

Commercial Wall Connector Connectivity Guidelines

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DOCUMENT REVISION HISTORY

DISCLAIMER





This document is updated as often as possible, but some sections may become outdated as a result of rapid, unforeseen changes in the service development process.

Date	Edition	Changes
09/2024	1	Initial release
01/2025	2	2nd revision

OVERVIEW

Tesla Wall Connectors provide an end-to-end suite of commercial Level 2 charging solutions to enable property owners and charge point operators to electrify their properties and generate revenue from charging.

For public Tesla Wall Connector installations (visible on Tesla Find Us Maps and In-Car Navigation), a Tesla Certified Installer is required. If you need assistance finding a certified electrician for a safe, reliable, and cost-effective installation, please email *commercialcharging@tesla.com*.

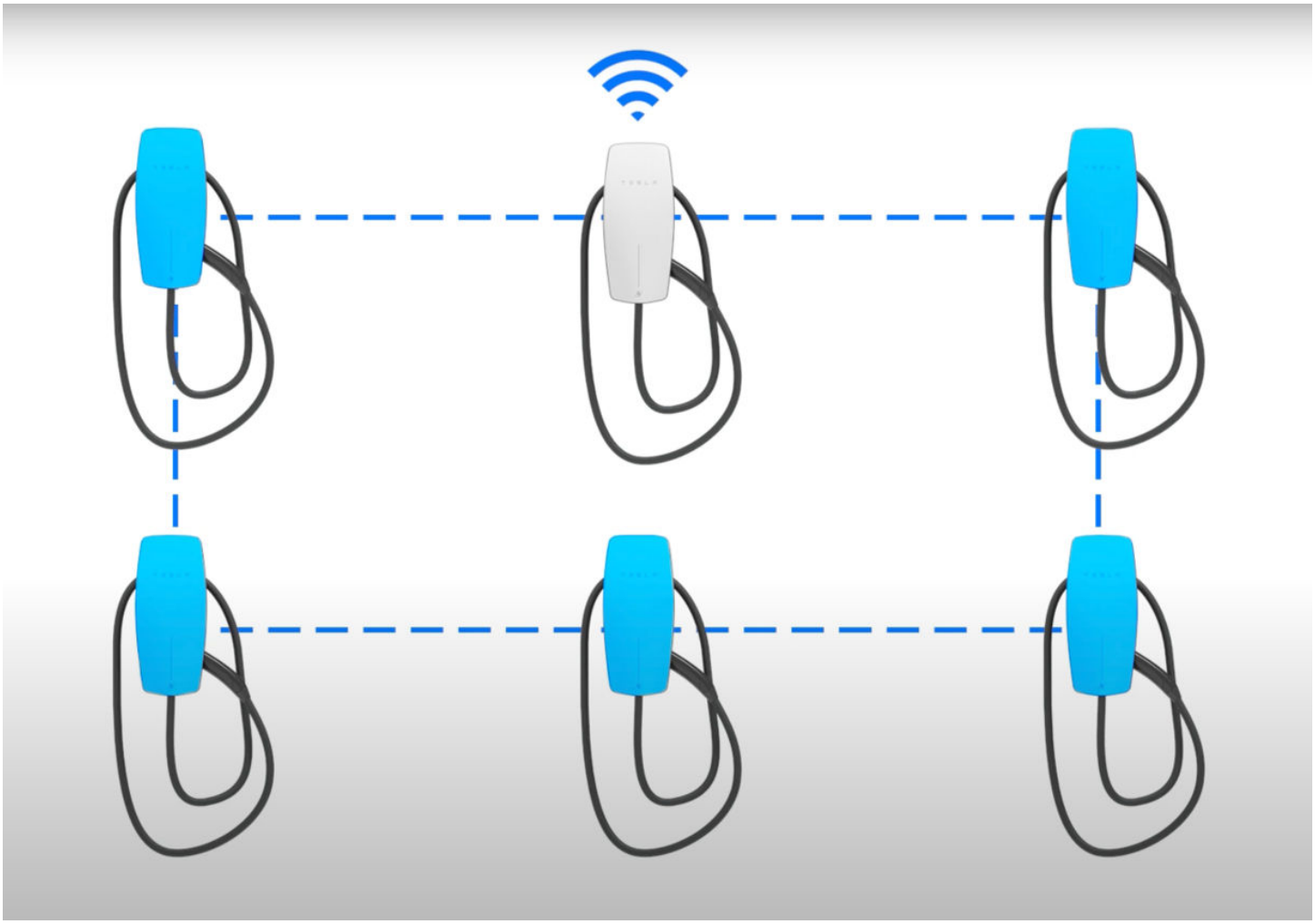
POWER MANAGEMENT FEATURE

Tesla Wall Connectors have power management software features that enable installers to customize current drawn by Wall Connector as a single unit or multiple units working together.

For sharing power with multiple Wall Connectors, the **Group Power Management feature enables up to six Gen 3 Wall Connectors to share power and charge multiple vehicles at once.** Power is distributed across multiple Wall Connectors to minimize charge time for each vehicle while making sure total power being drawn from your panel or a single circuit is within configured limits.

Group Power Management wirelessly monitors and controls the total amount of power used by multiple Wall Connectors. All Gen 3 Wall Connector variants are compatible with Group Power Management, and you can use multiple variants in the same Group.

This functionality is ideal for locations that need to charge more than one electric vehicle at the same time but may not have enough power for multiple electrical circuits. Installing a single circuit to power multiple Wall Connectors may be the most cost-effective installation, especially when the distance between your parking location and electrical panel is significant.



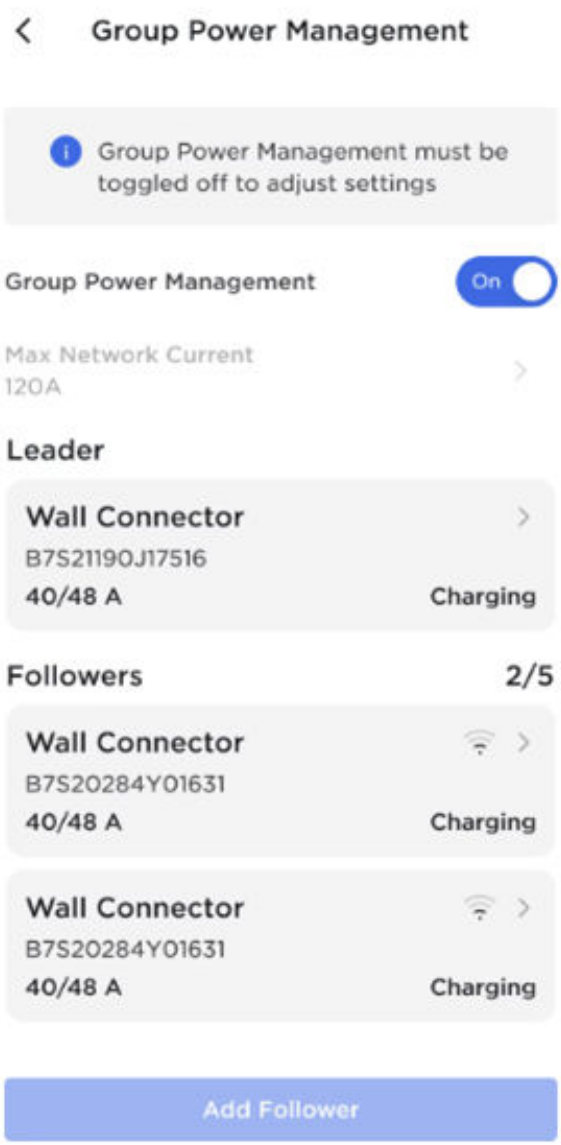
- Up to 5 follower Wall Connectors connect to the leader's wireless access point.
- Together, the Wall Connectors connected in a group will not exceed their network current limit while maximizing utilization of available power.

Group Power Management Setup

To set up the Group Power Management feature on your Wall Connectors:

1. Download the Tesla One App from your app store.
2. Login with your Tesla Account and click "Tesla Device Setup" and follow in app instructions to set up the Group Power Management feature.

> **NOTE:** When pairing followers, the leader will restart, and you will lose Wi-Fi connection. If your connection does not automatically return, ensure you are still connected to the leader's Wi-Fi connection and refresh the page.



For more information, see *Group Power Management Setup*.

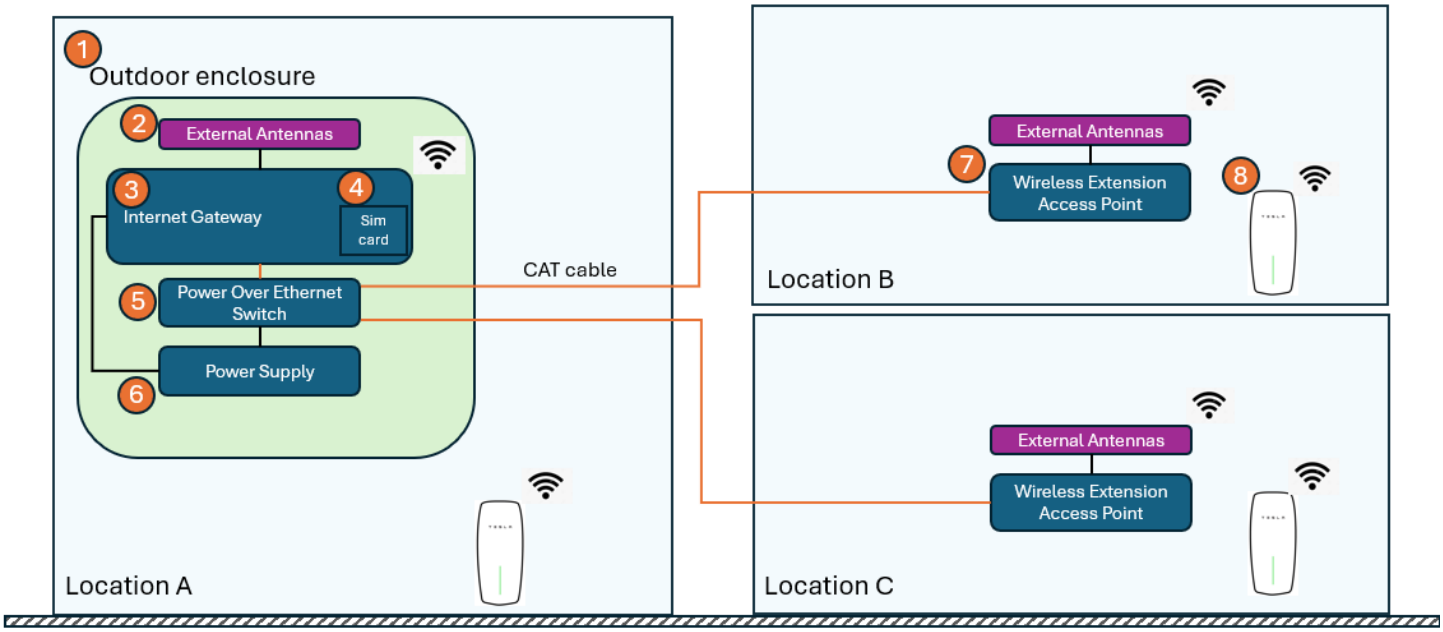
WIRELESS ACCESS POINT GUIDELINES

Wireless Network Hardware

A stable Wireless network is essential for accurate billing and charging operation of your Wall Connectors. A typical wireless network setup looks like the diagram shown below.

NOTE: Not all the components are required all the time. See the recommended network packages below for specific hardware.

Figure 1. Typical Networking Setup



Outdoor Enclosure (1) - A weatherproof enclosure that is needed when the networking gear is housed in an exposed environment and isn't sufficiently outdoor-rated.

External Antennas (2) - The Internet Gateway modem and Wireless Extension Access Point may come with external antennas. It is important to install all the provided antennas from the manufacturer for optimal performance.

Internet Gateway (3) - Usually a cellular data-based internet gateway that provides an internet connection for the Wall Connectors on-site. In some cases, this could be a local network switch or satellite internet gateway provided by the property owner.

Celluar Network SIM card (4) - When using a cellular data-based internet gateway, a suitable SIM card with a data plan is essential. Check your Internet Gateway to confirm the size and type of SIM card to procure, and choose a data plan suitable for devices such as security cameras and EV chargers. See the section on SIM card recommendations for more details.

Power-over-Ethernet switch (5) - Allows wireless Access Points to be powered from another location over Ethernet. This is only needed when the Internet Gateway model does not support Power-over-Ethernet natively. Please refer to recommended network packages for specific hardware.

Power Supply (6) - Required DC power supply in the enclosure where the networking gear is housed. Often, the networking gear comes with an AC/DC converter as needed.

WIRELESS ACCESS POINT GUIDELINES

Wireless Extension Access Point (7) - Devices that create a 2.4 GHz WiFi network to which Tesla Wall Connectors connect. Add these Extension Access Points when the site is too large for the Internet Gateway's WiFi Access Point to cover the area.

Tesla Wall Connector (8) - One or more Wall Connectors in the location.

For selecting the local wireless network hardware, Tesla has tested and recommends the following hardware packages. Use one of the recommended packages for robust connectivity and Tesla support.

NOTE: Any 2.4 GHz WiFi network is compatible with the Wall Connector, but the following hardware has been tested to work effectively with the application.

Recommended Network Packages

Network Package 1

Total cost is approximately $1200. This is a cost effective solution for sites and customers who want robust connectivity for their chargers but do not need advanced remote Access Point management features.

Category	Gear	Approximate Cost	Notes / Setup Instructions
Internet Gateway Modem	*Teltonika RUT M50*	~ $700	Install all antennas provided in the box *https://teltonika-networks.com/products/routers/rutm50*
Access Points	*Ubiquiti U7 Outdoor*	~ $200	Needed when Wall Connectors are out of the range from the Iinternet Gateway *https://dl.ui.com/qig/u7-outdoor/#index*
Power-over-Ethernet switch	*Teltonika TSW202*	~ $80 - $150	Connect on LAN ports to Internet Gateway and the Extension Access Point
Outdoor Enclosure	*Aletelix NP 1711406A1* Or *Akwscyby Enclosure*	~ $60 - $150	

Network Package 2

Total cost is approximately $1500. This is a cost-effective solution for sites and customers who want robust connectivity for their chargers but do not need advanced remote access point management features. Peplink Internet Gateway may have suitable SIM plans for your area that make it simpler to configure.

Category	Gear	Approximate Cost	Notes / Setup Instructions
Internet Gateway Modem	*Peplink BR1 Pro*	~ $1000	Install all antennas provided in the box *https://manual.peplink.com/peplink-max-user-manual/*
Access Points	*Ubiquiti U7 Outdoor*	~ $200	Needed when Wall Connectors are out of range from the Internet Gateway

Category	Gear	Approximate Cost	Notes / Setup Instructions
			https://dl.ui.com/qig/u7-outdoor/#index
Power-over-Ethernet switch	*Teltonika TSW202* OR *ASUS – Expert EBP15 Smart Managed PoE+ Switch*	~ $80 - $150	Connect on LAN ports to Internet Gateway and the Extension Access Point
Outdoor Enclosure	*Aletelix NP 1711406A1* Or *Akwscyby Enclosure*	~ $60 - $150	

Network Package 3

Total cost is approximately $3300. This is an advanced solution for sites and customers who want robust connectivity for their chargers and require remote access point and security management features. No Power-over-Ethernet switch required here since it is built into the Internet Gateway.

Category	Gear	Approximate Cost	Notes / Setup Instructions
Internet Gateway Modem	*Cradlepoint r1900*	~ $2000	Install all antennas provided in the box *https://customer.cradlepoint.com/s/article/R1900-Getting-Started*
Panaroma Antenna	*Panorama Antenna*	~ $100	Antenna needs to be purchased separately *https://panorama-antennas.com/r1900-starter-kit/*
Access Points	*Aruba AP-565*	~ $1,100	*https://www.arubanetworks.com/techdocs/hardware/aps/ap560/ig/AP-560_Install_Guide_EN.pdf*
Outdoor Enclosure	*Aletelix NP 1711406A1* Or *Akwscyby Enclosure*	~ $60 - $150	

Internet Provision

In some properties, the owner may provide the installer access to an internet connected network switch or alternate internet servvice; however in most installs the best internet connection would be to install a cellular data based Internet Gateway. Many property owners prefer this since the Wall Connectors can stay on a dedicated WiFi network.

Cellular Data SIM Plans

Choosing the correct SIM plan is essential to undisrupted operations for charging sites. There are 3 key factors:

1. Choose the network with the best local coverage. Use the following open source tools to check network strength in your location.
    - *https://www.fcc.gov/BroadbandData/MobileMaps/mobile-map*

- Mobile app - *https://opensignal.com/*

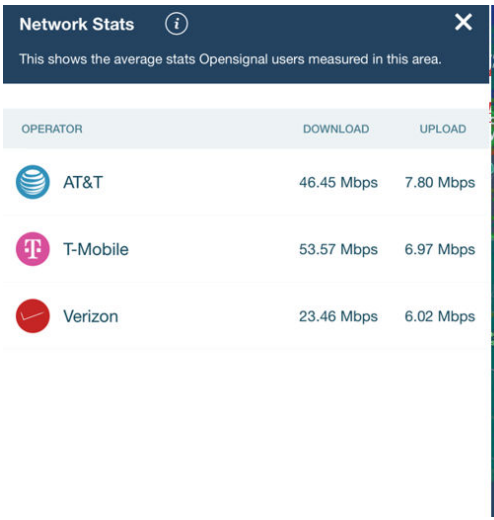
2. Choose the right data only SIM plan.
   a. To size the data plan, we suggest allocating ~ 2 GB per Wall Connector per month. For example, for a 8 Wall Connector site, choose a 16 GB per month or higher plan.
   b. Ensure the data plan is suitable for charging site application. Some smartphone plans will not work for this application. Following are some links to get started.

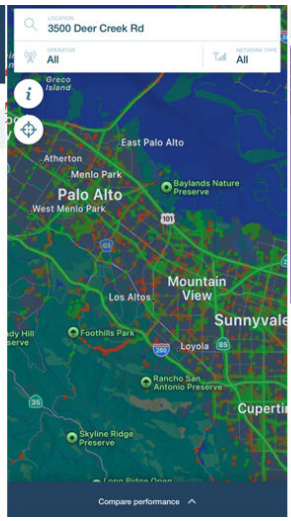
> **NOTE:** Property owner and installers are responsible to provision and maintain the correct data plan.

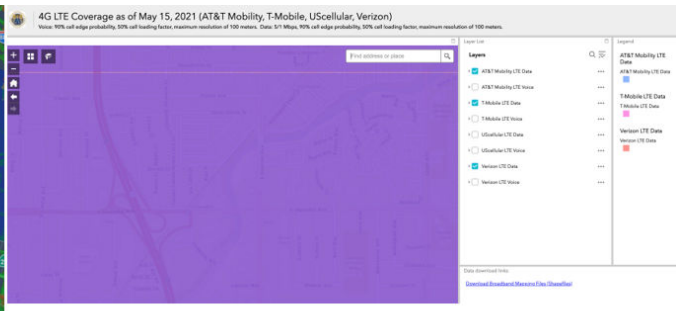
   - *https://www.att.com/support/article/wireless/KM1048698/*
   - *https://www.verizon.com/bring-your-own-device/activate*
   - *https://prepaid.t-mobile.com/plan-detail/mobile-internet*

3. For large sites with more than 20 Wall Connectors, consider deploying 2 SIM cards from different networks for redundancy. If one network goes down, the secondary SIM can provide internet connection.

> **NOTE:** To deploy 2 SIMs, a Teltonika or Cradlepoint Internet Gateway is required.







Access Point Placement

Tesla Gen 3 Wall Connector and Universal Wall Connectors work on 2.4 Ghz WiFi Networks Only.

Check and install external antenna if Access Point provides provision. Do not skip antenna installation even if the Access Point is close to the Wall Connectors.

> **NOTE: For good connectivity, please ensure the following**:

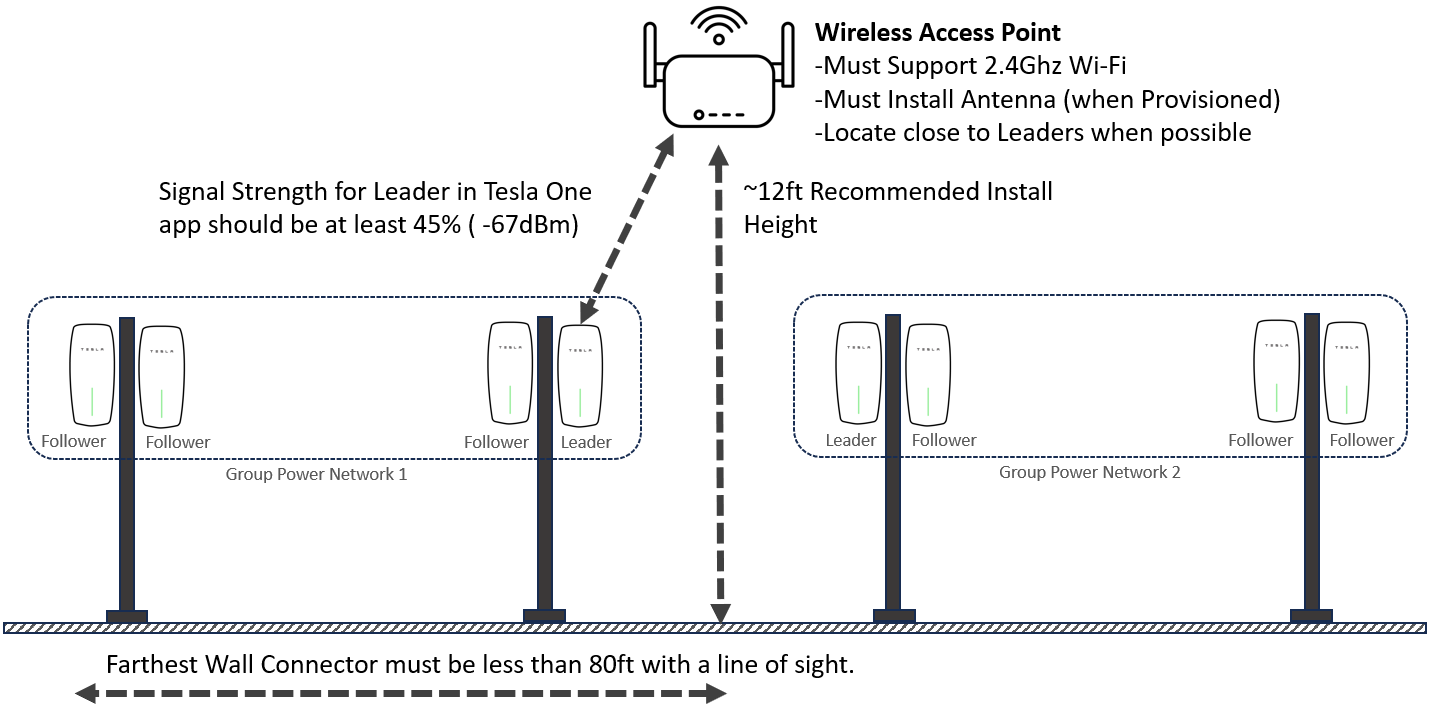
- Ensure a clear line of sight between Wall Connectors and Access Point. If line of sight is partially blocked between the Access Point and the Wall Connector, consider improving the mounting location and/or installing additional Access Points.
- If there are walls or support columns between the Wall Connector and the Access Point, check the nature of the obstruction material and the signal degradation in the Tesla One app under WiFi Settings. Materials such as concrete and metal negatively impact wireless connectivity.

WIRELESS ACCESS POINT GUIDELINES

- Configure the Wall Connectors closest to the Access Point as the Leader when possible in a group power-managed configuration.
- The wireless signal strength for each Leader Wall Connector should be above 45% (-67 dBm) in the Tesla One app under WiFi settings. When installing standalone Wall Connectors without Group Power Management, ensure that each Wall Connector meets the required signal strength.
- Add additional WiFi Access Points or reposition Access Points if the signal strength guidelines cannot be met. This is critical for robust, uninterrupted connectivity. Wireless repeaters are not recommended.
- When possible, position the Access Point approximately 10 ft in front of the Wall Connectors for better wireless reception.
- When installing the Wall Connector on a metal pedestal, position the Access Point so that it faces the front or side of the Wall Connectors for optimal wireless reception.
- Please maintain a minimum installation height of 10 ft for the Wireless Access Point. If the ceiling height does not permit, reduce the permitted line-of-sight distance to the Wall Connector as per the table below.

Table 1.

Access Point install height	Permitted Line of Sight distance to Wall Connector
10 to 12 ft (Recommended)	80 ft
8 to 9 ft	60 ft
7 to 8 ft	40 ft



Wireless Access Point Configurations

Setting up the Internet Gateway or wireless Access Point is the responsibility of the installer unless instructed otherwise by the property owner. Following are some important configurations to pay attention to:

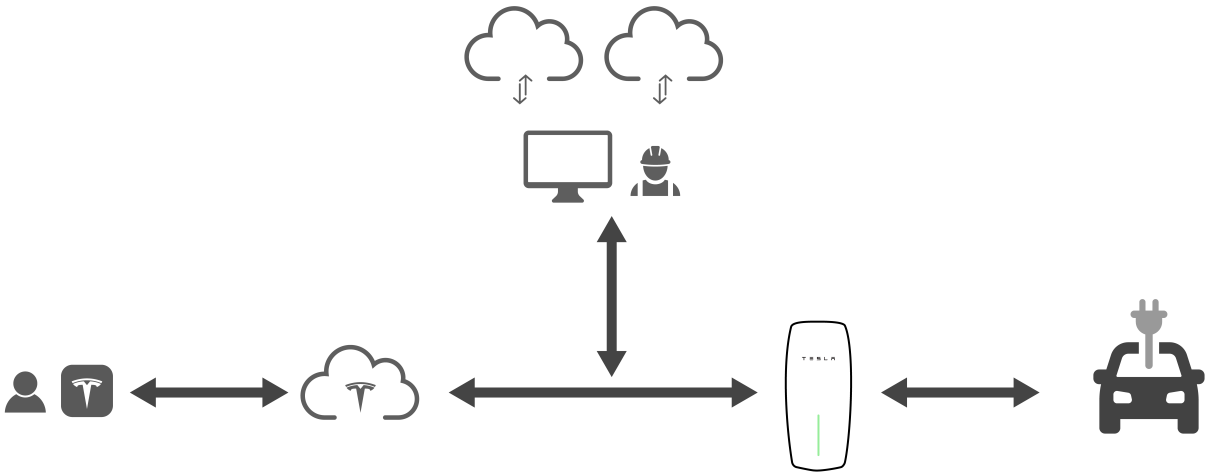
	Internet Gateway	Wireless Extension Access Point
Confrim Cellular network connection and strength	X	

WIRELESS ACCESS POINT GUIDELINES

	Internet Gateway	Wireless Extension Access Point
Leave 2.4 Ghz enabled and disable the 5 Ghz band if not used	X	X
Provide property owner access credentials for the devices	X	X
Optional: Re-name the WiFi SSID to reflect location and grouping	X	X

PAY PER USE FEATURE

To make sure your Tesla Wall Connector collects charging payments smoothly, it's important that it stays connected to Wi-Fi. This connection allows the Wall Connector to authenticate users and process transactions. To avoid any interruptions that could prevent EV drivers from charging their vehicles, please follow Tesla's connectivity guidelines during installation. If needed, consider upgrading your Wi-Fi setup to ensure a strong, reliable connection.



Connectivity is required to process:

- Authorization
- Transactions
- Availability
- Software updates
- TSLA Plug & Charge
- Non-Tesla Vehicle Charging (at PPU sites)
- Charging session data
- Billing and receipt

EV Station operators can use Tesla Tools **(Tesla for Business and Powerhub)** to set and view:

- PPU pricing
- Monthly Statements
- Charger Status
- Troubleshooting Insights
- Live session data

FAQS

Q: Non-Tesla vehicles are having trouble starting a charge session. What can I do?

A: To resolve this issue, set up a dedicated unsecured network (without a password) named "Tesla-Charging-Access" for customers to connect to when no other cell signals are available. Ensure all customer smartphones can connect to the internet to authenticate a charging session via the Tesla app. After connecting to this network on your cellphone, take a screenshot and submit it through the Tesla Pros app.

Q: Is an internet connection or Wi-Fi network required to use Power Management features?

A: No, an internet connection is not required to use the Power Management features at free charging sites. However, a stable internet connection is necessary when charging energy is billed to the vehicle owner.

Are the chargers capable of connecting to a network secured with certificates or Active Directory authentication?

A: No, Wall Connectors requires the following WiFi network configuration

- Network security level must be WPA2 or WPA3 compliant (WEP, WPA2-TKIP are not supported)
- WiFi network must be 2.4 GHz (If it shows up in the list of scanned networks in Tesla One, it is)
- Network channel width must be less than or equal to 20 MHz
- Network must be 802.11b, 802.11g or 802.11n compliant
- Network must support at least one of the following data rates:
    - 802.11 1, 2 Mbps
    - 802.11b 5.5, 11 Mbps
    - 802.11g 6, 9, 12, 18, 24, 36, 48, 54 Mbps
    - 802.11n 72,2 Mbps (20 Mhz channel)

INSTALLER COMPLETION CHECKLIST

Item	Category	Check	Done
1	Wireless Access Point	The Wi-Fi access point antenna must be at a minimum height of 10 feet and no more than 80 feet from the farthest Wall Connectors, ensuring a clear line of sight.	
2	Wireless Access Point	If the option is available, external antennas are properly installed on the wireless access point.	
3	Wireless Access Point	The wireless signal strength for each Wall Connector is above 45% (45% = -67 dBm) as shown in the Tesla One app under the Wi-Fi settings.	
4	Wireless Access Point	Confirm Wall Connector has access to the Internet and Tesla under the Wi-Fi settings.	
5	Charging	At least one Wall Connector under each group power management was able to charge a vehicle	
6	Charging	Ensure all Wall Connectors have power and are showing LED codes other than Red colored fault.	