



Cisco IoT, 3-port Multi-Element Antenna (ANT-3-5G2G1-P-O)

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Overview

This section describes the technical specifications and installation instructions for the Cisco 3-in-1, Cellular (4G/5G) and Passive Global Navigation Satellite Systems (GNSS) Antenna (ANT-3-5G2G1-P-O), hereafter referred to as the antenna.

The antenna is an integrated 3-in-1 multi-element radiator. It has two cellular antennas and one passive GNSS antenna in a single radome.

The antenna is designed for applications requiring a compact, direct-mount form factor. Some of the deployment environments are:

- Utilities
- Navigation
- Tracking

Antenna Features

The antenna has the following features:

- Multi-port connectivity: 2x ports for cellular (4G/5G FR1) and 1x port for passive GNSS (L1/L5)
- Wideband coverage: 617–960 MHz and 1700–5900 MHz for 4G/5G; 1559–1610 MHz (L1) and 1164–1215 MHz (L5) for GNSS
- Rugged design:

- Impact-resistant (IK10 rated)
- UV protected (UL746C f1)
- Weather-resistant (IP67 compliant)
- Compliance:
 - CE/UKCA certified
 - E-mark UN ECE R10
 - UL94 5VA flammability rated

Technical Specifications

Mechanical Specifications

The antenna consists of a single-housing radome measuring 4.14 inches in diameter and 1.63 inches in height. It features a bottom-exiting 3/4" mounting stud (thread), accompanied by an internal tooth lockwasher and a 3/4" jam nut to secure the unit to the mounting surface.



Note The cellular elements include a built-in ground plane, making the antenna performance independent of the external mounting surface ground plane.

Figure 1: Top View

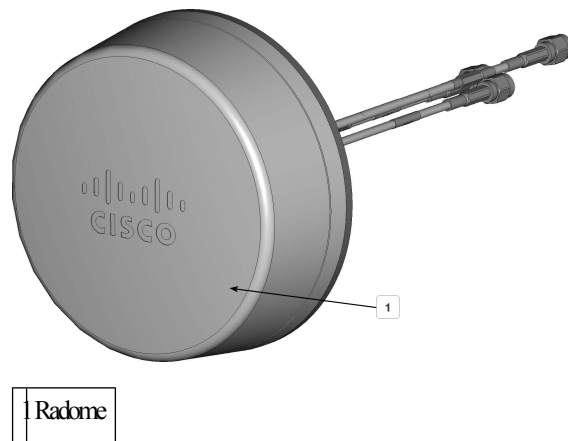
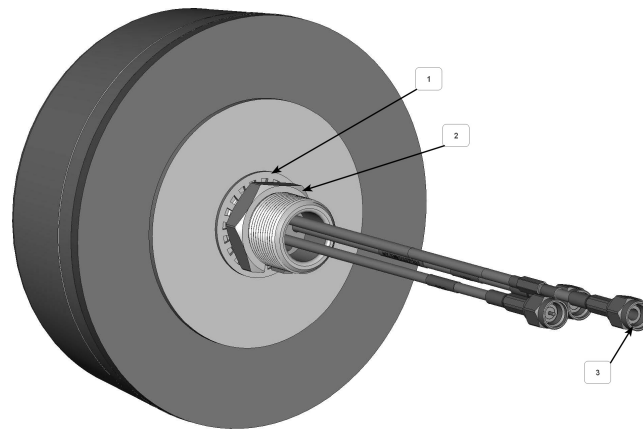


Figure 2: Bottom View

1	Internal tooth washer
2	2 3/4" jam nut
3	3x SMA plugs

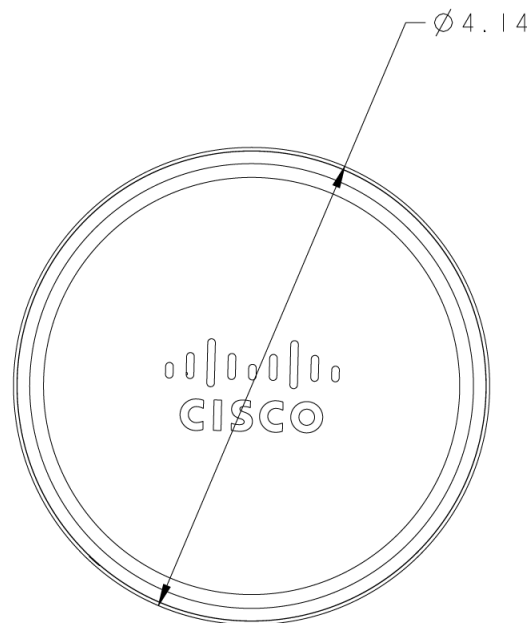
Figure 3: Radome Dimensions

Figure 4: Antenna and cable dimensions

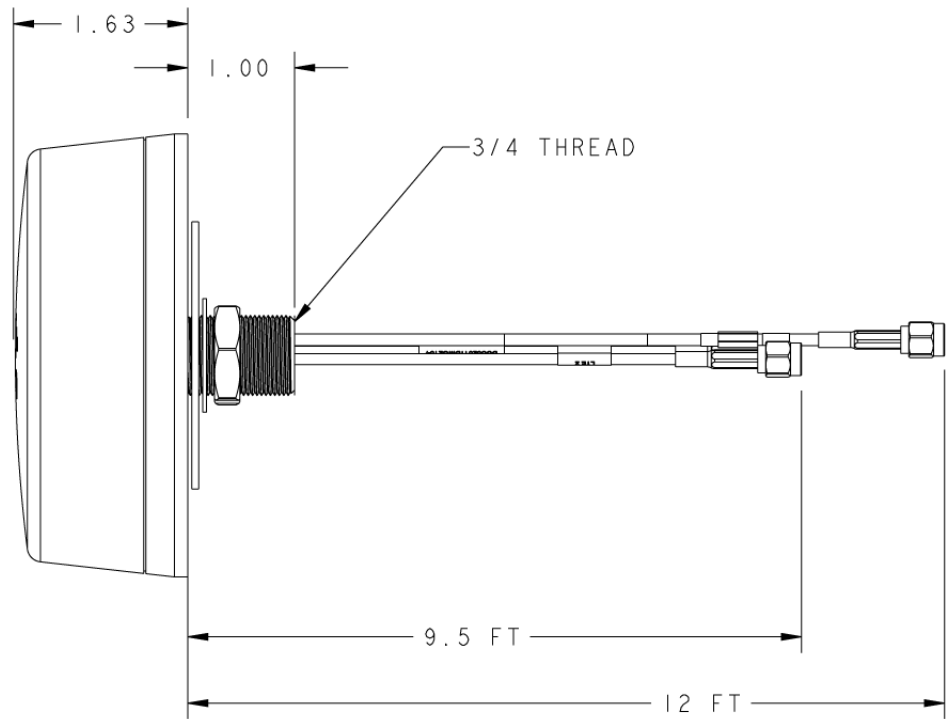


Table 1: Mechanical Specifications

Specification	Measurement
Radome Diameter	4.14 in (105.2 mm)
Height	1.63 in (41.4 mm)
Weight	430g (~1 lbs.)
Housing Material	PC, UV Protected
Color	Black
Mounting Thread	3/4 in
Mounting Hole Diameter	0.8 in (20 mm)

Cable and Connector Specifications

The section lists the antenna's cable length, type and connectors.

Table 2: Cable and Connector Specifications

Port Name	Ports	Cable Type	Cable Length	Connector
5G FR1 (Cell 0/1)	2	RG316X	9.5 ft (2896 mm)	SMA Plug (Male)
GNSS (L1/L5)	1	RG316X	12 ft (3658 mm)	SMA Plug (Male)

Electrical Specifications

The following tables provide the electrical specifications for the antenna:

Nominal Impedance	50 Ω
Power Withstanding	20 W

Table 3: Frequency Bands

Frequency Band (MHz)	VSWR (Max)	Peak Gain (Avg)	Polarization
5G: 617-960 MHz	$\leq 3.0:1$	1.9 dBi	Linear
5G: 1700-5900 MHz	$\leq 2.8:1$	4.0 dBi	Linear
GNSS L1: 1559-1610 MHz	$\leq 2.3:1$	2.6 dBic	RHCP
GNSS L5: 1164-1215 MHz	$\leq 2.1:1$	2.1 dBic	RHCP

Environmental and Operational Specifications

The following table is a summary of the environmental specifications:

Table 4: Environmental Specifications

Specification	Description
Operating Temperature	−40 to +85°C (−40 to 185°F)
Storage Temperature	−40 to +85°C (−40 to 185°F)
Ingress Protection	IP67

Specification	Description
Impact Protection	IK10
Flammability	UL94 5VA

Antenna Installation

This procedure explains how to direct-mount the antenna onto a metal plane or mounting bracket.

Before you begin

Tools and Equipment Required

- 20 mm (~0.8 in) hole saw or drill bit
- 1-1/8 inch open-ended wrench
- Deburring tool



Note If mounting on a pole, we recommend using the universal mounting bracket kit (ANT-MK-U)

Procedure

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- Step 1** Drill a 20 mm (~0.8 in) diameter hole through the mounting plane.
Remove all burrs and sharp edges from the hole to protect the cables.
- Step 2** Wipe the surface around the hole to ensure proper seating and seal of the integrated gasket.
- Step 3** Carefully pass the three SMA plug cables through the hole.
- Step 4** Insert the 3/4" threaded mounting stud through the hole until the radome base sits flat against the surface.
- Step 5** From the underside of the mounting surface:
- slide the internal tooth lockwasher over the cables and thread onto the stud.
 - slide and hand tighten the 3/4" jam nut.
- Step 6** Tighten the jam nut using the 1-1/8 inch open-ended wrench.
Torque the nut to 20–25 N-m (15–18 lb-ft).
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The ANT-3-5G2G1-P-O antenna is securely installed.

What to do next

Connect the 3x SMA cables to the supporting device.

Standalone Antenna Performance

Figure 5: VSWR Vs Frequency

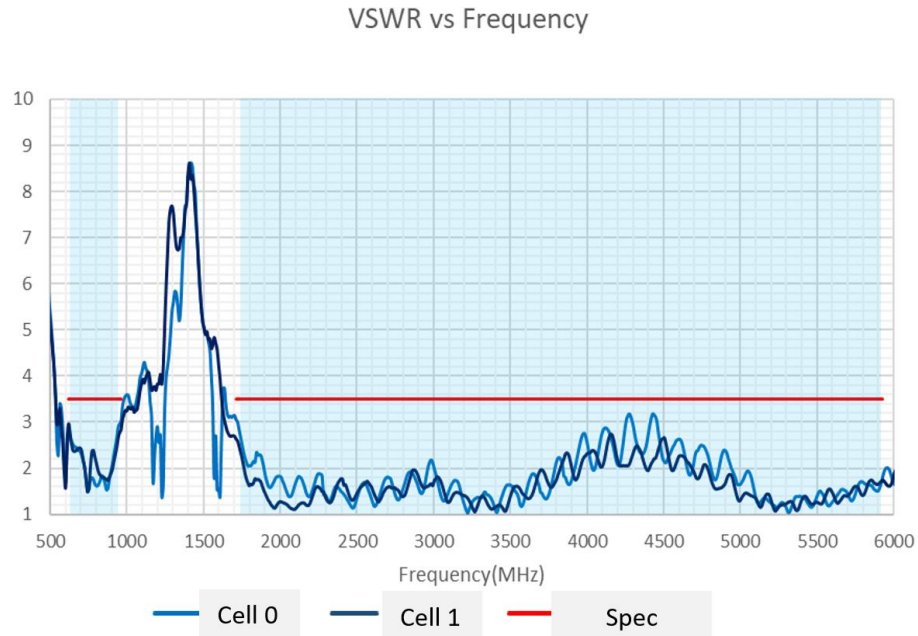


Figure 6: 5G FR1 Peak Gain Vs Frequency

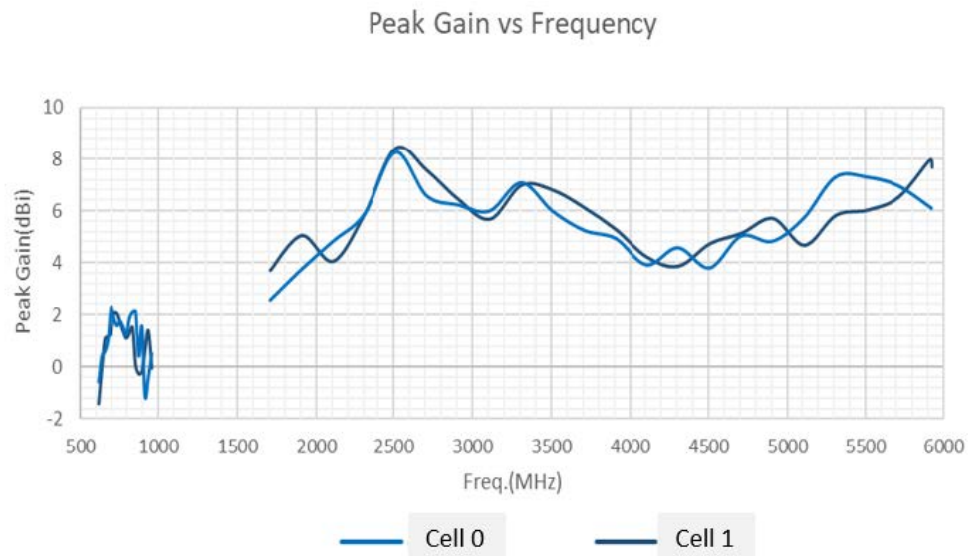


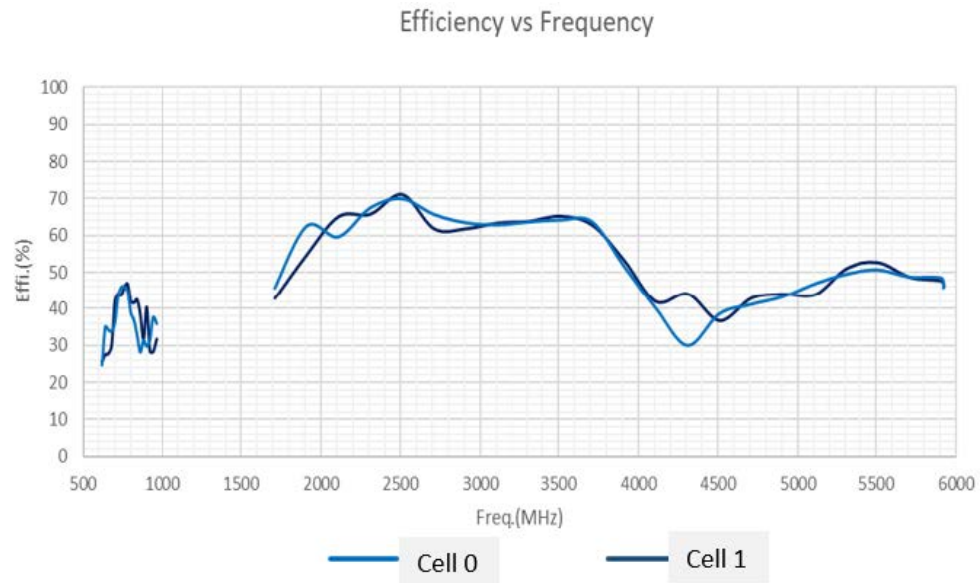
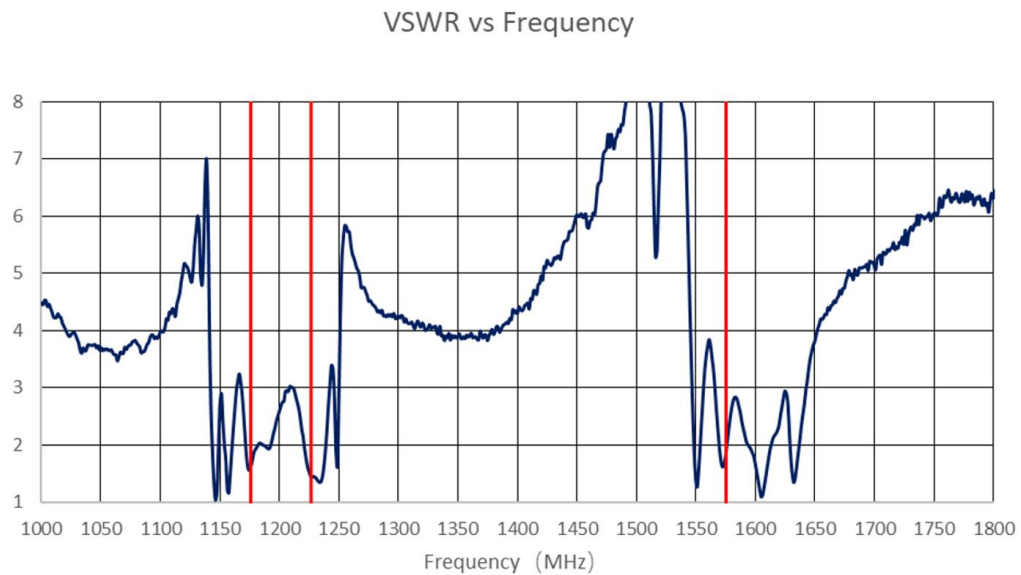
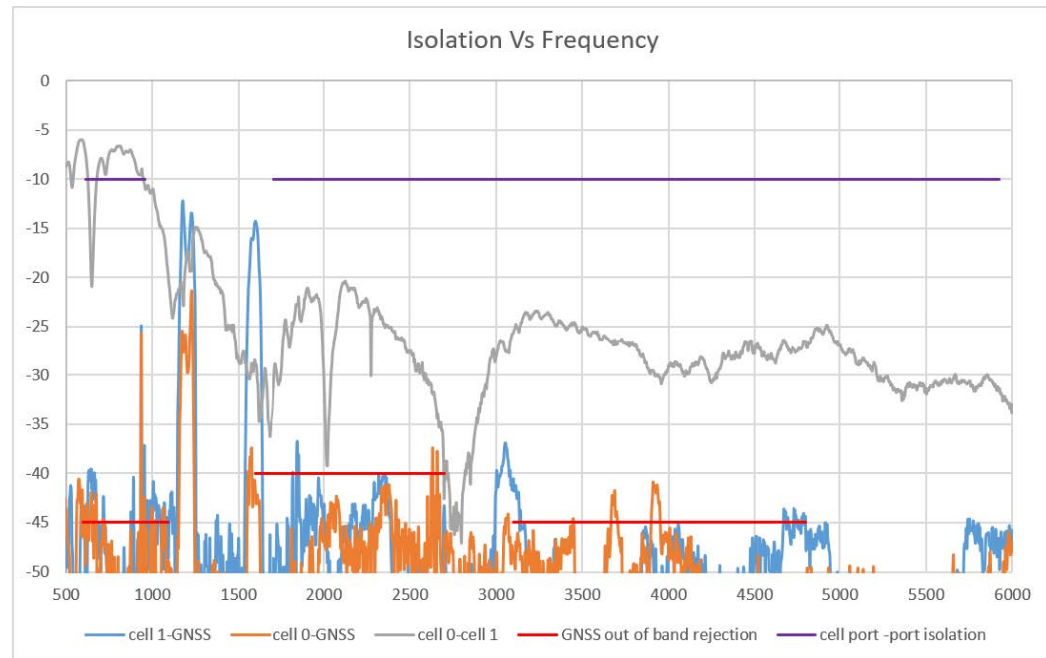
Figure 7: 5G FR1 Efficiency Vs Frequency**Figure 8: GNSS L1/L5 VSWR**

Figure 9: GPS L1/L5 Antenna Isolation**Figure 10: GPS L1/L5 Peak Gain**