



Cisco Beacon Hardware Installation Guide

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Preface

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Audience

This document is for Connected Mobile Experiences (CMX) network and IT administrators who deploy Cisco Beacon Points or Cisco Beacon Point Modules for high accuracy virtual beacon solution.

Conventions

This document uses the following conventions:

Table 1: Conventions

Convention	Indication
bold font	Commands and keywords and user-entered text appear in bold font.
italic font	Document titles, new or emphasized terms, and arguments for which you supply values are in <i>italic</i> font.
[]	Elements in square brackets are optional.
{x y z }	Required alternative keywords are grouped in braces and separated by vertical bars.
[x y z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	A nonquoted set of characters. Do not use quotation marks around the string. Otherwise, the string will include the quotation marks.
courier font	Terminal sessions and information the system displays appear in courier font.

Convention	Indication
\Diamond	Nonprinting characters such as passwords are in angle brackets.
[]	Default responses to system prompts are in square brackets.
!,#	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.



Note

Means reader take note. Notes contain helpful suggestions or references to material not covered in the manual.



Tip

Means the following information will help you solve a problem.



Caution

Means reader be careful. In this situation, you might perform an action that could result in equipment damage or loss of data.

Related Documentation

For more information about Cisco CMX Cloud, see:

https://support.cmxcisco.com/hc/en-us

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, using the Cisco Bug Search Tool (BST), submitting a service request, and gathering additional information, see What's New in Cisco Product Documentation.

To receive new and revised Cisco technical content directly to your desktop, you can subscribe to the What's New in Cisco Product Documentation RSS feed. RSS feeds are a free service.



About Cisco Beacon Point Module

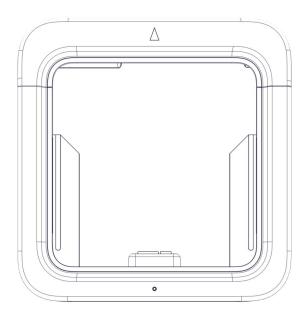
Cisco Beacon Point Module (AIR-RM-VBLE2-K9=) is a Bluetooth Low Energy (BLE version v4.2) beacon module that is mounted on supported Access Points. The access points now act as integrated WiFI and Bluetooth devices or Bluetooth-integrated access points. The smart device receives signals of different strengths from multiple Bluetooth-integrated access points.

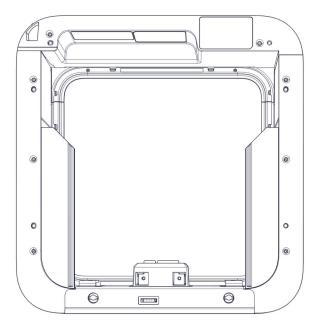
Deploying Bluetooth-integrated access points is similar to any Wi-Fi location based service solution. The recommended density for deploying the Bluetooth-integrated access points is 1 per 2500 sq.ft. The recommended height for a Bluetooth-integrated access points is 13 ft (3.9 m). Cisco Beacon Center requires the correct physical orientation, position, and height of Bluetooth-integrated access points for providing clients with indoor navigation, turn-by-turn guidance and proximity messaging for best indoor navigation experience.

Bluetooth-integrated access pointss connect with Cisco Beacon Center over the internet using secure HTTPS protocol. Each Bluetooth-integrated access points has a unique IP address just like any enterprise grade networking device. Bluetooth-integrated access points should connect with Cisco Beacon Center for

management and control. For Bluetooth-integrated access points to communicate with the Cisco Beacon Center the port numbers 80 (TCP) and 443 (TCP, UDP) must be open.

Figure 1: Cisco Beacon Point Module (AIR-RM-VBLE2-K9=)





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Supported Access Points

The Cisco Beacon Point Module can be attached to the following access points:

- AP3802I
- AP3802E

Cisco Beacon Point Module Features

Cisco Beacon Point Module comes with the following features:

Table 2: Hardware Feature Summary

Feature	Description
LED indicators	A multicolor system status LED on the front-face of the unit.
Reset button	A recessed button that resets a Cisco Beacon Point Module to factory settings when the Bluetooth-integrated access points is powered up.
Power Options	Uses the power supply of the access point.

Technical Specifications

NEED IMAGE HERE

Table 3: Technical Specifications of Cisco Beacon Point Module

Feature	Description
Dimensions (of access point with Cisco Beacon Point Module)	275 mm x 284.7 mm x 60.5 mm 10.8 in x 11.2 in x 2.38 in
Weight	1.38 kg (3.06 lbs)

Feature	Description
Compliance standards	UL 60950-1
	CAN/CSA-C22.2 No. 60950-1
	FCC Part 15.247, 15.107, and 15.109
	FCC Part 15 Class B
	RSS-247
	ICES-003 (Canada)
	ClassB EMC compliance
Environmental	Fanless operation; passive cooling
	Nonoperating (storage) temperature: -30 to 70°C (-22 to 158°F)
	Operating temperature: 0 to 40°C (32 to 104°F)
	Operating humidity: 10 to 90% (noncondensing)
	Operating altitude: 9843 ft (3000 m)
Power Dissipation	Less than 4.5W

Cisco Beacon Point Module Model Number

Cisco Beacon Point Module is available in the following model:

Table 4: Cisco Beacon Point Module Model Number

Product ID	Description
AIR-RM-VBLE2-K9=	Cisco Beacon Point Module with internal antennas that can be mounted on supported access points.

Installing a Cisco Beacon Point Module on an Access Point

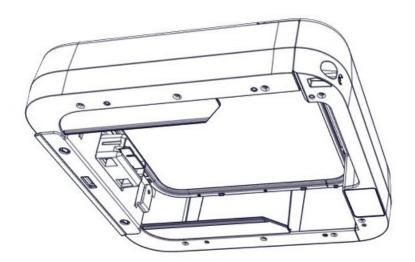
These instructions demonstrate how to install a Cisco Beacon Point Module to an access point that is already mounted to its location using a bracket.

Before You Begin

Ensure that Access Point is already mounted to the celing using a bracket.

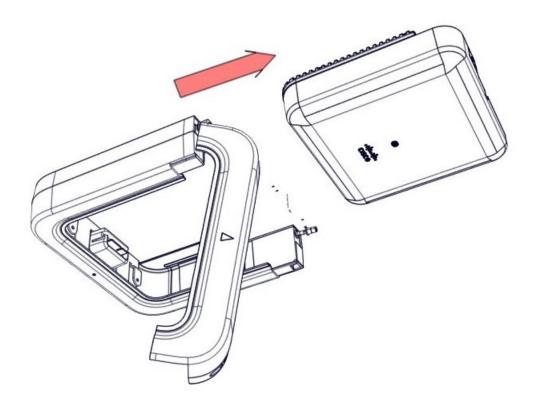
Step 1 Close the hinged door of the Cisco Beacon Point ModuleUnscrew the hinged door or the Cisco Beacon Point Module and swing it open.



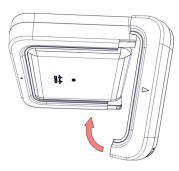




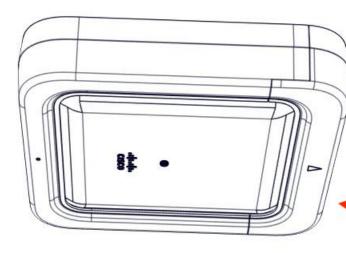
Step 2 Slide the Cisco Beacon Point Module into the access point.



Step 3 Close the hinged door of the Cisco Beacon Point Module

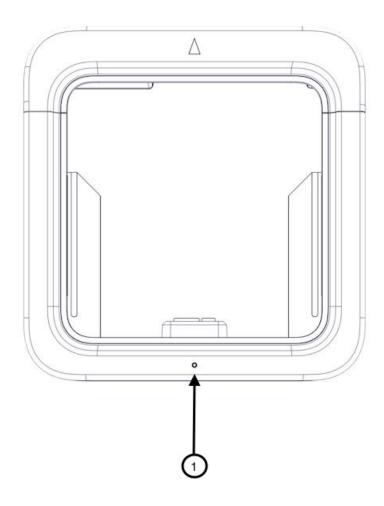


Step 4 Screw in the inset screw on the Cisco Beacon Point Module to secure the hinged door to the rest of the module.



Checking the Cisco Beacon Point Module LEDs

Figure 2: Face of Cisco Beacon Point Module



1	Location of the Status LED



Note

Small variations in color intensity and hue will be present from unit to unit. This is within the normal range of the LED manufacturer's specifications, and is not a defect.

Cisco Beacon Point status LED indicates various conditions, which are described in the table below:

Table 5: Cisco Beacon Point LED Status Indication

LED Color	Cisco Beacon Point LED Status
Blinking red	Cisco Beacon Point Module beginning a boot reset.
Alternating green and yellow	Cisco Beacon Point Module booting.
White	Cisco Beacon Point Module connecting to Cisco Beacon Center.
Green	Cisco Beacon Point Module configured by Cisco Beacon Center.
Blinking orange	Cisco Beacon Point Module upgrading.
Alternating green and purple	Locating a Cisco Beacon Point Module in Cisco Beacon Center.
Blinking amber	Cisco Beacon Point Module failure mode.
OFF turning to red	Reset to factory default button pressed by the user.
White turning to OFF	Cisco Beacon Point Module about to reset.



Declarations of Conformity and Regulatory Information

This section provides declarations of conformity and regulatory information for the Cisco Beacon Point. You can find additional information at this location

- Manufacturers Federal Communication Commission Declaration of Conformity Statement, page 12
- VCCI Statement for Japan, page 13
- Guidelines for Operating Cisco Virtual Beacon in Japan, page 13
- Canadian Compliance Statement, page 14
- Statement 371—Power Cable and Power Injector, page 15
- Industry Canada, page 15
- This Device Meets FCC and International Guidelines for Exposure to Radio Waves, page 15
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ManufacturersFederalCommunicationCommissionDeclaration of Conformity Statement

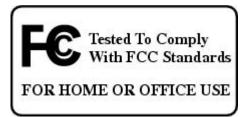


Table 6: Cisco Beacon Point Models and Certification Numbers

Cisco Beacon Point Models	Certification Number
Cisco Beacon Point	LDK102111
Cisco Beacon Point Module	LDK825321596

Manufacturer:

Cisco Systems, Inc.

170 West Tasman Drive San Jose, CA 95134-1706 USA

This device complies with Part 15 rules. Operation is subject to the following two conditions:

- 1 This device may not cause harmful interference, and
- 2 This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Cisco may void the user's authority to operate the equipment



Caution

The Part 15 radio device operates on a non-interference basis with other devices operating at this frequency when using the integrated antennas. Any changes or modification to the product not expressly approved by Cisco could void the user's authority to operate this device.

VCCI Statement for Japan



This is a Class B product based on the standard of the Voluntary Control Council for Interference from Information Technology Equipment (VCCI). If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

この装置は、クラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。

取扱説明書に従って正しい取り扱いをして下さい。

VCCI-B

Guidelines for Operating Cisco Virtual Beacon in Japan

This section provides guidelines for avoiding interference when operating Cisco Virtual Beacon in Japan. These guidelines are provided in both Japanese and English.

Japanese Translation

この機器の使用周波数帯では、電子レンジ等の産業・科学・医療用機器のほか 工場の製造ライン等で使用されている移動体識別用の構内無線局(免許を要する 無線局)及び特定小電力無線局(免許を要しない無線局)が運用されています。 1 この機器を使用する前に、近くで移動体識別用の構内無線局及び特定小電力 無線局が運用されていないことを確認して下さい。

- 2 万一、この機器から移動体識別用の構内無線局に対して電波干渉の事例が発生した場合には、速やかに使用周波数を変更するか又は電波の発射を停止した上、下記連絡先にご連絡頂き、混信回避のための処置等(例えば、パーティションの設置など)についてご相談して下さい。
- 3 その他、この機器から移動体識別用の特定小電力無線局に対して電波干渉の事例が発生した場合など何かお困りのことが起きたときは、次の連絡先へお問い合わせ下さい。

· *** 03-6434-6500

English Translation

This equipment operates in the same frequency bandwidth as industrial, scientific, and medical devices such as microwave ovens and mobile object identification (RF-ID) systems (licensed premises radio stations and unlicensed specified low-power radio stations) used in factory production lines.

- 1 Before using this equipment, make sure that no premises radio stations or specified low-power radio stations of RF-ID are used in the vicinity.
- 2 If this equipment causes RF interference to a premises radio station of RF-ID, promptly change the frequency or stop using the device; contact the number below and ask for recommendations on avoiding radio interference, such as setting partitions.
- 3 If this equipment causes RF interference to a specified low-power radio station of RF-ID, contact the number below.

Contact Number: 03-6434-6500

Canadian Compliance Statement

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication. Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

This radio transmitter has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Table 7: Antenna Specifications

Antenna Frequency	Antenna Peak Gain	Antenna Impedance
2.4 GHz	5 dBi	50 ohms

Table 8: Antenna Specifications for module

Antenna Frequency	Antenna Peak Gain	Antenna Impedance
2.4 GHz	5.8 dBi	50 ohms

Le présent émetteur radio a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Statement 371—Power Cable and Power Injector

When installing the product, please use the provided or designated connection cables/power cables/AC adaptors. Using any other cables/adaptors could cause a malfunction or a fire. Electrical Appliance and Material Safety Law prohibits the use of UL-certified cables (that have the "UL" shown on the code) for any other electrical devices than products designated by CISCO.

The use of cables that are certified by Electrical Appliance and Material Safety Law (that have "PSE" shown on the code) is not limited to CISCO-designated products.

Industry Canada

Table 9: Cisco Beacon Point Models and Certification Numbers

Cisco Beacon Models	Certification Number
AIR-VBLE1-K9	2461B-102111
AIR-RM-VBLE2-K9=	2461N-825321596

This Device Meets FCC and International Guidelines for Exposure to Radio Waves

Cisco Beacon Point Module includes a radio transmitter and receiver. It is designed not to exceed the limits for exposure to radio waves (radio frequency electromagnetic fields) recommended by international guidelines. The guidelines were developed by an independent scientific organization (ICNIRP) and include a substantial safety margin designed to ensure the safety of all persons, regardless of age and health.

As such the systems are designed to be operated as to avoid contact with the antennas by the end user. It is recommended to set the system in a location where the antennas can remain at least a minimum distance as specified from the user in accordance to the regulatory guidelines which are designed to reduce the overall exposure of the user or operator.

Table 10: Separation Distance

MPE	Distance	Limit
0.0005 mW/cm ²	30 cm (11.81 inches)	1.00 mW/cm ²

The World Health Organization has stated that present scientific information does not indicate the need for any special precautions for the use of wireless devices. They recommend that if you are interested in further reducing your exposure then you can easily do so by reorienting antennas away from the user or placing he antennas at a greater separation distance then recommended.

This Device Meets the Industry Canada Guidelines for Exposure to Radio Waves

The Cisco Beacon Point Module includes a radio transmitter and receiver. It is designed not to exceed the limits for exposure to radio waves (radio frequency electromagnetic fields) as referenced in Health Canada Safety Code 6. The guidelines include a substantial safety margin designed into the limit to ensure the safety of all persons, regardless of age and health.

As such the systems are designed to be operated as to avoid contact with the antennas by the end user. It is recommended to set the system in a location where the antennas can remain at least a minimum distance as specified from the user in accordance to the regulatory guidelines which are designed to reduce the overall exposure of the user or operator.

Table 11: Separation Distance

Frequency	MPE	Distance	Limit
2.4 GHz	0.005 W/m ²	30 cm (11.81 inches)	5.4 W/m ²

Health Canada states that present scientific information does not indicate the need for any special precautions for the use of wireless devices. They recommend that if you are interested in further reducing your exposure you can easily do so by reorienting antennas away from the user, placing the antennas at a greater separation distance than recommended, or lowering the transmitter power output.

Cet appareil est conforme aux directives internationales en matière d'exposition aux fréquences radioélectriques

Cet appareil de la gamme Cisco Beacon Point Module comprend un émetteur-récepteur radio. Il a été conçu de manière à respecter les limites en matière d'exposition aux fréquences radioélectriques (champs électromagnétiques de fréquence radio), recommandées dans le code de sécurité 6 de Santé Canada. Ces directives intègrent une marge de sécurité importante destinée à assurer la sécurité de tous, indépendamment de l'âge et de la santé.

Par conséquent, les systèmes sont conçus pour être exploités en évitant que l'utilisateur n'entre en contact avec les antennes. Il est recommandé de poser le système là où les antennes sont à une distance minimale telle que précisée par l'utilisateur conformément aux directives réglementaires qui sont conçues pour réduire l'exposition générale de l'utilisateur ou de l'opérateur.

Table 12: Distance d'éloignement

Fréquence	MPE	Distance	Limite
2.4 GHz	0.005 W/m ²	30 cm (11.81 inches)	5.4 W/m ²

Santé Canada affirme que la littérature scientifique actuelle n'indique pas qu'il faille prendre des précautions particulières lors de l'utilisation d'un appareil sans fil. Si vous voulez réduire votre exposition encore davantage, selon l'agence, vous pouvez facilement le faire en réorientant les antennes afin qu'elles soient dirigées à l'écart de l'utilisateur, en les plaçant à une distance d'éloignement supérieure à celle recommandée ou en réduisant la puissance de sortie de l'émetteur.

Additional Information on RF Exposure

You can find additional information on the subject at the following links:

- Cisco Systems Spread Spectrum Radios and RF Safety white paper at this location.
- FCC Bulletin 56: Questions and Answers about Biological Effects and Potential Hazards of Radio Frequency Electromagnetic Fields.
- FCC Bulletin 65: Evaluating Compliance with the FCC guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.
- You can obtain additional information from the following organizations.
- World Health Organization Internal Commission on Non-Ionizing Radiation Protection at this location.
- United Kingdom, National Radiological Protection Board at this location.
- Cellular Telecommunications Association at this location.
- The Mobile Manufacturers Forum at this location.

Declaration of Conformity Statements

All the Declaration of Conformity statements related to this product can be found at the following location: http://www.ciscofax.com

Declaration of Conformity Statements

REVIEW DRAFT - CISCO CONFIDENTIAL