

Installation Guide

AG Pro Quint

700 / 800 / AWS (1700 / 2100) / 1900 MHz
In-Building Wireless
Smart Technology II™
Signal Booster



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Appearance of device and accessories may vary.

Note: This manual contains important safety and operating information. Please read and follow the instructions in this manual. Failure to do so could be hazardous and result in damage to your Signal Booster.



Installation Instructions for the Following Wilson Electronics Signal Boosters:

AG Pro™ Quint

700 / 800 / AWS (1700 / 2100) / 1900 MHz

In-Building Wireless Smart Technology II™ Signal Booster

PN # 803670 Model # 273470 FCC ID: PWO273470

The term "IC" before the radio certification number only signifies that Industry Canada technical specifications were met.

How it Works

Designed for professional installation to provide signal coverage in buildings up to 80,000 square feet. The Wilson AG Pro Quint boosts signals on 800 MHz, 1900MHz, AWS and both AT&T and Verizon 700 MHz 4G networks as well as Sprint 4G on the G-Block of 1900 MHz. The AG Pro Quint is the most affordable five-band Signal Booster available. Wilson's compact, integrated design is about the size of a textbook and weighs less than 3 pounds. The AG Pro Quint's control knobs allow the installer to optimize the gain on each of the frequency bands.

The AG Pro Quint delivers up to 75 dB of gain and supports CDMA, GSM, EVDO, LTE, HSPA+ and WCDMA technologies. It can be paired with an Outside Directional Antennas and a variety of Wilson Inside Antennas to create a custom Signal Booster system. Like all Wilson Signal Boosters this unit features cell tower protection technologies refined over more than a decade of research and development.

Inside this Package

Note: Kits may contain different accessories



Signal
Booster



12V / 3A
AC/DC
Power
Supply
(859900)

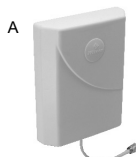
Outdoor Antenna Options

1. Wide Band Directional Antenna 700 MHz - 2700 MHz (304411)
2. Pole Mount Panel Antenna (304453)



Indoor Antenna Options & Accessories

- A. Wide-Band Panel Antenna 700-2700MHz (multiple mounting options available)
- B. 50 Ohm Lightning Surge Protector N-Connector (859902)



Appearance of device and accessories may vary.

To purchase, contact Wilson Electronics Sales Department at: 800-204-4104

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Contact Wilson Electronics Technical Support Team with any questions at 866-294-1660 or email: tech@wilsonelectronics.com. Mon.- Fri. Hours: 7 am to 6 pm MST.

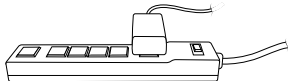
Quick Install Overview

See Installation Diagram on page 3. Contact Wilson Electronics Technical Support Team with any questions at 866-294-1660 Mon. - Fri. hours: 7am to 6pm MST.

1. Select a location to install the Signal Booster that is away from excessive heat, direct sunlight, moisture and has proper ventilation. Do not place the Signal Booster in an air-tight enclosure.
2. Select a location on the roof of the building to install the Outside Antenna. Use a cell phone in test mode to find the strongest signal from the cell tower (refer to page 6). Visit www.WilsonElectronics.com to find test mode function for your particular cell phone.
3. Run the Outside Antenna cable to the Signal Booster and attach it to the connector labeled "Outside Antenna" on the Signal Booster. Run the Inside Antenna cable to the Signal Booster and attach it to the connector labeled "Inside Antenna" on the Signal Booster. For more information on running cable (refer to page 7). Lightning Surge Protection is recommended for all in-building installations (refer to page 6).
4. Select a location for the Inside Antenna, preferably in the center of where the signal needs to be amplified. A minimum separation distance of **20 vertical feet (within the null zone) or 50 horizontal feet** is necessary for proper operation. If the inside coverage is not sufficient you may need as much as **75 feet of horizontal** separation (refer to installation diagram on pages 3 & 4).
5. Before powering up the Signal Booster, verify that both the Outside Antenna and the Inside Antenna are connected and check that all connections are tight. **Note: Be careful when plugging the connectors in so as not to bend the center pins on the connectors** (refer to page 9).
6. The Signal Booster has been packaged with the gain control knobs adjusted to the highest gain position. If any of the lights are not green, please refer to pages 10 & 11.

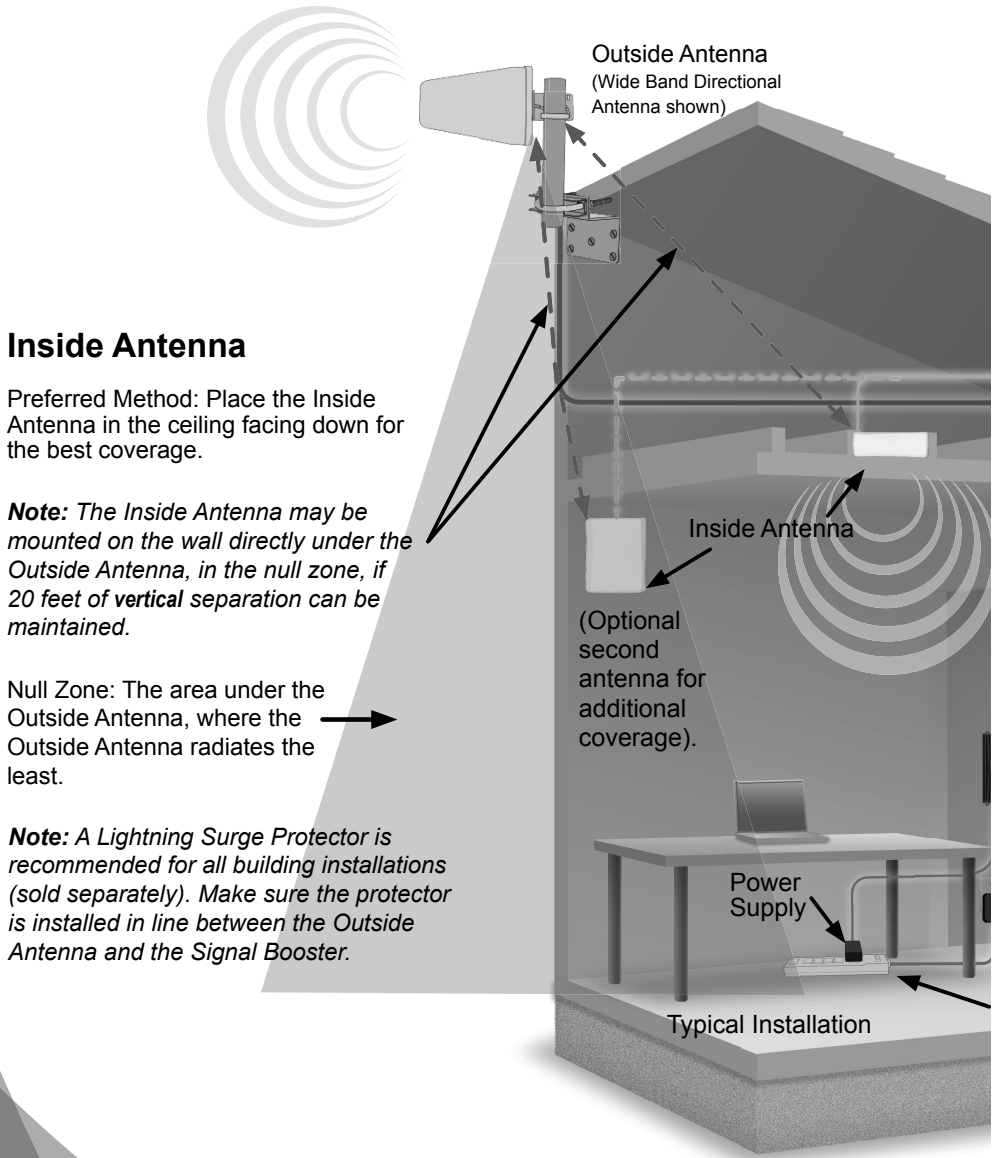
Warning: Connecting the Signal Booster directly to a cell phone with use of an adapter will damage the cell phone and/or the Signal Booster.

IMPORTANT NOTICE



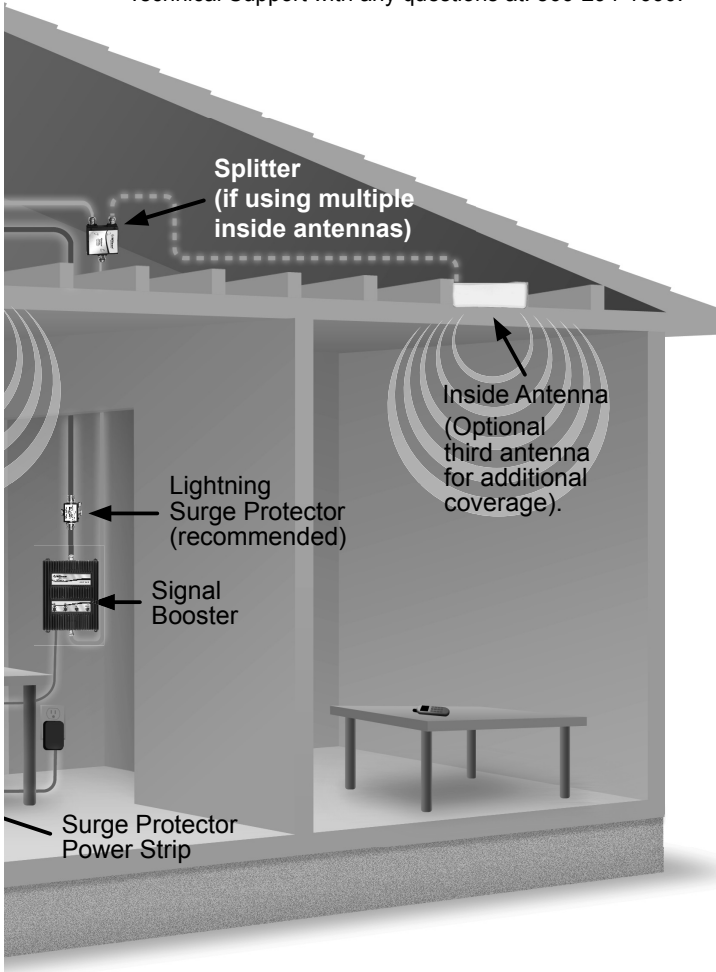
- It is very important to power your Signal Booster using a surge protected AC Power Strip with at least a **1000 Joule rating**.
- Failure to do this will void your warranty in the event of a power surge or lightning strike.

Installation Diagram



Before Getting Started

This guide will help you properly install your Wilson Electronics Signal Booster. **It is important to read through all of the installation steps for your particular application prior to installing any equipment.** Read through the instructions, visualize where all the equipment will need to be installed and do a soft installation before mounting any equipment. Contact Wilson Electronics Technical Support with any questions at: 866-294-1660.



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Reasons for Weak Cellular Signals

Anyone who uses a cell phone or cellular data card knows the frustration of not being able to connect to or maintain a strong cellular signal. When this occurs, it is generally due to one of two reasons:

1. Location of the Nearest Cell Tower – Cell towers are situated to provide broad coverage; however, there are many areas in which signal strength may be reduced by topographic features or by local government restrictions on the height or placement of the towers themselves. Rural areas generally have fewer cell towers than urban regions.
2. Natural and Man-Made Obstructions – Signal strength can also be negatively affected by trees, hills, buildings, weather, and other obstructions. You may be relatively close to a cell tower but still unable to make a call. This often occurs in homes, offices and other buildings in which stucco, concrete or metal walls may block the signal.

The Signal Booster works with two antennas. The Inside Antenna communicates with your cell phone and the Outside Antenna communicates with the cell tower. The Outside Antenna receives the cell tower signal and sends it through the cable to the Signal Booster, where it is amplified and re-transmitted much stronger through the Inside Antenna into the room. When the Inside Antenna picks up a signal from your cellular device, the Signal Booster amplifies that signal and transmits it through the cable to the Outside Antenna and back to the cell tower.

Note: *The Signal Booster will only operate if there is an adequate signal to amplify.*

Installing the Outside Antenna (#304411 shown)



The antenna should be mounted as shown in the illustration above. The mounting bracket, included with antenna, is adjustable and will accommodate pipe diameters from 1.25 inches to 2 inches (pipe sold separately #901117). Mount the antenna so that there is at least 3 feet of clearance in all directions around it. Position the antenna so that it has an unobstructed line of sight to the cell tower's strongest signal. Make sure the antenna is not pointing across your own roof or at the Inside Antenna as this will cause the oscillation protection circuitry to shut down the Signal Booster (refer to page 10).

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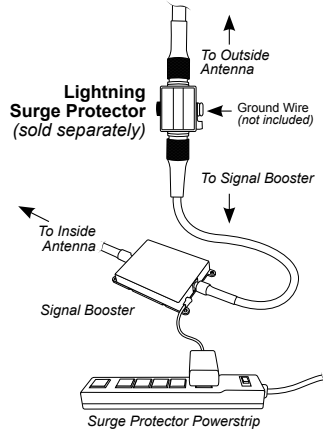
Contact Wilson Electronics Technical Support Team with any questions at 866-294-1660 or email: tech@wilsonelectronics.com. Mon.- Fri. Hours: 7 am to 6 pm MST.

⚠ Warning: Lightning protection is recommended for all installations (sold separately #859902-50 Ohm). Take extreme care to ensure that neither you nor the antenna comes near any electric power lines.

Installing Lightning Protection

(sold separately)

Install the **Lightning Surge Protector (LSP)** close to the Signal Booster. Attach the cable from the Outside Antenna to the surge protector, using a short length of low loss cable; attach one end to the LSP and the other to the Outside Antenna connector on the Signal Booster. Ensure the LSP is properly grounded (ground wire not included). Visit www.WilsonElectronics.com or call 800-204-4104 to purchase.



Selecting a Direction for the Outside Antenna

Select a location on the roof of the building to install the Outside Antenna. Use a cell phone in test mode to find the strongest signal from the cell tower (see below for more information). To get the strongest signal possible, it is very important to set up your Outside Antenna properly. The Inside and the Outside Antenna must be mounted in such a way that they are able to pick up the best possible cell signal on the outside of the building and provide the best possible signal on the inside of the building. Mount the Outside Antenna as high as possible facing the cell tower in an area with the best possible signal coverage.

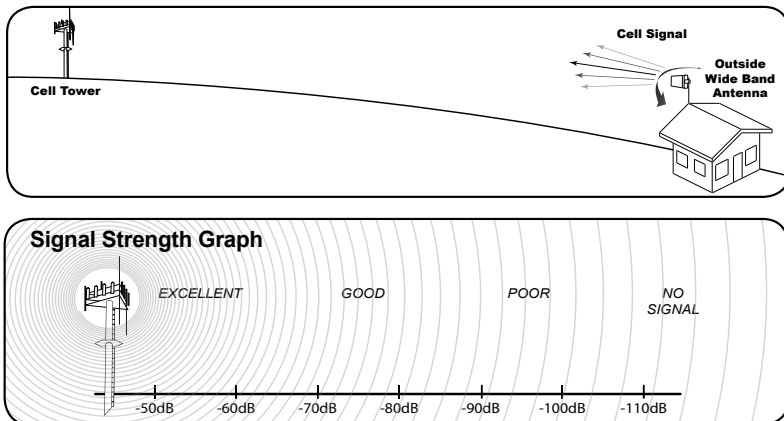
Note: Never point the front of a Directional Antenna toward the Inside Antenna.
See Figures 1 & 2 on page 10.

Finding the Strongest Signal

When installing your Signal Booster's Outside Antenna, aiming it towards the best signal source from your service provider is important. The best way of getting the strongest signal is to have one person on the roof to rotate the Outside Antenna, which is connected to the Signal Booster. Turning the Outside Antenna about 45 degrees at a time, while the second person is watching the signal strength on the phone inside the building. This allows you to read the

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signal strength from the cell tower. It is preferable to have the phone in the test mode so the actual signal strength can be read, as bars are not the most accurate. Go to www.WilsonElectronics.com for help in finding the test mode for your phone. Always make sure the person inside the building gives the signal time to arrive and register on the phone (between 10-30 seconds for phone to reset to the signal reading).



Signal readings usually appear as a negative number (for example, -86). The closer you get to zero the stronger the signal (see graph above).

Mounting Tips for Running Outside Antenna Cable

If you are mounting the Outside Antenna on the roof of your building, we have found that it is easiest to run your cable underneath the down side of your roof's flashing. If you have satellite TV service installed you may be able to follow the same route as the satellite TV cables that are already running from outside of your building to the inside.

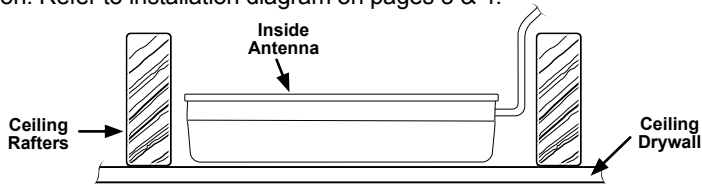
After routing the cable, we recommend sealing any areas where the cable passes into the building with cable bushings, silicone or other waterproof sealant to keep your installation from leaking. If you are mounting the Outside Antenna to the outside wall of your home or building, the simplest way is to run the cable on the outside of the wall and attach it to the exterior of your home or office. Then drill a hole through the wall where you want the cable to appear on the inside of the building. Before drilling, make sure that there are no electrical outlets, sewer or water pipes, or electrical wiring in the wall that you are about to drill through as this could potentially harm you or damage the building.

After drilling the required hole, run the cable through and seal it with cable bushings, silicone or other waterproof sealant to enclose the hole that you have created. In some instances, it may be possible to run the cable up into the fascia of the attic overhang. In this circumstance, the cable will be accessible in the attic for further routing.

Installing the Inside Antenna

(Instructions are for optional Panel Antenna)

Select a location for the Inside Antenna, preferably in the center of where the signal needs to be amplified. A minimum separation distance of **20 vertical feet (within the null zone) or 50 horizontal feet** is necessary for proper operation. If the inside coverage is not sufficient you may need as much as **75 feet of horizontal** separation. Refer to installation diagram on pages 3 & 4.



In some cases, multiple Inside Antennas may be required, for instance if you have multiple rooms with poor signal. A signal may be split by using a splitter (sold separately). See configuration on pages 3 & 4.

Warning: An Inside Antenna must have a separation distance from all persons that is at least 15 inches for the Panel Antenna.



Optional Wide Band Inside Antenna (sold separately)
Multiple mounting options available

Splitter Options: (sold separately)

50 ohm

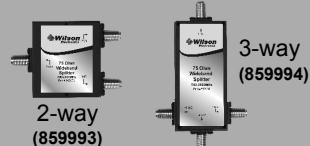


2-way
(859957)

3-way
(859980)

4-way
(859981)

75 ohm



2-way
(859993)

3-way
(859994)

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Installing a Wilson Electronics Signal Booster

Select a location to install the Signal Booster that is away from excessive heat, direct sunlight, moisture and that has proper ventilation. Do not place the Signal Booster in an air-tight enclosure. Recommended installation locations for in-building Signal Boosters are near a power outlet and in a closet or on a shelf.

Note: *It is important to have adequate air ventilation. Maintain at least 6 inches of clearance from surrounding objects. Be careful when plugging the connector in so as not to damage the center pins on the connectors.*

Run the Outside Antenna cable to the Signal Booster and attach it to the connector labeled “Outside Antenna” on the Signal Booster. Run the Inside Antenna cable to the Signal Booster and attach it to the connector labeled “Inside Antenna” on the Signal Booster.

Note: *For distances of 20 feet or more, use Wilson low loss cable.*

Powering up a Wilson Electronics Signal Booster

1. Never point the front of a Directional Outside Antenna toward the Inside Antenna. Refer to Figures 1 & 2 on page 10.
2. Ensure that both the Outside Antenna cable and the Inside Antenna cable are connected to the Signal Booster **and the connections are tight** before powering up the Signal Booster.
3. Plug the power supply into the Signal Booster input marked “POWER” (carefully, to avoid damaging the center pin) and then into a Surge Protector Power Strip.
4. If the Signal Booster does not have green lights, please refer to pages 10 & 11.
5. If you are not using a band, reduce the gain all the way down to minimum until the light turns off. This will reduce the power consumption of the Signal Booster.
6. Using multiple Signal Boosters in one installation could cause interference to the cell tower (except for the In-Line Signal Booster).
7. Contact Wilson Electronics Technical Support Team with any questions at 866-294-1660 or email tech@wilsonelectronics.com. Technical Support hours are Mon.- Fri. 7 am to 6 pm MST.

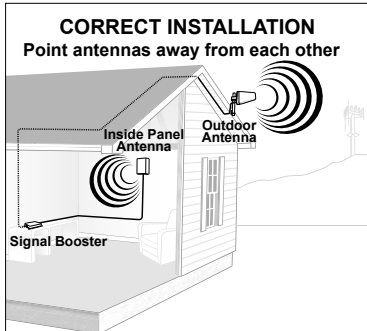


Figure 1

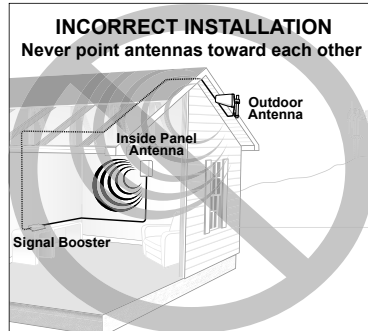
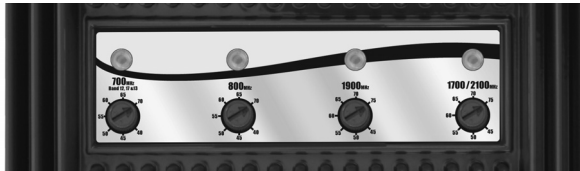


Figure 2

Understanding the Signal Booster Lights and Troubleshooting

The Signal Booster is equipped with four indicator lights for each Band (700 – Band 12,13,17/800 – Band 5/1900 – Band 2/1700/2100- Band 4). The lights will do one of the following 3 things:



Note: Reset the Signal Booster by disconnecting and reconnecting the power supply from the Signal Booster.

Note: All red lights must be resolved before orange lights.

1. GREEN

The indicator lights on the Signal Booster will be green if the unit is powered up and working properly.

2. ORANGE

The Signal Booster is experiencing receiver overload. The Signal Booster has protection circuits to prevent the disruption of cell towers. If one or more of the lights are orange, this indicates that the Signal Booster has automatically reduced the gain due to close proximity to a cell tower. To view how much the gain has been reduced, turn the knob down until the light turns green. This is the Actual Gain that the Signal Booster is operating on. Since the Signal Booster adjusts gain automatically, there is no need to turn the gain down. If

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the gain is not adequate for good coverage, you will need to turn the gain to maximum and then turn the Outside Antenna away from the cell tower until the lights turn to green. If the Signal Booster will not respond, turn the gain down 5 dB and then turn the Outside Antenna away from the cell tower. Continue to adjust the gain and the antenna position until the light turns green. Contact Wilson Electronics Technical Support Team for assistance.

3. RED

If any of the lights on the Signal Booster are red, it is indicating the Signal Booster has shut down to prevent an oscillation, most likely caused by the Inside and Outside Antennas being physically too close to each other. Without this patented protection, oscillations could be transmitted to the cell tower, blocking calls to and from the cell tower. Oscillation occurs just like in an audio system when you put a microphone next to a speaker and get a big squeal. When the Inside Antenna is too close to the Outside Antenna, the same type of oscillation occurs. If the Signal Booster has a red light, the following steps need to be done for each affected band.

First, check the Signal Booster by unplugging the power supply and removing the coax cables from the Signal Booster. Adjust the gain to minimum and plug the Signal Booster back in. You should now have a green light. If not, contact Wilson Electronics Technical Support Team.

If your lights are green then unplug the Signal Booster, reconnect the coax cables and ensure all connections are tight. Plug the Signal Booster back in. Increase the gain until you get a red light (for example, it may be at 50 dB for the red light) then decrease the gain until you get a green light. If your coverage is sufficient then you are done. If not, you will need to separate the Inside and Outside antennas further apart. Separating the antennas is very important to get the necessary gain for the system to provide maximum coverage and a green light.

The Outside Antenna needs to be pointed at the cell tower with its back facing towards the Inside Antenna (refer to Figures 1 & 2 on page 10). Without proper orientation of the antennas, you will not be able to get the maximum gain from the Signal Booster.

***Note:** *If the antennas cannot be sufficiently separated, the Signal Booster will have to operate with reduced performance by decreasing the Gain until a green light is obtained.*

Warnings and Recommendations

- ⚠ Warning: The Directional Antenna must always be located so the back or side points to the Inside Antenna. Never point the front of the Outside Antenna toward the Inside Antenna – this is to prevent oscillation.
- ⚠ Warning: Connecting the Signal Booster directly to the cell phone with use of an adapter will damage the cell phone.
- ⚠ Warning: Use only the power supply provided. Use of a non-Wilson Electronics product may damage your equipment.
- ⚠ Warning: **RF Safety:** FCC regulations require that any fixed Outside Antenna used with this Signal Booster may not have gain (less cable loss) that exceeds 15 dBi and must be located at least 30 inches from all people. Inside Antennas must not exceed 7 dBi gain (less cable loss) in the 800 MHz band or 10 dBi gain (less cable loss) in the 1900 MHz band and must be located at least 15 inches from all people.
- ⚠ Warning: Verify that both the Outside Antenna and the Inside Antenna are connected to the Signal Booster before powering up the Signal Booster.

Recommendation: *Lightning Surge Protection is recommended for all in-building installations.*

This device complies with Part 15 of FCC rules. Operation is subject to two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by Wilson Electronics could void the authority to operate this equipment.



About Wilson Electronics

Wilson Electronics, LLC has been a leader in the wireless communications industry for over 40 years. The company designs and manufactures Signal Boosters, antennas and related components that significantly improve cellular phone signal reception and transmission in a wide variety of applications, mobile (marine, RV, vehicles) and in-building (home, office, machine to machine).

With extensive experience in antenna and Signal Booster research and design, the company's engineering team uses a state-of-the-art testing laboratory, including an anechoic chamber and network analyzers, to fine-tune antenna designs and performance. For its Signal Boosters, Wilson Electronics uses a double electrically shielded RF enclosure and cell tower simulators for compliance testing.

Wilson Electronics Signal Boosters feature patented Smart Technology II™ that enables them to automatically adjust their power based on cell tower requirements. By detecting and preventing oscillation (feedback), signal overload and interference with other users, these Smart Technology II™ Signal Boosters improve network cell phone areas without compromising carrier systems.

All products are engineered and assembled in the company's 100,000 square-foot headquarters in St. George, Utah. Wilson Electronics has product dealers in all 50 states as well as in countries around the world.

30-Day Money-Back Guarantee

All Wilson Electronics products are protected by Wilson Electronics 30-day money-back guarantee. If for any reason the performance of any product is not acceptable, simply return the product directly to the reseller with a dated proof of purchase.

2-Year Warranty

Wilson Electronics Signal Boosters are warranted for two (2) years against defects in workmanship and/or materials. Warranty cases may be resolved by returning the product directly to the reseller with a dated proof of purchase.

Signal Boosters may also be returned directly to the manufacturer at the consumer's expense, with a dated proof of purchase and a Returned Material Authorization (RMA) number supplied by Wilson Electronics. Wilson Electronics shall, at its option, either repair or replace the product. Wilson Electronics will pay for delivery of the repaired or replaced product back to the original consumer if located within the continental U.S.

This warranty does not apply to any Signal Booster and Antennas determined by Wilson Electronics to have been subjected to misuse, abuse, neglect, or mishandling that alters or damages physical or electronic properties.

Failure to use a surge protected AC Power Strip with at least a 1000 Joule rating will void your warranty.

RMA numbers may be obtained by contacting Technical Support at 866-294-1660.

Disclaimer : The information provided by Wilson Electronics, LLC is believed to be complete and accurate. However, no responsibility is assumed by Wilson Electronics, LLC for any business or personal losses arising from its use, or for any infringements of patents or other rights of third parties that may result from its use.

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U.S. Patent Nos. – 7,221,967; 7,729,669; 7,486,929; 7,729,656; 7,409,186; 7,783,318

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or email: tech@wilsonelectronics.com. Mon.- Fri. Hours: 7 am to 6 pm MST.

Signal Booster Specifications

		AG Pro Quint				
Model Number	273470					
Antenna connectors	N-Female					
Antenna Impedance	50 Ohms					
Dimensions	8.875 x 6.0 x 1.5 inch (22.5 x 15.2 x 3.8 cm)					
Weight	2.8 lbs (1.270 kg)					
Frequency	698-746 MHz / 746-787 MHz / 824-894 MHz / 1850-1990 MHz / 1710-2155 MHz					
³ Power output for single cell phone (dBm)	700 A MHz	700 V MHz	800 MHz	1900 MHz	1700/2100 MHz	
Uplink	29.1	28.4	29.1	29.1	27.1	
Downlink	23.7	23.7	22.7	22.8	22.8	
Noise Figure (typical downlink/uplink)	5 dB nominal					
Isolation	> 90 dB					
Power Requirements	110-240 V AC, 50-60 Hz, 20 W					

Each Signal Booster is individually tested and factory set to ensure FCC compliance. The Signal Booster cannot be adjusted without factory reprogramming or disabling the hardware. The Signal Booster will amplify, but not alter incoming and outgoing signals in order to increase coverage of authorized frequency bands only. If the Signal Booster is not in use for five minutes, it will reduce gain until a signal is detected. If a detected signal is too high in a frequency band, or if the Signal Booster detects an oscillation, the Signal Booster will automatically turn the power off on that band. For a detected oscillation, after a minimum of 1 minute, the Signal Booster will automatically resume normal operation. After 4 (four) such automatic restarts, any problematic bands are permanently shut off until the Signal Booster has been manually restarted by momentarily removing power from the Signal Booster. Noise power, gain, and linearity are maintained by the Signal Boosters microprocessor, that determines necessary attenuation.

Wilson Electronics, LLC
 3301 East Deseret Drive, St. George, UT 84790
 For additional Technical Support visit www.WilsonElectronics.com
 or email at: tech@wilsonelectronics.com
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www.twitter.com/WilsonCellular www.facebook.com/WilsonCellular