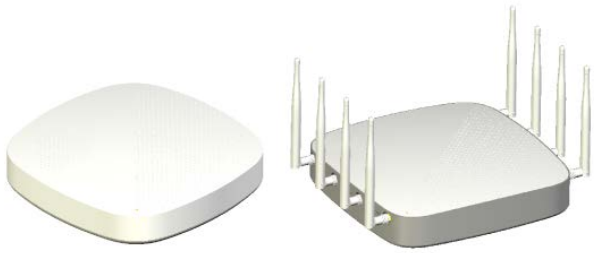
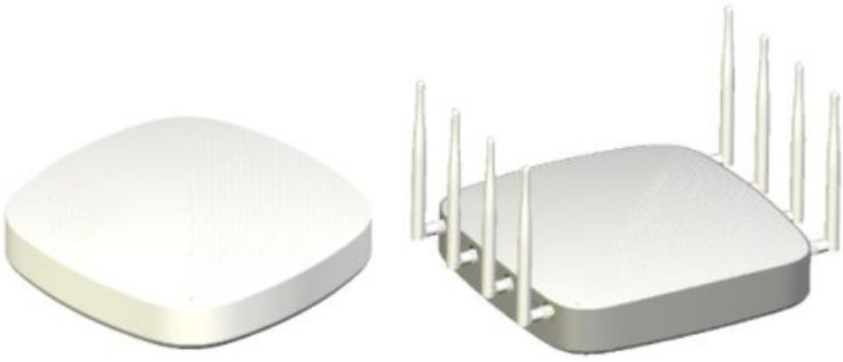


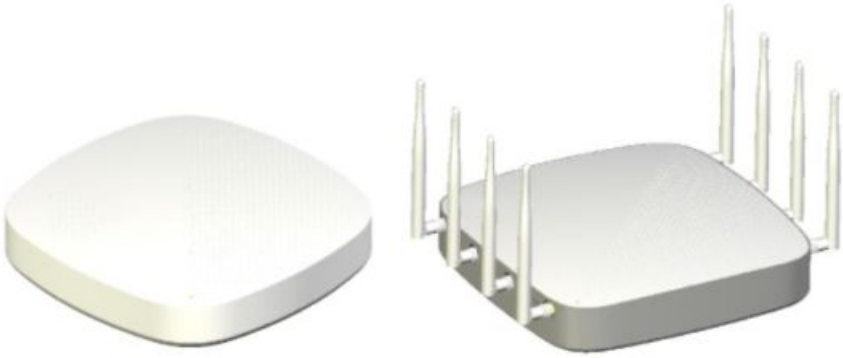
Extreme Networks AP510CX Hardware User Guide

Contents

Extreme Networks AP510CX Hardware User Guide



Read about and view specifications and compliance information for the AP510C and AP510CX in this topic. Install the AP510C and AP510CX using this topic.



The AP510C and AP510CX are high-performance dual-5G and dual band access points.

Both are designed for indoor high-density environments that require HD video streaming and large file transfers. The AP510CX has external antennas (sold separately), and an extended temperature range for industrial environments. These devices support IEEE 802.11ax Orthogonal Frequency- Division Multiple Access (OFDMA) multi-user access.

Both access point have a Bluetooth BLE i-beacon for location based services.

For regulatory and compliance information, see “Regulatory Compliance Statements”.

Important! Change the Country Code

If your access point is configured for the World Regulatory Domain, it is important to set the country code to the country in which the AP will be deployed to meet regulatory requirements and for optimal wireless operation. To do this, follow these steps:


The country code selection is for World models only and is not available to FCC, CAN, and other country-specific models. Per FCC regulations, all Wi-Fi products marketed in the United States must be set to U.S. channels only.

1. Power on the AP and allow it to find and connect to ExtremeCloud IQ. Once the AP is connected it appears in the table of devices on the Manage > Devices page.
2. Select the check box next to the AP, and then choose Assign Country Code from the Actions drop-down list. In the dialog box, select the appropriate country from the drop-down list, and then click Save.
3. Upload your changes to the device.

Safety Guidelines

The safety information in this section applies to AP510C and AP510CX devices.

The following safety icons are used in these guidelines to identify the type of precaution:

	This icon indicates a general caution. Failure to comply with a caution notification can result in damage to equipment.
	This icon indicates an electrical caution. Failure to comply with an electrical notification can result in serious injury or death, and extensive damage to equipment.
The following table lists the safety precautions you should follow when installing your AP510C and AP510CX devices.	
	Extreme Networks devices must be installed by a professional installer who is certified to install these types of devices and to ensure that they are properly grounded and meet applicable local and national electrical codes.
	These devices are intended for indoor use only.
	Do not install the device in an environment where the operating ambient temperature might exceed the recommended ranges.
	For products available in the USA/Canada market, for the 2.4 GHz band, only channels 1-11 can be operated. Selection of other channels is not possible.
	Changes or modifications made to this device that are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
	Use only attachments and accessories specified by Extreme Networks.

	These devices are not intended for use by persons (including children) with reduced physical, sensory, or mental capabilities, or with lack of experience of knowledge unless they are given supervision or instruction concerning use of the devices by a person who is responsible for their safety. Children should be supervised to ensure that they do not play with the devices.
	Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. ESD damage occurs when electronic components are improperly handled and can result in complete or intermittent failures. Be sure to follow ESD-prevention procedures when handling electronic components and equipment.
	During operation, the surfaces of the AP510C and AP510CX can become hot. Use caution when handling.
	To meet US federal radiation exposure requirements, these devices should be installed at a minimum distance of 10" (25.5 cm) from people or animals. To meet EU radiation exposure requirements, these devices should be installed at a minimum distance of 8" (20 cm) from people or animals. To meet Canadian radiation exposure requirements, these devices should be installed at a minimum of 30 cm from people or animals.

Install the AP

You can mount the AP510C and AP510CX on a flat surface or wall, or on the rails of a standard dropped ceiling grid. There is also an accessory mounting bracket that allows you to install the device in Armstrong-style dropped ceilings (ordered separately).

The following sections describe how to install your AP510C and AP510CX devices and connect them to the network.

Shipping Carton Contents

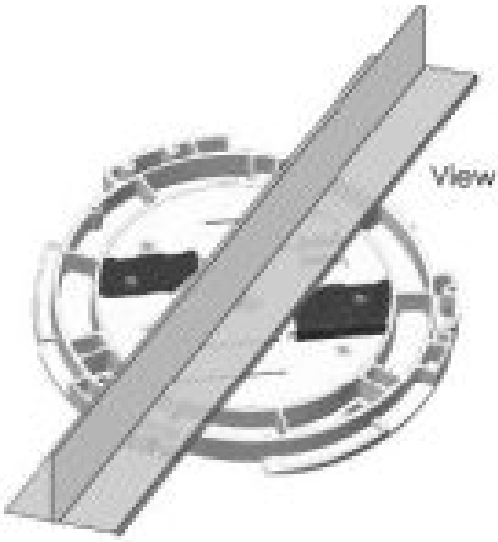
The AP510C and AP510CX shipping carton contains the following items:

- AP510C or AP510CX chassis
- Mounting bracket
- Read Me card

Install the AP on a Ceiling Track

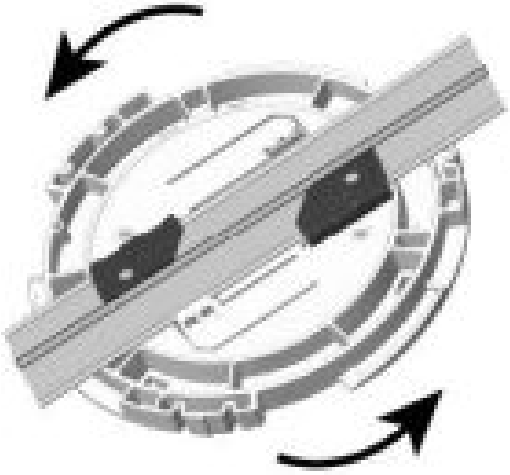
The AP510C and AP510CX ship with a mounting bracket that lets you easily install them on the Trail of a standard dropped ceiling grid. The following illustrations show how to install the bracket to the ceiling rail, and then install the AP on the bracket.

1 Align bracket to ceiling rail so that the mounting flanges are parallel to the sides of the rail.



View from above

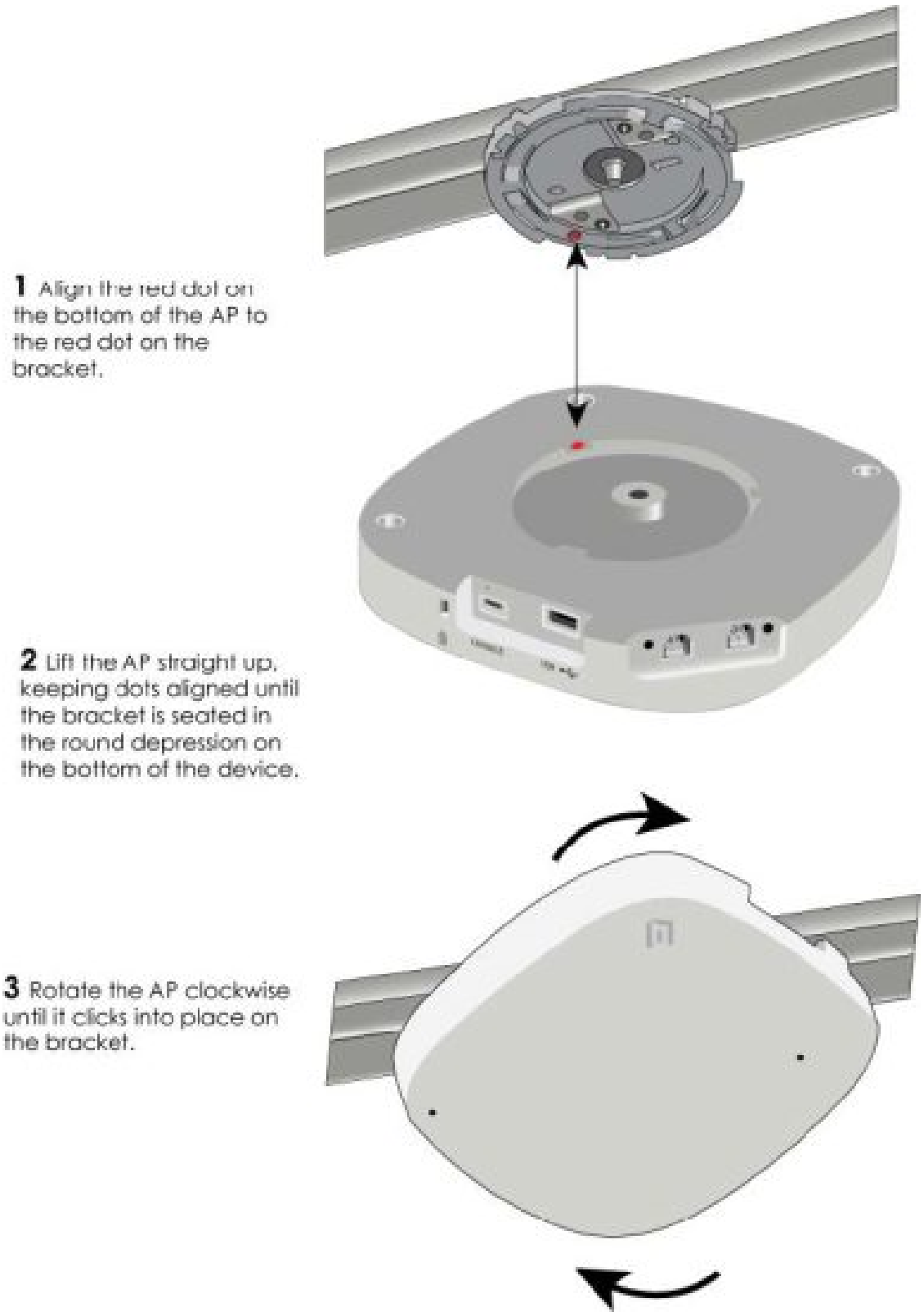
2 Rotate the bracket so that the flanges hook over the edges of the rail.



View from above

View from below

Once the bracket is secure, you can install the AP by aligning the red dot on the bracket with the red dot on the bottom of the AP. Keeping the dots aligned, raise the AP up until the bracket fits into the circular depression in the bottom of the AP. When the AP is firmly seated, rotate it clockwise until it clicks in to place. The process is identical for both models.



Mount the AP on a Wall

Use the holes in the accessory wall-mount bracket as a template to mark the wall. Drill holes in the wall and attach the bracket to the wall using wall screws and wall anchors if necessary. Attach the AP to the bracket in the same manner as shown in the previous section. Install external
antennas on AP510CX devices. Order antennas from Extreme Networks (AH-ACC-ANT-AX-KT).

Lock the AP

You can secure the AP using a Kensington® lock in the lock slot on the side of the device, or you can use a security bracket and a crosshead screw or a security screw. Security brackets and screws can be ordered separately from Extreme Networks (not available in Brazil).
Extreme Networks recommends a variety of Kensington locks. For more information, contact your sales representative.

Hardware Components

You can see the hardware components of the AP510C and AP510CX in the illustration below and read about them in the sections that follow. The illustration shows an AP510C model. The components are the same for both models, except the AP510CX has eight external antenna connectors.

Component Descriptions

Status Light

The status light conveys operational states for system power, firmware updates, Ethernet and wireless interface activity, and major alarms. The AP510C and AP510CX have a rectangular status light on the top right corner of the chassis. At setup, this light cycles through the following
sequence:

- Steady Amber: The device is initializing.
- Slow-blinking White: The device is receiving 802.3af power, instead of 802.3at power.
- Fast-blinking White: The device is looking for a mesh neighbor from which to obtain a password.
- Slow-blinking Amber (AF power mode only): The device is attempting to establish a connection or has established a CAPWAP connection with ExtremeCloud IQ.
- Fast-blinking Amber: The device is performing a IQ Engine or ExtremeCloud IQ upgrade.
- Steady White: The device has successfully established a CAPWAP connection and is operating normally.

Ethernet Ports

The ETH0 port is autosensing 100/1000/2500G BASE-T/TX Mbps, with IEEE 802.3af- or 802.3at-compliant PoE, and requires Cat6 cable.

The Eth 1 port is autosensing 10/100/1000 BASE-T/TX Mbps, wth IEEE 802.3af- or 802.3at-compliant PoE.

There are three power options. In the event of a failure, the device will automatically reboot using the next priority power source. When the failed power source is replaces, you must manually reboot the device again to use the repaired power source. For example, if Eth0 and Eth1 are in use, and Eth0 fails, the device will automatically reboot using Eth1. When Eth0 is restored, you will need to manually reboot the device to again use Eth0.

The priorities are:

- First priority: 12VDC
- Second priority: PoE – Eth0
- Third priority: PoE – Eth1

Hardware Specifications

The following sections list radio, device, power, and environmental specifications for the AP510C and AP510CX.

Radio Specifications

Bluetooth BLE Beacon

- 2402 – 2480 MHz
- Frequency Hopping Spread-spectrum (FHSS)

802.11a

- 5.150-5.350, 5.470 – 5.850 GHz operating frequency
- Orthogonal Frequency Division Multiplexing (OFDM) modulation
- Rates (Mbps): 54, 48, 36, 24, 12, 9, 6 with auto fallback

802.11b

- 2.4-2.48 GHz operating frequency
- Direct-Sequence Spread-Spectrum (DSSS) modulation
- Rates (Mbps): 11, 5.5, 2.1 with auto fallback

802.11g

- 2.4-2.48 GHz operating frequency
- Orthogonal Frequency Division Multiplexing (OFDM) modulation
- Rates (Mbps): 54, 48, 36, 24, 12, 9, 6 with auto fallback

802.11n

- 2.4-2.48 and 5.150-5.350, 5.470 – 5.850 GHz operating frequency
- 802.11n modulation
- Rates: MCS0 – MCS7
- 4×4 MIMO radio
- HT20 support
- HT40 support (5 GHz only)
- A-MPDU and A-MSDU frame aggregation

802.11ac

- 802.11ac modulation (256-QAM)
- 2.4 – 2.48 GHz MCS0-9, NSS=1-4
- 5.150-5.350, 5.470 – 5.850 GHz operating frequency
- Rates: MCS0 – MCS9, NSS = 1-4
- 4×4 MIMO radio
- VHT20/VHT40/VHT80/VHT160 support

802.11ax

- 5.150-5.350, 5.470 – 5.850 GHz operating frequency
- 2.4 – 2.48 GHz operation frequency
- 802.11ax modulation (1024-QAM)
- Rates: MCS0 – MCS11, NSS = 1-4
- OFDMA support
- 4×4 MU-MIMO
- HE20/HE40/HE80/HE160 support

Transmit Power and Sensitivity Specifications

 Output power may be limited by regulatory requirements.

2.4 H Tolerance +2/-2 dB @25°C

Mode	Data Rate	Power	Unit
11b	1,2,5.5,11	18	dBm
11g	54 Mbps	15	dBm
	48 Mbps	16	dBm
	36 Mbps	17	dBm
	6 Mbps	18	dBm
HE20	MCS 0,1,2	18	dBm
	MCS 3	17	dBm
	MCS 4, 5	16	dBm
	MCS 6,7	15	dBm
	MCS 8,9	14	dBm
	MCS 10,11	12	dBm
2.4 G Sensitivity			
11b	1 Mbps	-99	dB
	11 Mbps	-90	dB
11g	6 Mpbs	-96	dB
	36 Mpbs	-84	dB
	48 Mbps	-80	dB
	54 Mbps	-78	dB

HE20	MCS 0	-95	dB
	MCS 1	-91	dB
	MCS 2	-89	dB
	MCS 3	-86	dB
	MCS 4	-83	dB
	MCS 5	-79	dB
	MCS 6	-77	dB
	MCS 7	-76	dB
	MCS 8	-72	dB
	MCS 9	-70	dB
	MCS 10	-67	dB
	MCS 11	-64	dB

Mode	Data Rate	Power	Unit
11a	54 Mbps	18	dBm
	48 Mbps	18	dBm
	36 Mbps	19	dBm
	6 Mbps	20	dBm
HE20	MCS 0, 1, 2	20	dBm
	MCS 3, 4	19	dBm
	MCS 5, 6	18	dBm
	MCS 7, 8	17	dBm
	MCS 9	16	dBm
	MCS 10	15	dBm
	MCS 11	14	dBm
HE40	MCS 0, 1, 2	19	dBm
	MCS 3, 4, 5	18	dBm
	MCS 6,7,8	17	dBm
	MCS 9	16	dBm
	MCS 10	15	dBm

	MCS 11	14	dBm
HE80	MCS 0,1,2	19	dBm
	MCS 3,4,5	18	dBm
	MCS 6,7,8	17	dBm
	MCS 9	16	dBm
	MCS 10	15	dBm
	MCS 11	14	dBm
HE160	MCS 0,1,2	19	dBm
	MCS 3,4,5	18	dBm
	MCS 6,7,8	17	dBm
	MCS 9	16	dBm
	MCS 10	15	dBm
	MCS 11	14	dBm
5 G Sensitivity			
11a	6 Mbps	-94	db
	36 Mbps	-83	db
	48 Mbps	-79	db
	54 Mbps	-77	db
HE20	MCS 0	-94	db
	MCS 1	-91	db
	MCS 2	-88	db
	MCS 3	-86	db

Mode	Data Rate	Power	Unit
	MCS 4	-82	db
	MCS 5	-78	db
	MCS 6	-77	db
	MCS 7	-75	db
	MCS 8	-71	db
	MCS 9	-69	db
	MCS 10	-66	db
	MCS 11	-63	db
HE40	MCS 0	-92	db
	MCS 1	-88	db
	MCS 2	-86	db
	MCS 3	-83	db
	MCS 4	-80	db
	MCS 5	-76	db
	MCS 6	-74	db
	MCS 7	-73	db

	MCS 8	-69	db
	MCS 9	-67	db
	MCS 10	-63	db
	MCS 11	-60	db
HE80	MCS 0	-88	db
	MCS 1	-85	db
	MCS 2	-83	db
	MCS 3	-80	db
	MCS 4	-77	db
	MCS 5	-73	db
	MCS 6	-71	db
	MCS 7	-69	db
	MCS 8	-66	db
	MCS 9	-64	db
	MCS 10	-60	db
	MCS 11	-57	db
HE160	MCS 0	-85	db

	MCS 1	-82	db
	MCS 2	-80	db
	MCS 3	-77	db
	MCS 4	-74	db
	MCS 5	-70	db

Mode	Data Rate	Power	Unit
	MCS 6	-68	db
	MCS 7	-66	db
	MCS 8	-63	db
	MCS 9	-61	db
	MCS 10	-57	db
	MCS 11	-54	db

Device Specifications

- **Chassis dimensions:**
  AP510C: 8.1” W 8.1” H 1.46” D (205 mm x 205 mm x 37 mm)
  AP510CX: 8.9” W 8.9” H 1.48” D (225 mm x 225 mm x 37.5 mm)
- **Weight:**
  AP510C: 2.61 lbs (1.18 kilograms)
  AP510CX (without antennas): 2.82 lbs (1.28 kilograms)
- **Antennas**
  AP510CX option 1: 4 external omnidirectional 2.4/5 GHz dual band antennas and 4 external omnidirectional 5 GHz antennas
  AP510CX option 2: 8 internal omnidirectional 5 GHz antennas
  AP510C: 4 internal omni directional 2.4/5 GHz dual band antennas, and 4 internal omnidirectional 5 GHz antennas

AP510C/AP510CX: 1 internal BLE antenna

- **ETH0 Ethernet port:** autosensing 100/1000/2500G BASE-T/TX Mbps, with IEEE 802.3af- or 802.3at-compliant PoE, and requires Cat6 cable.
- **ETH1 Ethernet port:** autosensing 10/100/1000 BASE-T/TX Mbps, with IEEE 802.3af- or 802.3at-compliant PoE

Antenna Gain

- BLE 2.4 GHz: 4.2 dBi gain
- WiFi02.4 GHz: 5 dBi gain
- WiFi1 5 GHz:5.5 dBi gain
- WiFi2 2.4 GHz:5.5 dBi gain
- WiFi2 5GHz:6 dBi gain
- WiFi3 2.4GHz:6.9 dBi gain
- WiFi3 5GHz:7.2 dBi gain

Power Specifications

- PoE input voltage range: 37-57 V
- RJ45 power input pins: Wires 4, 5, 7, 8 or 1, 2, 3, and 6

Power Consumption

AP510C:

- DC power: 18.72 W with USB, 15.72 W without USB
- PoE: 21.78 W with USB, 18.78 W without USB

AP510CX:

- DC power: 18.72 W with USB, 15.72 W without USB
- PoE: 20.79 W with USB, 17.79 W without USB

Environmental Specifications

- **AP510C:** Operating temperature: 32° to 104° F (0° to 40° C)
- **AP510CX:** Operating temperature: -4° to 131° F (-20° to 55° C)
- **Storage temperature:** -40° to 185° F (-40° to 85° C)
- **Relative Humidity:** 5 to 95% RH (noncondensing)

Regulatory Compliance Statements

The regulatory compliance statements in this section apply to Extreme Networks AP510C and AP510CX devices.

Japan Indoor Use

 For Japan, the AP510C and AP510CX are restricted for indoor use in the 5150-5350 MHz band only.

Japan Equipment VCCI-B Statement

Compliance Statement – Europe

EU Declaration of Conformity

View full CE Declaration of Compliance and this information online at **www.aerohive.com/support/regulatory-compliance**

Extreme Networks, Inc. declares that this device complies with the essential requirements of the Radio Eqiupment Directive 2014/53/EU.

Hereby, [Extreme Networks], declares that this [AP510C], AP510CX is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU.

USA and Canada Radio Frequency Bands

a. USA

l 802.11b/g/n/ax: 2.4 GHz band: 2400-2483 MHz
l 802.11a/n/ac/ax: 5 GHz band: 5150-5850 MHz
l BLE: 2402-2480 MHz

b. Canada

l 802.11b/g/n/ax: 2.4 GHz band: 2400-2483 MHz
l 802.11a/n/ac/ax: 5 GHz band: 5150-5850 MHz MHz
l BLE: 2402-2480 MHz

EU Radio Frequency and Power Levels

This product supports the following radio frequencies and power levels in the EU version:
l 802.11b/g/n/ax, 2.4 GHz band: 2400-2483 MHz EIRP<20 dBm
l 802.11a/ac/n/ax: 5 GHz band: 5150-5350 MHz EIRP<23 dBm, 5470-5850 MHz EIRP<30 dBm, 5725-5850 MHz<14 dBm
l BLE: 2402-2480 MHz EIRP<8 dBm

This product supports the following radio frequencies and power levels in the EU version:
l 802.11b/g/n/ax, 2.4 GHz band: 2400-2483 MHz EIRP<20 dBm
l 802.11a/ac/n/ax: 5 GHz band: 5150-5350 MHz EIRP<23 dBm, 5470-5850 MHz EIRP<30 dBm, 5725-5850 MHz<14 dBm
l BLE: 2402-2480 MHz EIRP<8 dBm

This product supports the following radio frequencies and power levels in the EU version:

- 802.11b/g/n/ax, 2.4 GHz band: 2400-2483.5 MHz EIRP<20 dBm
- 802.11a/ac/n/ax: 5 GHz band: 5150-5350 MHz EIRP<23 dBm, 5470-5850 MHz EIRP<30 dBm, 5730-5850 MHz<23dBm
- BLE: 2402-2480 MHz EIRP<8 dBm

EU Radiation Warning Statement

AT	BE	BG	CH	CY	CZ	DE	DK	EE	EL	ES
FI	FR	HR	HU	IE	IS	IT	LI	LT	LU	LV
MT	NL	NO	PL	PT	RO	SE	SI	SK	TR	UK

To meet radiation exposure requirements, these devices should be installed at a minimum distance of 8″ (20 cm) from people or animals.
Restrictions: 5150-5350 MHz for indoor use only.

To meet radiation exposure requirements, these devices should be installed at a minimum distance of 8″ (20 cm) from people or animals.
Restrictions: 5150-5350 MHz for indoor use only.

Federal Communication Commission Interference Statement
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 of the following measures:

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

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC 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.

IMPORTANT NOTE:
Radiation Exposure Statement:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 10″ (25.5 cm) between the radiator and people or animals.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. Country Code selection feature to be disabled for products marketed to the US/CANADA.

Industry Canada Statement:
This device complies with Industry Canada license-exempt RSS standards. Operation is subject to the following two conditions:

- This device may not cause interference, and
- This device must accept any interference, including interference that may cause undesired operation of the device.

Caution:

The device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;

Dynamic Frequency Selection (DFS):
Dynamic Frequency Selection (DFS) for devices operating in the bands 5250- 5350 MHz, 5470-5600 MHz and 5650-5725 MHz.

Radiation Exposure Statement:
This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 30 cm between the radiator and people or animals.

Taiwan Compliance Information
Extreme NetworksAP510C AP510CX

Taiwan MPE Warning

(MPE) 1mW/cm2 0.734 mW/cm2

Read More About This Manual & Download PDF:

Documents / Resources

	Extreme Networks AP510CX Hardware [pdf] User Guide AP510CX, QXO-AP510CX, QXOAP510CX, AP510CX Hardware, Hardware

References

- Legal - Extreme Networks
- Legal - Extreme Networks