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In-home cell repeaters

Raising the Bars Yourself

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Despite marketing claims that your cellphone works most everywhere, small businesses and consumers who have spotty service are raising the bars - on their phones - themselves.

Background

Cellphones are two-way radios, and as such don't work everywhere at all times. Your cellphone might not work because of coverage or capacity problems. Capacity problems kick in when a lot of people in a concentrated area try to use their cellphone at the same time. That's why you have trouble getting through when there's a traffic jam. Coverage can be limited because radio signals at cell and PCS frequencies are affected by many factors - the distance and objects between you and the nearest cell site, heavy foliage, ridges, construction materials in buildings, quality of the antenna in the phone, other radios operating at nearby frequencies, and a lot of other things.

Cellphone users know the truth: while the newer digital, multi-band phones work many places, and coverage continues to improve as the wireless companies add more sites, it's far from 100-percent.

Where do people have problems? In Metro (Verizon phones work there. Other wireless phones that use either Analog or the same CDMA technology in the 850 MHz band can also make calls). In buildings, rural areas, in tunnels, elevators, the patio or back yard.

Siba Alsaddy says she has weak reception "in the house sometimes. Sometimes, like I don't get a very good signal. In the basement it doesn't work."

Wiley Simons says his phone works fine in town, but "I live in Laurel, live in the woods, so I have service problems out there also."

Sean Donahue has a common problem. Service is fine most places, but it "actually doesn't work in my own apartment building, so it can be frustrating."

Check out what your wireless company offers to improve service. Some offer car kits for hands free operation. But beyond that - not a lot.

Frustration with cell service is sending people to the Internet for solutions. Those solutions range from a simple 25-dollar antenna with suction cups to stick on a car window or your home, to in-building or in-home repeaters that can range from about 400 to 5000 dollars.

I've tried the suction cup antenna. It can make the difference between making and not making a call in "iffy" service areas. But you're tethered to the antenna, and must remount it when you move around the house. Using a Bluetooth headset can add limited mobility once you find a "sweet spot" in the house.

The Repeater Approach

David Broadwater of Manassas, VA was really frustrated. He'd just finished a new building for his property management company, a business that depends on reliable cell service. Outside the building, cell coverage was fine. But inside, Broadwater said, "it went to just about zero."

Service was so bad Broadwater said they actually put cellphones on the window ledge where coverage was a bit better. "We'd be working back in the offices and when we'd hear our phone ring, we'd have to run out here, grab the phone and run out in the parking lot," said Broadwater.

He says he called his wireless company, Cingular, was transferred to engineering and was told he needed a repeater, but they didn't do that kind of work. So he spent time researching repeaters on the Internet and bought one made by Wilson. The cost, including some extra materials he bought for installation, about 1000-dollars.

Repeaters rebroadcast cell signals. One antenna (usually outdoors) is aimed at the nearest cell site. Another antenna

mounts inside the building to distribute the cell signal in the area you want coverage. An amplifier boosts the received and transmitted signals from the cell site and the phone. You must have some signal for the repeaters to work. They can't create signals.

David Broadwater said, "I went from just about nothing to five bars which is maximum signal strength."

Wireless companies have been using expensive repeaters for years in big buildings, and are concerned consumers will go the cheap route to fill in coverage gaps themselves with less expensive units - some as low as 440 -dollars.

The [CTIA](#), which represents the wireless companies, wants you to go thru the carrier first, citing FCC regulations, and potential interference to other subscribers if the repeaters are faulty or not installed properly.

Joe Farren is Director of Public Information for the CTIA: "the answer can't be to go it alone, and by going it alone, essentially taking away someone's service because of interference. That's simply not fair."

[CellAntenna](#) makes in-home repeaters. Its CEO says his equipment doesn't cause interference - that people don't want to wait for the wireless companies: "If you can't get a signal, and the carrier doesn't want to do anything about it, such as put a repeater in your home, or in your office or in your building. What are you to do?," said Howard Melamed.

I did a quick installation (15-minutes) of CellAntenna's 450-dollar in-home repeater. I mounted a small yagi (beam) antenna on a roof vent, ran the supplied cable from that antenna to an indoor amplifier mounted on my kitchen wall. A small whip antenna on the amplifier served to rebroadcast cellsite signals and to pick up signals from my cellphone. My Cingular service went from poor (one or two bars) to very reliable - 3-5 bars on one level of my home. No interference reported. It worked fine.

The amplifier comes with a power light and a warning light that comes on if the two antennas got too close to each other and cause feedback. The antennas would then have to be manually separated. The wireless companies would prefer amplifiers that automatically shutdown down when there's feedback because you might not be around to see the red light. Verizon suggested a [Spotwave](#) repeater that it said had higher quality components, automatic shutdown features, and had checked out with its network. I tried one briefly. Installation was more critical, and the price - about 3500-dollars. Would consumers pay that much?

Legality

Industry sources say the use of repeaters by consumers is a gray legal area that has not be settled in the courts. The FCC had no comment, other than its public relations people referring me to its regulations. While most carriers would not go on camera, some said they thought consumer repeaters were legal - period. Another carrier indicated the repeater would be legal only if it were "carrier approved," suggesting repeaters that were only FCC-Approved didn't necessarily mean that the repeater would meet the specifications of the carrier itself. All sides agree interference is illegal.

Whether legal or not, the carriers know repeaters are growing in popularity as businesses and consumers want to cut the cord and go totally wireless. Several carriers have told me they will work with manufacturers to offer high quality consumer repeaters at lower prices. John Johnson is a spokesman for Verizon Wireless: "I think both customer demand and technology are heading in that direction. And we're listening, because we want to give customers what they want."

Johnson also told me that Verizon Wireless has asked several businesses and consumers to shut down repeaters because of interference problems. Engineers tell me interference problems are more likely in urban areas as signals from different cellsites bounce around buildings.

Caution: one size does not fit all. It's important to find a repeater that works for you - for your house/how it's built and how much area you need to cover. You may need only a small repeater that handles a limited area. And installation of some of the more sophisticated repeaters may be more than you want to tackle yourself. Be sure you know the company's return policy in case things don't work out.

The Marketing Dilemma

Industry sources say in-home cell repeaters will continue to grow in popularity. The wireless companies will either embrace that and help consumers flesh out coverage, or continue to say coverage is already great. That could force consumers to raise the bars themselves, perhaps by choosing the cheapest path and paying someone else. By offering repeaters, the wireless companies admit they aren't providing the coverage their marketing seems to promise, but they would show that they are concerned about providing that coverage while waiting for more cell site

approvals. And not offering repeaters gives someone else the potential revenue stream.

Survey

I'd like to hear your thoughts about repeaters? Is cell coverage for your home or business critical enough that you would consider a repeater? Have you called customer service and asked about a repeater? If so, what was the response? Would you switch to a carrier that offered them?

I'll pass along your thoughts to the wireless folks.

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