



# **Avaya 3920 Wireless Telephone Planning and Installation Guide**

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## **Notice**

Every effort was made to ensure that the information in this book was complete and accurate at the time of printing. However, information is subject to change.

## **Federal Communications Commission Statement**

This equipment has been tested and found to comply with Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment 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. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense. This system is Class B compliant in some configurations.

## **Canadian Department of Communication (DOC) Interference Information**

This digital apparatus does not exceed the Class A limits for radio noise emissions set out in the radio interference regulations of Industry Canada.

Le Présent Appareil Numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la class A prescrites dans le règlement sur le brouillage radioélectrique édicté par le Industrie Canada.

## **Preventing Toll Fraud**

"Toll fraud" is the unauthorized use of your telecommunications system by an unauthorized party (for example, a person who is not a corporate employee, agent, subcontractor, or working on your company's behalf). Be aware that there may be a risk of toll fraud associated with your system and that, if toll fraud occurs, it can result in substantial additional charges for your telecommunications services.

The final responsibility for securing both this system and its networked equipment rests with you – an Avaya Inc. system administrator, your telecommunications peers, and your managers. Avaya Inc. does not warrant that this product or any of its networked equipment is either immune from or will prevent either unauthorized or malicious intrusions. Avaya Inc. will not be responsible for any charges, losses, or damages that result from such intrusions.

## **Avaya Fraud Intervention**

If you suspect you are being victimized by toll fraud and you need technical support assistance, call Avaya Global Support Services at **1 800 628-2888**.

## **Warranty**

Avaya Inc. provides a limited warranty on this product. Refer to the "Limited Use Software License Agreement" card provided with your package.

**Trademarks**

PARTNER is a registered trademark of Avaya Inc. in the U.S. and other countries.

**Customer Support**

If you need assistance when programming or using your system, contact your local Authorized Dealer or call Avaya Global Support Services at **1 800 628-2888**. Consultation charges may apply.

**Avaya Web Page**

For information about Avaya products and service, go to [www.avaya.com](http://www.avaya.com). For the most current version of this document, go to [www.avaya.com/support](http://www.avaya.com/support).



## **Important Safety Instructions**

The following list provides basic safety precautions that should always be followed when using your telephone equipment.

1. Read and understand all instructions.
2. Follow all warnings and instructions marked on the product.
3. Unplug all telephone connections before cleaning. **DO NOT** use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
4. This product should be serviced by (or taken to) a qualified repair center when service or repair work is required.
5. **DO NOT** use this product near water, for example, in a wet basement location.
6. **DO NOT** place this product on an unstable cart, stand or table.
7. Never push objects of any kind into slots or openings as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock. Never spill liquid of any kind on the product.
8. **DO NOT** use the telephone to report a gas leak in the vicinity of the leak.

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# 1 Introduction

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## Welcome

This guide describes how to install and administer Avaya 3920 Wireless Telephones and Avaya 3920 Repeaters. The Avaya 3920 Wireless Telephone is specific to the Avaya PARTNER Communications System. Unlike consumer-type wireless telephones, which are typically connected to analog interfaces, the Avaya 3920 Wireless Telephone offers full access to the features of the PARTNER system, including two dedicated intercom buttons plus six line/feature buttons with LED-status indication.

The Avaya 3920 Wireless Telephone uses DECT 6.0 technology to provide crystal-clear, high-quality voice communication. Unlike other wireless technologies (such as ISM spectrum), DECT 6.0 uses a dedicated frequency that is free from interference from other devices.

The Avaya 3920 Wireless Telephone is not only a single-cell wireless telephone. The system can be expanded with repeaters to cover larger areas without the need of additional wiring. This flexible expansion of the coverage area makes the Avaya 3920 Wireless Telephone cost effective for small installations, while at the same time providing the capability for seamless telephony in larger areas.

Up to six repeaters can be linked with a single base unit to increase the coverage area of the Avaya 3920 Wireless Telephone, making crystal-clear communication possible in areas that were hard to reach without installing a complex, multicell telephone system.

In the U.S. and Canada, DECT 6.0 provides a maximum of five channels with 12 full-duplex slots. The technology embedded in the Avaya 3920 Wireless Telephone can support a maximum of five channels with six full-duplex slots, providing you with a total of 30 available channels/slots.

DECT 6.0 is extremely easy to install since frequency and channel selection are done automatically. As long as the maximum number of devices is not exceeded, DECT 6.0 will provide trouble-free functionality.

This chapter explains how this guide is organized, shows the typographical conventions used, and provides the Avaya Support Center web site to access for additional documentation.

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## Organization

This guide is organized as follows:

- **Chapter 1, “Introduction”** provides a brief description of the contents of each chapter, the typographical conventions used, and the Avaya Support Center web site.
- **Chapter 2, “Installation Guidelines”** provides general guidelines for installing Avaya 3920 Wireless Telephones.
- **Chapter 3, “Administering the Avaya 3920”** describes the system administration that must be performed on the PARTNER Advanced Communications System to which the Avaya 3920 Wireless Telephone is connected.
- **Chapter 4, “Installing a Repeater”** describes how to install an Avaya 3920 repeater to extend the coverage area of the Avaya 3920 Wireless Telephone.
- **Chapter 5, “Registering/Unregistering Handsets”** describes how to register/unregister an Avaya 3920 with the base unit.
- **Appendix A, “Specifications”** provides telephone, base unit, and repeater specifications.

## Conventions

- Numbers, the asterisk, and the pound sign on the dialpad are shown in a button, for example: **2**, **\***, or **#**.
- **Bold** type is used to indicate buttons on the Handset, other than those on the dialpad.
- *Courier* type indicates text that appears in the handset display.

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## Related Documents

For additional documentation and the most current version of this document, go to the Avaya Support Center at [www.avaya.com/support](http://www.avaya.com/support).



# 2 Installation Guidelines

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## Overview

This chapter provides general guidelines for installing the Avaya 3920 Wireless Telephones. Following these guidelines will help ensure satisfactory performance of the Avaya 3920 Wireless Telephones.

The following limitations apply for the Avaya 3920 Wireless Telephone:

- A maximum of six base units can be installed at one site.
- A maximum of 20 radio transmitting devices (base units and repeaters) can be installed at one site. *Up to six of those devices can be base units.* This number may be reduced if other wireless telephones using Dect 6.0 technology are used at the same site. Repeaters enable you to extend the coverage area of your telephone in all directions. For more information about repeaters, see [“Installing a Repeater” on page 23](#).
- The base units must be located at least 17 feet apart from one another.
- The repeaters must be located at least 35 feet apart from base units and other repeaters.
- The coverage area depends on the environment. The range of radio coverage depends on the material of which the building is composed. For example, concrete/metal walls decrease the range of coverage of a wireless telephone much more than wood/plasterboard walls. Also, large, metal objects like storage racks in a warehouse can decrease the range of

coverage. Avaya strongly recommends that you test wireless telephone coverage before final installation to ensure that all customer requirements are met.

The following parameters are guidelines to the achievable range:

- Open field/line of site: up to 700 feet
- In-building: 100 to 350 feet. An average of 160 feet is used in this document.

**NOTE** 

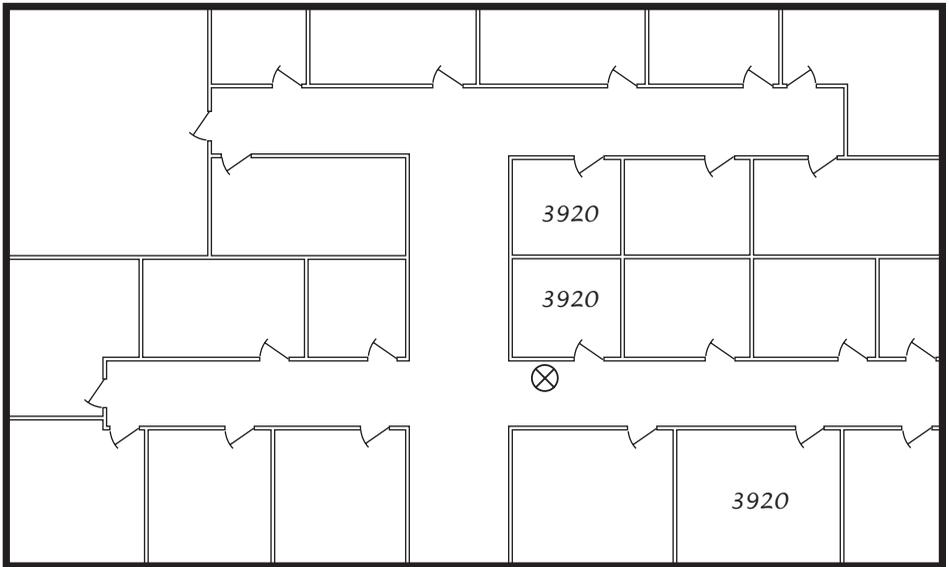
*Make sure to verify the achievable range.*

Before installing the Avaya 3920 Wireless Telephones, keep in mind the following information:

- If possible, place the base unit in a centralized location relative to the locations where the Avaya 3920 Wireless Telephone will be used.
- Install the base unit as high as possible so that it clears nearby objects (for example, office cubicles and file cabinets).
- More than three base units in a confined area will degrade product performance. Refer to “Determining the Location for the Base Units” on page 14 to optimize locations of up to 5 base units in a building or desired coverage area.
- Each Avaya 3920 Wireless Telephone requires its own base unit.
- The range of an Avaya 3920 Wireless Telephone will decrease when the handset is used on a different floor from the base unit.

If you have three or fewer Avaya 3920 Wireless Telephones, place all of the base units in a centralized location and at least 17 feet apart. (See Figure 1.)

**Figure 1: Configuration with Three Avaya 3920 Wireless Telephones**



⊗ Location of Base Units

If you have more than three Avaya 3920 Wireless Telephones, go to “Determining the Location for the Base Units” on page 14.

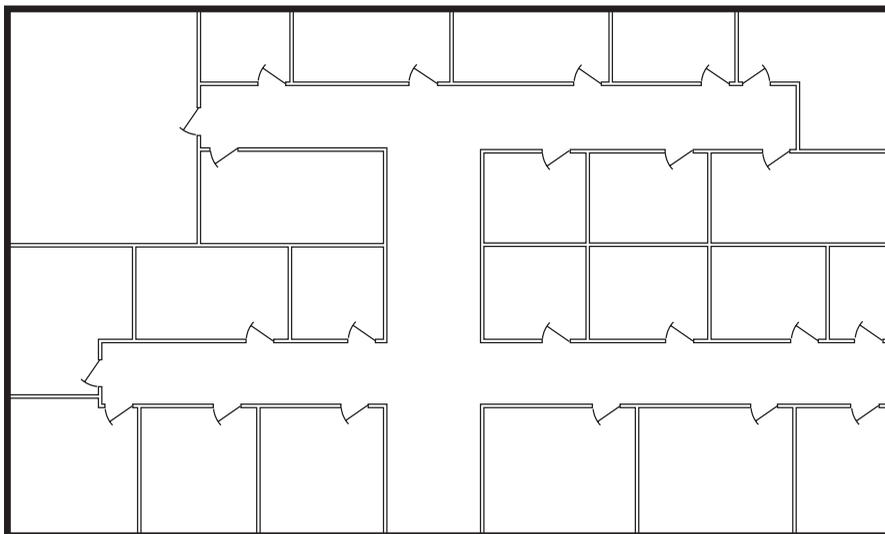
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## Determining the Location for the Base Units

To obtain the best possible performance from the Avaya 3920 Wireless Telephones, you must install all of the base units in a location that will provide proper coverage. To determine the location for the base units, perform the following steps:

- 1 Draw a floor plan of your building. Figure 2 shows the floor plan for a sample company.

**Figure 2: Floor Plan for a Sample Company**

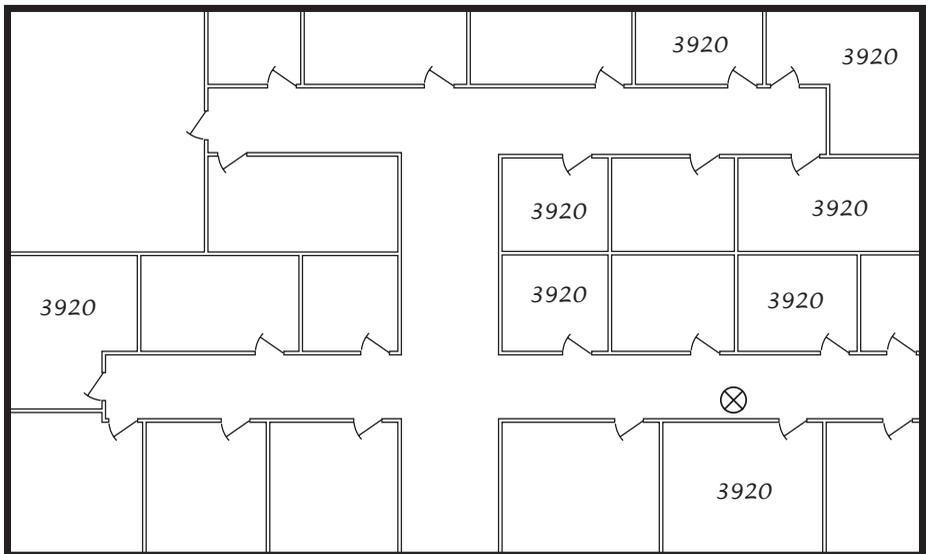


- 2 Identify all of the people in your company who will use an Avaya 3920 Wireless Telephone.

- 3 On your floor plan, identify all areas (for example, offices, conference rooms, and lobbies) where you expect the Avaya 3920 Wireless Telephones to be used. (See Figure 3.)
- 4 On your floor plan, identify the location where you want to install all of the base units for the Avaya 3920 Wireless Telephones (for example, a hallway). **Make sure there is at least 17 feet of separation between each base unit.**

Figure 3 shows the completed floor plan and base unit location for the sample company.

**Figure 3: Location of Base Units for a Sample Company**

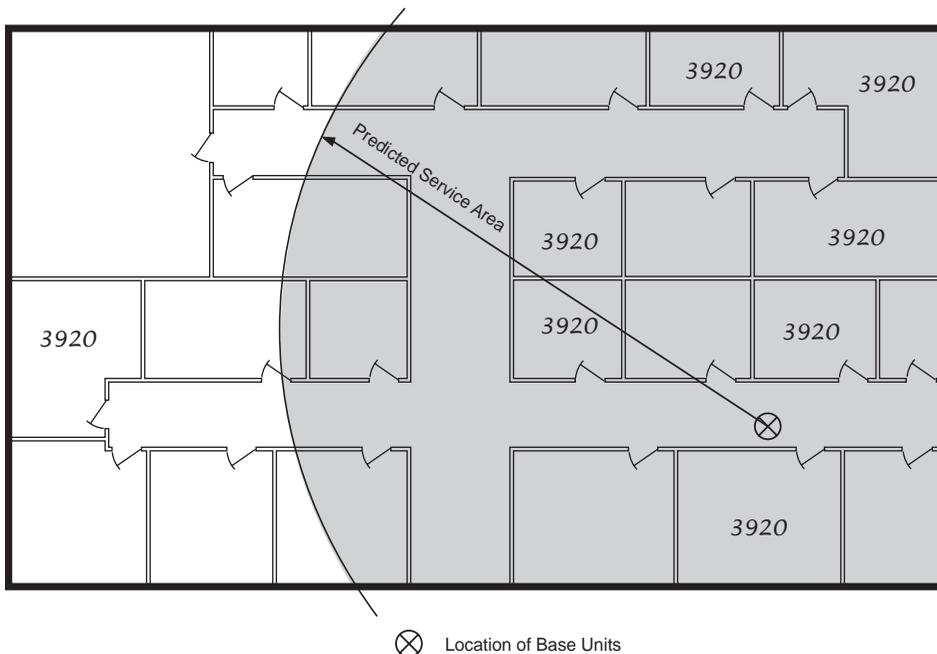


⊗ Location of Base Units

- 5 Using the base unit location as the center, draw a circle with a 160 foot radius. This circle indicates the coverage area of all of the base units. Note that the coverage area goes in all directions, including up and down.

Figure 4 shows the coverage area for the sample company.

**Figure 4: Coverage Area of the Base Units**



- 6 Verify whether the circle encompasses all of the areas where the Avaya 3920 Wireless Telephones will be used.

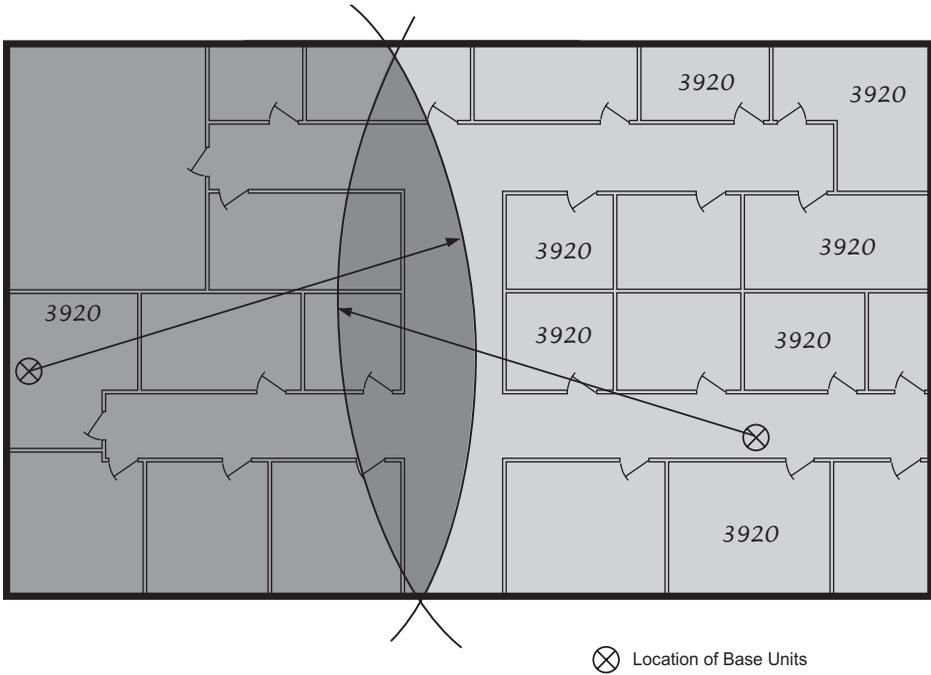
## 7 Perform one of the following steps:

- If the circle encompasses all of the areas where the Avaya 3920 Wireless Telephones will be used, you are finished determining the location of the base units.
- If the circle does not encompass all of the areas where the Avaya 3920 Wireless Telephones will be used, perform one of the following steps:
  - Select a location for all of the base units that is “centrally located” within the area where the Avaya 3920 Wireless Telephones will be used. (This new location should encompass all of the areas where the Avaya 3920 Wireless Telephones will be used.)
  - Identify a base unit location for the Avaya 3920 Wireless Telephones that are not covered by the current base unit location. Draw a circle with a 160 radius around this second base unit location, and verify that the circle encompasses those Avaya 3920 Wireless Telephones that were not covered by the first base unit location.

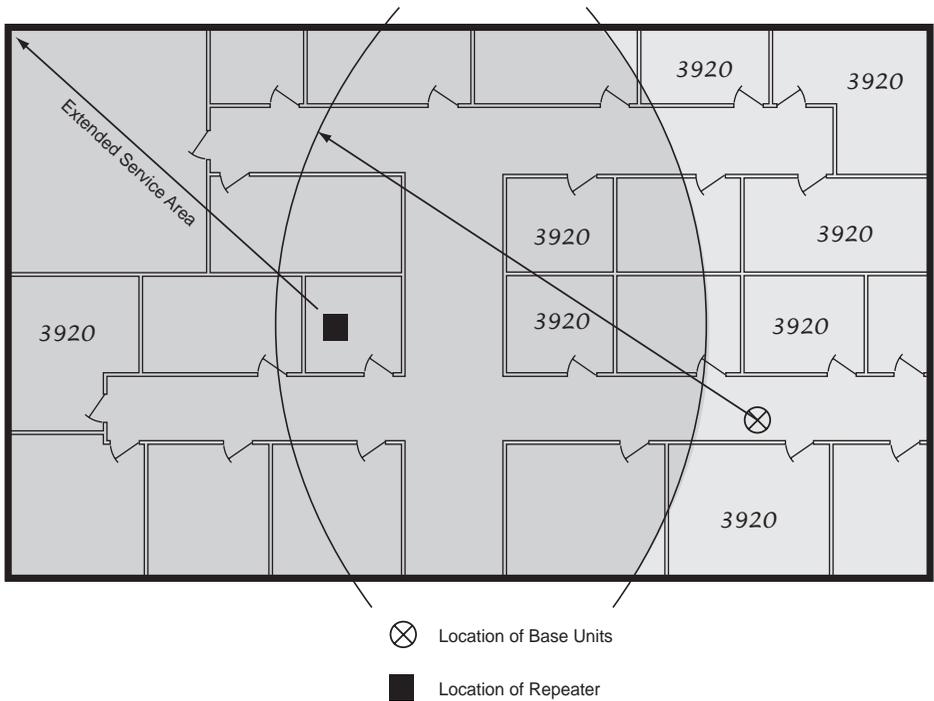
Figure 5 shows multiple locations of base units for a sample company.

Figure 6 shows locations of a base unit and repeater for extended coverage. For more information about repeaters, see [“Installing a Repeater” on page 23](#).

**Figure 5: Multiple Locations for Base Units**



**Figure 6: Using a Repeater to Extend Range**



**8** Repeat Step 7 until all of the Avaya 3920 Wireless Telephones are included in an area covered by the base units and repeaters.



# 3 Administering the Avaya 3920

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## Overview

This chapter is intended for your System Administrator. It describes system administration that must be performed on the PARTNER ACS to which your Avaya 3920 Wireless Telephone is connected.

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## Administration

The PARTNER Advanced Communications System views your Avaya 3920 Wireless Telephone as if it is an MLS-12D telephone. However, there are only six programmable buttons on your Avaya 3920 telephone, rather than the 12 buttons that are available on the MLS-12D telephone.

The Avaya 3920 Wireless Telephone provides eight buttons. However, the first two buttons (from the left) on the top row are used as intercom buttons.

In order for the Avaya 3920 Wireless Telephone to operate correctly, perform the following administration:

- 1 Remove all line appearances from the extension to which the Avaya 3920 telephone is connected.
- 2 Assign up to six lines or pools to that extension.



# 4 Installing a Repeater

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## Overview

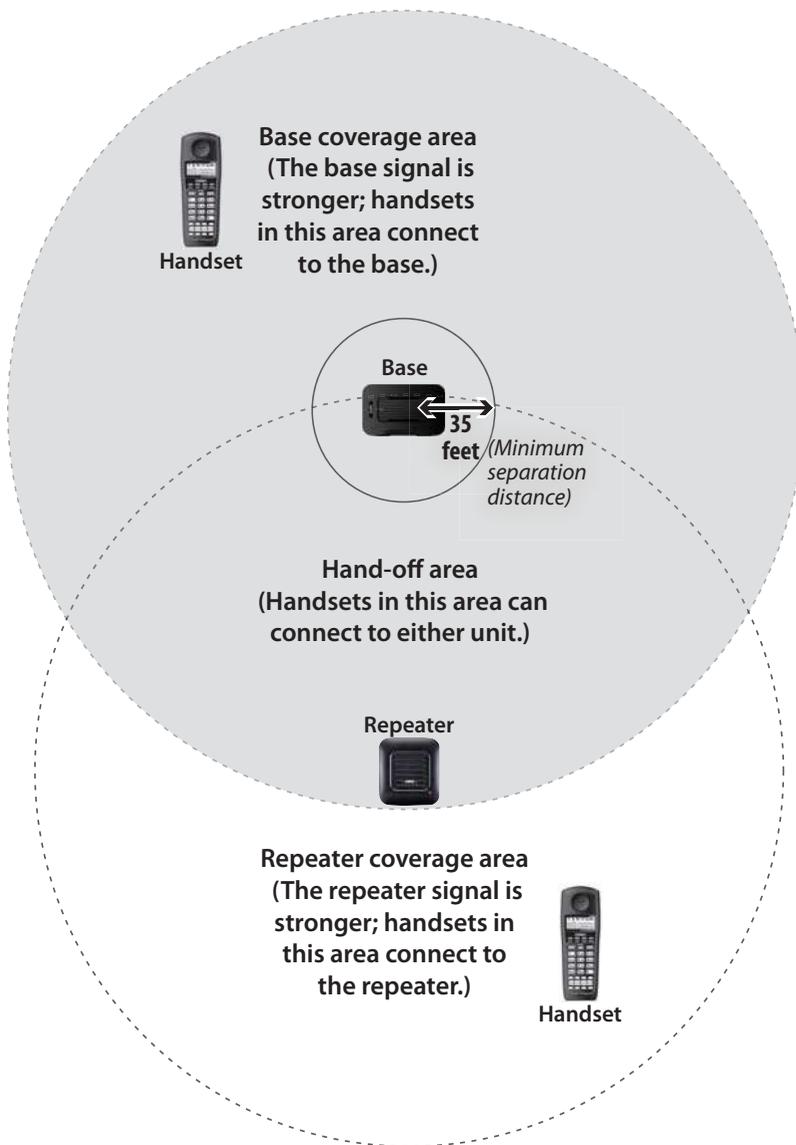
This chapter describes how to install an Avaya 3920 repeater to extend the coverage area of the Avaya 3920 Wireless Telephone.

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## About the Avaya 3920 Repeater

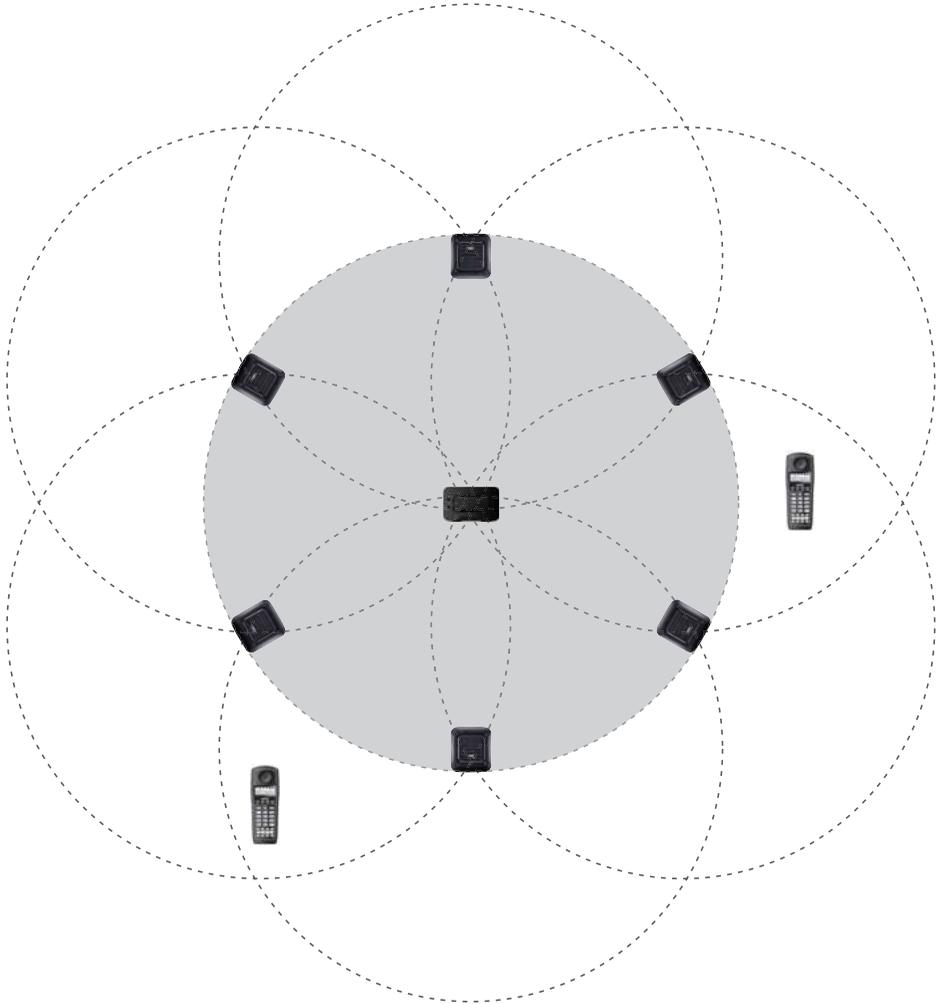
The Avaya 3920 repeater lets you extend the coverage area of the Avaya 3920 Wireless Telephone in all directions, including up and down. If the repeaters are installed so their coverage area overlaps the coverage area of the base, the base can hand-off calls to the repeaters as the user moves from one coverage area to another. When it is connected to the repeater, the Avaya 3920 operates the exact same way as it does when connected to the base, and the hand-off from the base to the repeater can be completely invisible to the end user, even during an active call. [Figure 7](#) shows a configuration that contains one repeater.

**Figure 7: Configuration with One Repeater**



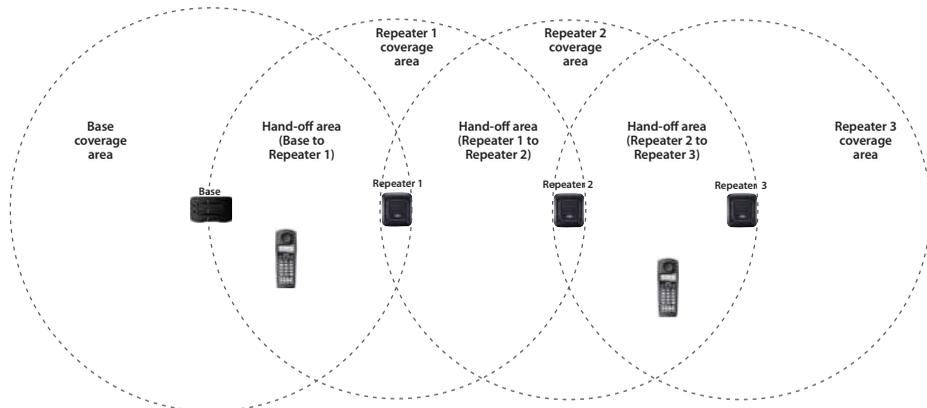
Each base supports up to six repeaters, so you can extend coverage in all directions, including through floors and ceilings.

**Figure 8: Installation of Multiple Repeaters**



The repeater also supports a sequential (daisy chain) layout to extend coverage in a single direction. You can daisy-chain up to three repeaters. See [“Installing a Repeater in a Daisy-Chain Configuration”](#) on page 37.

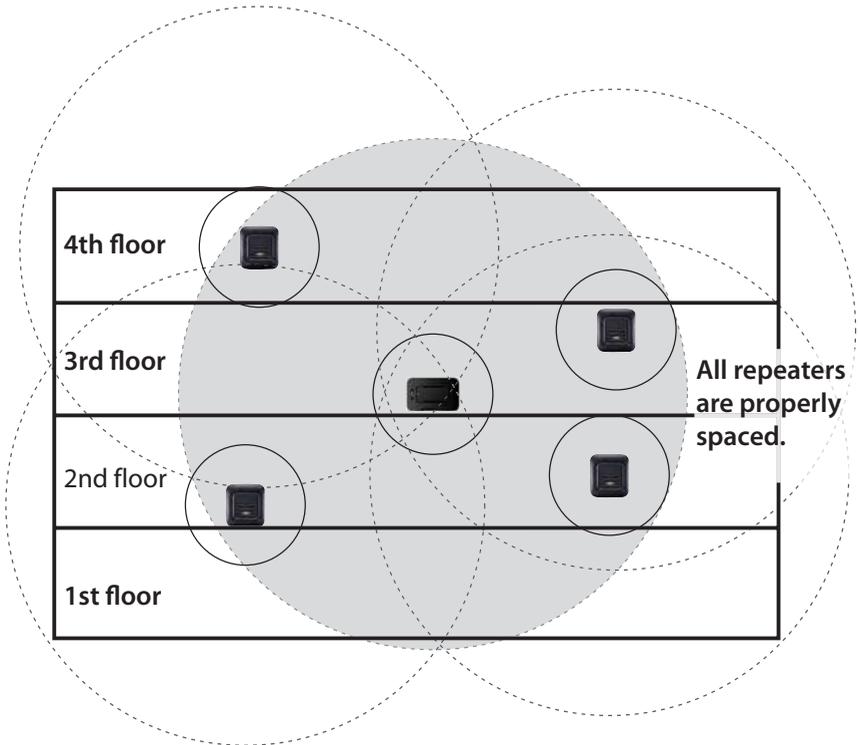
**Figure 9: Daisy-Chain Configuration**

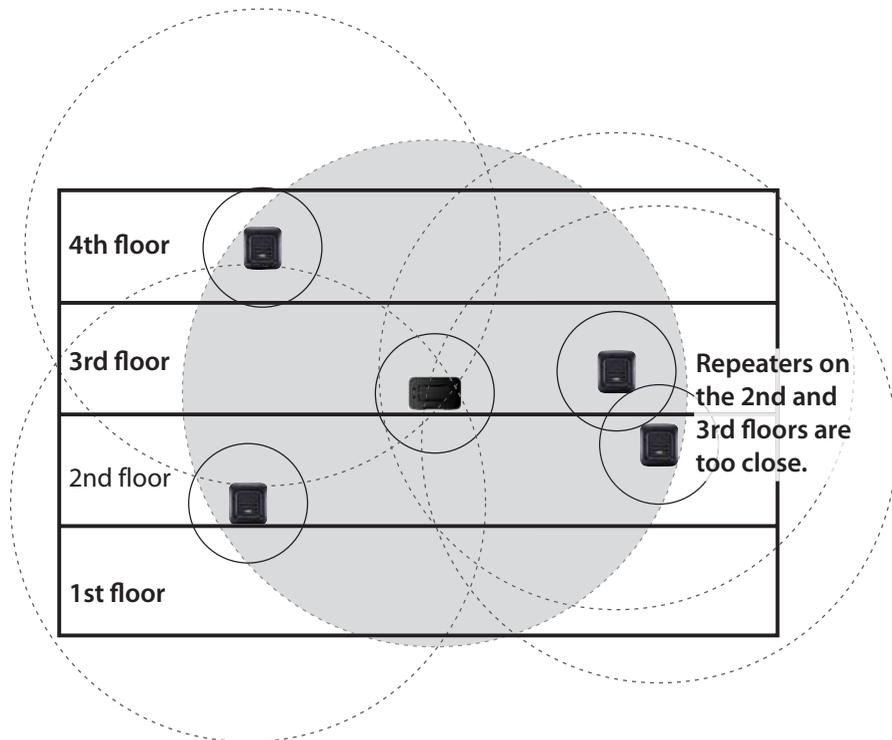


## Multiple-Repeater Systems

If you use multiple repeaters, the repeaters must be at least 35 feet apart. [Figure 10](#) shows a correct installation with multiple repeaters. [Figure 11](#) shows an incorrect installation with multiple repeaters.

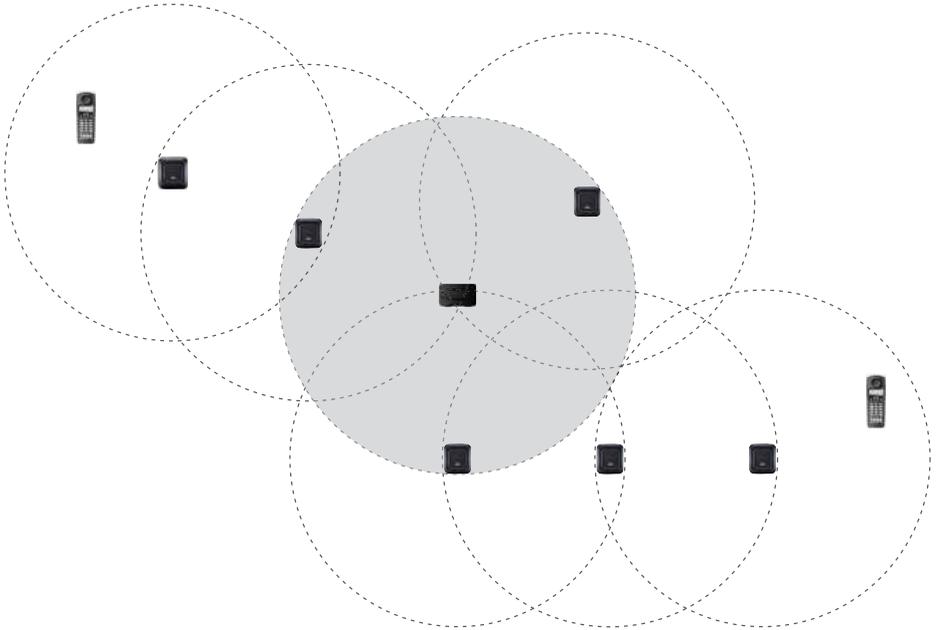
**Figure 10: Correct Installation of Multiple Repeaters**



**Figure 11: Incorrect Installation of Multiple Repeaters**

You can also combine “normal” and “daisy-chain” connections to create a wide variety of coverage configurations, as long as you have no more than six repeaters per base unit. [Figure 12](#) shows a combined configuration.

**Figure 12: Combined Installation of Normal and Daisy-Chain Connections**



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## Features

- Automatic registration to the base
- Up to six repeaters per base station
- Up to three repeaters in a sequential or daisy-chain layout
- Support for two simultaneous calls
- Repeater connection verification tone
- Low power consumption

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## Installing a Repeater in a Normal Configuration

This section describes how to install and configure a repeater in a normal configuration (that is, not a daisy-chain configuration). You must perform the following steps:

- 1 Register the repeater. See [“Procedure 1: Register the Repeater” on page 30](#).
- 2 Find the right location for the repeater. See [“Procedure 2: Find the Right Location” on page 33](#).
- 3 Install the repeater. See [“Procedure 3: Install the Repeater” on page 35](#).

### Procedure 1: Register the Repeater

Before installing a repeater, you must activate the repeater mode on the base unit of an Avaya 3920 Wireless Telephone and then register the repeater to the base unit and any handsets. Before you start the registration process, be sure you have:

- A working base
- A working handset registered to that base
- Any repeaters you want to register to this base. (You must complete the registration process separately for each repeater.)

Perform one of the following steps:

- If you are registering only one repeater to the base of an Avaya 3920 Wireless Telephone, go to [“Registering a Repeater Automatically” on page 31](#).
- If you are registering more than one repeater to the same base of an Avaya 3920 Wireless Telephone, go to [“Registering a Repeater Manually” on page 31](#).

### ***Registering a Repeater Automatically***

During automatic registration, the repeater seeks out the base that is currently in registration mode and registers itself to the base.

To register a repeater automatically, perform the following steps:

- 1 Set the base of the Avaya 3920 Wireless Telephone into registration mode by pressing and holding the registration button on the base for 3 seconds. The indicator on the base flashes.
- 2 Plug the AC adapter cord into the AC adapter input jack on the repeater.
- 3 Plug the AC adapter into a standard 120VAC wall outlet that is near the base unit. The repeater must be near the base unit. The LED on the repeater flashes briefly and then remains on. The repeater is now registered to this base and is ready to use.

**NOTE** 

*If the LED continues to flash, try registering the repeater again.*

- 4 Remove the power and move the repeater to the selected location. The repeater will stay registered to the base. Go to [“Procedure 2: Find the Right Location” on page 33](#).

### ***Registering a Repeater Manually***

If you are registering more than one repeater to the same base, you must register each repeater manually. Note that this procedure only works when registering a repeater directly to a base. You cannot add multiple repeaters in a “daisy chain” using this procedure. For a daisy-chain configuration, see [“Installing a Repeater in a Daisy-Chain Configuration” on page 37](#).

To register a repeater manually, perform the following steps:

- 1 Plug the AC adapter cord into the AC adapter input jack on the repeater.
- 2 Plug the AC adapter into a standard 120VAC wall outlet near the base unit for 1 to 5 seconds and then disconnect it.

**NOTE** 

*The repeater must be near the base unit.*

- 3 Plug the AC adapter into the wall outlet again. The LED on the repeater flashes slowly, indicating that the repeater is in registration mode.

**NOTE** 

*The repeater remains in registration mode for a maximum of 5 minutes. If you cannot complete the registration in 5 minutes, you must repeat this procedure.*

- 4 Set the base of the Avaya 3920 Wireless Telephone into registration mode by pressing and holding the registration button on the base for 3 seconds. The indicator on the base flashes quickly with no interruptions.

**NOTE** 

*If the LED has brief interruptions in the flash, you must reset your telephone system PIN to 0000 by selecting "CHANGE PIN" from the registered handset's menu and selecting "0000" as the PIN.*

- 5 Using the handset, press the TALK key to go offhook. The LED stops flashing.
- 6 Use the handset's number pad to assign a repeater number. Press a number between 2 and 7. Each repeater number can only be used once per base. (These numbers are independent of any handset extension numbers.)

When the repeater has accepted the assignment, the LED flashes a corresponding number of times.

- 7 To confirm the registration, press the STAR key and then the TALK key. The LED goes off for 2 seconds, flashes for a brief moment, and then remains on and steady.

The repeater is now registered to this base station.

8 Perform one of the following steps:

- If you want to register another repeater to this base, repeat Steps 1 through 7 for each repeater.
- If you are finished registering repeaters to this base, remove the AC adapter from the wall outlet, and move the repeater to the selected location. Go to [“Procedure 2: Find the Right Location” on page 33](#).

**NOTE** ►

*The repeater remains registered even if you disconnect the AC adapter or there is a power failure. If you want to clear the registration (for example, so you can register to a different base), you must reset the repeater.*

## Procedure 2: Find the Right Location

To get the best operating conditions for the repeater, it is important to place it correctly. Here are a few tips for placing repeaters:

- Place the repeater as high as possible (at least six feet off the ground).
- Make sure you have good reception from the base.
- Allow **at least 35 feet** between repeaters. If you are installing repeaters across multiple floors, don't forget to allow 35 feet **vertically**, also).
- Avoid sources of electrical interference, such as hi-fi systems, office equipment or microwave ovens.
- Avoid heat sources and direct sunlight.
- Avoid things that can interfere with radio signals, such as metal doors, thick walls, niches and cupboards.
- Make sure the wall material can hold the weight of the repeater. Never install a repeater in damaged or decaying wall material.
- Make sure a standard 120VAC wall outlet is within reach of the repeater.

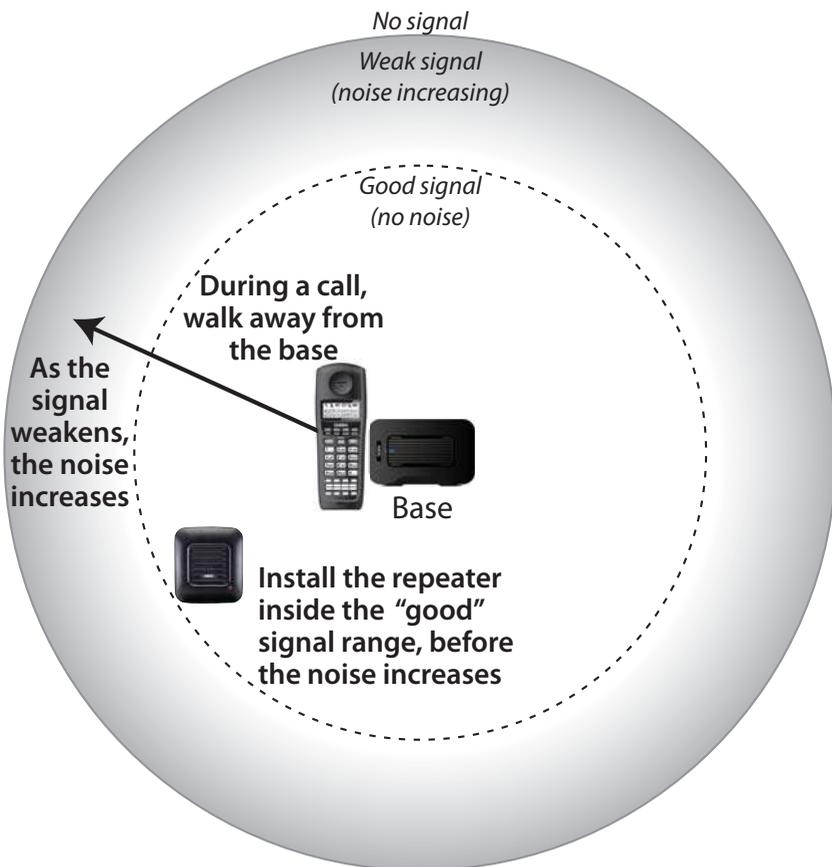
### **Mapping the Coverage Area of the Base**

To find the best location for the repeater, you need to determine the base's coverage area. Stand near the base and make a call. Walk away from the base with the handset, and make a note where the signal becomes weaker. The optimum location for the repeater is as far from the base as possible while still

maintaining a “good” signal, or just inside the location where the signal became weaker.

If you are installing multiple repeaters, perform this procedure for each repeater.

**Figure 13: Mapping the Coverage Area of a Base Unit**



After you map the coverage area of the base, go to [“Testing the Location” on page 35](#).

### ***Testing the Location***

To test the location, plug the repeater's AC adapter into a standard 120VAC wall outlet, and then hold the repeater in the place where you plan to mount it. The LED should remain on and steady, indicating that the repeater has a good signal from the base.

If the LED flashes, the repeater is not getting a good signal. The repeater may be too far away from the base, there may be interference from electronic devices, or the signal might be blocked by thick walls or metal objects. Move the repeater to another location.

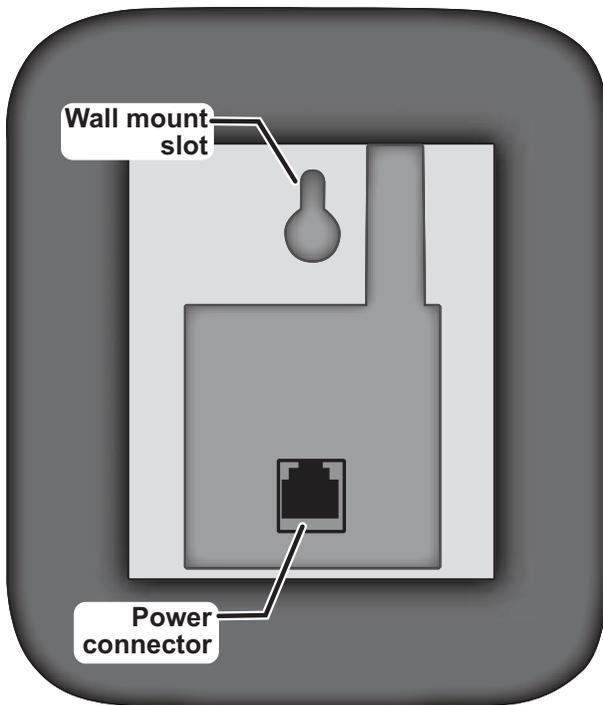
If you are installing multiple repeaters, perform this procedure for each repeater.

After you successfully test the location, go to [“Procedure 3: Install the Repeater” on page 35](#).

### **Procedure 3: Install the Repeater**

Perform the following steps:

- 1 Hold the repeater in its final location, and mark the center of the top edge.
- 2 From the edge mark, measure down about 1  $\frac{1}{2}$  inches (about 38 mm), and mark the screw location.
- 3 At the screw location, use a  $\frac{3}{16}$  - inch drill bit to make a pilot hole, approximately 1 inch deep.
- 4 Place the wall anchor (provided with the repeater) into the pilot hole and tap it gently with a hammer until the anchor is flush with the wall.
- 5 Insert the mounting screw into the anchor, leaving approximately  $\frac{1}{4}$  inch of space between the screw head and the wall.
- 6 Plug the AC adapter cord into the AC adapter input jack on the back of the repeater. See [Figure 14](#).

**Figure 14: Back of Repeater**

7 Put the repeater over the screw head, and slide it down into place.

8 Plug the AC adapter into the wall outlet.

If you are installing multiple repeaters, perform this procedure for each repeater.

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## Installing a Repeater in a Daisy-Chain Configuration

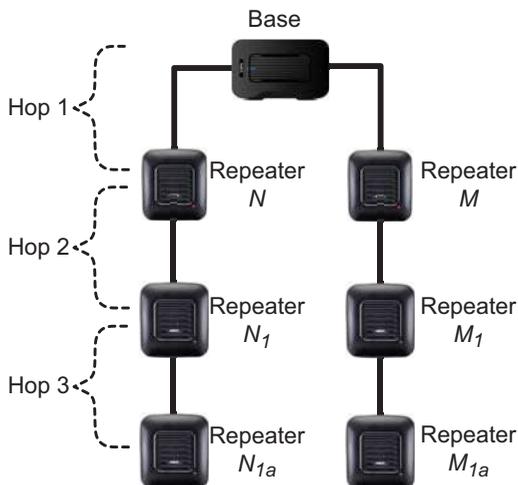
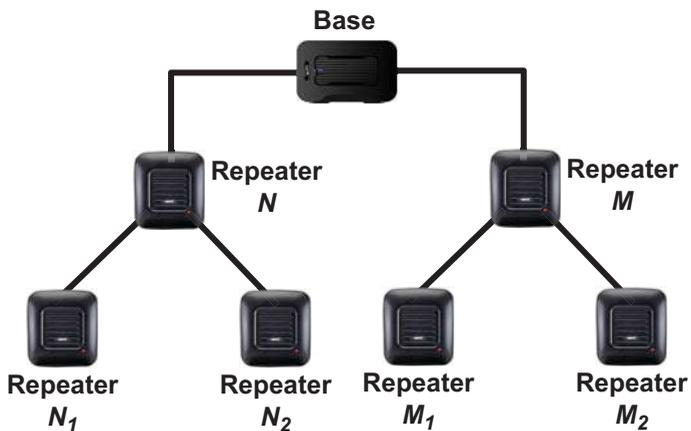
This section describes how to install and configure a repeater in a sequential (daisy-chain) configuration. In this configuration, one repeater connects to a second repeater instead of connecting directly to the base. When installing repeaters in a daisy chain, remember the following rules:

- Each base unit supports a total of six repeaters.
- Each repeater supports two direct connections to other repeaters.
- No repeater can be more than three connections or “hops” from the base unit.

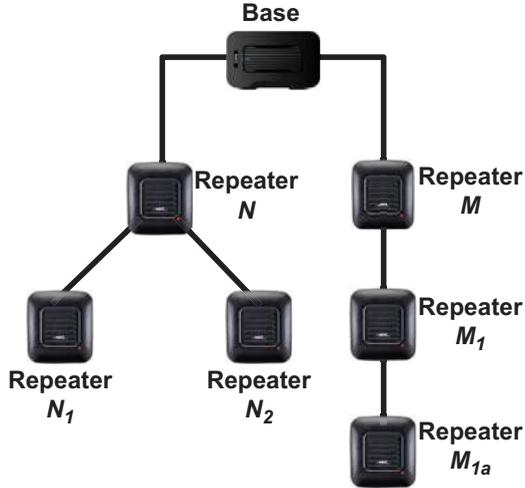
**NOTE** 

*You must have a repeater configuration programming kit to set up the daisy-chain configuration.*

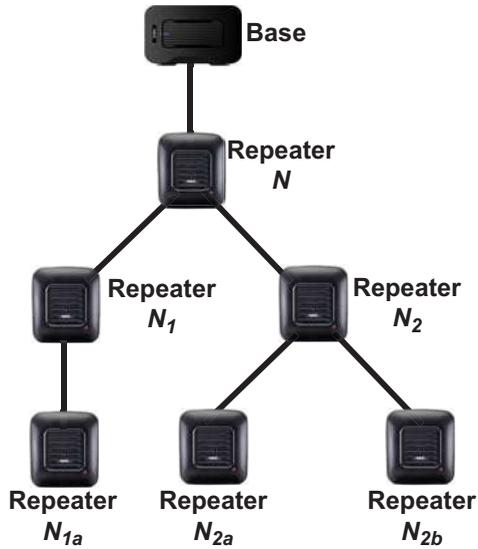
The following figures show sample layouts of different daisy-chain configurations. In these figures, the repeater designated as Repeater N (M, O, etc.) is always directly connected to the base unit (that is, one hop from the base unit). (See [Figure 15](#).) Repeater N1 is connected in a series off of Repeater N (two hops), and Repeater N1a is connected off of Repeater N1 (three hops).

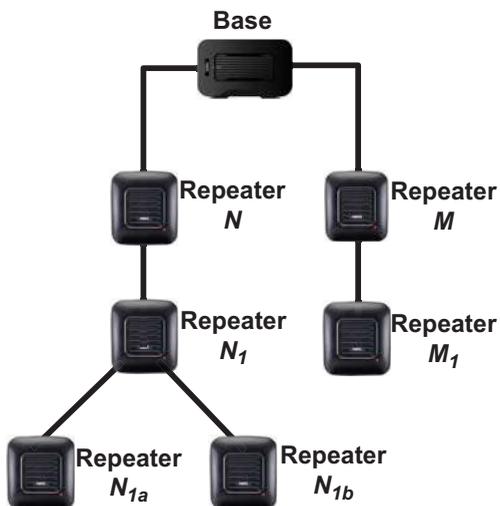
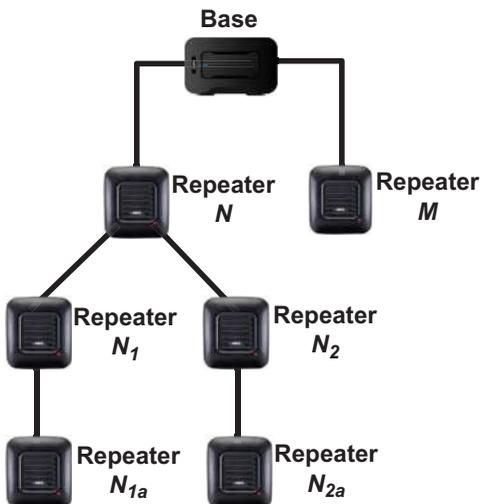
**Figure 15: Sample Daisy-Chain Configuration 1****Figure 16: Sample Daisy-Chain Configuration 2**

**Figure 17: Sample Daisy-Chain Configuration 3**



**Figure 18: Sample Daisy-Chain Configuration 4**



**Figure 19: Sample Daisy-Chain Configuration 5****Figure 20: Sample Daisy-Chain Configuration 6**

To install repeaters in a daisy-chain configuration, you must perform the following steps:

- 1 Install the repeater configuration software on a PC. See [“Procedure 1: Install the Repeater Configuration Software” on page 42.](#)
- 2 Register repeater N to the base. See [“Procedure 2: Register Repeater N to the Base” on page 42.](#)
- 3 Connect repeater N to the PC running the repeater configuration software. See [“Procedure 3: Configure Repeater N” on page 43.](#)
- 4 Connect repeater N1 to the PC running the repeater configuration software. See [“Procedure 4: Configure Repeater N1” on page 44.](#)
- 5 Register repeater N1 to the base. See [“Procedure 5: Register Repeater N1 to the Base” on page 45.](#)
- 6 Configure the remaining repeaters. See [“Procedure 6: Configure Additional Repeaters” on page 46.](#)
- 7 Find the right location for the repeaters. See [“Procedure 7: Find the Right Location” on page 48.](#)
- 8 Install the repeaters. See [“Procedure 8: Install the Repeater” on page 50.](#)

Before you begin, make sure you have:

- the customized RJ-11 splitter (provided with the repeater)
- the customized RJ-11 to serial DB9 PC connection cable (provided with the repeater)
- the repeater configuration software CD
- a working base unit
- a working handset registered to that base unit
- any repeaters you want to register to this base. (You must complete the registration process separately for each repeater.)
- a PC that will run the repeater configuration software

## Procedure 1: Install the Repeater Configuration Software

Perform the following steps:

- 1 Close all applications on your PC.
- 2 Insert the repeater configuration software CD into your PC. The installer starts.
- 3 Follow the screen prompts, and accept all of the default options.

When finished, go to [“Procedure 2: Register Repeater N to the Base” on page 42.](#)

## Procedure 2: Register Repeater N to the Base

Before installing a repeater, you need to activate the repeater mode on the base unit of an Avaya 3920 Wireless Telephone and then register the repeater to the base unit and any handsets. During automatic registration, the repeater seeks out the base that is currently in registration mode and registers itself to the base.

Perform the following steps:

- 1 Set the base of the Avaya 3920 Wireless Telephone into registration mode by pressing and holding the registration button on the base for 3 seconds. The indicator on the base flashes.
- 2 Plug the AC adapter cord into the AC adapter input jack on the repeater.
- 3 Plug the AC adapter into a standard 120VAC wall outlet near the base unit. The repeater must be near the base unit. The LED on the repeater flashes briefly and then remains on. The repeater is now registered to this base and is ready to use.

### **NOTE**

*If the LED continues to flash, try registering the repeater again.*

- 4 Remove the AC adapter from the wall outlet.
- 5 Unplug the AC adapter cord from the AC adapter input jack on the repeater. The repeater will stay registered to the base.

When finished, go to [“Procedure 3: Configure Repeater N” on page 43.](#)

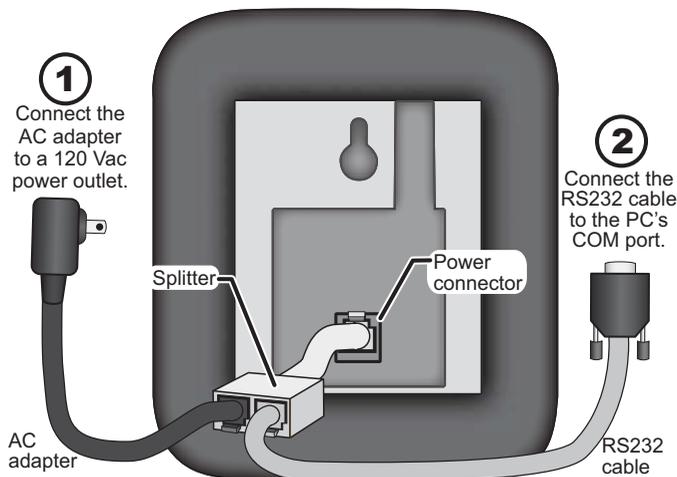
### Procedure 3: Configure Repeater N

In this section, you will connect repeater N to the PC that is running the repeater configuration software and configure repeater N.

Perform the following steps:

- 1 Connect the splitter to the power connector on repeater N. See [Figure 21](#).
- 2 Plug the AC adapter into a port on the splitter.
- 3 Plug the customized RJ-11 to serial DB9 PC connection cable into the other port on the splitter.
- 4 Plug the AC adapter cord into a standard 120VAC wall outlet.
- 5 Connect the other end of the customized RJ-11 to serial DB9 PC connection cable to the properly configured COM port on your PC.
- 6 Start the repeater configuration software.
- 7 From the COM port box at the top of the repeater configuration software window, select the COM port to which repeater N is connected.
- 8 Click the **Load** button. The software loads the configuration information from repeater N and displays it in the window.
- 9 Record the information displayed in the Repeater RFPI box at the bottom of the window. (You will use this information in the next section.)
- 10 If you do not want the handset to beep when it is connected to the repeater, clear the **Monitor beep** check box, and click the **Save** button.
- 11 Click the **Quit** button to exit the application.
- 12 Unplug the AC adapter from the wall outlet.
- 13 Unplug the splitter from the power connector on repeater N.
- 14 Unplug the AC adapter from the splitter.

When finished, go to [“Procedure 4: Configure Repeater N1”](#) on page 44.

**Figure 21: PC and Repeater Connections**

## Procedure 4: Configure Repeater N1

In this section, you will connect repeater N1 to the PC that is running the repeater configuration software and configure repeater N1.

### NOTE

*Do not register repeater N1 to the base unit. If repeater N1 has been registered to any base unit, reset the repeater before continuing.*

Perform the following steps:

- 1 Connect the splitter to the power connector on repeater N. See [Figure 21](#).
- 2 Plug the AC adapter cord into a port on the splitter.
- 3 Plug the customized RJ-11 to serial DB9 PC connection cable into the other port on the splitter.
- 4 Plug the AC adapter into a standard 120VAC wall outlet.

- 5 Start the repeater configuration software.
- 6 From the COM port box at the top of the repeater configuration software window, select the COM port to which repeater N1 is connected.
- 7 In the RFPI box, enter the RFPI for repeater N. You recorded this information in Step 9 in the previous section.
- 8 Click the mouse in the PARK box. The software will automatically display the PARK information and RPN information for repeater N.
- 9 Click the **Ignore HOP control** check box.
- 10 If you do not want the handset to beep when it is connected to the repeater, clear the **Monitor beep** check box.
- 11 Click the **Save** button.
- 12 Unplug the AC adapter from the wall outlet.
- 13 Unplug the splitter from the power connector on repeater N.
- 14 Unplug the AC adapter from the splitter.

When finished, go to [“Procedure 5: Register Repeater N1 to the Base” on page 45](#).

## Procedure 5: Register Repeater N1 to the Base

After you have configured repeater N1, you must register it to the base unit.

Perform the following steps:

- 1 Set the base of the Avaya 3920 Wireless Telephone into registration mode by pressing and holding the registration button on the base for 3 seconds. The indicator on the base flashes.
- 2 Plug the AC adapter cord into the AC adapter input jack on the repeater.
- 3 Plug the AC adapter into a standard 120VAC wall outlet near the base unit. The repeater must be near the base unit. The LED on the repeater flashes briefly and then remains on. The repeater is now registered to this base and is ready to use.

### **NOTE**

*If the LED continues to flash, try registering the repeater again.*

- 4 Remove the AC adapter from the wall outlet.
- 5 Unplug the AC adapter cord from the AC adapter input jack on the repeater. The repeater will stay registered to the base.

If you want to connect another repeater (for example, repeater N2) through repeater N, repeat the steps in [“Procedure 4: Configure Repeater N1” on page 44](#) and [“Procedure 5: Register Repeater N1 to the Base” on page 45](#) for that repeater.

If you want to configure additional repeaters, go to [“Procedure 6: Configure Additional Repeaters” on page 46](#).

Otherwise, go to [“Procedure 7: Find the Right Location” on page 48](#).

## Procedure 6: Configure Additional Repeaters

If you want to configure additional repeaters, perform the steps in the following sections:

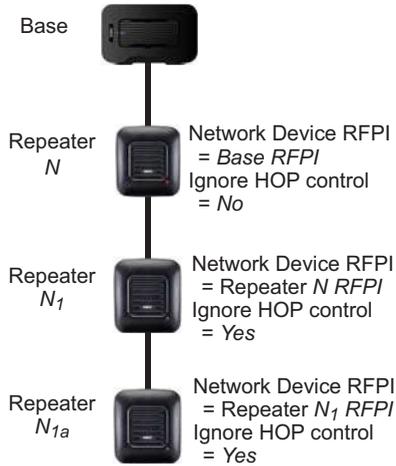
- [“Procedure 3: Configure Repeater N” on page 43](#)
- [“Procedure 4: Configure Repeater N1” on page 44](#)
- [“Procedure 5: Register Repeater N1 to the Base” on page 45](#)

When configuring these other repeaters, use the Repeater RFPI from the previous level as the Network Device RFPI:

- For repeaters N1a and N1b, enter the RFPI for repeater N1 in the Network Device RFPI box.
- For repeaters N2a and N2b, enter the RFPI for repeater N2 in the Network Device RFPI box.

For all repeaters not connected directly to the base, make sure the **Ignore HOP Control** check box is enabled.

**Figure 22: Configure Additional Repeaters**



When finished, go to [“Procedure 7: Find the Right Location”](#) on page 48.

## Procedure 7: Find the Right Location

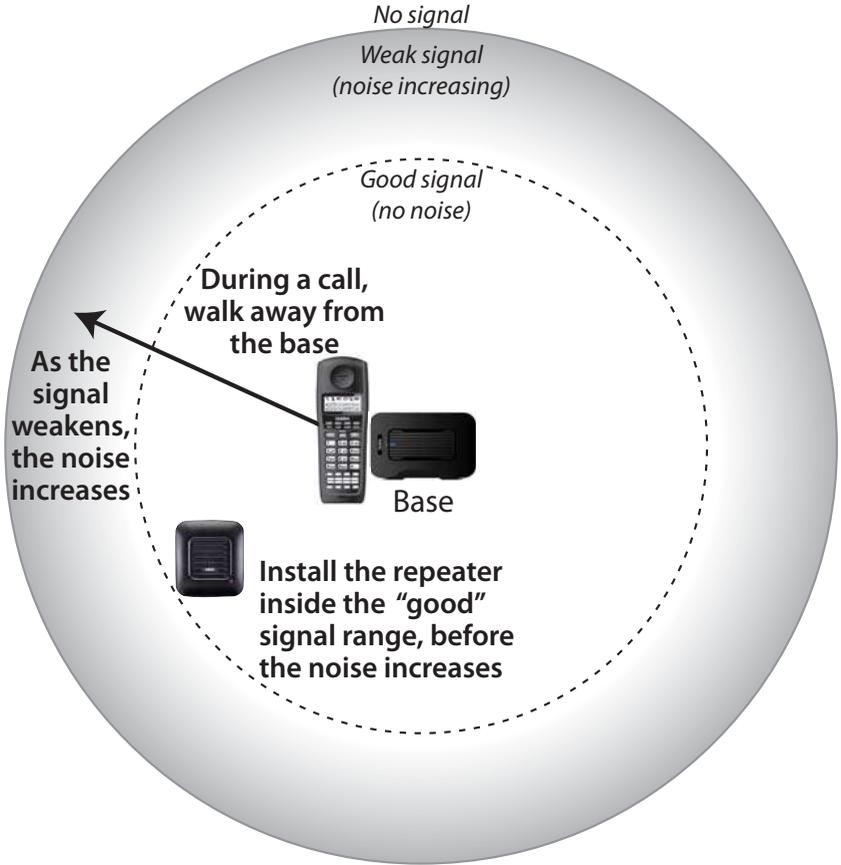
To get the best operating conditions for the repeater, it is important to place it correctly. Here are a few tips for placing repeaters:

- Place the repeater as high as possible (at least six feet off the ground).
- Make sure you have good reception from the base.
- Allow **at least 35 feet** between repeaters. If you are installing repeaters across multiple floors, don't forget to allow 35 feet **vertically**, also).
- Avoid sources of electrical interference, such as hi-fi systems, office equipment or microwave ovens.
- Avoid heat sources and direct sunlight.
- Avoid things that can interfere with radio signals, such as metal doors, thick walls, niches and cupboards.
- Make sure the wall material can hold the weight of the repeater. Never install a repeater in damaged or decaying wall material.
- Make sure a standard 120VAC wall outlet is within reach of the repeater.

### ***Mapping the Coverage Area of a Base***

To find the best location for the repeater, you need to determine the base's coverage area. Stand near the base and make a call. Walk away from the base with the handset, and make a note where the signal becomes weaker. The optimum location for the repeater is as far from the base as possible while still maintaining a "good" signal, or just inside the location where the signal became weaker.

**Figure 23: Mapping the Coverage Area of a Base Unit**



After you map the coverage area of the base, go to ["Testing the Location"](#) on page 50.

### ***Testing the Location***

To test the location, plug the repeater's AC adapter into a standard 120VAC wall outlet, and then hold the repeater in the place where you plan to mount it. The LED should remain on and steady, indicating that the repeater has a good signal from the base.

If the LED flashes, the repeater is not getting a good signal. The repeater may be too far away from the base, there may be interference from electronic devices, or the signal might be blocked by thick walls or metal objects. Move the repeater to another location.

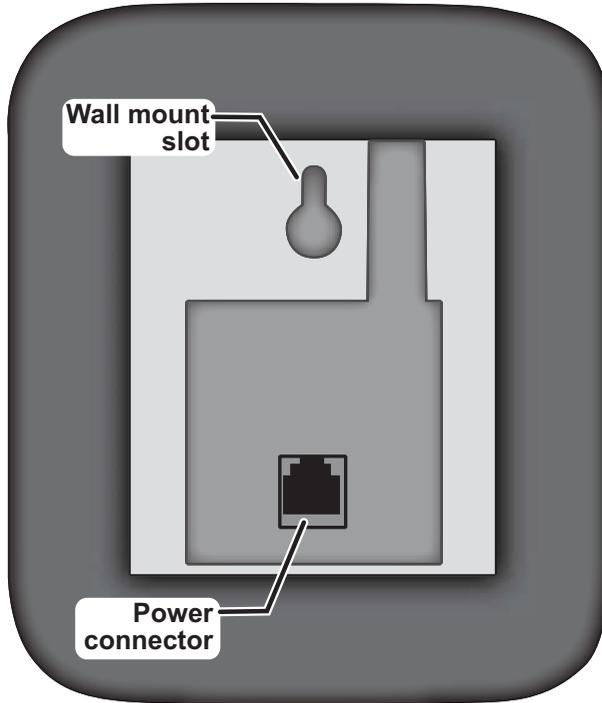
Perform this procedure for each repeater.

After you successfully test the location, go to [“Procedure 8: Install the Repeater” on page 50](#).

### **Procedure 8: Install the Repeater**

Perform the following steps:

- 1 Hold the repeater in its final location, and mark the center of the top edge.
- 2 From the edge mark, measure down about 1  $\frac{1}{2}$  inches (about 38 mm), and mark the screw location.
- 3 At the screw location, use a  $\frac{3}{16}$  - inch drill bit to make a pilot hole approximately 1 inch deep.
- 4 Place the wall anchor (provided with the repeater) into the pilot hole, and tap it gently with a hammer until the anchor is flush with the wall.
- 5 Insert the mounting screw into the anchor, leaving approximately  $\frac{1}{4}$  inch of space between the screw head and the wall.
- 6 Plug the AC adapter cord into the AC adapter input jack on the back of the repeater. See [Figure 24](#).

**Figure 24: Back of Repeater**

7 Put the repeater over the screw head, and slide it down into place.

8 Plug the AC adapter into the wall outlet.

Perform this procedure for each repeater.

---

## Registering a Repeater to a Different Base

Perform this procedure if you want to register a repeater with a different base.

Once the repeater is registered, you must reset it before you can change the registration to a different base. If you want to reset the repeater and clear its registration, perform the following steps:

- 1 Unplug the AC adapter from the wall outlet.
- 2 Plug the AC adapter into the wall outlet for 1 to 5 seconds, and unplug it again.
- 3 Plug the AC adapter into the wall outlet for 25 to 35 seconds, and unplug it again.
- 4 Set the base of the Avaya 3920 Wireless Telephone into registration mode by pressing and holding the registration button on the base for 3 seconds. The indicator on the base flashes.
- 5 Plug the AC adapter of the repeater into a wall outlet. The LED on the repeater flashes briefly and then remains on. The repeater is now registered to this base and is ready to use.

**NOTE** 

*If the LED continues to flash, try registering the repeater again.*

- 6 Unplug the AC adapter from the outlet and move the repeater to the selected location. The repeater will stay registered to the base.

---

## Turning on the Verification Tone

When a handset moves into the extended coverage area of the repeater, it sounds a continuous verification tone. This tone sounds as long as the handset is connected to the repeater. The verification tone is a useful tool for troubleshooting installation problems.

Perform the following steps:

- 1 Unplug the AC adapter from the wall outlet.
- 2 Reconnect the power for 1 to 5 seconds, and disconnect it again.
- 3 Reconnect the power and wait for the LED on front of the repeater to start a slow flash.
- 4 Disconnect the power, and immediately reconnect it. The verification tone is then activated.

To turn the verification tone off again, repeat the procedure.

## Troubleshooting

Refer to this section if you encounter problems while using repeaters.

### NOTE

*Do not attempt to service this unit yourself. All service must be done by qualified service personnel.*

Condition	Suggestion
There is a lot of static when calls hand-off to the repeater and/or the LED on the repeater will not stop flashing.	<p>Move the repeater closer to the base.</p> <p>Check for interference from electronic devices.</p> <p>Make sure the repeater is not too close to metal objects or thick walls.</p>
You are no longer able to connect to the base.	<p>Make sure the repeater is powered on.</p> <p>Reset the repeater and register it to the base again. See <a href="#">“Registering a Repeater to a Different Base”</a> on page 52.</p>
When you are on a call, the handset starts beeping.	<p>Turn off the verification tone. See <a href="#">“Turning on the Verification Tone”</a> on page 53.</p>
Calls will not hand-off to the repeater.	<p>Make sure the repeater is inside the base’s good signal range.</p> <p>Make sure there is at least 35 feet between repeaters.</p> <p>Reset the repeater and register it to the base again. See <a href="#">“Registering a Repeater to a Different Base”</a> on page 52.</p>

<p>You cannot register a repeater to the base, and the repeater is connected directly to the base.</p>	<p>Make sure there are not already six repeaters registered to this base.</p> <p>Reset the problem repeater and try again.</p>
<p>You cannot register a repeater to the base, and the repeater is connected through another repeater (repeater N).</p>	<p>Make sure there are not already six repeaters registered to this base.</p> <p>Make sure there are not already two repeaters connected to repeater N.</p> <p>Reset the problem repeater and try again.</p> <p>Reset both the problem repeater and repeater N.</p>
<p>The repeater registered to the base, but you cannot make calls.</p>	<p>Make sure all of the repeaters registered to this base have unique RPNs.</p>

---

## Maintenance

Unplug the repeater from the wall outlet before cleaning, and then simply wipe the repeater with a damp cloth or an antistatic wipe.

- Do not use liquid cleaners or aerosol cleaners.
- Never use solvents or a dry cloth (static discharge).



# 5 Registering/Unregistering Handsets

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## Overview

This chapter describes how to register and unregister a handset and a base.

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## Register a Handset to the Base

Perform this procedure if you add or replace a handset.

Before a handset can be used in your system, it must be registered to the cordless base. **The handset that came with your system was preregistered at the factory.**

Perform the following steps if you add or replace a handset:

- 1 Install the handset's battery and charging cradle.
- 2 Charge the handset for several hours.
- 3 Press and hold **menu**.
- 4 Using the **Vol +** and - buttons on the side of the handset, select "Register."
- 5 Press **menu**. The handset displays the prompt "Are You Sure."
- 6 Using the **Vol +** and - buttons, select "Yes."
- 7 On the base, press the registration button for three seconds. The indicator will begin to flash. After a few seconds, the handset will prompt you for the base's registration PIN. The factory-set PIN is "1234."
- 8 Enter "1234." The handset and base will register to each other. You can now use the handset with that base.

---

## Unregister a Handset

If you want to move a handset to a different base, you must first unregister it from the current base.

Perform the following steps to unregister a handset:

- 1 Press and hold **menu**.
- 2 Use the **Vol +** and - buttons on the side of the handset to select “Deregister.”
- 3 Press **menu**. The handset displays the prompt “Are You Sure.”
- 4 Using the **Vol +** and - buttons, select “Yes.”
- 5 Press **menu** to confirm.
- 6 Using the **Vol +** and - buttons, select the appropriate handset.
- 7 Press **menu**. The handset displays the prompt “Are You Sure.”
- 8 Using the **Vol +** and - buttons, select “Yes.”
- 9 Press **menu** to confirm.

# A Specifications

<b>Specifications</b>	
<b>Base Unit</b>	
Operating Temperature	0° to 50° C (+32° F to +122° F)
Receive/Transmit Frequency	1920 MHz to 1930 MHz
Peak RF Output/Transmit Power	100 mW (+20 dBm)
Power Requirements	120V from supplied AC adapter
Size	Width – 14 4/5 inches Depth – 10 4/5 inches Height – 4 2/5 inches
Weight	Approximately 14.3 oz.
<b>Handset</b>	
Operating Temperature	0° to 50° C (+32° F to +122° F)
Receive/Transmit Frequency	1920 MHz to 1930 MHz
Power Requirements	Nickel Metal-Hydride rechargeable battery
Size	Width – 2 1/5 inches Depth – 1 2/3 inches Height – 6 1/4 inches
Weight	Approximately 5.4 oz. with battery
Battery	Capacity – 910 mAh, 2.4 V Talk Time – 12 hours Standby Time – 6 days

<b>Specifications</b>	
<b>Repeater</b>	
Operating Temperature	-10° to 50° C (+14° F to +122° F)
Receive/Transmit Frequency	1920 MHz to 1930 MHz
Peak RF Output/Transmit Power	100 mW (+20 dBm)
Power Requirements	120V from supplied AC adapter
Size	Width – 2 inches Depth – 6 inches Height – 9 inches
Weight	Approximately 5 oz.