

Access Points

AT-WA7500

AT-WA7501



Radio Installation Instructions



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3200 North First Street, San Jose, CA 95134 USA

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Preface

This manual contains instructions on how to install or replace a radio in an Allied Telesyn AT-WA7500 or AT-WA7501 access point.

Document Conventions

This document uses the following conventions:

Note

Notes provide additional information.



Caution

Cautions inform you that performing or omitting a specific action may result in equipment damage or loss of data.



Warning

Warnings inform you that performing or omitting a specific action may result in bodily injury.

Where to Find Web-based Guides

The installation and user guides for all Allied Telesyn products are available in Portable Document Format (PDF) from on our web site at **www.alliedtelesyn.com**. You can view the documents on-line or download them onto a local workstation or server.

Contacting Allied Telesyn

This section provides Allied Telesyn contact information for technical support as well as sales or corporate information.

Online Support

You can request technical support online by accessing the Allied Telesyn Knowledge Base from the following web site: **www.alliedtelesyn.com/kb**. You can use the Knowledge Base to submit questions to our technical support staff and review answers to previously asked questions.

Email and Telephone Support

For Technical Support via email or telephone, refer to the Support & Services section of the Allied Telesyn web site: **www.alliedtelesyn.com**.

Returning Products

Products for return or repair must first be assigned a Return Materials Authorization (RMA) number. A product sent to Allied Telesyn without a RMA number will be returned to the sender at the sender's expense.

To obtain a RMA number, contact Allied Telesyn's Technical Support at our web site: **www.alliedtelesyn.com**.

For Sales or Corporate Information

You can contact Allied Telesyn for sales or corporate information at our web site: **www.alliedtelesyn.com**. To find the contact information for your country, select Contact Us -> Worldwide Contacts.

Management Software Updates

You can download new releases of management software for our managed products from either of the following Internet sites:

- Allied Telesyn web site: **www.alliedtelesyn.com**
- Allied Telesyn FTP server: **<ftp://ftp.alliedtelesyn.com>**

To download new software from the Allied Telesyn FTP server using your workstation's command prompt, you need FTP client software and you must log in to the server. Enter "anonymous" as the user name and your email address for the password.

AT-WA7500 and AT-WA7501 Radio Installation Instructions

Note

Opening this product can result in voiding the warranty. Radio upgrades and radio replacements should only be performed by Allied Telesyn service personnel.

Note

The country code is programmed into the radio at the factory. The country code should always remain the same in an access point. You should not upgrade an access point with a radio that has a different country code.

Note

The country code is included on the shipping label. Do not discard the shipping container because you will need this 3-digit country code when you reconfigure the configuration matrix string on page 23.

For the AT-WA7500 and AT-WA7501 Access Points, you may need to add a second radio, replace a malfunctioning radio, or remove one type of radio and replace it with another type of radio. These instructions explain how to add or replace a radio, reconfigure the configuration matrix string, and apply the new labels. At the end of these instructions you can find some troubleshooting information.

The radio upgrade kits contain:

- Mini-PCI radio card
- Retaining clip
- Radio certification labels

- Product certification labels
- Antenna cable assemblies (2)
The 802.11a full-range radio upgrade kit ships with antennas with integral cable assemblies (2).
- Gasket (AT-WA7501 only)

You need these tools:

- Phillips screwdriver
- Ratchet with 16 mm (5/8 in) socket
- 16 mm (5/8 in) open-ended socket wrench
- Torx T20 driver (AT-WA7501 only)
- Calibrated torque screwdriver with Torx T20 bit (AT-WA7501 only)

You may also need these tools:

- Antenna cable remover
- Scissors (to trim the RF certification label)



Caution

Integrated circuits on the printed circuit board (PCB) in the access point are very sensitive to damage by electrostatic discharge (ESD). Prevent ESD by always wearing skin contact ground straps firmly attached to the equipment metal base assembly when working inside the access point. Never open the unit package without safeguarding the entire work area with ESD protection. Failure to comply may result in damage to PCB components.

About the Radios Supported

The AT-WA7500 and AT-WA7501 access products may contain one or two radios. You can use access points that contain two different types of radios to support two different types of wireless networks, such as legacy networks. You can use access points with two of the same type of radios as WAPs, as point-to-multipoint bridges, to increase throughput in a busy network, or to provide redundancy.

The 802.11g radio is sometimes referred to as the 802.11b/g radio because it can be configured to communicate with any 802.11b and 802.11g radios that have the same SSID and security settings.

Prior to installing an 802.11g radio, note the following:

- ❑ Before you install the 802.11g radio, upgrade the access point to the latest software release to ensure that the correct radio drivers are installed. For instructions, refer to the *AT-WA7500 and AT-WA7501 Installation and User's Guide*.
- ❑ After you install the 802.11g radio, reconfigure the configuration matrix string to change the 3-digit radio from 70x (for an 802.11b radio) to 80x (for an 802.11g radio). For assistance, see the instructions on page 23.

Opening the Access Point

1. Before you replace or add a radio, note the configuration settings.
 - ❑ If the access point is running release 1.9, from the Main Menu, select **Maintenance** then **Configuration Summary**.
 - ❑ If the access point is running release 2.2 and above, from the Main Menu, select **Maintenance** then **About this Access Point** and scroll down to the subtitle **Configuration Summary**.
2. Write down the current configuration matrix string (Config String). You can find this configuration string on one of the access point labels or from the Main Menu, select **Maintenance** then **About this Access Point**.

Note

You will need this information when you reconfigure the configuration matrix string on page 23.

3. (AT-WA7501) Unscrew the two thumbscrews on the cable access door and remove the door.
4. Turn the access point over so it rests on its top cover.
5. Disconnect all cables.
6. (AT-WA7501) Remove the seven Torx screws that connect the top cover to the bottom chassis. Turn the access point over so it rests on its feet.
7. (AT-WA7500) Remove the six Phillips screws that connect the top cover to the bottom chassis, and then turn the access point over so it rests on its feet.

8. (AT-WA7501) Slowly separate the cover from the chassis by tilting it from the back and disconnect the LED flex assembly from the main printed circuit board (PCB).

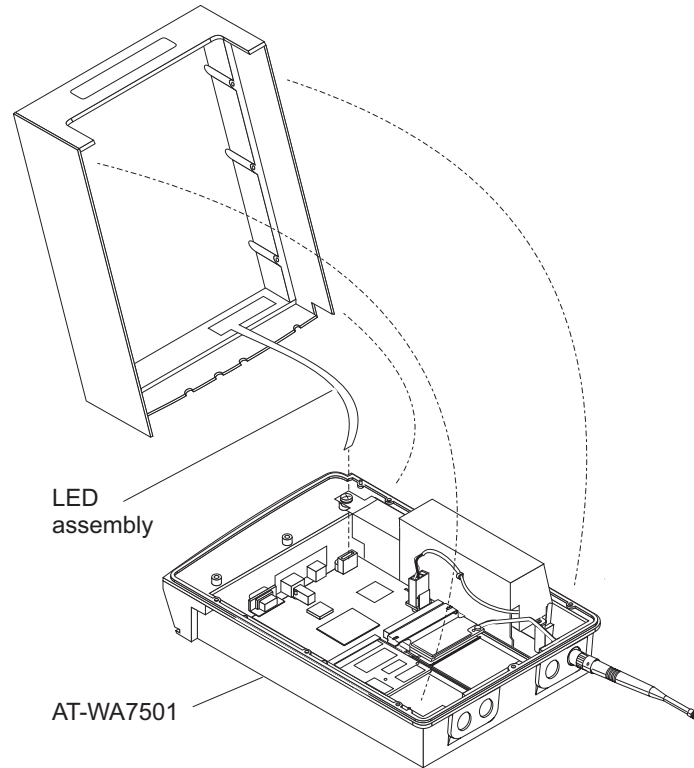


Figure 1. Removing the AT-WA7501 Cover

9. Completely remove the top cover from the access point.
10. (AT-WA7501) Remove the gasket from the access point.

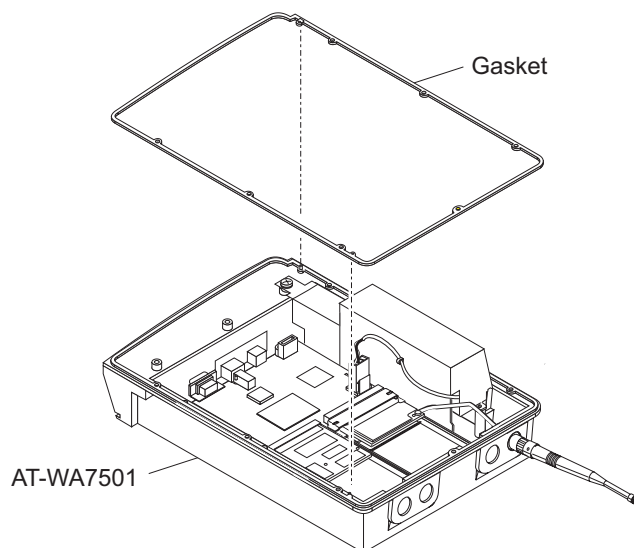


Figure 2. Removing the AT-WA7501 Gasket

11. (AT-WA7501) Discard the gasket.

Note

To maintain an IP54 environmental rating, you must install a new gasket when you close the access point. A new gasket is included in the radio upgrade kit.

Removing an Existing Radio

If you are replacing a malfunctioning radio or if you are replacing one type of radio with another type of radio, you must remove the existing radio and its antenna cable assemblies.

To remove a radio

1. Carefully lift the antenna cables off the radio. Use the antenna cable remover tool so that you do not break the cables. Insert the prongs under the antenna cable socket (on the side opposite the wire) and lift gently.

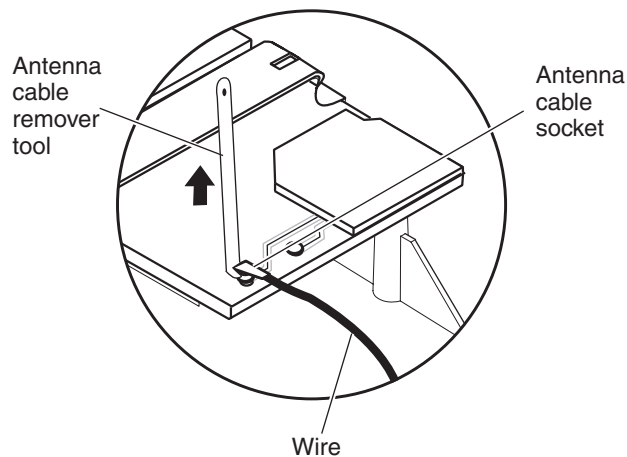


Figure 3. Removing the Antenna Cable



Caution

Do not pull on the wire because the cable will break. If you do not have an antenna cable remover, insert your fingernails under the antenna cable socket and lift gently.

2. Carefully pry one end of the retaining clip off the radio and remove the clip.

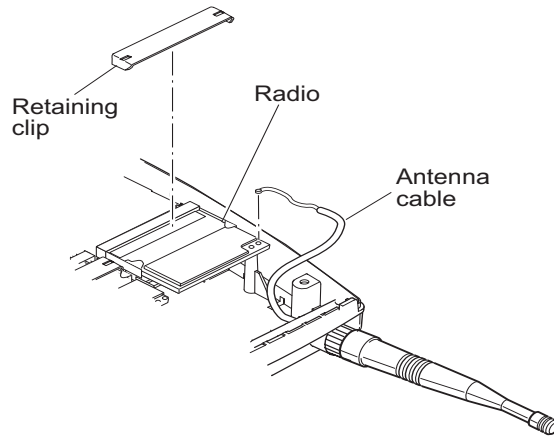


Figure 4. Removing the Retaining Clip

3. Pull apart the spring clips on either side of the radio until the radio tilts up. Gently rock the radio back and forth while pulling it out to remove it from the mini-PCI connector.

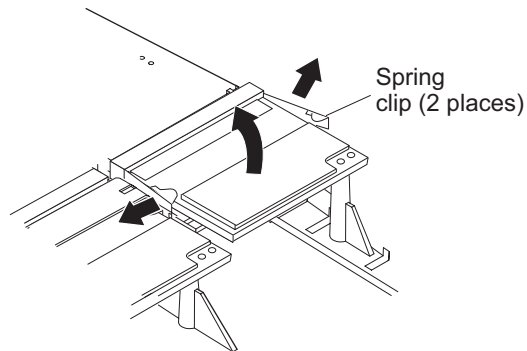


Figure 5. Removing the Spring Clip

4. Remove the antennas and antenna cable assemblies for the radio you are removing. You may need to use an open-ended socket wrench or ratchet to remove the nut and lockwasher on the antenna cable assembly.

Installing the Radio

The access point has two radio slots and four antenna ports. When the antenna ports are facing toward you, slot 2 is on your left and slot 1 is on your right. If your access point has only one radio and you are replacing it, you must install it in slot 1.

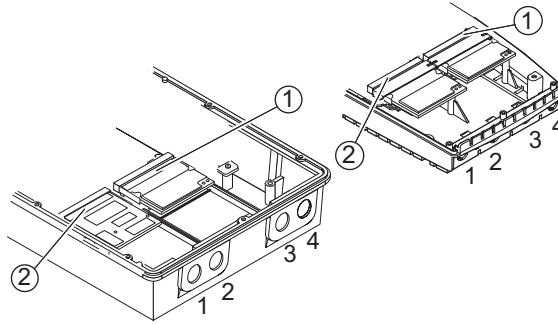


Figure 6. Identifying the Radio Slots

Removing the Antenna Plugs or the Antenna Tabs

The antenna ports are numbered 1 through 4. If you are adding a second radio, antenna ports 1 and 2 may have plugs or tabs. You may need to remove these plugs or tabs.

(AT-WA7500) To remove an antenna tab

- Use cutters to cut out the plastic tab and remove the plastic tab.

(AT-WA7501) To remove an antenna tab

- Remove the nut from the antenna plug and push out the plug.

Note

To maintain an IP54 environmental rating, keep plugs in all unused antenna ports.

Installing the Antenna Cable Assemblies and Antennas

Depending on which radio upgrade kit you have, you will either install antenna cable assemblies or you will install antennas (with the cable assemblies already connected). The 802.11a full-range radio upgrade kit is the only radio upgrade kit that ships with antennas.

Note

All 802.11a radios require you to install two antennas for antenna diversity.

To install the 802.11g or 802.11a mid-range antenna cable assemblies

1. From the inside of the access point, insert an antenna cable assembly through an antenna port.

If you have an 802.11g radio and are using only one antenna, use antenna port 2 or antenna port 4, depending on which slot contains the radio

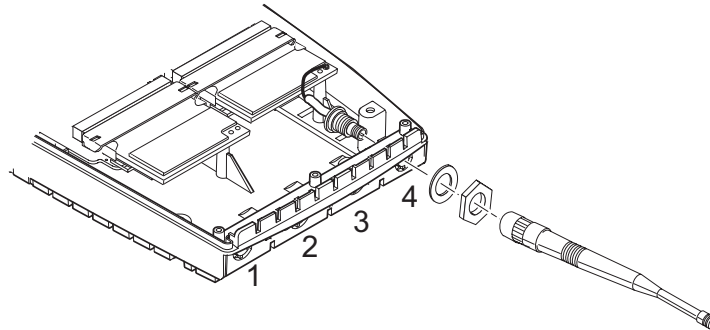


Figure 7. 802.11g Radio Assembly

2. From the outside of the access point, place the lockwasher on the antenna cable assembly, and then screw on and tighten the nut.
3. Connect the antenna cable socket to the connector on the radio. It may be easier to connect the socket and connector if you tilt the socket first before pushing it down.

If you are using only one antenna, connect the socket to the primary connector, which is the rightmost connector (when the antenna ports are toward you) on the radio.

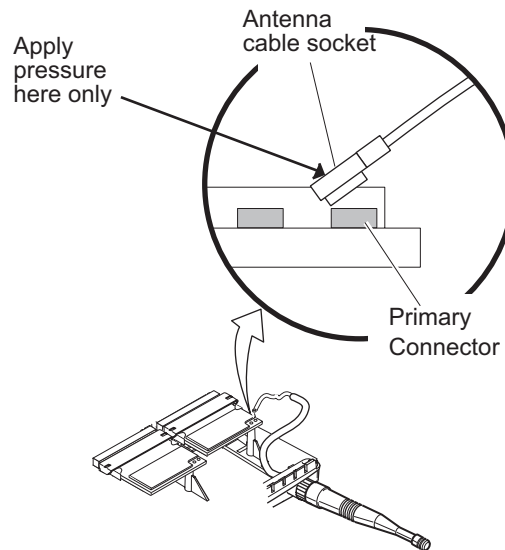


Figure 8. Connecting the Antenna Cable Socket

4. If necessary, repeat Steps 1 through 3 for the other antenna cable assembly. Connect the other antenna cable socket to the secondary connector. Do not cross the antenna cables.
5. Screw on the antennas or antenna cables.

To install the 802.11a full-range antennas and cable assemblies

1. If necessary, remove the lockwasher and nut from the antenna and cable assembly.
2. (AT-WA7501) To maintain an IP54 environment rating, make sure the rubber gasket remains threaded on the antenna.
3. From the outside of the access point, feed the antenna wire through the antenna port.

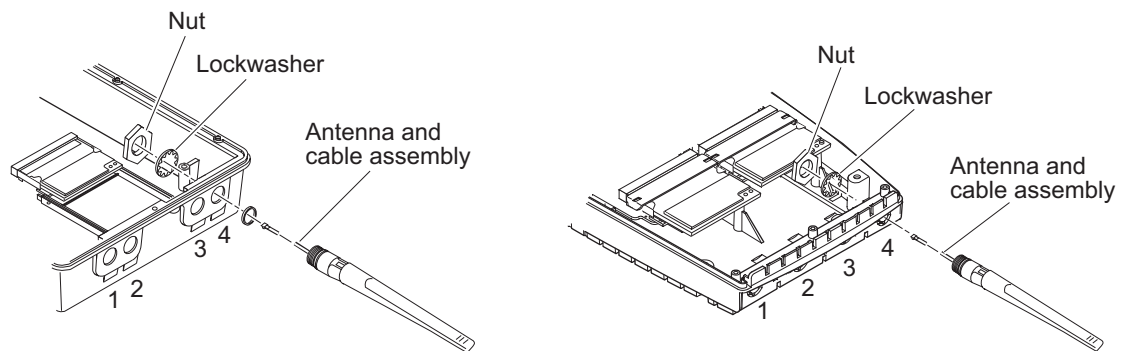


Figure 9. Installing an Antenna

4. From the inside of the access point, thread the lockwasher and nut onto the antenna cable.
5. Connect the antenna cable socket to the connector on the radio. It may be easier to connect the socket and connector if you tilt the socket first before pushing it down. (See Figure 8 on page 18.)

If you are using only one antenna, connect the socket to the primary connector, which is the rightmost connector (when the antenna ports are toward you) on the radio.

6. Tighten the nut on the antenna.
7. Repeat Steps 1 through 6 for the other antenna and cable assembly. Connect the other antenna cable socket to the secondary connector. Do not cross the antenna cables.

Inserting a Radio

1. Orient the radio so that the labels are facing up and the socket is facing the connector.
2. Tilt the radio toward the connector (approximately 45 degrees) and insert it into the connector. The radio is keyed so you can only insert it one way.

Note

Verify that the radio is fully seated by making sure the radio connector contacts are completely covered by the connector.

3. Push the radio down until it locks in the spring clips.

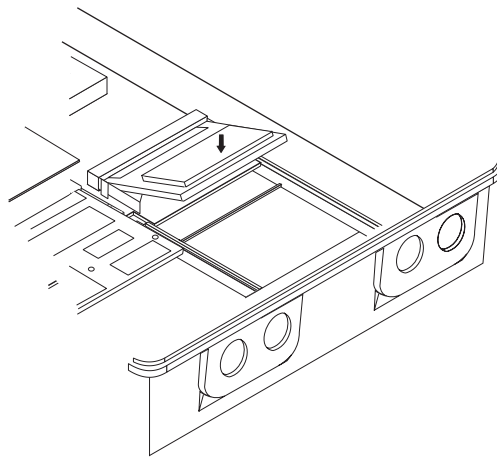


Figure 10. Inserting the Radio

4. Install the retaining clip (with the bevel facing the antenna ports) over the radio by pushing it down until both sides lock into place. If the radio is not fully seated, the clip will not lock into place.

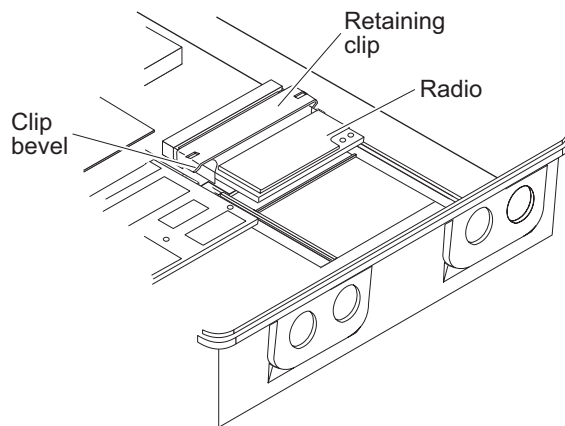


Figure 11. Installing the Retaining Clip

Closing the Access Point

1. (AT-WA7501) Install the new gasket along the inside edge of the top cover.

Note

To maintain an IP54 environmental rating, you must replace the gasket with the new gasket included in the radio upgrade kit.

2. (AT-WA7501) Insert the tab on the LED flex assembly into the connector on the main PCB.
3. Place the bottom cover on the top cover.
4. By hand, begin screwing in the screws you removed when you opened the access point.

Note

To maintain an IP54 environmental rating, follow the torque sequence in the next illustration. You may need to retighten screws 1 through 3 after you complete the initial sequence.

5. (AT-WA7501) Use 2 Nm (18 in-lb) of torque to tighten the screws in the sequence shown in the next illustration.

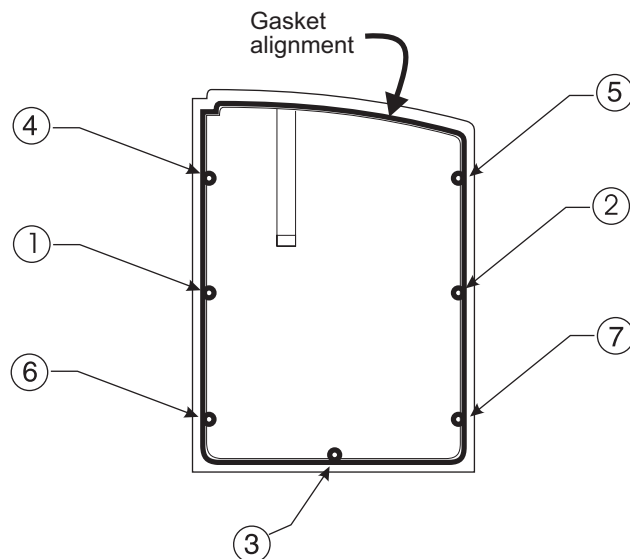


Figure 12. AT-WA7501 Torque Sequence

Installing the Labels

Once you have finished installing a new radio in the access point, you need to apply the new product and radio certification labels. See Figure 13.

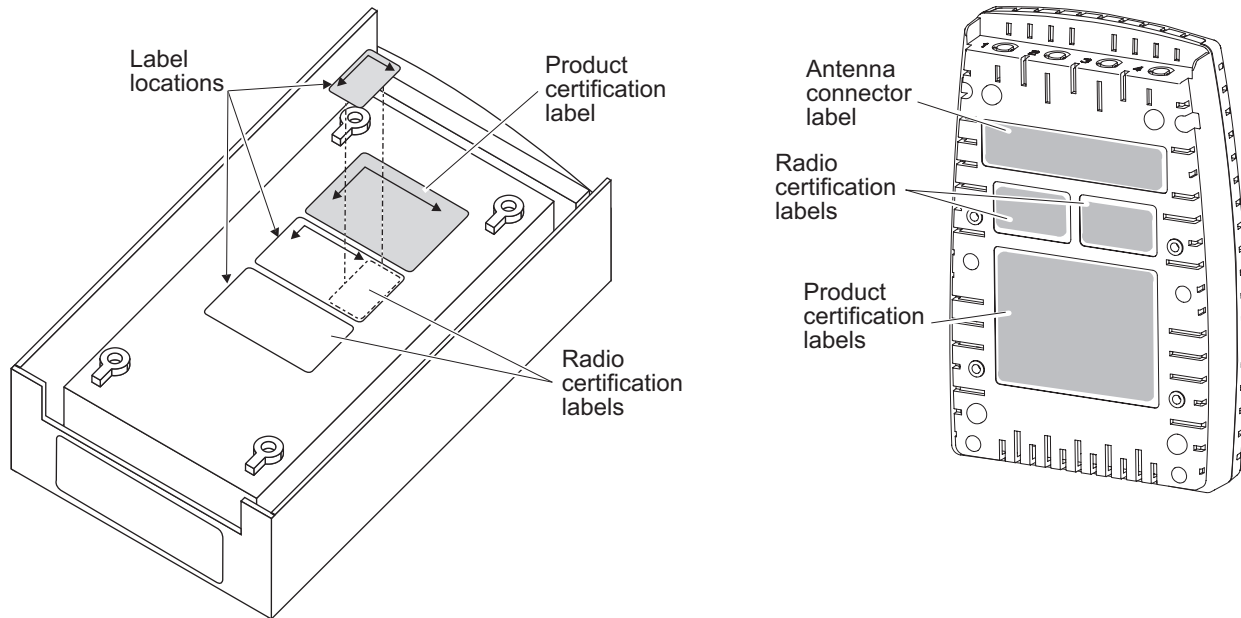


Figure 13. Installing the Labels

To label the access point

1. Apply the product certification label. For the AT-WA7501, you may need to trim the blank portion off the new certification label.
 - Place the printed portion on top of the existing certification label. Be sure the original label containing the access point model and serial numbers and other identifying information remains visible.
 - If you added a second radio to the access point, place the entire certification label on top of the existing certification label.
2. Apply the radio certification label.
 - If you replaced an existing radio, place the small radio certification label to the right of all existing labels. Do not cover up any existing labels.
 - If you added a second radio to the access point, place the small radio certification label in the blank area on the certification label you applied in Step 1.

Reconfiguring the Configuration Matrix String

The configuration matrix string is a 14-character string indicating the access point model and the radios installed. When the access point boots, it compares the configuration matrix string to the installed hardware. If the configuration matrix string and the installed hardware do not match, the access point indicates an error and does not boot.

For the access point to boot properly, you must reconfigure the configuration matrix string to identify the radio you just installed. You need the 3-digit code that identifies the radio in this upgrade kit. You can find this code on the shipping label. The 3-digit codes are shown here.

Radio Type	3-Digit Code
802.11g	8xx
802.11a	9xx

The format of the configuration matrix string is:

750xyyyy111222

where:

<i>750x</i>	identifies the access point
<i>yyyy</i>	identifies the hardware and software in the access point
<i>111</i>	identifies the radio in slot 1
<i>222</i>	identifies the radio in slot 2

For example, an AT-WA7500 access point in North America with an 802.11g radio in slot 1 and no radio in slot 2 is 7500b513804000.

To reconfigure the configuration matrix string

1. Locate the original configuration matrix string. This string appears after the characters C/N on the original radio certification label. Note the first eight characters of the configuration matrix string—these are the first eight characters in the new configuration matrix string.
2. Identify the radios in slots 1 and 2. The shipping label on the radio upgrade kit box contains the 3-digit code.
3. Write down the new 14-character configuration matrix string.
4. Connect the access point to a PC using an RS-232 null modem cable.

5. Start a communications program (such as HyperTerminal) and configure the serial port communications parameters on your PC, and then select **OK**. You should configure the serial port communications parameters to:

Bits per second: 9600

Data bits: 8

Parity: None

Stop bit: 1

Flow control: None

6. Plug the power cable into a power source and then into the access point. The access point boots.
7. When the message **Press any key within 5 seconds to enter the UAP monitor** appears, press **<Enter>** to enter the UAP Monitor.
8. At the AP (ap>) prompt, type **zmt** and press **<Enter>**.
9. In the password field, type **matrix** and press **<Enter>**.
10. Type **ma** and then the new configuration matrix string.

Note

If your access point is running software release 1.75, you must enter the configuration matrix string using lowercase letters.

11. Press **<Enter>**. The confirmation message **passed** appears on the screen.

Note

If you do not receive the “passed” message, you may have typed something incorrectly. Repeat Steps 1 through 11. If you do not receive the “passed” message again, reboot the access point and repeat Steps 1 through 11 again. If you still do not receive the “passed” message, contact Allied Telesyn Technical Support.

12. Type **x** and press **<Enter>** to exit the matrix menu.
13. At the AP prompt, type **mx** to verify the configuration matrix string. The manufacturing record appears onscreen, including the configuration matrix string.

14. Type **b** and press **<Enter>** to reboot the access point.



Caution

The reboot process may take up to 4 minutes to complete. Do not power-cycle the access point during the reboot process or the radio firmware will be destroyed.

Completing a Radio Upgrade

1. You may want to upgrade the access point software before you reinstall the access point. For the latest software release, check the Allied Telesyn web site at **www.alliedtelesyn.com**.

For help upgrading the access point, see the *AT-WA7500 and AT-WA7501 Installation and User's Guide*.

2. If you added a radio or if you replaced one radio type with a different radio type, configure the radio. For help, see the *AT-WA7500 and AT-WA7501 Installation and User's Guide*.
3. Confirm that the access point is working properly, reinstall it in the network, and reattach the cables.
4. (AT-WA7501) Replace the cable access door.

You have successfully upgraded the access point.

Troubleshooting the Radios

If the access point does not reboot successfully, try reconfiguring the configuration matrix string. You may have entered an invalid string. If you have problems communicating with the wireless network, you can use the access point LEDs, a serial connection, or the access point to help you troubleshoot radio problems.

Using LEDs

If the access point LEDs show this pattern after it boots, the radio may be faulty or the configuration matrix string may be wrong.

Power	Wireless #1	Wireless #2	Wired LAN	Root/Error
ON	ON	ON	OFF or Blinks (Blinks if network traffic.)	OFF or Blinks (Blinks if AP is root.)

Perform these steps to solve the problem.

1. Make sure the configuration matrix string is correct.
2. Make sure the radio is seated properly in the slot.
3. If the configuration matrix string is correct and the radio is seated properly, contact Allied Telesyn Technical Support for assistance.

Using a Communications Program or a Telnet Session

If you are communicating with the access point using a communications program or a telnet session, one of the error messages in the next table may appear on your PC after the access point reboots. In these error messages, "Radio A" refers to the radio in slot 1 and "Radio B" refers to the radio in slot 2.

Error Message	Explanation
Could not read country code from radio A	The radio may be faulty.

Error Message	Explanation
<p>Invalid country code in string for radio A</p>	<p>The country code in the configuration matrix string does not match the country code in the radio in the access point.</p> <p>Make sure the configuration matrix string is correct. Make sure the radio is seated properly in the slot. If the configuration matrix string is correct and the radio is seated properly, use a new radio replacement kit.</p>
<p>Radio A has unknown country code</p>	<p>The radio may have been configured incorrectly at the factory.</p> <p>Make sure the configuration matrix string is correct. Make sure the radio is seated properly in the slot. If the configuration matrix string is correct and the radio is seated properly, use a new radio replacement kit.</p>
<p>Radio string doesn't match radio installed</p>	<p>When this error message appears, additional information also appears on the screen; for example, Expected 504,000 but found 491 in slot A, nothing in slot B may appear. The radio may be faulty.</p> <p>Make sure the configuration matrix string is correct. Make sure the radio is seated properly in the slot. If the configuration matrix string is correct and the radio is seated properly, use a new radio replacement kit.</p>