

# 5G Sub-6 GHz Pluggable Interface Module

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# 5G Sub-6 GHz Support on IoT Routing

The 5G Sub-6 GHz Pluggable Interface Modules offer 5G capability to the IoT Industrial Router family.

The supported pluggable modules product IDs are:

| PID | modem | First Release Support |
|---|---|---|
| P-5GS6-R16SA-GL | EM9293 | IOS XE release 17.15.1a |
| P-5GS6-RC-GL | EM8695 | IOS XE release 26.1.2 |

### Features and Limitations

The following features and limitations apply across all IoT routing platforms unless specifically mentioned:

- IoT routing platforms support a maximum of two pluggable modules, with a combination of 5G and 4G PIMs.
- The pluggable module can be started or stopped through the CLI under exec mode. Also, it can be configured to power off the module to reduce power consumption as needed.
- The capability to disable FDD Band 30 for vehicular applications is available.

The following are product specific:

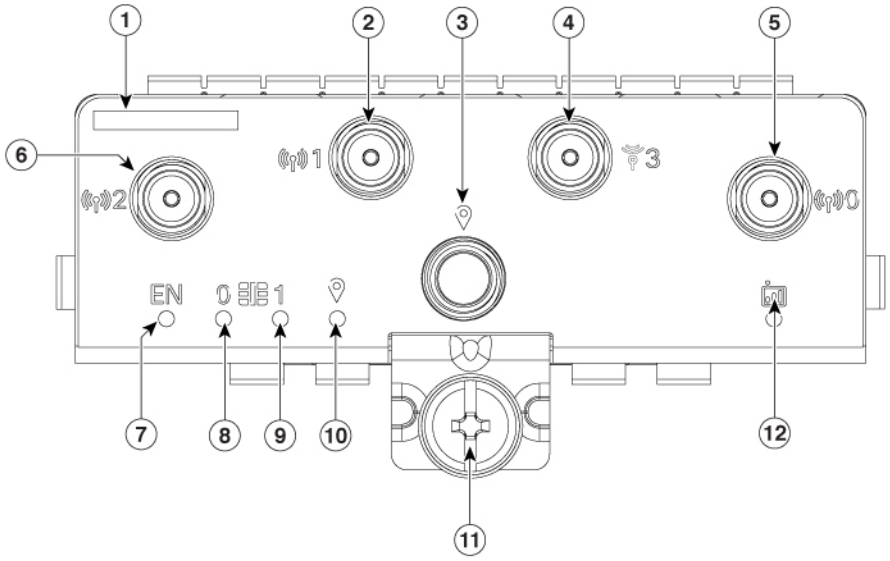
- On the with the P-5GS6-R16SA-GL module:

- The module is software and hardware supported on the base.

# 5G Pluggable Interface Module Overview

The following figure shows the face plate of P-5GS6-GL and P-5GS6-R16SA-GL pluggable modules:

***Figure 1: 5G Pluggable Interface Module - P-5GS6-GL, P-5GS6-R16SA-GL***




| | |
|---|---|
| 1 | The printed PID<br>**Note**<br>Modules P-5GS6-GL, P-5GS6-R16SA-GL share the same face plate. |
| 2 | Antenna 1 (SMA) |
| 3 | GPS (SMA) |
| 4 | Antenna 3 (SMA) |
| 5 | Antenna 0 (SMA) |
| 6 | Antenna 2 (SMA) |
| 7 | Enable LED |
| 8 | SIM 0 LED |
| 9 | SIM 1 LED |
| 10 | GPS LED |
| 11 | M3.5 thumb-screw |

| | |
|---|---|
| 12 | Service LED |

# RF Band and Port Mapping for the P-5GS6-GL and P-5GS6-R16SA-GL Antenna

The following table lists the RF band mapping for antenna ports.

### RF Band Mapping for Antenna Ports:

*Table 1: RF Band Mapping for P-5GS6-GL Module*

| Antenna Port | Technology | TX | RX |
|---|---|---|---|
| ANT 0 | 3G WCDMA | B1, B2, B3, B4, B5, B6, B8, B9, B19 | B1, B2, B3, B4, B5, B6, B8, B9, B19 |
| | 4G LTE | B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B30, B34, B38, B39, B40, B41, B66, B71 | B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B29, B30, B32, B34, B38, B39, B40, B41, B42, B43, B46, B48, B66, B71 |
| | 5G NR FR1 | n1, n2, n3, n5, n7, n8, n12, n20, n28, n38, n40, n41, n66, n71 | n1, n2, n3, n5, n7, n8, n12, n20, n25, n28, n38, n40, n41, n48, n66, n71, n77, n78, n79 |
| ANT 1 | 3G WCDMA | — | B1, B2, B3, B4, B5, B6, B8, B9, B19 |
| | 4G LTE | B5, B20, B42, B43, B48, B71 | B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B29, B30, B32, B34, B38, B39, B40, B41, B42, B43, B46, B48, B66, B71 |
| | 5G NR FR1 | n5, n48, n77, n78, n79 | n1, n2, n3, n5, n7, n8, n12, n20, n25, n28, n38, n40, n41, n48, n66, n71, n77, n78, n79 |
| ANT 2 | 3G WCDMA | — | — |
| | 4G LTE | B1, B2, B3, B4, B7, B41, B66 | B1, B2, B3, B4, B7, B25, B30, B32, B34, B38, B39, B40, B41, B42, B43, B46, B48, B66 |
| | 5G NR FR1 | n1, n2, n3, n7, n25, n41, n66, n77, n78, n79 | n1, n2, n3, n7, n25, n38, n40, n41, n48, n66, n77, n78, n79 |

| Antenna Port | Technology | TX | RX |
|---|---|---|---|
| ANT 3 | 3G WCDMA | — | — |
| | 4G LTE | — | B1, B2, B3, B4, B7, B25, B30, B32, B34, B38, B39, B40, B41, B42, B43, B46, B48, B66 |
| | 5G NR FR1 | — | n1, n2, n3, n7, n25, n38, n40, n41, n48, n66, n77, n78, n79 |

*Table 2: RF Band Mapping for P-5GS6-R16SA-GL Module*

| Antenna Port | Technology | TX | RX |
|---|---|---|---|
| ANT 0 (Filtered) | 3G WCDMA | B1, B2, B4, B5, B8, B19 | B1, B2, B4, B5, B8, B19 |
| | 4G LTE | B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B32, B34, B38, B39, B40, B41, B66, B71 | B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B29, B30, B32, B34, B38, B39, B40, B41, B42, B43, B46, B48, B66, B71 |
| | 5G NR Sub-6G | n1, n2, n3, n5, n7, n8, n12, n13, n14, n17, n18, n20, n25, n26, n28, n30, (n38), n39, n40, (n41), n66, n70, n71 | n1, n2, n3, n5, n7, n8, n12, n13, n14, n18, n20, n25, n26, n28, n29, n30, n38, n40, n41, n48, n66, n70, n71, n75, n76, n77, n78, n79 |
| ANT 1 | 3G WCDMA | — | — |
| | 4G LTE | (B42), (B43), (B48) | B1, B2, B3, B4, B7, B25, B30, B32, B38, B39, B40, B41, B42, B43, B48, B66 |
| | 5G NR Sub-6G | (n48), (n77), (n78), (n79) | n1, n2, n3, n4, n7, n25, n30, n38, n40, n41, n48, n66, n70, n75, n76, n77, n78, n79 |
| ANT 2 (Filtered) | 3G WCDMA | — | B1, B2, B4, B5, B8, B19 |
| | 4G LTE | (B41) | B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B29, B30, B32, B34, B38, B39, B40, B41, B42, B43, B48, B66, B71 |
| | 5G NR Sub-6G | n38, n41, (n77), (n78) | n1, n2, n3, n5, n7, n8, n12, n13, n14, n18, n20, n25, n26, n28, n29, n30, n38, n40, n41, n48, n66, n70, n71, n75, n76, n77, n78, n79 |

| Antenna Port | Technology | TX | RX |
|---|---|---|---|
| ANT 3 | 3G WCDMA | — | — |
| | 4G LTE | B42, B43, B48 | B1, B2, B3, B4, B7, B25, B30, B32, B38, B39, B40, B41, B42, B43, B46, B48, B66 |
| | 5G NR Sub-6G | n48, n77, n78, n79 | n1, n2, n3, n4, n7, n25, n30, n38, n40, n41, n48, n66, n70, n75, n76, n77, n78, n79 |

**Note** Bands in parenthesis are used for EN-DC or CA.

### Port Mappings for 5G-ANTM-0-4-B on the P-5GS6-GL and P-5GS6-R16SA-GL PIMs

The following table lists the port mappings using the 5G-ANTM-O-4-B antenna as an example, mapping to the ports on the P-5GS6-GL and P-5GS6-R16SA-GL pluggable module.

| 5G-ANTM-O-4-B | P-5GS6-GL, P-5GS6-R16SA-GL |
|---|---|
| MAIN 0 (LTE1) | ANT 0 |
| MAIN 1 (LTE3) | ANT 1 |
| DIV 0 (LTE2) | ANT 2 |
| DIV 1 (LTE4) | ANT 3 |
| GNSS | GPS |

The following link contains the antenna specifications and installation instructions for 5G NR (5G-ANTM-O-4-B):

https://www.cisco.com/c/en/us/td/docs/routers/connectedgrid/antennas/installing-combined/b-cisco-industrial-routers-and-industrial-wireless-access-points-antenna-guide/m-5g-antm-04b.html#Cisco_Generic_Topic.dita_e780a6fe-fa46-4a00-bd9d-1c6a98b7bcb9

# Cisco P-5GS6-RC-GL Pluggable Interface Module Overview

The Cisco P-5GS6-RC-GL is a high-performance, 5G RedCap (Reduced Capability) pluggable interface module (PIM) designed for industrial and IoT applications. It provides a cost-effective, power-efficient transition path for customers migrating from LTE to 5G connectivity.

The module supports 5G Standalone (SA) mode, network slicing, and modern eSIM standards (SGP.32), providing a robust, secure, and manageable connectivity solution for next-generation industrial routers.

**Note** This module is designed to work with a passive GNSS antenna, active GNSS antennas are not supported.

*Figure 2: 5G Pluggable Interface Module - P-5GS6-RC-GL Face Plate*




| | |
|---|---|
| 1 | The printed PID |
| 2 | ANT 0 (MAIN) |
| 3 | GNSS |
| 4 | ANT 1 (DIV) |
| 5 | Enable LED |
| 6 | SIM 0 LED |
| 7 | SIM 1 LED |
| 8 | GNSS LED |
| 9 | M3.5 thumb-screw |
| 10 | Service LED |
| 11 | SIM Slot 1 |
| 12 | SIM Slot 0 |

# RF Band and Port Mapping for the P-5GS6-RC-GL Antenna

The following table lists the RF band mapping for antenna ports.

### RF Band Mapping for Antenna Ports:

*Table 3: RF Band Mapping for P-5GS6-RC-GL Module*

| Antenna Port | Technology | TX | RX |
|---|---|---|---|
| ANT 0 (MAIN) | 4G LTE | B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B30, B34, B38, B39, B40, B41, B42, B43, B48, B66, B70, B71, B106 | B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B30, B34, B38, B39, B40, B41, B42, B43, B48, B66, B70, B71, B106 |
| | 5G RedCap NR | n1, n2, n3, n5, n7, n8, n12, n13, n14, n18, n20, n25, n26, n28, n30, n38, n40, n41, n48, n66, n70, n71, n77, n78, n79 | n1, n2, n3, n5, n7, n8, n12, n13, n14, n18, n20, n25, n26, n28, n30, n38, n40, n41, n48, n66, n70, n71, n77, n78, n79 |
| ANT 1 (DIV) | 4G LTE | — | B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B30, B34, B38, B39, B40, B41, B42, B43, B48, B66, B70, B71, B106 |
| | 5G RedCap NR | — | n1, n2, n3, n5, n7, n8, n12, n13, n14, n18, n20, n25, n26, n28, n30, n38, n40, n41, n48, n66, n70, n71, n77, n78, n79 |

### Port Mappings for ANT-3-5G2G1-P-O on the P-5GS6-RC-GL PIM

The following table lists the port mappings using the ANT-3-5G2G1-P-O antenna as an example, mapping to the ports on the P-5GS6-RC-GL pluggable module.

**Note** This module is designed to work with a passive GNSS antenna, active GNSS antennas are not supported.

| ANT-3-5G2G1-P-O | P-5GS6-RC-GL |
|---|---|
| Cell 0 | ANT0 - MAIN |
| Cell 1 | ANT1 - DIV |
| GNSS | GNSS |

The following link contains the antenna specifications and installation instructions for the ANT-3-5G2G1-P-O antenna: https://www.cisco.com/c/en/us/td/docs/routers/connectedgrid/antennas/install-guide/b-cisco-industrial-routers-and-industrial-wireless-access-points-antenna-guide/ant-3-5g2g1-p-o.html

# LED Behaviors

The following table lists the LED indicators and their behavior. The LEDs provide a visual indication of the status and the currently selected services.

**LED Indicators:**

| LED | Color | Function |
|---|---|---|
| EN | Green, Yellow | **Enable LED**<br>• Pluggable enable LED<br>• Off: System power is off<br>• Yellow: Module power is not functioning correctly<br>• Green: Module power is on |
| SIM0 | Green, Yellow | **SIM0 LED/Activity**<br>• SIM0 LED status and WWAN activity<br>• Off: SIM0 is not installed<br>• Yellow: SIM0 is installed, but not active<br>• Green: SIM0 installed and active<br>• Green Flash: LTE data activity |
| SIM1 | Green, Yellow | **SIM1 LED/Activity**<br>• SIM1 LED status and WWAN activity<br>• Off: SIM1 is not installed<br>• Yellow: SIM1 is installed, but not active<br>• Green: SIM1 installed and active<br>• Green Flash: LTE data activity |
| GNSS | Green, Yellow | **GNSS LED**<br>• Off: GPS not configured<br>• *Yellow: Software defined<br>• Green: GPS configured<br>• Green Flash: GPS acquiring (flashing done by SW)<br>*–GPS configured (error/not working as expected) for P-5GS6-RC-GL module only |

| LED | Color | Function |
|---|---|---|
| Service | Green, Yellow, Blue | **Service Indication LED**<br>• Yellow: 3G<br>• Green: 4G LTE<br>• Blue: 5G |

# Attaching an Antenna

To attach the antenna in the Pluggable Interface Module, perform the below steps:

*Figure 3: Attaching 5G NR Antenna (5G-ANTM-O4-B) to P-5GS6-GL, P-5GS6-R16SA-GL PIM*

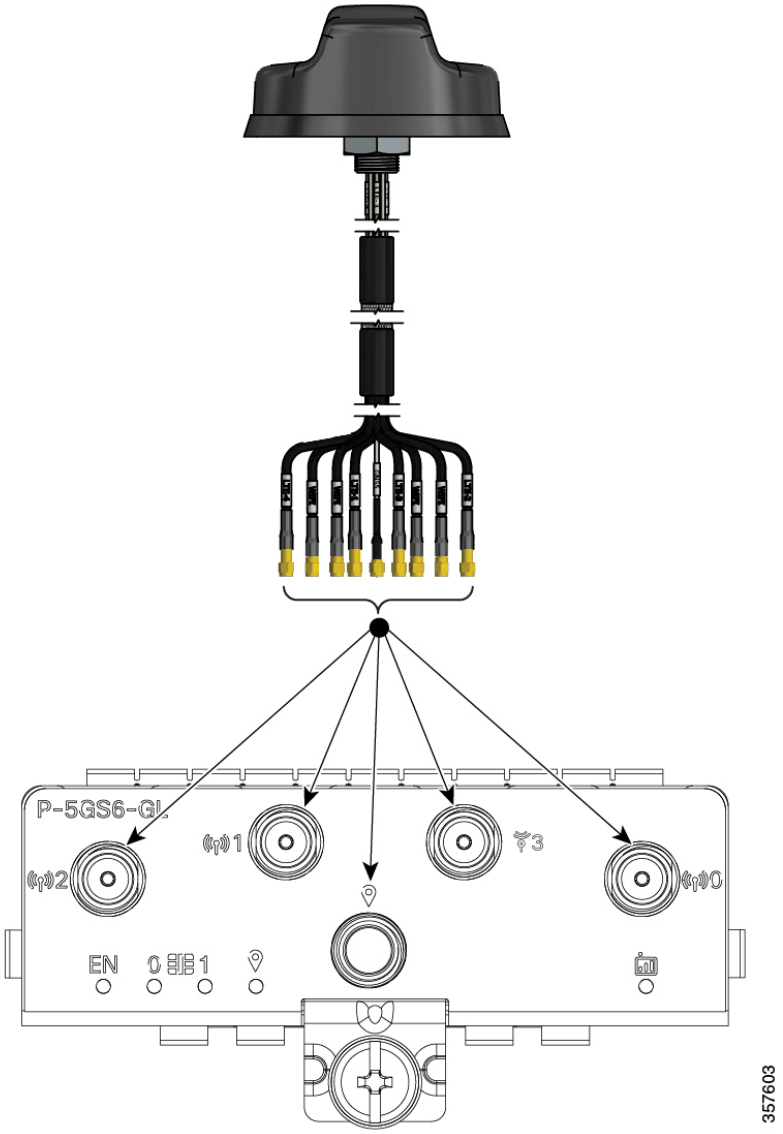
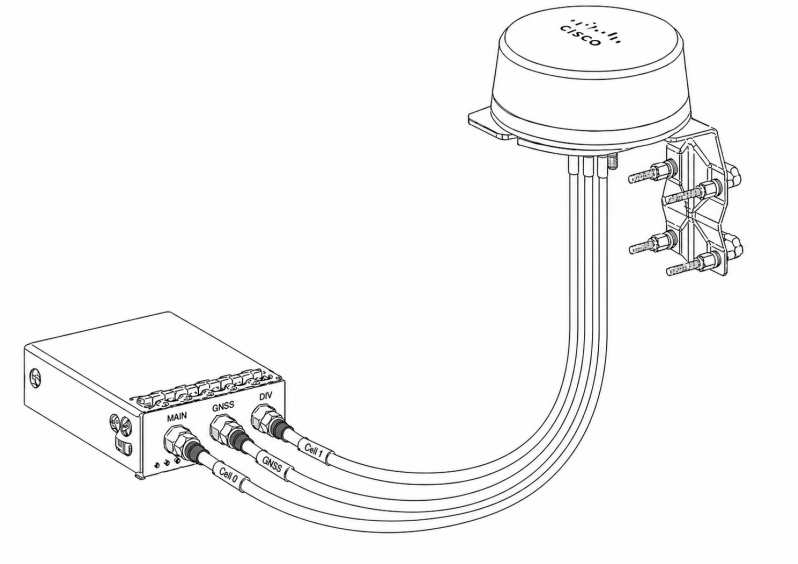


*Figure 4: Attaching ANT-3-5G2G1-P-O to P-5GS6-RC-GL PIM*




1. Attach each SMA cable to the ports as indicated in the table mappings.
2. Ensure that you tighten and secure each SMA cable into the SMA connector on the PIM.