# Interpret the IMSI Contained in a SIM of a 5G Device

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## Introduction

This document describes how to verify SIM's IMSI details from a Cisco 5G device so configuration and geographical location correspond to the carrier.

## Prerequisites

### Requirements

Cisco recommends that you have basic knowledge of these topics:

- 5G Cellular Network Basics
- Cisco Cellular Gateway 522-E
- Cisco P-5GS6-GL module
- Cisco IOS-XE
- Cisco IOS-CG

### Components Used

The information in this document is based on these software and hardware versions:

- Cisco Cellular Gateway 522-E with IOS-CG version 17.9.3a.
- Cisco IR1101 with IOS-XE version 17.9.3 with a P-5GS6-GL module plugged in.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

This applies to a P-5GS6-GL module connected to a router in standalone mode, or a CG522-E in standalone or controller mode managed by SD-WAN. This document does not apply to a P-5GS6-GL module connected to a router in SD-WAN since command syntax is different.

### Background information

With the IMSI (International Mobile Subscriber Identity) different details can be obtained that are important while network connection issues are troubleshooted.

As the SIM is the identity of the device when you attach to the network, these must be corroborated:

- The configured APN (Access Point Name) is correct and corresponds to the carrier it is intended for.
- The 5G device is physically located in the country the SIM was bought for.
- The device icorrectly detecs the SIM; this is corroborated if the IMSI is shown.

# Verify

In a CG522-E, the command **show cellular 1 hardware** shows the IMSI:

<#root>

CellularGateway#

**show cellular 1 hardware**


Modem Firmware Version = SWIX55C_01.07.08.00 000000 jenkins
Device Model ID = EM9190

**International Mobile Subscriber Identity (IMSI) = XXXXXXXXXXXXXXX**


**International Mobile Equipment Identity (IMEI) = XXXXXXXXXXXXXXX**

Integrated Circuit Card ID (ICCID) = XXXXXXXXXXXXXXXXXXXX
Mobile Subscriber Integrated Services Digital Network-Number (MSISDN) = XXXXXXXXXX
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In the case of a P-5GS6-GL module connected to a router, the command is **show cellular 0/X/0 all**:

<#root>

isr#

**show cellular 0/X/0 all**


Hardware Information
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Modem Firmware Version = MOH.020202
Host Firmware Version = AOH.000292
Device Model ID = FN980

**International Mobile Subscriber Identity (IMSI) = XXXXXXXXXXXXXXX**


**International Mobile Equipment Identity (IMEI) = XXXXXXXXXXXXXXX**


Integrated Circuit Card ID (ICCID) = XXXXXXXXXXXXXXXXXXXX
Mobile Subscriber Integrated Services
Digital Network-Number (MSISDN) = XXXXXXXXXX

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For example, if the IMSI **40445XXXXXXXXXX** is shown, the first three digits refer to the MCC (404) and the last two, to the MNC (45).

# Troubleshoot

With any public database from internet, such as [MCC MNC public database](#), the Region, Country, Operator, Carrier and the bands that can be used are identified:



| MCC | MNC | PLMN | REGION | | COUNTRY | ISO | OPERATOR | BRAND | TADIG | BANDS |
|-----|-----|-------|------------------------|--|---------|-----|-----------|-------|-------|-------------------|
| 404 | 45  | 40445 | Asia and the Middle East | | India  | IN  | Karnataka | Airtel | INDJ8 | GSM / TD-LTE 2300 |

Ensure the device with the SIM is physically placed in a location where the carrier provides services and can connect to those bands.

If the device uses a SIM that does not apply to the location details, the attachment to the cellular network is not possible.