Cisco Aironet Dual Band MIMO Low Profile Ceiling Mount Antenna (AIR-ANT2451NV-R)

This document outlines the specifications for the AIR-ANT2451NV-R dual band MIMO low profile ceiling mount antenna and provides instructions for mounting it. The antenna operates in the 2.4- and 5-GHz frequency ranges and is designed for indoor use.

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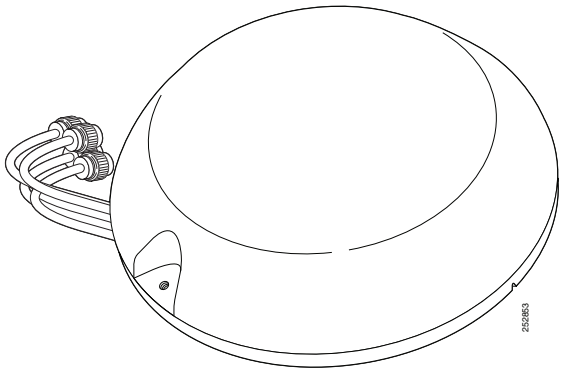
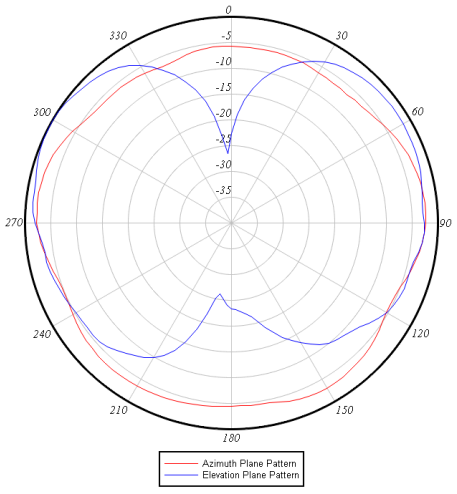
Technical Specifications

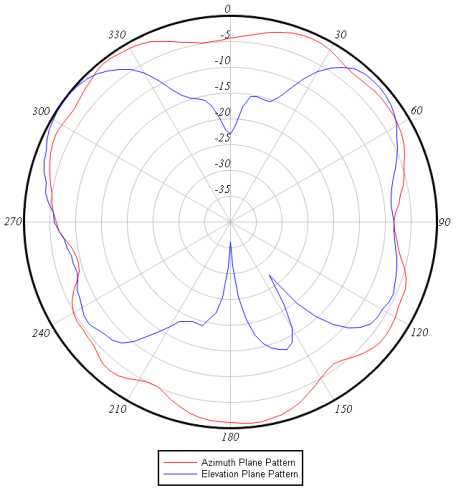
Antenna type	6-element Omnidirectional
Operating frequency range	2400–2500 MHz 5150–5850 MHz
Nominal input impedance	50Ω
VSWR	2:1 or less (both bands)
Peak gain 2.4 GHz	2.5 dBi
Peak gain 5 GHz	3.5 dBi
Polarization	Linear
Azimuth plane (3 dB beamwidth)	Omnidirectional
Elevation plane 2.4 GHz (3 dB beamwidth)	63°
Elevation plane 5 GHz (3 dB beamwidth	55°
Diameter	8.6 in (21.8 cm)
Thickness	1.8 in (4.6 cm)
Cable	3 ft (91.4 cm) plenum rated (blue markers indicate 5 GHz antennas)
Connector	RP-TNC plug
Environment	Indoor only
Operating temperature	32° F to 131° F (0° C to 55° C)



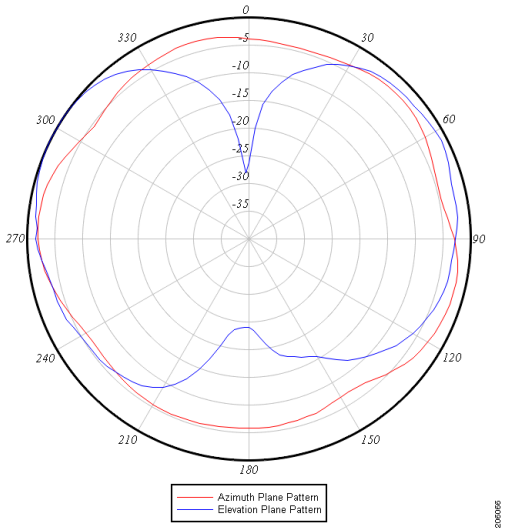
2.4-GHz Antenna #1 Azimuth and Elevation Patterns



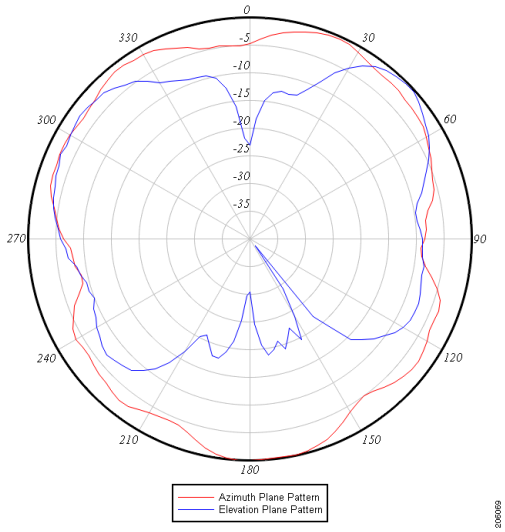
5-GHz Antenna #1 Azimuth and Elevation Radiation Patterns



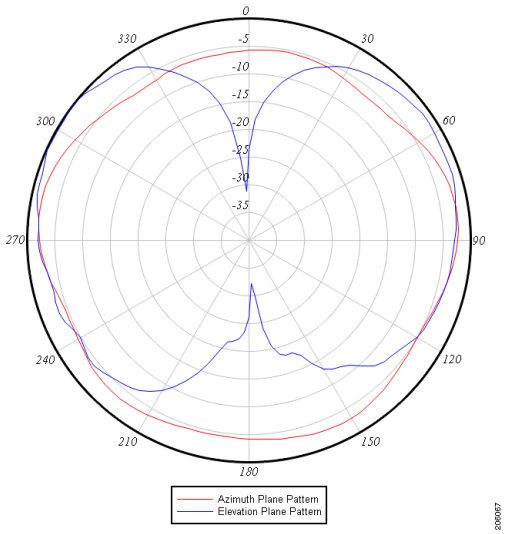
2,4-GHz Antenna #2 Azimuth and Elevation Patterns



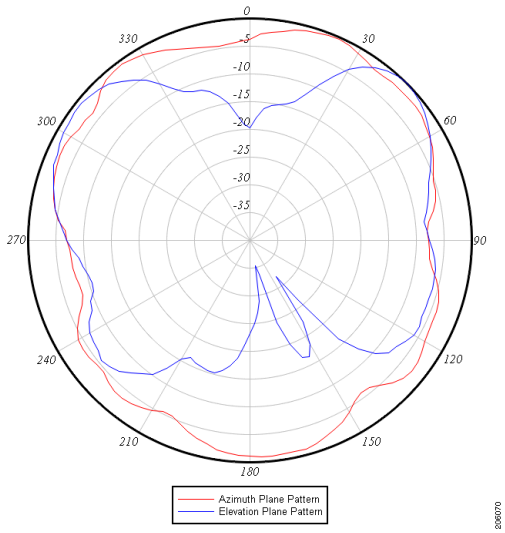
5-GHz Antenna #2 Azimuth and Elevation Radiation Patterns



2.4-GHz Antenna #3 Azimuth and Elevation Patterns



5-GHz Antenna #3 Azimuth and Elevation Radiation Patterns



System Requirements

This antenna is designed for indoor use with Cisco Aironet 802.11N radio devices that use six RP-TNC connectors (three 2.4-GHz and three 5-GHz).

Safety Precautions

Translated versions of the following safety warnings are provided in the *Safety Warnings for Cisco Aironet Antennas,* which is available at http://www.cisco.com.

For your safety, and to help you achieve a good installation, please read and follow these safety precautions. **They may save your life!**

1. If you are installing an antenna for the first time, for your own safety as well as others, seek professional assistance. Your Cisco sales representative can explain which mounting method to use for the size and type antenna you are about to install.
2. Select your installation site with safety as well as performance in mind. Remember: electric lines and phone lines look alike. For your safety, assume that any line can kill you.
3. Call your electric power company. Tell them your plans and ask them to come look at your proposed installation. This is a small inconvenience considering your life is at stake.
4. If any part of the antenna system should come in contact with an electric line, **don't touch it or try to remove it yourself. Call your local power company**. They will remove it safely.
5. If an accident occurs with the electric lines, call for qualified emergency help immediately.

Installation Notes

Antennas transmit and receive radio signals which are susceptible to RF obstructions and common sources of interference that can reduce throughput and range of the device to which they are connected. Follow these guidelines to ensure the best possible performance:

- Keep the antenna away from metal obstructions such as heating and air-conditioning ducts, large ceiling trusses, building superstructures, and major power cabling runs. If necessary, use a rigid conduit to lower the antenna away from these obstructions.
- The density of the materials used in a building's construction determines the number of walls the signal can pass through and still maintain adequate signal strength. Consider the following before choosing the location for your antenna:
  - Signals penetrate paper and vinyl walls with little change to signal strength.
  - Signals penetrate only one or two solid and pre-cast concrete walls without degrading signal strength.
  - Signals penetrate three or four concrete and wood block walls without degrading signal strength.
  - Signals penetrate five or six walls constructed of drywall or wood without degrading signal strength.
  - Signals will likely reflect off a thick metal wall and may not penetrate it at all.
  - Signals will likely reflect off a chain link fence or wire mesh spaced between 1 and 1 1/2 in. (2.5 and 3.8 cm). The fence acts as a harmonic reflector that blocks the signal.

- Install the antenna away from microwave ovens and 2-GHz cordless phones. These products can cause signal interference because they operate in the same frequency range as the device to which your antenna is connected.

Choosing a Mounting Location

The antenna should be mounted clear of any obstructions to the sides of the radiating elements. Generally, the higher an antenna is above the floor, the better it performs. If possible, find a mounting place directly above your wireless device to ensure that any additional lead-in cable can be as short as possible.

Tools and Equipment Required

You need the following tools and equipment, which are not provided.

- A suitable hole cutter capable of creating a 1-in. (2.54-cm) hole in a suspended ceiling tile.

Note We recommend a hole saw, which is available in most home improvement centers and hardware stores.

- A step ladder high enough to access your ceiling safely.

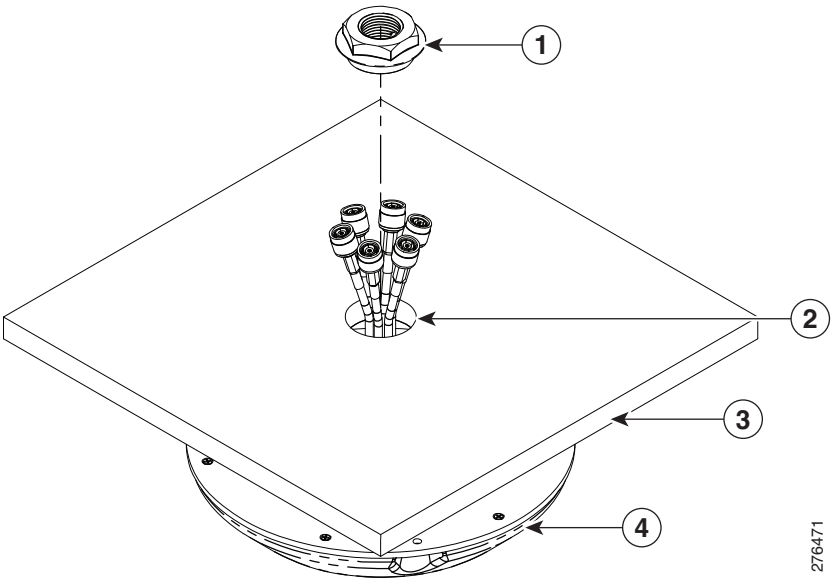
Installing the Antenna

The antenna is installed to a suspended ceiling tile with a supplied 1 in. (2.54-cm) plastic nut. See Figure 1 for details.

The antenna terminates with an RP-TNC connector after a short, 3-ft. (91-cm) cable. The mating connector to the antenna is an appropriate RP-TNC connector.

Mounting the Antenna on a Ceiling Tile

Figure 1 Ceiling Tile Mounting Details



1	Plastic nut	**3**	Ceiling tile
2	Antenna cables	**4**	Antenna

Follow these steps to mount the antenna on a suspended ceiling tile.

Step 1 Mark the location on the ceiling tile where you will mount the antenna.

Step 2 Remove the ceiling tile from the ceiling grids.

Step 3 Use a 1-in. (2.54-cm) hole cutter to create a 1.57-in. (40 mm) hole in the ceiling tile.

Step 4 Insert the antenna cables, one at a time, through the hole in the ceiling tile.

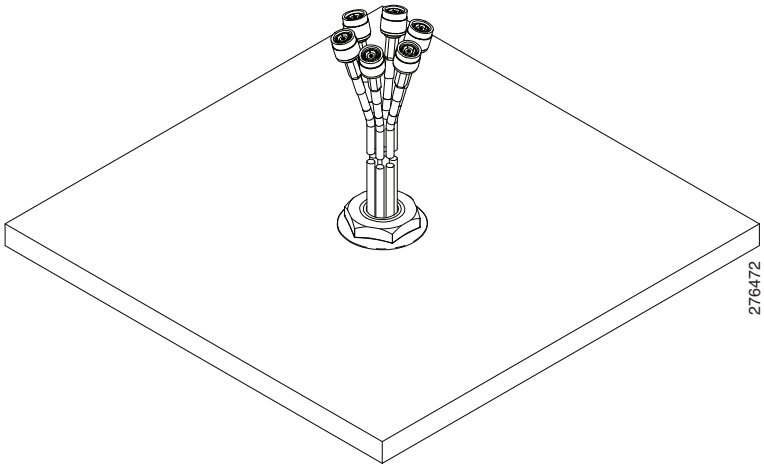
Step 5 Line up the plastic nut and washer as shown in Figure 1.

Step 6 Insert the antenna cables, one at a time, through the hole in the plastic nut.

Note Do not use the rubber washer when you mount the antenna on a ceiling tile. The washer is not required for ceiling tile installations.

Step 7 Make sure that the antenna is properly positioned on the ceiling tile and then tighten the plastic nut hand-tight as shown in

Figure 2 Ceiling Tile Finished Installation



Step 8 Reinstall the ceiling tile.

Step 9 Connect the antenna cables to the access point.

Note The 5-GHz antenna cables are identified by a blue collar near the connectors. Make sure that you connect these cables to the 5-GHz antenna connection on the access point.

Suggested Cable

Cisco recommends a high-quality, low-loss cable for use with the antenna.

Note Coaxial cable loses efficiency as the frequency increases, resulting in signal loss. The cable should be kept as short as possible because cable length also determines the amount of signal loss (the longer the run, the greater the loss).

Obtaining Documentation, Obtaining Support, and Security Guidelines

For information on obtaining documentation, obtaining support, providing documentation feedback, security guidelines, and also recommended aliases and general Cisco documents, see the monthly *What's New* in Cisco Product Documentation, which also lists all new and revised Cisco technical documentation, at:

http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html

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