



Cisco Multiband Panel Outdoor 4G MIMO Antenna (ANT-4G-PNL-OUT-N)

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Overview

This section describes the technical specifications and installation instructions for the Cisco Multiband Panel Outdoor 4G MIMO antenna, hereafter referred to as the antenna. The antenna is a dual-port antenna designed to cover cellular 4G bands. The supported bands are:

- LTE700/Cellular/PCS/AWS/MDS
- Global GSM900/GSM1800/UMTS/LTE2600
- WiMAX 2300/2500

The topics included are:

Antenna Features

The antenna features:

- 3G, 4G, and WiMAX 2300/2500 operation
- 698–960, 1710–2700 MHz band support
- 4G directional panel, dual-polarized/MIMO
- Indoor or outdoor location
- Wall mount or mast mount installation
- Dual type N female connector

Antenna Model

ANT-4G-PNL-OUT-N - Cisco Multiband Panel Outdoor 4G MIMO antenna

Antenna Assembly

Figure 1: Cisco ANT-4G-PNL-OUT-N Antenna



Technical Specifications

This section contains the following:

Environmental Specifications

Table 1: Environmental Specifications for the Cisco ANT-4G-PNL-OUT-N Antenna

Specification	Description
Operating temperature range	-40 to 158°F (-40 to 70°C)
Storage temperature range	-40 to 185°F (-40 to +85°C)

Mechanical Specifications

Table 2: Mechanical Specifications for the Cisco ANT-4G-PNL-OUT-N Antenna

Specification	Description
Mount style	Wall or mast mount
Location	Indoor or outdoor
Connector	Dual type N female direct connect
Dimensions (width x length x height)	11.61 x 11.61 x 3.23 in. (29.5 x 29.5 x 82 cm)
Weight	3.22 lbs (1.46 kg)
Wind rating	160 km/hr (93 mph)
IP rating	IP55
Radome	Polycarbonate, UV resistant, white
Material substance compliance	ROHS compliant

Power Specifications

Table 3: Power Specifications for the Cisco ANT-4G-PNL-OUT-N Antenna

Specification	Description
Maximum Voltage	2.0:1
Nominal Impedance	50 ohms
Maximum input power per port	10 watts

Radio Frequency Specifications

Table 4: Antenna Radio Frequency Specification

Specification	Description
Antenna type	4G directional panel, dual-polarized/MIMO
Frequency	<ul style="list-style-type: none"> • 698 to 960 MHz • 1710 to 2700 MHz
Nominal impedance	50 ohms
VSWR	2.0:1 Maximum
Gain	<p>The gain values (dBi) for each frequency range are:</p> <ul style="list-style-type: none"> • 698 to 960 MHz—8.0 to 10.0 dBi • 1710 to 2170 MHz—6.0 to 8.5 dBi • 2200 to 2400 MHz—6.5 to 9.5 dBi • 2500 to 2700 MHz—8.5 to 9.5 dBi
3 dB beamwidth (vertical plane)	<ul style="list-style-type: none"> • 55 to 70 degrees—698 to 960 MHz • 53 to 98 degrees—1710 to 2200 MHz • 60 to 70 degrees—2200 to 2500 MHz • 55 to 70 degrees—2500 to 2700 MHz
3 dB beamwidth (horizontal plane)	<ul style="list-style-type: none"> • 55 to 70 degrees—698 to 960 MHz • 50 to 90 degrees—1710 to 2200 MHz
F/B ratio	<p>> 15 dB, typical 20 dB—698 to 960 MHz</p> <p>> 17 dB, typical 23 dB—1700 to 2700 MHz</p>
Isolation	> 30 dB
Efficiency	Antennas were designed and tested to high RF efficiency in all supported cellular bands. Detailed technical specifications can be obtained through your Cisco authorized partner or Cisco account representative.
Polarization	Slant +/- 45 degrees
Radiation Pattern	Directional

Antenna Radiation Patterns

In the following graphics of the radiation patterns, the blue line denotes Port 1 and the red line denotes Port 2.

Figure 2: 698 MHz Antenna Radiation Pattern—Horizontal Plane

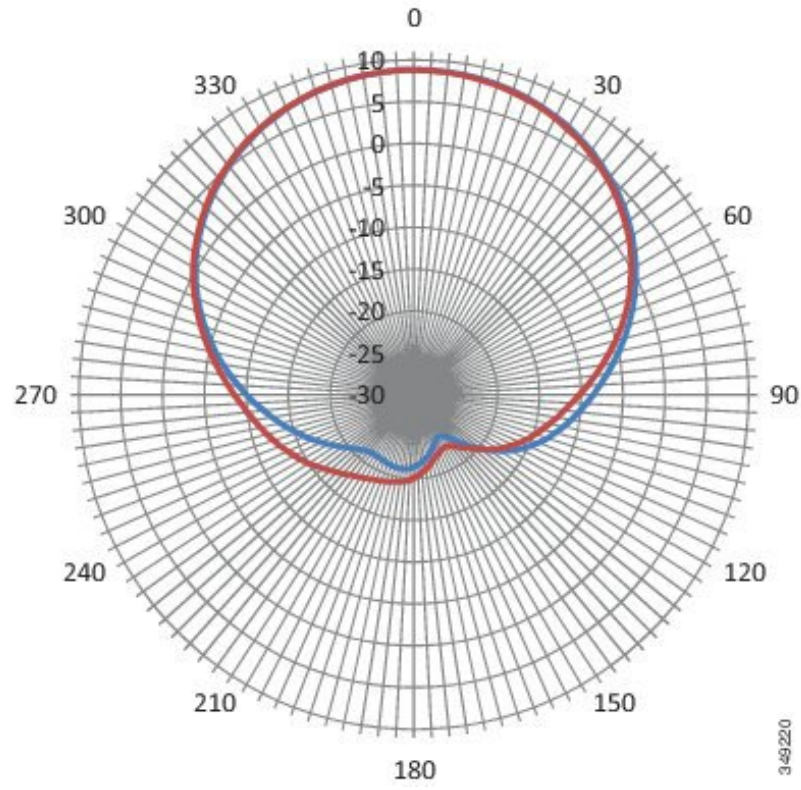


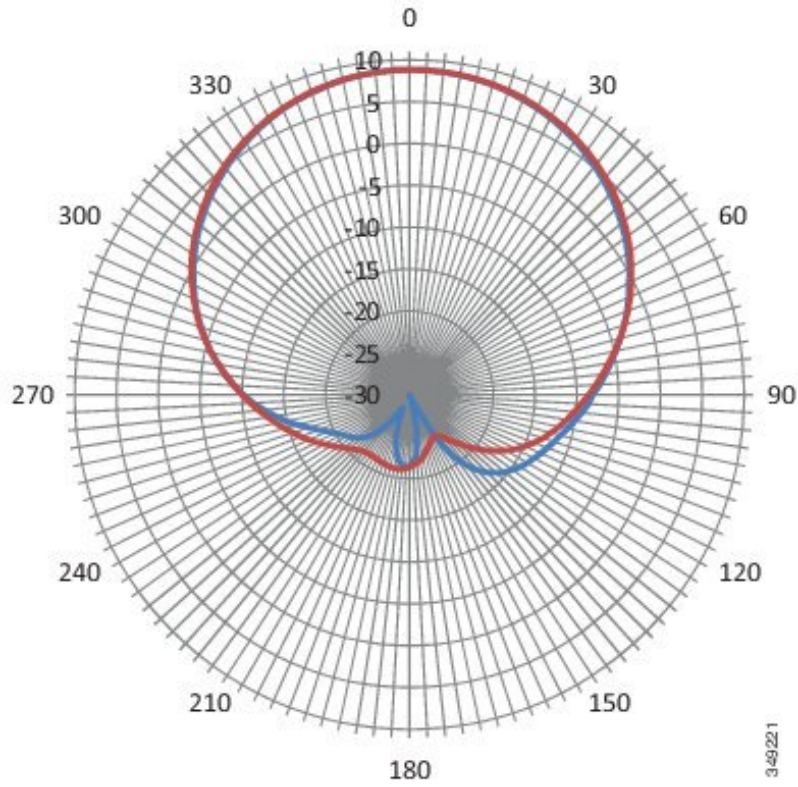
Figure 3: 698 MHz Antenna Radiation Pattern—Vertical Plane

Figure 4: 880 MHz Antenna Radiation Pattern—Horizontal Plane

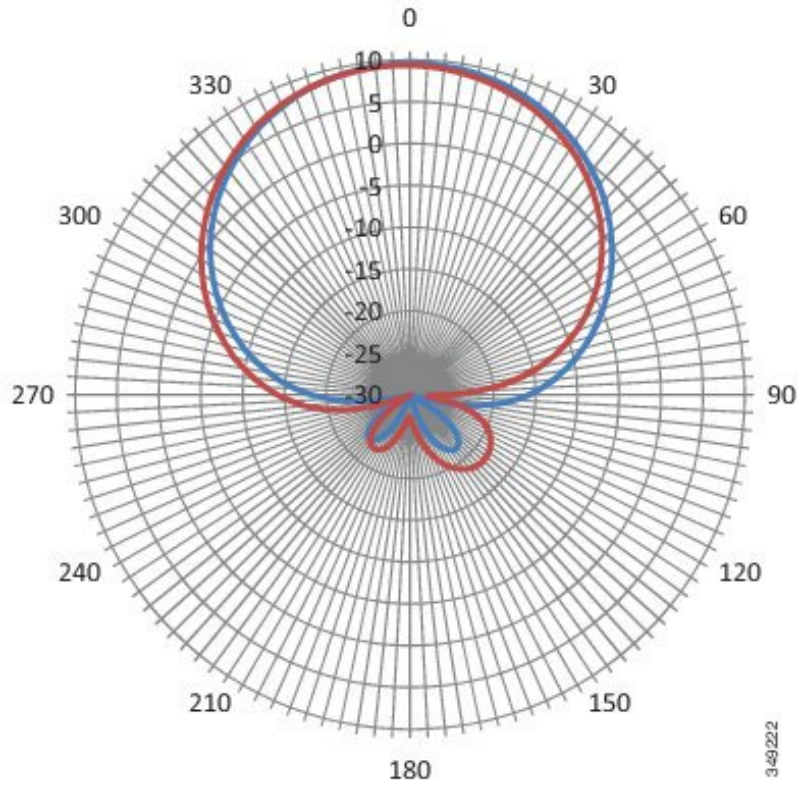


Figure 5: 880 MHz Antenna Radiation Pattern—Vertical Plane

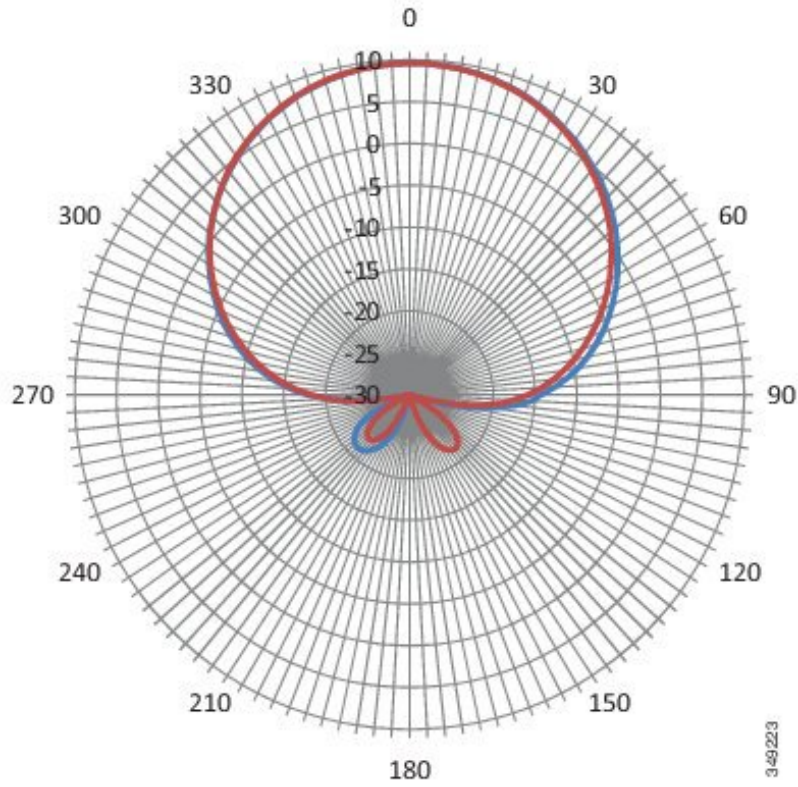


Figure 6: 960 MHz Antenna Radiation Pattern—Horizontal Plane

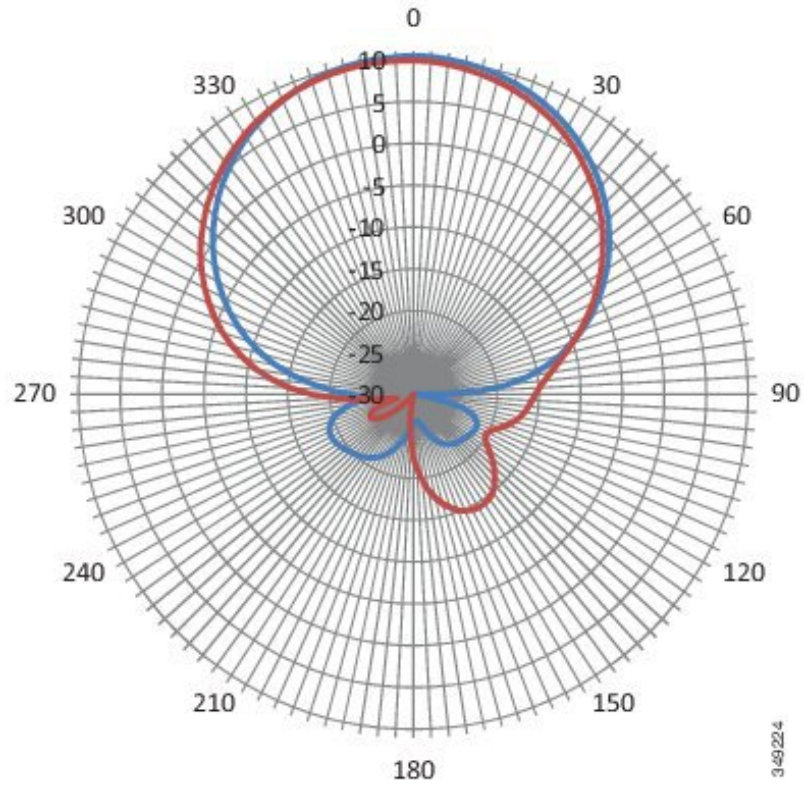


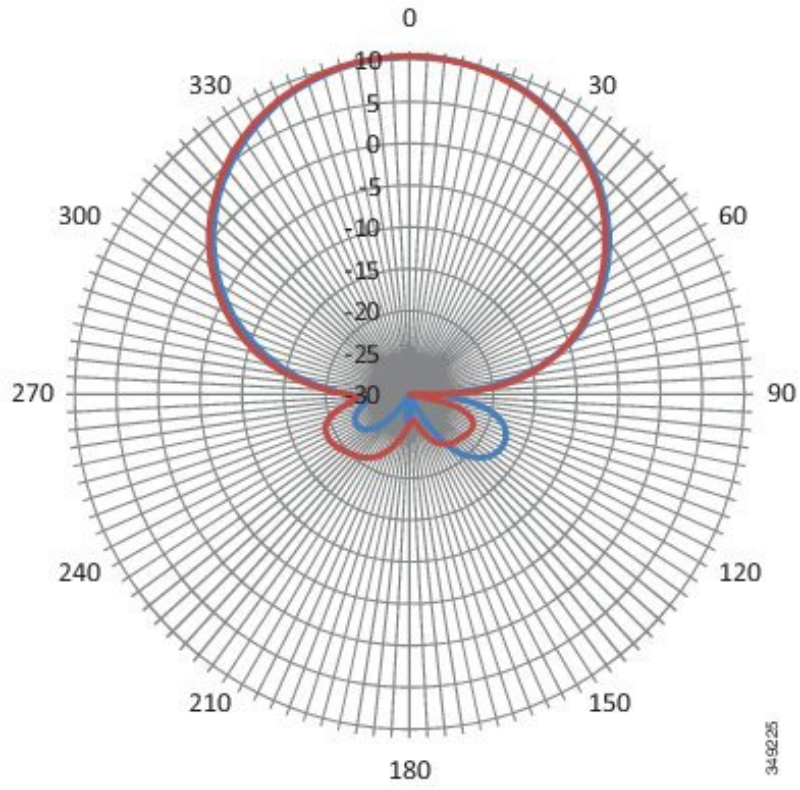
Figure 7: 960 MHz Antenna Radiation Pattern—Vertical Plane

Figure 8: 1710 MHz Antenna Radiation Pattern—Horizontal Plane

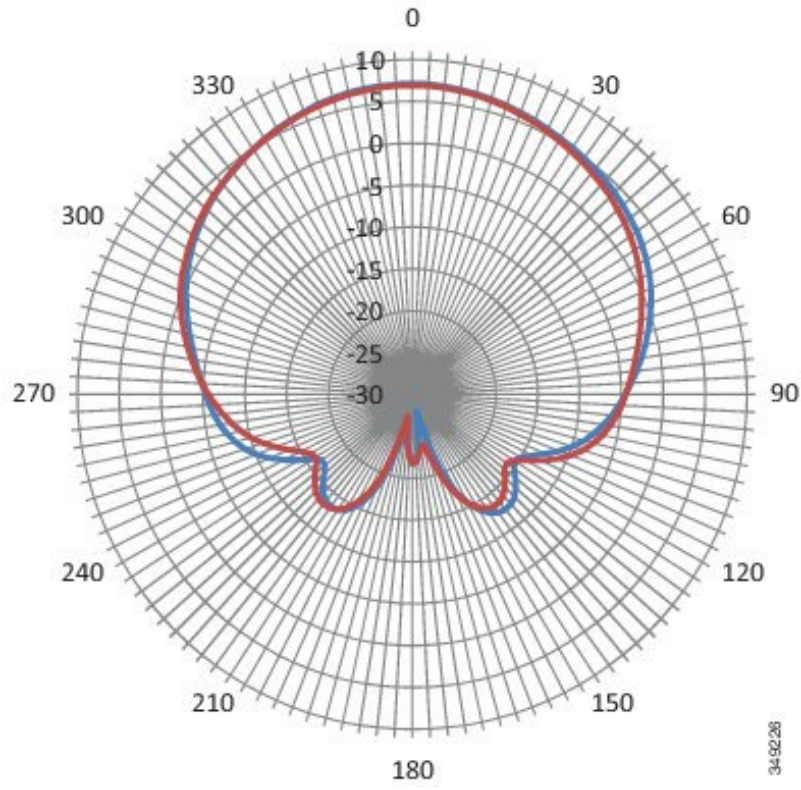


Figure 9: 1710 MHz Antenna Radiation Pattern—Vertical Plane

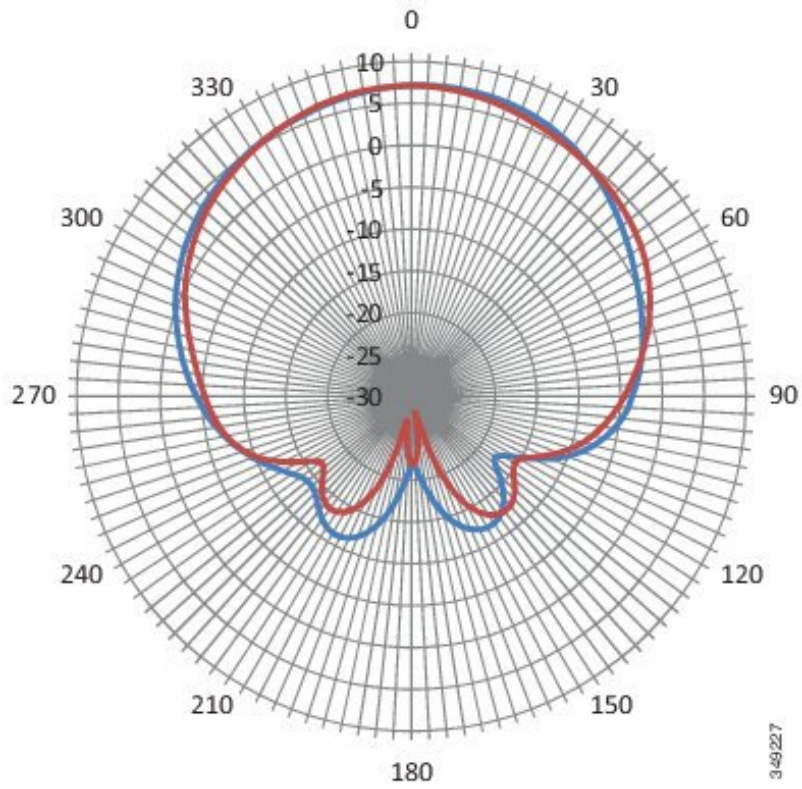


Figure 10: 1950 MHz Antenna Radiation Pattern—Horizontal Plane

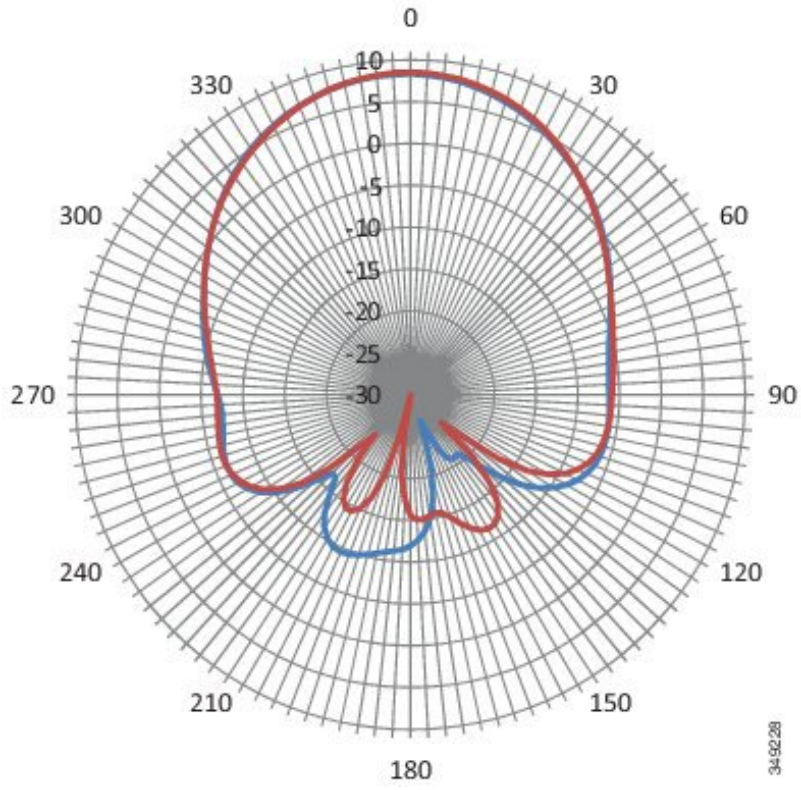


Figure 11: 1950 MHz Antenna Radiation Pattern—Vertical Plane

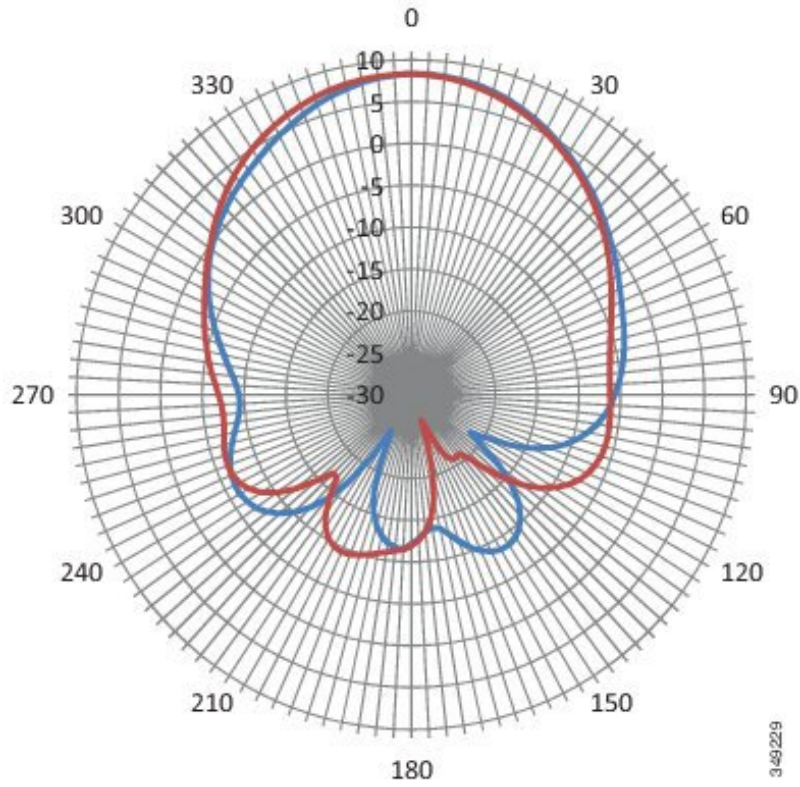


Figure 12: 2170 MHz Antenna Radiation Pattern—Horizontal Plane

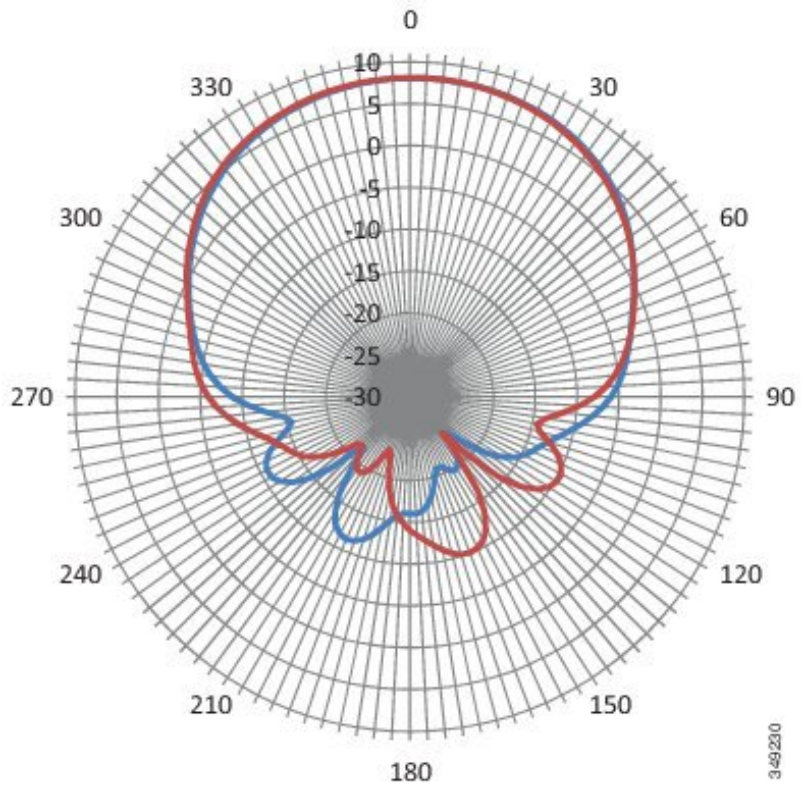


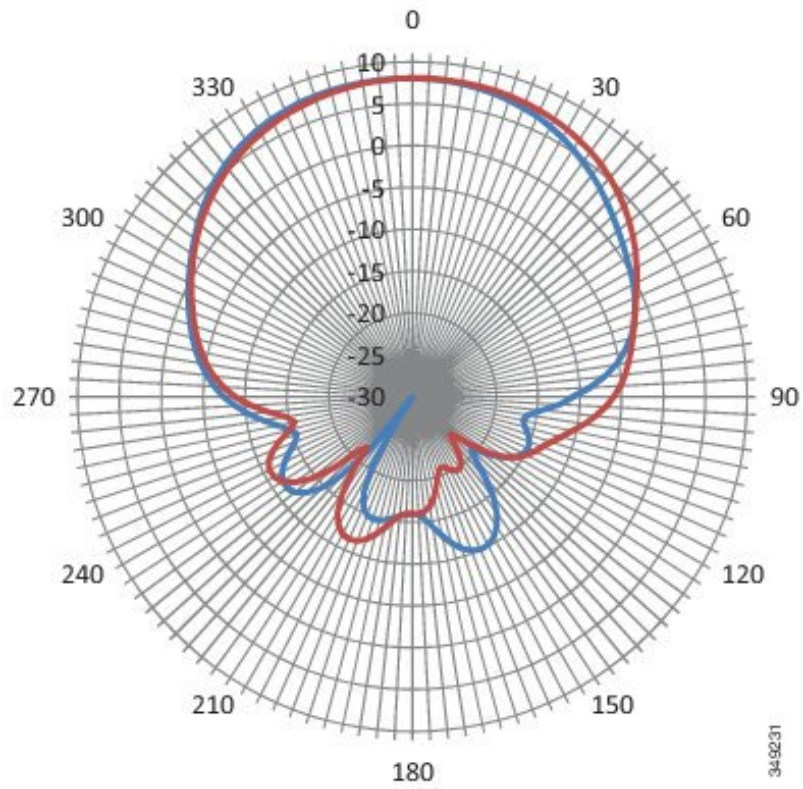
Figure 13: 2170 MHz Antenna Radiation Pattern—Vertical Plane

Figure 14: 2700 MHz Antenna Radiation Pattern—Horizontal Plane

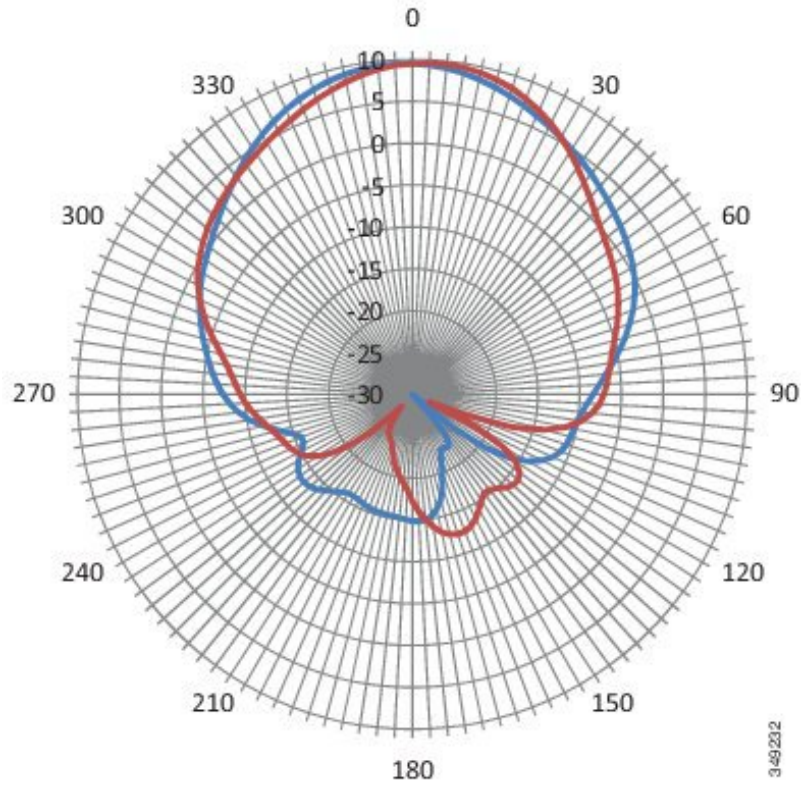
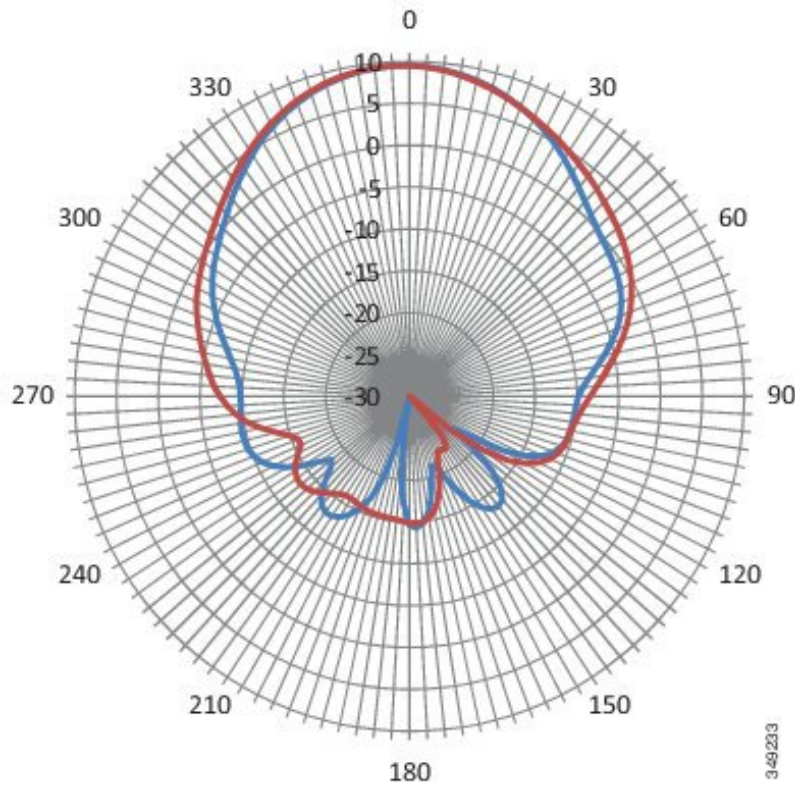


Figure 15: 2700 MHz Antenna Radiation Pattern—Vertical Plane



General Safety Precautions



Warning

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device. **Statement 1071**



Warning

Do not work on the system or connect or disconnect cables during periods of lightning activity. **Statement 1001**



Warning

Do not locate the outdoor antenna near overhead power lines or other electric light or power circuits, or where it can come into contact with such circuits. When installing the antenna, take extreme care not to come into contact with such circuits, as they may cause serious injury or death. For proper installation and grounding of the antenna, please refer to national and local codes (for example, U.S.:NFPA 70, National Electrical Code, Article 810, Canada:Canadian Electrical Code, Section 54). **Statement 1052**

**Warning**

In order to comply with FCC radio frequency (RF) exposure limits, antennas should be located at a minimum of 7.9 inches (20 cm) or more from the body of all persons. **Statement 332**

Each year hundreds of people are killed or injured when attempting to install an antenna. In many of these cases, the victim was aware of the danger of electrocution, but did not take adequate steps to avoid the hazard.

**Warning**

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

For your safety, read and follow these safety precautions.

- 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.
- Before you install an antenna, contact your Cisco account representative to explain which mounting method to use for the size and type of antenna that you are about to install.
- Find someone to help you—installing an antenna is often a two-person job.
- Select your installation site with safety, as well as performance, in mind. Remember that electric power lines and phone lines look alike. For your safety, assume that any overhead line can kill you.
- Contact your electric power company. Tell them your plans and ask them to come look at your proposed installation.
- Plan your installation carefully and completely before you begin. Each person involved in an installation should be assigned to a specific task, and should know what to do and when to do it. One person should be in charge of the operation to issue instructions and watch for signs of trouble.
- When installing your antenna, follow these guidelines:
 - Do not use a metal ladder.
 - Do not work on a wet or windy day.
 - Do dress properly—wear shoes with rubber soles and heels, rubber gloves, and a long-sleeved shirt or jacket.
- If the assembly starts to drop, move away from it and let it fall. Because the antenna, mast, cable, and metal guy wires are all excellent conductors of electrical current, even the slightest touch of any of these parts to a power line completes an electrical path through the antenna and the installer.
- If any part of the antenna system should come in contact with a power line, do not touch it or try to remove it yourself. Call your local power company to have it removed safely.
- If an accident should occur with the power lines, call for qualified emergency help immediately.

Installing the Antenna

The antenna installation includes the following procedures:

Contents of the Antenna Kit

The antenna kit contains:

- 1 x Cisco ANT-4G-PNL-OUT-N antenna
- 1 x mounting bracket

Tools and Equipment Required

In addition to the parts included in the antenna kit described in the previous section, you must provide the following tool to install the antenna on the router:

- Phillips screwdriver
- Open-ended wrench
- Electric drill



Note This list does not include the tools and equipment required to assemble and erect the tower, mast, or other structure you intend to mount your antenna on.

Preparing the Antenna for Installation



Note Before mounting the antenna on a mast or wall:- the antenna must be attached to the mounting bracket.- the signal cable must be attached to the antenna.

To prepare the antenna for installation:

1. Attach the antenna to the mounting bracket.
2. To attach the signal cable to the antenna:
 - a. Loosely hand-tighten the antenna nut so that the cable can be attached with ease.
 - b. Attach the cable to the antenna.
 - c. Hand tighten the N-connector to the antenna.
 - d. Tighten the antenna nut securely after the cable is installed.
 - e. Use weatherproof sealing tape (coax seal) at the connector junction. Start wrapping at the top of the antenna connector, wrap downward 3 times and end about 2 inches downward from the center of the connector junction. Then wrap upwards another 3 times to reach the top of the antenna connector.
3. Decide if the antenna is to be mounted on a wall or mast. Perform the following steps where relevant:
 - a. If the antenna is going to be mast mounted, install the clamps provided in the mounting bracket. Align the antenna so the top of the metal bracket is even with or slightly above the top of the mast tubing.
 - b. If the antenna is to be wall mounted, use the screws provided.
 - c. Use both clamps and screws for extra security if required.

Mounting the Antenna

Follow these instructions to mount the antenna:

-
- Step 1** Mark the desired location where you plan to mount the antenna and create a hole to receive the antenna.
- Note** The rubber washer is not required for ceiling tile installations.
- Step 2** Make sure that the antenna is properly positioned, then tighten the washer and plastic nut to secure the antenna.
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Connecting the Lightning Arrestor

To install a lightning-protection device, please refer to the appropriate Hardware Installation Procedures for the model of hardware you are installing.

Connecting the Antenna to the Router

To attach the router-end of the cable to your device, please refer to the appropriate Hardware Installation Procedures for the model of hardware you are installing.



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- 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 cable length or run, the greater the loss).
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