



Cisco Aironet 2.4-GHz/5-GHz MIMO 4-Element Patch Antenna (AIR-ANT2566P4W-DS)

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This document outlines the specifications for the Cisco Aironet 2.4-GHz and 5-GHz MIMO 4-Element Patch Antenna (AIR-ANT2566P4W-DS) and provides mounting instructions. This antenna operates in the 2.4 GHz and 5 GHz frequency ranges and is designed for indoor and outdoor use. The antenna also includes self-identifying circuitry.

The following information is provided in this document.

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Technical Specifications

Table 1 AIR-ANT2566P4W-DS 2.4 GHz/5 GHz MIMO 4-Element Patch Antenna Specifications

Antenna type	4-element dual-band MIMO	
Operating frequency range	2400 to 2484 MHz	5150–5850 MHz
VSWR	2:1 or less	2:1 or less
Gain	6 dBi	5 dBi
Polarization	Linear, vertical	Linear, vertical
Azimuth Plane 3-dB Beamwidth	105°	110°
Elevation Plane 3-dB Beamwidth	65°	55°
Length	6.3 in. (16 cm)	
Width	11 in. (27.9 cm)	
Depth	1.2 in. (3.05 cm)	
Weight	1.4 lbs	
Cable length and type	3 ft. (91.4 cm) plenum rated	
Connector	4-DART	
Environment	Indoor/outdoor	
Water/Foreign Body Ingress	IP54	
Operating temperature range	-40° to 158° F	
	-40° to 70° C	

Azimuth and Elevation Radiation Patterns

Figure 1 2.4 GHz — Azimuth — Port A

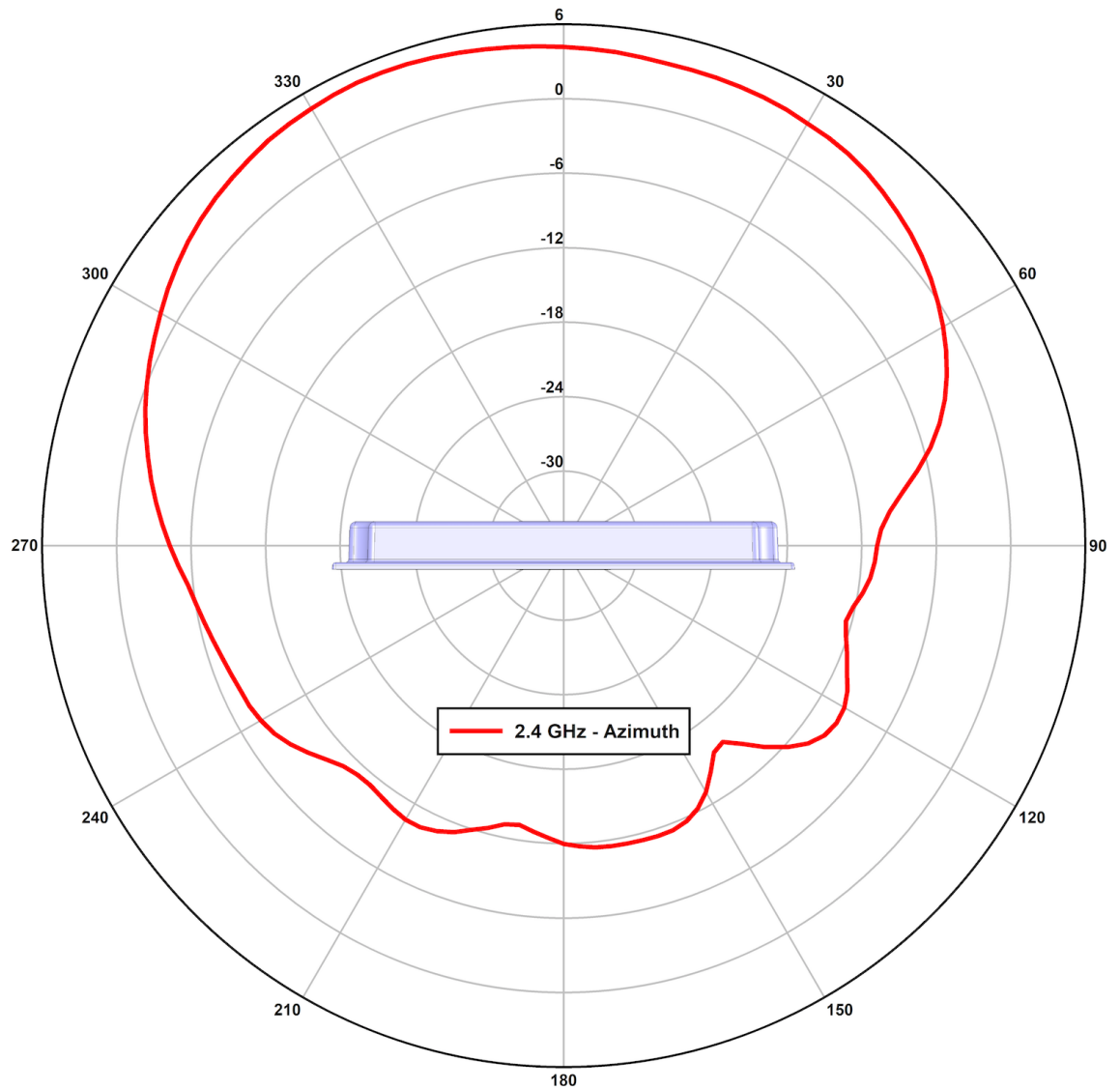


Figure 2 2.4 GHz – Elevation – Port A

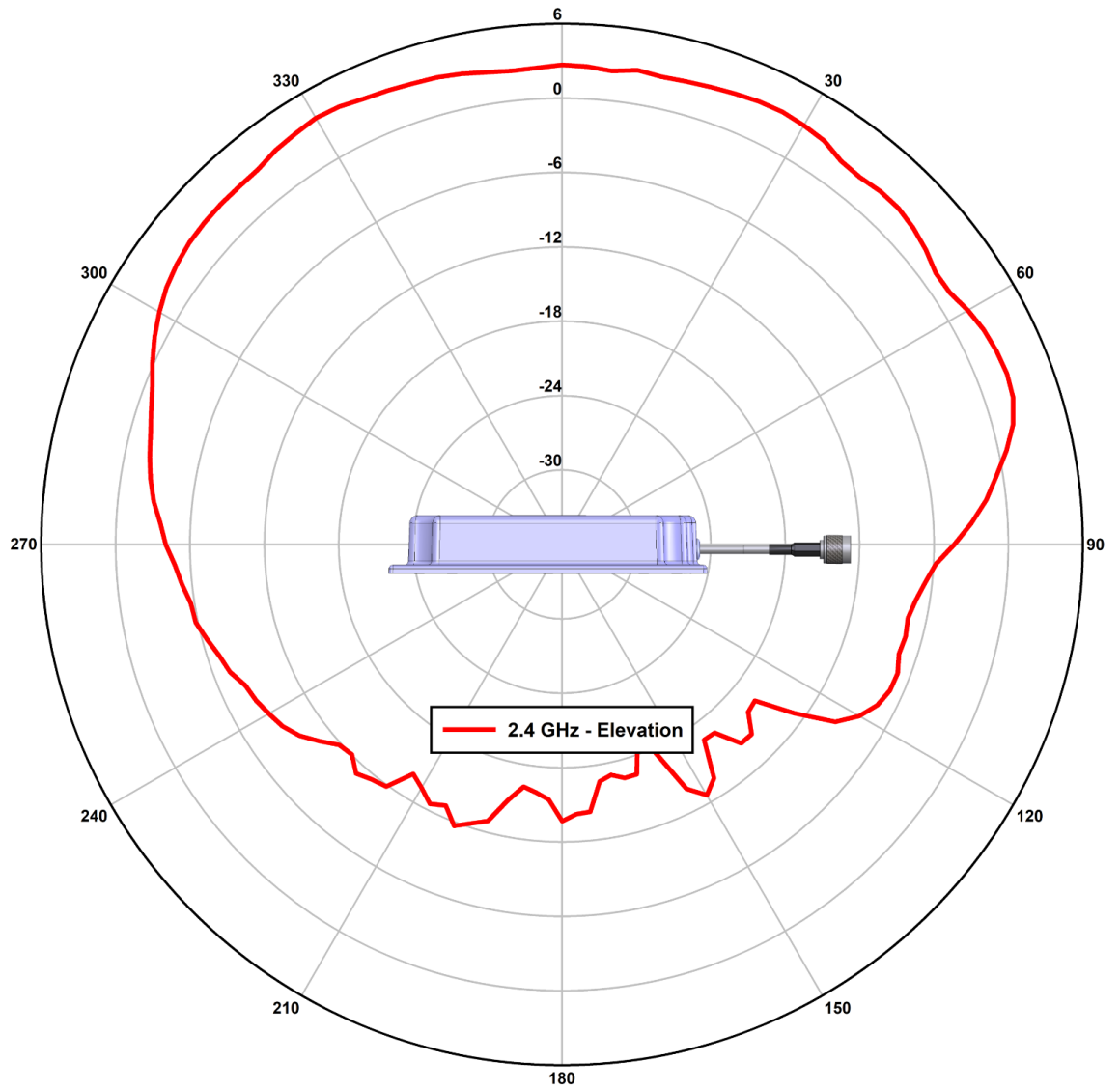


Figure 3 2.4 GHz – Azimuth – Port B

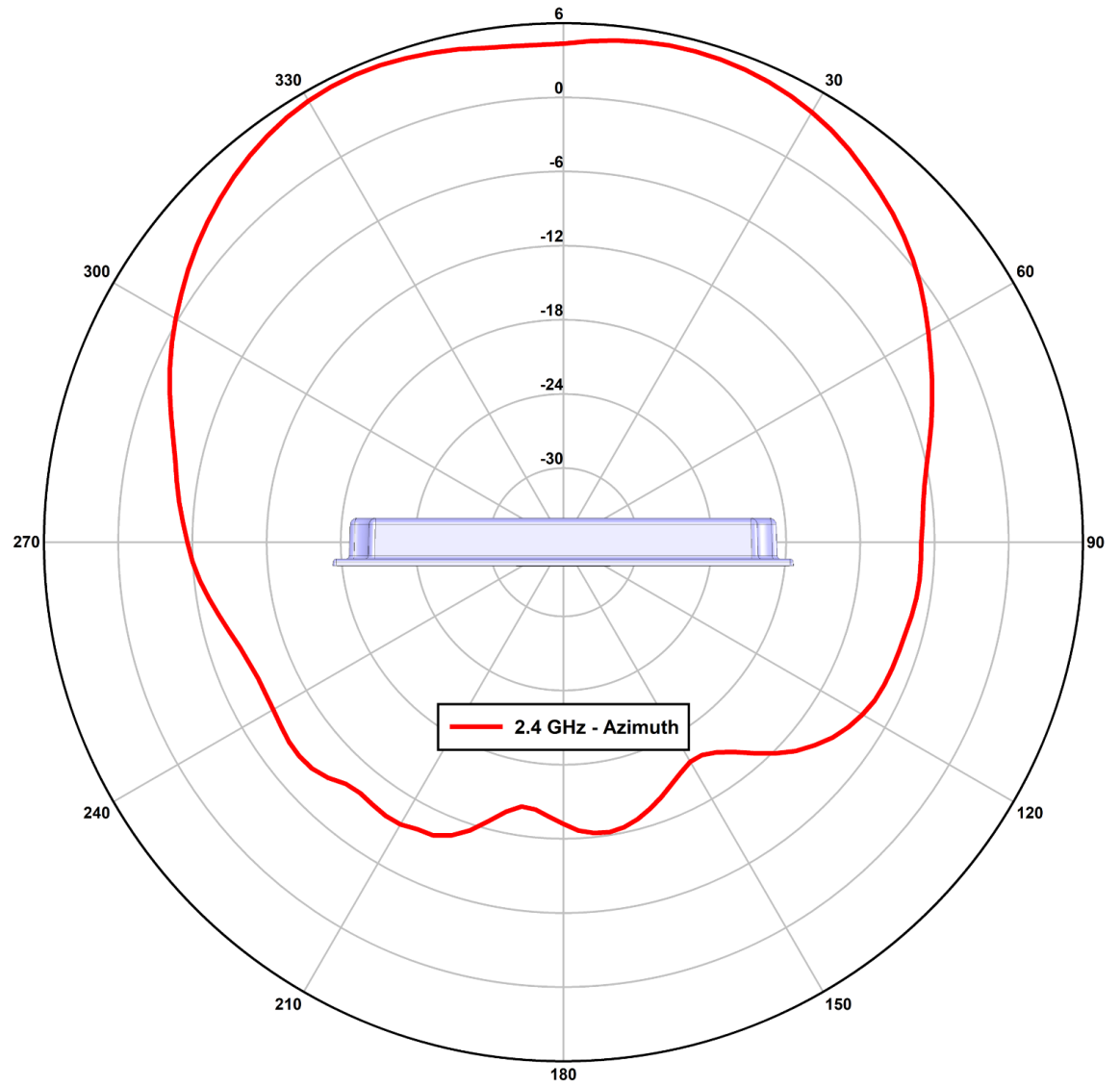


Figure 4 2.4 GHz – Elevation – Port B

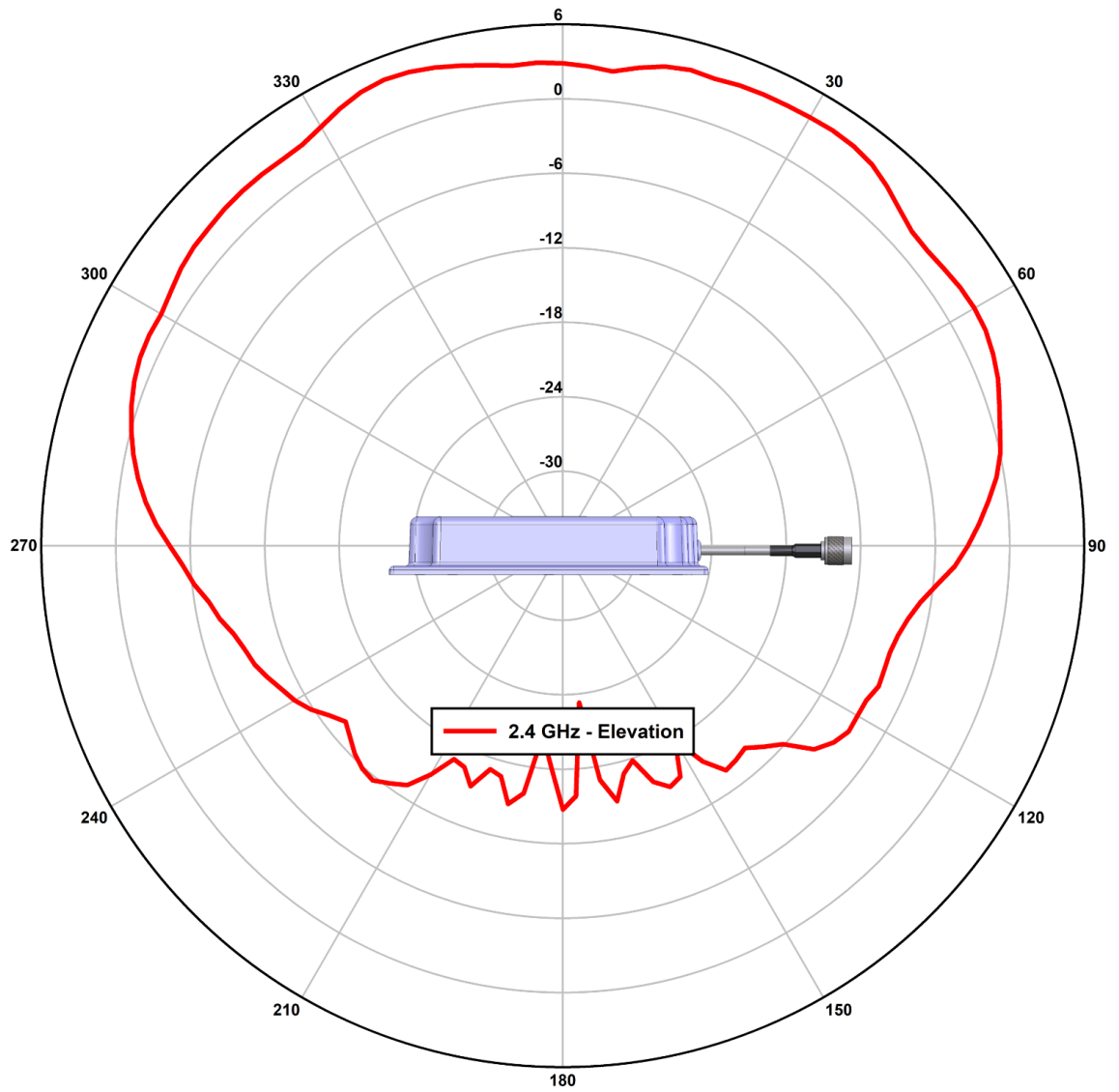


Figure 5 2.4 GHz – Azimuth – Port C

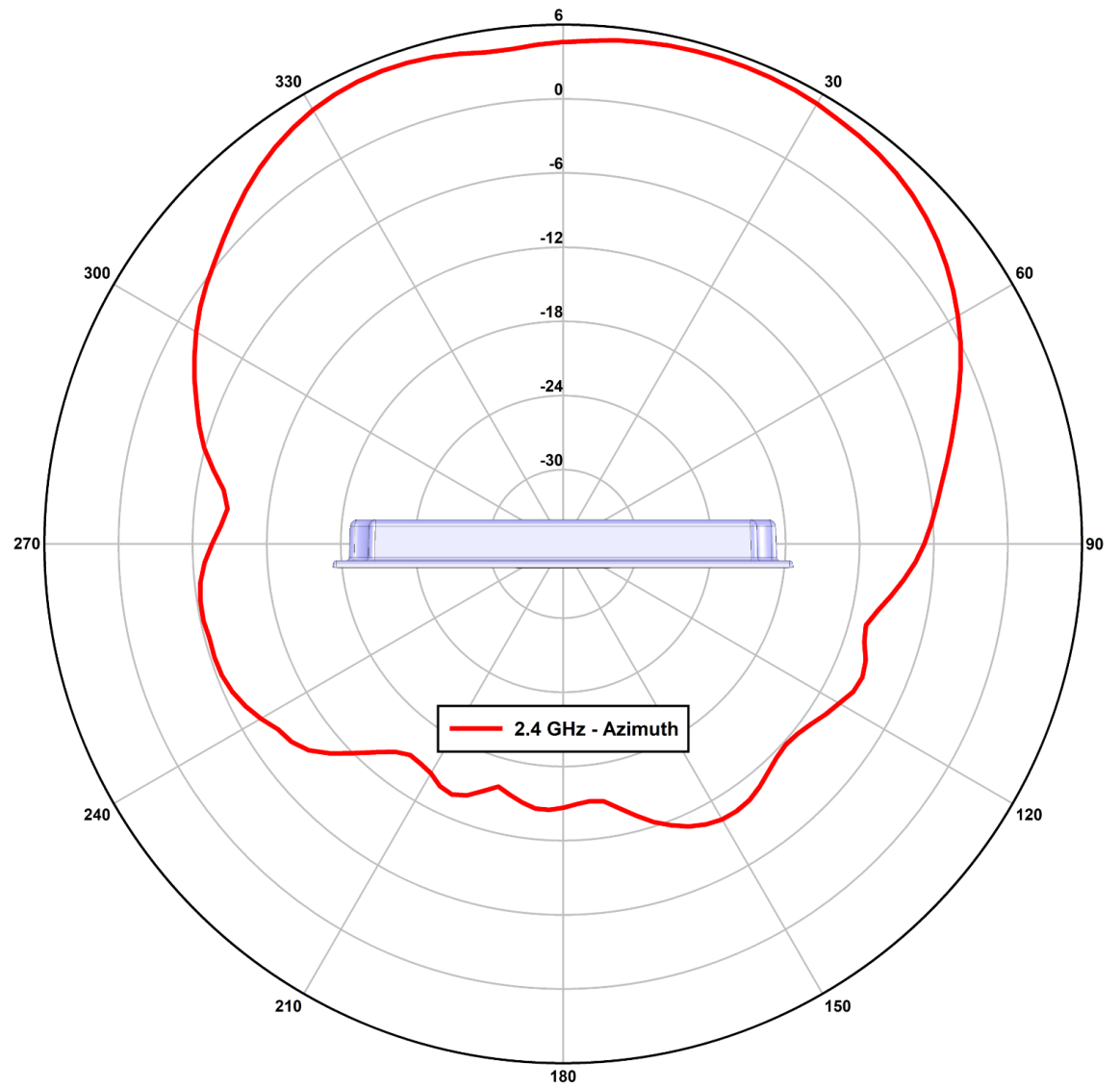


Figure 6 2.4 GHz – Elevation – Port C

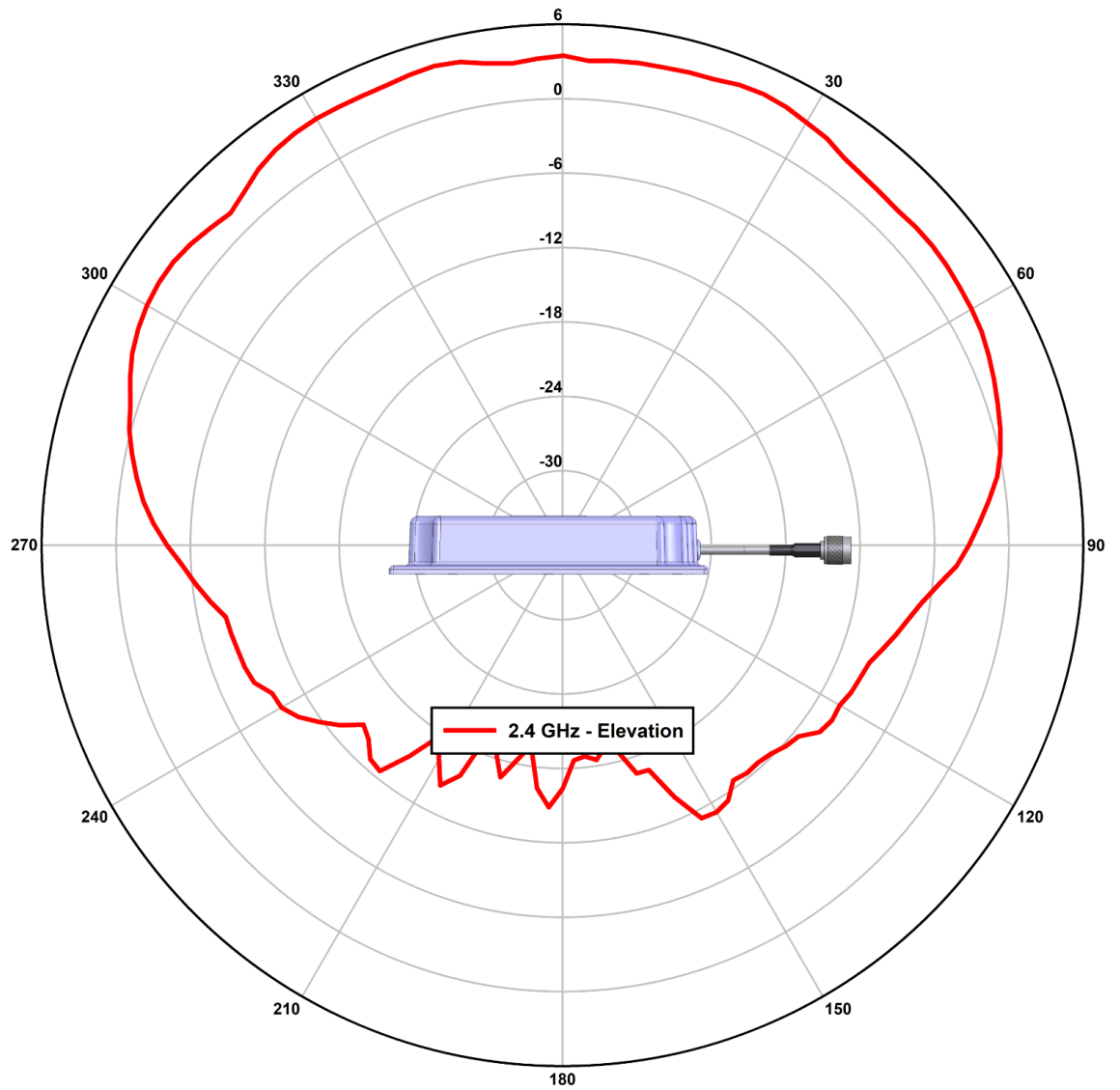


Figure 7 2.4 GHz – Azimuth – Port D

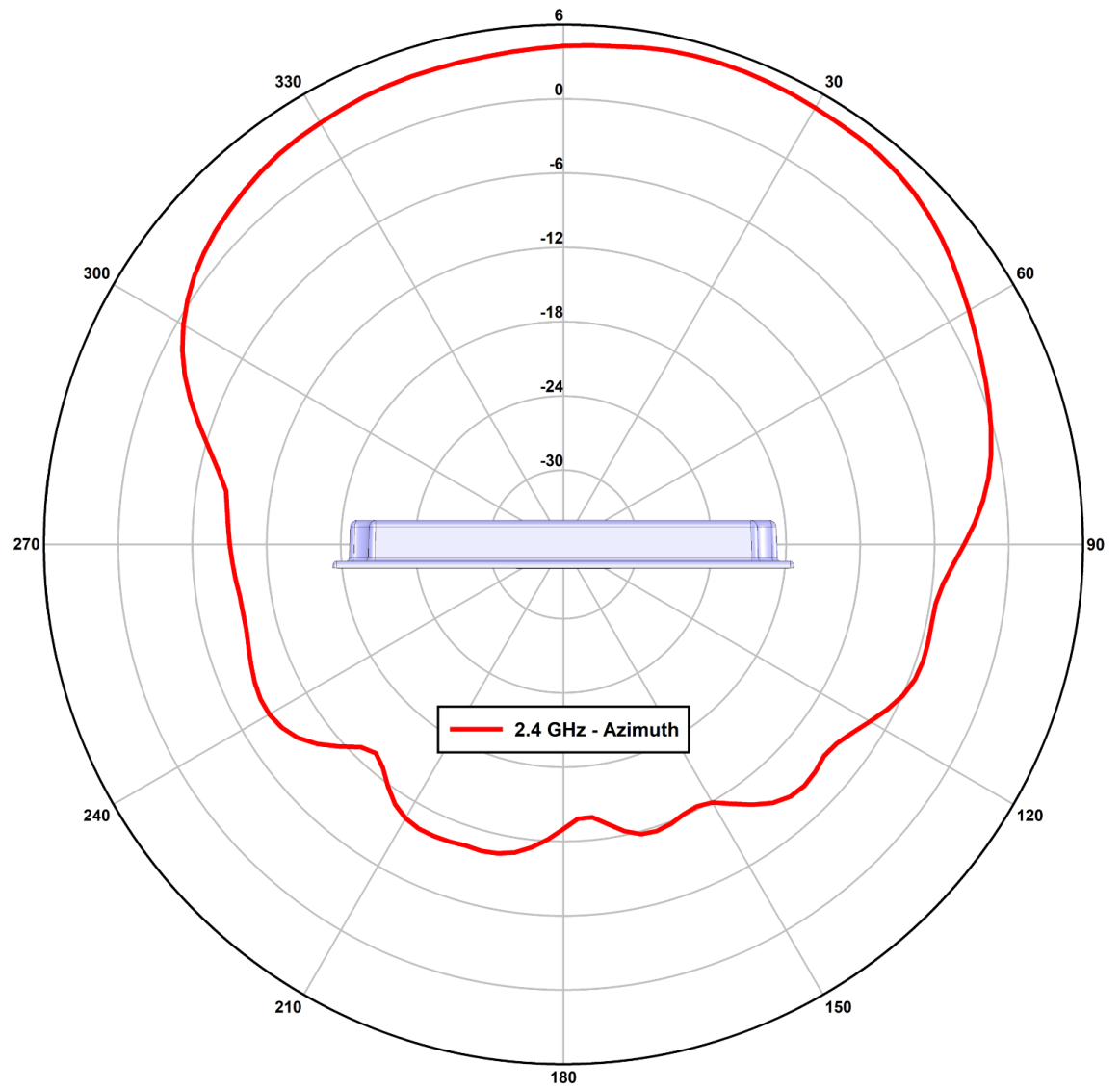


Figure 8 2.4 GHz – Elevation – Port D

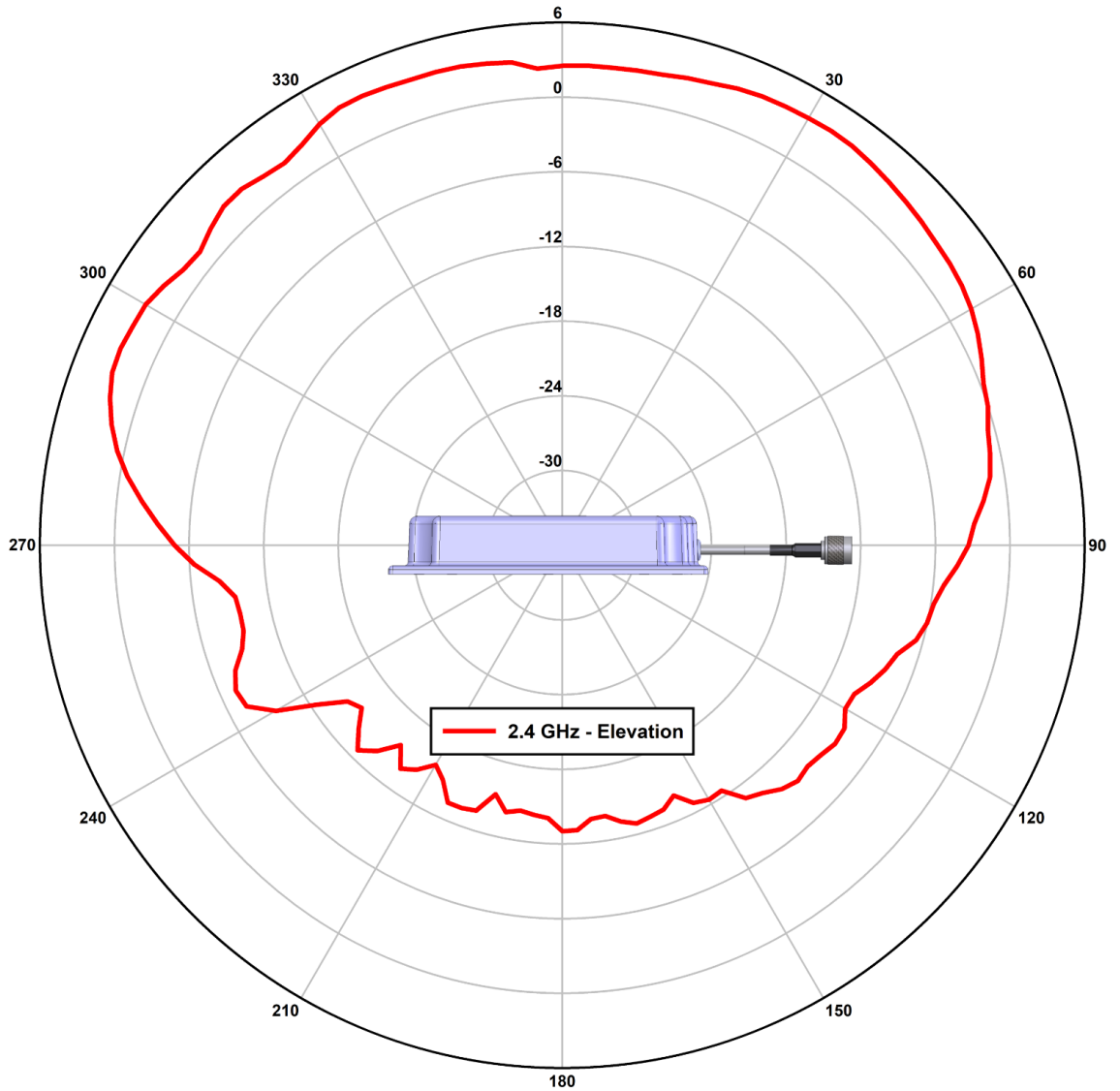


Figure 9 5 GHz – Azimuth – Port A

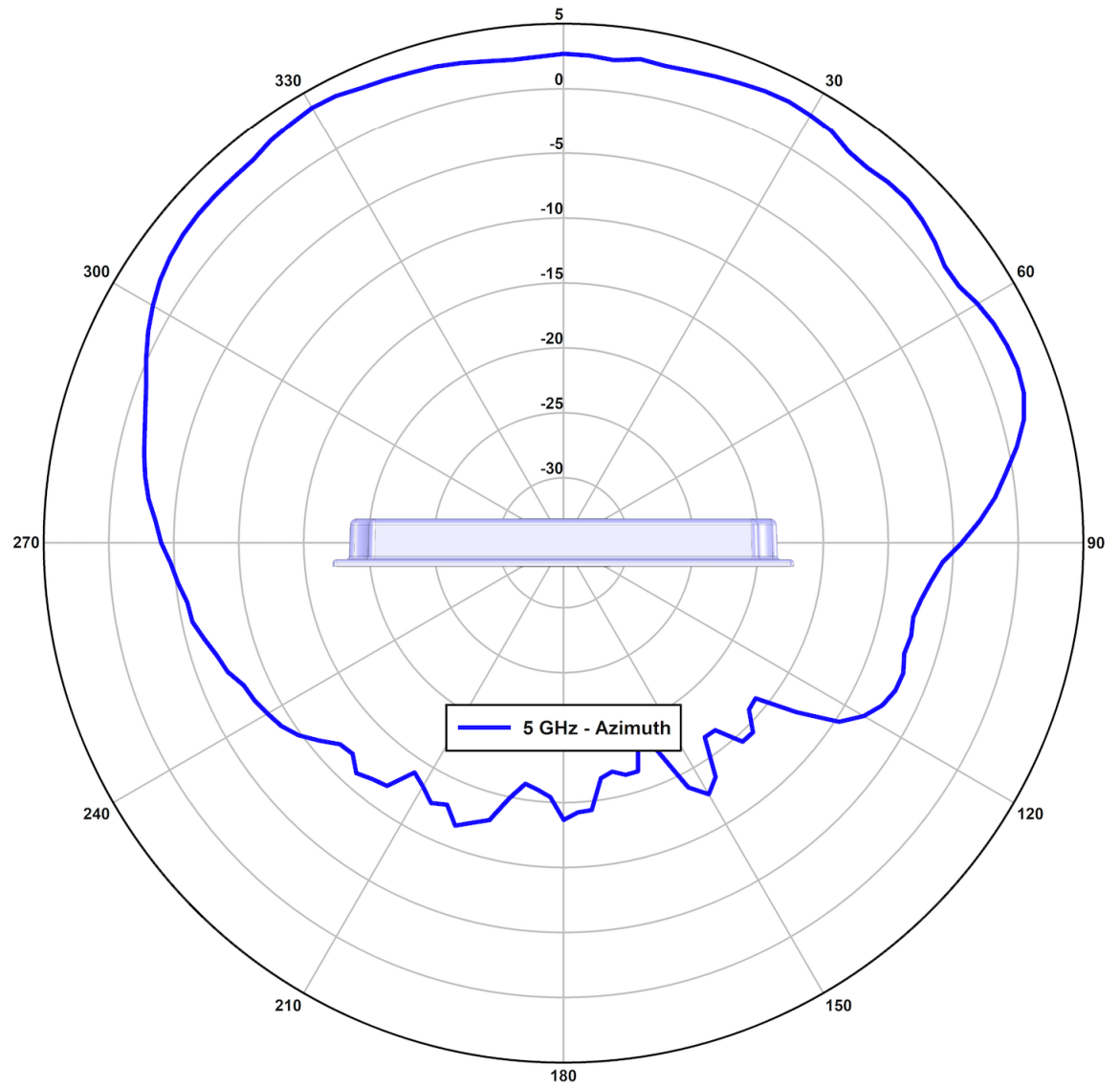


Figure 10 5 GHz – Elevation – Port A

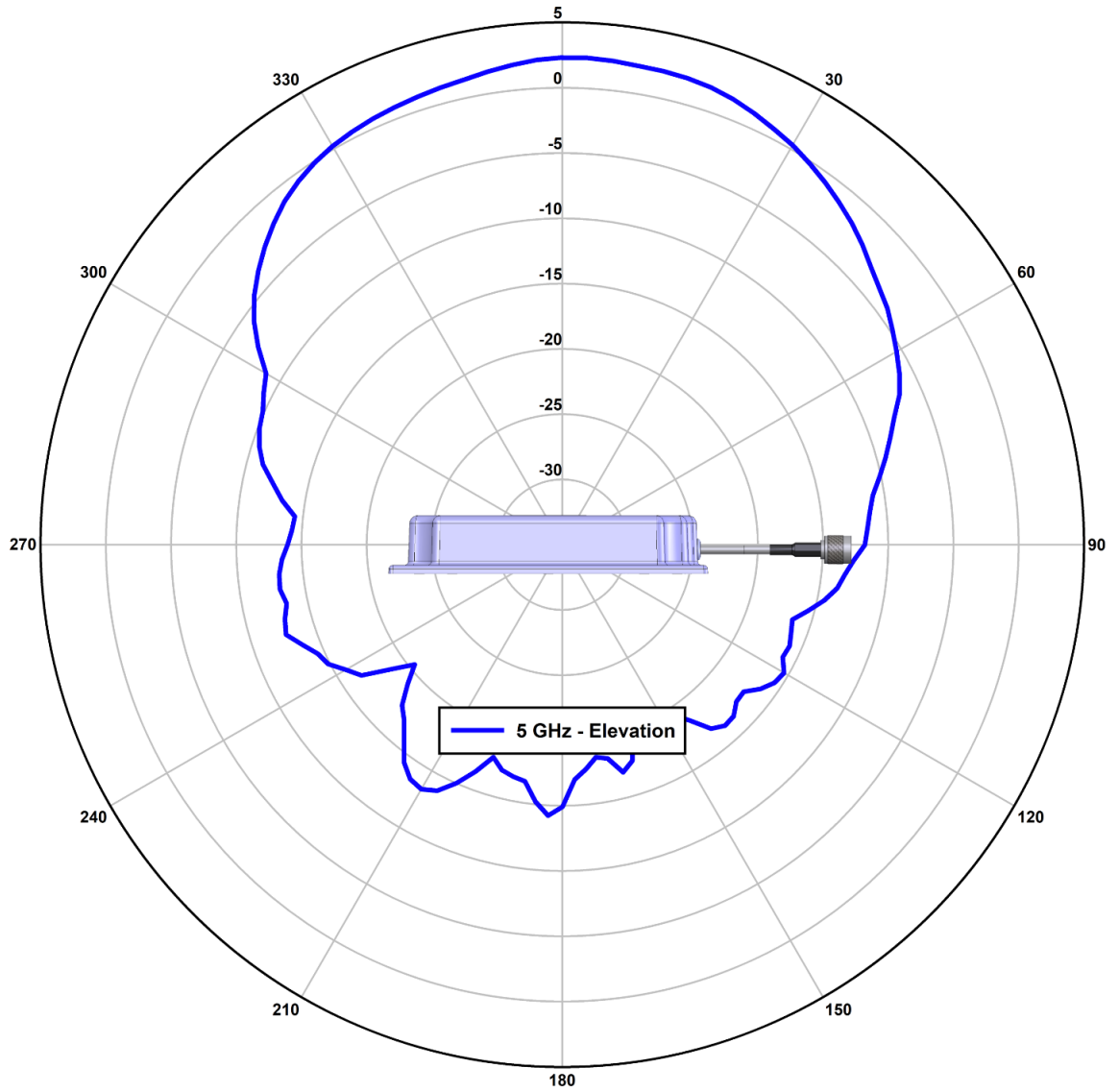


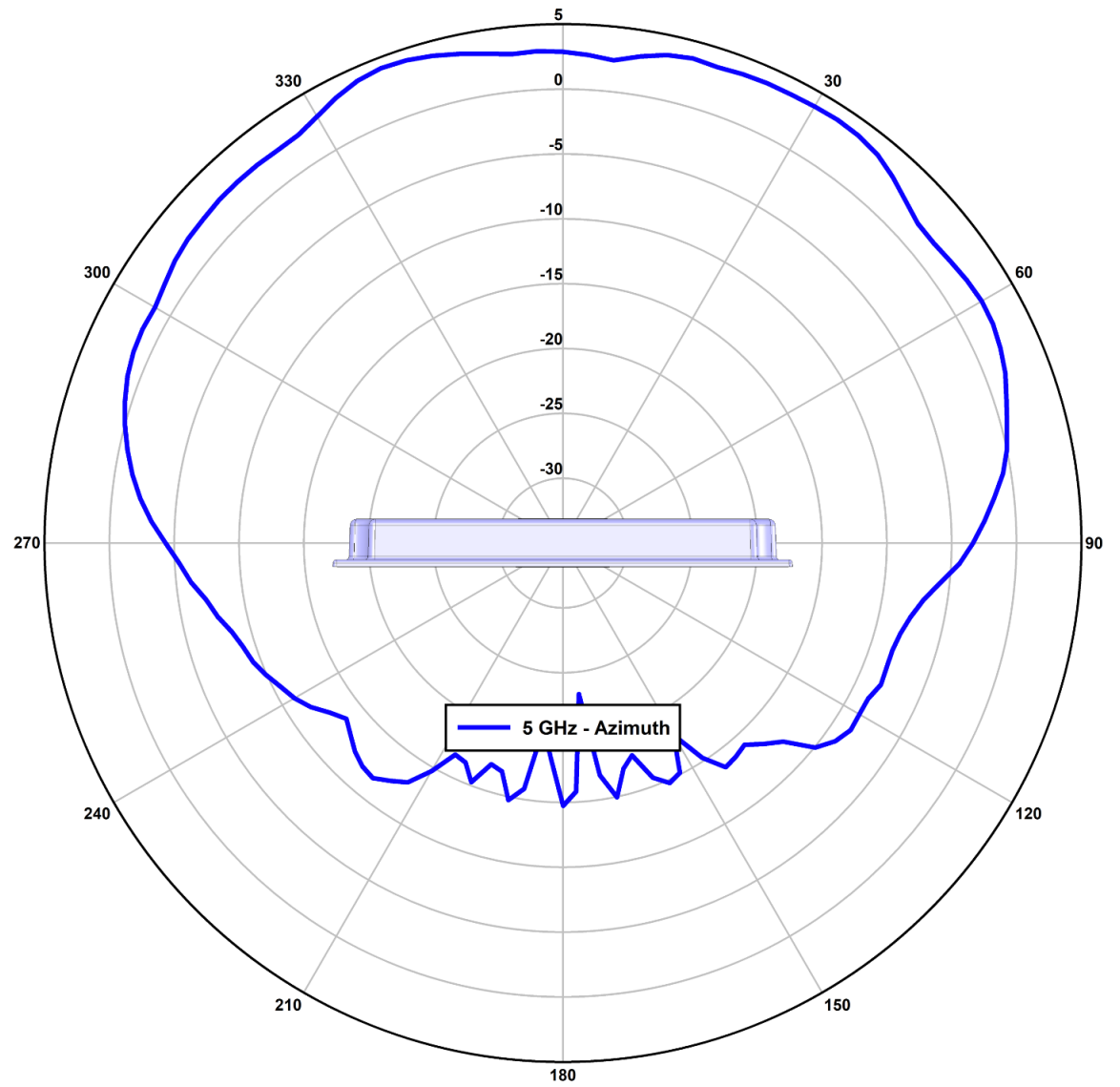
Figure 11 5 GHz – Azimuth – Port B

Figure 12 5 GHz – Elevation – Port B

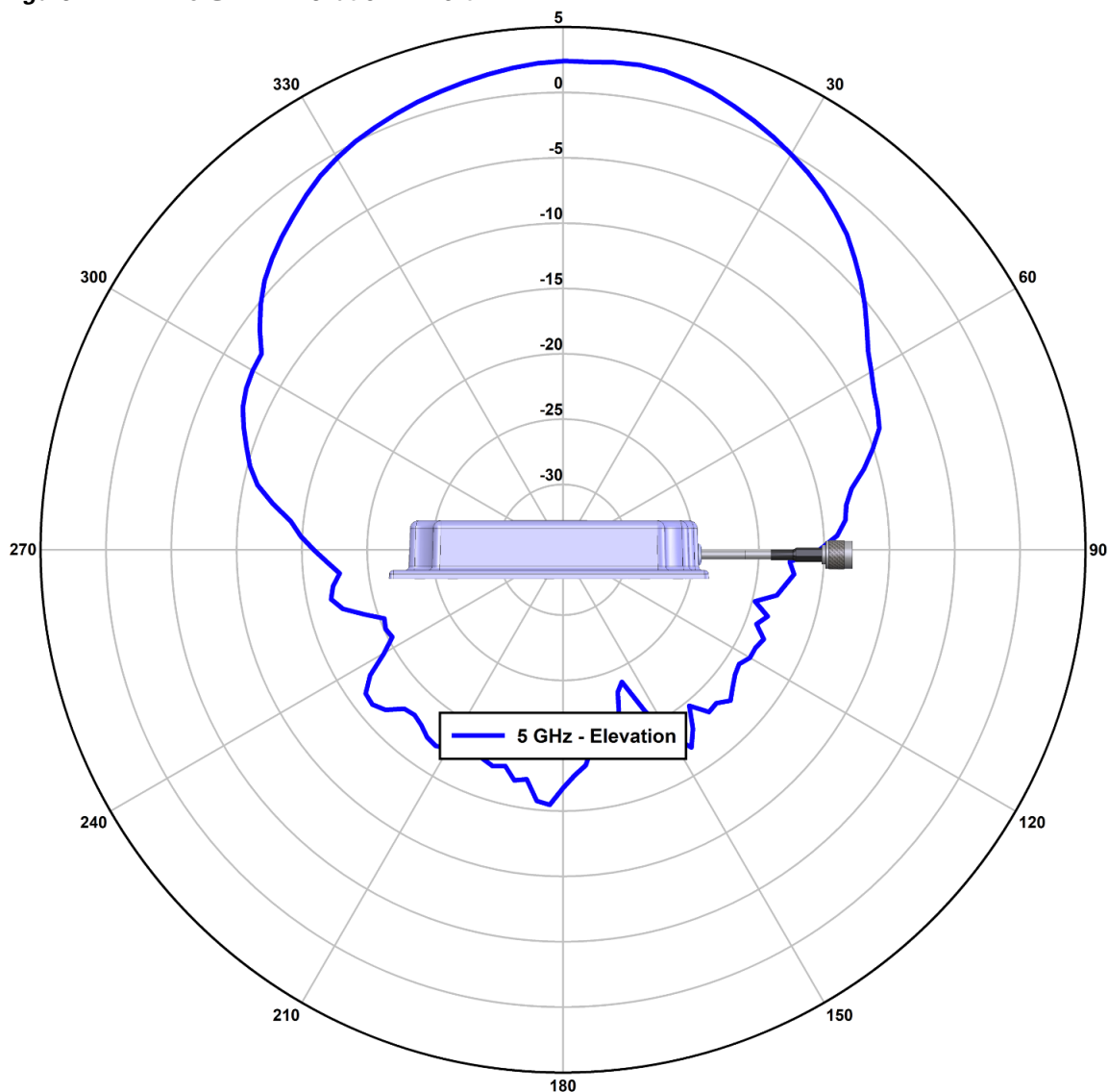


Figure 13 5 GHz – Azimuth – Port C

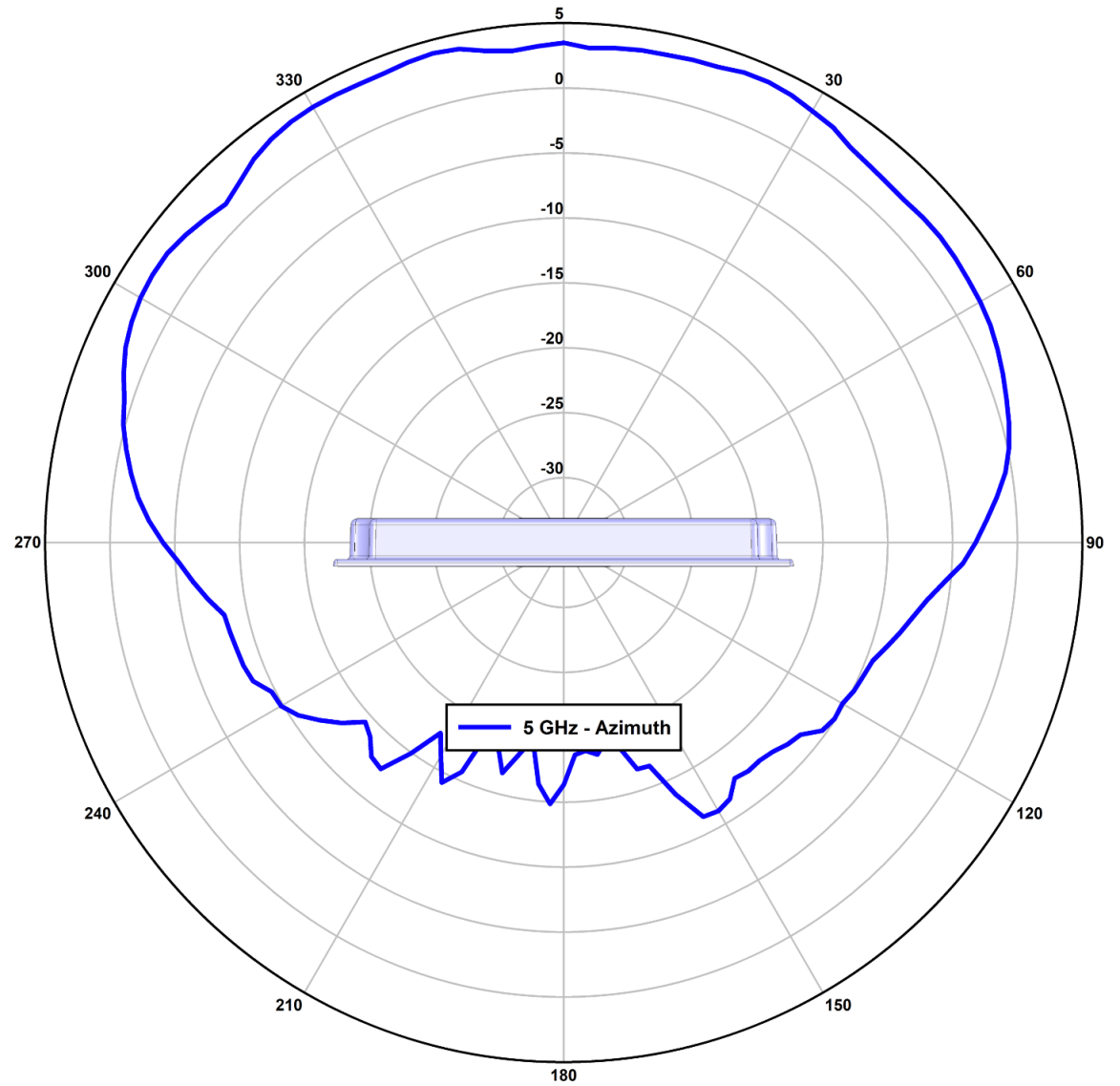


Figure 14 5 GHz – Elevation – Port C

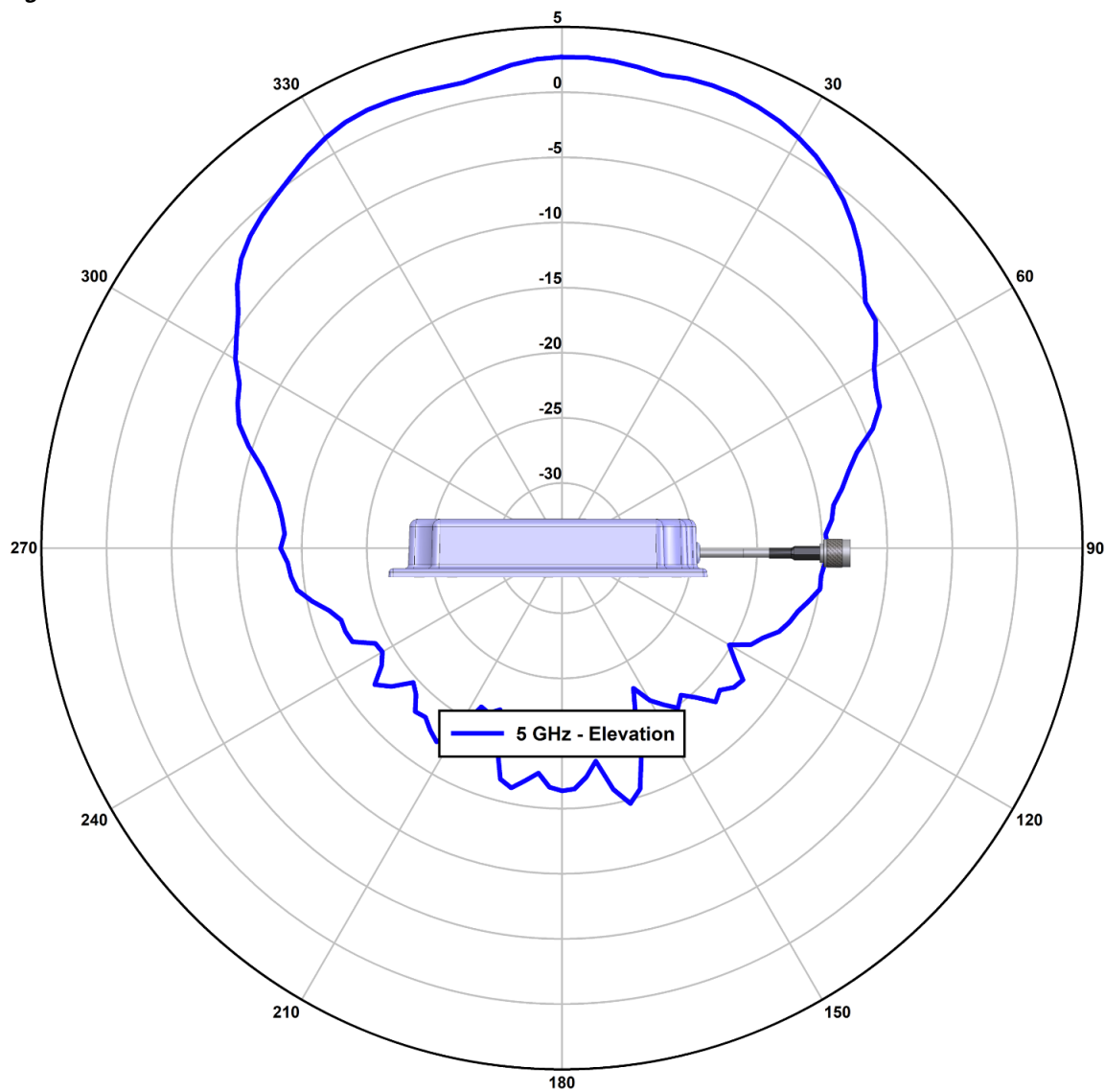


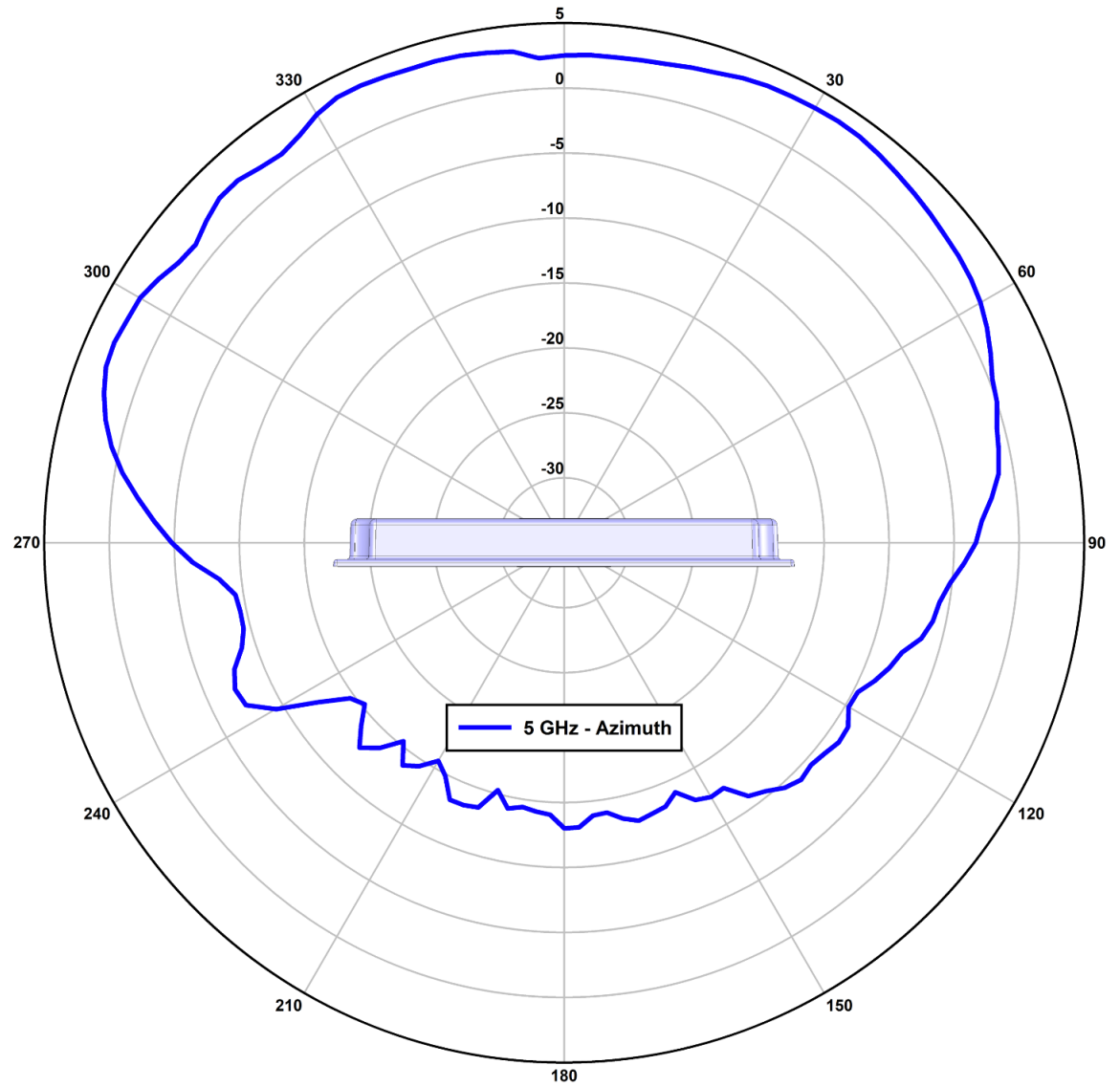
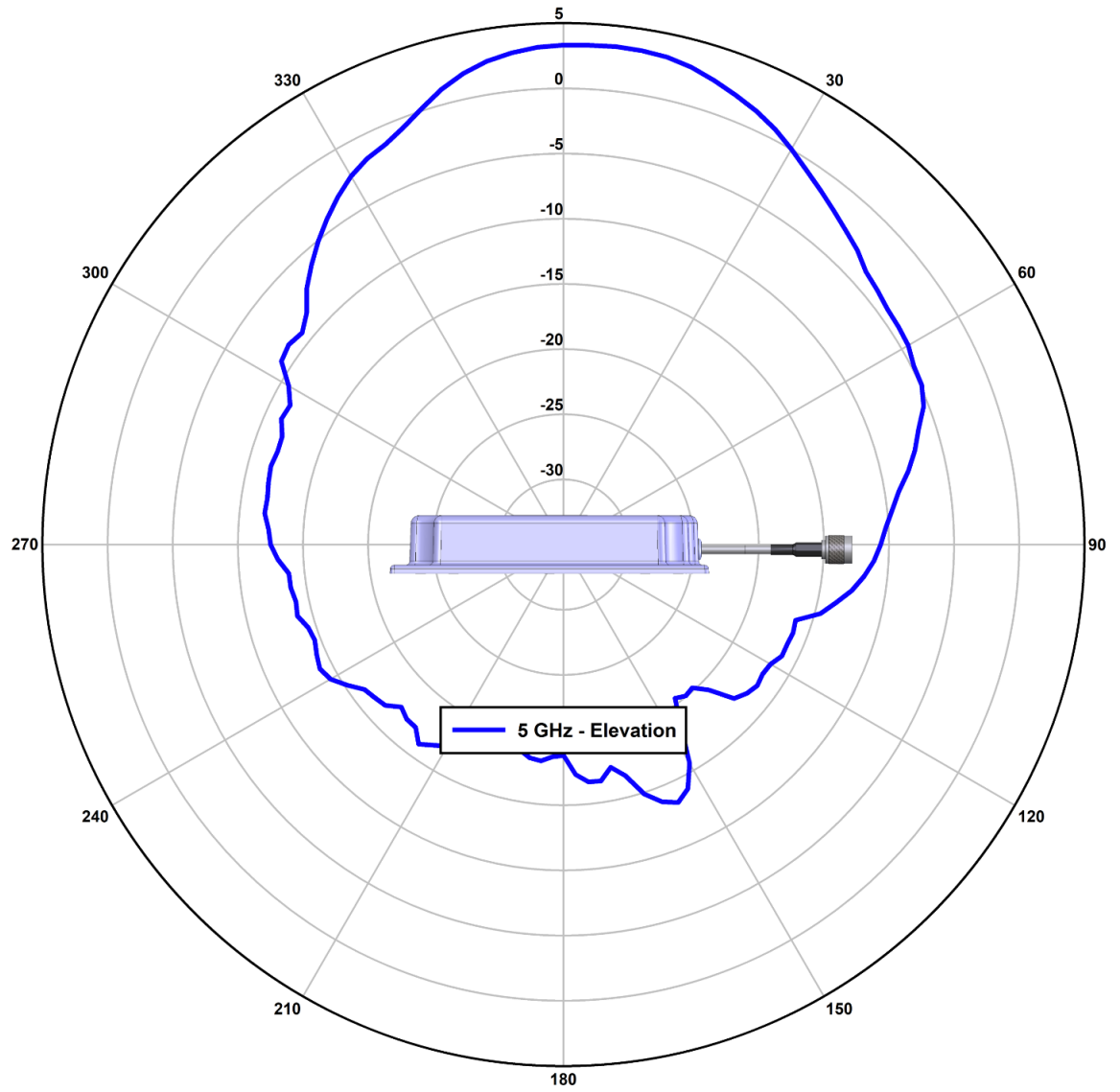
Figure 15 5 GHz – Azimuth – Port D

Figure 16 5 GHz – Elevation – Port D



System Requirements

This antenna is designed for indoor and outdoor use with any Cisco Catalyst 91xx Series access point that requires dual-band 4-DART antennas.

The Self Identifying Antenna model AIR-ANT2566P4W-DS= is supported only on Cisco Catalyst 9800 Series Wireless Controllers running an IOS-XE 17.4.1 release or a later release. This antenna model is not supported on Cisco AireOS Wireless Controllers.

Safety Precautions



Warning

IMPORTANT SAFETY INSTRUCTIONS

Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Read the installation instructions before using, installing, or connecting the system to the power source. Use the statement number provided at the end of each warning statement to locate its translation in the translated safety warnings for this device.

SAVE THESE INSTRUCTIONS Statement 1071



Warning

Instructed person is someone who has been instructed and trained by a skilled person and takes the necessary precautions when working with equipment.

Skilled person/Qualified personnel is someone who have training or experience in the equipment technology and understand potential hazards when working with equipment. Statement 1089



Warning

Only skilled person should be allowed to install, replace, or service this equipment. Refer to Statement 1089 **for description of skilled person.** Statement 1090



Warning

Do not locate the 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 (e.g. U.S.: NFPA 70, National Electrical Code, Article 810, Canada: Canadian Electrical Code, Section 54). Statement 280



Warning

To reduce the risk of electric shock, refer to national and local codes for proper installation and grounding of antennas. Statement 1052



Warning

To reduce the risk of electric shock, the shield of the coaxial cable must be connected to the building earth. Statement 1253

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.

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 power lines and phone lines look alike. For your safety, assume that any overhead 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. Plan your installation carefully and completely before you begin. Successful raising of a mast or tower is largely a matter of coordination. Each person should be assigned 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.
5. When installing your antenna, remember:
 - a. **Do not** use a metal ladder.
 - b. **Do not** work on a wet or windy day.
 - c. **Do** dress properly—shoes with rubber soles and heels, rubber gloves, long sleeved shirt or jacket.
6. If the assembly starts to drop, get away from it and let it fall. Remember, 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: **You!**
7. If any part of the antenna system should come in contact with a power line, **don't touch it or try to remove it yourself. Call your local power company.** They will remove it safely.
8. If an accident occurs with the power 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:

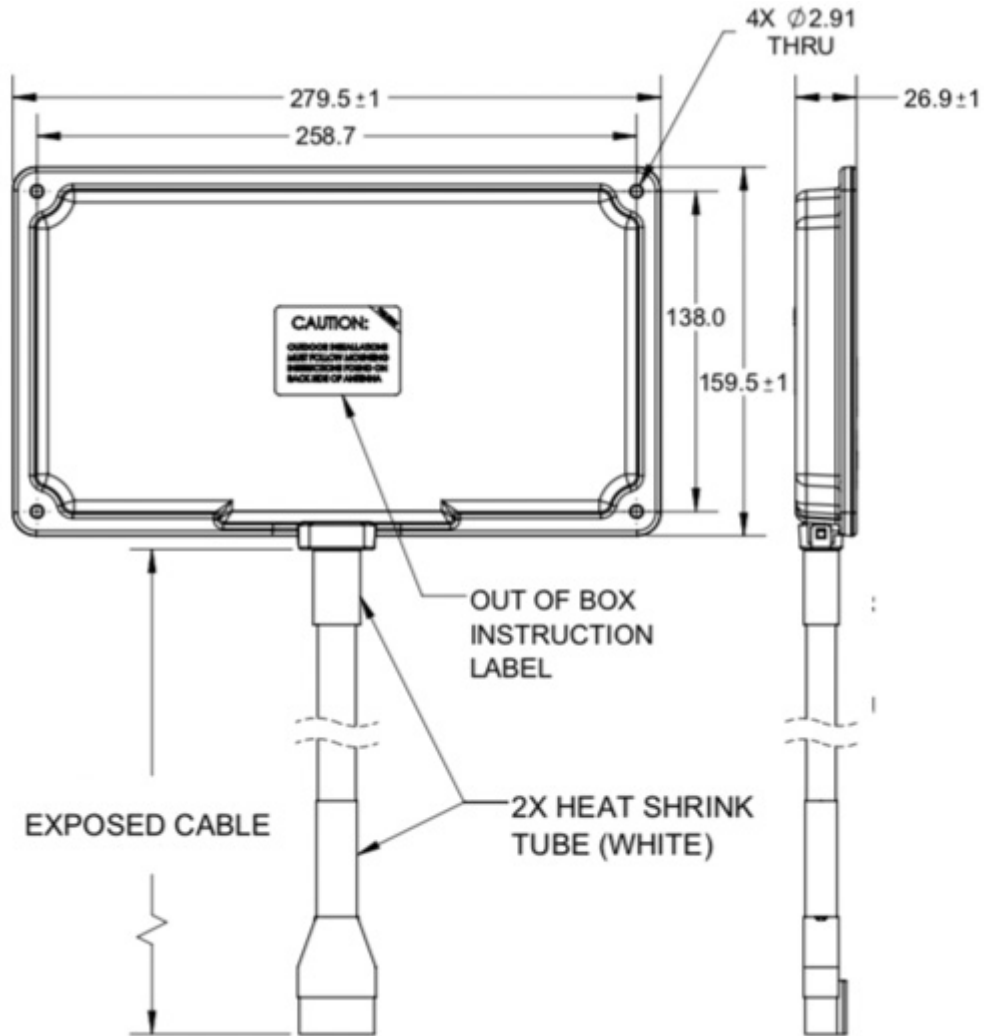
- Install the antenna vertically and mount it with the cables pointing towards the ground.
- Keep the antenna away from metal obstructions such as heating and air-conditioning ducts, large ceiling trusses, building superstructures, and major power cabling runs. If necessary, use a rigid conduit to lower 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.

Dimensions of the Antenna

The dimensions noted in the following illustrations are all in mm, unless noted otherwise.

Figure 17 *Dimensions of the Antenna*



Installing the Antenna

You can install the antenna on any wall. If you intend to install your antenna on another surface, you must provide the appropriate hardware.

**Note**

Four mounting screws are provided to mount the antenna. To ensure a safe, reliable, and long-standing installation, you must use all four screws to mount the antenna.

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 the lead-in cable can be as short as possible.

Tools and Equipment Required

A mounting installation kit is shipped with the antenna and consists of the following hardware:

- Four #8 x 1¼ in screws
- Four #8 plastic anchors
- Four metal washers
- Four end caps

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

- A Phillips screwdriver
- A drill
- A #29 (0.136-in. (s.45 mm)) drill bit (for drywall installation, other surfaces may require a different size).
- A pencil
- A small mallet or hammer

Mounting on a Vertical Surface

Follow these steps to mount your antenna on a vertical surface like a drywall surface. If you are mounting the antenna on any other type of surface, your procedure may vary slightly.

-
- Step 1** Determine the location where you will mount the antenna.
 - Step 2** Use the antenna as a template to mark the location of the four mounting holes.
 - Step 3** Use a drill and #29 drill bit to drill four holes at the locations you marked in [Step 2](#).
 - Step 4** Start a plastic anchor into each hole.
 - Step 5** Use a mallet or small hammer to seat the anchors into the wall.
 - Step 6** Align the antenna's mounting holes with the anchors.

- Step 7** Place a metal washer onto each #8 x 1¼ in screw and start them into each antenna mounting hole.
- Step 8** Use a Phillips screwdriver to secure the antenna to the wall. Do not overtighten.
- Step 9** Install the end caps into the antenna mounting holes.
- Step 10** Remove the yellow outdoor installation warning label from the antenna radome.

Outdoor Installations

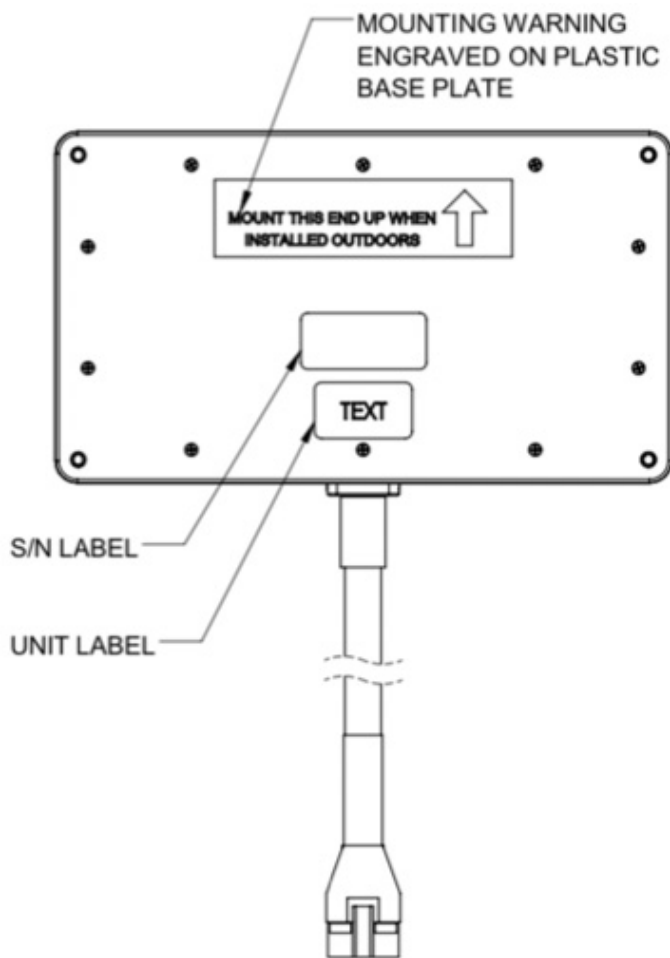
You can mount this antenna outdoors. If you mount the antenna outdoors, you must provide the mounting hardware. For outdoor installations, follow the instructions printed on the back of the antenna.



Caution

An orientation arrow is printed on the back of the antenna that indicates the proper orientation for the antenna for outdoor installations. You must install the antenna so the arrow points up to prevent any water intrusion and to provide a drain for any moisture that may accumulate inside the antenna around the cable exit points.

Figure 18 Orientation Arrow on Antenna Base Plate



Connecting the Antenna to the Access Point

The AIR-ANT2566P4W-DS has a 4-port DART connector which is connected to the access point's 4-DART port.

The antenna includes circuitry to enable self-identification of the antenna by the Cisco Catalyst 91xx Series access points. The antenna has a built-in EEPROM that can be read by the AP to automatically configure the antenna type and gain in the wireless controller.

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).

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