Amplifier Installation Guide

SIGNALBOOST™

U-Booster™

Universal Dual-Band Wireless Cellular / PCS Amplifier with Built-in Antenna

Model # 2B5225 FCC ID: PWO2B5225 IC: 4726A-2B5225*

Contents:

⚠ **Warning:** 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 amplifier.

* The term “IC” before the certification number only signifies that Industry Canada technical specifications were met.

The phone must be placed in the U-Booster cradle at all times.

To achieve the best performance while the phone remains in the cradle, use a Bluetooth® headset for voice communications.

Wilson® Electronics, Inc.

Inside this Package

U-Booster™
Wireless Amplifier/
Cradle

DC Plug-In
Power Supply

Included: if U-Booster® Kit is purchased

Mini Magnet-Mount
antenna

Vehicle Dash
Mounting Brackets

Wilson® Electronics, Inc.
Accessory Antennas & Mounts

Accessory Antenna Options

In addition to the convenient mini magnetic roof mount antenna included with your kit, Wilson Electronics offers a wide variety of outside antennas to help you customize your amplifier for a specific application. All models shown below double the power to the cell site compared to the mini magnet antenna. See your dealer or visit www.wilsonelectronics.com

301103
12" Magnet Mount Antenna

301101
Trucker Antenna

Designed for mirror mounting on large trucks.

Mounts on Wilson 3/8" mounts: 901104 and 901106

301104
NMO Mount Antenna

For permanent vehicle roof mount on cars and pickup trucks.

Mounts on Wilson NMO style mounts: 901101, 901102, and 901103

301133
RV Antenna

Ideal for mounting on non-metal surfaces.

Accessory Power Supply, Antenna Mounting ,Cradle Mounting and Charging Cable Options

2D9969
AC Power Supply

901128
Antenna Window Mount

901132
Adjustable Suction Cup Cradle Mount

901131
Low Profile Suction Cup Cradle Mount

901120
Gooseneck Suction Cup Crade Mount

901130
Cup Holder Cradle Mount

859967- Micro USB to Mini USB

859968- HTC USB to Mini USB

859966- Mini USB to Mini USB

To order accessory items please call 800-204-4104 or visit www.wilsonelectronics.com

General

Your Wilson amplifier has been carefully engineered to significantly improve the performance of your phone. Together with an outside antenna, the amplifier's state-of-the-art circuitry is designed to increase your phones signal to and from the cell site, up to 20 times greater than the phone alone. The U-Booster™ reduces disconnects and dropouts and increases data communication rates on 2G and 3G networks.

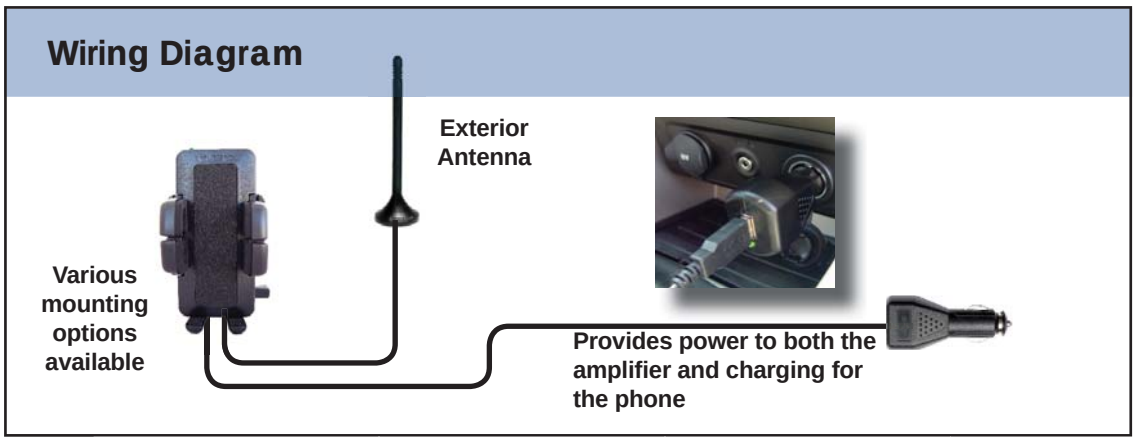
How it Works

With the phone in the cradle and while using a wireless Bluetooth headset (or wired hands free device) the outside antenna collects the cell tower signal and sends it through its cable to the amplifier located inside the cradle. The signal is then boosted by the amplifier and sent to the phone via the built-in antenna inside the cradle. When the phone transmits, the signal is picked up by the antenna inside the cradle, boosted by the amplifier and broadcast back to the cell tower via the outside antenna.

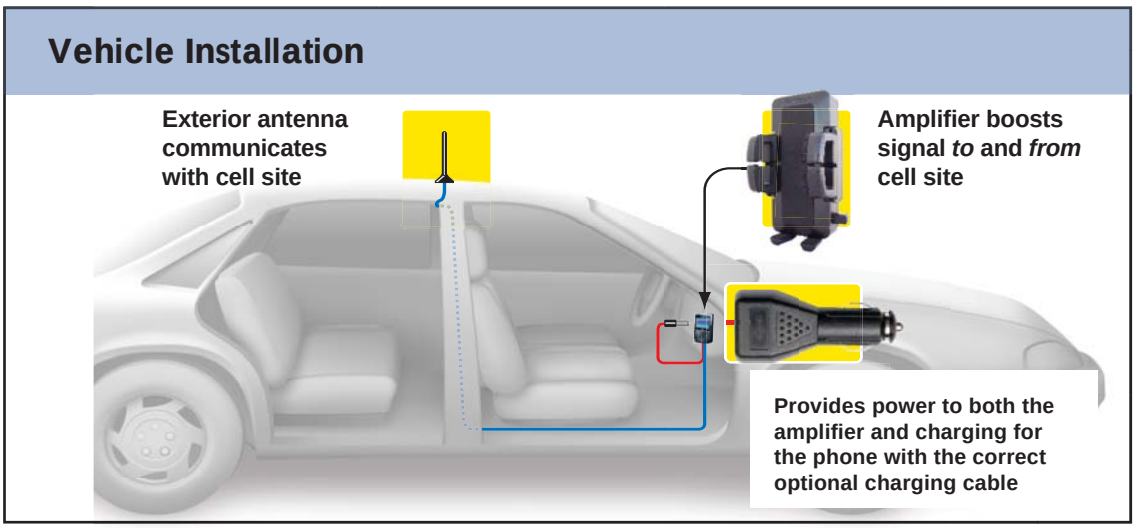
Before Getting Started

This guide will help you properly install the Wilson U-Booster™ Dual-Band Wireless Amplifier. **It is important to read through all of the installation steps prior to actual installation.** If you do not understand the instructions contact Wilson Technical Support at 866-294-1660**.**

Wiring Diagram



Vehicle Installation



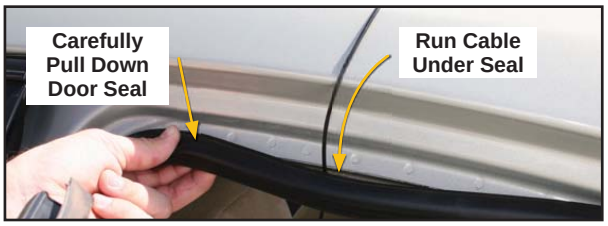
Vehicle Installation

1. Place Magnetic Roof Top Antenna

To receive the best cell signal, select a location for the outside antenna that is preferably in the center of the vehicle's roof, 12 inches away from any other antennas and free of obstructions, at least 8-12 inches from the rear or side windows or sunroof.

The outside antenna must be installed vertically. Signal performance will be degraded if the antenna is not vertical.

The antenna cable is small yet strong enough that it may be shut in most vehicle doors without damaging the cable.



For a more professional-looking installation, the antenna cable may be run under the door seal. Carefully pull down the door seal. Run the cable under the seal and push the seal back into place. This prevents constant wear and tear on the cable as the door opens and closes. The antenna cable is small enough to easily tuck under the door seal or plastic molding.

2. Attach the Mounting Bracket

Two mounting brackets are provided for attaching the U-Booster™ to your vehicle's dash. Choose the appropriate one for your application. See bracket specific mounting options below.

OPTION 1

ADHESIVE BRACKET

1. Clean the area where the bracket is to be mounted with the alcohol wipe provided. Allow to dry.
2. Peel the backing to expose the adhesive and press the bracket onto the desired location in the vehicle. Note: be sure the tab is positioned **vertically**, not horizontally.
3. Allow the adhesive to cure for 24 hours before you attach the U-Booster™.
4. Once the cradle is attached, you can adjust the angle of the adhesive bracket by applying gentle pressure to the top or bottom of the U-Booster™. This option is designed to swivel when the knurled nut is loosened, for greater adjustability of the U-Booster™ viewing angle. To lock bracket into position tighten large nut.

OPTION 2

ADHESIVE/SCREW SWIVEL BRACKET

This mount allows for adhesive mounting as well as more permanent screw mounting. This option is designed to swivel when the knurled nut is loosened, for greater adjustability of the U-Booster™ viewing angle. For adhesive mounting, follow steps 1, 2 and 3 in option 1.

For screw mounting, use an ice pick or an awl to punch through the adhesive and expose the four screw holes in the bracket. You must provide the screws of an appropriate size for your particular application. Using the bracket as a template, mark the locations for the screws as shown, drill pilot holes, attach the bracket with adhesive, and tighten all screws.

3. Attach the U-Booster™

Once you have installed your selected mount in the desired location, and waited 24 hours for adhesive to cure, attach the cradle by aligning the rectangular hole on its back with the tab on the mount, grasping the sides of the cradle, slide it downward approximately ¼ inch into place.

4. Powering up the Wilson U-Booster™ Amplifier

Make sure the outside antenna cable is connected before powering up the amplifier.

Connect the mini-USB plug on the power cable to the U-Boosters mini USB port located on the bottom of the U-Booster™ and insert the adapter into the cigarette lighter outlet of your vehicle.

The U-Booster™ may remain on all the time. However, leaving the U-Booster™ on in a vehicle when it is not running can discharge the battery in a day or two.

A good option is to power the U-Booster™ through the ignition switch so that the amplifier is turned on and off with the vehicle. The 12 VDC power source on many vehicles is shut off with the ignition key.

Note: With (optional) charging cables the U-Booster™ 5V power supply provides charging current to the phone.

IMPORTANT: Do not power up the amplifier unless the outside antenna cable is attached to amplifier.

WARNING: Use only the supplied Wilson power supply/connector to power your U-Booster™.

Phone charging connector port.
Connect to your phone with optional cables

U-Booster™ Power connector.
Connect to Wilson's power supply

859967- Micro USB to Mini USB

859968- HTC USB to Mini USB

859966- Mini USB to Mini USB

Optional Phone Charging Cables

Understanding the Amplifier Lights

Separation of U-Booster™ and the outside antenna is very important. In a vehicle, the metal roof acts as a barrier and helps shield the two antennas from each other, preventing oscillation.

Oscillation can occur when the roof mounted antenna is too close to the U-Booster™ inside the vehicle. An oscillation (or feedback) in an amplifier is similar to when a microphone is too close to a speaker in a sound system, resulting in a loud whistle. An oscillation in a cellular amplifier, if allowed to occur, can affect nearby cell sites' ability to handle calls.

If the light turns red, an oscillation has occured and the amplifier has powered down to protect the cell tower. The outside roof mounted antenna needs to be moved farther from the U-Booster™. In a vehicle installation, move the outside antenna on the roof of the car farther to the rear of the car, but at least 8-12 inches from the rear or side windows or sunroof. Remove power from the U-Booster™ and reconnect power - this resets the U-Booster™.

If the light is now green, the oscillation has stopped and the U-Booster™ is working. If the red light is still on, move the outside antenna farther away and repeat the process.

In a vehicle, always use a magnet-mount or roof-mount antenna. Do not use a glass-mount antenna, as oscillation may cause continuous shut-down of the U-Booster™.

Building Installation

Installing a Wilson Outside Antenna in a Building

Follow the specific antenna instructions included with the outside antenna (sold separately except for certain kits). These instructions assume that you are using a Wilson magnet-mount or mini magnet-mount antenna and the optional suction-cup window bracket.

To receive the best signal, select a window on the side of your building where your outside signal is the strongest.

Attach the suction-cup bracket to the inside of a window so that the cable will reach the amplifier location. Place the bracket as high on the window as possible for best performance.

Suction cup Antenna Window Mount -not included-
Available from Wilson Electronics.
www.wilsonelectronics.com or call 800-204-4104

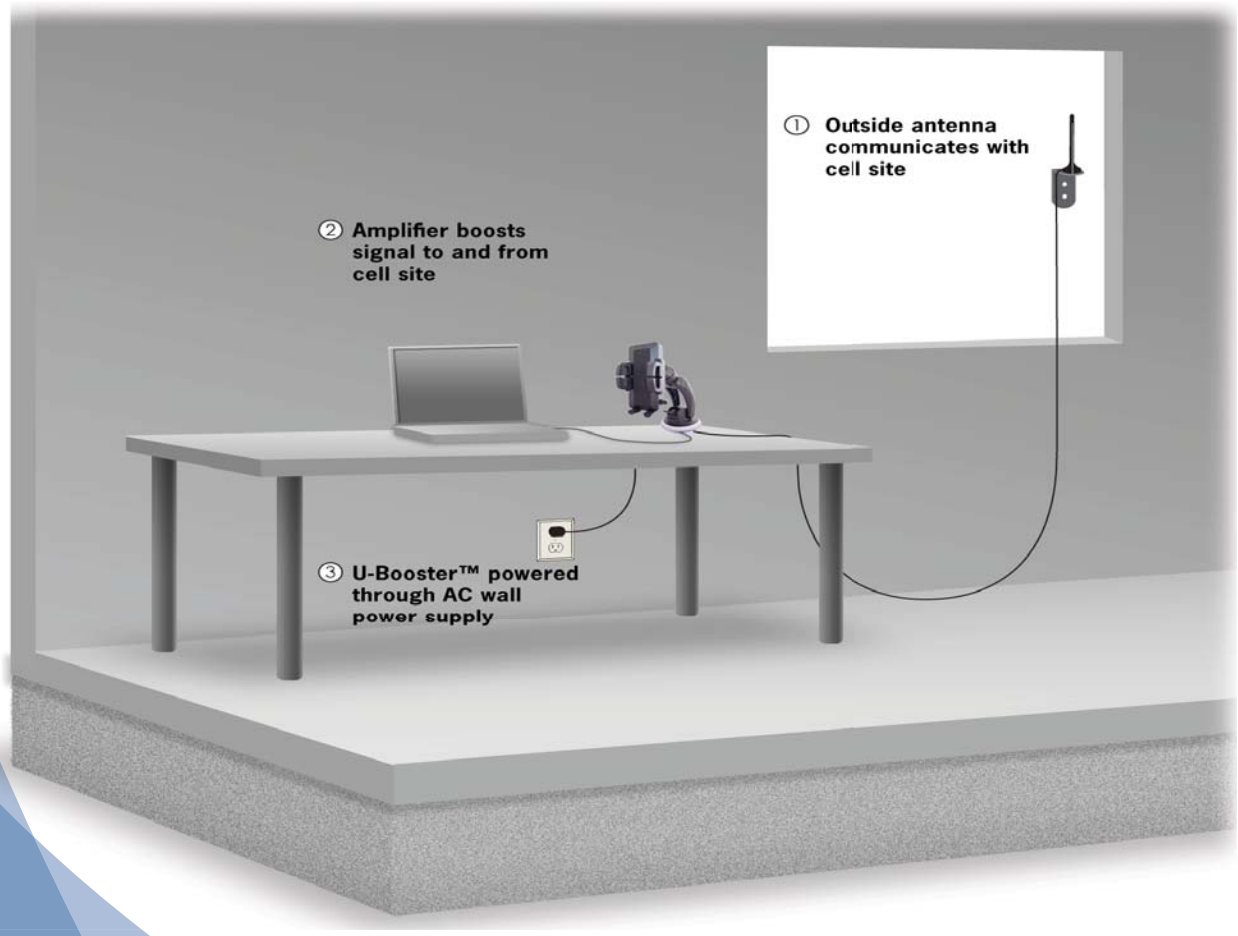
Once the bracket is in place, attach the magnet base of the antenna to the flat surface of the bracket. Note: the antenna must be installed vertically. Signal performance will be degraded if the antenna is not vertical.The antenna cable is small enough to easily tuck under the door seal or plastic molding.

Installing the Wilson U-Booster Amplifier in a Building

The Wilson U-Booster™ may be placed in any convenient indoor location, such as a desk or tabletop. The cell phone must be in the cradle and a Bluetooth® headset used for voice communications.

Attaching the Antenna

Once you have selected the location for the U-Booster™, run the cable from the outside antenna and attach it to the SMA connector on the bottom of the U-Booster™. Note: the U-Booster™ and the outside antenna must have a minimum separation of 8 feet to prevent oscillation.



Troubleshooting

SYMPTOM: Green Light always OFF

1) Make sure that the power source is supplying power to the U-Booster by checking that the light is on.
2) If the DC plug-in power supply is properly inserted, but the plug's light doesn't come on, then check the 12 volts from the car socket, and check the fuse in the DC plug-in power supply.

SYMPTOM: Red Light always ON

1) Make sure that the antenna connector is tight.
2) Place the outside antenna on its side (see picture). Reset U-Booster™ power (off and back on) again. The light should now be green (antenna was too close). Turn U-Booster™ off and proceed to step 3.
3) Return the outside antenna to its upright position, and move it further towards the rear of the vehicle, (away from the U-Booster™) but no closer than 8 inches from a sunroof, rear or side windows. Power U-Booster™ back on and recheck for a green light. If light is still red, continue moving the antenna further back and resetting the power until the light changes to green and stays green. Remember to stay more than 8 inches away from a sunroof, rear or side windows.
4) If the light remains red, call Wilson Technical Support at 866-294-1660.

WARNINGS AND RECOMMENDATIONS

⚠ Warning: Do not plug in the power supply until the outside antenna cable is attached to the amplifier.

⚠ Warning: **RF Safety:** The U-Booster™ cradle/amplifier must be installed with a separation of at least 8 inches from all persons and must not be located in conjunction with any other antenna or amplifier.

⚠ Warning: **RF Safety:** The FCC requires that a cell phone with cradle attached may only be used with the cradle mounted as illustrated in this installation guide. A cell phone held near the ear must be without the cradle attached.

⚠ Warning: **RF Safety:** The Outside Antennas authorized for use with this amplifier are shown on page 1 of this guide. Other antennas may be used, but only in fixed installations when located **outside of a building or structure** (not in mobile/ portable installations), provided that:

(a) antenna location ensures at least a 30 inch separation distance from all persons,
(b) antenna gain less cable loss does not exceed 15 dBi, and
(c) such antennas are not operating in conjunction with any other antennas, or transmitting devices.

If the vehicle has a sunroof, it is important to keep the outside antenna at least 8 inches from the edge of the sunroof. This prevents the amplifier from oscillating.

Separation of the U-Booster and the outside antenna is very important. In a vehicle, the metal roof acts as a barrier and helps shield the two antennas from each pother, preventing oscillation.

ABOUT WILSON ELECTRONICS

Wilson Electronics, Inc. has been a leader in the wireless communications industry for nearly 40 years. The company designs and manufactures amplifiers, antennas and related components that significantly improve cellular telephone signal reception and transmission in a wide variety of applications, both mobile and in-building.

With extensive experience in antenna and amplifier 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 amplifiers, Wilson uses a double-shielded RF enclosure and cell site simulators for compliance testing.

All products are engineered and assembled in the company's 55,000-square-foot headquarters in St. George, Utah. Wilson has product dealers in all 50 states as well as in countries all over the world.

Amplifier Specifications

	Dual Band 800/1900 MHz Specifications	
Model Number / Part Number	2B5225/805225	
Connectors	SMA Female	
Impedance (input/output)	50 ohms	
Frequency	824-894 MHz / 1850-1990 MHz	
[1]Passband Gain (nominal)		
	20 dB (typical) / 30 dB (maximum)	
[2]20 dB Bandwidth (nominal)		
800 MHz (uplink/downlink)	43 MHz / 45 MHz	
1900 MHz (uplink/downlink)	112 MHz / 84 MHz	

Power output for single cell phone (uplink)	800 MHz	1900 MHz
CDMA	28.9 dBm	31.8 dBm
GSM	30.9 dBm	32.6 dBm
EDGE	30.9 dBm	31.9 dBm
WCDMA	30.13 dBm	31.4 dBm

[3,4]Power output (uplink) for multiple cell phones:	Number of cell phones	Maximum Power[3]	
		800 MHz	1900 MHz
	2	27.3 dBm	21.5 dBm
	3	23.8 dBm	18.0 dBm
	4	21.3 dBm	15.5 dBm
	5	19.3 dBm	13.5 dBm
	6	17.8 dBm	12.0 dBm

Power output for single received channel (downlink)	800 MHz	1900 MHz
CDMA	-.9 dBm	1.0 dBm
GSM	-1.3 dBm	1.8 dBm
EDGE	-1.3 dBm	2.1 dBm
WCDMA	.32 dBm	2.3 dBm

[3,4]Power output for multiple received channels (downlink). The maximum power is reduced by the number of channels:	Number of channels	Maximum Power[3]	
		800 MHz	1900 MHz
	2	-1.1 dBm	2.2 dBm
	3	-4.7 dBm	-1.4 dBm
	4	-7.2 dBm	-3.9 dBm
	5	-9.1 dBm	-5.8 dBm
	6	--10.7 dBm	-7.4 dBm

Noise Figure (typical)	3 dB nominal
Isolation	> 40 dB
Power Requirements	5V DC, 1A

Notes:
1. Nominal gain is the maximum gain at any frequency in the passband.
2. Nominal bandwidth is the difference between two frequencies that are adjacent to the passband where the amplification is 20 dB lower than the passband amplification. One of the frequencies is lower than the passband and the other is higher.
3. The Manufacturer's rated output power of this equipment is for single carrier operation. For situations when multiple carrier signals are present, the rating would have to be reduced by 3.5 dB, especially where the output signal is re-radiated and can cause interference to adjacent band users. This power reduction is to be by means of input power or gain reduction and not by an attenuator at the output of the device.
4. The maximum power for 2 or more simultaneous signals will be reduced by 6 dB every time the number of signals is doubled.

30-Day Money-Back Guarantee

All Wilson Electronics products are protected by Wilson's 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.

1-Year Warranty

Wilson Electronics amplifiers are warranted for one (1) year against defects in workmanship and / or materials. Warranty issues may be resolved by returning the product directly to the reseller with a dated proof of purchase.

Amplifiers 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 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 within the continental United States.

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

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

Operation is subject to the following two conditions: (1) This device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of this device.