



About Connected Grid Antennas

This section describes the Cisco 1120 Connected Grid Router antennas, and describes how to find product and installation information for all Cisco Connected Grid antennas. This chapter includes these sections:

- [Router Antennas Overview, page 71](#)
- [Installing or Replacing Module Antennas, page 74](#)
- [Antenna Specifications, page 75](#)

Router Antennas Overview

This section describes the antennas used with the router.

Router Antennas

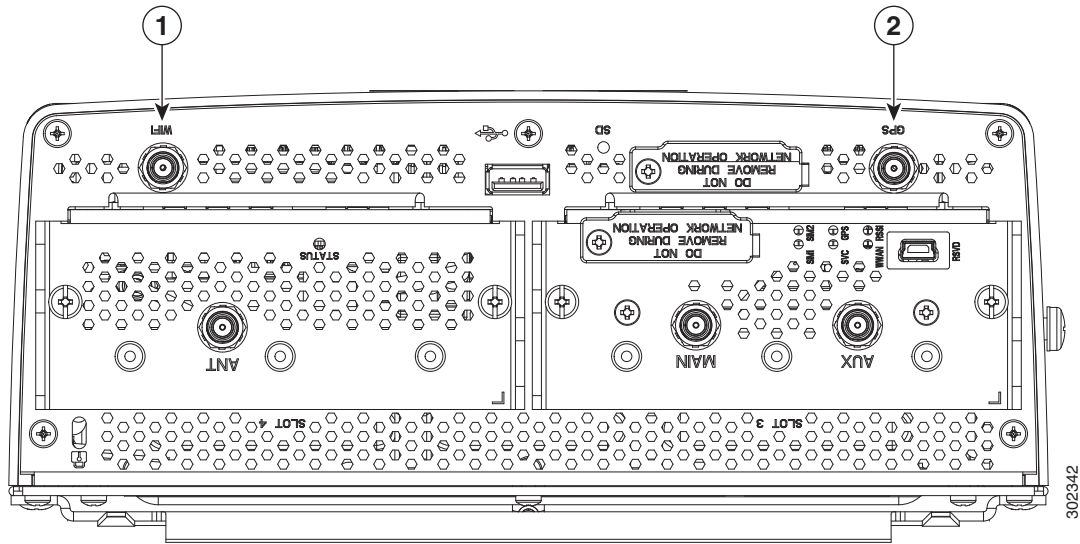
The router ships with two antennas that support router functionality:

- [GPS Antenna, page 72](#)
- [WiFi Antenna, page 73](#)

Module Antennas

The router also supports Connected Grid module antennas. For more information, see [Connected Grid Module Antennas, page 74](#).

Figure 1 Router WiFi and GPS Antenna Locations



- 1 WiFi antenna port
- 2 GPS antenna port

GPS Antenna

The Connected Grid GPS Antenna kit (optional) includes the following items:

- GPS antenna with integrated 15-foot coaxial cable (see [Figure 2 on page 73](#))
- Male QMA connector adapter, to connect the cable to the router GPS antenna port
- Hardware required to mount the antenna, for example on the substation or utility cabinet exterior

This antenna provides connectivity to the GPS system, from which the router derives precise time and location information while operating on the network.

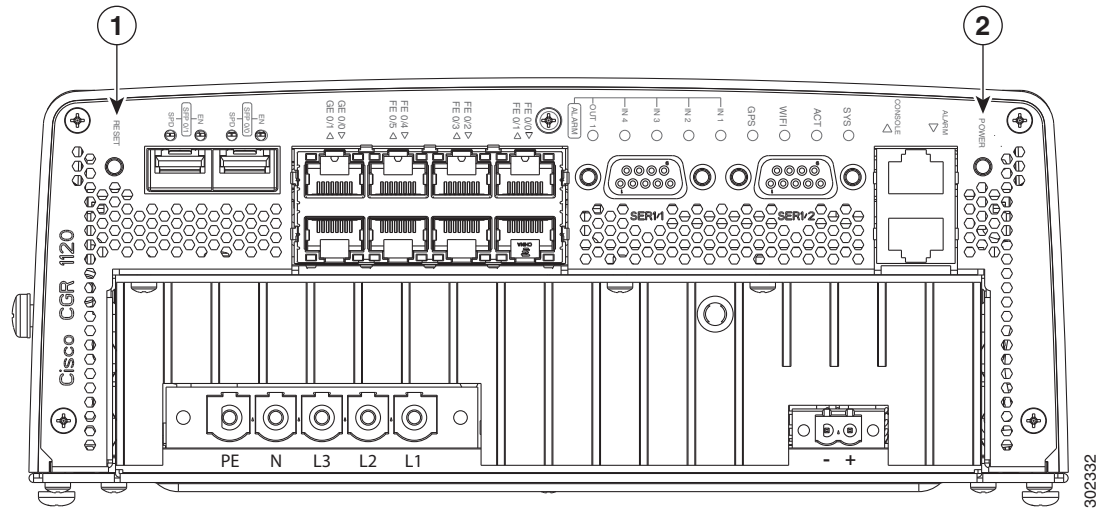
GPS Antenna Information

Caution: If the antenna is mounted outside, the antenna assembly must be grounded either at the bracket or at the external building point where the cabling enters the building. This is critical because if it's not grounded, the CGR 1120 chassis would be isolated on the antenna card very close to AC isolation requirements. Also see Statement 1052 below.

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

- The GPS antenna is a field-replaceable component.
- For detailed technical information about the GPS antenna, see [GPS Antenna Specifications, page 75](#).
- For information about the GPS status LED, see [Router LED Locations and States, page 83](#).
- For more information about the internal GPS module, see the [Internal GPS Module, page 29](#).

Figure 2 GPS Antenna with Mounting Hardware and Male QMA Adapter



WiFi Antenna

The Connected Grid 4GE LTE WiFi antenna kit (optional) includes the following items:

- 4G LTE indoor swivel-mount antenna (see [Figure 3 on page 74](#))
- Male QMA connector adapter, to connect the antenna to the router WiFi antenna port

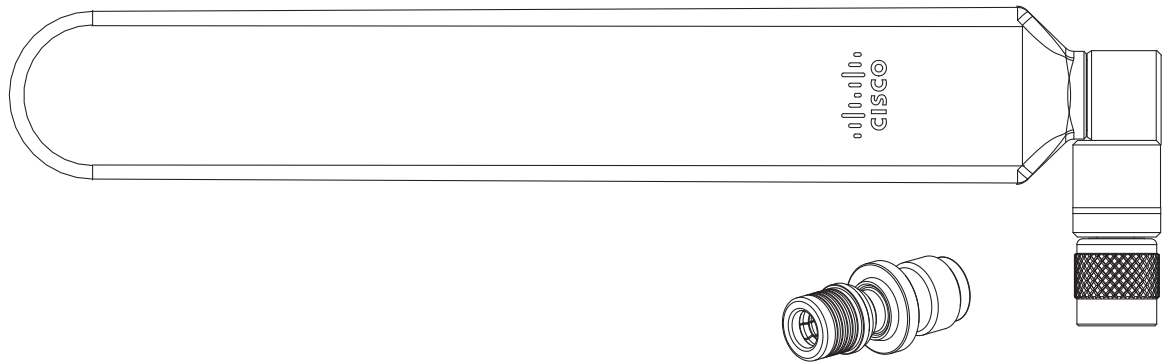
The WiFi antenna provides connectivity to the router internal short-range access point.

The short-range access point enables a WiFi link so users can connect to the router from anywhere within WiFi range. For example, a technician can check the status of the router from outside the substation or utility cabinet by connecting to the router over the WiFi link.

WiFi Antenna Information

- The Cisco order number of the WiFi antenna kit is: ANT-4G-DP-IN-TNC.
- The WiFi antenna is a field-replaceable component.
- For detailed technical information about the WiFi antenna, see [WiFi Antenna Specifications, page 76](#).
- For information about the WiFi status LED, see [Router LED Locations and States, page 83](#).
- For more information about the WiFi short-range access point that provides the WiFi connection to the router, see [WiFi Short-Range Access Point, page 30](#).

Figure 3 4G LTE WiFi Antenna and Male QMA Adapter



Connected Grid Module Antennas

In addition to the two fixed antennas (GPS and WiFi), the router supports additional antennas that provide connectivity to the Connected Grid modules installed in the router.

The router supports up to two Cisco Connected Grid modules. Each module requires one antenna or two antennas (one main antenna and one diversity antenna). The total number of antennas installed with the router depends on:

- Number of modules installed in the router.
- Module types that are installed in the router

For detailed information about the Connected Grid module antennas, see the Connected Grid antennas documentation, at: www.cisco.com/go/cg-modules

Installing or Replacing Module Antennas

Depending on the configuration you specified, the router could arrive in the shipping container with all required antennas already installed and connected to the corresponding Cisco Connected Grid modules, also installed in the router.

However, you might need to install an antenna when:

- You purchase a module separately from the router. The antenna is included with the module, and must be installed on the router to complete the module installation.
- You purchase an antenna separately to replace a faulty or damaged antenna.
- The antenna form factor prevents requires that it be installed after the router has shipped.

Where to Find Antenna Installation Information

For instructions on how to install or replace antennas on the router, see the Cisco Connected Grid antenna documentation on Cisco.com, at: www.cisco.com/go/cg-modules

Table 1 Connected Grid Modules for CGR 1000 Series Routers Documentation

Title	Description
Cisco Connected Grid Antennas Installation Guide	Installation procedures and safety information for all models of Cisco Connected Grid antennas.
Cisco Connected Grid Antennas Overview	An overview of antenna technology, antenna types, and Cisco Connected Grid antennas and accessories.

Table 1 Connected Grid Modules for CGR 1000 Series Routers Documentation (continued)

Title	Description
Choosing Your Cisco Connected Grid Antenna	A decision tree to help you choose the correct antennas for your platform and physical environment.

Antenna Specifications

This section contains specifications for the fixed antennas that ship with the router.

For all technical details and specification for these and other Cisco Connected Grid antennas, see the Cisco Connected Grid antenna documentation on Cisco.com at: www.cisco.com/go/cg-modules

GPS Antenna Specifications

Specification	Value
Dimensions	Cable length: 15 feet (460.8 cm) Diameter of antenna rodome: 1.97 inches (50 cm)
Connector (cable to router)	TNC male
Frequency	1575.42 MHz +/-5MHz
Nominal Impedance	50 Ohms nominal
VSWR	2.0 Max. in band
Peak Gain	4.0 dBi min. @ zenith
Minimum Gain	1 dBi @ 10 degrees elevation
Pattern Type	Hemispherical
Polarization	Circular RHCP
LNA Gain	26 dB +/-2 dB DC Voltage: 3-5VDC
Out of Band Attenuation	20 dB min. at 1575+ / -50MHz
Max. Input Power	20 mA max @ 3.3VDC +/- .3VDC
Operating Temperature	-40° C to +85° C
IP Code Rating	IP67 (Outdoor use)
Wind Speed Rating	165 MPH
Compliance	RoHS

WiFi Antenna Specifications

Specification	Value
Dimensions	9.0 x 1.2 x 0.6 inches (229 x 30.5 x 15 mm)
Weight	1.73 ounces (49 grams)
Connector	TNC male
Frequency	698 to 806 MHz 824 to 894 MHz 880 to 960 MHz 1710 to 1880 MHz 1850 to 1990 MHz 1920 to 2170MHz 2100 to 2500 MHz 2500 to 2690 MHz
Nominal Impedance	50 ohms
VSWR	< 2.5:1
Peak Gain	0.5 dBi (698-960 MHz) 2.2 dBi (1710-2700 MHz)
Average Efficiency	55% (698-960 MHz) 73% (1710- 2700 MHz)
Polarization	Linear
Max. Input Power	3W
Operating Temperature	-35° C to +70° C
Compliance	RoHS