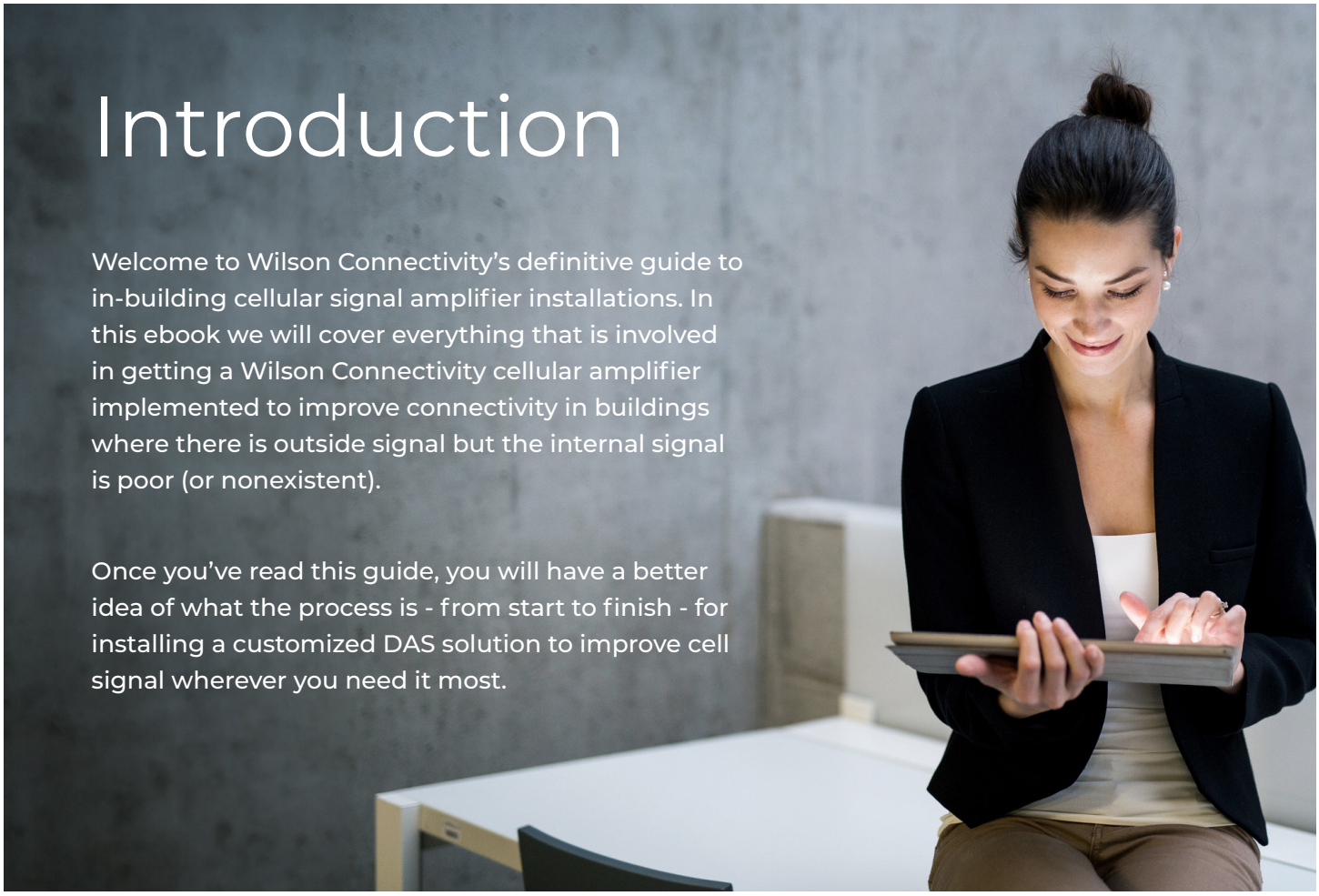
EBOOK

Wilson Connectivity Installation Guide: In-Building Passive DAS Cellular Amplifier Solution

Introduction



Welcome to Wilson Connectivity's definitive guide to in-building cellular signal amplifier installations. In this ebook we will cover everything that is involved in getting a Wilson Connectivity cellular amplifier implemented to improve connectivity in buildings where there is outside signal but the internal signal is poor (or nonexistent).

Once you've read this guide, you will have a better idea of what the process is - from start to finish - for installing a customized DAS solution to improve cell signal wherever you need it most.

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What is a Cellular Amplifier and How Does it Improve Signal Inside of Buildings?

As much as cellular service has permeated the far corners of the globe, there are still places where — whether because of remote location, environmental interference, or building materials — indoor cell signal reception is problematic. Cell phone signal amplifiers address this problem by amplifying existing, strong outside cell signal and pushing it to indoor areas where signal is weak.

Cell signal amplifiers can improve call quality and cellular data reception inside residential buildings, hotels, corporate offices, healthcare facilities, warehouses, and other buildings of all sizes. These repeaters can detect and collect cell signals that are up to 30 times more faint than what can be detected by a mobile device.

Wilson Connectivity has advanced technology called Multi-Tower Targeting built into the enterprise products that use its three outdoor-antenna-port configuration to receive cellular signal from multiple cell towers at the same time boosting the strongest possible signal for all carriers into your building.

Know before you go.

If you're considering a cellular signal amplifier solution for your building, it's helpful to know what to expect throughout the implementation process.

Signal Repeaters Are Comprised of Three Main Components

The broadcast antenna is installed indoors and delivers the amplified cell signal to phones and other mobile devices.

As its name implies, the amplifier unit amplifies the signal captured from the cell tower.

The donor antenna is mounted outside of a building in order to capture strong signal from nearby towers. These antennas are typically placed on the roof or side of a building.

Get a Needs Assessment

A phone consultation with a Wilson Connectivity authorized representative will help you understand and identify how a cellular amplifier can address your needs based on your particular situation. During this initial conversation you'll discuss the size of your building, its location, what problems you're experiencing, and where. They'll also note your timeline for the installation and who will be involved in decision making throughout the process.

You'll also discuss your connectivity needs. For example, do you need strong, reliable cell signal coverage mostly for phone calls, texting, uploading and downloading data, or all of the above? Also, what solutions have you looked at in the past to address this issue?

Working with a Dedicated Integrator

Your Wilson Connectivity authorized representative can discuss your cellular connectivity needs with you and get you on the path to your cellular amplifier installation in your building. They'll start by referring you to a Wilson-certified integrator in your area. This professional has a deep working knowledge of the different products that can improve signal inside of buildings and how they can be used.

Getting a Site Survey

Once you've completed this initial exploratory conversation, your integrator will schedule a site survey at your building. A site survey is the first and most crucial step in assessing your cellular signal amplification needs to ensure you receive the best solution.

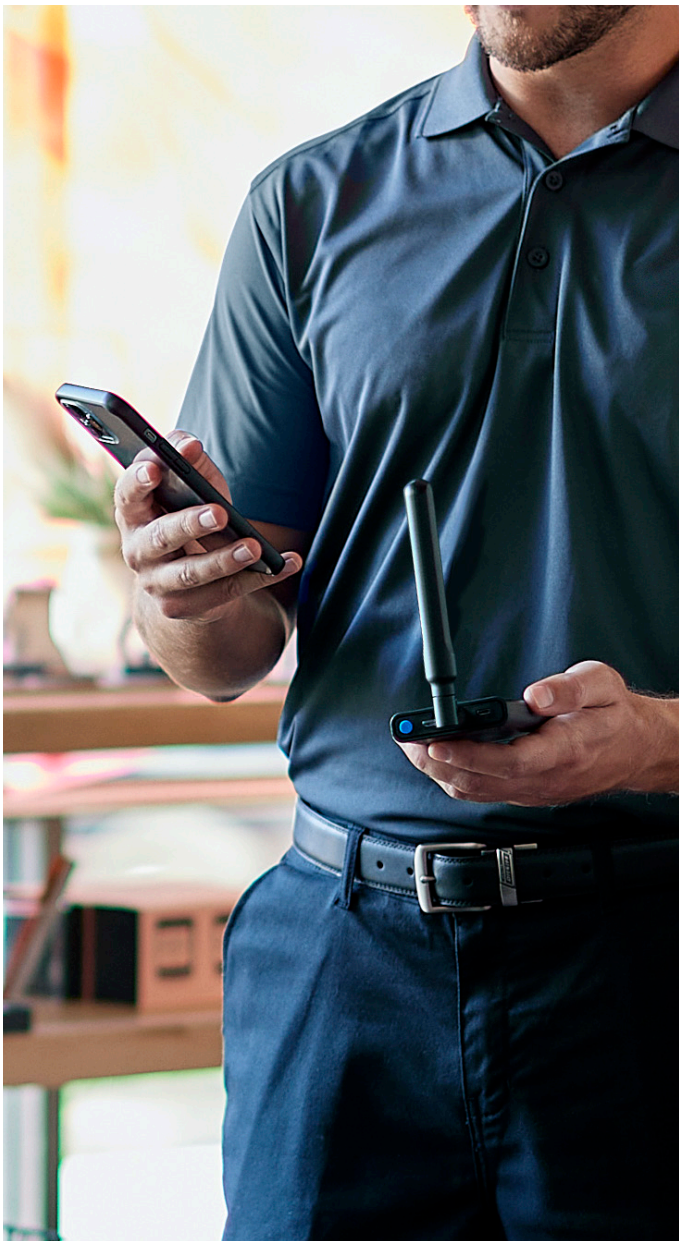
Your integrator will conduct a complete assessment to accurately determine the source of the strongest cell signal in your area and which carriers/network get the best and worst signal there. The integrator will note the strongest and weakest signal areas inside your building.

The integrator relies on decibels instead of bars to get the most accurate measure of signal strength since the bars on a mobile phone are based on a manufacturer generated algorithm. Therefore bars can vary greatly among different carriers and devices.

All of this signal measurement data will ultimately dictate the type of equipment needed to improve your signal, and where it should be placed to achieve the best results. It's important to conduct the site survey at a time of day that will provide an

accurate picture of what the typical cellular needs and usage demands are in your building.
First of all, you will need to ensure that the integrator can access all necessary places in the building to conduct a thorough site survey. This begins with providing a complete floor plan and, if necessary, working with building maintenance, security personnel, or city departments to obtain access to the roof or areas that may be restricted.

In fact, roof access is almost always necessary because that's where donor antennas are typically placed. In order to get the most out of your site survey, your integrator will need complete access in and around the building.



We're in this together.

Whether you're an occupant, owner, or manager of the building, you play an important role in the site survey, too.

Prioritizing Signal Boosting Needs

The initial site survey also provides an opportunity to capitalize on the expertise of your integrator to help determine how to prioritize the signal needs in your building. For example, you may choose to focus on key areas, such as executive offices and conference rooms, and make areas that are less essential to business functions — such as storage areas, break rooms, or cafeterias — a lower priority.

When making these decisions, you'll also want to consider the pain points of the employees, visitors, and patrons of your business. For example, beyond the workspace area, where else might an employee need (or appreciate) strong cell signal? While you may be inclined to bypass signal boosting in common and break areas, consider how often people routinely make calls or send texts and emails from these areas on their personal break times.

If you're the owner of a retail business, you should consider the signal needs throughout your entire store. While strong signal at the checkout counter is imperative for secure payments and fast transactions, your customers will also likely want to research or price-compare a product online, access online or email coupons like Whole Foods and Target offer on their mobile app, or send a photo to friends or family for validation on an important purchase.

All of these are crucial considerations and your integrator can work with you to ensure you don't overlook any key factors in deciding which areas in your building receive priority for enhanced cell coverage. Of course, you can always make future additions and adjustments to your installation as new needs are identified.

Designing Your Customized Passive DAS Solution

Once the initial consultation and site signal survey are complete, your integrator will put together a customized installation plan based on your specific needs, building size, and outside signal strength.

Wilson Connectivity offers a variety of amplifiers to meet different building size requirements. Wilson amplifiers can cover a large square footage since multiple amplifiers can be installed in a single building.

The physical installation of antennas and cable will span both indoor and outdoor areas of your building. Amplifiers are generally best placed in a dedicated IT closet or communications room because they require a reliable and strong power source to function properly.

It's also recommended to utilize a universal power supply so the amplifier will never shut down even in a power outage. When providing the details of your floor plan to your integrator, be sure to clearly identify where in the building these areas are located. This will aid your integrator's design of the amplifier system's layout.

Once your integrator has finalized your system design, you will receive a proposal outlining all of the details of the installation and an upfront

breakdown of costs, including materials and labor. The cost breakdown is flexible and may go up or down based on changes to your requirements. Proposals might also include case studies and/or recommendations from other Wilson Connectivity customers.

If you prefer, you can also request a demo in your building. During the demo, your integrator will set up the donor antenna and cabling, and turn on the amplifier. This gives you an opportunity to see firsthand how an amplifier can improve connectivity in your building before committing to permanently install anything.

All of these solutions are carrier-agnostic, meaning they can amplify signal from all carriers, and across all devices. Your installation plan will be designed to maximize coverage throughout your space, prioritizing any specific areas you've identified in your site survey and consultation.

What to Expect During & After Your Installation

The intention of Wilson Connectivity and its approved installers is to complete this process with as little disruption to you as possible Wilson Connectivity-certified integrators will communicate to you during the site survey what they expect in terms of construction needs for the project, such as moving items, drilling, installing cable, and placing antennas.

Whenever possible, integrators will use existing access points to install equipment as long as signal can be adequately amplified via those locations. Overall, you can expect your installation to be as non-intrusive as possible to your building structure and your daily operations.

The exact details of the installation will vary depending on the type of business, the construction of the building, and any aesthetic requirements.

School or campus installations, for example, often feature thicker interior wall construction with concrete and brick. In these facilities, your installer will work to recommend the antenna that best satisfies the need for both aesthetics and coverage.

Warehouse and manufacturing facilities typically have fewer aesthetic requirements. However, they must account for any materials or machinery that could impede signal to areas where it's most needed throughout the building.

Hospitals and healthcare facility installations must strike a balance between enabling critical communications and business functions, while also minimizing disruption to patients and doctors. Clean installation methods and techniques are used to meet the hospitals' sanitary and environmental standards.

Retail spaces, hotels, and office buildings have unique requirements because owners and building managers must consider both business employee and customer/patron needs, as well and how each will be using their devices. For many upscale or brand-conscious businesses, aesthetics may also be a consideration.

How Long Will an Install Take?

The installation of a cellular amplification system can take anywhere from a few days to a few weeks, or months. Completion times are dependent on several factors, such as building size, coverage requirements, facility accessibility, hours of install work and resource availability.

Once your project is complete, your integrator will conduct a walkthrough with you. As part of the protocol, the integrator will measure the signal and compare the level of improvement to the signal readings obtained during the initial site survey.

> The ability to make calls, browse the internet, make downloads uploads and send/receive texts in areas where you weren't able to before is another good measure of success.

Remote Monitoring

To ensure the optimal performance of your cellular signal amplification system, your Wilson Connectivity integrator will offer maintenance and support for any new or future needs or problems. Remote monitoring is part of many Wilson Connectivity repeaters including the Enterprise 1300/1300R and Enterprise 4300/4300R, and the WilsonPro 4330/4330R and WilsonPro 1398 series of products. These cloud-enabled systems alert customers of any changes or issues so the integrator can be notified and make adjustments to the amplifier for optimal performance.

Both integrators and building managers can remotely monitor the amplifiers from any mobile device and be immediately notified of any issues, such as system failure, oscillation, or change in signal strength. This enables remote troubleshooting when necessary and also allows end users to closely monitor and measure the return on investment (ROI) on infrastructure spend and manage expectations with employees and leadership.

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If you'd like to learn more about how your building or business can benefit from improved cellular signal, contact Wilson Connectivity today.