


[NEWS](#)
[REVIEWS](#)
[PHONES](#)
[CARRIERS](#)
[DOWNLOADS](#)
[FO](#)

**Your Cost Today: FREE**  
with new service activation

[ARTICLES](#)
[FEATURE SEARCH](#)
[COMPARISON](#)
[PERSONALITY QUI](#)

[Home](#) > [Cell Phones](#) > [Articles](#) > [Explaining Cell Phone Reception](#)

[XML](#)

## Explaining Cell Phone Reception

### What Did You Say?

Ever wonder why you don't get reception? For a simple answer, typically user load and tower placement are the reasons reception quality diminishes. Other factors may be terrain, modulation technology, weather, or the phone itself. However, call quality depends more upon network than anything else.

To clear up the mystery, some basic information on how cell phones work is useful.

### How Cell Phones Work

Cell phones are essentially "radios." They communicate to the world by transmitting and receiving voice through cell towers setup throughout the area. And a carrier's coverage is a network of cell sites, each with a tower and base station controller for a range of about 10 square miles.

From a carrier's standpoint, great coverage comes at various technological expenses and certain restrictions that are out of their control. For instance, each provider is limited by the FCC to a number of frequencies it can use in any given city.

Given a limited number of frequencies available in the spectrum, in order to sustain the capacity needed for urban coverage, frequency reuse is required.

To put it into an extreme example, if there was only one tower covering all of New York City, only a limited amount of simultaneous users could use that tower at once due to FCC regulations, say 100 frequency slots. Thus, 100 users at once could use it.

Conversely, if each house had its own tower, 100 users would be able to talk on their cell phones simultaneously in each house. Since each tower now only has a few feet to cover,

Find  
Pho

MOB

- ▶ Free C
- ▶ Free C
- ▶ Free S

Best Ce

- ▶ Editor
- ▶ Most I
- ▶ Best S

Cell Ph

- ▶ Cingu
- ▶ Nexte
- ▶ Sprint
- ▶ T-Mob
- ▶ Verizc

Cell Ph  
Manufa

- ▶ Audio
- ▶ Firefly
- ▶ LG Ph
- ▶ Motor
- ▶ Nokia
- ▶ Palm |
- ▶ Pante
- ▶ RIM P
- ▶ Samsi
- ▶ Sanyc

power consumption is greatly lowered. Once a guest walks to a neighbor's apartment, the current tower would hand off the user to the next tower, freeing up a spot of another person.

---

### Where's the Reception?

Coverage gaps arise when there is minimal or no overlap between cell sites. Ideally, hexagonal cell sites in a grid would cover 100% of the city. However, cell sites are circular in range. Thus small gaps occur when cell sites are next to each other. When user load increases, more towers need to be built to sustain the volume.

Also as mentioned earlier, by using a network of cell sites, transmission power can be lowered. To maintain efficiency, cells ideally provide reception up to the edge of the next cell site. However, signal strength fades the farther a user strays from the tower. And if the user strays too far from the fringe of two adjacent sites, coverage can get dropped.

---

### Other Reasons for Poor Reception

If coverage is great outdoors but vanishes once inside, a problem could be the transmission power. Since more users requires more towers to be placed, it requires less power to cover a smaller area. The weaker signals will not be able to penetrate buildings deeper.

Additionally, at the expense of power consumption, cell phones use low-power transmitters. Base station transmits at low power to keep within the cell range (mentioned above). So to provide long lasting phones, manufacturers end up trading off power for transmission and reception strength. Together these are all possible reasons for bad reception.

[Next >](#)

▶ [Sony](#)  
▶ [UTSta](#)  
▶ [Vertu](#)

Cell Ph

▶ [2006](#)  
▶ [2005](#)  
▶ [2004](#)  
▶ [2003](#)  
▶ [2002](#)

 Web Mobiledia.com

[Home](#) | [News](#) | [Reviews](#) | [Phones](#) | [Carriers](#) | [Downloads](#) | [Forums](#) | [Shop](#)

[About Us](#) | [Contact Us](#) | [Advertise](#) | [Feeds](#) | [Site Index](#)

©2002-2006 Mobiledia Corp. A Cell Phone Resource Site. All Rights Reserved. [Terms of Use](#) | [Privacy P](#)