

Understanding Wireless Telephone Coverage Areas

Wireless telephones work by communicating via radio waves using a system of base stations (sometimes known as “cell sites”) that send and receive calls and relay them to other networks, like the Public Switched Telephone Network (PSTN). Because wireless phones communicate using radio waves, their reliability is influenced by many factors, such as the proximity of the phone to the base station with which it is communicating, physical obstacles, and interference or noise. Noise refers to unwanted electronic signals introduced by circuit components or natural disturbances that tend to distort communications. For example, like other radio transmissions, wireless phone calls can be affected by severe weather, large buildings or other objects between your phone and the nearest base station or antenna that your wireless service provider uses.

Antennas/Networks

A number of factors can prevent the commencement or completion of a call from a wireless phone. Even when a carrier publishes maps showing coverage in a certain geographic area, a subscriber may not be able to complete a call due to limitations in **topography** (the surroundings), **capacity** (how many callers are communicating with the same cell site at a given time), and **network architecture** (where antennas are located). A dropped call usually occurs when you are on the move and there are too few (or no) cell sites in the area where you are traveling. A dropped call also could result from a weakening of the signal from the cell site that carries your call and/or the failure of the call in progress to be handed off to another cell site. For example, the communication signal between your wireless phone and the cell site could fade significantly and end your call as you drive into a tunnel or walk into a building. The structure blocks the signal. The locations where you cannot make or receive calls due to these limitations are sometimes referred to as “dead zones,” “coverage holes,” “dead spots” or “obstructed areas.”

When many people use a wireless service provider’s network at the same time and its **capacity** is strained, other customers trying to connect may hear a “**busy signal**” instead of being able to complete their calls.

Coverage Maps and Other Coverage Research

Before choosing a wireless service provider or a plan, it is wise to research the various providers to determine the extent of their coverage in the areas that matter most to you. You can research a wireless service providers’ coverage area in a number of ways:

- Ask neighbors, colleagues and friends. You can also visit Internet sites (such as www.deadcellzones.com) that list specific dead spots (submitted by individuals). Information on dead spots is organized by wireless service provider and location.
- Test the wireless service providers’ plan and coverage area on a trial basis, if possible. Some wireless providers offer trial periods, during which you can test a phone before you are committed to a service contract and have to pay a significant fee to terminate that contract. Be aware, however, that if you terminate during a trial period or at any other time, most wireless

service providers will not refund any activation or usage fees. During the trial period, you may want to test the phone in the areas where you plan to use it most frequently to determine if the actual coverage suits your needs.

- Check out the wireless service providers' coverage map on its website and/or in stores where its products are sold. Often these maps show very general coverage for entire regions. The maps usually carry a disclaimer saying they are provided for informational purposes only and that actual coverage may vary. There may be holes where the service provider does not have cell sites or where the topography causes dead zones. With few exceptions, the maps do not indicate signal strength or dead zones. Additionally, these coverage maps are not intended to show whether coverage is provided in obstructed areas, like buildings, tunnels, and underground garages. While wireless service providers often deploy in-building wireless solutions for these areas, any lack of coverage is usually not disclosed.

There is no guarantee that your phone will work in an area, even if it is included on a wireless service providers' published coverage map. Just because a wireless service provider generally advertises service to an area, there may be several reasons why the service is not reliably available in all locations. Although wireless service providers attempt to design their networks to eliminate dropped calls, busy signals and dead zones, no network is perfect, so coverage breaks within the general coverage areas are still possible. Specific and/or updated information may not be available on maps provided by the wireless service provider, because coverage is frequently changing.

Roaming

“Roaming” is the term that describes a wireless phone's ability to make and receive calls outside the home calling area under your service plan. Roaming occurs when a subscriber of one wireless service provider uses the facilities of a second provider. While the subscriber usually has no pre-existing agreement with the second provider to handle calls, the subscriber's provider may have a “roaming agreement” with the second provider. Under that agreement, the second provider agrees to handle calls placed by subscribers of the first provider and vice versa. When your phone is roaming, an indicator light on your phone may display the word “roam.” On occasion, your handset will not display a roaming indicator, even though it is in a roaming area. Also, some handset software needs to be updated monthly. Often this can be done by simply pressing a few buttons on the handset. Keeping that software updated can increase reliability and reduce incorrect roaming charges.

Contact your provider for more information about roaming areas, related fees, and software requirements. If your handset signal or the service provider's signal from the nearest antenna is too weak, roaming can occur automatically, even if you are using your phone in your own home calling area. A phone can also go into “roaming mode” if there is a high volume of calls in the area. For example, though you may be surrounded by sites from your provider, each of your provider's sites may be at its capacity or out of range. Instead of having a call blocked or dropped, your phone might use another provider's site (roam), sometimes at an additional cost to you. Roaming fees are typically charged on a per-minute basis and determined by your service provider.

Many wireless service providers have eliminated these fees in their nationwide pricing plans. All of the major wireless service providers and many others now offer pricing plans that allow consumers to purchase a “bucket” of monthly minutes to use nationwide without incurring roaming charges. You should be aware, however, that wireless service providers define “nationwide” in different ways. For example, some providers define “nationwide” as anywhere in the country, whereas others define it as



anywhere within the provider's network. Check with your wireless service provider for information on the availability of plans without roaming charges or other roaming options.

Emergency Situations

Some people purchase wireless phones for emergency use only. These people rely on their wireless phones as a vital means of getting help during personal and other emergencies. Remember that during widespread emergencies, the calling volume in particular geographic areas can increase significantly, and a wireless phone call may not go through. When call volume is high and capacity is limited, consider sending a text message. Text messages require much less capacity, so they may go through even if a voice call cannot.

Researching the Best Coverage for You

- Determine how you will be using your wireless phone (long distance, emergencies, daily, weekends) to find a plan to best fit your needs.
- Investigate wireless service providers' coverage areas to determine if they provide service where you intend to use the phone most frequently. Be aware that coverage areas shown on maps do not necessarily mean that the wireless service provider's signal in those areas is strong or even available, and that dead zones may exist. Remember that most coverage maps carry the disclaimer that they are provided for general informational purposes only and that actual coverage may vary.
- Ask neighbors, colleagues and friends who have similar calling patterns about their experiences with different service providers and plans.
- Browse the Internet for websites that report dead zones, particularly in areas where you plan to use your wireless phone on a regular basis.
- Because coverage is also affected by the type of handset you use, consider whether a single-mode, dual-mode or tri-mode handset best suits your calling needs. "Single-mode" handsets can connect to either a digital or an analog network, but not both. "Dual-mode" handsets can be used on both an analog network and one type of digital network. "Tri-mode" handsets can be used on analog and two types of digital networks. Digital networks allow wireless service providers to offer advanced features such as Internet access.
- Compare plans and prices of several dealers and service providers before deciding on the phone and plan that best suits your needs.
- Take advantage of the trial periods offered by some wireless service providers. A trial is a short period when you can use the phone without having to pay a significant fee to terminate your service contract.
- Consider trying a prepaid plan, which allows you to more easily switch providers if you are not satisfied with the service. If you sign a longer term contract and are not satisfied, you may have to pay a significant termination fee to cancel.
- When a problem arises, call your wireless service provider. If the problem is with the phone itself, you may wish to visit one of the provider's company stores, rather than an independent agent. The staff at a company store may be better equipped to provide a remedy.



- To improve the likelihood that your wireless phone will work in the event of an emergency, always keep your phone battery charged.

Filing a complaint

If you have questions or complaints about particular wireless phone plans, the handling of calls by a particular provider, the fees charged or similar service matters, first try to resolve the matter with the service provider. If you are unable to resolve the matter directly, you can file a complaint with the FCC. You have multiple options for filing a complaint with the FCC:

- File a complaint online at <https://consumercomplaints.fcc.gov>
- By phone: 1-888-CALL-FCC (1-888-225-5322); TTY: 1-888-TELL-FCC (1-888-835-5322); ASL: 1-844-432-2275
- By mail (please include your name, address, contact information and as much detail about your complaint as possible):

Federal Communications Commission
Consumer and Governmental Affairs Bureau
Consumer Inquiries and Complaints Division
445 12th Street, S.W.
Washington, DC 20554

Consumer Help Center

For more information on consumer issues, visit the FCC's Consumer Help Center at www.fcc.gov/consumers.

Accessible formats

To request this article in an accessible format - braille, large print, Word or text document or audio - write or call us at the address or phone number at the bottom of the page, or send an email to fcc504@fcc.gov.

Last reviewed: 10/27/16

