SIGNAL BOOSTERS CEL-FI GO X Smart Signal Booster System Installation Guide

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SIGNAL BOOSTERS USA

CEL-FI GO X

PLEASE READ THIS FIRST

The Cel-Fi GO X do-it-yourself kit can be complicated. This installation guide contains everything we've learned from helping hundreds of people just like you boost their signal.

Give this a read before you start, as it will save you time in the long run.

Should you encounter any problems with your Cel-Fi GO X installation, or would like someone to walk you through it, don't hesitate to call us at 1-800-470-6777.

5010 Wright Road, Suite 110
Stafford, TX, 77477

1-800-470-6777

www.signalboosters.com
sales@signalboosters.com

WHAT'S IN THE BOX

	CEL-FI GO X + 1 DOME ANTENNA	CEL-FI GO X + 2 DOME ANTENNAS	CEL-FI GO X + 1 PANEL ANTENNA	CEL-FI GO X + 2 PANEL ANTENNAS
 Cel-Fi GO X Kit	1	1	1	1
 Outdoor Antenna	1	1	1	1
 Dome Antenna	1	2	✕	✕
Panel Antenna	✕	✕	1	2
 30Ft Cable	2	3	2	3
 2Ft Jumper Cable	1	2	1	2
 Surge Protector	1	1	1	1
 Connectors (SMA-M to N-F)	2	2	2	2
 2 Way Splitter	✕	1	✕	1

WHAT YOU SHOULD KNOW BEFORE INSTALLATION

The GO X provides an industry-leading 100 dB of gain for a single carrier. Proper installation ensures you receive the most significant boost to your cell signal possible.

The GO X is composed of three core components: the amplifier, the outside (or donor) antenna, and an inside antenna. There are three main issues people have when installing the Cel-Fi GO X: proper placement of their antennas, proper separation of their antennas, and finding usable signal to boost.

We might as well get the biggest problem out of the way now: if you go all over your property and cannot make a call or get reception of any kind, the Cel-Fi GO X will not work for you. The booster requires existing signal to function. Without that, it won't function. Please call us at 1-800-470-6777 for a return.

ANTENNA LOCATIONS AND SIGNAL QUALITY MATTER MORE THAN ANYTHING

Review the "Isolation and Necessary Separation" and "Antenna and Amplifier Placement" sections carefully.

Getting these two things right is the key to getting great coverage. Use the “Antenna Position Test” in the Wave app for best results.

COMPATIBILITY

The Cel-Fi GO-X works with:

- AT&T
- Verizon
- T-Mobile
- Sprint
- US Cellular
- And all other US carriers and MVNOs

As a reminder, you will need to set which carrier to amplify via the Cel-Fi WAVE app. The carrier can be changed at any time. For more on this, see Page # 9.

ANTENNA TYPES

There are four major types of antennas used by the Cel-Fi GO X. Your default kit configuration will have at least one variety of these:

OUTDOOR:

Omnidirectional Gathers signal in a 360 degree radius. Easy to install, but provides less power than a Yagi antenna. Works best in areas with strong outdoor signal.

Yagi (Directional) Gathers signal from the direction you point. Requires aiming, but provides more power to a system. The smaller the directional radius, the greater the power.

INSIDE:

Dome Projects boosted signal in a 360 degree radius. Provides less power than a panel antenna, but covers more area. Best for wide open spaces and drop-tile ceiling, but can be used anywhere to good effect.

Panel Projects boosted signal in a 45 degree radius. Provides more power than a dome antenna, but can be trickier to implement effectively. Best for hallways and places where projecting signal.

ISOLATION AND NECESSARY SEPARATION

ISOLATION IS A MEASURE OF SEPARATION BETWEEN THE INDOOR AND OUTDOOR ANTENNAS

The Cel-Fi GO X automatically throttles its gain (amplification) up or down to avoid “oscillation.” Oscillation is a type of feedback that occurs if the gain of the system is higher than the isolation.

The more isolation between the outside and indoor antenna you have, the more the GO X will be able to amplify your signal, and the better your signal will be inside the building. As a general rule, you should strive to have either ***50 feet of horizontal distance or 20 feet of vertical distance*** between the outdoor and inside antennas.

EXAMPLE OF POOR ISOLATION

- ✗ Not enough vertical separation between outdoor and indoor antenna.
- ✗ Not enough horizontal separation between outdoor and indoor antenna.
- ✗ Not enough building materials between indoor and outdoor antenna.

EXAMPLE OF GOOD ISOLATION

- ✓ Good vertical separation.
- ✓ Outdoor antenna pointing away from indoor antenna.
- ✓ Multiple layers of building materials between antennas.

Antenna placement is one of the major considerations for avoiding isolation issues during installation.

ANTENNA AND AMPLIFIER PLACEMENT

OUTDOOR ANTENNA PLACEMENT

Finding the best location possible for the Outdoor Antenna is critical. There are two things you need to consider:

1. Isolation from the Indoor Antenna(s)
2. Signal quality

Avoid oscillation by properly distancing the outdoor and indoor antennas. Avoiding oscillation is more important than outdoor signal strength, but if you only receive signal strength in a limited area, that is where your outdoor antenna should be installed.

HOW TO MEASURE SIGNAL QUALITY

For some buildings, the location with the best signal may be on top of the roof. In others, the best location is the side of the building. The best way to find out is to test.

There are three ways you can measure signal quality:

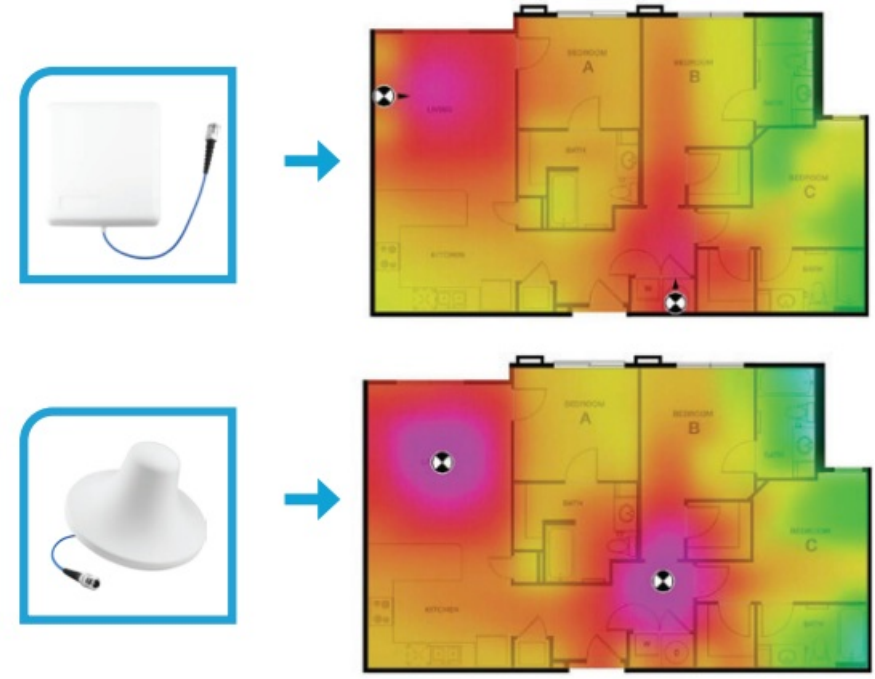
1. Look at the number of bars (easiest, but least reliable method)
2. Download the OpenSignal app for iPhone or the Network Cell Info Lite app for Android (best method)
3. Measure SINR (signal-to-noise ratio) with the Cel-Fi WAVE app

To find the best Outdoor Antenna location: walk around the perimeter of your building with your phone, and if you can, get up on the roof. You’re looking for a location with good SINR (ideally above 5 dB) and good isolation from the indoor antenna locations.

ANTENNA AND AMPLIFIER PLACEMENT

INDOOR ANTENNA PLACEMENT

The signal from your booster is strongest where it is broadcast. For best results, place the indoor antenna(s) near where you’re most likely to use your cellular devices.



FINE-TUNING AND AIMING:

The Antenna Position Test feature of the Cel-Fi WAVE app can help you test and compare multiple Outdoor Antenna locations, and will help you aim the antenna at the source of the best signal.

AMPLIFIER PLACEMENT

Your Cel-Fi GO X should be placed in a cool, dry area with access to a power source. For best results, use an uninterruptible power supply and surge protector to allow for its continued function during blackouts.

BOOSTER SET UP

Refer to the diagram on the next page as needed.

1. Attach SMA to N-F Connectors to each booster output.
2. Run 30 ft of cable to where you plan to set up your outside antenna, attaching the yagi antenna to the 30ft cable.
3. Connect 2ft jumper cable to the connector on the side, and attach the surge protector to it.

For Single Indoor Antenna Setups

1. Run 30ft of cable to where you plan to set up your indoor antenna. Attach panel or dome antenna.

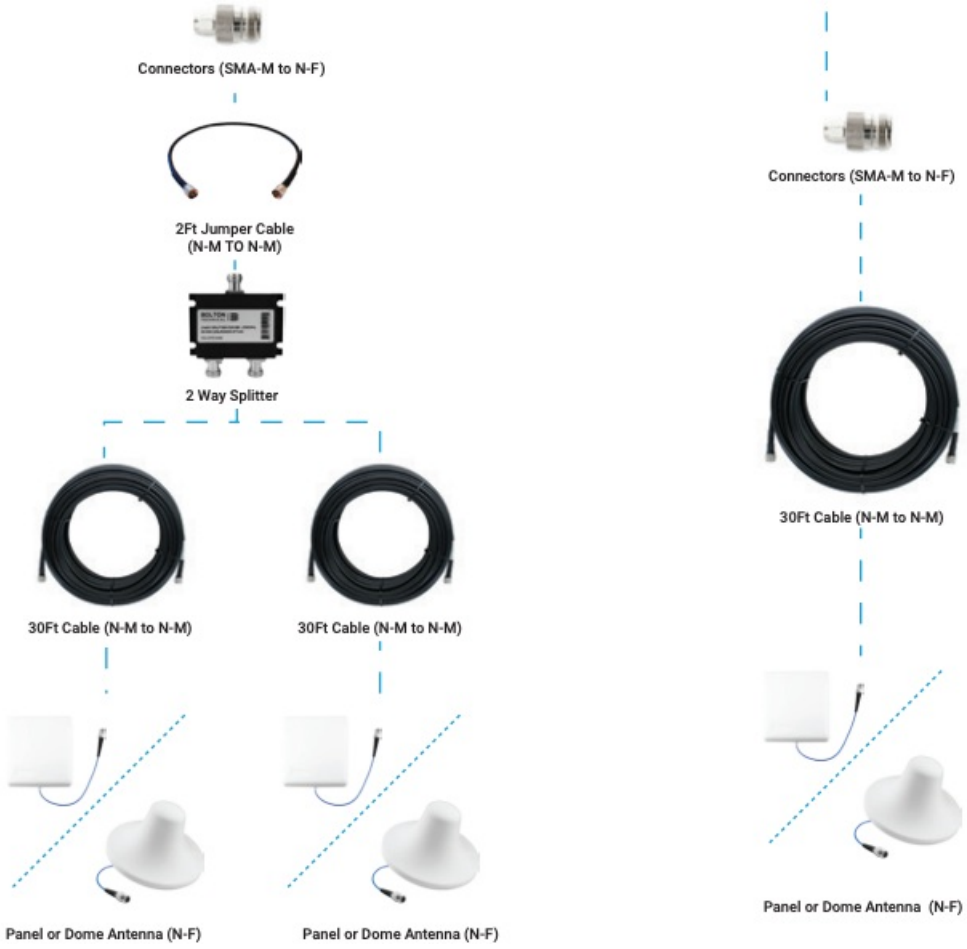
For Dual Indoor Antenna Setups

1. Connect the second 2ft jumper cable to the connector on the side, and attach to the single-port side of the splitter.
2. Attach 30ft cables to the multi-out side of the splitter. Run them to where you plan to set up your indoor

antennas.

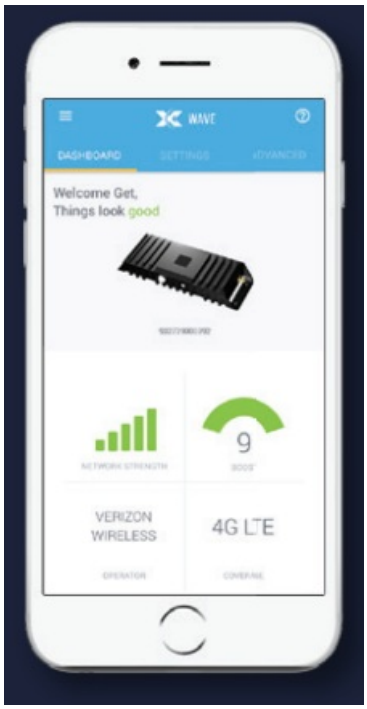
3. Attach the panel or dome antenna to the end of the 30ft cable to complete the set up.

Disclaimer: We highly recommend using a ground wire and spike when installing a signal booster.



SYNCH THE CEL-FI GO-X TO YOUR CARRIER WITH THE CEL-FI WAVE APP

The Cel-Fi WAVE App allows for carrier setup and switching, remote monitoring, real-time status updates, and more. In order to get the most out of your Cel-Fi GO X, you'll need to follow these steps.



- Download the "Cel-Fi Wave" app to your phone or tablet from cel-fi.com/software or directly from the iOS App Store or Google Play.
- You'll need Internet connectivity when setting up the GO X, but it will work offline once it is set up.
- Open the app while keeping your phone within 4 feet of the GO X to start pairing. This may take a few minutes, the app will say "searching," "syncing data," and finally "gathering data."
- Register your device when prompted to do so. This is **required by law**.
- Check that your operator is shown in the bottom left of the "Dashboard" screen.
- If it isn't, go to "Settings" and then "Operator" to change it. Changing carriers takes a few minutes don't turn off your booster or move your phone away during the process. **This is necessary for your booster to function properly**.

(Note: the carrier that the amplifier is currently boosting will not be listed in the "Operator " dropdown. For example if your GO X is boosting Verizon it will list AT&T and T-Mobile as options).

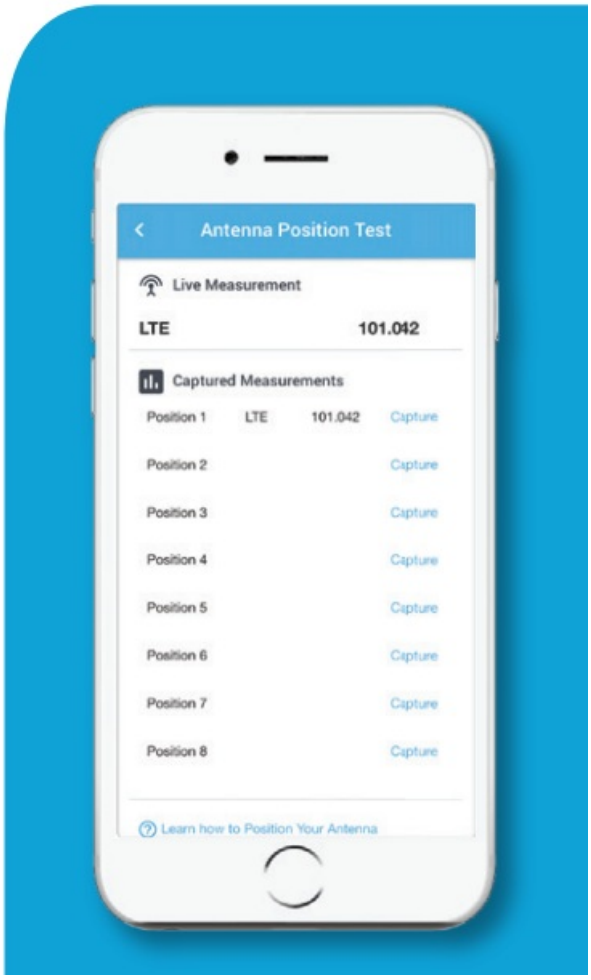
Update the software for the GO X if necessary (this may take 10 to 20 minutes and requires a data connection).

FEATURES OF THE WAVE APP

THE ANTENNA POSITION TEST

The Wave app comes with an Antenna Position Test that can help you achieve the ideal balance between isolation and signal quality.

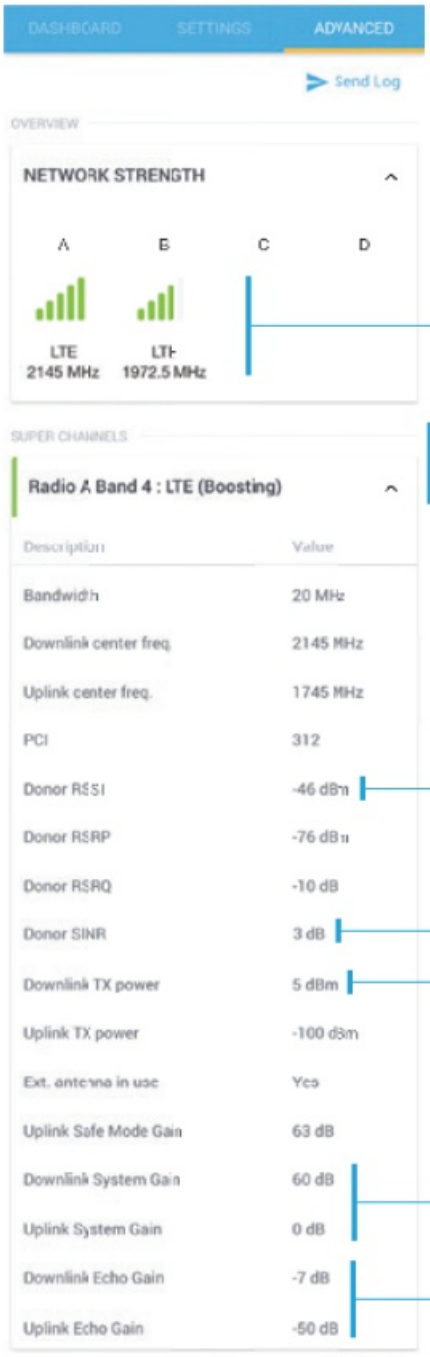
1. Place your indoor antenna(s) approximately where they will be installed.
2. In the Wave app, go to the “Settings” tab, and under the “Antenna Settings” tab select the “Antenna Position Test” option.
3. The app will guide you through taking multiple measurements. Try both different antenna locations and directions. Consider isolation and signal quality when choosing antenna locations.
4. The higher the number, the better your signal will be.
5. Once you’re done, the Wave app will calculate the best location for your outdoor antenna.



If you’re having issues finding the best antenna location, don’t hesitate to contact our support team. We’ll gladly walk you through finding the best location for best results.

THE ADVANCED TAB

One of the best features of the GO X is that it actively listens and decodes the cellular signals before amplifying. You can find out more about the donor signal and the booster’s performance under the “Super Channels” sections of the “Advanced” tab.



The "Send Log" button allows you send a diagnostic log from your device to either the RepeaterStore or Cel-Fi support teams.

This area shows the bands currently being amplified. When the device is scanning, the frequencies will change.

The "Super Channels" section lists the two bands being amplified. Select a band to expand the details (as shown).

The "Donor RSSI" value shows the signal strength being received from the outdoor antenna.

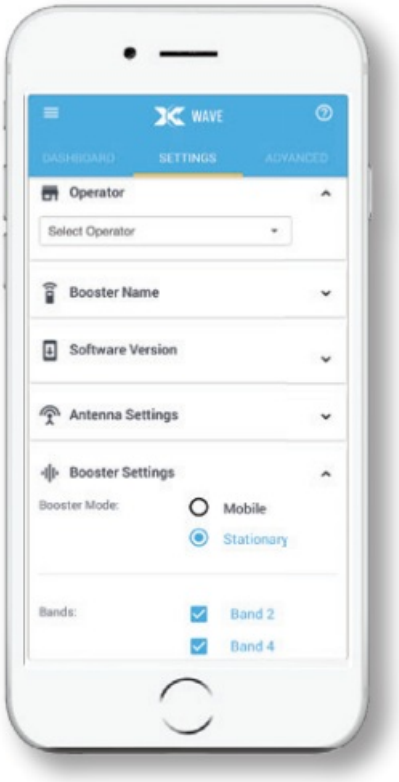
The "Donor SINR" is a measure of signal quality. Ideally, you want a number higher than 3 dB here. The higher the SINR, the more bars you'll see. If your SINR is under 0 dB, try moving the Outdoor antenna to different a different location, or changing the direction it is pointing.

The "Downlink TX Power" shows how much signal is being rebroadcast. The higher this number, the greater the coverage area. Ideally you want 0 dBm or higher here.

The Uplink and Downlink System Gain show the current uplink and downlink amplification of the system. Uplink may sometimes show 0 dB when phones aren't in use. That's normal.

The "Echo Gain" numbers show how much isolation you have between the outdoor and indoor antennas. If either number is at or near 10 dB, you need more isolation between the outdoor and indoor antennas.

BOOSTER MODE



Under the “Booster Settings” section of the “Settings” tab of the Wave app, there is an option to change the booster mode from “Stationary” to “Mobile.”

The Mobile setting should only be used if you are using the booster on the go in a vehicle or RV. It reduces the gain of the unit from 100 dB to 65 dB. This mode requires a different antenna setup optimized for vehicles.

BANDS

The “Bands” settings under the “Booster Settings” section allows you to control which bands are scanned and amplified by the GO X. In some cases, the carrier networks will try to hand you off to the highest band automatically, even if it isn’t the best quality signal. Lower frequency bands also propagate further. In such cases, it can help to lock the Cel-Fi to just the 700 MHz frequency band (12, 13 or 17).

Here are how the band numbers show match up to different frequencies:

Band 12/13/17 = 700 MHz;
Band 2 = 1900 MHz;
Band 4 = 2100 MHz;
Band 5 = 850 MHz.

This is fairly advanced, however, and in general simply switching the amplifier to your carrier should be enough to see a significant improvement in your signal quality.

TIPS AND FAQ

INSTALLATION TIPS:

If you unplug the cable from the outdoor antenna, make sure to reset the GO X.
The GO X will start scanning as soon as you unplug the cable to the outdoor antenna. To make sure it scans all the frequencies, restart the unit after you reconnect the cable.

If you can, cut and crimp any longer lengths of extra cable.
If you can’t do that, make sure to keep any cable loops as large as possible to minimize negative side-effects (4 ft or wider loops are best). Coiling it tightly.

FREQUENTLY ASKED QUESTIONS:

How do I know if I have enough isolation between outdoor and indoor antennas?
Under the “Advanced” tab of the Wave app, look at the “Downlink TX Power” and “Downlink Echo Gain” under each Super Channel. If the Downlink TX Power is less than 5 dBm and the Downlink Echo Gain is between 5 to 10 dB, you need more isolation between your indoor and outdoor antennas for best performance.

What can I do to improve the number of bars my phone is showing or increase my upload and download speeds?
The most important thing you can do to improve performance is to improve the signal quality at your outside antenna. Look at the “Donor SINR” measurement for each Super Channel under the “Advanced” tab of the Wave app. Your Donor SINR should be at least 0 dB. If you can get to 3 dB or higher, that’s great – the higher the better

(the maximum is 30 dB).

To improve SINR, try moving the outdoor antenna to new locations, and pointing it in different directions. You can also upgrade your outdoor antenna to a Cel-Fi LPDA Antenna (available at SignalBoosters.com).

NEED HELP? WE'RE READY AND WAITING.

Signal boosters aren't always easy to install. But the end result is worth it.

SignalBoosters provides lifetime technical support on every system we sell. We've installed hundreds of these devices ourselves, and can walk you through troubleshooting and fine-tuning your installation for best results.

Simply give us a call, start a live chat on our website, or send us an email. We love helping solve tricky install problems.

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Documents / Resources

	SIGNAL BOOSTERS CEL-FI GO X Smart Signal Booster System [pdf] Installation Guide CEL-FI GO X, Smart Signal Booster System