Cisco Wireless 9179F Access Point with CW-ANT-T-D3-N Antenna Installation Guide

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Preface

This preface describes this guide and provides information about the conventions used in this guide, and related documentation.

It includes the following sections:

- About this guide, on page v
- Conventions, on page v
- Communications, Services, and Additional Information, on page vi
- Related documentation, on page vi
- Cisco Bug Search Tool, on page vi
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- Cisco Documentation Feedback, on page vii

About this guide

This guide provides technical information and details about CW-ANT-T-D3-N Antenna.

The CW-ANT-T-D3-N Antenna is a versatile and robust solution designed to support both indoor and outdoor access point deployments. The CW-ANT-T-D3-N Antenna enables automatic recognition and configuration for optimized wireless performance. Its unique design and features make it an ideal choice for diverse environments, providing reliable connectivity and enhanced coverage for Cisco wireless access points.

Conventions

This document uses the following conventions for notes, cautions, and safety warnings. Notes and cautions contain important information that you should know.

Note Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the manual.

Caution Means *reader be careful*. Cautions contain information about something you might do that could result in equipment damage or loss of data.

Warning Safety warnings appear throughout this guide in procedures that, if performed incorrectly, can cause physical injuries. A warning symbol precedes each warning statement.

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Related documentation

The Cisco Wireless 9179F Wi-Fi 7 Access Point is an enterprise-class, tri-band (2.4 GHz, 5 GHz, 6 GHz) access point for high-density, indoor or outdoor, large public venue deployments like stadiums.

For information about the Cisco Wireless Wi-Fi 7 Access Points, see these:

- Cisco Wireless Wi-Fi 7 Access Points At-a-glance
- Cisco Wireless Ordering Guide

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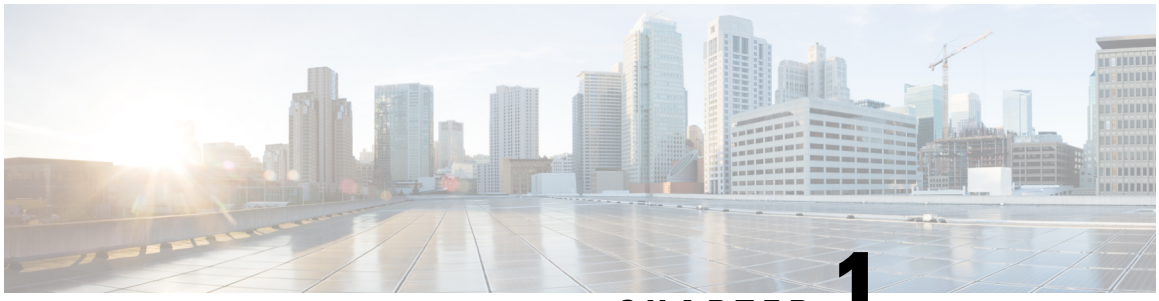


CHAPTER 1

Introduction to CW-ANT-T-D3-N Antenna

The CW-ANT-T-D3-N antenna serves as an external antenna for Wi-Fi 7 access points.

CW-ANT-T-D3-N features one port and operates as a triple-band, directional, outdoor antenna that supports a variety of deployments. With its IP67 rating, it functions reliably in both indoor and outdoor environments. The antenna integrates a one-wire EEPROM to support the SIA (Self-Identifying Antenna) feature. It includes an N-Type male connector plug and features an articulating joint that allows the antenna to pivot ±90 degrees from the N-Connector axis.

- Technical specifications, on page 1
- Azimuth and Elevation Radiation patterns, on page 3
- Antenna information, on page 5
- Safety precautions, on page 7
- Antenna dimensions, on page 8

Technical specifications

System requirements

This antenna is designed for indoor and outdoor use with Cisco Wireless 9179F Wi-Fi 7 Access Point.

Antenna specifications

Figure 1: CW-ANT-T-D3-N Antenna

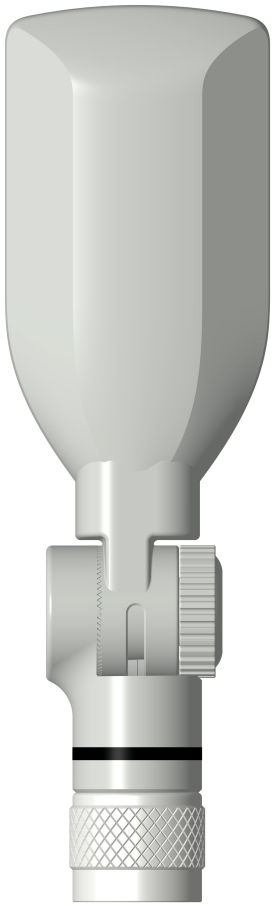


Table 1: Mechanical specifications

Parameters	Descriptions
Antenna type	Directional
SIA Functionality	Available
Nominal input impedance	50 Ohms
Polarization	Linear
Length	139mm
Width	41mm
Depth (thickness)	23mm

Parameters	Descriptions
Weight (without mount)	0.161 lbs. (73 g)
Connector type	N-Type Male Connector
Operating temperature range	-40ºC to 65ºC -4° to 122°F (-20° to 50°C) including solar load.
Environment rating	IP66, IP67
Environmental sensors	Supports air pressure sensors

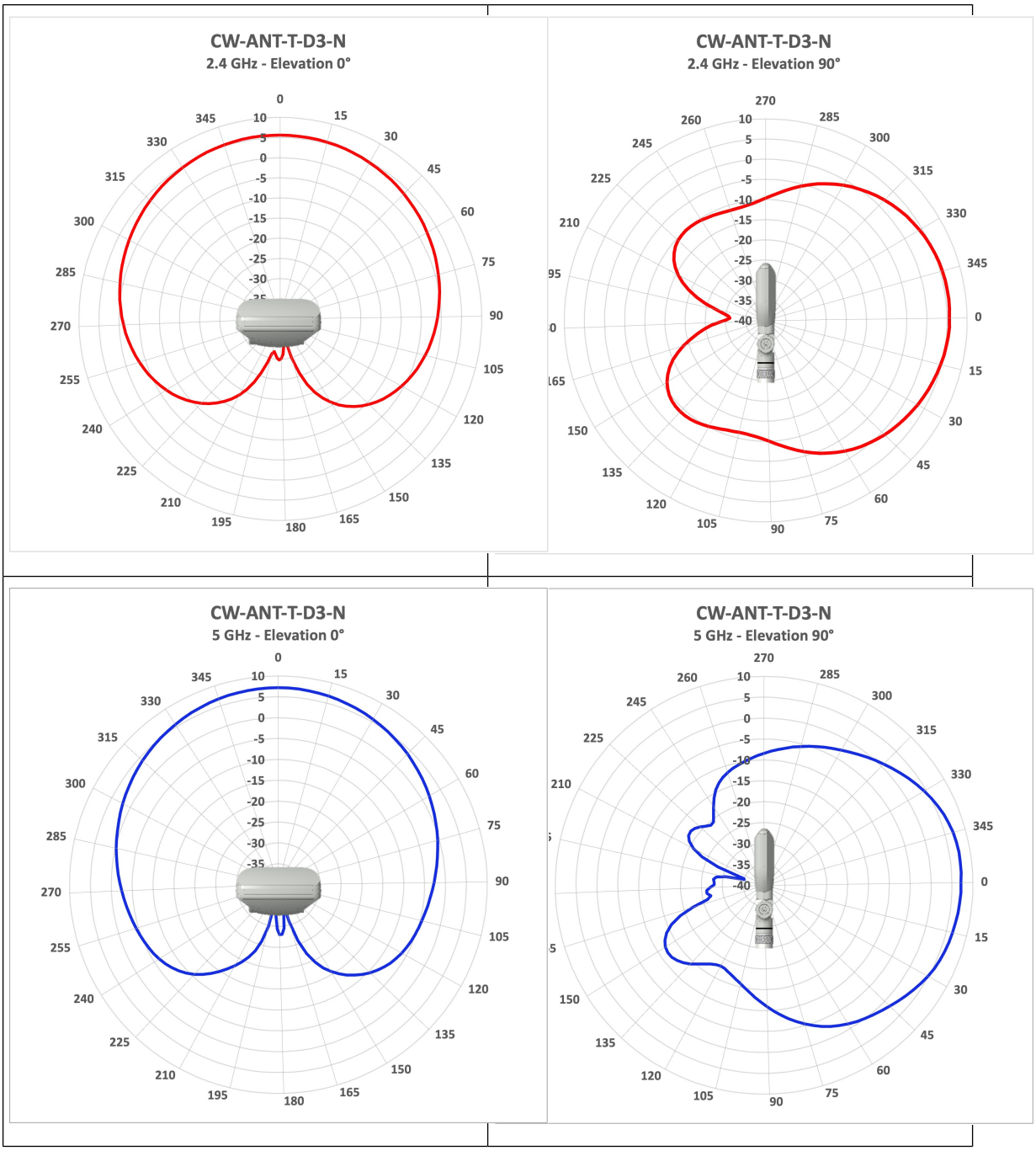
Table 2: Parameters and values

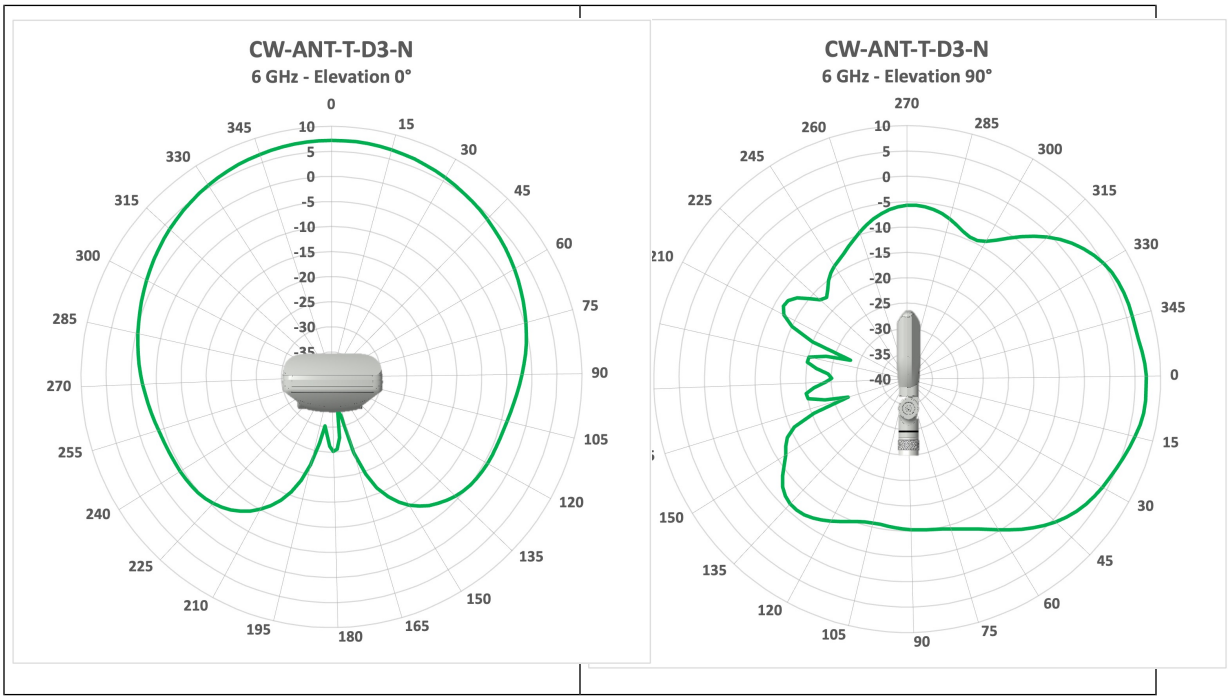
Parameters	Value starting range	Value ending range
Operating frequency range	2400–2500 MHz	5180–7125 MHz
Peak Gain (6dBi)	2400	2500
Peak Gain (7.5dBi)	5158	5900
Peak Gain (7.5dBi)	6000	7125
Average Az Beamwidth	2400-2500: 118	
Azimuth Plane 3-dB Beamwidth –V-Pol	95°	148°
Azimuth Plane 3-dB Beamwidth–H-Pol	144°	150°
Azimuth Plane 6-dB Beamwidth –V-Pol	120°	172°
Azimuth Plane 6-dB Beamwidth –H-Pol	171°	179°
Elevation Plane 3-dB Beamwidth–V-Pol	44°	30°
Elevation Plane 3-dB Beamwidth–H-Pol	34°	33°
VSWR	<2.0	<2.0
Front-to-back ratio (V-Pol)	> 20 dB	> 20 dB
Front-to-back ratio (H-Pol)	> 10 dB	> 10 dB

Azimuth and Elevation Radiation patterns

These illustrations show the CW-ANT-T-D3-N antenna radiation patterns:

Table 3: Radiation patterns



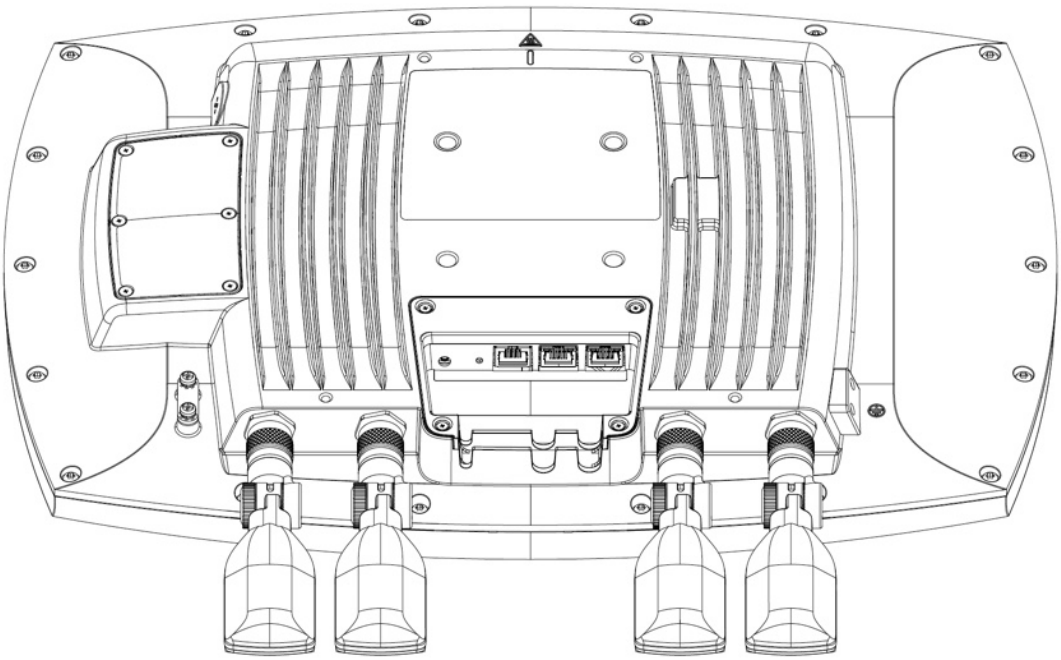


Antenna information

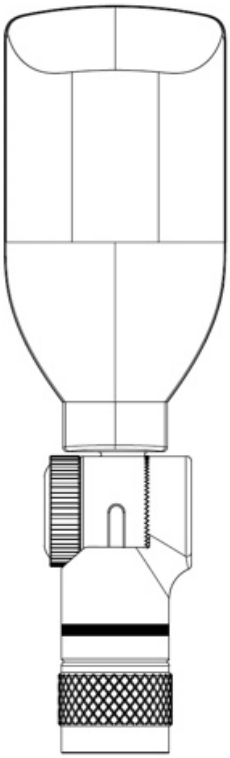
Features

The CW-ANT-T-D3-N antenna is a single-port, triple-band, directional antenna designed for Wi-Fi 7 access points. The Cisco Wireless 9179F Wi-Fi 7 Access Point supports four CW-ANT-T-D3-N antennas.

Figure 2: CW9179F with CW-ANT-T-D3-N antenna



For more information about Cisco Wireless 9179F Wi-Fi 7 Access Point, see *Cisco Wireless 9179F Series Wi-Fi 7 Access Point Hardware Installation Guide*.



These are the features.

- Suitable for both indoor and outdoor use (IP66/IP67 rated).
- Integrated with support for self-identifying antenna (SIA) feature.
- Includes N-Type male connector and articulating joint (pivots ±90°).
- Frequency bands: 2400–2500 MHz, 5180–7125 MHz.
- Supports operating temperatures from –40°C to 65°C.

Safety precautions

Safety notes

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 sound installation, read and follow these safety precautions. *They may save your life!*

Before you install:

- If you are installing an antenna for the first time, for your safety and that of others, seek professional assistance. Your Cisco sales representative can explain which mounting method to use for the size and type of antenna you are about to install.
- Select your installation site with safety and performance in mind. Remember that electric power lines and phone lines look alike. For your safety, assume that any overhead line can kill you.
- Call your electric power company. Tell them your plans and ask them to look at your proposed installation. While it may seem like a minor inconvenience, it could save your life.
- Plan your installation carefully and thoroughly before you begin. Successful raising of a mast or tower is essentially a matter of coordination. Assign each person a specific task and 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, remember:
  - *Do not* use a metal ladder.
  - *Do not* work on a wet or windy day.
  - *Do* dress properly: shoes with rubber soles and heels, rubber gloves, long–sleeved shirt, or jacket.
- 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. The slightest touch of these parts to a power line completes an electrical path through the antenna and the installer: *You!*
- If any part of the antenna system should contact a power line, do not touch it or remove it yourself. Instead, call your local power company. They would remove it safely.
- If an accident occurs with the power lines, call for qualified emergency help immediately.

For a list of all the warning statements and their translations, see *Translated Safety Warnings for Cisco Aironet Access Points* at:

http://www.cisco.com/c/en/us/td/docs/wireless/access_point/warnings/reference/guide/ap_warn1.html

Safety warnings

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.

Warning

- Installation of the antenna near power lines is dangerous. For your safety, follow the installation directions.
- In order to comply with international radio frequency (RF) exposure limits, dish antennas should be located at a minimum of 8.7 inches (22 cm) or more from the bodies of all persons. Other antennas should be located a minimum of 7.9 inches (20 cm) or more from the bodies of all persons.
- Do not work on the system or connect or disconnect cables during periods of lightning activity.
- This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.
- 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, refer to national and local codes (for example, U.S.: NFPA 70, National Electrical Code, Article 810; in Canada: Canadian Electrical Code, Section 54).

Antenna dimensions

CW-ANT-T-D3-N is

- Tri-Band
- Articulate N-Male
- Directional antenna.

The dimensions noted in these illustrations are all in millimeters, unless noted otherwise.

Figure 3: Antenna dimensions

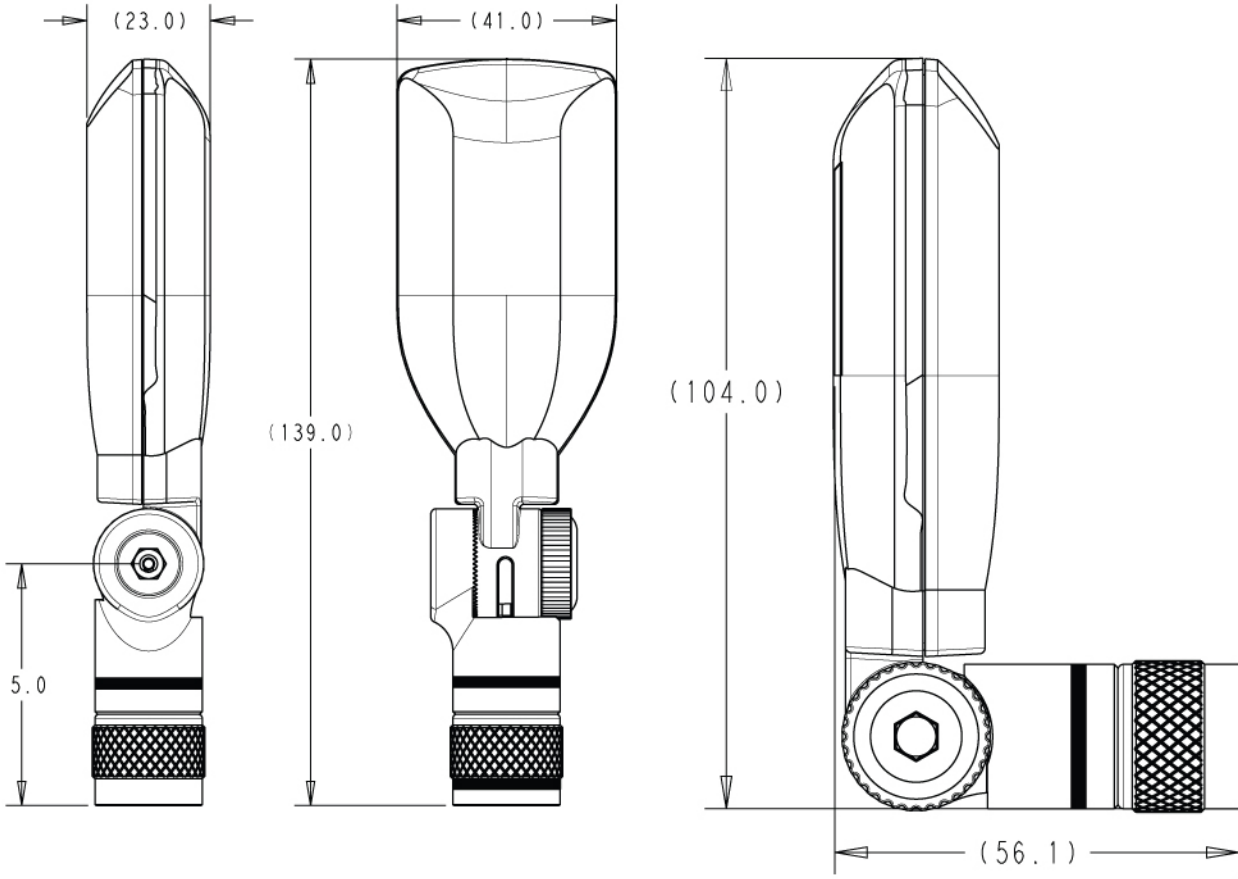
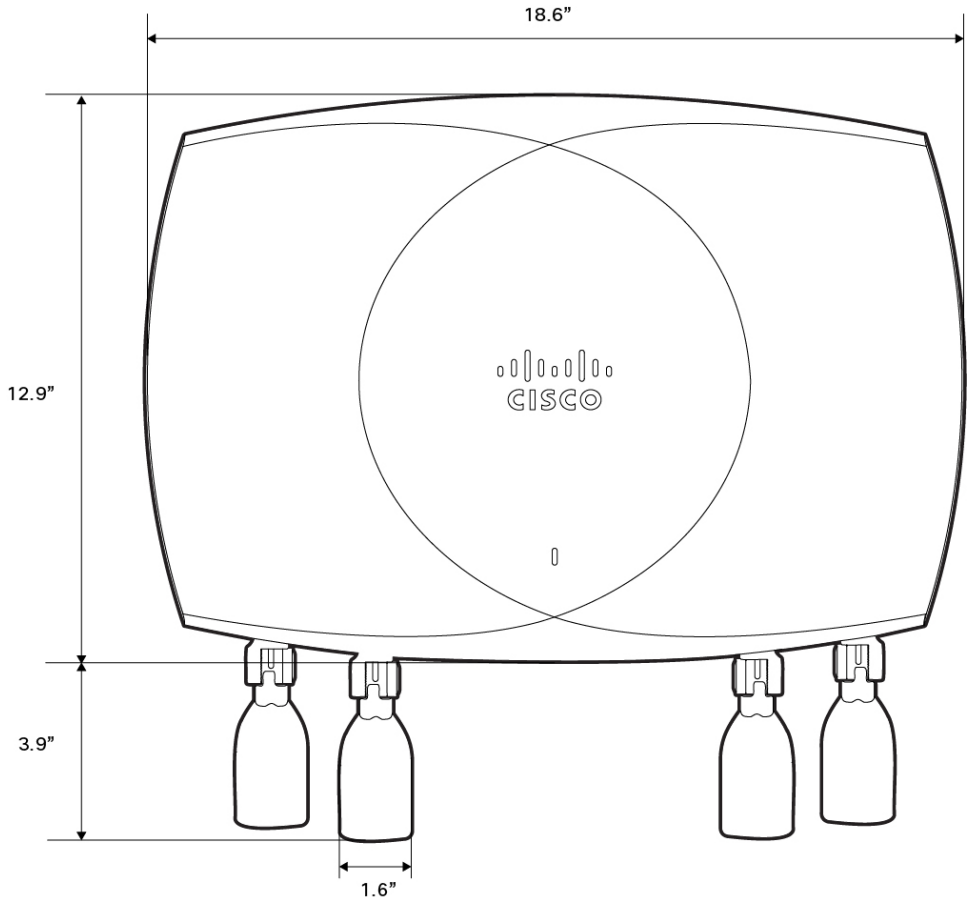


Figure 4: Dimensions of the Antenna with AP



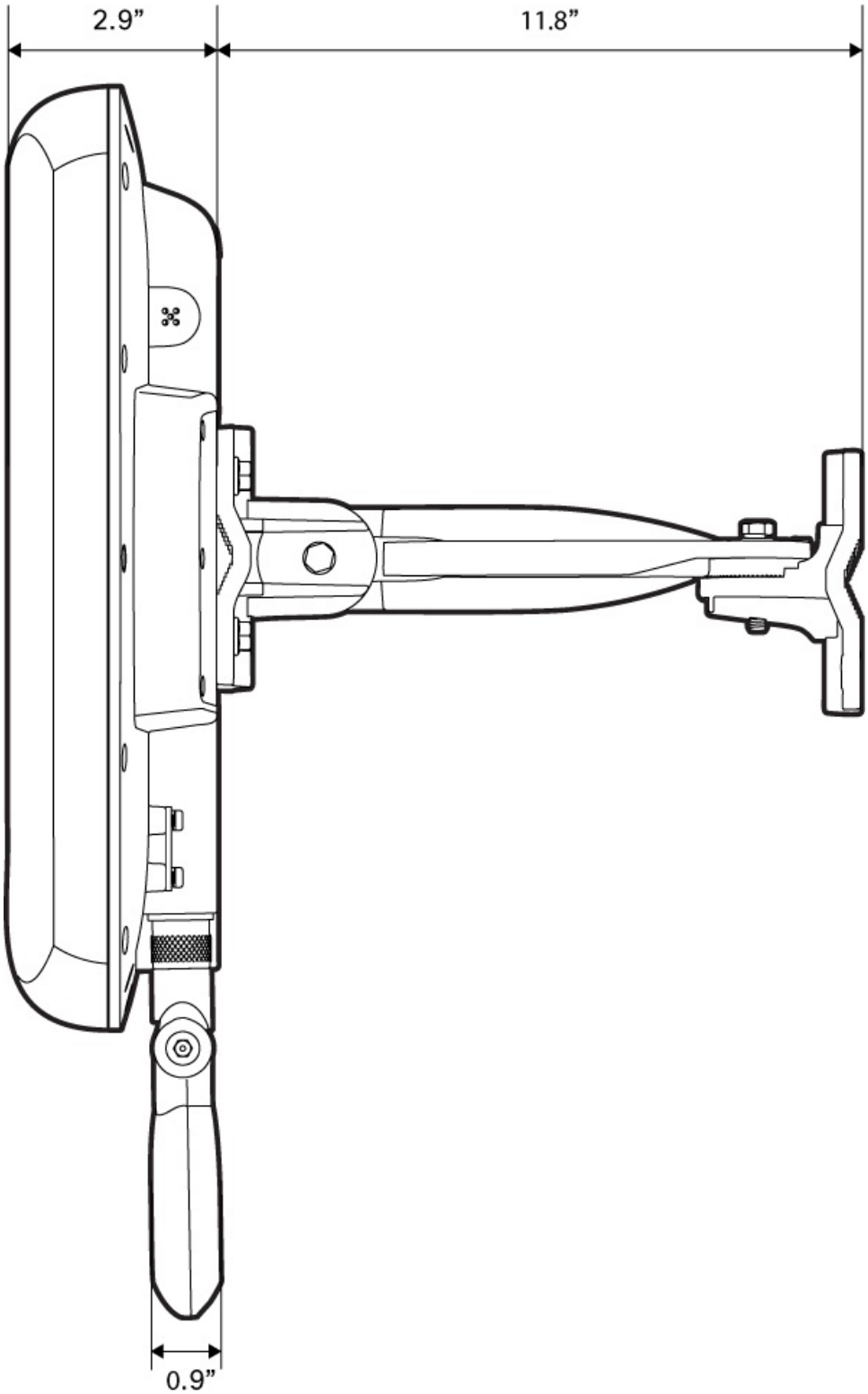
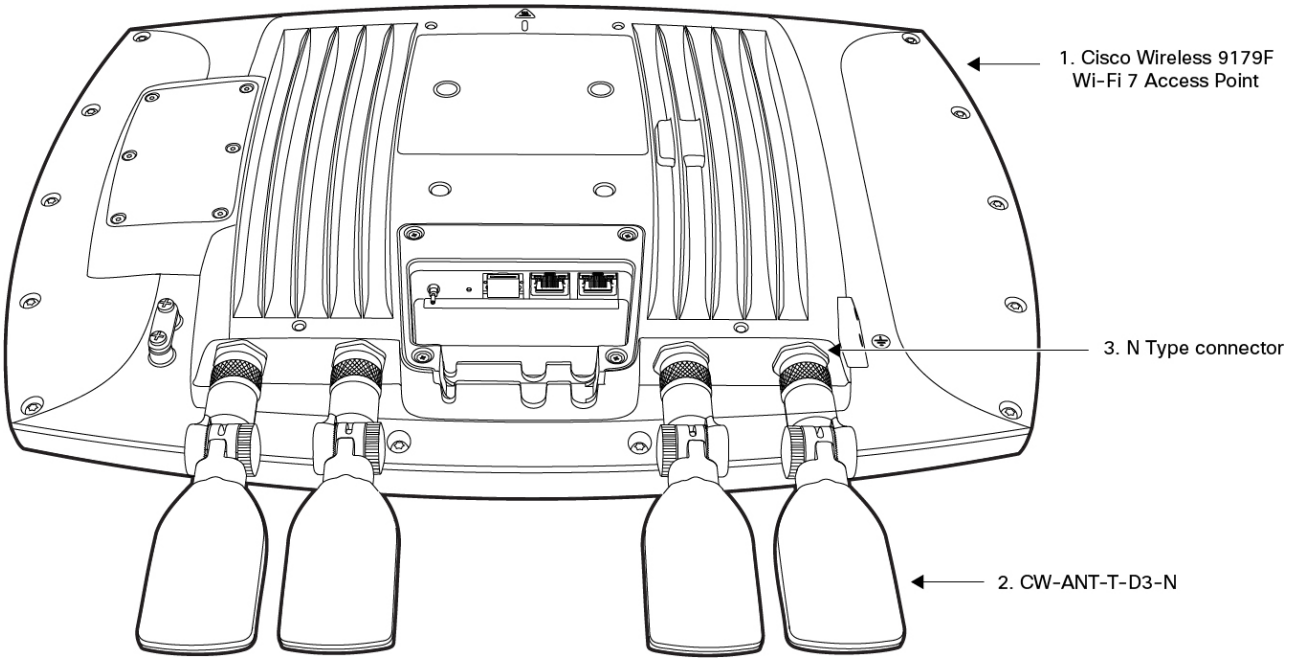
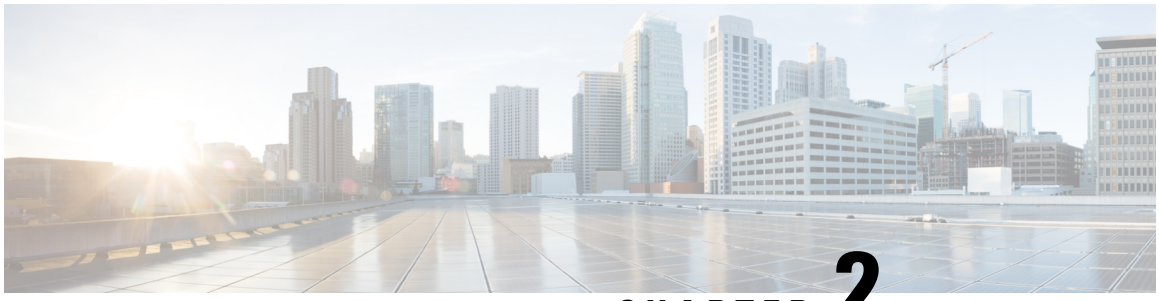

2.9”
11.8”
0.9”

Figure 5: Assembly view of CW-ANT-T-D3-N Antenna





CHAPTER 2

Install the Antenna

This chapter describes the installation instructions of CW-ANT-T-D3-N antenna with Cisco Wireless 9179F Wi-Fi 7 Access Point and contains these sections:

- Installation guidelines, on page 13
- Install the Antenna on Cisco Wireless 9179F Access Point, on page 15

Installation guidelines

Optimal performance factors

Antennas transmit and receive radio signals that are susceptible to RF obstructions and common sources of interference, which can reduce the throughput and range of the connected devices.

These guidelines ensure optimal performance:

- Keep the antenna away from metal obstructions such as
  - heating,
  - air-conditioning ducts,
  - large ceiling trusses,
  - building superstructures, and
  - major power cabling runs.

Tip Use a rigid conduit to lower the antenna away from these obstructions.

- In an outdoor environment, connect the antenna to a lightning arrestor and ensure proper grounding.
- Due to the tight side lobe configuration, the antenna does not support RRM. Configure the channel and power for it statically.
- Australian regulatory restrictions are applied when the device is configured for the -Z domain with the country set as Australia. This results in a band lock on radios that are enabled.

Location considerations

The density of the materials used in a building's construction determines the number of walls the signal can pass through and maintains adequate signal strength.

Consider these before choosing the location for your antenna:

- The density of the materials used in a building's construction determines the number of walls the signal can pass through and maintains 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 precast concrete walls without degrading signal strength.
  - Signals penetrate three or four concrete and woodblock walls without degrading signal strength.
  - Signals penetrate five or six walls constructed of drywall or wood without degrading signal strength.
  - Signals are likely to reflect off a thick metal wall and may not penetrate it at all.
  - Signals are likely to reflect off a chain–link fence or wire mesh spaced between 1 and 1 1/2 inches. (2.5 cm 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.

Important safety instructions

Danger 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

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

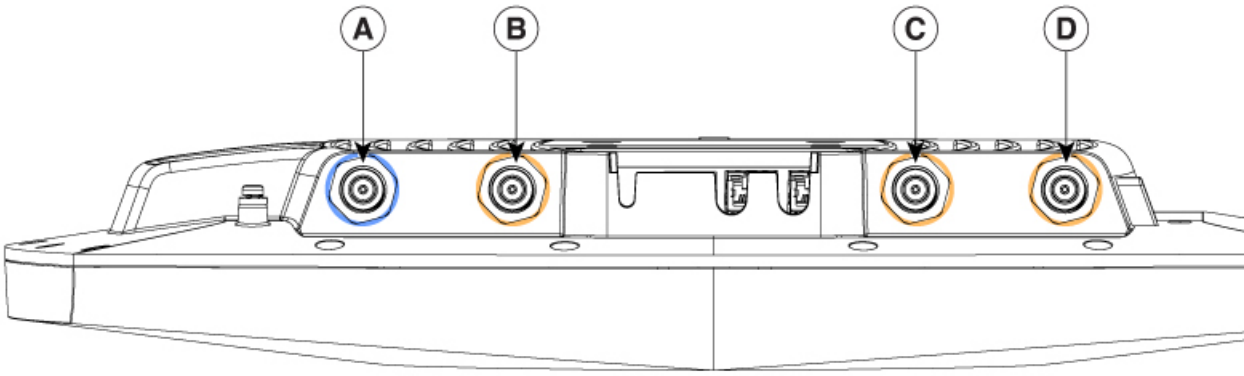
Danger **To reduce the risk of electric shock, refer to national and local codes for proper installation and grounding of antennas. Statement 1052**

Note **To reduce the risk of electric shock, the chassis of this equipment needs to be connected to permanent earth ground during normal use. Statement 0445**

Install the Antenna on Cisco Wireless 9179F Access Point

This procedure provides information about installing the CW-ANT-T-D3-N antenna to Cisco Wireless 9179F Wi-Fi 7 Access Point. Cisco Wireless 9179F Wi-Fi 7 Access Point supports four N-TYPE ports. You can install the antenna in any of these ports as in the figure.

Figure 6: N-TYPE ports



A	Port A 2.4/5 GHz (Purple Ring)	B	Port B 2.4/5 GHz (Orange Ring)
C	Port C 2.4/5 GHz (Orange Ring)	D	Port D 2.4/5 GHz (Orange Ring)

Complete these steps to install the antenna.

Before you begin

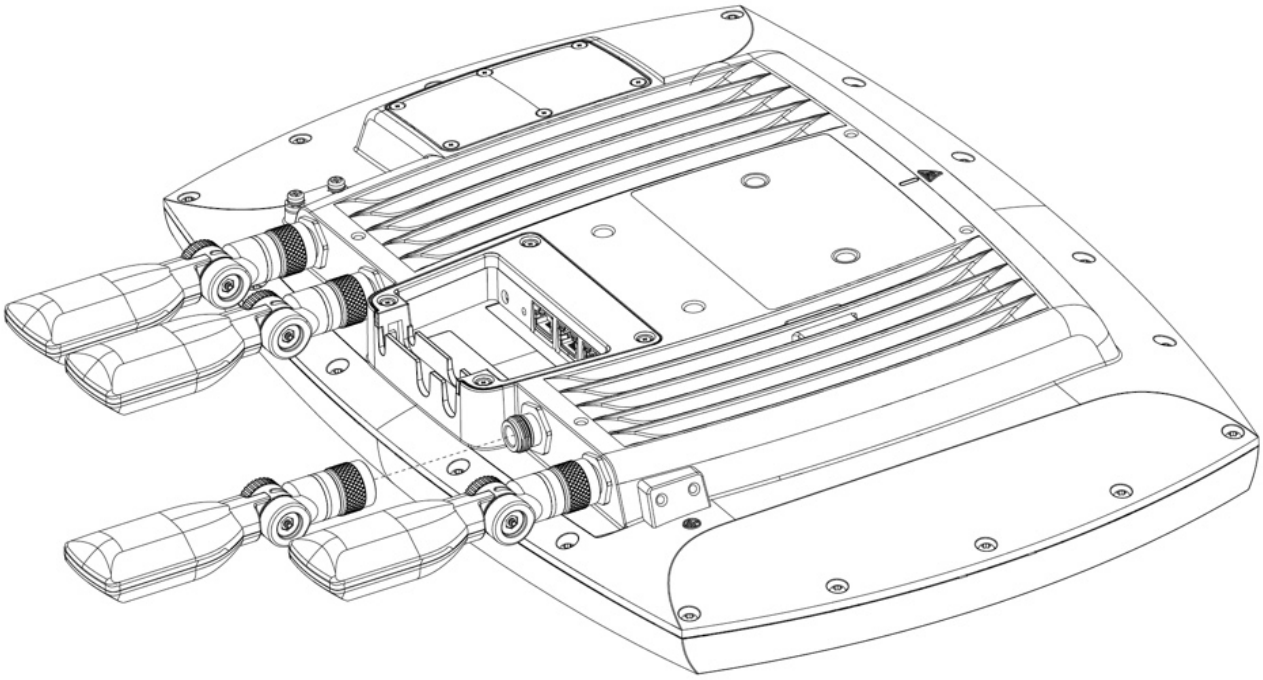
Because the antennas transmit and receive radio signals, they are susceptible to RF obstructions and common sources of interference that can reduce throughput and range of the device to which they are connected.

Procedure

Step 1 Place the Cisco Wireless 9179F Access Point on stable ground to ensure safety during installation.

Step 2 Align the antenna with the N-Type connector port on the access point.

Figure 7: Align antenna



Step 3 Plug the antennas into the access point by connecting each antenna to one of the four N-Type connector ports. Ensure that all four ports have antennas attached.

Step 4 Rotate the metal portion of the antenna connector to secure it firmly to the access point.

Do not use or apply force to the plastic portion of the antenna when securing.

Step 5 To tilt the antenna, gently loosen the adjustment knob.

Note
We recommend that you do not over-loosen or remove the adjustment knob. Loosen the knob only enough to allow the antenna to tilt as needed.

Step 6 Adjust or articulate the antenna between +90° and -90° as required for optimal signal coverage.

Step 7 Once the position is set, tighten the adjustment knob securely.

Figure 8: Antenna installed

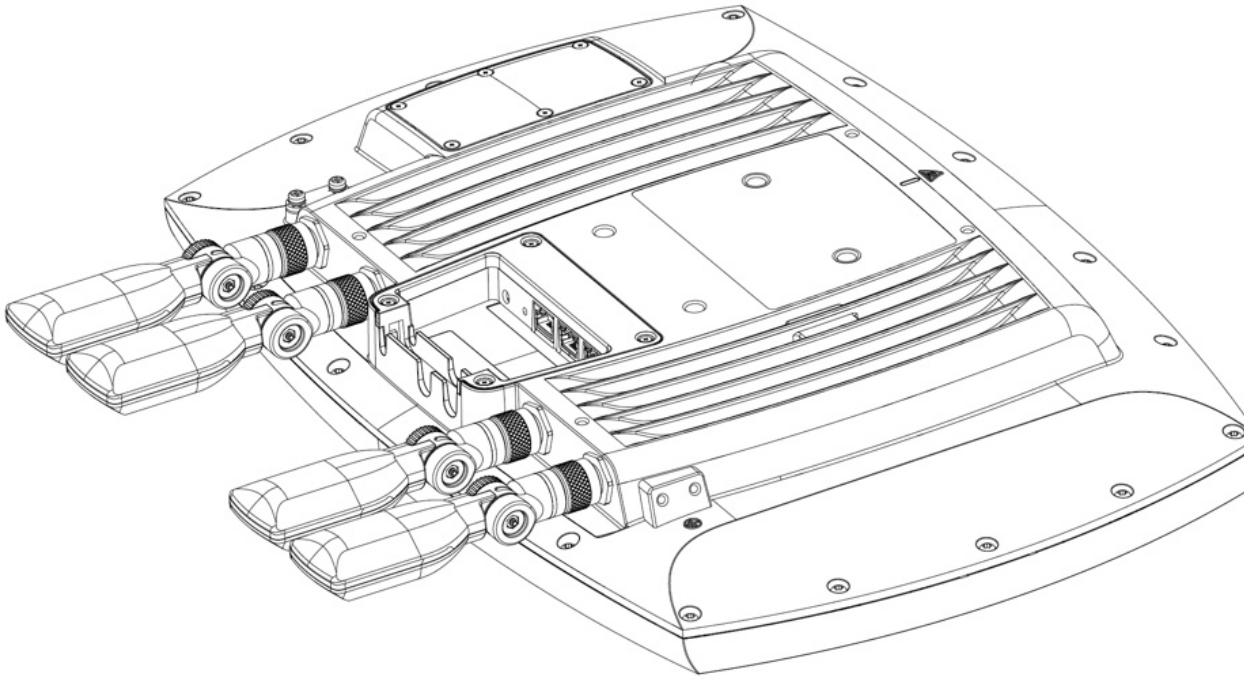
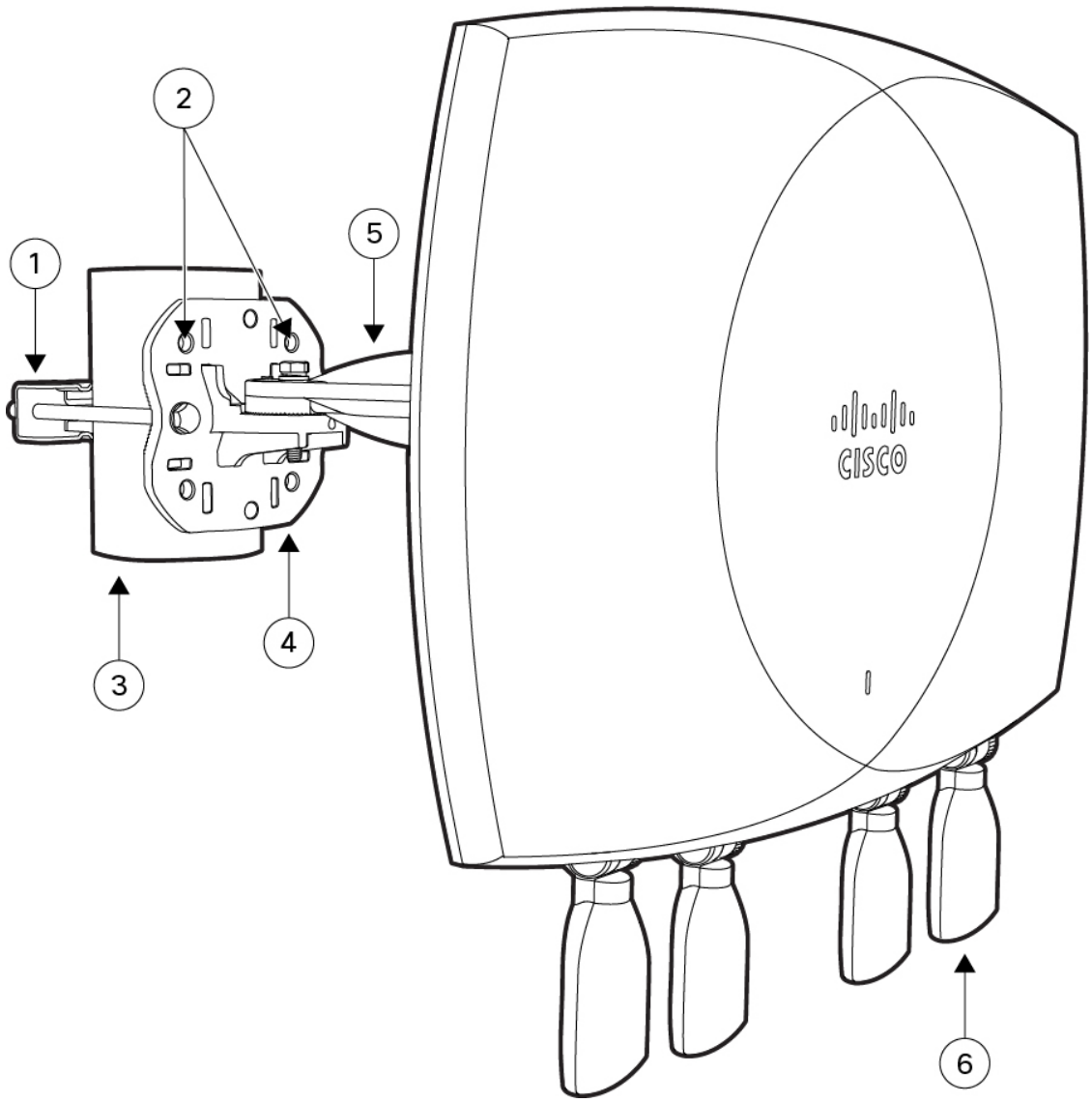


Figure 9: Antenna Assembly for Pole Mounting



1	Clamp	2	Flange mounting hole
3	Small pole	4	Mount flange
5	Arm	6	CW-ANT-T-D3-N antenna