

Network Connectivity Guidelines

All EV chargers deployed by TurnOnGreen require a reliable and consistent internet connection to communicate with the online management dashboard and point-of-sale system. Network connectivity can be achieved by Cellular network (3G/4G), Wi-Fi and Ethernet. Ethernet is recommended to maximize charger up-time.

Requirements for a reliable cellular network

1. Signal strength for 3G/4G networks

- a. Signal reading of -80dBm or greater is considered to be GOOD for connectivity purposes.
- b. Signal reading between -80 dBm and -100 dBm is considered ACCEPTABLE for connectivity purposes.
- c. Signal reading less than -100 dBm is considered POOR for connectivity purposes.

The signal strength of a particular location can be obtained using many mobile applications. If you are an android user, we recommend the following apps:

- [Network Cell Info Lite & Wi-Fi- Apps on Google Play](#)
- [LTE Discovery \(5G NR\)- Apps on Google Play](#)

For iOS, the user will have to enter the field test mode on the iPhone. Open the phone app as though you are about to make a phone call and dial *3001#12345#*. This will take the user to a field test menu. Depending on the iOS version, the field test menu can have different interfaces. For more information [click here](#).

The appendix section of this document provides an overview of the key parameters displayed on the mobile applications.

2. During the pre-install phase, obtain accurate signal strength readings by conducting a thorough walkthrough of the EV charging site. Be especially cautious in covered parking garages.

- a. Visit the exact spot for the EV charging installation.
- b. Wait a minimum of 10-15 seconds in a stationary position to make sure the signal has stabilized.
- c. Open either of the apps and take note of the dBm reading. Also, note the carrier for which the signal strength is available (Rogers, Bell, T-Mobile, AT&T, et c.)
 - i. Repeat steps a, b, c, for all EV charger locations in the parking lot/garage.

- e. An important note to consider when recording signal strengths is the amount of traffic present at the site. The signal strength will be impacted when more cars are parked, compared to when the parking lot/garage is empty. Therefore, when performing steps, a, b, and c, also make a note of the parking occupancy. If it helps, take photos of the parking spaces to capture the general feel for parking occupancy.
3. For EV charger locations that fall under the POOR category, a cellular network booster will be required.
- 4.. After the network booster is installed, verify the signal strength readings at the proposed EV charger locations as described in Step 3. The signal strength readings at all EV charger locations should fall under the GOOD or ACCEPTABLE range.

Requirements for a reliable wi-fi network

1. Signal strength for wi-fi networks

- a. Signal reading of -67 dBm or greater is considered to be GOOD for connectivity purposes.
- b. Signal reading between -68 dBm and -78 dBm is ACCEPTABLE for connectivity purposes.
- c. Signal reading less than -78 dBm is considered POOR for connectivity purposes.

The signal strength of a particular location can be obtained using many mobile applications. We recommend the following app for Android:

- [Network Cell info Lite & Wifi- Apps on Google Play](#)

2. During the pre-install phase, obtain accurate signal strength readings by conducting a thorough walkthrough of the EV charging site. Be especially cautious in covered parking garages.

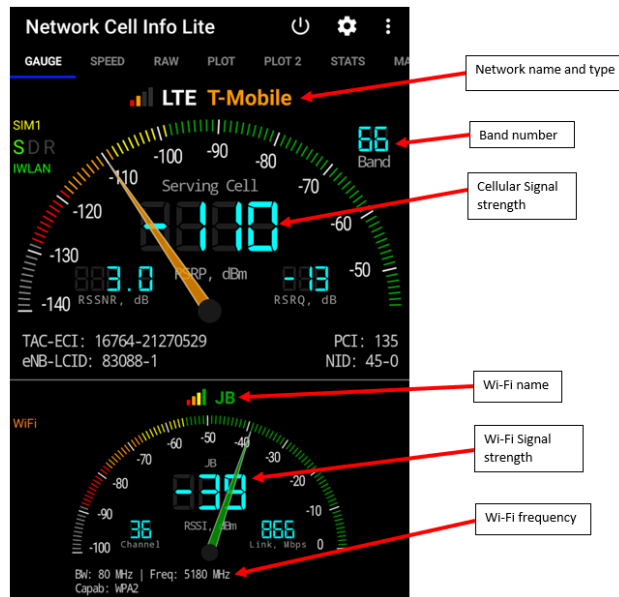
- a. Visit the exact spot for the EV charging installation.
- b. Open the recommended app and make note of the dBm reading. Also, note the Wi-Fi name and frequency (2.4GHz or 5GHz). Most chargers are capable of functioning on 2.4GHz frequency.
- c. Repeat steps a, and b for all EV charger locations in the parking lot/garage.

3. For EV charger locations that fall under the POOR category, multiple access points will be required to provide network coverage at EV charger locations. The type of access point to be installed and its positioning in the parking lot or garage will vary for each site and should be finalized in consultation with a network engineer.
4. There may be sites that have no public Wi-Fi as well as possess POOR cellular connectivity. Such instances will normally be found in parking garages or underground parking spaces. For such sites, a new Wi-Fi connection will have to be established from the building's telecommunications system.

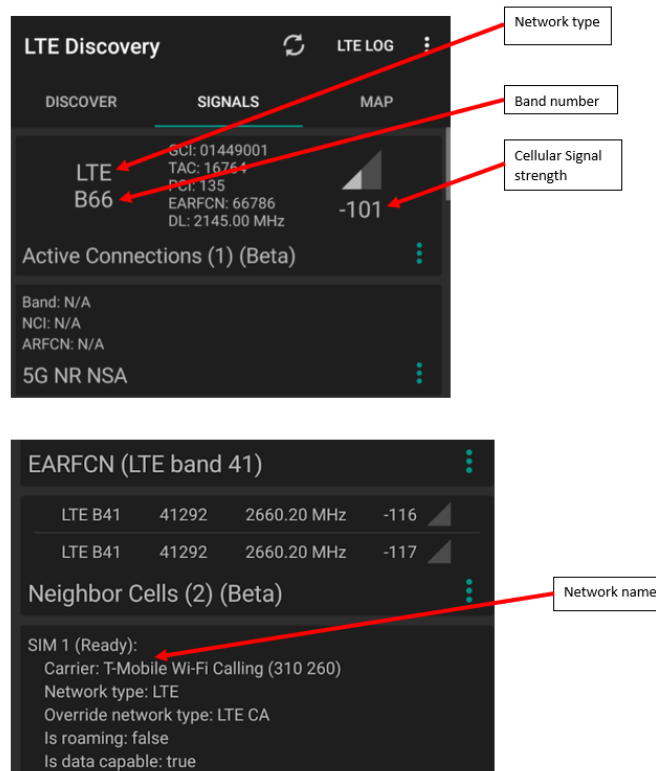
- a. Locate the route between the telecommunication room and the proposed location of the Wi-fi modem.
 - b. Pull a new ethernet cable and connect to the Wi-fi modem.
 - c. Configure the modem to create a wireless local area network (WLAN) in the garage for the chargers to connect to.
 - d. It is very important to have separate Wi-fi networks for EV charging and public use. The Wi-fi network for EV chargers should be secured to prevent any security breaches.
5. Oftentimes, firewall settings may also have to be updated to facilitate the EV chargers to connect to the Wi-fi network. Depending on the type of site,
- a. The site host may have to reach out to the internet provider to change the firewall settings to allow Wi-fi access to the chargers, or
 - b. The site host may have to consult with the property's IT team to make changes to the firewall settings.

Appendix

Network Cell Info Lite app interface and key parameters:



LTE Discovery app interface and key parameters:



iPhone Field test mode interface and key paramters:

