

# SIGNALBOOST™ DT™ DESKTOP



## SIGNALBOOST™ DT Dual-Band Cellular/PCS Amplifier System Installation Guide



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### **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 cases 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.

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.

### **Installation Instructions for the Following Wilson Amplifier:**

#### **SIGNALBOOST™ DT Dual-Band Cellular/PCS Amplifier**

Model # 271247, Part # 801247

FCC ID: PWO271247SB IC: 4726A-271247SB

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

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.

Disclaimer: The information provided by Wilson Electronics, Inc. is believed to be complete and accurate. However, no responsibility is assumed by Wilson Electronics, Inc. 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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## Welcome to the Wilson Electronics Family of Products!

Thank you for purchasing the Wilson SIGNALBOOST™ DT amplifier system. You are just minutes away from enjoying improved performance from your cellular phone and/or laptop data card. When installed properly, the SIGNALBOOST™ DT will significantly reduce dropped calls and improve both voice and data signal quality. By taking a few minutes to read and follow the simple instructions in this guide, you will get the most out of your new amplifier system. If you have questions during or after installation, please don't hesitate to contact a member of our Technical Support team by phone (866-294-1660 or 435-673-5021) or email ([tech@wilsonelectronics.com](mailto:tech@wilsonelectronics.com)). We're here to help!

### Inside this Package:



SIGNALBOOST™  
DT Amplifier



On-board  
Antenna



Antenna  
and Cradle



AC Power  
Supply



Coaxial Cable  
(50 ft.)



Amplifier  
Wall Bracket



Window-Mount  
(Packet A)



Wall-Mount  
(Packet B)



Pole-Mount  
(Packet C)

### Tools Required for Installation:

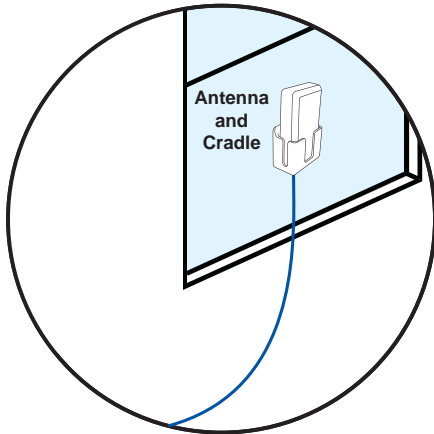
Depending on your particular installation, you will need the following tools:

- Window-mount - No additional tools needed
- Wall-mount - Drill and 3/16-inch bit, Phillips-head screwdriver
- Pole-mount - 1/4-inch open-end wrench or adjustable wrench

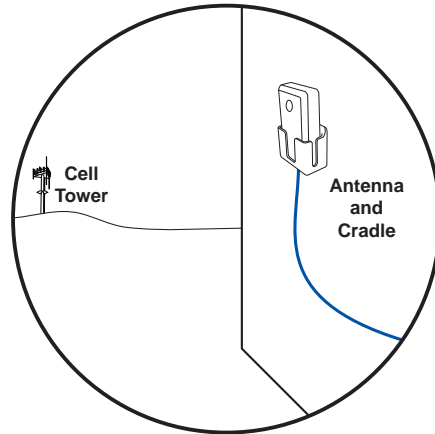
## How it Works

Your new Wilson SIGNALBOOST™ DT amplifier system has been carefully engineered to enhance the performance of your cell phone or cellular data card. Its advanced technology is designed to significantly improve voice and data signal quality and reduce disconnects and drop-outs.

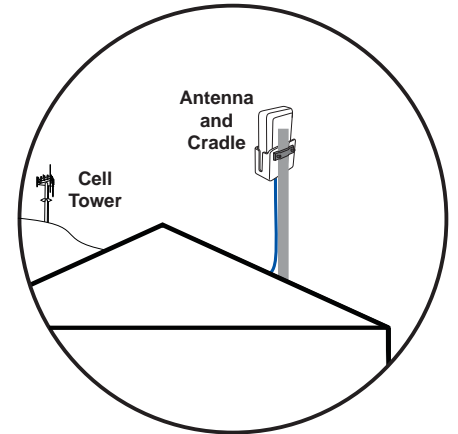
The SIGNALBOOST™ DT works with two antennas (included). The on-board antenna communicates with your cell phone or laptop data card, and the cradle antenna communicates with the cell tower. The cradle antenna is designed for installation inside on a window or outside on a wall or a pole, depending on your preferred configuration.



**Window Installation (A)**

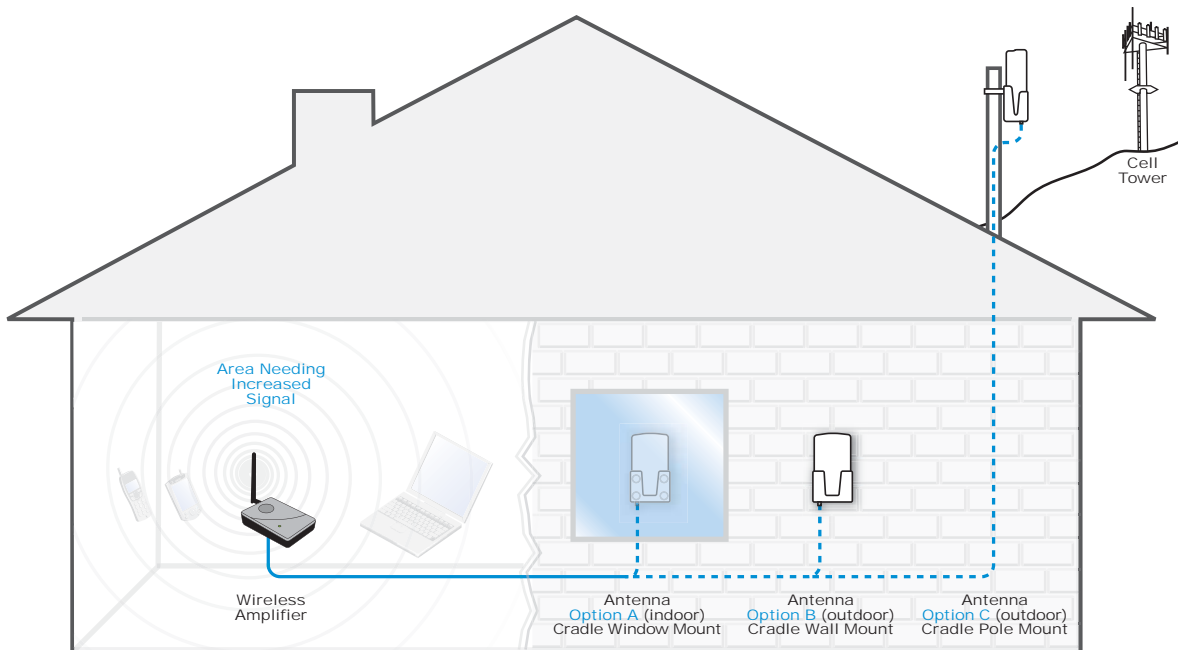


**Wall Installation (B)**



**Pole Installation (C)**

The cradle antenna collects the the outside signal and sends it through a cable to the SIGNALBOOST™ DT. The signal is then boosted and sent to the on-board antenna, which communicates with your cell phone or data card. When the cell phone or data card transmits, the on-board antenna picks up the signal and sends it to the amplifier where it is boosted and sent through the cradle antenna to the cell tower.



**Note:** While the SIGNALBOOST™ DT is designed to give you reliable signal improvement with the included antennas, Wilson offers a variety of optional antennas and accessories that enable you to customize your SIGNALBOOST™ DT to your specific needs. Visit [www.wilsonelectronics.com](http://www.wilsonelectronics.com) for details.

## Before Getting Started

This guide will help you properly install Wilson's SIGNALBOOST™ DT. **It is recommended that you read through all of the installation steps and familiarize yourself with the product.** Read the instructions and visualize where you want to place the components before mounting any equipment. If you do not understand the instructions in full, please contact Wilson Technical Support at 866-294-1660.

## 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's 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 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 block the signal.

Whether you're too far from the nearest cell tower to obtain a usable signal or you're located in an area or building where the signal is obstructed, the Wilson SIGNALBOOST™ DT can help you get connected and stay connected!

## How to Check Your Outside Signal Strength

Before you install your SIGNALBOOST™ DT, it is very important that you determine the location of the best available cellular signal outside your building. This will affect where you place the cradle antenna and will help you get the best performance from your system.

Your cell phone can help you find the strongest outside signal, using any or all of the following methods:

1. Place calls from several locations outside your building and note where you get the best reception.
2. Check the bar indicator on your cell phone display and note where the signal appears to be the strongest. (Note: cell phone bars are only an approximation of signal strength and vary from phone to phone.)
3. Using the test mode on your cell phone, move around the outside of your building and determine the location of the strongest signal. (For assistance with the test mode on your particular phone, visit the Technical Support section of our website: [www.wilsonelectronics.com](http://www.wilsonelectronics.com) or call our Technical Support Department at 866-294-1660 or 435-673-5021.)

Once you have determined where the outside signal is strongest, you should plan to install the cradle antenna in that general area, either inside or outside. (See the following section for alternative installation options.)

## Installation Options - Cradle Antenna

The SIGNALBOOST™ DT comes with all necessary parts for installation of the cradle antenna in three alternative locations:

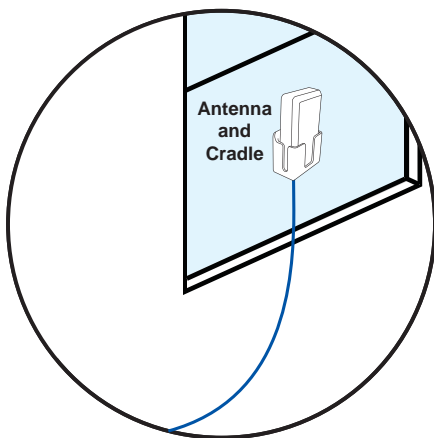
- Inside on a window (suction cups or double-sided adhesive strip)
- Outside on a wall (screws, washers and anchors)
- Outside on a pole (bracket, nuts and washers)

The best location for your particular application depends primarily on outside signal strength (see page 4). For example, if your strongest signal is obtained on the north side of the building and a suitable window exists in that area, you may want to mount the cradle antenna inside on the glass (see page 6). If you find the strongest signal in an area with no window, an outside wall mount may be a better choice (see page 7). Or, if your particular application allows for the installation of the antenna on a roof or balcony to obtain the strongest signal, mounting the cradle outside on a pole (not included) may be your best option (see page 8).

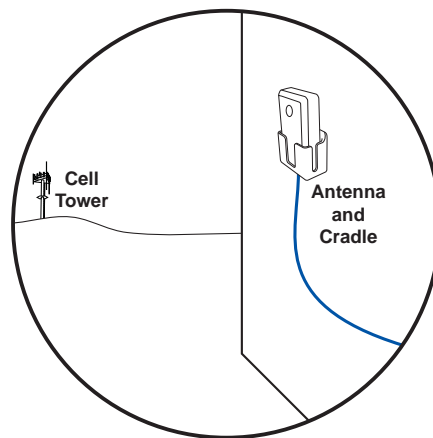
**IMPORTANT!** Depending on your particular installation, the antenna must be positioned in the cradle correctly. The side with the Wilson label should face in the direction of the cell tower.

**Note:** The amplifier itself is designed to sit on a desk, table or shelf; however, it may also be mounted on a wall with the included triangular bracket if you so desire (see page 9).

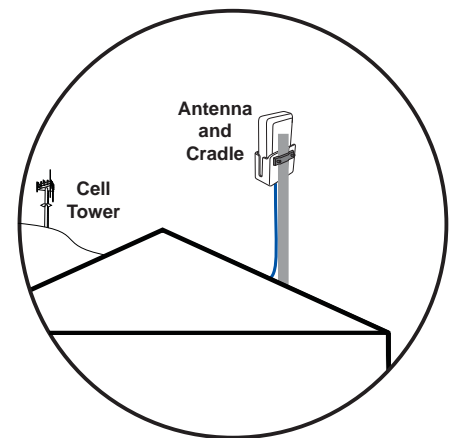
In all cases, you will want to insure a separation of at least 20 feet between the cradle antenna and the amplifier. The SIGNALBOOST™ DT comes with 50 feet of low-loss coaxial cable. Additional lengths of cable and the necessary connectors are available through your Wilson dealer, but keep in mind that using longer cable will result in some signal loss.



Window Installation (A)



Wall Installation (B)



Pole Installation (C)

## Installing the Cradle Antenna

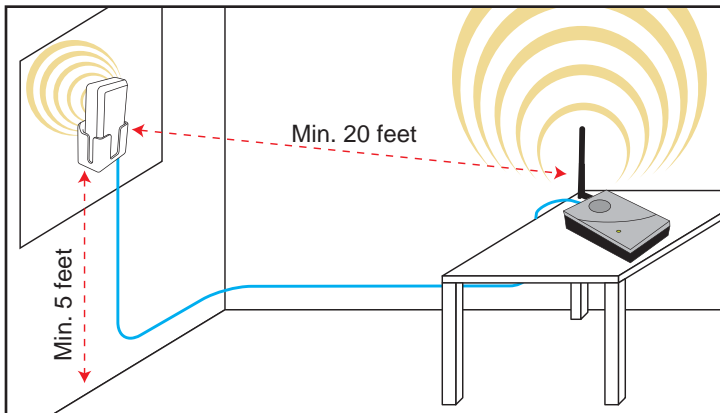
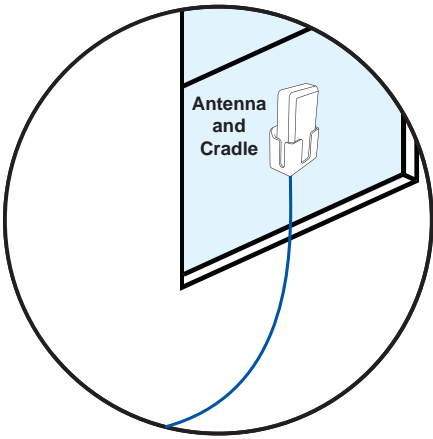


Figure 1

## Window Mount (Packet A)

1. Select a location on the inside of the window at least 5 feet up from the floor, at least 20 feet away from any other amplifier or antenna and at least 20 feet from where the amplifier will be located (see Figure 1).



**Warning: RF Safety:** The cradle antenna, when used with the included cable, must have a separation distance of at least 8 inches from all persons. If the cable is shortened, or if a different type of cable is used, or if a different antenna is used, consult with Wilson Technical Support to verify that the planned installation is safe. Call 866-294-1660 or 453-673-5021, or email [tech@wilsonelectronics.com](mailto:tech@wilsonelectronics.com).

2. Clean the area on the glass with the supplied alcohol prep pad.
- 3a. If you plan to remove or relocate the cradle antenna at some point, use the suction cups provided in Packet A. Using a twisting motion, press the suction cups into the two holes on the antenna cradle (see Figure 2), then press the cradle onto the glass at the desired location.
- 3b. For a more permanent installation, use the double-sided adhesive strip. Cut the strip as shown in Figure 3. Peel the backing from one side of the strip and place it on the back of the cradle (see Figure 4). Peel the backing from the other side of the strip and press the cradle onto the glass at the desired location.
4. Insert the antenna into the cradle **with the Wilson label facing in the direction of the cell tower**. The cable connection should protrude through the bottom of the cradle.
5. Connect one end of the supplied coax cable to the antenna and route the cable as desired to where the amplifier will be located.

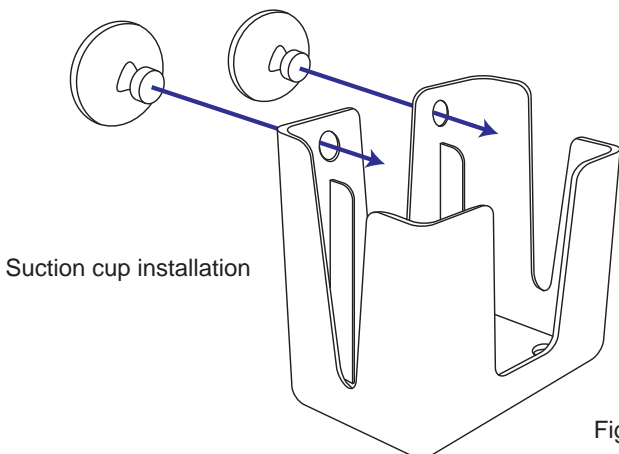


Figure 2

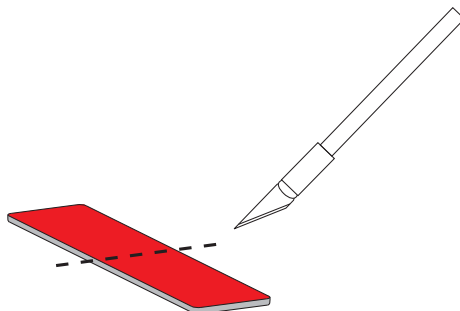
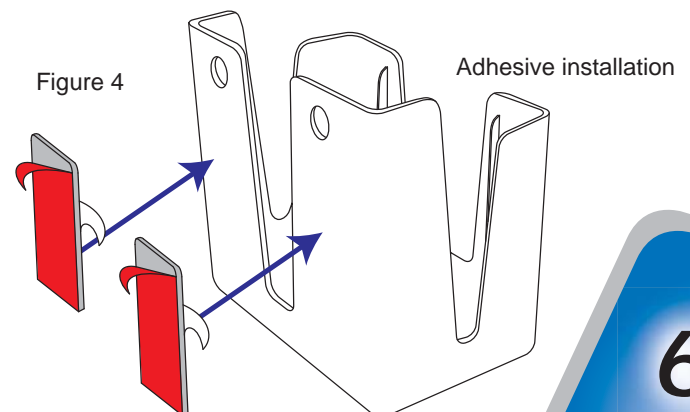


Figure 3



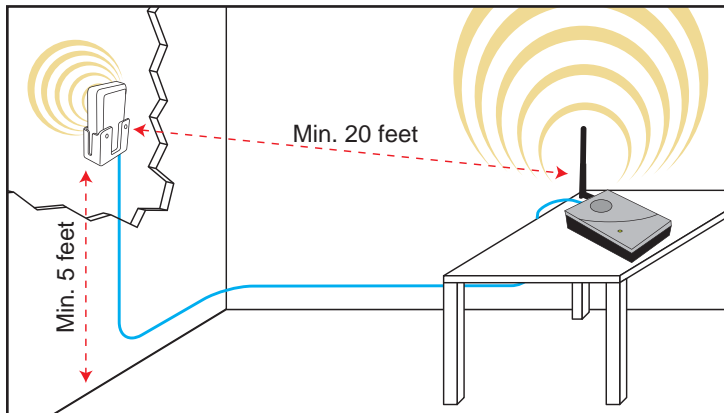
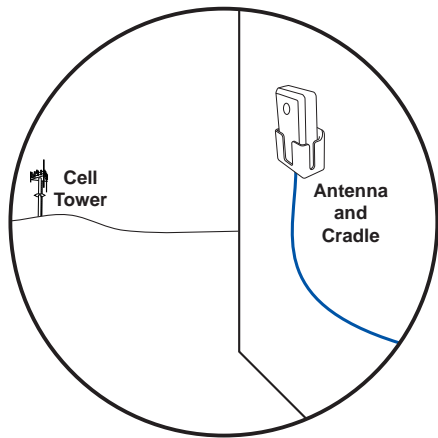


Figure 5

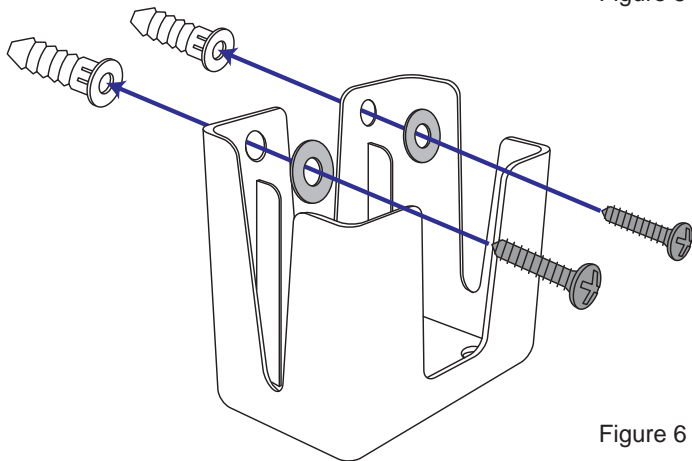


Figure 6

## Wall Mount (Packet B)

1. Select a location on an outside wall at least 5 feet up from the ground, at least 20 feet away from any other amplifier or antenna and at least 20 feet away from where the amplifier will be located (see Figure 5).



**Warning: RF Safety:** The cradle antenna, when used with the included cable, must have a separation distance of at least 8 inches from all persons. If the cable is shortened, or if a different type of cable is used, or if a different antenna is used, consult with Wilson Technical Support to verify that the planned installation is safe. Call 866-294-1660 or 453-673-5021, or email [tech@wilsonelectronics.com](mailto:tech@wilsonelectronics.com).

2. Using the cradle as a template, position it on the wall in the desired location and mark the screw holes with a pencil.
3. Drill two holes where marked, using a 3/16-inch bit, and insert the screw anchors.
4. Line up the holes in the cradle with the screw anchors and mount the cradle to the wall using two screws and two washers (see Figure 6). Tighten the screws with a Phillips-head screwdriver.
5. Insert the antenna into the cradle **with the Wilson label facing in the direction of the cell tower**. The cable connection should protrude through the bottom of the cradle.
6. Connect one end of the supplied coax cable to the antenna and route the cable as desired to where the amplifier will be located.



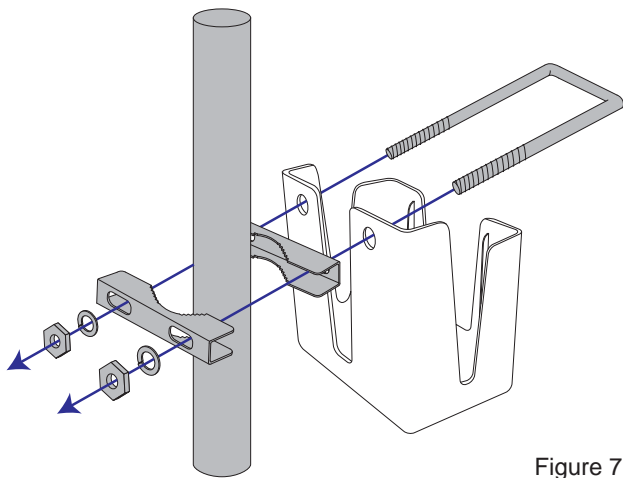
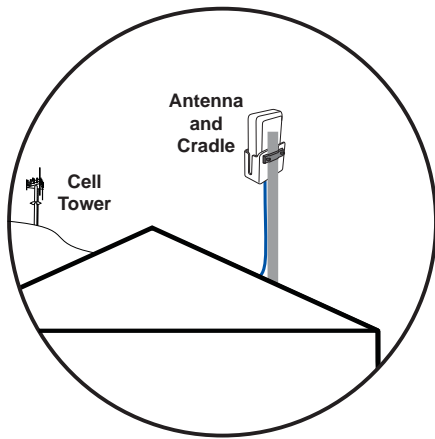


Figure 7

## Pole Mount (Packet C)

1. The supplied pole-mount bracket is designed to accommodate a pole diameter of 1 to 2 inches. Install the pole in the desired location using your own hardware.



**Warning: RF Safety:** The cradle antenna, when used with the included cable, must have a separation distance of at least 8 inches from all persons. If the cable is shortened, or if a different type of cable is used, or if a different antenna is used, consult with Wilson Technical Support to verify that the planned installation is safe. Call 866-294-1660 or 453-673-5021, or email [tech@wilsonelectronics.com](mailto:tech@wilsonelectronics.com).



**Warning:** Take care to ensure that neither you nor the pole comes near any power lines during installation.

2. Insert the supplied U-bolt through the holes in the cradle and slide one half of the bracket assembly onto the U-bolt (see Figure 7).
3. Fitting the assembly onto the pole, slide the second half of the bracket onto the U-bolt and secure it with lock washers and nuts. Be sure the cradle is at the desired height on the pole and is rotated toward the nearest cell tower before tightening the nuts.
4. Insert the antenna into the cradle **with the Wilson label facing in the direction of the cell tower**. The cable connection should protrude through the bottom of the cradle.
5. Connect one end of the supplied coax cable to the antenna and route the cable as desired to where the amplifier will be located.

## Installing the Amplifier Unit

**Warning:** The amplifier unit is designed for use in an indoor, temperature-controlled environment. It is not intended for use in attics or similar locations subject to temperatures in excess of 120 degrees Fahrenheit.

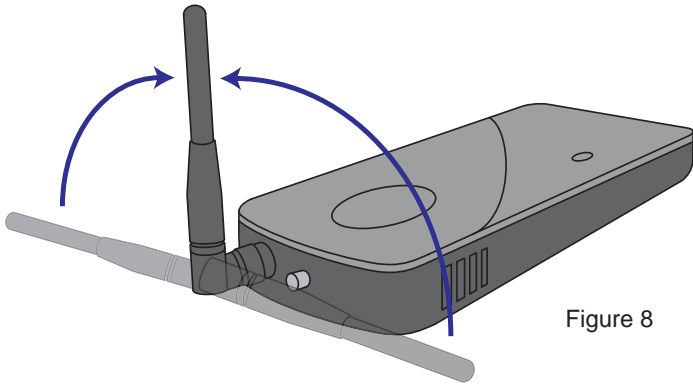


Figure 8

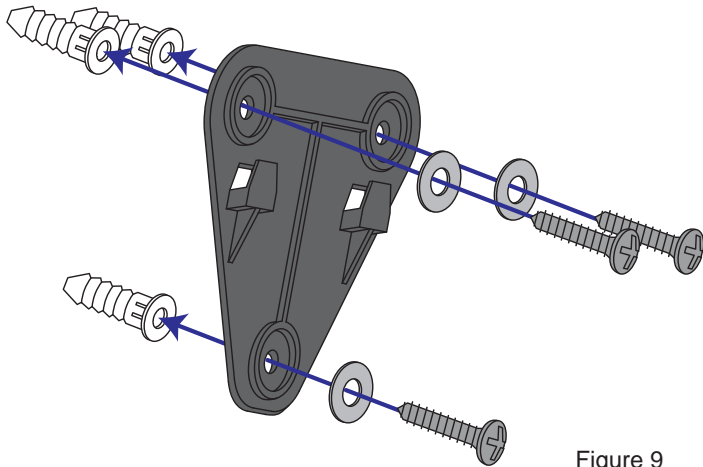


Figure 9

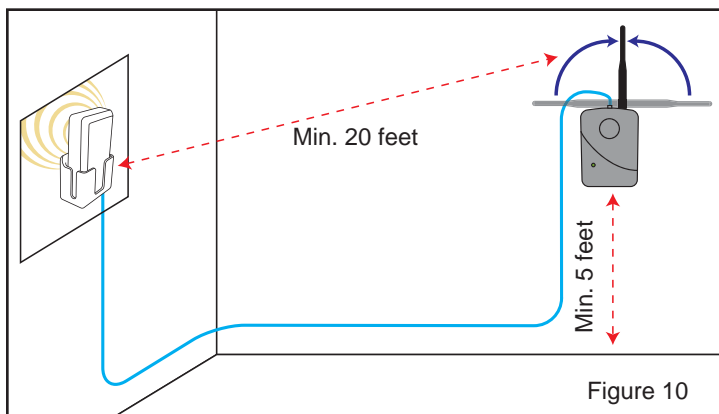


Figure 10

**Warning:** The on-board antenna must have a separation distance from all persons that is at least 8 inches.

**Warning:** Connecting the amplifier directly to the cell phone with use of an adapter will damage the cell phone.

### Desk or Table Mount

1. Attach the on-board antenna by screwing it onto the threaded connector on the amplifier. Position the antenna vertically by rotating it on its base (see Figure 8). Operating the amplifier with the on-board antenna in a position other than vertical will reduce its performance.
2. Place the amplifier on a desk, table or similar surface where you have routed the coax cable.

**Warning: RF Safety:** The amplifier must be placed so that its on-board antenna has a separation distance of at least 8 inches from all persons.

3. Attach the cable to the connector on the amplifier.

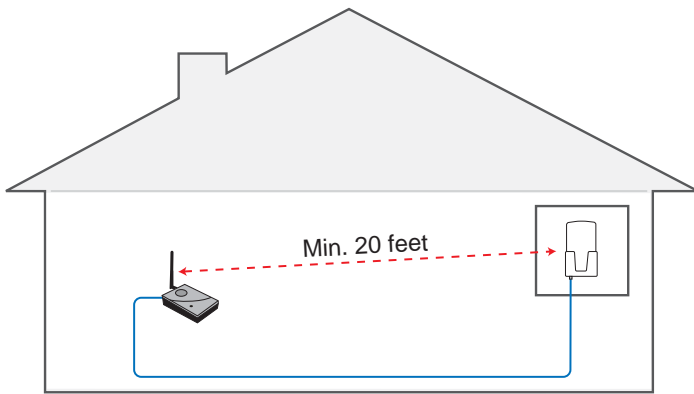
### Wall Mount

1. Attach the on-board antenna by screwing it onto the threaded connector on the amplifier (see Figure 8).
2. Position the triangular wall-mount bracket at the desired spot on the wall, at least 5 feet up from the floor and away from any other amplifier or antenna.


**Warning: RF Safety:** The amplifier must be placed so that its on-board antenna has a separation distance of at least 8 inches from all persons.


3. Using the bracket as a template, mark the locations for the screws using a pencil.
4. Drill the holes, using a 3/16-inch drill bit, and insert the screw anchors. **Note:** if you are not using the wall-mount hardware in Packet B for the cradle antenna, you can use it for the amplifier. Otherwise, you will need to purchase three screws, washers and anchors.
5. Align the triangular bracket with the screw anchors (Figure 9) and attach it with screws and washers. Tighten the screws with a Phillips-head screwdriver.
6. Slide the amplifier onto the bracket. Position the antenna vertically for best performance (see Figure 10). Operating the amplifier with the on-board antenna in a position other than vertical will reduce its performance.
7. Attach the cable to the connector on the amplifier.

## Powering Up the Amplifier



1. Ensure that the distance between the amplifier and the cell phone or cellular data card does not exceed 4 feet.
2. **Important:** Ensure that any other cell phones and cellular data cards are turned off unless they are at least twice the distance from the amplifier than the desired unit.
3. Ensure that the distance between the on-board antenna and the cradle antenna is a minimum of 20 feet. If you are using a different antenna configuration, see the separation guidelines for your specific antennas or call Wilson's Technical Support department at 866-294-1660 or 435-673-5021.
4. Ensure that the coax cable is attached to the amplifier and the cradle antenna before powering up the amplifier.
5. Plug the power supply into the amplifier input marked "Power" (carefully, to avoid damaging the center pin) and then into a wall outlet.

 **Warning:** Verify that the on-board antenna is attached and that the cable from the cradle antenna is connected before powering up the amplifier.

 **Warning:** Use only the power supply provided in this package. Use of a non-Wilson product may damage your equipment.

## Understanding the Indicator Light

**GREEN:** 

**AMBER:** 





**RED:** 

The indicator light on the top of the amplifier will be **GREEN** when the unit is powered up and working properly.

If the indicator light is **AMBER**, this indicates that the cell phone or data card may be too close to the amplifier and the amplifier has automatically reduced its gain. Move farther from the amplifier when making a call so that the light is green.

If the indicator light is **RED**, the amplifier has detected oscillation. Increase the separation between the on-board antenna and the cradle antenna (or whatever two antennas you may be using). Remove and reinsert the power cable to reset the amplifier. If the light remains red, repeat the antenna separation/power reset procedure until the light is green.

## Warnings and Recommendations

-  **Warning:** Connecting the amplifier directly to the cell phone with use of an adapter will damage the cell phone.
-  **Warning:** Attach the on-board antenna and connect the cradle antenna before powering up the amplifier.
-  **Warning:** Use only the power supply provided in this package. Use of a non-Wilson product may damage your equipment.
-  **Warning:** **RF Safety:** A minimum separation distance of at least 8 inches must be maintained between the antennas supplied with this amplifier and all persons. A different antenna may be used in place of the on-board antenna, provided that its gain does not exceed 15 dBi and it is separated by at least 8 inches from all persons. Antennas **outside of the building** may have gains as high as 15 dBi, provided that a separation distance of at least 30 inches is maintained between the antennas and all persons. Use of antennas with higher than the above maximum gains and/or closer to people than the specified minimum distance is in violation of FCC regulations for which the offender is fully liable.

## Frequently Asked Questions

*What kind of improvement in cell phone performance can I expect with the SIGNALBOOST™ DT?*

The SIGNALBOOST™ DT's performance will depend somewhat on the strength of the cellular signal outside your home or building. However, if you install the SIGNALBOOST™ DT in accordance with the instructions in this guide, you can expect a significant improvement in your ability to use your cell phone or cellular data card indoors.

*Where should I install my SIGNALBOOST™ DT to get the best coverage?*

You should install the amplifier in the area where you most need an improved signal. The farther you are from the amplifier, the less improvement you will experience. It is also important to install the cradle antenna in a location where you have the strongest outside signal (see page 4). Also keep in mind the distance between the amplifier and the cradle antenna. You'll need at least 20 feet of separation to prevent the start of oscillation, but you'll probably want to stay within the 50-foot length of the coax cable. (Additional cable and the necessary connectors are available from your Wilson dealer, but using more cable will result in some signal loss.)

*Instead of placing the amplifier on a desk or table, I'd rather attach it to a wall – will it still work OK?*

Yes! Your SIGNALBOOST™ DT comes with a triangular wall bracket that allows you to mount the amplifier on a wall. Just be sure that the on-board antenna is positioned vertically and not at a right angle to the wall (see page 9).

*What color should the indicator light be showing?*

Once the amplifier is powered up, the indicator light should be green during normal operation.

*The amplifier indicator light is amber – what does that mean?*

An amber light indicates that the amplifier has reduced its gain because the cell phone or data card is too close to it. Move farther away from the amplifier when making a call or using your data card.

*The amplifier light is red – what does that mean?*

A red light indicates oscillation between the on-board antenna and the cradle antenna. Increase the separation between the amplifier and the cradle antenna, then remove and reinsert the power cable to reset the amplifier. If the light remains red, repeat this procedure until the light is green.

*I have a Nextel phone – will the SIGNALBOOST™ DT boost that signal?*

The SIGNALBOOST™ DT is designed to work with both the Cellular (800 MHz) and PCS (1900 MHz) bands, but not the iDEN/Nextel frequency. Wilson offers specific amplifiers for iDEN/Nextel users. Visit [www.wilsonelectronics.com](http://www.wilsonelectronics.com) for details.

*Can I use my own cable for my installation?*

The low-loss RG6 cable included with your product has been specifically selected for the SIGNALBOOST™ DT. Use of another type or longer length of cable will likely degrade the system's performance.

*There are frequently several people using cell phones in my building at the same time – will the SIGNALBOOST™ DT improve the signal for all of them?*

Absolutely! The SIGNALBOOST™ DT is designed to support multiple users simultaneously.

*I have questions about my installation – where can I get some help?*

Wilson's Technical Support representatives are just a phone call or email away. Call 866-294-1660 or 435-673-5021, or send an email to [tech@wilsonelectronics.com](mailto:tech@wilsonelectronics.com).



## **About Wilson Electronics**

Wilson Electronics, Inc. a leader in the wireless communications industry for over 40 years, designs and manufactures amplifiers, antennas and related components that significantly improve cellular telephone signal reception and transmission in a 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 electrically insulated RF enclosure and cell site simulators for compliance testing.

Wilson amplifiers feature patent-pending Smart Technology™ that enables them to automatically adjust their power based on cell site requirements. By detecting and preventing oscillation, signal overload and interference with other users, these Smart Technology™ amplifiers improve network cell phone areas without compromising the carrier's system.

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

# Amplifier Specifications

|   |   | Dual-Band Wireless<br>800/1900 MHz Specifications |          |
|---|---|---|----------|
| <b>Model Number</b>   | 271247                                      |   |          |
| Connectors  | To onboard antenna: TNC Female              | To cradle antenna: F Female                       |          |
| Impedance   | Onboard antenna: 50 ohms                    | Cradle antenna: 75 ohms                           |          |
| Dimensions  | 6.2 x 4.2 x 1.5 inch (15.7 x 10.7 x 3.8 cm) |   |          |
| Weight  | 0.64 lbs (0.29 kg)                          |   |          |
| Frequency   | 824-894 MHz / 1850-1990 MHz                 |   |          |
| <b><sup>1</sup>Passband Gain (nominal)</b>                                |   |   |          |
|   | 800 MHz                                     | 55 dB Maximum                                     |          |
|   | 1900 MHz                                    | 55 dB Maximum                                     |          |
| <b><sup>2</sup>20 dB Bandwidth (nominal)</b>                              |   |   |          |
|   | 800 MHz                                     | 32 MHz  |          |
|   | 1900 MHz                                    | 74 MHz  |          |
| <b>Power output for single cell phone (uplink)</b>                        |   |   |          |
|   | 800 MHz                                     | 1900 MHz  |          |
|   | CDMA  | 29.9 dBm  | 29.7 dBm |
|   | GSM   | 28.8 dBm  | 31.1 dBm |
|   | EDGE  | 30.8 dBm  | 31.1 dBm |
|   | AMPS  | 29.5 dBm  |          |
| <b>Power output for single received channel (downlink)</b>                |   |   |          |
|   | 800 MHz                                     | 1900 MHz  |          |
|   | CDMA  | 15.6 dBm  | 12.5 dBm |
|   | GSM   | 11.7 dBm  | 11.6 dBm |
|   | EDGE  | 12.4 dBm  | 9.5 dBm  |
|   | AMPS  | 12.3 dBm  |          |
| <b><sup>3</sup>Power output for multiple received channels (uplink)</b>   |   |   |          |
|   |   | Maximum Power                                     |          |
| The maximum power is reduced by the number of channels:                   | Number of channels                          | 800 MHz   | 1900 MHz |
|   | 2   | 22.6 dBm  | 23.2 dBm |
|   | 3   | 19.0 dBm  | 19.7 dBm |
|   | 4   | 16.5 dBm  | 17.2 dBm |
|   | 5   | 14.6 dBm  | 15.3 dBm |
|   | 6   | 13.0 dBm  | 13.7 dBm |
| <b><sup>4</sup>Power output for multiple received channels (downlink)</b> |   |   |          |
|   |   | Maximum Power                                     |          |
| The maximum power is reduced by the number of channels:                   | Number of channels                          | 800 MHz   | 1900 MHz |
|   | 2   | 13.4 dBm  | 14.3 dBm |
|   | 3   | 9.9 dBm   | 10.7 dBm |
|   | 4   | 7.4 dBm   | 8.2 dBm  |
|   | 5   | 5.4 dBm   | 6.3 dBm  |
|   | 6   | 3.8 dBm   | 4.7 dBm  |
| Noise Figure (typical)  | 3.5 dB nominal                              |   |          |
| Isolation (uplink/downlink)   | > 90 dB                                     |   |          |
| <b>Power Requirements</b>   | 110-240 V AC, 50-60 Hz, 8 W                 |   |          |

**Notes:**

- Nominal gain is the maximum gain at any frequency in the passband.
- 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.
- 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.
- The maximum power for 2 or more simultaneous signals will be reduced by 6 dB every time the number of signals is doubled.