Cisco USB GNSS Dongle Quick Installation Guide

First Published: 2023-10-03

Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
http://www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 527-0883

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THE SOFTWARE LICENSE AND LIMITED WARRANTY FOR THE ACCOMPANYING PRODUCT ARE SET FORTH IN THE INFORMATION PACKET THAT SHIPPED WITH THE PRODUCT AND ARE INCORPORATED HEREIN BY THIS REFERENCE. IF YOU ARE UNABLE TO LOCATE THE SOFTWARE LICENSE OR LIMITED WARRANTY, CONTACT YOUR CISCO REPRESENTATIVE FOR A COPY.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB's public domain version of the UNIX operating system. All rights reserved. Copyright © 1981, Regents of the University of California.

NOTWITHSTANDING ANY OTHER WARRANTY HEREIN, ALL DOCUMENT FILES AND SOFTWARE OF THESE SUPPLIERS ARE PROVIDED “AS IS" WITH ALL FAULTS. CISCO AND THE ABOVE-NAMED SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THOSE OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.

All printed copies and duplicate soft copies of this document are considered uncontrolled. See the current online version for the latest version.

Cisco has more than 200 offices worldwide. Addresses and phone numbers are listed on the Cisco website at www.cisco.com/go/offices.

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: https://www.cisco.com/c/en/us/about/legal/trademarks.html. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1721R)

© 2023 Cisco Systems, Inc. All rights reserved.

CONTENTS

CHAPTER 1 **Overview of Cisco USB GNSS Dongle** 1

Product Information 2

Software Requirement 3

CHAPTER 2 **Installation and Configuration** 5

Prerequisites for Cisco USB GNSS Dongle Installation 5

Installation Guidelines 5

Installing Cisco USB GNSS Dongle 5

LED Status 6

Configurations 6

Configure External Antenna Cable Length 6

Configure Pressure Sensor Parameters 7

Geolocation Parameters 7

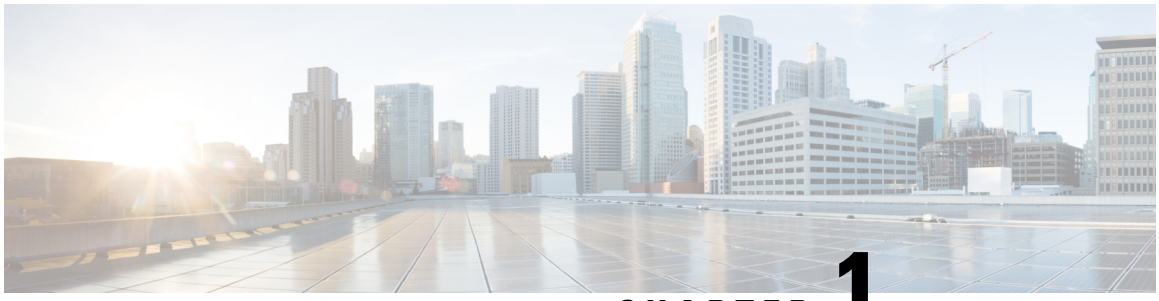
Configure Above Ground Level Geolocation Parameters 7

Configure Clear Derived Geolocation Parameters 8

CHAPTER 3 **Technical Specifications** 9

Technical Specifications 9

Cisco USB GNSS Dongle Antenna Patterns 10



CHAPTER 1

Overview of Cisco USB GNSS Dongle

Cisco USB GNSS dongle is a USB-compatible device for use with the Cisco Catalyst Access Points (APs).

The dongle contains a Global Navigation Satellite System (GNSS) System on Chip (SoC) and a barometric pressure sensor. It provides the controller with the AP location (latitude, longitude, altitude) data.

Note The Cisco USB GNSS dongle location data supersedes other connected BLE and Wi-Fi modules.

The Cisco USB GNSS dongle supports the following GNS Systems:

- BeiDou (BDS)
- Galileo
- Global Positioning System (GPS)
- Global Navigation Satellite System (GLONASS)
- Navigation with Indian Constellation (NAVIC)
- Quasi-Zenith Satellite System (QZSS)
- Satellite-based augmentation systems (SBAS)

The Cisco USB GNSS dongle is compatible with the following Cisco APs:

- Cisco Catalyst 9130AX AP
- Cisco Catalyst 9136I AP
- Cisco Catalyst Wireless 9166I APs
- Cisco Catalyst Wireless 9166D1 APs
- Cisco Catalyst Wireless 9164I APs
- Cisco Catalyst Wireless 9162I APs
- Cisco Meraki MR57 APs

- Product Information, on page 2
- Software Requirement, on page 3

Product Information

The physical specifications of the Cisco USB GNSS dongle.

Figure 1: Cisco USB GNSS dongle

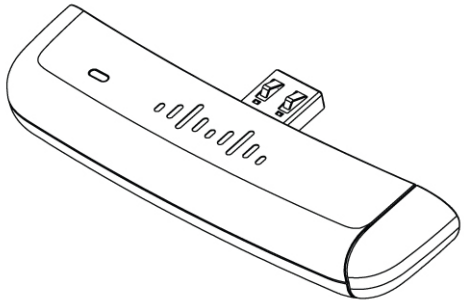
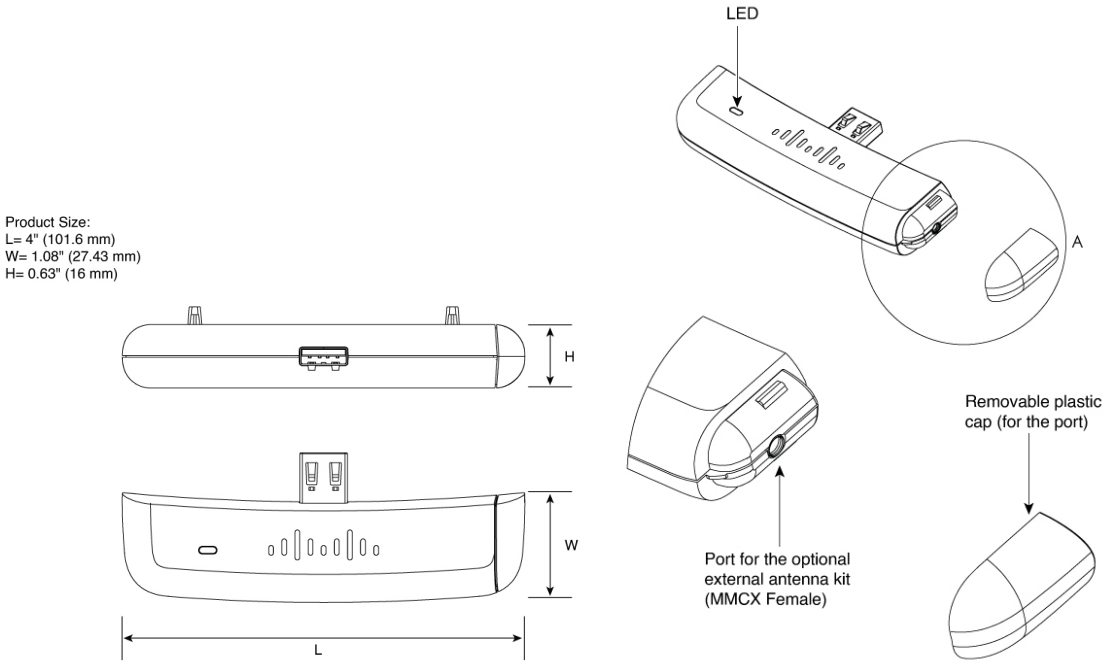


Figure 2: Cisco USB GNSS dongle Dimensions



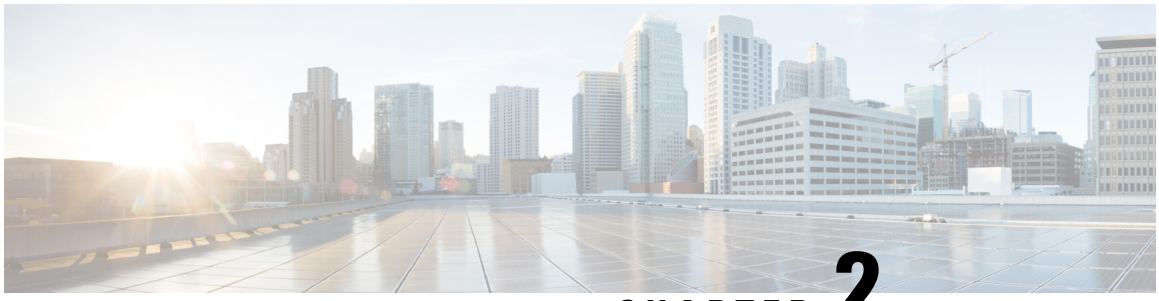
Part Number	Description
CW-ACC-GPS1=	Cisco USB GNSS dongle
CW-ANT-GPS1-M-00	[Optional] Cisco USB GNSS dongle external antenna kit

Software Requirement

The Cisco USB GNSS dongle only works with supported Cisco APs running the supported software versions.

Table 1: Supported Cisco IOS-XE Software Releases

Platforms Supported	Cisco IOS-XE Software
Cisco Catalyst 9130AX AP	Cisco Catalyst 9800 Series Wireless Controller Release 17.12.1 and later releases
Cisco Catalyst 9136I AP	Cisco Catalyst 9800 Series Wireless Controller Release 17.12.1 and later releases
Cisco Catalyst Wireless 9166I AP	Cisco Catalyst 9800 Series Wireless Controller Release 17.12.1 and later releases
Cisco Catalyst Wireless 9164I AP	Cisco Catalyst 9800 Series Wireless Controller Release 17.12.1 and later releases
Cisco Catalyst Wireless 9162I AP	Cisco Catalyst 9800 Series Wireless Controller Release 17.12.1 and later releases
Cisco Catalyst Wireless 9166D1 AP	Cisco Catalyst 9800 Series Wireless Controller Release 17.12.1 and later releases
Cisco Meraki MR57	Cisco Catalyst 9800 Series Wireless Controller Release 17.12.1 and later releases



CHAPTER 2

Installation and Configuration

- Prerequisites for Cisco USB GNSS Dongle Installation, on page 5
- Installation Guidelines, on page 5
- Installing Cisco USB GNSS Dongle, on page 5
- LED Status, on page 6
- Configurations, on page 6

Prerequisites for Cisco USB GNSS Dongle Installation

- Your network must include a Cisco Wireless Controller and the supported Cisco APs. These APs must be associated with the controller.

Installation Guidelines

The following is a list of installation guidelines pertaining to Cisco USB GNSS dongle:

- The dongle can be plugged into a supporting AP's USB port without removing the AP from the ceiling.
- Use caution when placing the dongle near equipment and antennas operating on cellular LTE frequencies such as repeaters and amplifiers. This equipment may interfere with GNSS frequencies.
- When installing the external antenna, position the antenna in the desired location and perform any cable management tasks before inserting the connector into the dongle to reduce mechanical stress.

Installing Cisco USB GNSS Dongle

Step 1 Plug the Cisco USB GNSS dongle into the USB port of the AP.

Note Avoid excessive insertion and removal of the USB dongle to ensure mechanical stability of the USB connector.

Step 2 Log in to the controller GUI.

Step 3 Choose **Configuration** > **Tags & Profiles** > **AP Join Profile** > **General**.

Select the AP Join profile.

Step 4 In the **General** section, check the **USB Enable** checkbox to enable the USB port.

Step 5 Choose **Configuration** > **Wireless** > **Access Points** > **All APs**.

Step 6 Select the AP with the Cisco USB GNSS dongle installed.

Step 7 Click the **Inventory** tab.

Step 8 In the **USB Module Inventory** section, verify the USB module details.

We recommend that you perform the USB module verification for all the APs with Cisco USB GNSS dongle.

LED Status

The following table lists Cisco USB GNSS dongle LED status.

Table 2: LED Status

LED Color	Status
Red	Not ready with satellite fix
Green	Ready with satellite fix
Blinking green	Acquiring satellite signal/fix

Note LED brightness control (dimming) and multicolor status is not supported.

Configurations

Configure External Antenna Cable Length

The GNSS external antenna cable length is configured per AP and the AP retains the value even after the AP is rebooted. You must manually configure the cable length when the antenna cable exceeds the 10 meter length cable provided with the external antenna.

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device# enable`	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	**ap name** *ap-name* **geolocation gnss antenna external cable-length** *cable-length*	Configures the cable length in meters. The range is between 1 and 100 meters.

	Command or Action	Purpose

	Example:
	`Device# ap name test-ap geolocation gnss antenna external cable-length 15`
	`Device# ap name test-ap no geolocation gnss antenna external cable-length`
		Use the **no** form of this command to remove the manually configured cable length and reset the cable length to default value.

Configure Pressure Sensor Parameters

This task configures the pressure sensor parameters.

Procedure

	Command or Action	Purpose
Step 1	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 2	**ap profile** *ap-profile-name* **Example:** `Device(config)# ap profile ap-profile-name`	Configures an AP profile and enters AP profile configuration mode.
Step 3	**sensor environment pressure mode disabled** **Example:** `Device(config-ap-profile)# sensor environment pressure mode disabled`	This command disables the pressure sensor. By default, the sensor is set to auto.
Step 4	**end** **Example:** `Device(config-ap-profile)# end`	Exits configuration mode and returns to privileged EXEC mode.

Geolocation Parameters

Configure Above Ground Level Geolocation Parameters

You can configure the above ground level (AGL) in meters for the AP manually. You can configure the height using this option when the AP is not receiving the height values. The configured value is retained in the AP, reported to the controller during rejoin and it persists across AP reloads.

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:**	Enables privileged EXEC mode. Enter your password if prompted.

	Command or Action	Purpose
	`Device# enable`	

Step 2	**ap name** *ap-name* **geolocation height** *ap-height*
	Example:
	`Device# ap name ap-name geolocation height 350`
	`Device# ap name ap-name no geolocation height`
		Enter AP above ground level (AGL) height in meters. The range is between -100–1000 meters.
		Use the **no** form of this command to remove the AGL value manually configured for a particular AP.

Configure Clear Derived Geolocation Parameters

The following commands clear the derived geolocation information. You can clear the values from a specific AP, all APs, or using the MAC address of the AP.

Procedure

- **clear ap name** *ap-name* **geolocation derivation**

  Example:

  ```
  Device# clear ap name test-ap geolocation derivation
  ```

  This CLI clears the derived geolocation values from the memory of a particular AP.

- **clear geolocation derivation**

  Example:

  ```
  Device# clear geolocation derivation
  ```

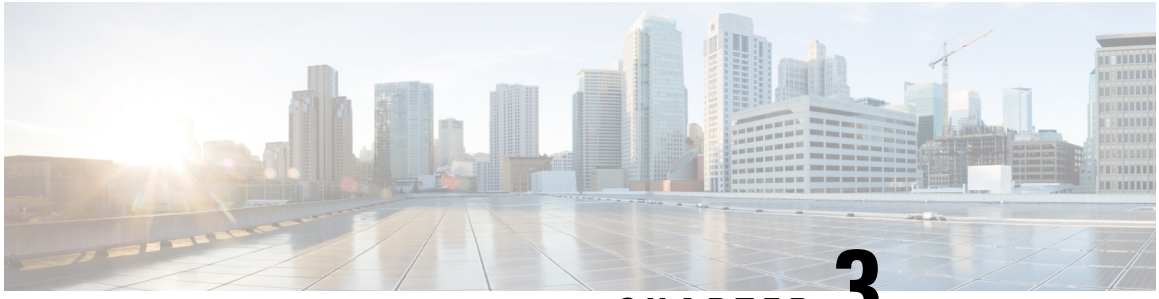
  This CLI clears the derived geolocation values from the memory of all APs associated with the controller.

- **clear ap mac-address** *ap-mac-addr***geolocation derivation**

  Example:

  ```
  Device# clear ap mac-address ap-mac-addr geolocation derivation
  ```

  This CLI clears the derived geolocation values from the memory of a particular AP identified by its MAC-address.



CHAPTER 3

Technical Specifications

This section provides the technical specifications of Cisco USB GNSS dongle.

- Technical Specifications, on page 9
- Cisco USB GNSS Dongle Antenna Patterns, on page 10

Technical Specifications

Table 3: Hardware Specifications

Antenna	• Embedded Antenna • External (active) antenna and kit with 10 meter plenum rated cable and mounting bracket (CW-ANT-GPS1-M-00).
Frequency Bands	• BeiDou (BDS)—B1I, B1C, B2a • Galileo—E1, E5a • Global Positioning System (GPS)—L1, L1C, L5 • Global Navigation Satellite System (GLONASS)—L1 • Navigation with Indian Constellation (NAVIC)—L5 • Quasi-Zenith Satellite System (QZSS)—L1, L5 • Satellite-based augmentation systems (SBAS)—L1
Supported Protocols	AGPS applications, including GSM/UMTS/LTE (3GPP 44.031, 44.035,25.331, and 36.355)
Security Protocol	ACT2

Table 4: Technical Specifications

Operating Temperature	-20° to +65°C (-4° to 149°F)
Operating Humidity	90% (noncondensing)

Operation Altitude	3000 meters (9843 ft) at 70°C (104°F)
Non-Operation Temperature	-30° to 70°C (-22° to 158°F)
Non-Operation Humidity	95% (noncondensing)
Non-Operation Altitude	4570 meters (15000 ft) at 70°C (104°F)
System Power	5 V, 500 mW (max)
Dimensions (H x W x L)	4 x 1 x 0.63 inches (101.6 x 25.4 x 16 mm)
Weight	0.06 lbs (27.2 grams)

Cisco USB GNSS Dongle Antenna Patterns

The following illustrations show the Cisco USB GNSS dongle with antenna patterns:

Table 5: Cisco USB GNSS Dongle Antenna Patterns

Figure 3: Cisco USB GNSS Dongle Normalized Antenna Pattern (Azimuth)

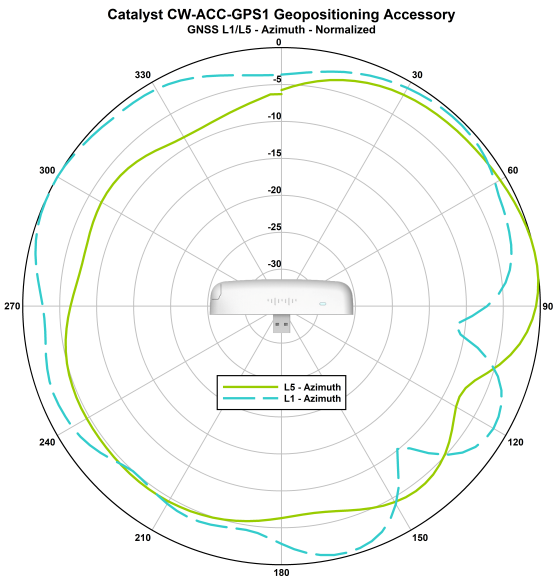
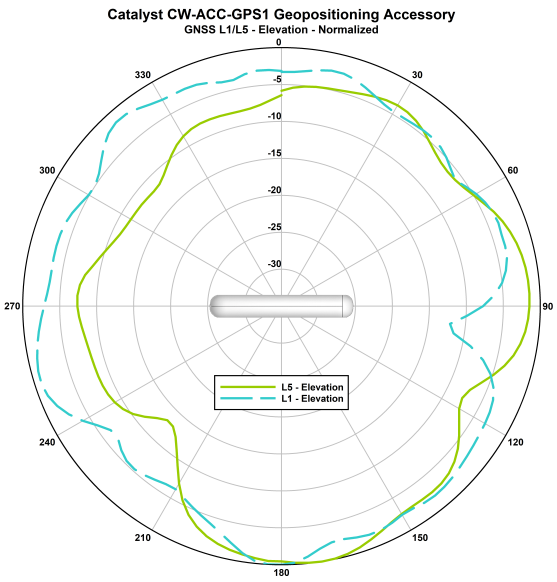



Figure 4: Cisco USB GNSS Dongle Normalized Antenna Pattern (Elevation)