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Installing the Nortel Wireless Access Point 7220

NORTEL

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Regulatory Statements

This device is designed for installation and use in the USA, Canada, China and Taiwan regulatory rules. For operation in other countries, please consult Nortel Networks.

This device contains one radio operating in the 2.4 GHz band and one radio operating in the 5 GHz bands in point-to-point fashion.

Regulatory statements pursuant to CFR 47 Part 15 for the United States

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Federal Communications Commission (FCC) Compliance Notice: Radio Frequency Notice

Note: This equipment 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 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. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Consult the dealer or an experienced radio/TV technician for help.

The installation and operation of this device shall be in strict compliance with the manufacturer's instructions for its installation and use. Any changes in the installation, or modification of the device or of its optional accessories that are not expressly approved by the manufacturer and the party responsible for compliance could void the user's authority to operate the device.

Only those optional accessories listed in the operating manual shall be used with this device. The use of any other accessories (including antennas) will void the warranty and the user's authority to operate the device.

The manufacturer is not responsible for interference to other radio systems caused by the use of this device or by any unauthorized modification to the device or its associated antennas. The manufacturer assumes no liability for any damage or violation of regulations arising from the use of the device.

This device is designed to be installed by professionals trained in its installation and who are responsible for compliance with the relevant regulations.

This device is designed for installation in fixed locations only.

This device is not designed for direct connection to the public switched telephone network.

Note: The use of external RF amplifiers with this device is not permitted by the regulations of the FCC.

This unit is not a consumer product and requires professional network planning and installation. As such, this device is limited for use with approved antennas only.

Note: The use of non-approved antennas, tampering with, or deviating from the approved deployment configurations is strictly prohibited and could result in FCC/IC (Industry Canada) regulatory violations.

Regulatory statements pursuant to RSS-210/CNR-210 for Canada

AVIS: Le texte en français suit ci-dessous.

Operation (of this device) is subject to the following two conditions: (1) this device may not cause interference and (2) this device must accept any interference, including interference that may cause undesired operation of the device. To reduce the potential of radio interference to other users, the antenna type and its gain should be chosen so that the equivalent isotropically radiated power (EIRP) is not more than that required for successful communication.

This Class B digital apparatus meets all the requirements of the Canadian Interference Causing Equipment Standard 003 (ICES-003).

Note: The use of external RF amplifiers with this device is strictly forbidden by the regulations of Industry Canada.

This device has been designed to operate with a optional external 5GHz antenna having a maximum gain of 23.0 dBi. Operation with antennas having a higher gain is strictly prohibited by the regulations of Industry Canada. The required antenna impedance is 50 ohms.

This device has been designed to operate with a 2.4GHz antenna having a maximum gain of 4.0 dBi. Operation with antennas having a higher gain is strictly prohibited by the regulations of Industry Canada. The required antenna impedance is 50 ohms.

The installer of this radio equipment must ensure that the antenna is located or pointed such that it does not create an RF field in excess of Health Canada limits for the general population; consult Safety Code 6, obtainable from Health Canada's website www.hcsc.gc.ca/rpb.

This unit is not a consumer product and requires professional network planning and installation. As such, this device is limited for use with approved antennas only.

Note: the use of non-approved antennas, tampering with, or deviating from the approved deployment configurations is strictly prohibited and could result in FCC/IC regulatory violations.

L'utilisation de ce dispositif est autorisée seulement aux conditions suivantes : (1) il ne doit pas produire de brouillage et (2) l'utilisateur du dispositif doit être prêt à accepter tout brouillage radioélectrique reçu, même si ce brouillage est susceptible de compromettre le fonctionnement du dispositif.

Afin de réduire le risque d'interférence aux autres utilisateurs, le type d'antenne et son gain doivent être choisis de façon à ce que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne soit pas supérieure au niveau requis pour obtenir une communication satisfaisante.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de la class B prescrites dans la norme sur le matériel brouilleur "Appareils Numeriques" (NMB-003) édictée par le ministère des Communications du Canada

ATTENTION: L'utilisation d'amplificateurs RF externes avec les dispositifs de faible puissance est strictement interdit.

Ce dispositif a été conçu pour fonctionner avec une antenne optionnelle de 5GHz ayant un gain maximal de 23.0 dBi. Une antenne ayant un gain plus élevé est strictement interdit par les règlements d'Industrie Canada. L'impédance d'antenne requise est 50 ohms.

Ce dispositif a été conçu pour fonctionner avec une antenne de 2.4GHz ayant un gain maximal de 4.0 dBi. Une antenne ayant un gain plus élevé est strictement interdit par les règlements d'Industrie Canada. L'impédance d'antenne requise est 50 ohms.

L'installateur du présent matériel radio doit s'assurer que l'antenne est située ou pointée de manière à ce que cette dernière n'émettre pas de champs radioélectriques supérieurs aux limites spécifiées par Santé Canada pour le grand public; consulter le Code de sécurité 6, disponible sur le site Web de Santé Canada, à l'adresse suivante: www.hcsc.gc.ca/rpb.

Cet appareil est seulement pour usage commercial et requiert une installation professionnelle certifiée. L'usage de cet appareil est limité aux antennes certifiées stipulées par le fabricant.

ATTENTION: L'usage d'antennes autres que stipulées par le fabricant est prohibé et peut résulter en une violation des critères d'approbation FCC et Industrie Canada pour lequel cet appareil est homologué.

General Installation Considerations

This device has been evaluated and found to be compliant to the requirements addressing RF exposure from radio frequency devices for an uncontrolled environment. The RF emissions of this device are below the FCC limits. However, it is nevertheless generally advisable that radio transmitting equipment should always be installed and used in a manner so as to minimise exposure during normal operation.

When the unit is installed using integral 5GHz antennas with integral or external 2.4GHz antennas, the product shall be installed in a fixed location with a minimum separation of 0.5 metre from all persons during normal use and shall be used only with approved accessories listed in this manual.

When the unit is installed using optional external 5GHz antennas (13 dBi and 18dBi), the product shall be installed in a fixed location with a minimum separation of 50 cm from all persons during normal use and shall be used with approved accessories listed in this manual.

When the unit is installed using optional external 5GHz antennas (23 dBi), the product shall be installed in a fixed location with a minimum separation of 100 cm from all persons during normal use and shall be used with approved accessories listed in this manual.

Installation with external 5GHz antennas (13 dBi and 18 dBi) are qualified for indoor and outdoor use. The 23 dBi antenna is qualified for outdoor use only. This unit operates in point-to-point fashion only in 5GHz band.

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Installing the Wireless AP 7220

Limitations and restrictions

Warning: THE WIRELESS AP 7220 IS A SEALED DEVICE INTENDED FOR PROFESSIONAL INSTALLATION BY A QUALIFIED INSTALLER FOR INDUSTRIAL/COMMERCIAL USE. THERE ARE NO USER-SERVICEABLE COMPONENTS INSIDE.

TO AVOID ELECTRICAL SHOCK OR BODILY INJURY DO NOT TAMPER WITH OR ATTEMPT TO OPEN THIS DEVICE.

Safety guidelines

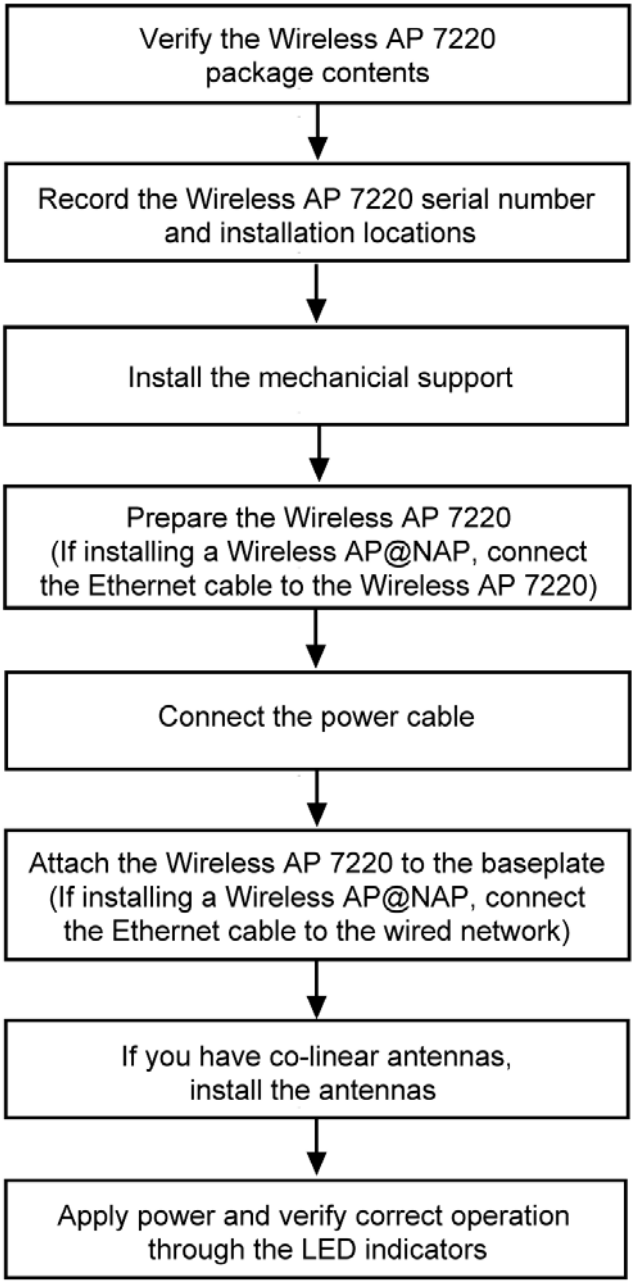
Use the following safety guidelines to ensure your own personal safety and to help protect your Wireless AP 7220 unit from potential damage.

The Wireless AP 7220 is safety-certified as a free-standing unit and as a component for use indoors or outdoors when installed using certified components and accessories according to the instructions and observing the limitations detailed in this manual.

The product must be installed in compliance with all local safety and electrical codes. The manufacturer disclaims all warranties and liability in connection with installation methods not described in this manual and/or installations that do not comply with local safety codes and regulations. This device is designed to be installed by professionals trained in its installation and who are responsible for compliance with the relevant regulations.

Installation flowchart

Figure 1 Installing the Wireless AP 7220 flowchart



Installing the Wireless AP 7220

Use the Wireless AP 7220 mechanical support to mount the Wireless AP 7220 vertically or horizontally on a:

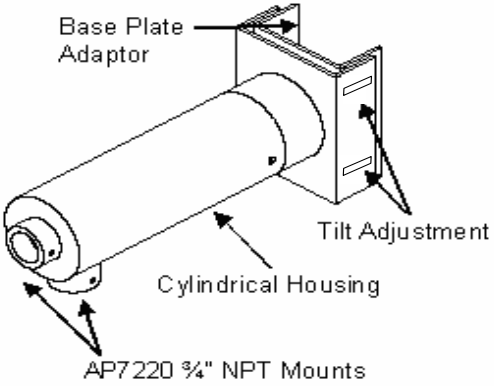
- horizontal pole
- vertical pole
- wall (side of a building)
- ceiling

Note: Please read all instructions prior to installation.

The mechanical support consists of three major components (see Figure 2):

- base plate adaptor (shown) and pole band clamps (not shown)
- cylindrical housing
- inner wiring / divider arm inside the cylindrical housing

Figure 2 Wireless AP 7220 mechanical support



Use the band clamps to fix the mechanical support to the horizontal or vertical pole. The mechanical support allows adjustment of ± 20 degrees to accommodate a pole that is tapered or offset from the vertical or horizontal mounting plane.

Verifying the package contents

1 Verify the contents of the Wireless AP 7220 and mechanical support packages. For a detailed list of standard package contents and available accessories see Appendix A, “Wireless AP 7220 materials checklist”.

Recording the serial number

2 Record the serial number and the installation location of the Wireless AP 7220. These records are required for subsequent network management and maintenance.

Installing the mechanical support

3 Select the location for the Wireless AP 7220 and unpack the mounting hardware kit.

4 Remove the cylindrical housing of the mechanical support by loosening the two set screws and sliding the cylindrical housing away from the base plate adaptor.

You can install the mechanical support on:

- a pole (horizontal or vertical). To install the mechanical support on a pole, go to the section “Installing the mechanical support on a pole
- a wall or ceiling. To install the mechanical support on a wall or ceiling, go to the section “Installing the mechanical support on a wall or ceiling.

Installing the mechanical support on a pole

5 Fasten the base plate adaptor to the pole by inserting the three band clamps through the slotted openings and around the pole. Mount the base plate adaptor to the pole with the U-bracket opening towards the pole.

Note: To facilitate installation, installers may remove the base plate adaptor from the mount by removing the four adjustment screws located on the base plate U-bracket.

6 Adjust and tighten the base plate adaptor securely to the pole by tightening the band clamps such that no movement is possible.

The mount is now securely fastened to the pole. To continue the installation, go to the section “Preparing the Wireless AP 7220

Installing the mechanical support on a wall or ceiling

The base plate adaptor is reversible for wall and ceiling installations.

7 Remove the four adjustment screws on the base plate adaptor and secure the flat side of the adaptor on the mounting surface (wall or ceiling) using appropriate anchors to support the weight and wind loads.

8 Re-attach the inner arm on the installed base plate adaptor using the four adjustment screws removed previously.

The mount is now securely fastened to the wall/ceiling. To continue the installation, go to the section “Preparing the Wireless AP 7220

Preparing the Wireless AP 7220

On the ground, install the Wireless AP 7220 on the cylindrical mount (vertical or horizontal) via the ¾ NPT opening.

9 Loosen (back off) the NPT anti-rotation set screw.

10 Remove the appropriate ¾ NPT plastic plugs from the mount.

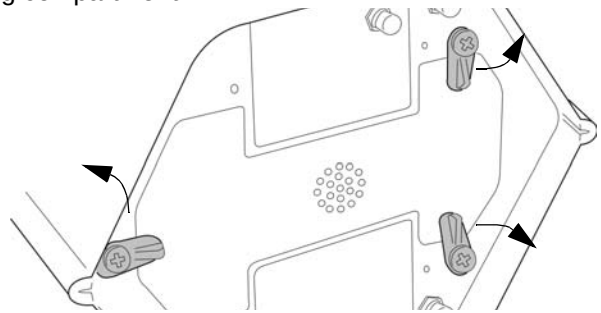
If you are installing a Wireless AP 7220@NAP, proceed to the section “Connecting an Ethernet cable to a Wireless AP 7220 @ NAP.

If you are installing a standalone Wireless AP 7220, skip to the section “Completing the Wireless AP 7220 preparation

Connecting an Ethernet cable to a Wireless AP 7220 @ NAP

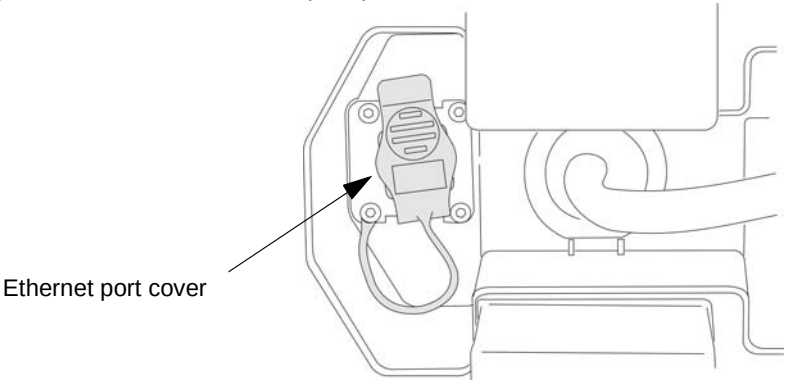
11 Remove the baseplate cover of the Wireless AP 7220 @ NAP cabling compartment by pivoting open the three tabs holding the cover in place.

Figure 3 Open cabling compartment



12 Remove the Ethernet port protective cover from the cabling compartment.

Figure 4 Remove Ethernet port protective cover



13 Pull back the unattached end of the AC power cable from the central support pipe until it is free of the shaft. This will make it easier to feed the Ethernet cable up through the support pipe.

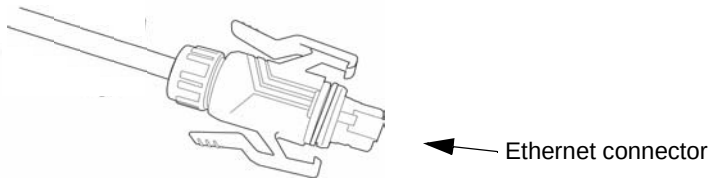
Note: Do not disconnect the AC power connector from the Wireless AP 7220 @ NAP.

Note: The CAT5 cable has a connector at one end. This connector attaches to the Ethernet jack at the base of the Wireless AP 7220 @ NAP unit.

14 Slide the non-connectorized end of the CAT 5 Ethernet cable up through the main support pipe of the Wireless AP 7220 @ NAP and out of the side hole of the cylindrical arm. This cable will be used to provide a wired connection to the NAP.

15 Attach the connector to the Ethernet jack at the base of the Wireless AP 7220 @ NAP unit.

Figure 5 CAT5 connectorized cable end



16 Feed the power cable back up through the main support pipe until it emerges from the cylindrical housing.

17 Replace the metal baseplate cover of the Wireless AP 7220 @ NAP by pivoting shut the three tabs used to hold the cover in place.

Completing the Wireless AP 7220 preparation

18 Feed the Wireless AP 7220 AC wire (and, in the case of a Wireless AP 7220@NAP, the Ethernet cable) into the ¾ NPT port and up through the cylindrical arm.

19 Screw the Wireless AP 7220 to the cylindrical arm until secure (do not over tighten).

The wiring should extend beyond the cylinder mount to facilitate wiring to the terminal strip located on the inner arm.

The Wireless AP 7220 and cylindrical arm are now ready to attach and wire to the base plate adaptor on the pole.

Connecting the power cable

To facilitate the next steps, hang the Wireless AP 7220 and attached cylindrical arm from the base plate adaptor. Small holes are provided on the inner arm and arm housing for an "S" hook to support the Wireless AP 7220 assembly.

Danger: The external power cable connects to the source which will power the Wireless AP 7220.

Ensure that no power is coming through this cable when performing the procedure.

20 Install an electrical switch, fuse, or circuit breaker at an accessible point between the power mains and the Wireless AP 7220 to facilitate power cut-off to the Wireless AP 7220 for maintenance purposes.

21 Access the base plate adaptor on the pole. With electrical power removed, pre-wire the inner arm AC power using an approved water tight feed through on the base of the mount and connect the individual line and neutral conductors to the terminal strip provided on the inner wiring arm.

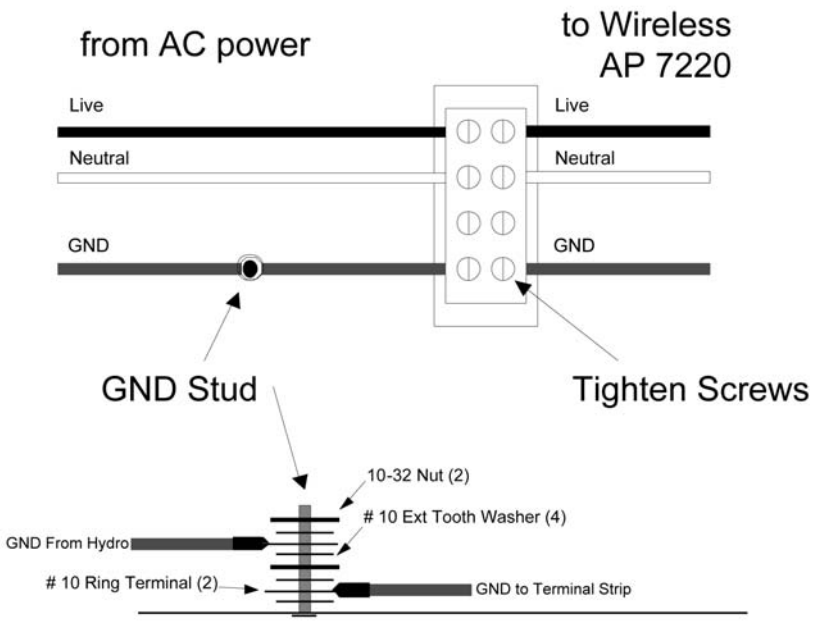
Note: For Wireless AP 7220@ NAP installations, pass the Ethernet feed from the Wireless AP 7220 along the side of the inner arm opposite the wiring connections, and exit at the base of the support through an approved water tight feed through

The purpose of the inner arm / divider is to separate the AC wiring from the Ethernet communication feed

22 Connect the GND wire from the AC power feed to a #10 ring terminal (see Figure 6). Attach the ring terminal to the GND stud on the inner wiring arm and secure with the external tooth lock washers and 10-32 nut provided. (the lock washers are installed each side of the ring terminal).

Note: The GND stud is pre-wired to the GND on the terminal strip via a short lead.

Figure 6 Wiring the Wireless AP 7220 to the mechanical support inner arm



23 Attach the Wireless AP 7220 black wire to the correct position on the terminal strip. Connect the neutral wire to the neutral position on the terminal strip and the GND (green wire) to the GND position on the terminal strip.

Attaching the Wireless AP 7220 to the base plate adaptor

24 With wiring complete, slide the cylindrical housing (with Wireless AP 7220 attached) over the inner arm.

25 Align and secure the cylindrical housing with the two set screws located at the base.

26 Verify the alignment of the vertical and horizontal and adjust if required.

To adjust the alignment, loosen the four adjustment screws on the base plate adaptor and align the unit in the vertical or horizontal as required.

Tighten the four adjustment screws to secure the alignment.

27 To complete the installation, securely tighten all anti-rotation screws and adjustment screws. Ensure the unused ¾ NPT port is capped securely with the plug provided.

If you are installing external co-linear antennas, proceed to the section "Installing an external co-linear antenna.

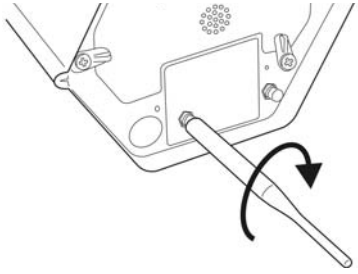
If you are not installing external co-linear antennas, skip to the section "Verifying correct operation through the LED indicators

Installing an external co-linear antenna

28 If you have a Wireless AP 7220 with integrated 2.4 GHz antennas instead of co-linear antennas, skip to step 36.

29 Screw the co-linear antenna firmly onto the Wireless AP 7220 base antenna connector.

Figure 7 Attaching the co-linear antenna



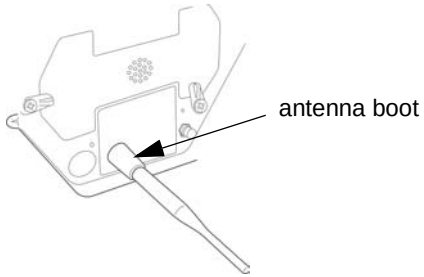
30 Slip the protective rubber boot over the antenna and 3/4 of the way to its base.

31 Apply protective grease around the underside of the boot to ensure a good seal.

Note: Nortel Networks recommends Dow Corning* 111 silicon for use as a protective grease.

32 Slip the protective rubber boot the remainder of the way to the base of the antenna.

Figure 8 Install the protective boots



33 Ensure that the protective boot is firmly in place.

34 Repeat steps 29 to 33 with the second antenna.

Verifying correct operation through the LED indicators

35 If installing a Wireless AP 7220@NAP, run the Ethernet cable to the desired Ethernet feeder and splice using standard connectors.

36 Apply power to the Wireless AP 7220 unit.

The LED at the bottom of the unit turns red indicating the unit is powering up.

Consult Table 1 to interpret the different LED states for a standalone Wireless AP 7220 or Table 2 to interpret the different LED states for a Wireless AP 7220 @ NAP.

Table 1 Standalone Wireless AP 7220 LED Indicators

LED Pattern	Status	Description
Solid Red	Power-up/Initializing	Basic Services not yet initialized
Alternating Red/Amber	Initialized + No Transit Link	Initialized but no Transit Link Neighbors Detected
Alternating Red/Green	Initialized + Transit Link Detected	1 or more neighbors detected

Table 1 Standalone Wireless AP 7220 LED Indicators

LED Pattern	Status	Description
Solid Amber	Initialized + Transit Link up +No service	1 or more Transit Links established but no Wireless Gateway 7250 connection
Solid Green	Initialized + Transit Link up + Fully Operational	1 or more Transit Links established and Wireless Gateway connection successfully established

Table 2 Wireless AP 7220 @ NAP LED Indicators

LED Pattern	Status	Description
Solid Red	Power-up/Initializing	Basic Services not yet initialized
Solid Amber	Initialized + No service	Initialized but no Wireless Gateway 7250 connection
Solid Green	Initialized + Fully Operational	Initialized and Wireless Gateway 7250 connection successfully established

Appendix A

Wireless AP 7220 materials checklist

Wireless AP 7220 materials checklist

Table 3 lists the contents of the Wireless AP 7220 standard packages. Figure 9 and Figure 10 show the standard package contents. The standard package includes parts suitable for the majority of installations. Additional site-specific accessories may be required prior to installation. Should any additional accessories or custom configurations be required, please contact 1-800-4NORTEL.

Table 3 Wireless AP 7220 materials checklist (standard package contents)

Wireless AP 7220 standard package contents	
PEC: NTE300BG	**PEC: NTE350BG**
Wireless Access Point 7220 with attached power cable and integrated 2.4 GHz antennas	Wireless Access Point 7220 with attached power cable
Installation card	Installation card
-	two co-linear 2.4 GHz antennas
-	two antenna protective weatherproofing boots

Figure 9 Standard package contents (integrated 2.4 GHz antenna) - PEC: NTE300BG

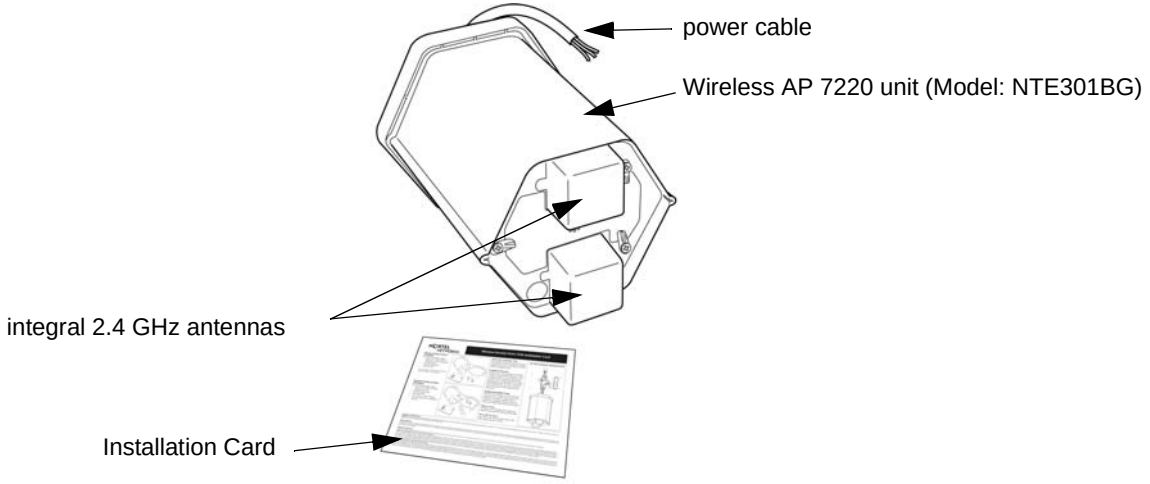
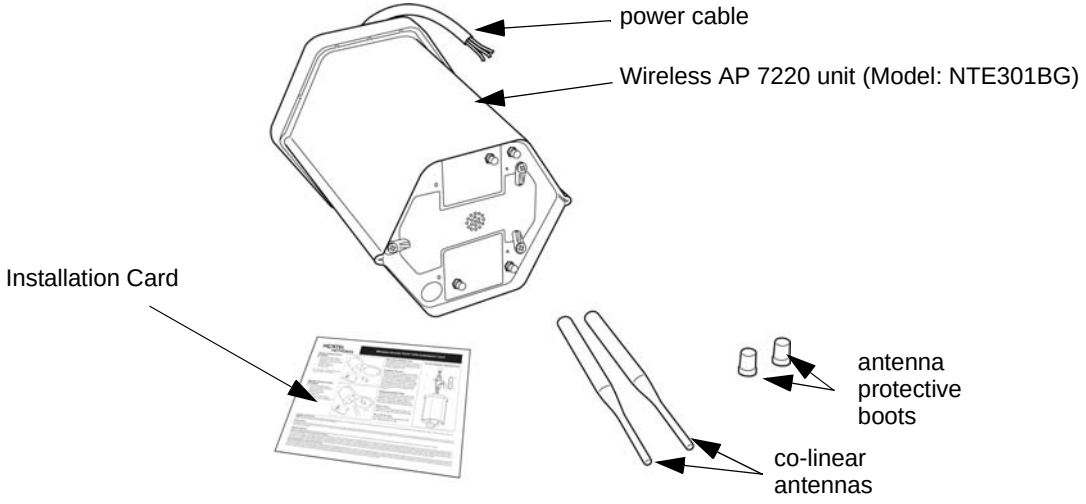


Figure 10 Standard package contents (co-linear antennas) - PEC: NTE350BG



Appendix B

Physical installation requirements

Physical installation requirements

The Wireless AP 7220 unit is designed to be installed vertically with the baseplate facing down (in indoor or outdoor locations). The unit must be installed in accordance with pre-installation activities, site survey, local electrical codes and regulatory requirements. Record the serial number and the location of each unit. These records are required for subsequent network management and maintenance.

Location

When installing the Wireless AP 7220 unit choose a location that:

- provides a minimum separation of 0.5 metre from all persons during normal operation for units installed using integral 5GHz (13 and 18 dBi)antennas with integral or external 2.4GHz antennas for regulatory compliance.
- provides a minimum separation of 1 metre from all persons during normal operation for units installed using optional approved external 5GHz (23 dBi) antennas for regulatory compliance.
- approved external 5GHz antennas (13 dBi and 18 dBi) are qualified for indoor and outdoor use except for the 23 dBi which is qualified for outdoor installation only.
- minimizes the possibility of vandalism or accidental harm to the unit.
- has line of sight with neighboring units.

Supplying AC power

The Wireless AP 7220 must be powered from AC supplies in the range 100V-240V and 45Hz-65Hz. A continuous supply of power is required for operation of the unit.

Installation scenarios

Wireless AP 7220 mounting methods are determined by the characteristics of the location at which the Wireless AP 7220 is to be installed.

The Wireless AP 7220 unit is always installed vertically with the baseplate facing down. It can be installed using side mounting methods or vertical mounting methods.

Using a side mounting method, the Wireless AP 7220 can be installed on the side of a building or wall, or on a vertical pole.

Using a vertical mounting method the Wireless AP 7220 can be installed below a ceiling or on a horizontal pole.

For information on custom mounting options, contact Nortel Networks (see Appendix C, “Getting technical manuals and support,” on page 25).

Appendix C

Getting technical manuals and support

How to get technical manuals

You can print selected technical manuals and release notes free, directly from the Internet.

1. Go to the www.nortelnetworks.com/documentation URL.
2. Find the product for which you need documentation.
3. Locate the specific category and model or version for your hardware or software product.
4. Use Adobe* Acrobat Reader* to open the manuals and release notes, search for the sections you need, and print them on most standard printers.

   Go to Adobe Systems at www.adobe.com to download a free copy of the Adobe Acrobat Reader.

How to get support

If you purchased a service contract for your Nortel Networks product from a distributor or authorized reseller, contact the technical support staff for that distributor or reseller for assistance.

If you purchased a Nortel Networks service program, contact Nortel Networks Technical Support. To obtain contact information online, go to www.nortelnetworks.com/cgi-bin/comments/comments.cgi, then click on Technical Support.

From the Technical Support page, you can open a Customer Service Request online or find the telephone number for the nearest Technical Solutions Center. If you are not connected to the Internet, you can call 1-800-4NORTEL (1-800-466-7835) to learn the telephone number for the nearest Technical Solutions Center.

An Express Routing Code (ERC) is available for many Nortel Networks products and services. When you use an ERC, your call is routed to a technical support person who specializes in supporting that product or service. To locate an ERC for your product or service, go to www.nortelnetworks.com/help/contact/erc/index.html.

Installing the Nortel Wireless Access Point 7220

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