C Spire Indoor Cell Zone
User Guide

c spire wireless™

Airvana
Mobile Broadband. **Everywhere.**

Indoor Cell Zone User Guide (910715) Rev. 01.04, July 2013

Contents

Introduction

This guide introduces you to your CDMA Indoor Cell Zone device and all its features. Throughout this guide, you'll find tips and techniques to get you started and to help you make the most of your new Indoor Cell Zone and service. This guide also provides troubleshooting information to isolate common issues with your Indoor Cell Zone installation.

TIP

The Table of Contents can help you quickly locate specific information.

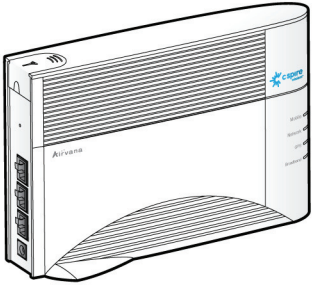
Because of updates in software, this printed guide may not be the most current version for your Indoor Cell Zone. See your service provider's website to access the most recent version of the User Guide.

WARNING

It is important to read the safety information on page 29 and page 30 to learn about how to safely use your Indoor Cell Zone. Failure to read and follow the safety information in this user guide may result in serious bodily injury, death, or property damage.

Check What's in the Box

Make sure that the following items are in the box:

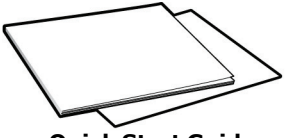


Indoor Cell Zone

Yellow Ethernet cable

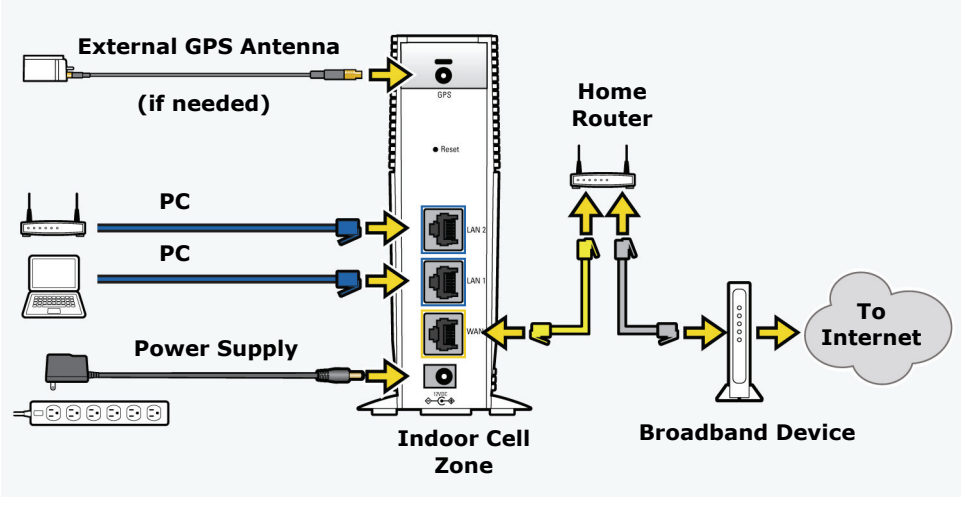
Power supply

External GPS antenna cable



Quick Start Guide and User Guide

Setup at a Glance



TIP

See the Quick Start Guide for the basics on setup and getting your Indoor Cell Zone up and running.

Setting up Your Indoor Cell Zone

1 Disconnect the power from all devices on your network.

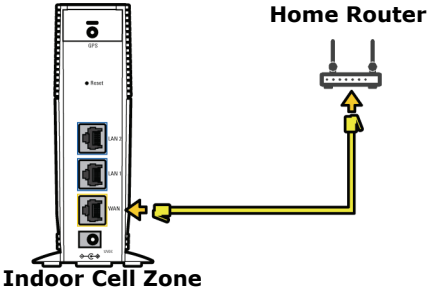
NOTE: This includes your cable or DSL modem and home router.

2 Place your device close to a window and in a central location. For best results, place the device in an elevated location, such as the top of a bookshelf or tall cabinet.

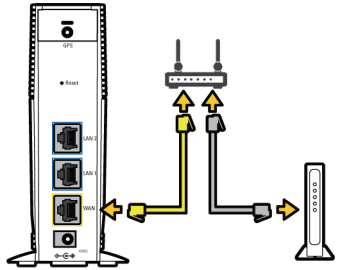
NOTE: In large homes, the external GPS antenna can be used to allow the Indoor Cell Zone to be placed in a more central location. This allows the Indoor Cell Zone to provide even coverage throughout the home. See “Your Broadband Connection Speed” (page 15) for more information.

3 Connect one end of the yellow Ethernet cable to the LAN port on your home router.

NOTE: If your modem includes a home router, plug the Indoor Cell Zone into an available port on the modem.



4 Connect the other end of the Ethernet cable to your Indoor Cell Zone's yellow WAN port.

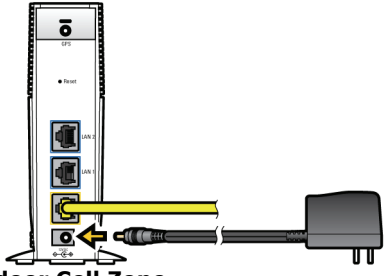


Indoor Cell Zone

5 Turn on your cable or DSL modem, and home router.

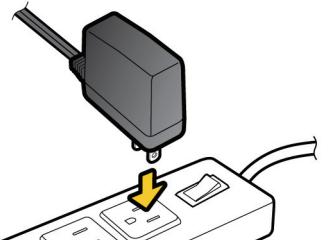
NOTE: Wait a couple of minutes for the cable or DSL modem to fully initialize before continuing.

6 Plug the power supply connector into the black port on your Indoor Cell Zone.



Indoor Cell Zone

7 Plug the other end into an available electrical outlet. (We recommend a power strip with surge protection.)



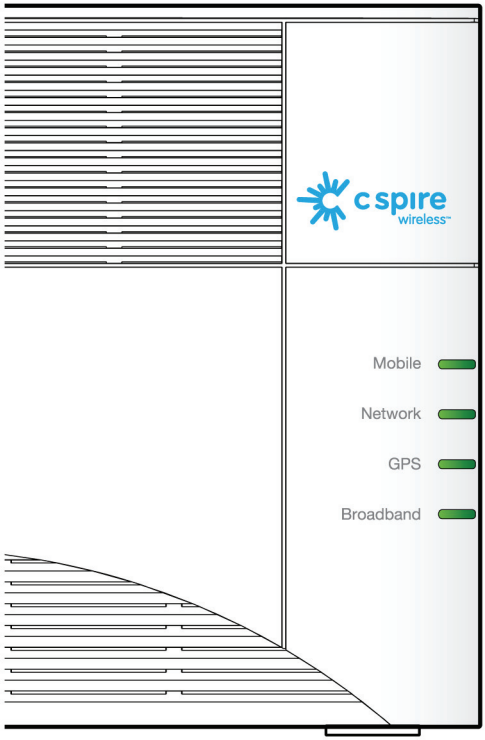
When is Your Indoor Cell Zone Ready for Use?

After installing and turning on your Indoor Cell Zone for the first time, take notice of an automated setup sequence. During this time, the device's green LEDs will be solid for a few seconds, and then all LEDs, except the Broadband LED, will turn off until the software loads. This process may take up to 2 hours if your GPS antenna is not near a window to receive sufficient GPS signals from the sky.

When the Broadband, GPS, Network, and Mobile LEDs are solid green, your Indoor Cell Zone is ready for use.

For complete descriptions of LED states and a quick reference to LED status indicators, see "Using LEDs" (page 19).

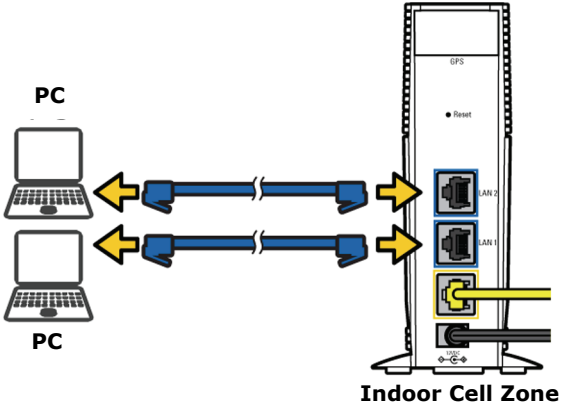
You will hear three short beeps when placing or answering calls on your wireless phone if you are within range of your Indoor Cell Zone.



Setting up Optional Components

PC Setup

Connect any devices that you have, such as a PC, to your Indoor Cell Zone's blue LAN ports.



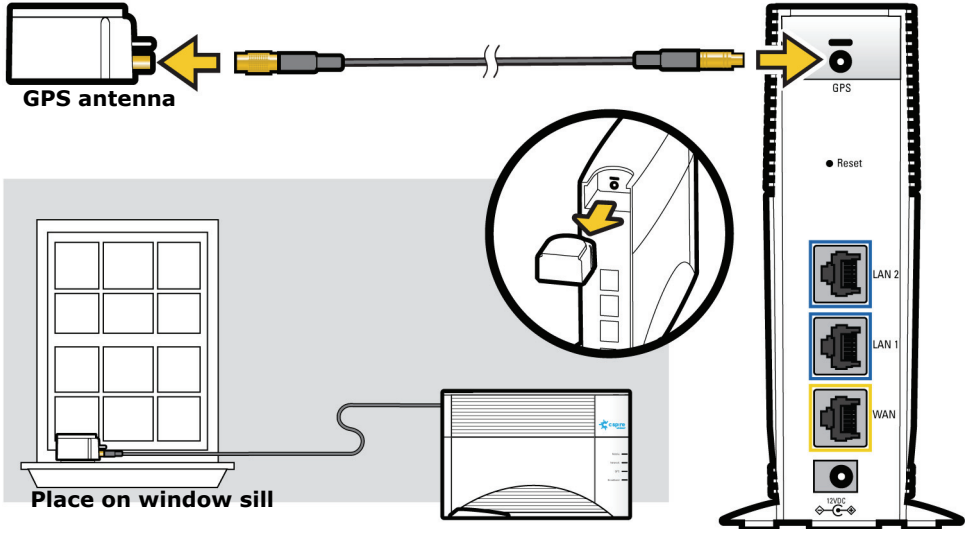
External GPS Antenna Setup

If the GPS LED does not turn solid green after 30 minutes, connect the external GPS antenna to your Indoor Cell Zone.

Place the external GPS antenna horizontally on a window sill. The antenna works best in an open area, with a clear view of the sky, where it can easily pick up signals.

Do not place the GPS antenna:

- Outdoors; it is not weatherproof.
- Behind large, heavy objects; doing so could affect the signal.



Configuring Your Indoor Cell Zone's Built-in Router

Usually, you can plug your Indoor Cell Zone into your broadband connection device, such as a cable modem, DSL modem or fiber broadband Internet service, without performing any additional steps. However, you may need to configure the built-in router to work with your ISP modem or connection device. The following table lists typical ISP setups and actions to take so that the built-in router works with your existing ISP setup.

Broadband connection device	LED display pattern	Symptom	Action to take
Cable modem	Broadband and Mobile solid green	Not applicable (working properly)	Not applicable
DSL modem	Broadband LED blinking red	Cannot access Internet	See "Adding Your ISP User Name and Password" (page 12)
DSL modem with router	Broadband LED blinking red Mobile LED blinking red	Cannot access Internet Cannot make a mobile phone call through the Indoor Cell Zone	See "FAQs" (page 24). If the problem persists, contact Customer Support as described in "Getting Help" (page 28)
Cable modem with router			
Fiber broadband			

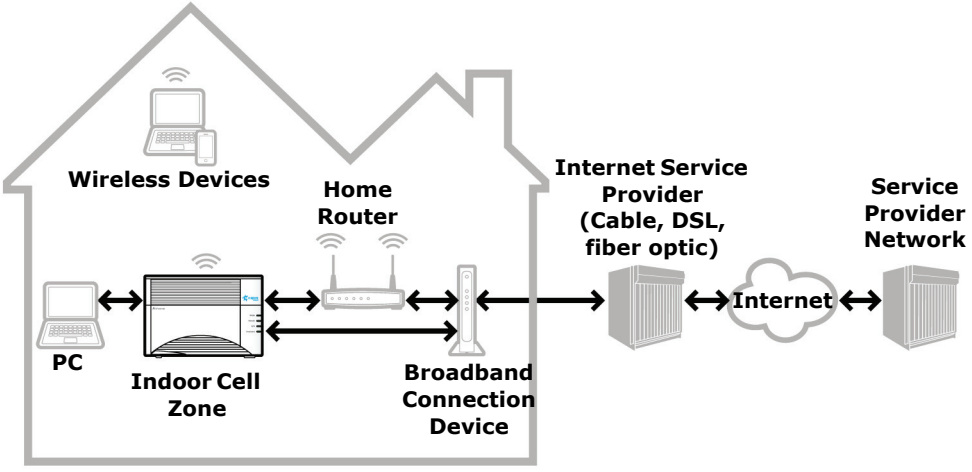
How Your Indoor Cell Zone Works

Your Indoor Cell Zone is like a personal base station with a radio unit that is similar to a cell tower radio. The base station uses a low-power antenna to transmit voice and data cellular signals in your home or small office.

Base stations give you better cellular coverage, which means a stronger signal and improved voice quality. Also, data applications on smartphones, such as mobile email devices, work faster.

The Indoor Cell Zone connects to your provider's network through your broadband Internet connection. Outgoing calls go from the Indoor Cell Zone over a secure connection to your provider's network; incoming calls reverse this route.

How calls and Data Go Over the Internet



Adding Your ISP User Name and Password

If you are using a DSL modem and your device cannot connect to the Internet, you may need to enter your Internet service provider (ISP) account user name and password so that your Indoor Cell Zone can connect to the Internet.

TIP

Before you begin, obtain your ISP user name and password. Contact your ISP if you do not have this information.

1 Ensure that your computer is networked with your Indoor Cell Zone.

2 Enter the following IP address in your Web browser:

192.168.17.1

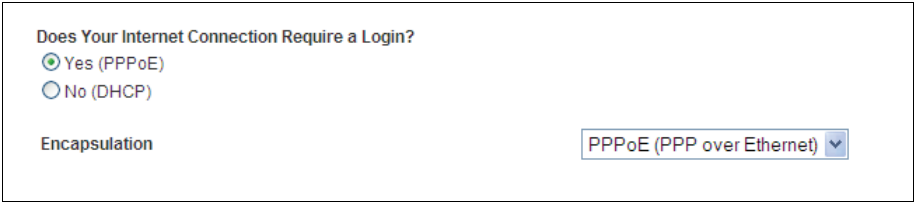
The login dialog box appears.

3 Enter “admin” in both the User Name and Password boxes and click **OK.**

User name: admin
Password: admin

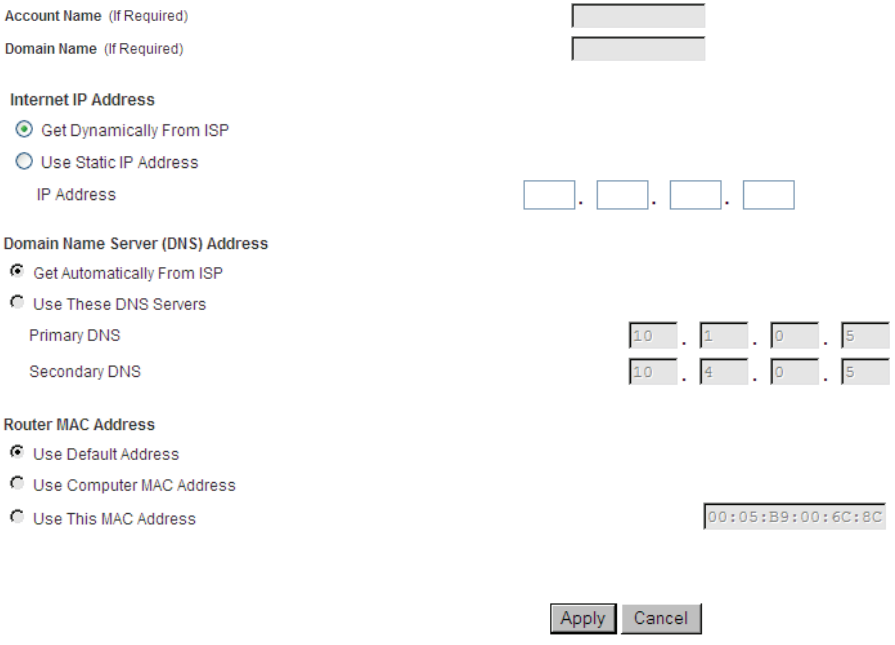
The router opens to the Setup tab.

4 Ensure that **Yes (PPPoE)** is selected.



5 Enter your ISP user name in the Login box (overwrite “Guest”) and your password in the Password and click **OK.**

6 Accept the defaults in other fields on the screen and click **Apply.**



When the Broadband LED turns solid green (stops blinking), your Internet connection is available. If the LED is not solid green, call the Customer Support number located on the insert included in your Indoor Cell Zone documentation package.

Your Broadband Connection Speed

Your Indoor Cell Zone supports up to six simultaneous voice calls, data sessions, or any combination of both.

Your Indoor Cell Zone can support data sessions of up to 3 Mbps downstream and 1.8 Mbps upstream.

The actual transmission speed of your Indoor Cell Zone is only as fast as your maximum broadband connection speed. Internet congestion, the number of users on your provider's network, and other factors can decrease your actual broadband connection speed. Individual bandwidth needs vary per customer.

Your service provider recommends a minimum of 800 kbps (both upstream and downstream) for voice services and 3 Mbps downstream and 1.8 Mbps upstream for data services.

The following table shows recommended bandwidth by usage type.

Usage Type	Recommended Dowload Speed	Recommended Upload Speed
Wireless Call	40 kbps per call	40 kbps per call
Wireless Data	Up to 3 Mbps per session	Up to 1.8 Mbps per session

Maintenance

With normal use, your Indoor Cell Zone is maintenance-free. Follow the recommendations below to ensure that it runs optimally.

Ventilation

Your Indoor Cell Zone has ventilation slots that work best if you don't block the flow of air to them. Keep your Indoor Cell Zone at least 2 inches (5 cm) from walls and other surfaces to ensure proper air flow.

Cleaning

Dust your Indoor Cell Zone occasionally to keep air vents clear of debris.

NOTE: Do not use liquid cleaners on your Indoor Cell Zone.

Troubleshooting Installation Problems

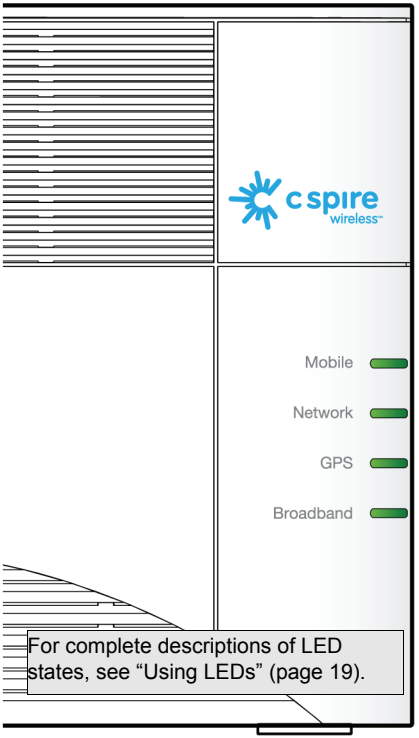
During the installation, if your Broadband LED turns solid red, reversing the order of turning on the Indoor Cell Zone and your cable or DSL modem can often resolve this problem. To reverse the order, follow these procedures:

1. Unplug all cables and power cords from all devices. You can unplug devices in any order.
2. Connect all Ethernet and GPS cables as described in “Setting up Your Indoor Cell Zone” (page 4).

   NOTE: Do not connect any power cords at this point in the procedure.
3. Plug the Indoor Cell Zone into an electrical outlet.
4. Wait 4 minutes.
5. Plug your cable or DSL modem into an electrical outlet.

If the Broadband LED turns solid red after 15 minutes, call the Customer Support number located on the insert included in your Indoor Cell Zone documentation package.

LED Quick Reference



For complete descriptions of LED states, see “Using LEDs” (page 19).

Mobile
- Solid green: Ready
- Solid red: Hardware problem
- Blinking red: Service error
- Off: No service, service disabled, no power, or LED malfunction

Network
- Solid green: Ready
- Solid red: AIRAVE is not connected router/modem for more than 15 minutes
- Blinking red to solid red: Service error
- Off: No power or LED malfunction

GPS
- Solid green: Ready
- Blinking red: Acquiring a lock
- Solid red: GPS lock not available
- Off: No power or LED malfunction

Broadband
- Solid green: Connected to the Internet
- Blinking green: Initializing
- Solid amber: Hardware problem
- Blinking amber: Service error
- Alternating green/amber: Software upgrade in progress
- Off: No power

Using LEDs

LED	Display pattern	Action to take
Mobile	Solid green	None. Ready.
	Solid red	Hardware problem. Call Customer Support as described in “Getting Help” (page 28).
	Blinking red	Service has not come up since startup or has gone down. If service has gone down, call Customer Support as described in Getting Help. (page 28).
	Off	If the LED turns off after turning on from either a blinking red or solid green state, the Indoor Cell Zone is not activated. Contact the customer support number located on the insert included in your Indoor Cell Zone documentation package.

LED	Display pattern	Action to take
Network	Solid green	None. Ready.
	Blinking red to solid red	Service has not come up since startup or has gone down. If this problem persists, call Customer Support as described in Getting Help.
	Blinking red	Network connection has gone down or has not come up since startup, for 15 minutes or less.
	Solid red	If all LEDs are solid red there is a hardware problem. Contact the customer support number located on the insert included in your Indoor Cell Zone documentation package.
	Off	LED malfunction. Contact the customer support number located on the insert included in your Indoor Cell Zone documentation package.

LED	Display pattern	Action to take
GPS	Solid green	None. GPS is ready.
	Blinking red	GPS is trying to acquire a lock. Perform the following steps. If GPS fix was not achieved after GPS restart (either at power-up or after recovery from an error), then the GPS LED turns solid red after more than 30 minutes. • If you have not already done so, connect the external GPS antenna to your device. • If the external GPS antenna is already connected, move it to a different location, preferably on a window sill. • If this problem persists, contact the customer support number located on the insert included in your Indoor Cell Zone documentation package.
	Solid red	GPS fix is not available for more than 30 minutes. • If you have not already done so, connect the external GPS antenna to your device. • If the external GPS antenna is already connected, move it to a different location, as close to a window as possible. • If this problem persists, call Customer Support as described in Getting Help. • If all LEDs are solid red there is a hardware problem. If this problem persists, call Customer Support as described in Getting Help.

LED	Display pattern	Action to take
Broadband	Solid green	None. Connected to the Internet.
	Solid red	Indoor Cell Zone is not connected to the router/modem for more than 15 minutes. If all LEDs are solid red there is a hardware problem. Contact the customer support number located on the insert included in your Indoor Cell Zone documentation package.
	Blinking red	Service error. Check if your broadband modem or broadband router has a problem. Reset your broadband connection device. If the problem with the broadband device persists, contact your Internet service provider (ISP). Ensure that your Indoor Cell Zone's router is correctly configured to access the Internet service. See "Configuring Your Indoor Cell Zone's Built-in Router" (page 9). Restart the device by turning the power off and on. If this problem persists, contact customer support. See "Getting Help" (page 28).
	Off	The LED is not working or the unit has no power. If this problem persists, contact customer support. See "Getting Help" (page 28).

LED	Display pattern	Action to take
All	Solid red	The Indoor Cell Zone cannot pass a hardware self-test. Contact customer support. See “Getting Help” (page 28).

See page 18 for a quick reference to all LEDs on your Indoor Cell Zone.

FAQs

Why does my Indoor Cell Zone need a GPS antenna?

Your Indoor Cell Zone has a GPS antenna so that it can:

- Synchronize properly with the rest of your service provider's network.
- Determine and select the correct radio frequencies available in your area so that your Indoor Cell Zone uses the correct radio frequencies.

Why does my Indoor Cell Zone need an external GPS antenna?

Your Indoor Cell Zone needs the external antenna only when the internal GPS antenna cannot lock on to sufficient satellite signals. The external antenna lets your Indoor Cell Zone lock on to the greatest number of satellites.

What happens to my Indoor Cell Zone if there is a power outage or if I lose Internet access?

Your Indoor Cell Zone needs both a broadband Internet connection and a constant power supply to work. During a power outage your wireless phone or device will immediately switch to the service provider's network.

Where is the best location in my home to place the Indoor Cell Zone?

Place your device close to a window and in a central location. For best results, place the device in an elevated location, such as the top of a bookshelf or tall cabinet.

Can I move my Indoor Cell Zone to another location?

Yes, you can move your Indoor Cell Zone to another location within your service provider's network.

How do I know if my phone is connecting through my Indoor Cell Zone?

By dialing *99 on your wireless phone, an audio message will confirm if you are in range of your Indoor Cell Zone. Also, you will hear three short beeps on your wireless phone before making and receiving calls.

I have a DSL modem and cannot connect to the Internet

See "Adding Your ISP User Name and Password" (page 12).

I am not able to connect to my Indoor Cell Zone

See "Where is the best location in my home to place the Indoor Cell Zone?" (page 24).

My signal coverage is poor

See "Where is the best location in my home to place the Indoor Cell Zone?" (page 24).

My Internet connection is slow when my laptop is connected to my Indoor Cell Zone

If you are experiencing slow Internet speeds when your laptop is connected to the LAN port of your Indoor Cell Zone, you may need to change the bandwidth speed on your Indoor Cell Zone.

1. Connect your laptop to the LAN port of your Indoor Cell Zone and disable WiFi.
2. In a Web browser on your laptop, search for a Web site to test your uplink speed.

3 Run a speed test on your uplink speed. Note the maximum speed value.

4 In a Web browser, enter the following IP address:

HTTP://192.168.17.1

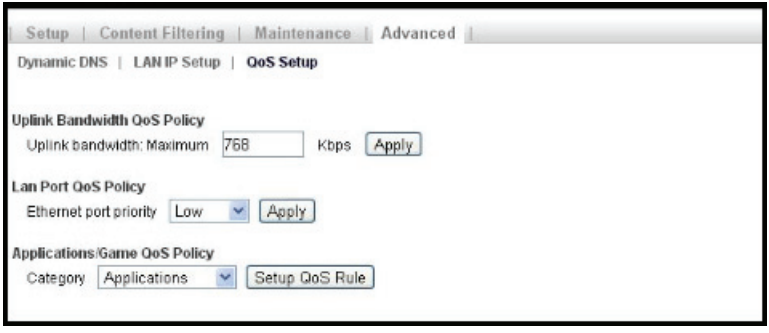
5 Enter the User name and Password.

User name: **admin**

Password: **admin**

6 In the Advanced tab, click QoS Setup.

7 Change the Uplink bandwidth: Maximum to the value recorded from *www.speedtest.net* and click **Apply**.



8 If the problem persists, check the QoS setting in your home router. Ensure that the Indoor Cell Zone has the highest priority. See the home router's user manual for instructions.

9 If the problem persists, contact your Internet Service Provider.

My voice calls are choppy or jittery

First see "Where is the best location in my home to place the Indoor Cell Zone?" (page 24). After moving the Indoor Cell Zone, you are still experiencing choppy or jittery calls, perform the following procedure.

1 Connect your laptop to the LAN port of your Indoor Cell Zone and disable WiFi.

2 In a Web browser on your laptop, go to a Web site to test your uplink and downlink speeds.

3 Run a speed test on your uplink and downlink speeds. Ensure that the uplink and downlink speeds are at least 800 kbps. If not, go to step 4. If it is, go to step 5.

4 Check the QoS setting in your home router. Ensure that the Indoor Cell Zone is set at the highest priority. See the home router's user manual for instructions. After changing the Indoor Cell Zone to the highest priority, repeat step 1 to step 3.

5 In a Web browser, go to a Web site to measure your Internet connection for VoIP for jitter, packet loss, and MoS score.

6 Select a server in a region closest to your location.

7 Run a VoIP test.

8 In the Connection Summary ensure that jitter, packet loss, and MoS score are all green.

If one or more of the metrics are not green, contact your Internet Service Provider.

If all metrics are green, contact customer care.

Getting Help

If you need help with your Indoor Cell Zone, contact C-Spire Customer Care:

- Online (www.cspire.com/indoorcellzone)
- Text 611
- Call at 1-855-CSPIRE5 (277-4735)

General Precautions

- Dust your Indoor Cell Zone occasionally to keep air vents clear of debris. Do not wash it.
- Your Indoor Cell Zone has ventilation slots that work best if you don't block them. Keep your Indoor Cell Zone at least 2 inches (5 cm) from walls and other surfaces to ensure proper air flow.
- Do not operate your Indoor Cell Zone in an extremely dusty or humid environment.
- Avoid placing your Indoor Cell Zone near radiators or other heating sources.
- Avoid locating your Indoor Cell Zone where it could be exposed to direct sunlight for prolonged periods.
- Do not connect your Indoor Cell Zone to a power strip containing an excessive number of other devices.
- Although your Indoor Cell Zone is quite durable, it is a complex piece of equipment and can be broken. Avoid dropping, hitting, bending, or sitting on it.
- Do not immerse your Indoor Cell Zone in water or get it wet. If your Indoor Cell Zone does get wet, unplug it immediately until it dries.
- Do not allow children to play with your Indoor Cell Zone. They could hurt themselves and others or damage the Indoor Cell Zone.

NOTE: For the best care of your Indoor Cell Zone, only service provider-authorized personnel should service your device and accessories. Failure to do so may be dangerous and void your warranty.

Warning of 911 Limitations

911 service may be limited or not available outside your service provider's wireless network coverage areas. Interconnected VoIP service may be limited by comparison to traditional 911 service. Such circumstances may include, but are not limited to: relocation of the equipment, broadband connection failure, loss of electrical power, delays in availability of your registered location information, and/or other technical problems. You may not be able to place a 911 call during software updates to the device.

Not all public safety answering points have location-based E911 technology. Always be prepared to report your location to the 911 operator when placing an emergency call.

Mobile phones operate using radio signals which cannot guarantee connection in all conditions.

TIP

Unregistered or unauthorized users can make emergency 911 calls using an Indoor Cell Zone.

FCC Information

FCC Radiation Exposure Statement

This device complies with FCC's RF radiation exposure limits set forth for an uncontrolled environment under the following conditions:

- This device should be installed and operated such that a minimum separation distance of 8 inches (20 cm) is maintained between the radiator (antenna) and the user's or nearby person's body at all times.
- This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

For more information, see the publication Femtocells and Health at http:// www.femtoforum.org or visit the FCC website at www.fcc.gov.

FCC Part 15

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This device generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this device does cause harmful interference to radio or television reception, which can be determined by turning the device off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antennas of other devices.
- Increase the separation between the Indoor Cell Zone and other device receivers.
- Connect the Indoor Cell Zone into an outlet on a circuit different from that to which the other device receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.