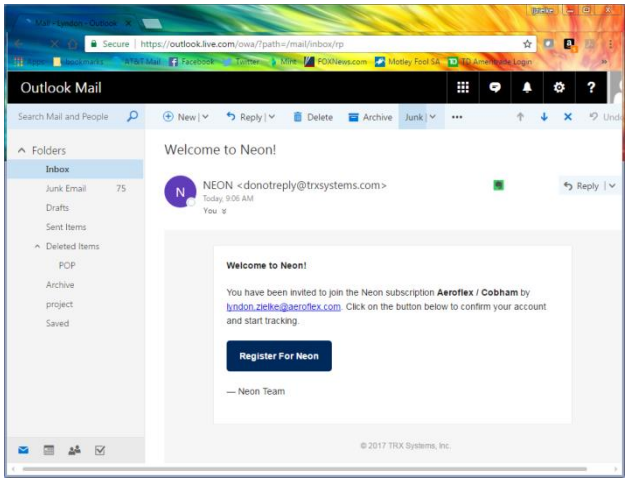
To activate your NEON subscription, please go to
neon.trxsystems.com/activate
and use the code below.

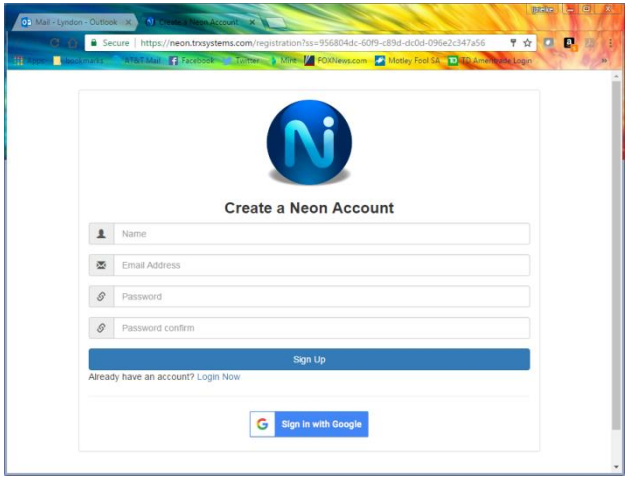
W1TGN-7O4P4-L47VP

- Your package includes the TRX Systems tracking unit and a wireless router.
- Open up the box with the tracking unit.
- Read and follow the instructions on this label, which you will find in the tracking unit box.

Setting Up Your Neon Account

Welcome Email

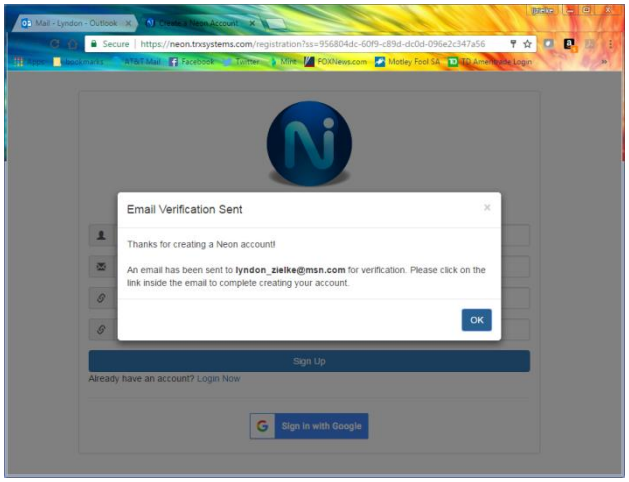


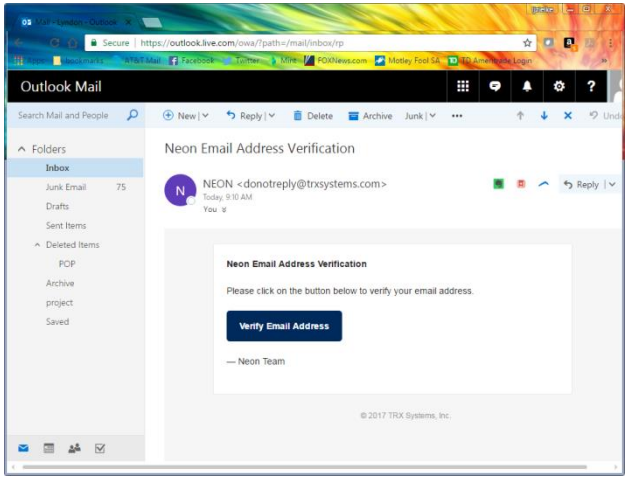


- You will receive a “Welcome to Neon!” email from TRX Systems.
- Click on “Register For Neon”.
- This will take you to a page to create your Neon Account.

Setting Up Your Neon Account

Email Verification

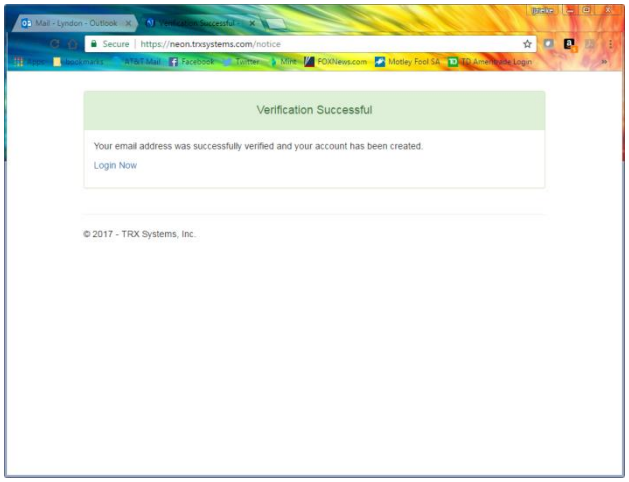




- In order to verify and finish setting up the account, TRX Systems will send an Email Verification.
- When you receive this email, click on the “Verify Email Address” button.

Setting Up Your Neon Account

Click on “Login Now”

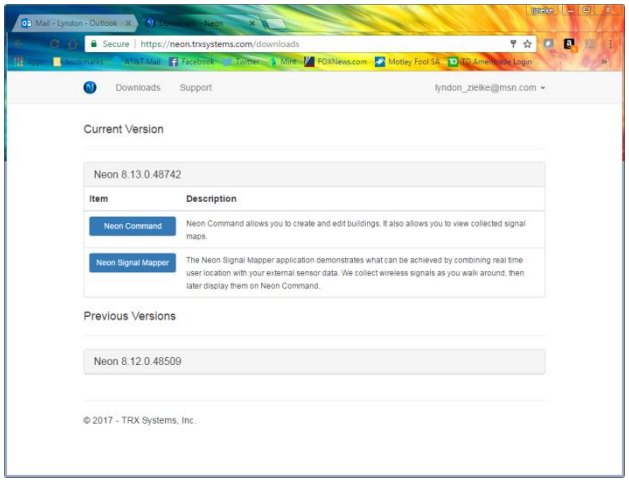


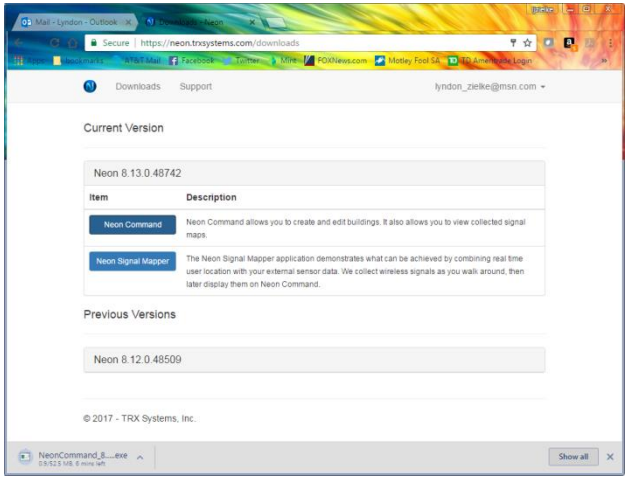
- On the Verification Successful screen, click on “Login Now”
  - Enter your Login credentials that you created.
  - Click on “Sign In”
- If you used Google for your credentials, you can click on the “Sign In with Google” button.

INSTALLING NEON COMMAND SOFTWARE

Installing Neon Command Software

Downloading the Neon Command Software

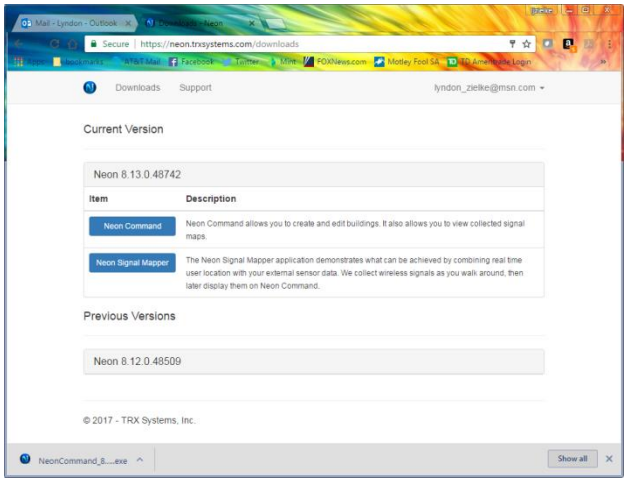


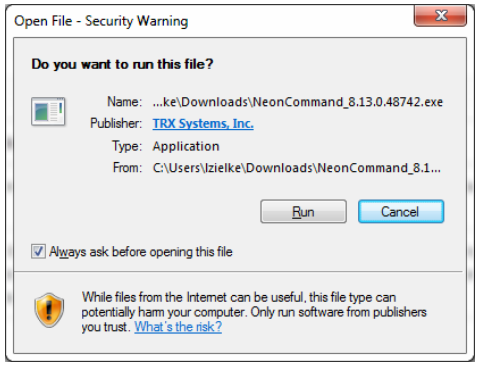


- You should now be on the downloads screen.
- Click on the “Neon Command” button.
- Wait for the software to download.
  - This varies by browser type, but Chrome shows the download progress in the bottom bar.

Installing Neon Command Software

Executing the install





- When the download is complete, click on “NeonCommand…exe (may vary by browser used)
- Click on “Run” in the Security Window.

Installing Neon Command Software

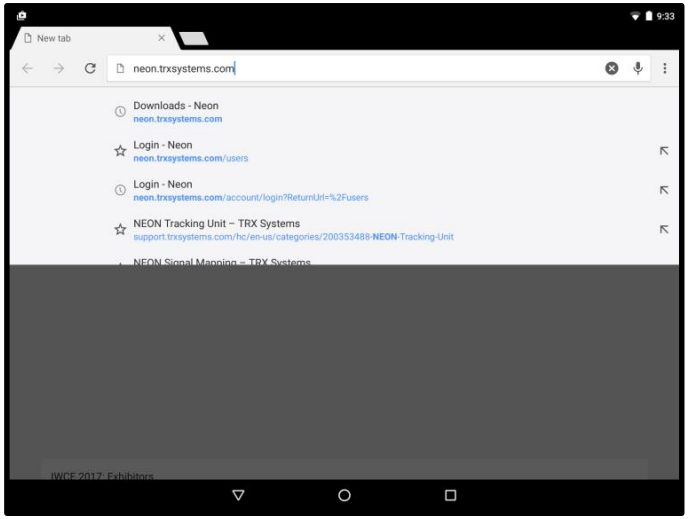
Installation Wizard

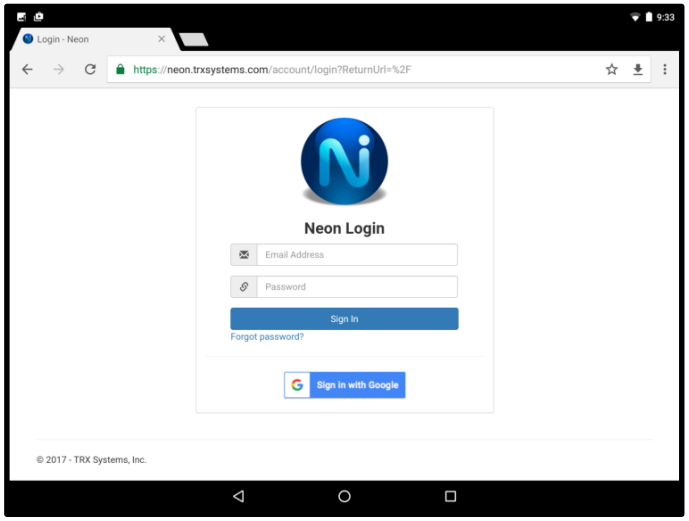
- Follow the instructions in the Install wizard.
- You must agree to the terms of the license.
- Click on the Finish button when complete.

INSTALLING NEON SIGNAL MAPPER

Installing Neon Signal Mapper

Android Device Installation

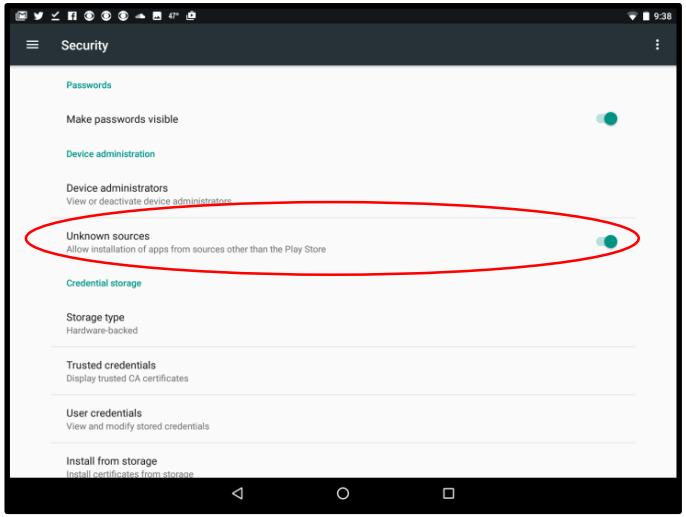


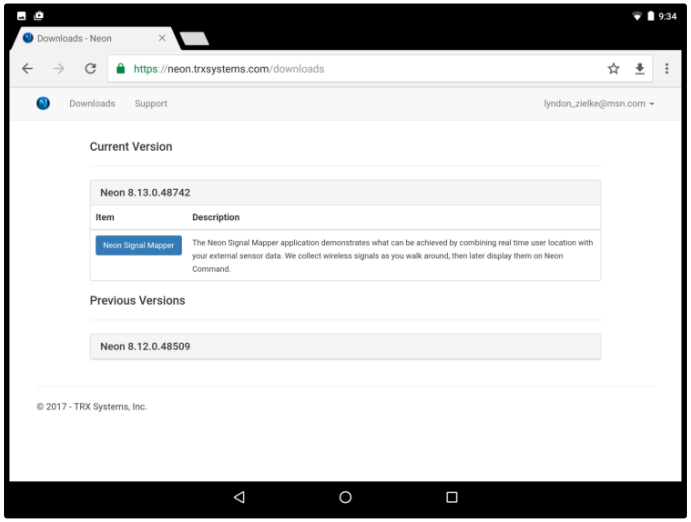


- The Neon Signal Mapper installation is performed on your Android device.
  - Open up the Internet browser on your Android device and type “neon.trxsystems.com” into the address field
  - Login to Neon using your Email Address and Password.
    - Or “Sign in with Google” if you used Google when you created your login credentials.

Installing Neon Signal Mapper

Android Device Installation

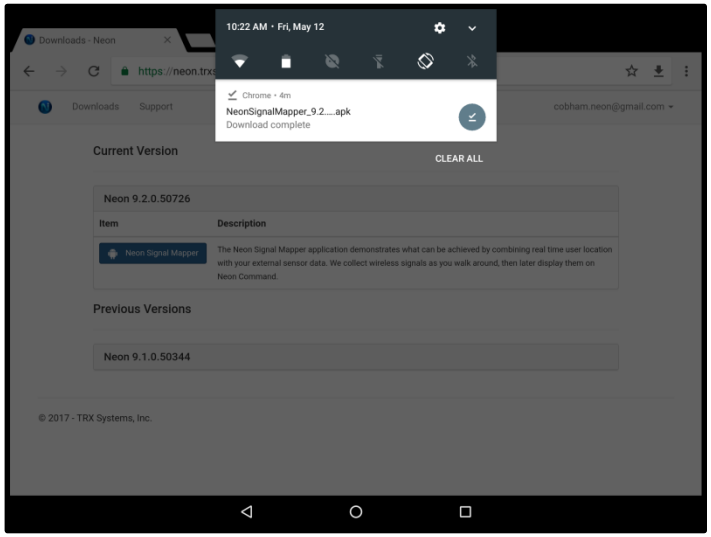


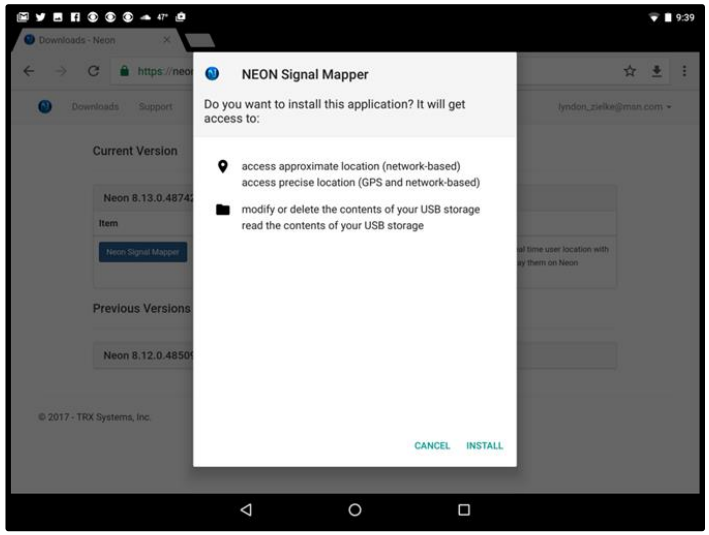


- Make sure that your Security settings allow installation of apps from sources other than the Play Store.
- From your browser window, click on “Neon Signal Mapper”.
- Answer “Yes” when the device asks if you want to download.

Installing Neon Signal Mapper

Android Device Installation

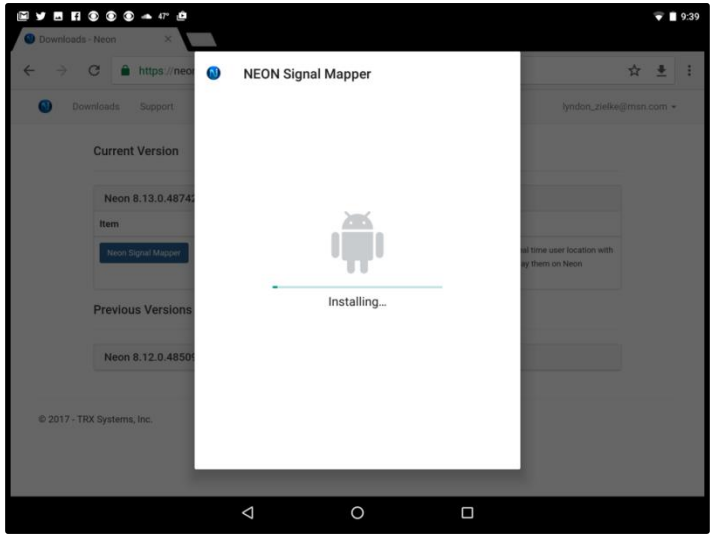


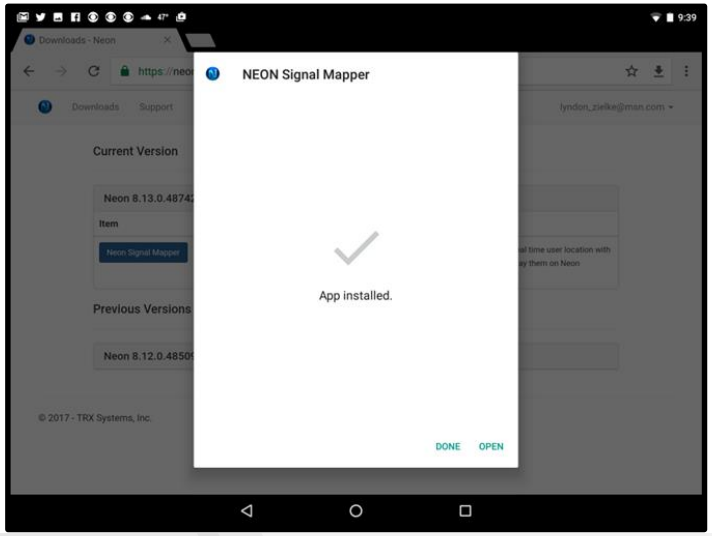


- When the download has completed, pull down from the top of the display.
- From the pull down menu touch to install the Neon Signal Mapper.
  - Touch Install in the NEON Signal Mapper window.

Installing Neon Signal Mapper

Android Device Installation

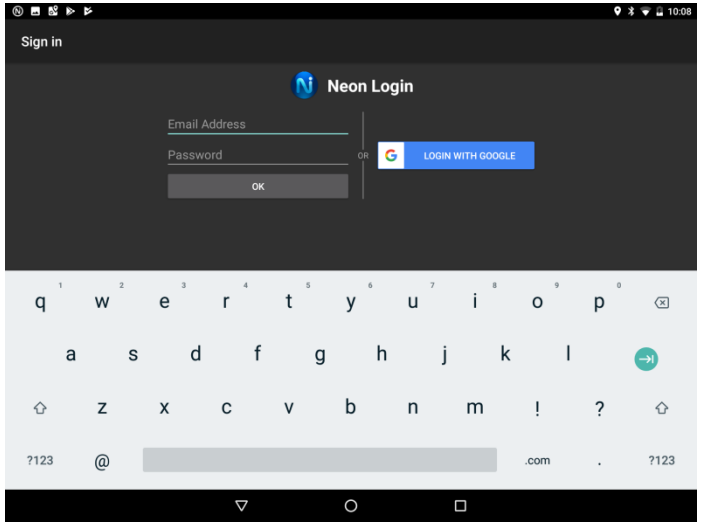


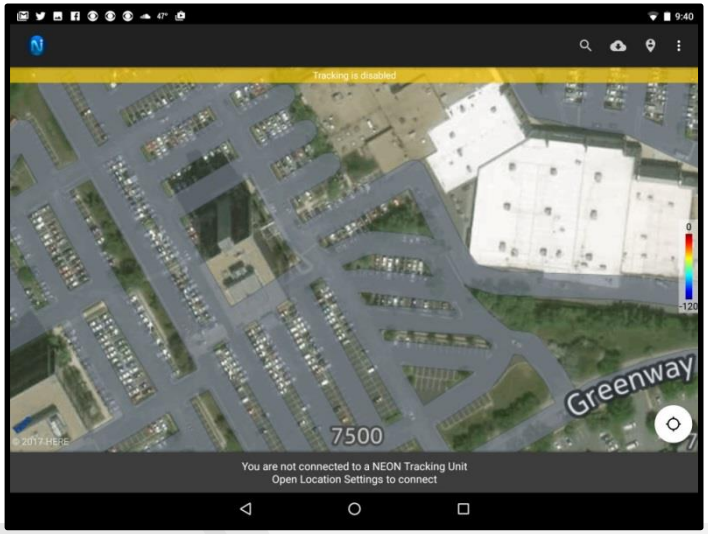


- Wait for the Installation to finish.
- Press “OPEN” to run Neon Signal Mapper application.

Installing Neon Signal Mapper

Android Device Installation





- Login using your Neon Email address and password.
  - Press “Sign in with Google” if you created your account with your Google credentials.

SETTING UP THE WIRELESS ROUTER

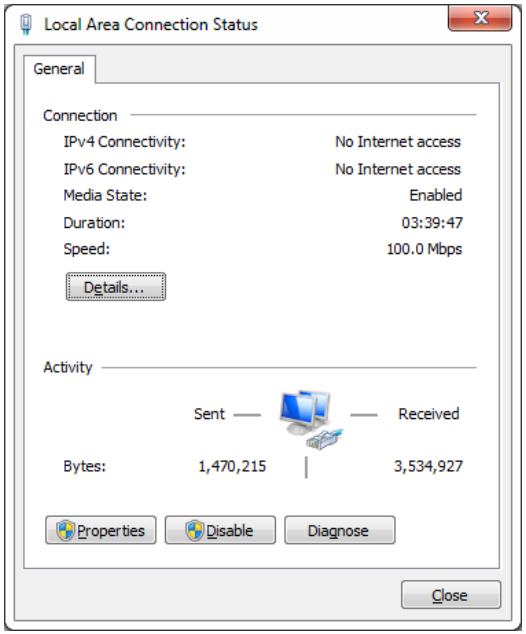
Setting up the Wireless Router

TP-LINK Setup

- You will use the TP-LINK router to connect wirelessly to the 3550R or 8800. This requires to router to be used in AP mode.
  - On the bottom of the router is a three position switch.
    - Select AP mode
- Power up the router
  - If the battery is not charged, connect to a power source using the USB cable.
- Connect the router to your PC with the supplied Ethernet cable
  - The next step is to setup the router.

Setting up the Wireless Router

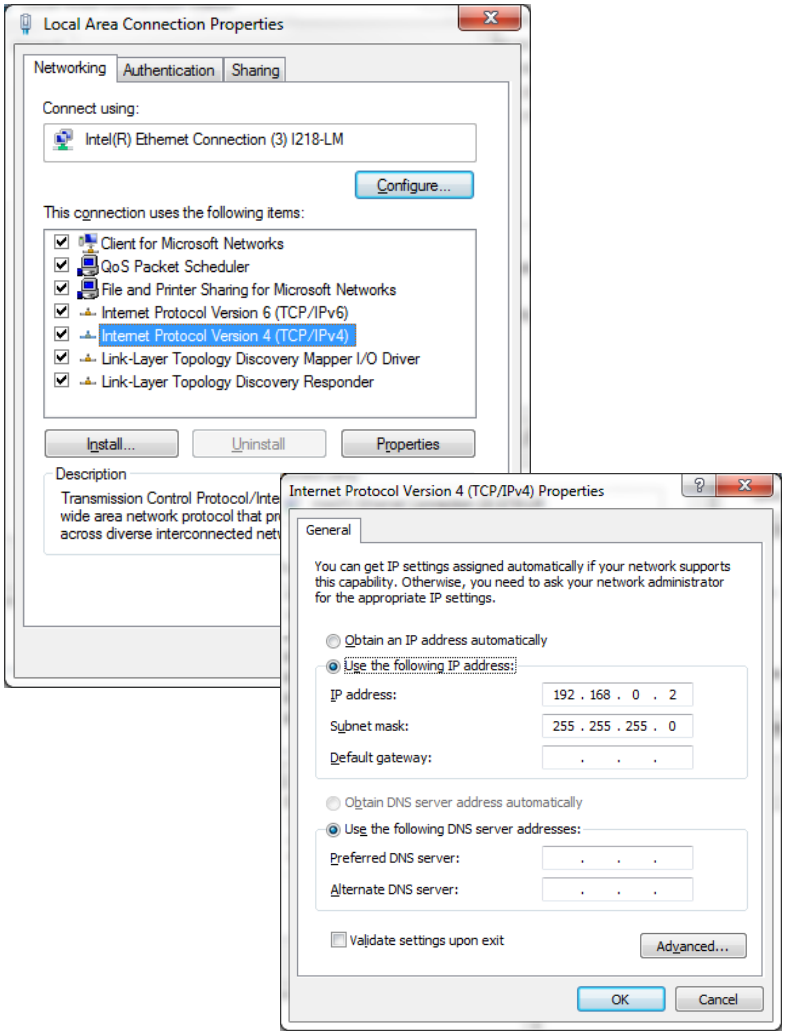
TP-LINK Setup



- To communicate with the router the first time, you will need to enter a fixed IP into your PC.
  - Open Network and Sharing Center (type “Network and Sharing Center” into the search field of the start menu.)
  - Click on “Local Area Connection”

Setting up the Wireless Router

TP-LINK Setup (continued)

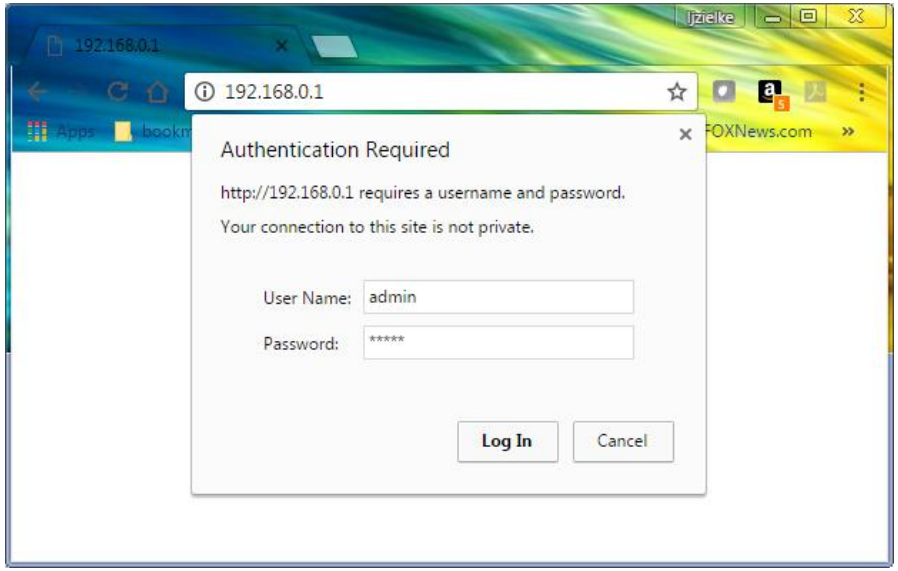


- Click on “Properties” and then double click on “Internet Protocol Version 4”
  - Set the IP Address to 192.168.0.2 and the Subnet mask to 255.255.255.0
  - Hit OK and then OK

Setting up the Wireless Router

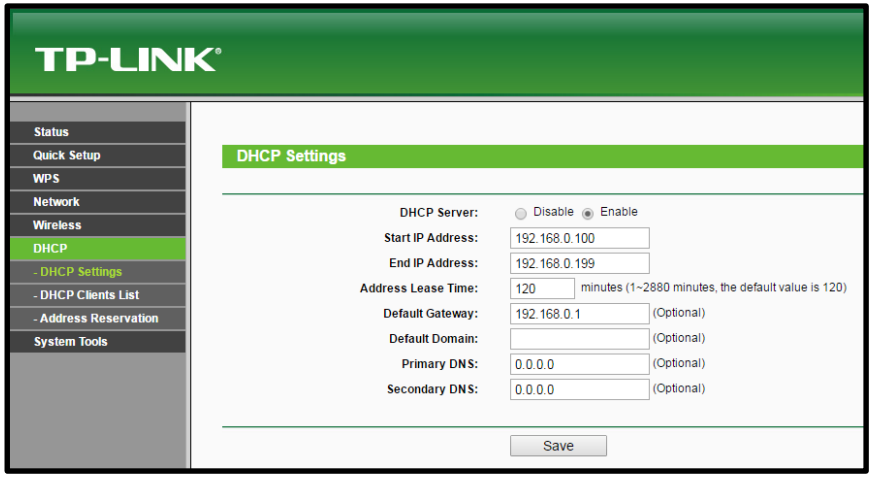
TP-LINK Setup

- On your PC, open up a browser
  - Enter 192.168.0.1 into the address field
  - Enter admin for both the user name and the password

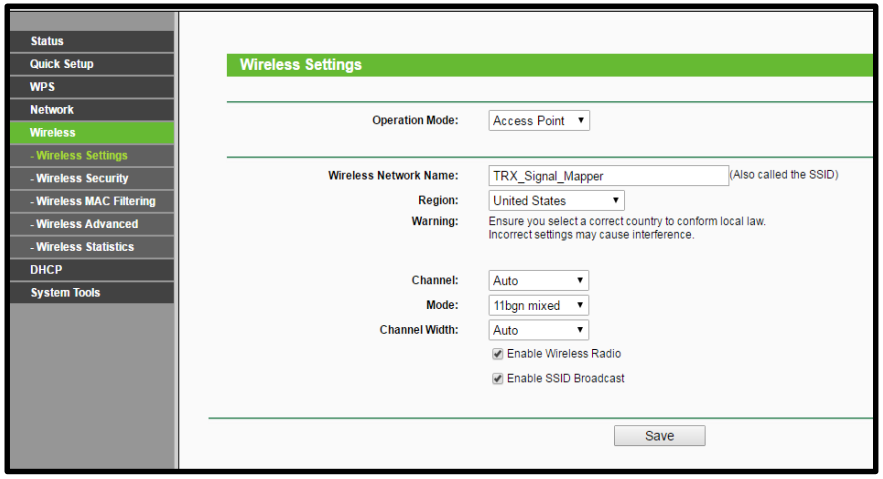


Setting up the Wireless Router

TP-LINK Setup

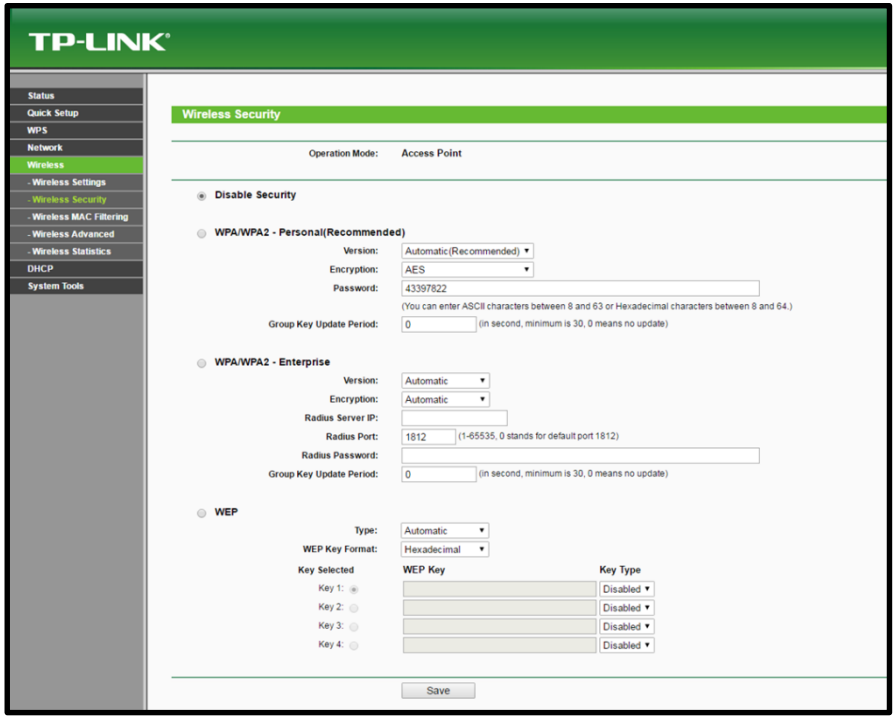


- Select the DHCP Settings screen.
  - Enable the DHCP Server.
- Select the Wireless Settings screen.
  - You may change the name of “Wireless Network Name” if desired.



Setting up the Wireless Router

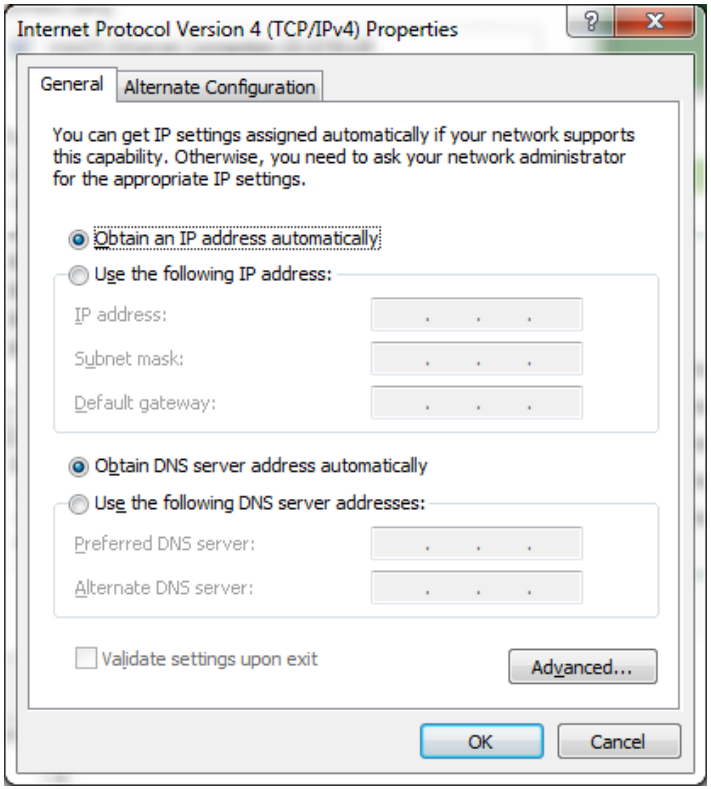
TP-LINK Setup



- Select the Wireless Security Screen.
  - Set the Security level as desired.

Setting up the Wireless Router

TP-LINK Setup

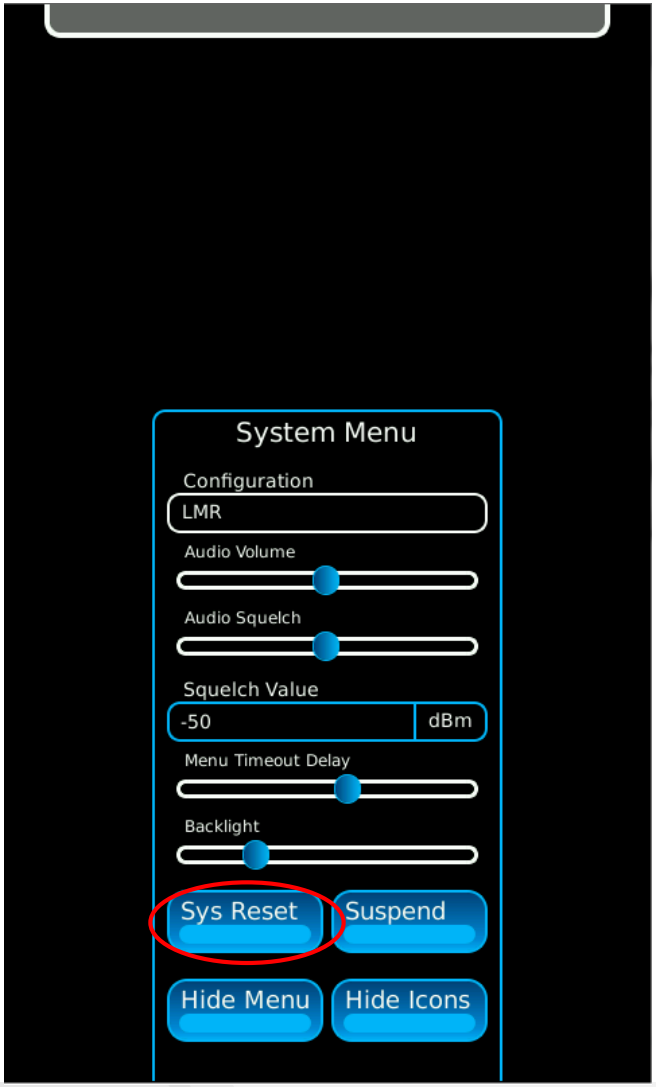


- Follow the TP-Link instructions to reboot the router.
  - After rebooting the router, recheck the router settings to make sure they are correct.
- Don’t forget to change your PC settings back to: “Obtain an IP address automatically”

3550R SETUP

3550R Setup

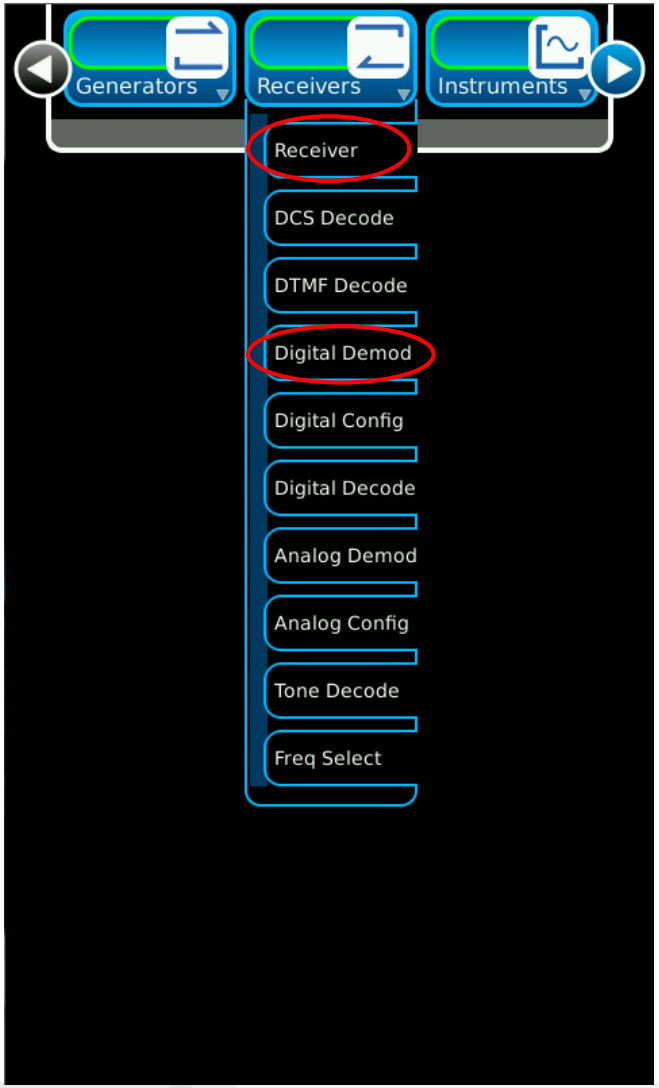
Configuring the 3550R for P25



- Before configuring the 3550R perform a system reset.
  - Press the “System Menu” button located below the display.
  - Make sure that the “Configuration” field is set to LMR.
  - Touch “Sys Reset” and follow the instructions.

3550R Setup

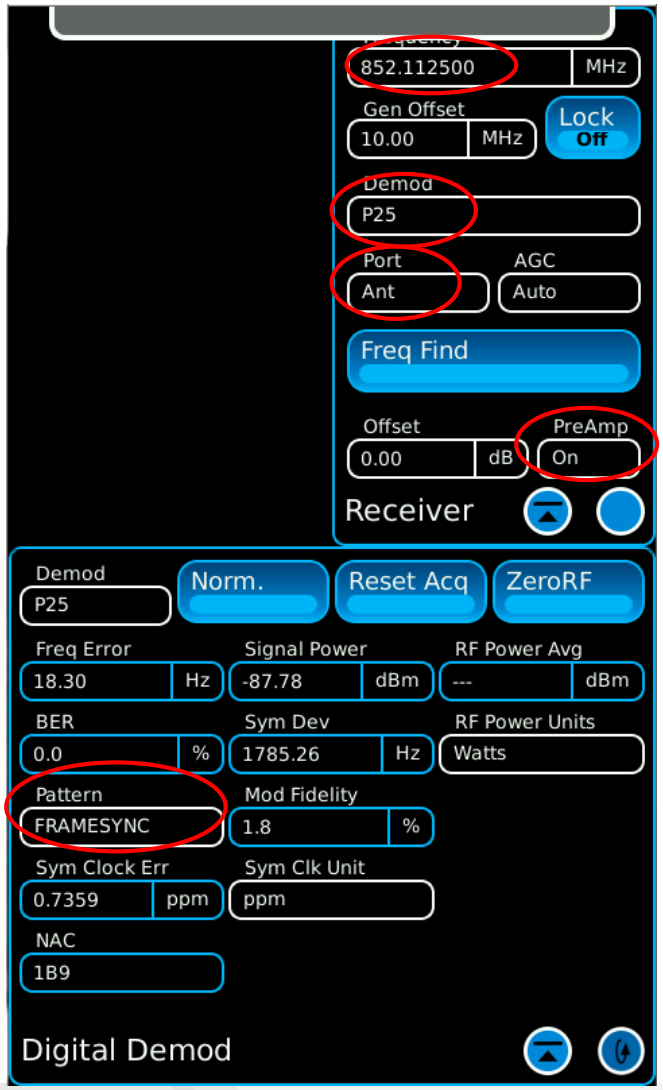
Configuring the 3550R for P25



- Next, configure the 3550R by selecting two windows from the “Receivers” drop down menu.
  - Receiver
  - Digital Demod
- Move the Receiver window to the upper right hand corner of the display.
- Move the Digital Demod window to the bottom half of the display.

3550R Setup

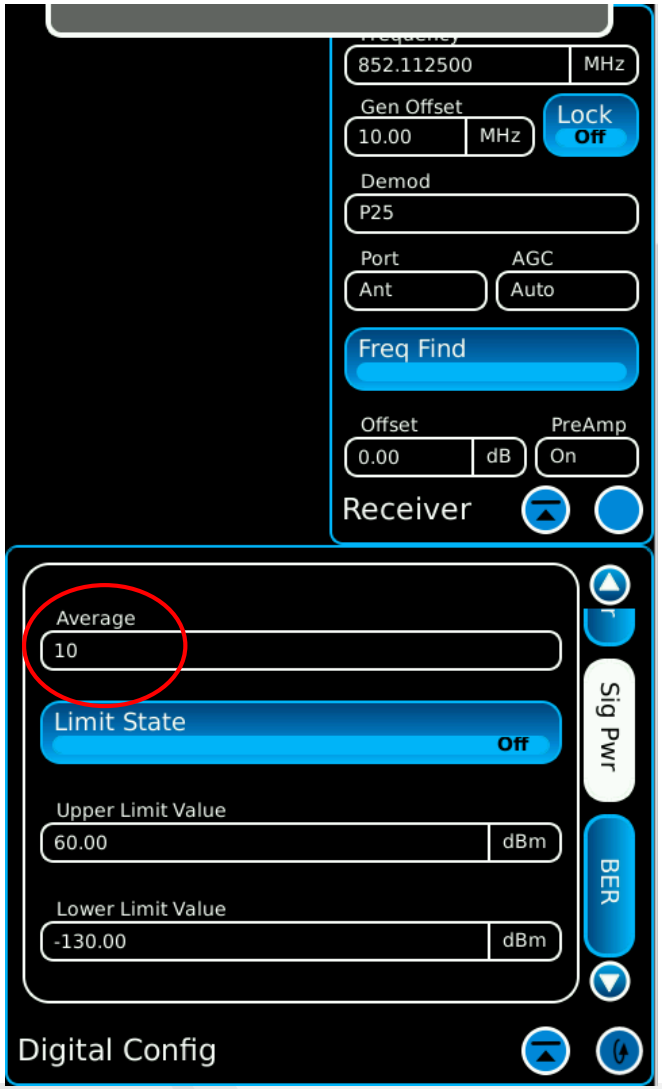
Configuring the 3550R for P25



- Expand the Receiver tile.
  - Enter the RF receive frequency.
  - Set the receive “Demod” field to P25.
  - Set the receive “Port” field to Ant.
  - Set “PreAmp” field to On.
- Select the “Pattern” field in Digital Demod window.
  - Set this field to FRAMESYNC in most cases. If you can put the P25 base station into a test mode, then you have the option of using one the P25 test patterns, for example the 1011 or O.153 pattern.

3550R Setup

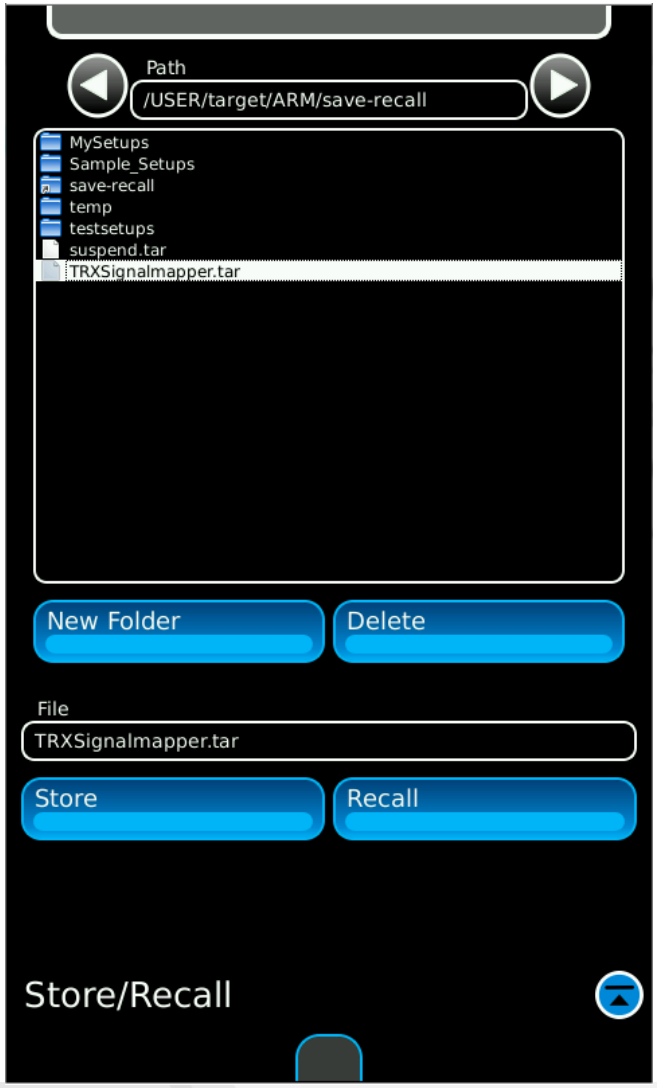
Configuring the 3550R for P25



- From the “Receivers” drop down menu, select the “Digital Config” window.
- Set the number of measurements to average by setting the “Average” field to 10 for:
  - Sig Pwr
  - BER
  - Mod Fidly

3550R Setup

Configuring the 3550R for P25



- Save your setup.
  - Select the Store/Recall window from the Utilities drop down menu.
  - Enter a file name (no spaces in name).
  - Select the Store button.
- Next time you can simply recall this setup.

3550R Setup

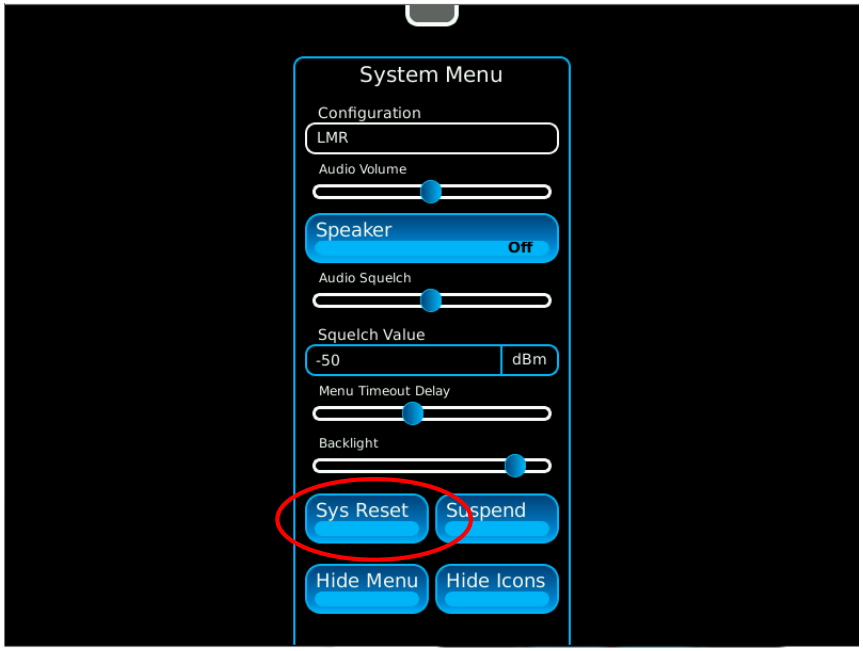
Other Configurations for the 3550R

- You can also configure the 3550R in the other supported Digital Modes or FM.
  - If Demod is set DMR, NXDN, or dPMR
    - Measures FSK Error, Symbol Deviation, and BER
  - If Demod is set to FM
    - Measures RSSI
    - The signal does not need to be FM modulated. We will make RSSI measurements on any type of signal present.

8800 SETUP

8800 Setup

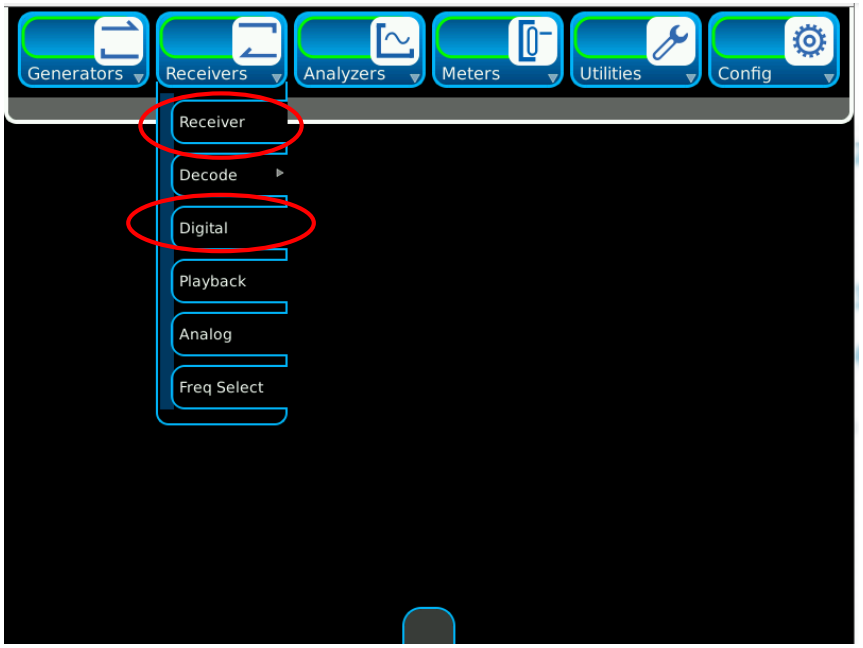
Configuring the 8800 for P25



- Before configuring the 8800 perform a system reset.
  - Press the “System Menu” button located below the display.
  - Make sure that the “Configuration” field is set to LMR.
  - Touch “Sys Reset” and follow the instructions.

8800 Setup

Configuring the 8800 for P25



- Next, configure the 8800 by selecting two windows from the “Receivers” drop down menu.
  - Receiver
  - Digital
- Move the Receiver window to the upper right hand corner of the display.
- Move the Digital window to the bottom left hand corner of the display.

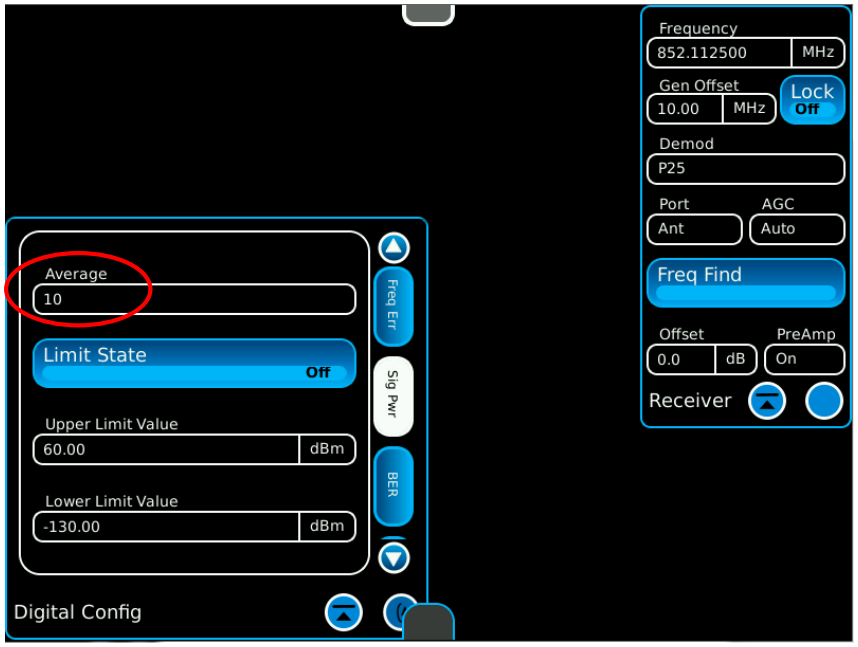
8800 Setup

Configuring the 8800 for P25

- Expand the Receiver tile.
  - Enter the RF receiver frequency.
  - Set the receive “Demod” field to P25.
  - Set the receive “Port” field to Ant.
  - Set the “PreAmp” field to On.
- Select the “Pattern” field in Digital Demod window.
  - Set this field to FRAMESYNC in most cases. If you can put the P25 base station into a test mode, then you have the option of using one the P25 test patterns, for example the 1011 or O.153 pattern.

8800 Setup

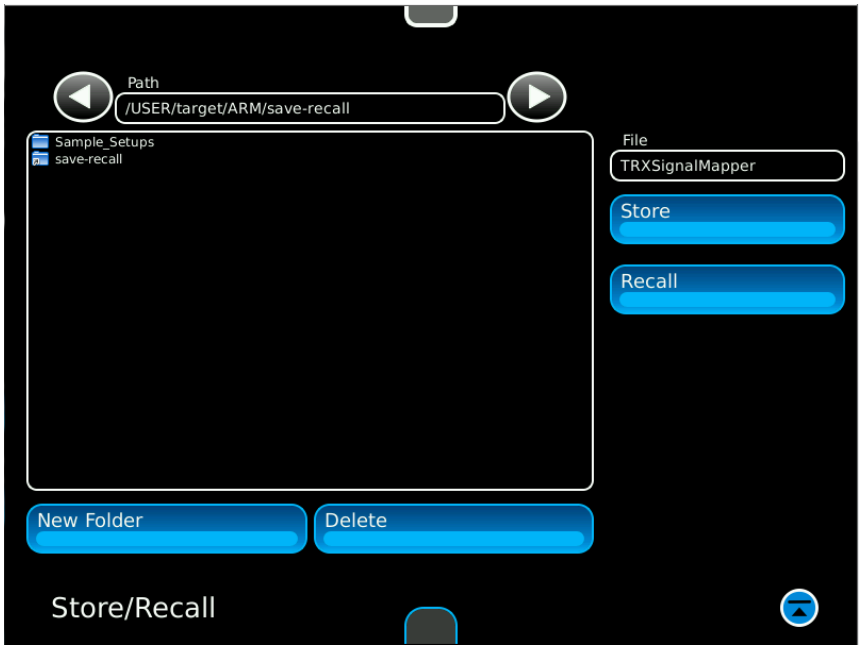
Configuring the 8800 for P25



- From the “Config” drop down menu, select the “Digital” window.
- Set the number of measurements to average by setting the Average field to 10 for:
  - Sig Pwr
  - BER
  - Mod Fidly

8800 Setup

Configuring the 8800 for P25



- Save your setup.
  - Select the Store/Recall window from the Utilities drop down menu.
  - Enter a file name (no spaces in name)
  - Select the Store button.
- Next time simply recall this setup.

8800 Setup

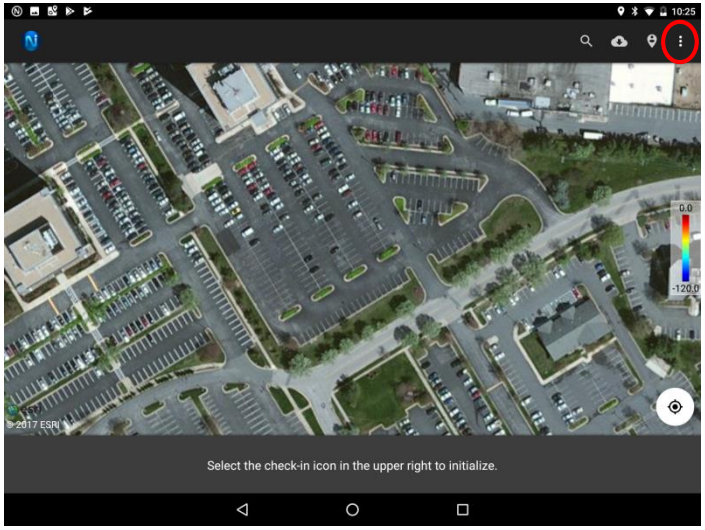
Other Configurations for the 8800

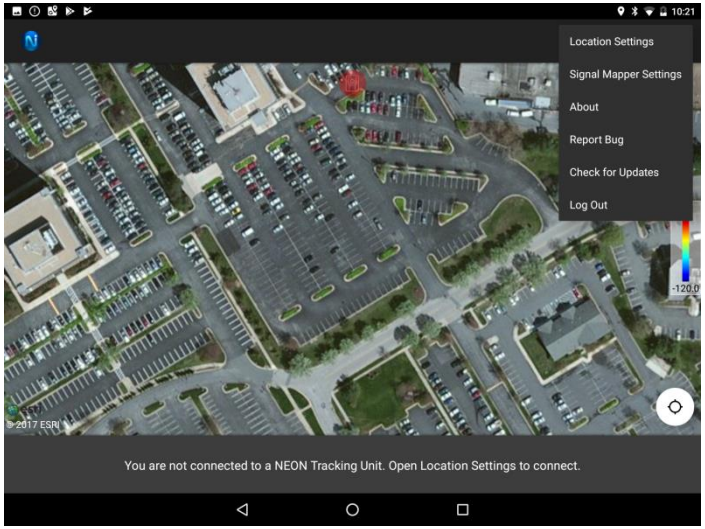
- You can also configure the 8800 in the other supported Digital Modes or FM.
  - If Demod is set DMR, NXDN, or dPMR
    - Measures FSK Error, Symbol Deviation, and BER
  - If Demod is set to FM
    - Measures RSSI
    - The signal does not need to be FM modulated. We will make RSSI measurements on any type of signal present.

SETTING UP BLUETOOTH ON THE ANDROID

Neon Signal Mapper

Bluetooth setup

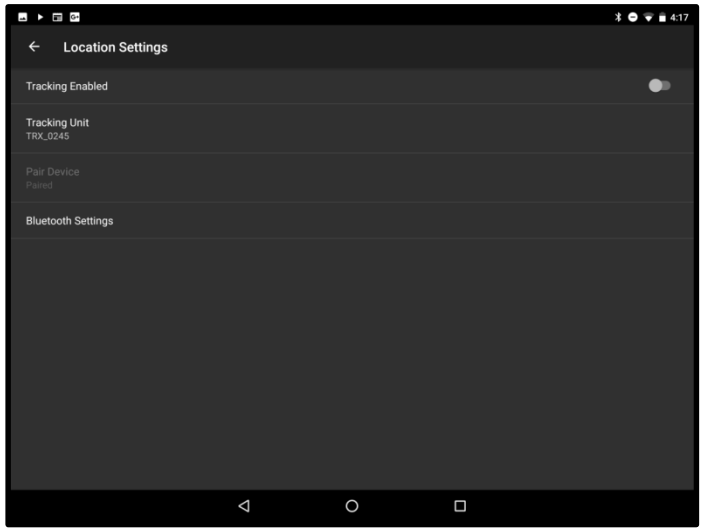


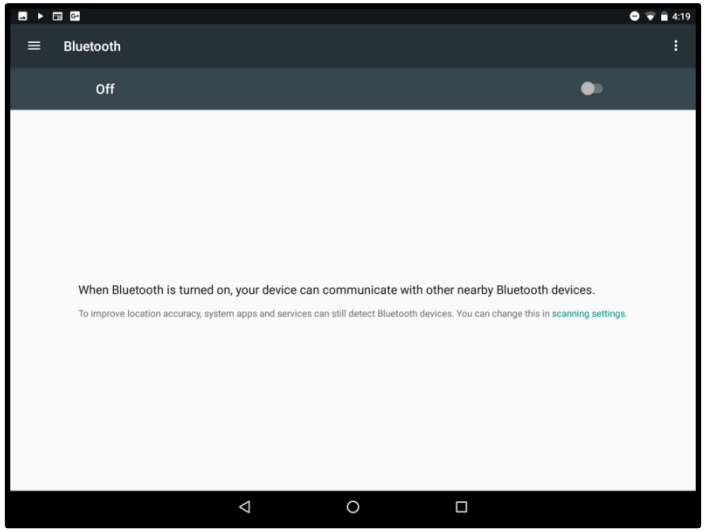


- The first time that we use Neon Signal Mapper we must setup the connection to the TRX tracking unit.
  - We use Bluetooth to connect the Android device to the TRX Tracking Unit.
  - To connect Bluetooth, first touch the 3 dots in the upper right hand corner and then touch “Location Settings”.

Neon Signal Mapper

Bluetooth setup

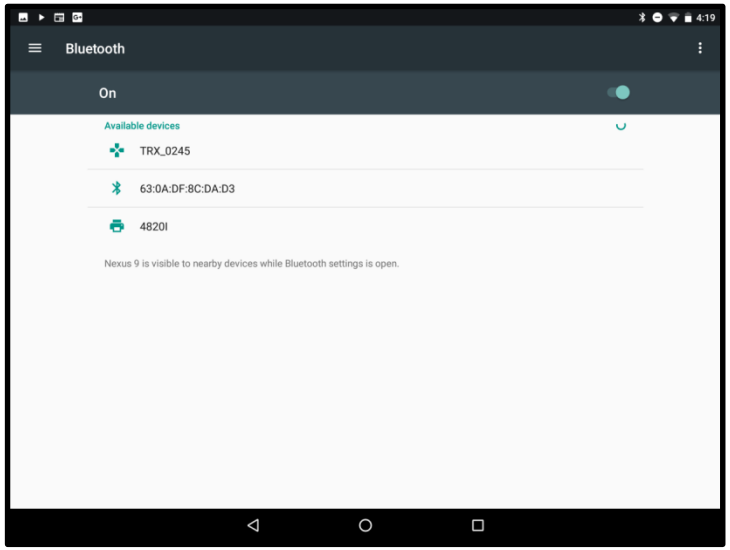


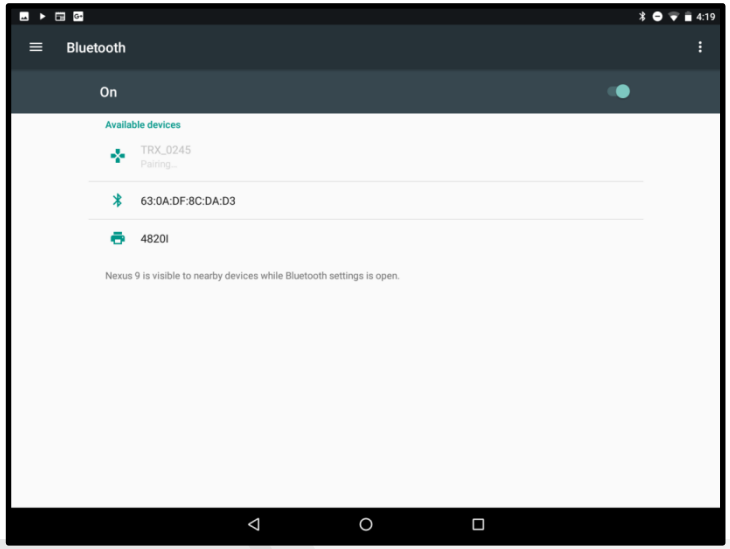


- In the Location Settings screen disable “Tracking Enabled” and then press “Bluetooth Settings”.
  - In the Bluetooth screen, make sure that Bluetooth is enabled.

Neon Signal Mapper

Bluetooth setup

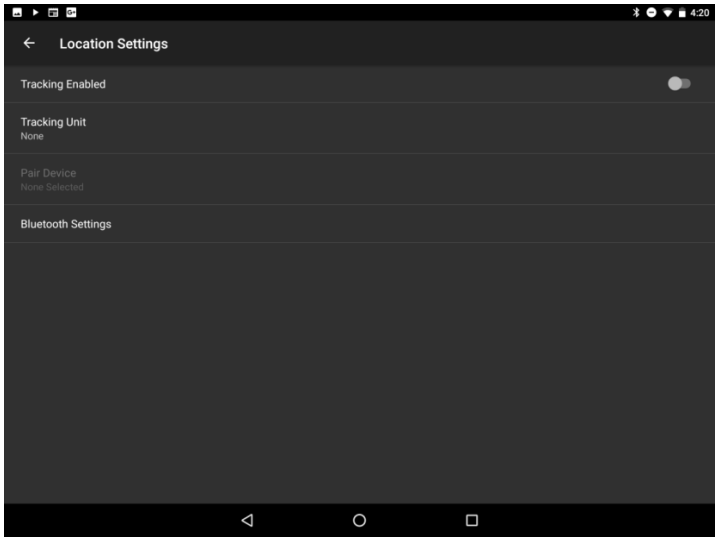


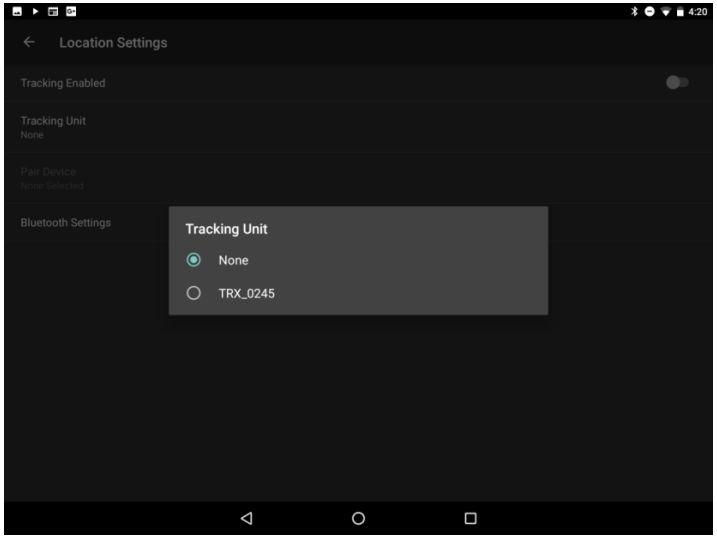


- If your tracking unit is not already paired, wait for your tracking unit S/N to be displayed as an available device and then select.
- Wait for the device “Pairing” to complete and then press the back arrow

Neon Signal Mapper

Bluetooth setup

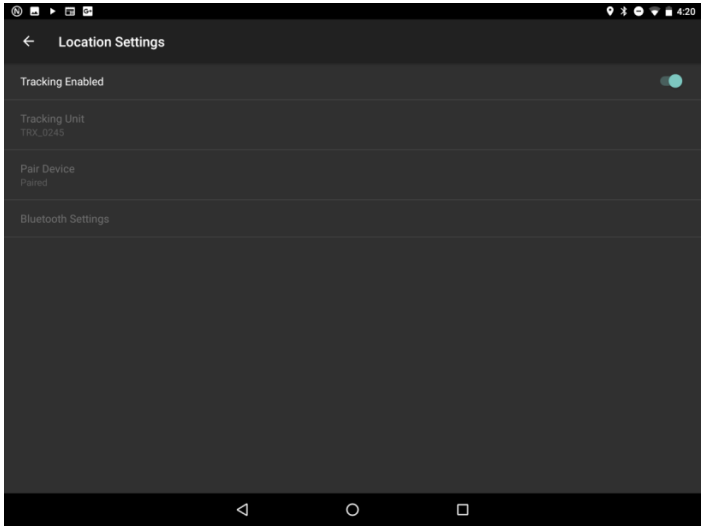


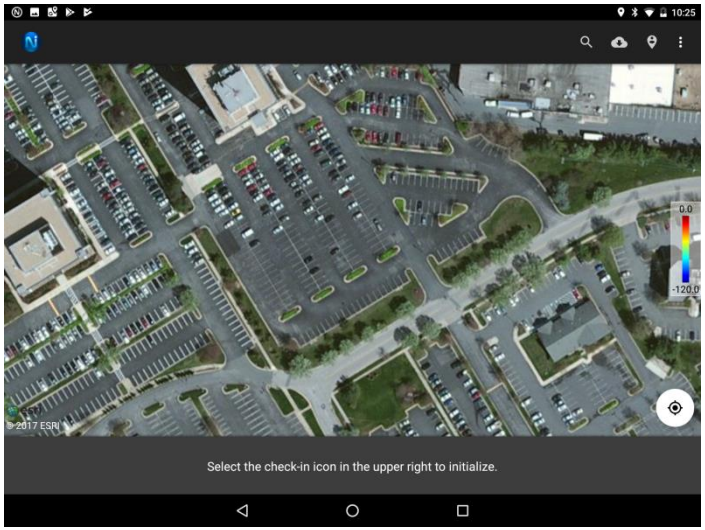


- In the Location Settings screen select the “Tracking Unit” field.
- Select your tracking unit, identified by TRX_ followed by the serial number on your tracking unit device.

Neon Signal Mapper

Bluetooth setup





- Enable the “Tracking Enabled” field.
- Press the back arrow to return to the main Neon Screen.
- The red dot should be gone. You have successfully connected to the tracking unit!
  - The LED on the tracking unit should now be blinking blue.
- This setup only needs to be performed the first time or when switching to a different tracking unit.

SETTING UP CONNECTION TO THE TEST SET

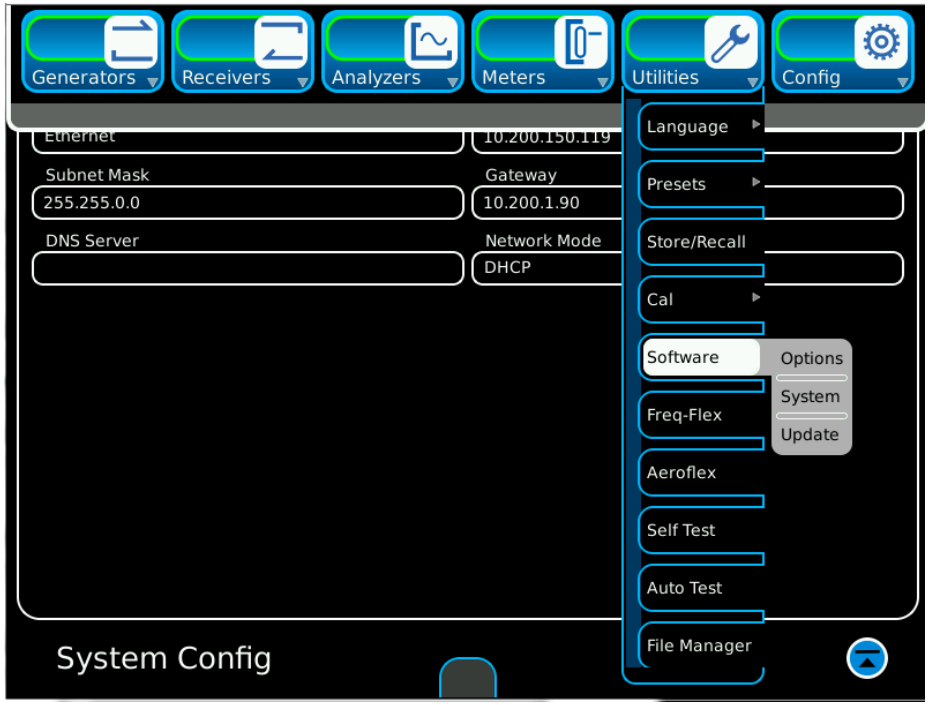
Setting up connection to the test set

Connecting the router to the test set

- Plug the router into the 3550R or 8800.
  - Connect the Ethernet port of the 3550R/8800 to the Ethernet port on the router.
  - The USB port of the router can also be connected to the USB port on the 3550R or 8800.
  - Turn on the test set and router.

Setting up connection to the test set

Configure the wireless settings of the 8800



- Select “Software / System” from the “Utilities” drop down menu.
  - Select the “Remote” tab.
  - Set the “Network Mode” field to DHCP.
    - TP-LINK router should assign IP Address to the 8800.
    - Note: if it doesn’t assign an IP Address, then toggle Network Mode.
- Make a note of the IP Address

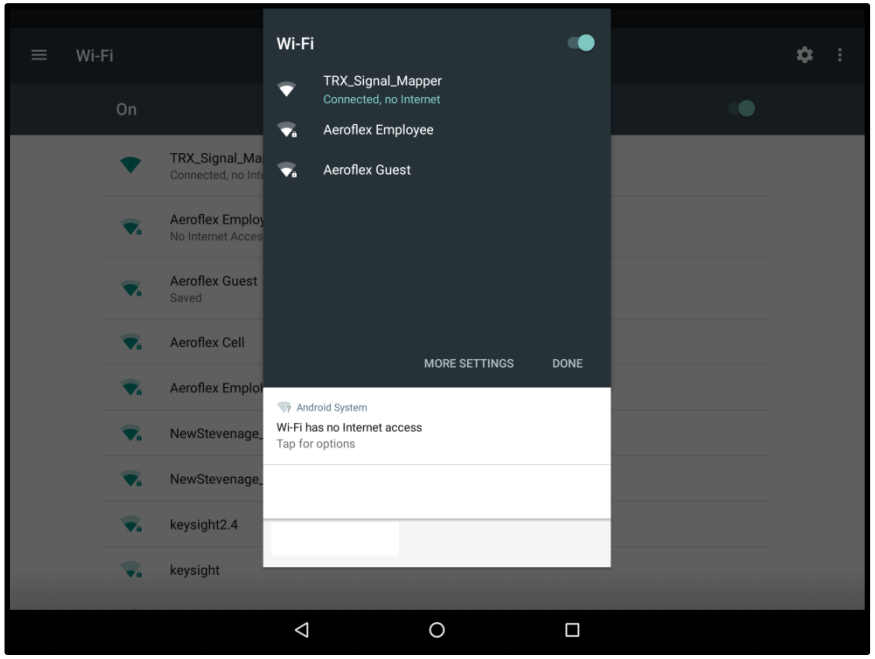
Setting up connection to the test set

Configure the wireless settings of the 3550R

- Select “System Config” from the “System” drop down menu.
  - Select the “Remote” tab.
  - Set the “Network Mode” field to DHCP.
    - Linksys router should assign IP Address to the 3550R.
    - Note: if it doesn’t assign an IP Address, then toggle “Network Mode”.
- Make a note of the IP Address

Setting up connection to the test set

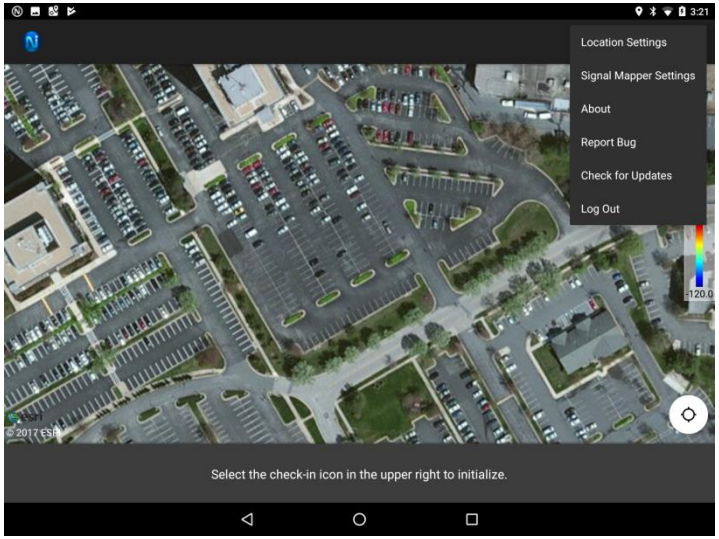
Selecting SSID of Router

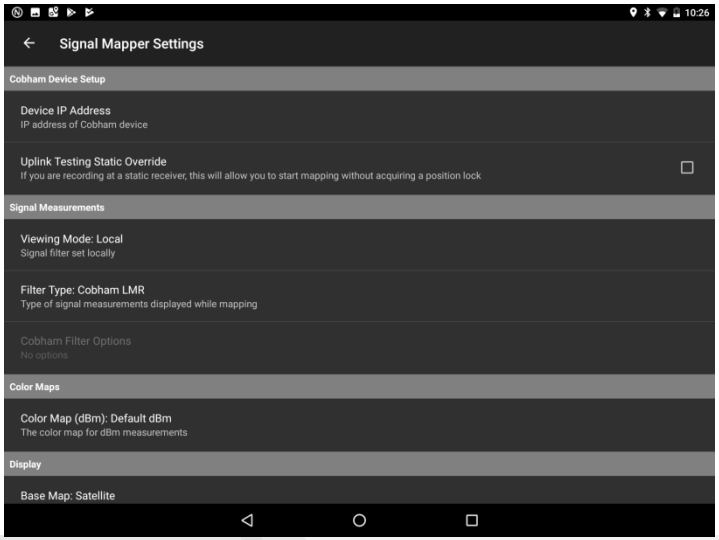


- Select the Wi-Fi Configuration screen on the Android device.
- Select the previously chosen SSID for your TP-LINK router from the list.

Setting up connection to the test set

Setting up the IP Address

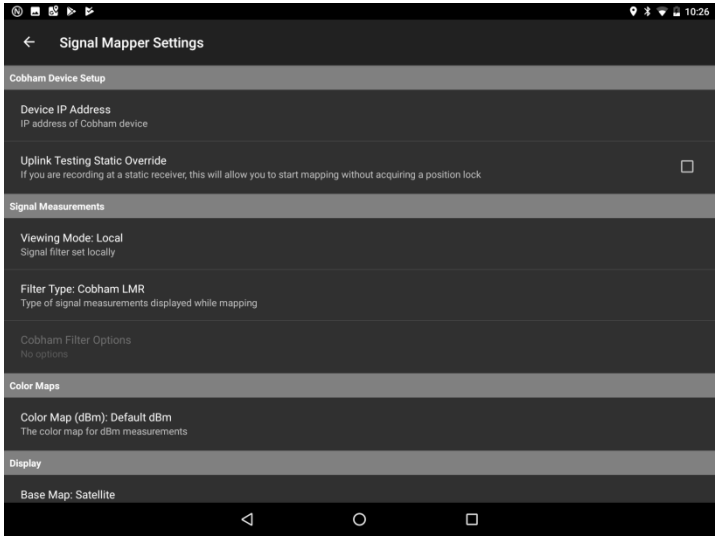


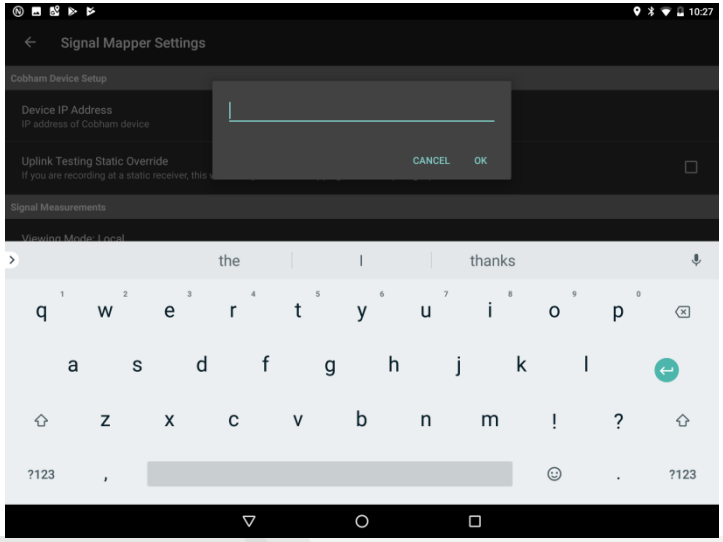


- Run Neon Signal Mapper on your Android phone or tablet.
- Click on the Configuration Menu (three dots in upper right hand corner) and then touch “Signal Mapper Settings”.

Setting up connection to the test set

Setting up the IP Address



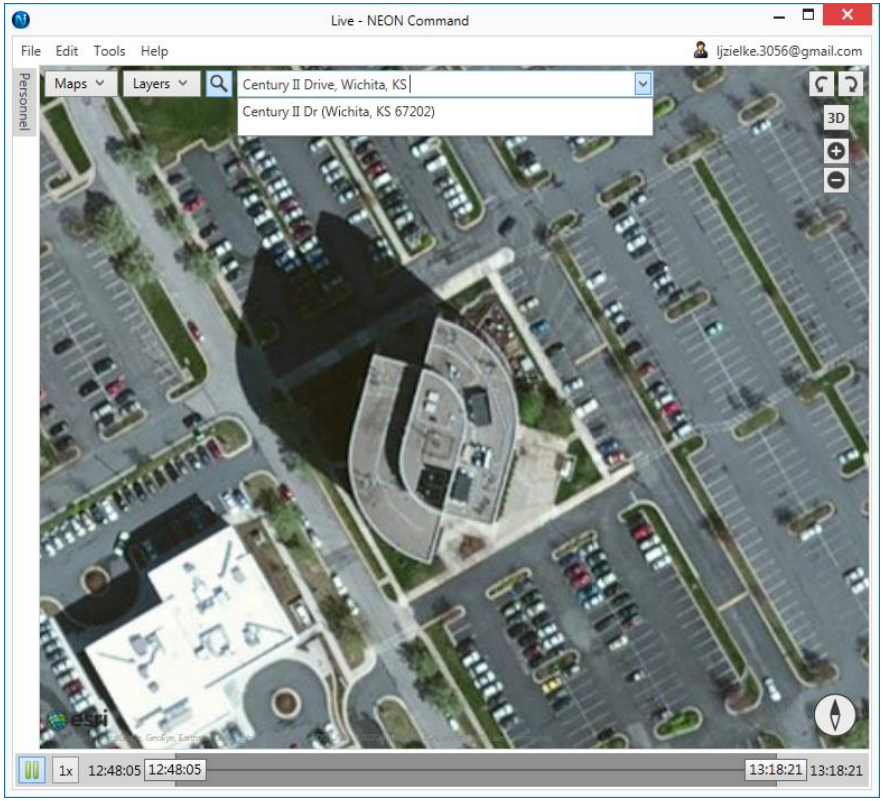


- Click on “External Device IP Address”.
  - Enter the IP Address of the 3550R or 8800.
  - Click OK.
- On this screen, you may also:
  - Select the Type of Signal Measurements to be shown on the Neon screen.
  - Select the Color Map.
  - Select the Base Map.
- Press the back arrow to return to the Signal Mapper app.

NEON COMMAND SITE PLANNING

Neon Command

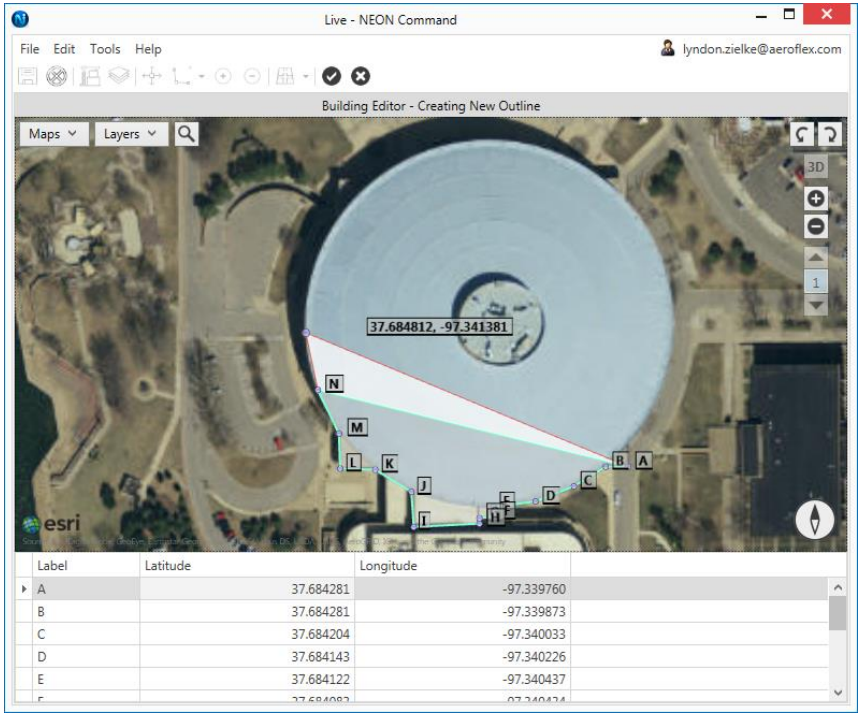
Site Planning – Select Building



- Open the Neon Command software and login using the user name and password that you selected when you registered.
  - Select the building that you would like to map.
  - Click on the search icon located on the top left corner of the map.
  - When a text input box appears, enter the address of the building.

Neon Command

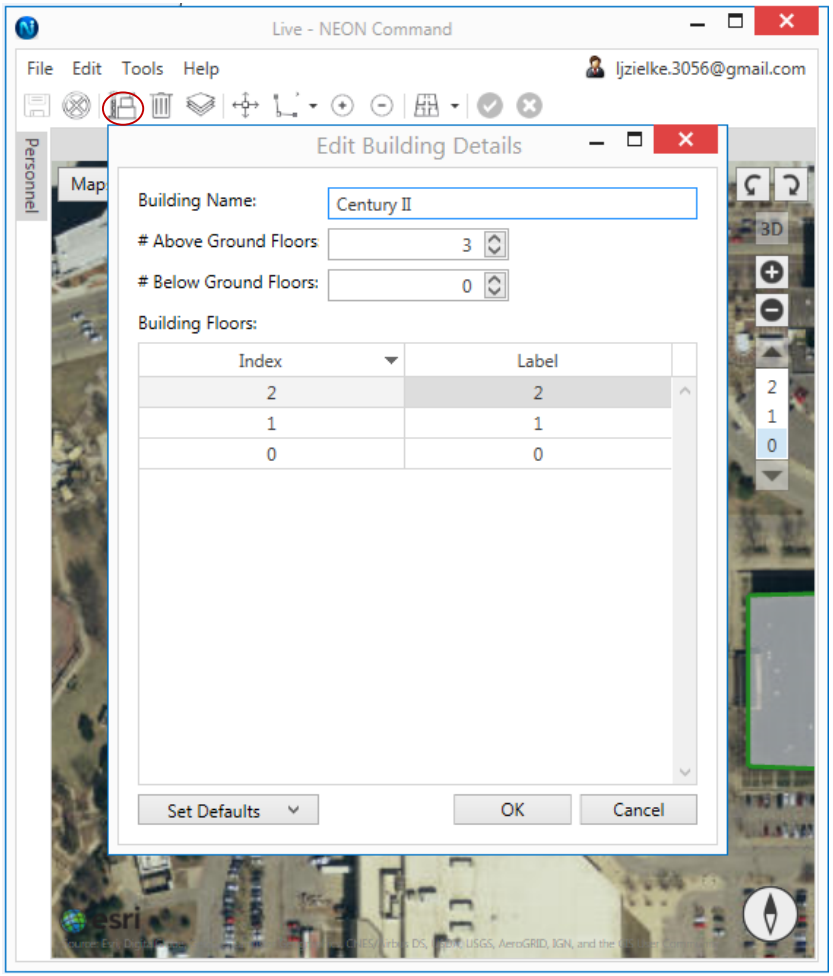
Site Planning – Creating the building outline



- Create a simple building outline
  - Click on the Tools/Create Building
  - Click on the map to set vertices of the building outline and press enter when done.

Neon Command

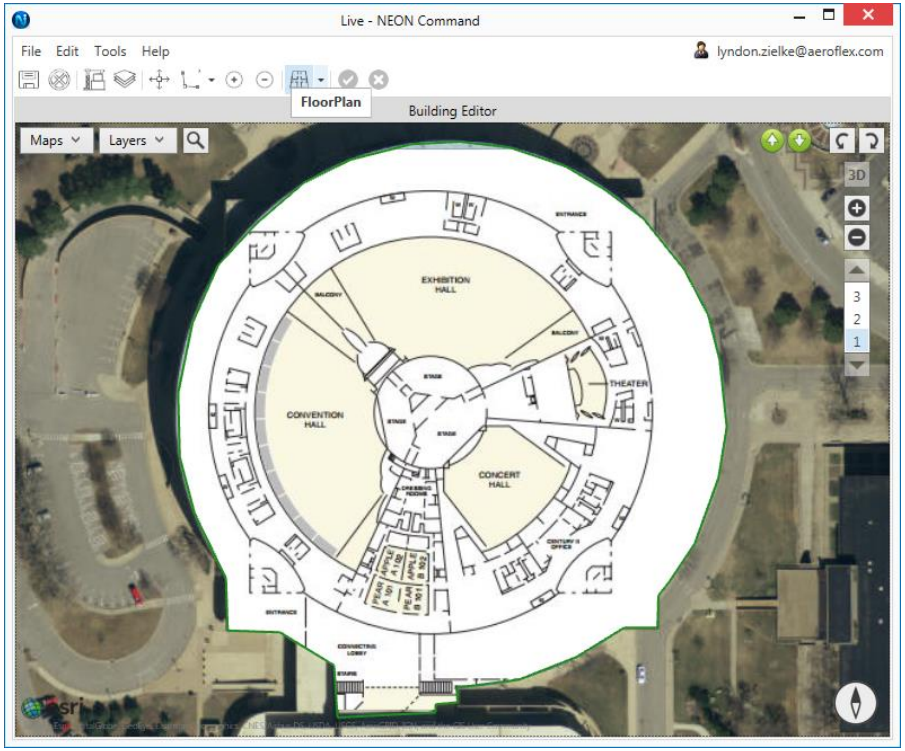
Site Planning – Creating the building outline



- Edit Building Details
  - Click on the Edit Building Details icon (circled on picture)
  - Enter the Building Name
  - Enter the number of Above Ground Floors
  - Enter the number of Below Ground Floors
  - Click on OK to accept

Neon Command

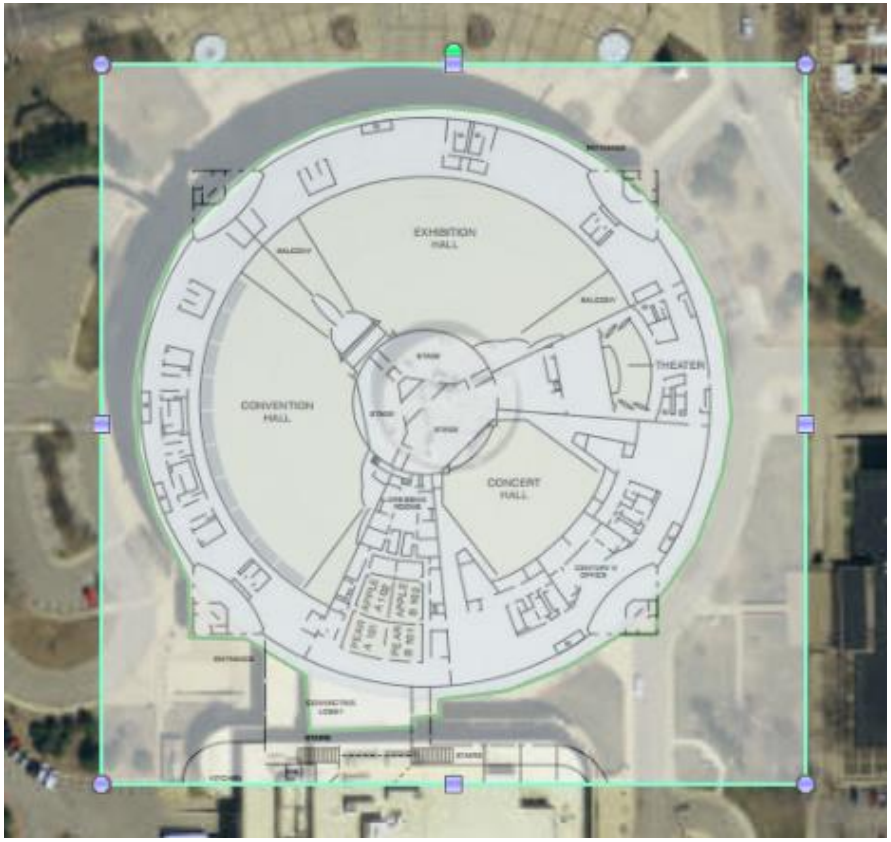
Site Planning – Adding a floor plan



- Add floor plans to your building outline
  - Select the floor that you want to attach a floor plan to and then click on the “Floor Plan” icon.
  - Select a .png or .jpeg from the file selector

Neon Command

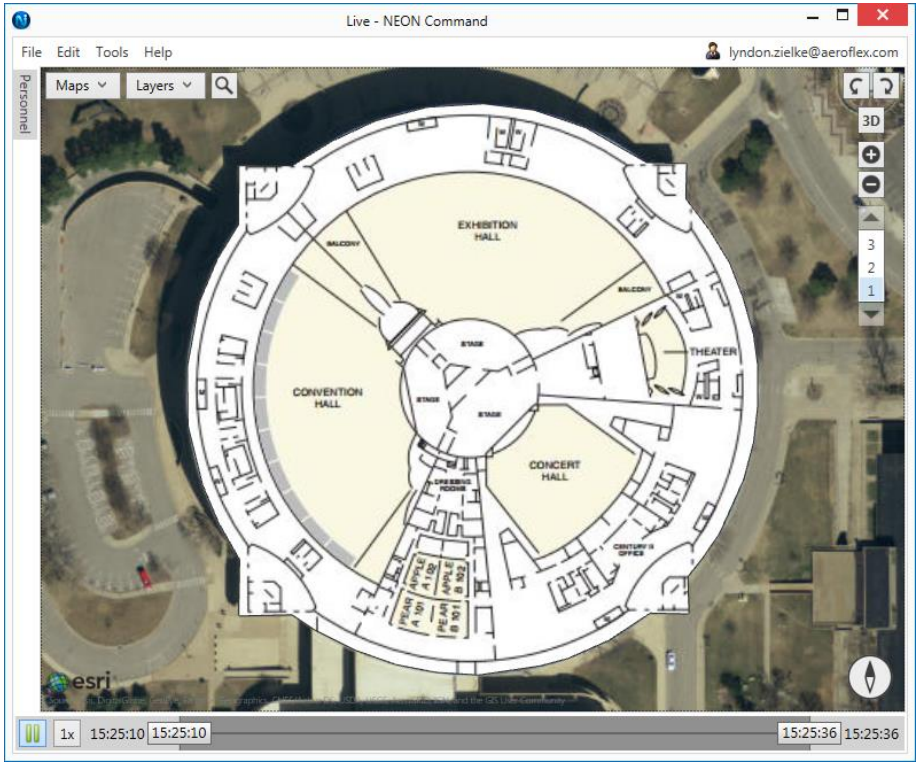
Site Planning – Adding a floor plan



- Editing floor plans in your building outline
  - Right click on the floor plan and then select Floorplan/Edit to access the floorplan editing tools.
    - Click and drag the green circle to rotate the floor plan image.
    - Click and drag a purple circle on the corner of the floor plan to scale the image.

Neon Command

Site Planning – saving to cloud

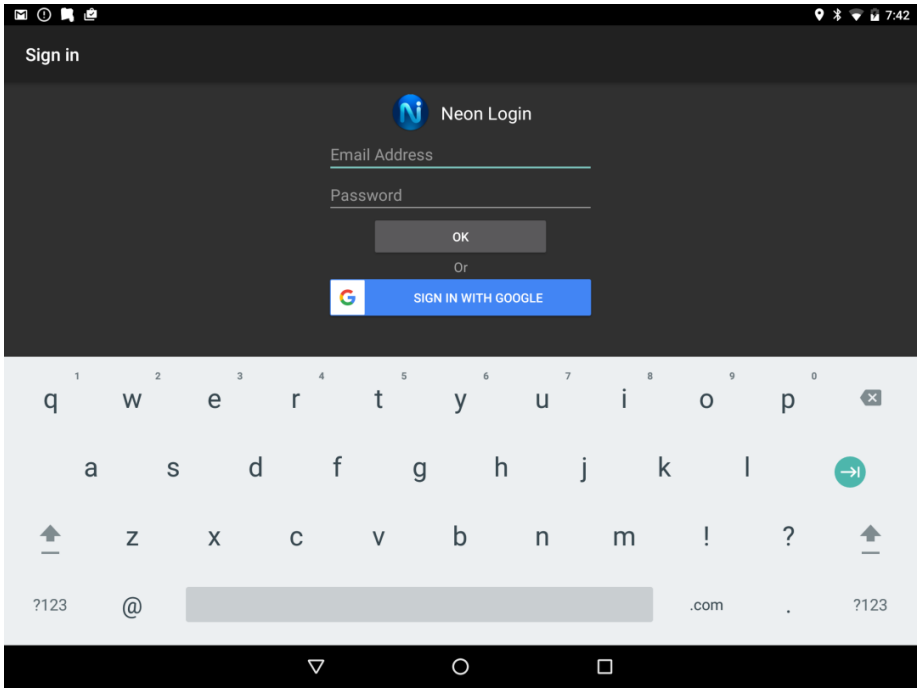


- Press the Enter key to close the floor plan tools.
- Click on File->Save and then click on "Yes" in the following pop up to save your changes.
  - If you are signed in, the building model will be saved to the Neon account on the cloud.

NEON SIGNAL MAPPER COLLECTING DATA

Neon Signal Mapper

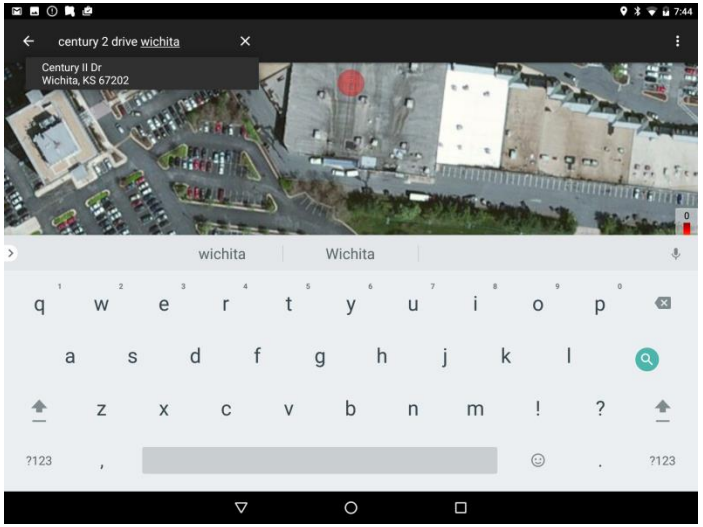
Preparing for Collecting Data

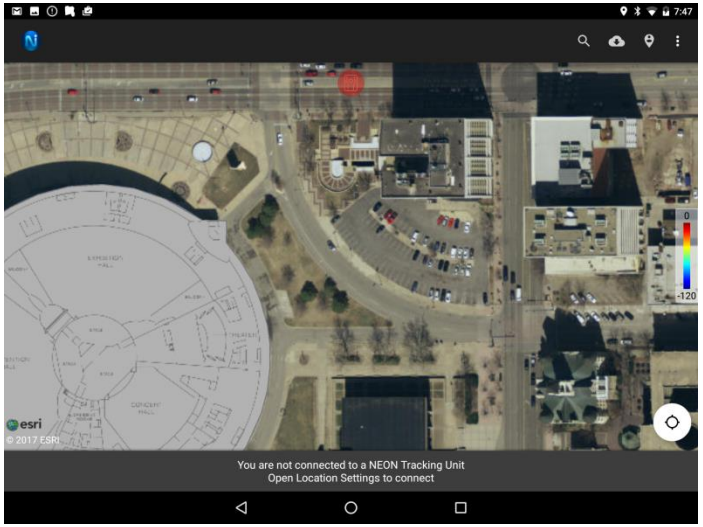


- These steps require Internet Access
  - Startup the Neon Signal Mapper application
  - Log in with your Neon email or Google account when prompted (unless already logged in).
    - Enter your Email address and Password or press “Sign in with Google” for Google accounts.

Neon Signal Mapper

Preparing for Collecting Data





- To find the building that you want to map:
  - Press the search icon in the top bar. An input text field will appear.
  - Enter the address of the building.
- The building outline created using the Neon Command software should appear on the map.
  - If the building does not appear, press the synchronize button.
- Select your building by pressing it (it may already be selected).

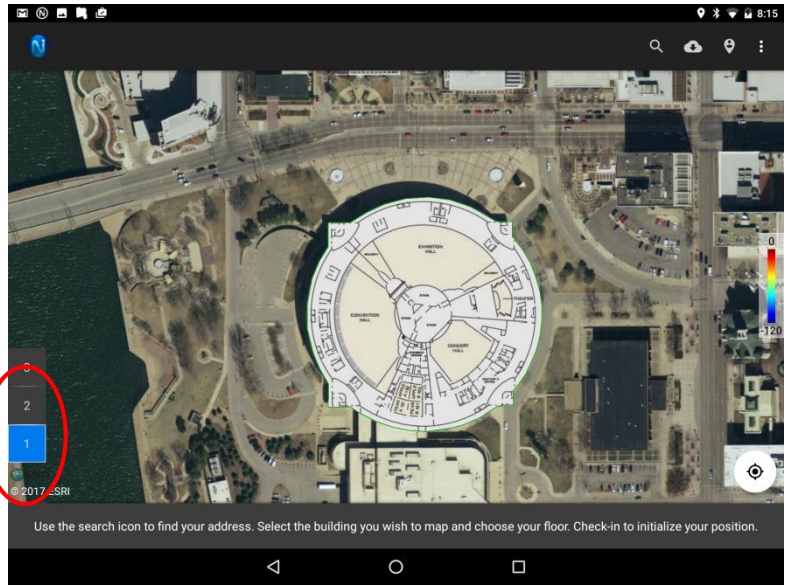
Neon Signal Mapper

Preparing for Collecting Data

- Setup the Bluetooth Connection to the tracking unit
- Setup the Wi-Fi connection to the 3550R or 8800

Neon Signal Mapper

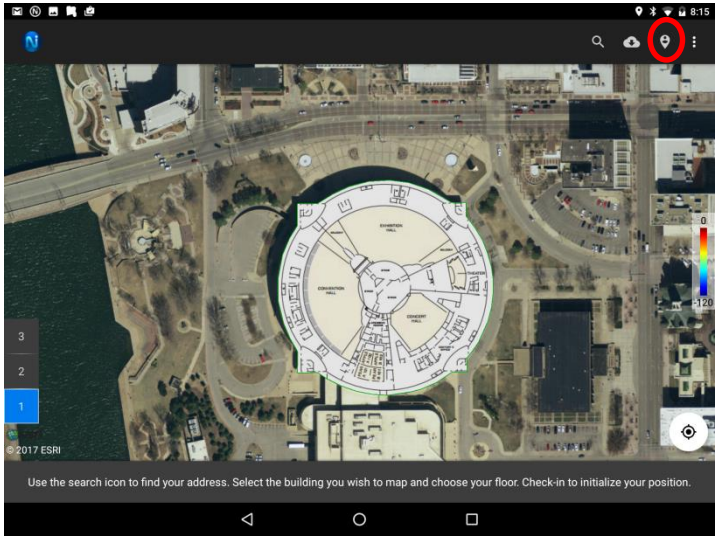
On Site Signal Mapping

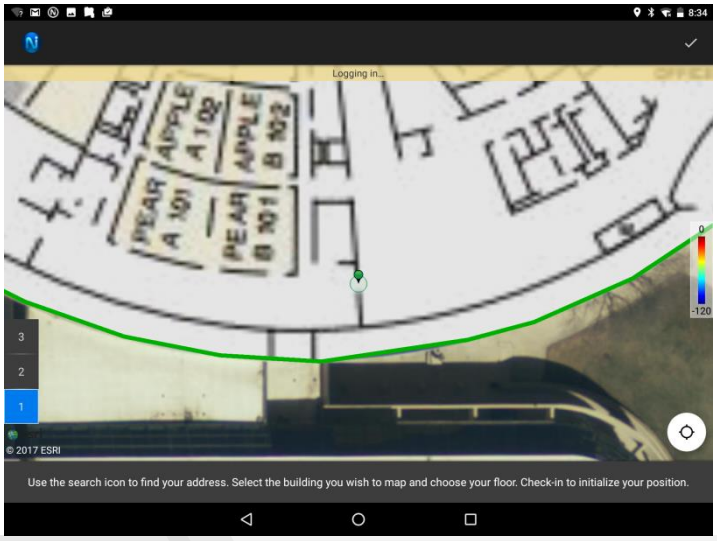


- These steps do not require internet access
  - Attach the Tracking Unit to your waist using the belt clip.
  - Place as close to front and center as possible.
  - Select the floor where you are starting using the floor selector on the right of the screen.

Neon Signal Mapper

On Site Signal Mapping

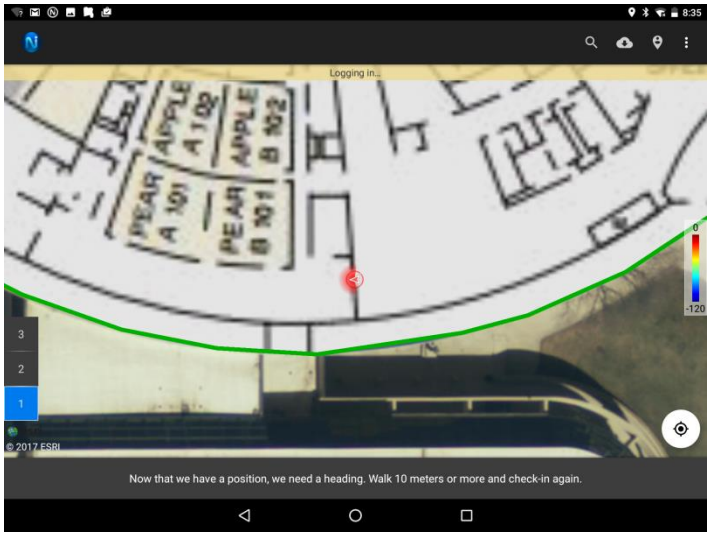




- Check-in at your current location.
  - Press the "check-in" icon in the upper right hand corner and then drag the map to place the green marker at your current location.
  - Press the check mark in the upper right corner to complete the check-in.

Neon Signal Mapper

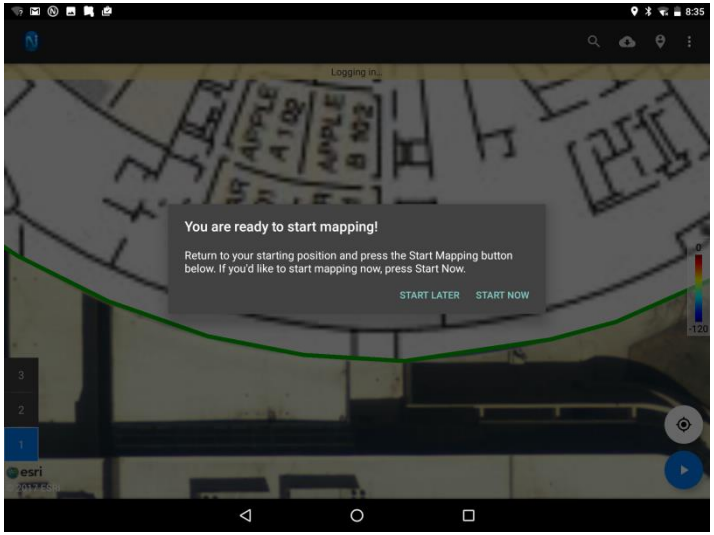
On Site Signal Mapping

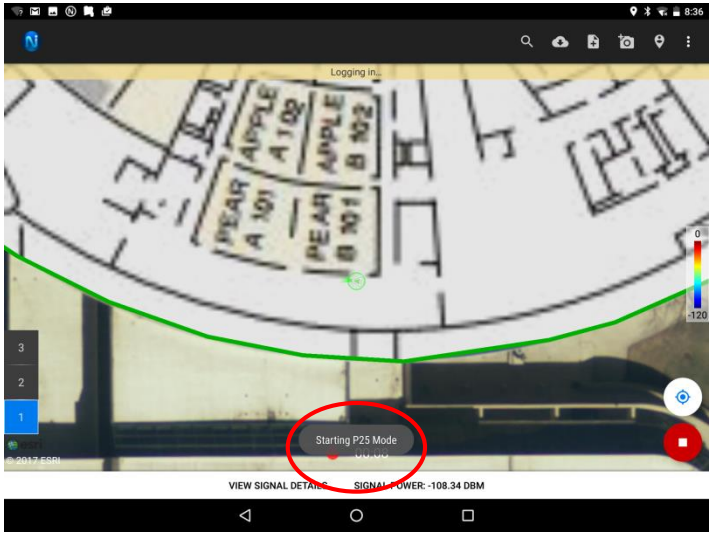


- Walk straight at least 10 meters
  - A red circle showing your progress shows that the heading is unknown
- Check in again
  - Press the "check-in" icon in the upper right hand corner and then drag the map to place the green marker at your current location.
  - Press the check mark in the upper right corner to complete the check-in.

Neon Signal Mapper

Collecting Data

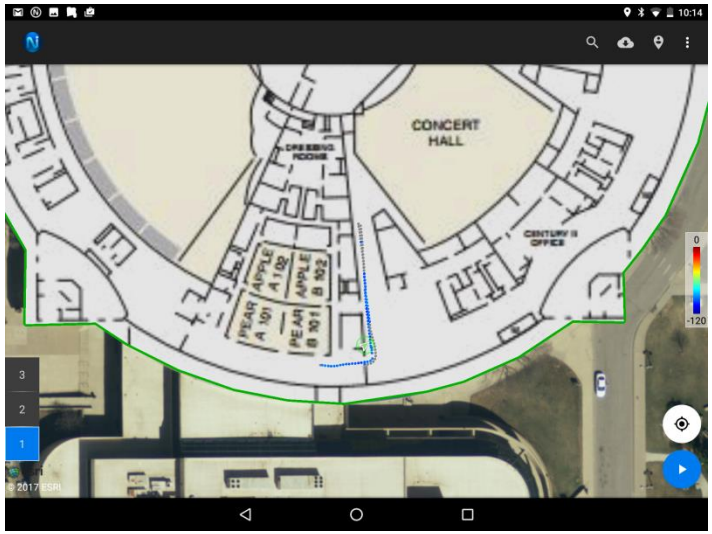


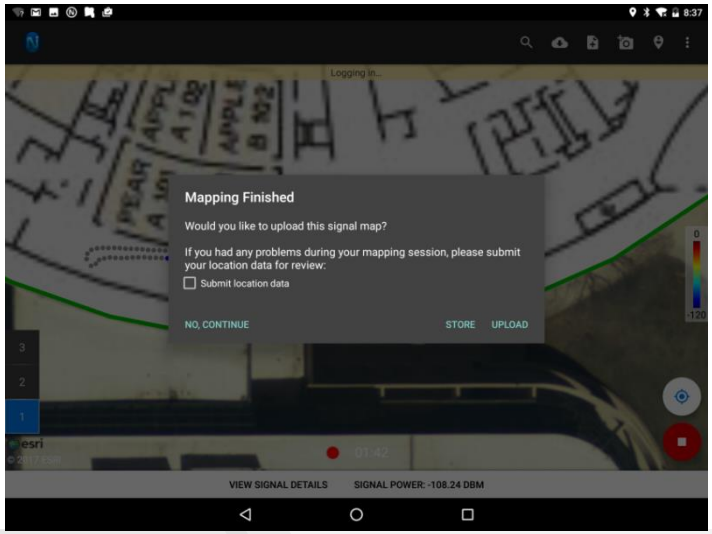


- Press "Start Now" to start collecting data.
  - “Starting P25 Mode” will momentarily be displayed at the bottom of the Android display.
  - The bottom of the display shows the Signal Power every time a measurement is taken from the Test Set.

Neon Signal Mapper

Collecting Data

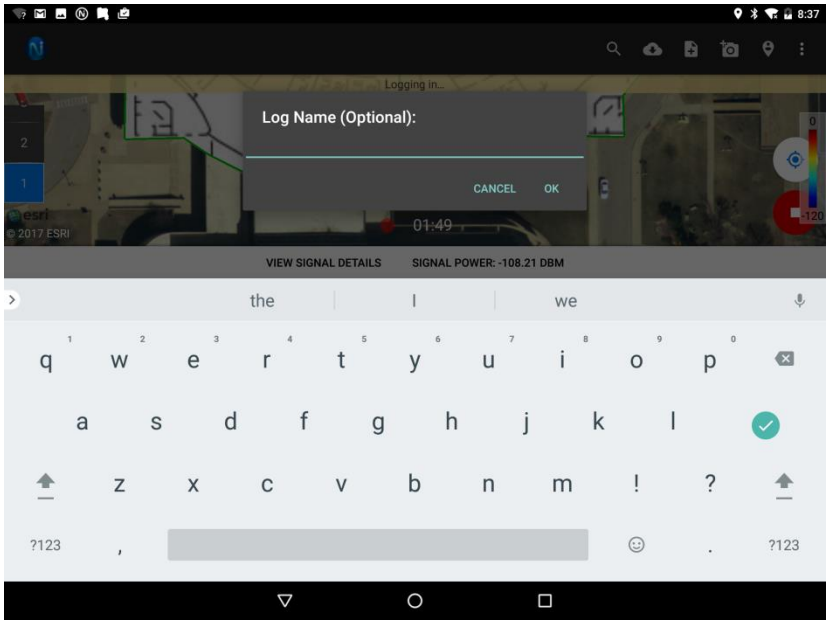




- Walk through areas where you want to collect data.
  - While you are mapping a timer will be displayed.
  - If any of your location indicators turn red, the phone/tablet will vibrate and you will stop taking signal mapping data. Check-in until the indicators turn green and you will resume taking signal map data.
- When you have completed taking data, press the red stop button.
  - The button will turn blue.
- Select whether you would like the data stored on the Android device or uploaded to the cloud server.

Neon Signal Mapper

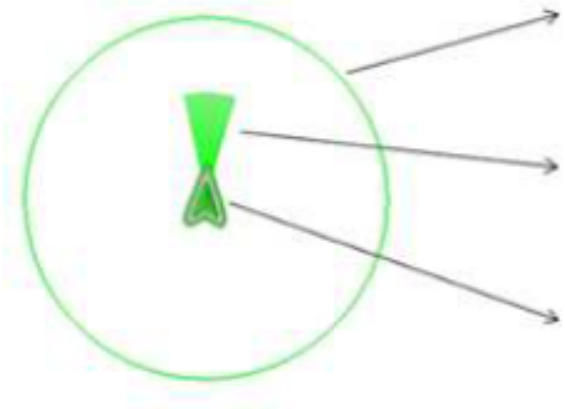
Saving Log Results



- Enter the log file name and then press “OK”
  - The Log Name is optional
- If you chose to store the file locally on your Android device, you will find it in the directory named “NeonSignalMaps”

Neon Signal Mapper

Location Indicators



Error Bound

- **Green**: Error bound is within tolerance.
- **Red**: Error bound is too large, you need to check-in.

Heading Wedge

- **Green**: Acceptable heading error.
- **Red**: Heading error is too large - you need to check-in, walk straight, then check in again.

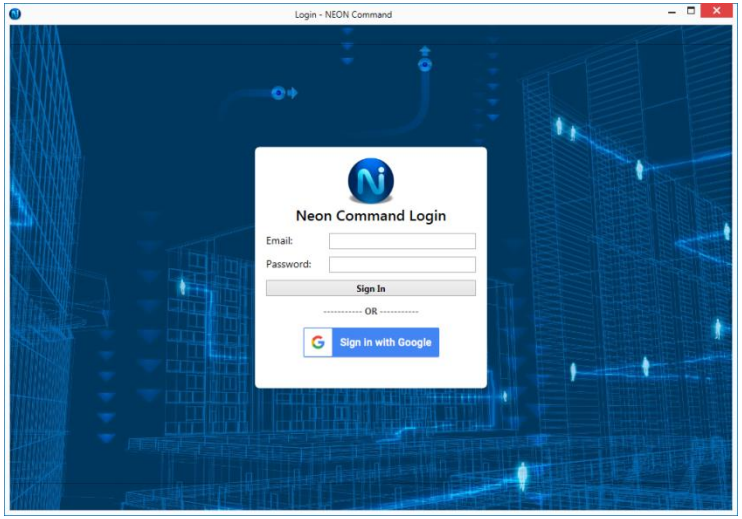
Altitude Indicator

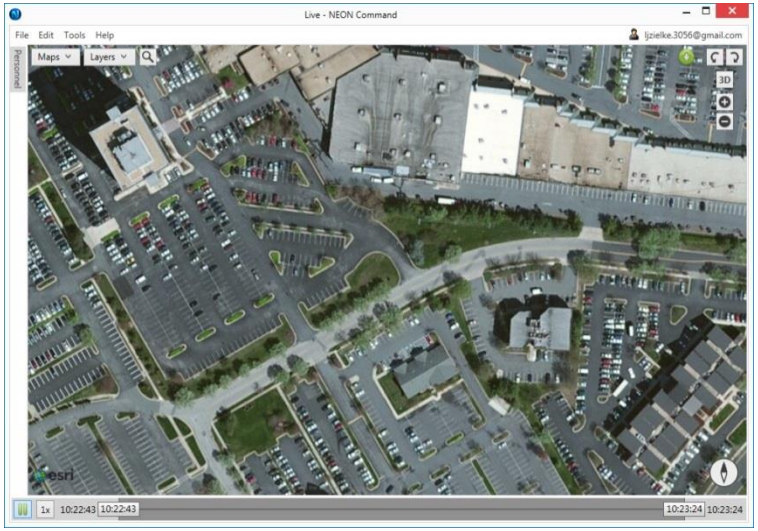
- **Green**: Acceptable altitude range.
- **Red**: Altitude is not set, you

NEON COMMAND
ANALYZING DATA

Neon Command

Logging in

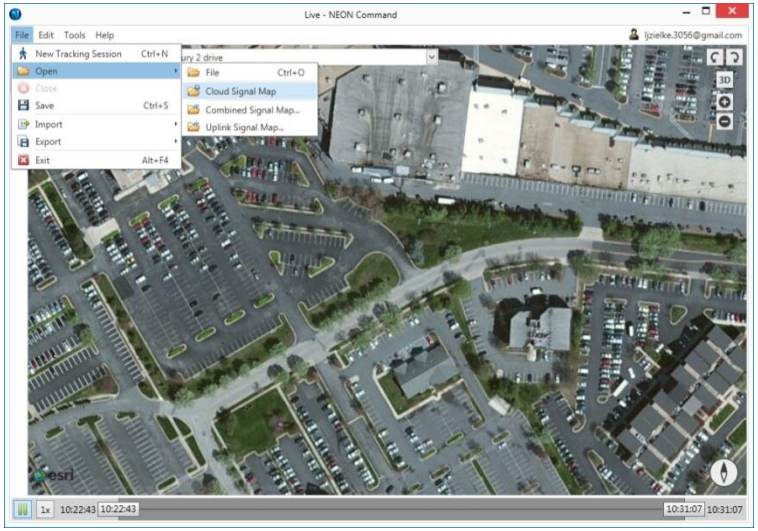


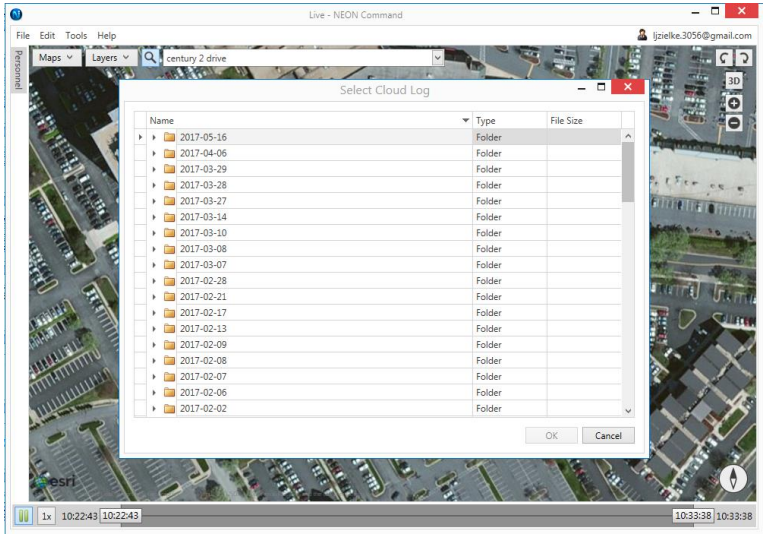


- Start the Neon Command windows application
- Login with your established credentials
  - If you used your Google credentials, click on “Sign in with Google”

Neon Command

Logging in

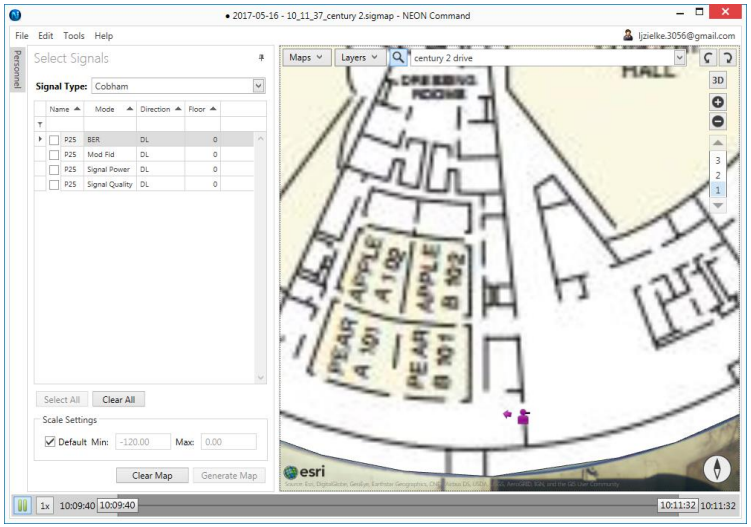


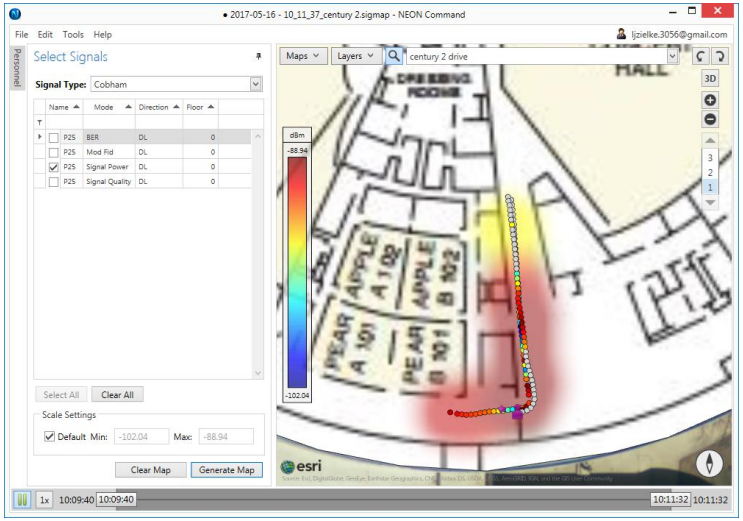


- From the File menu, select Open/Cloud Signal Map.
- Select the file that you uploaded from Neon Signal Mapper.
  - Folders are arranged by date.

Neon Command

Selecting Signal Type

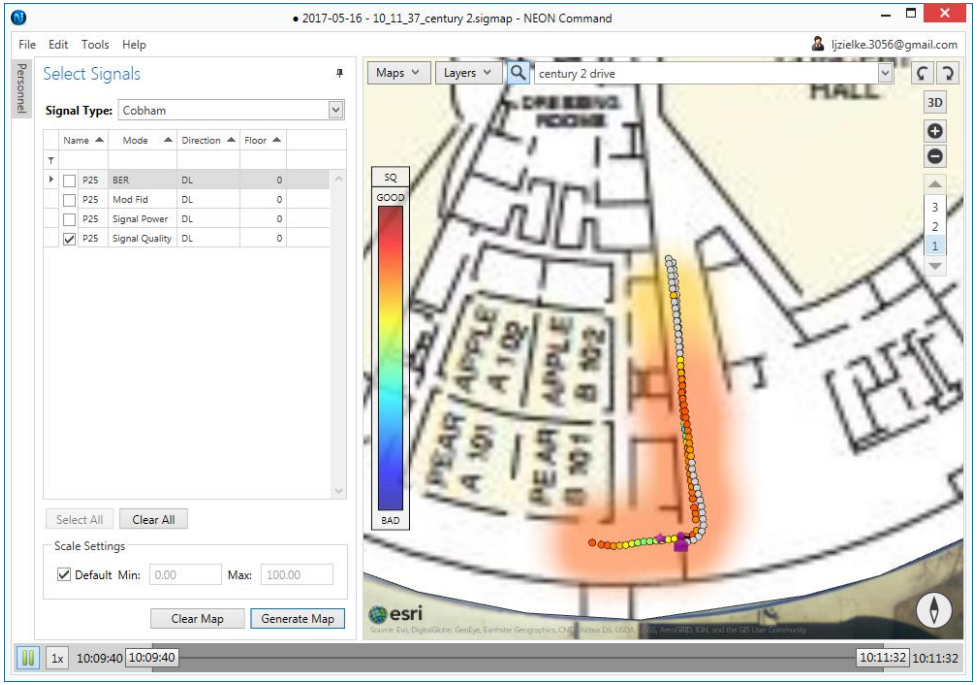




- Open a signal map to visualize
  - If the signal type is “Cobham”, and the measurement signal is P25, you can select from 4 measurements.
    - P25 BER
    - P25 Modulation Fidelity
    - P25 Signal Power
    - P25 Signal Quality
  - Click on “Generate Map” to create the heat map.

Neon Command

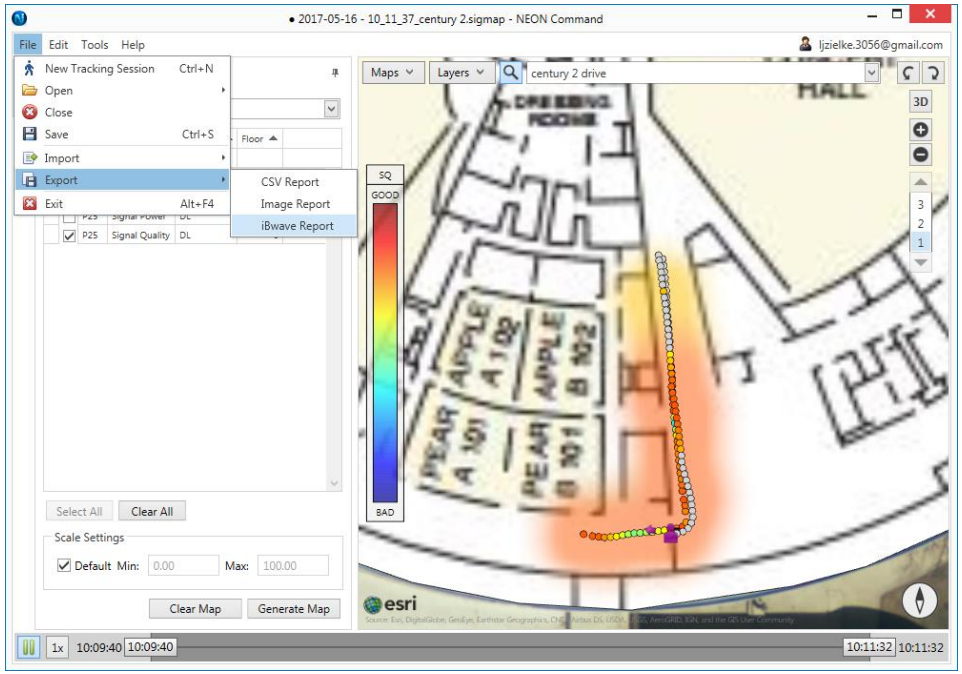
Signal Quality



- What is the Signal Quality Heat Map?
  - The Signal Quality Heat Map is a combination of the Signal Power, Modulation Fidelity, and Bit Error Rate measurements.
  - The purpose of this heat map is to find trouble spots that may be caused by interference or low signal to noise ratio.
  - Even if the Signal Power is at an acceptable level, if the Modulation Fidelity or BER is poor, then the Signal Quality is poor.
  - The modulation fidelity and BER are the primary parameters for determining the color of the heat map.

Neon Command

Creating Reports



- You can create reports very easily with Neon Command
  - Click on File/Export
  - Select the type of report
    - CSV Reports
    - Image Report
    - iBwave Report
  - Select the Directory to store the report

Neon Signal Mapping

Customer Support

Telephone: 1-800-835-2350

http://ats.aeroflex.com/radio-test-sets/land-mobile-radio-products/8800sx-digital-radio-test-set

http://ats.aeroflex.com/radio-test-sets/land-mobile-radio-products/3550r-radio-test-system

VIAVI Solutions

viavisolutions.com