Extreme networks AP410C WiFi 6 Tri-Radio Wireless Access Point User Guide

Contents

Extreme networks AP410C WiFi 6 Tri-Radio Wireless Access Point

The AP410C is a high-performance 802.11ax dual-5G. dual band access point designed for indoor high-density environments. This device supports IEEE 802.11ax Orthogonal Frequency-Division Multiple Access (OFDMA) multi-user access.
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:
NOTE: 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 Extreme Cloud 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 AP410C 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.
- This icon indicates a laser caution. Failure to comply with a laser caution can result in serious injury.
- 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.

Warning: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

- 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 cap-abilities, 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 AP410C can become hot. Use caution when handling.
- To meet federal radiation exposure requirements, these devices should be installed at a minimum distance of 8″ (20 cm) from people or animals.

Install the AP

You can mount the AP410C 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 AP410C devices.

Shipping Carton Contents

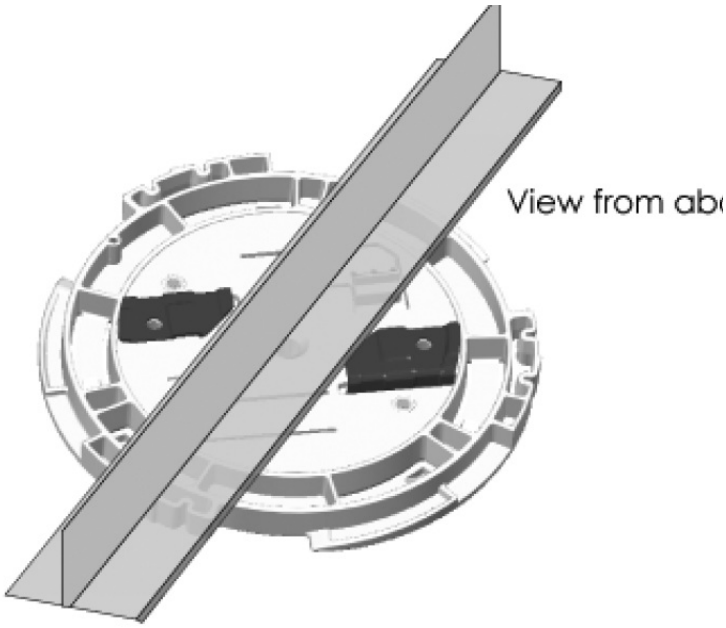
The AP410C shipping carton contains the following items:

- l AP410C chassis
- l Mounting bracket
- ReadMe card

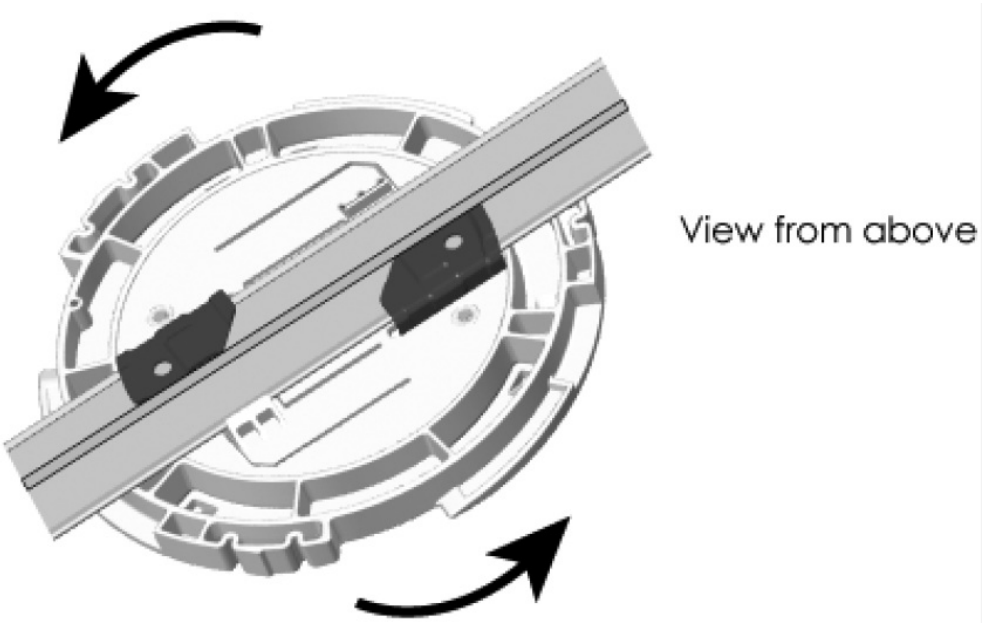
Install the AP on a Ceiling Track

The AP410C ships with a mounting bracket that lets you easily install it on the rail of a standard dropped ceiling grid. The following illustration shows how to attach the bracket to the ceiling rail, and then install the AP on the bracket.

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



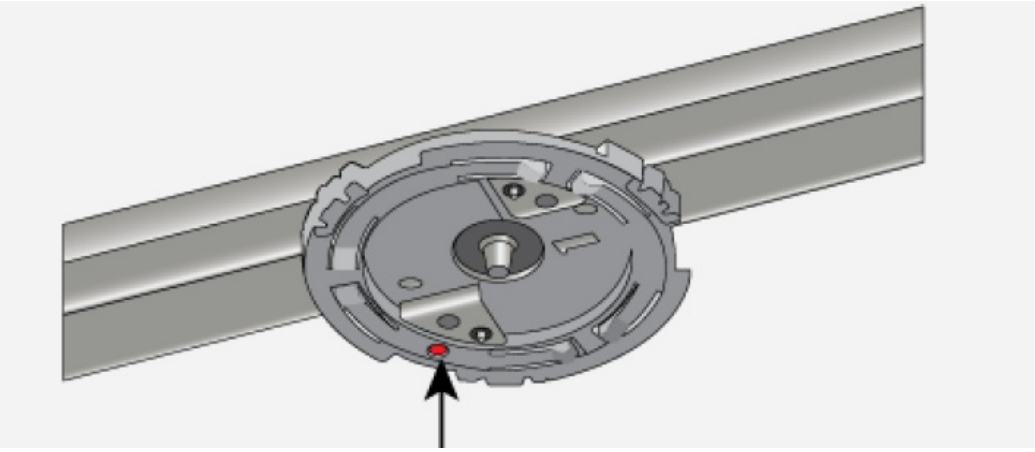
2. Rotates the Bracket so that flanges hook over the edges of the rail



Once the bracket is secure, install the AP using the following steps:

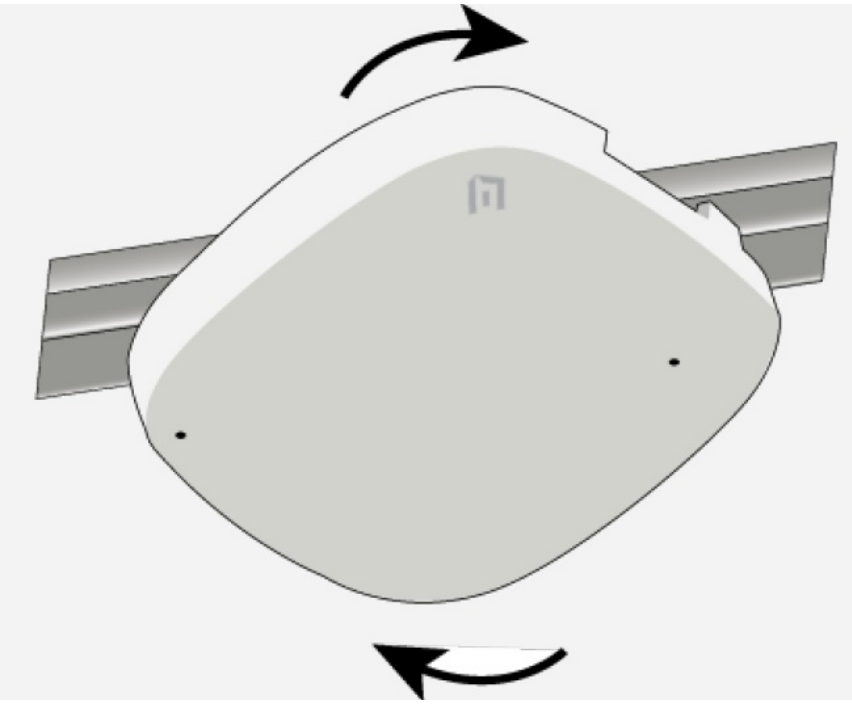
- Align the red dot on the bottom of the AP with the red dot on the bracket.
- Lift the AP straight up and keep the red dots aligned until the bracket is seated in the round depression on the bottom of the device.
- Rotate the AP clockwise until it clicks into place on the bracket.

3. Align the red dot on the bottom of AP to the red dot of bracket



4. Lift the AP straight up, keeping dots aligned until the is seated in the round depression on the bottom of the devices

5. Rotate the AP clockwise until it clicks into place on the brackets



Mounting brackets are available for these devices that will allow you to install them on non-standard ceiling tracks. The following accessory brackets are available:

- l AH-ACC-BKT-AX-IL: Mounting bracket for Interlude ceilings.
- l AH-ACC-BKT-AX-SL: Mounting bracket for Silhouette 1/8″ and Silhouette 1/4″ ceilings.
- l AH-ACC-BKT-AX-TB: Mounting bracket for Prelude 15/16″ and Suprafine 9/16″ ceilings.
- l AH-ACC-BKT-AX-WL: Mounting bracket for direct-to-wall installations.

Mount the AP on a Wall

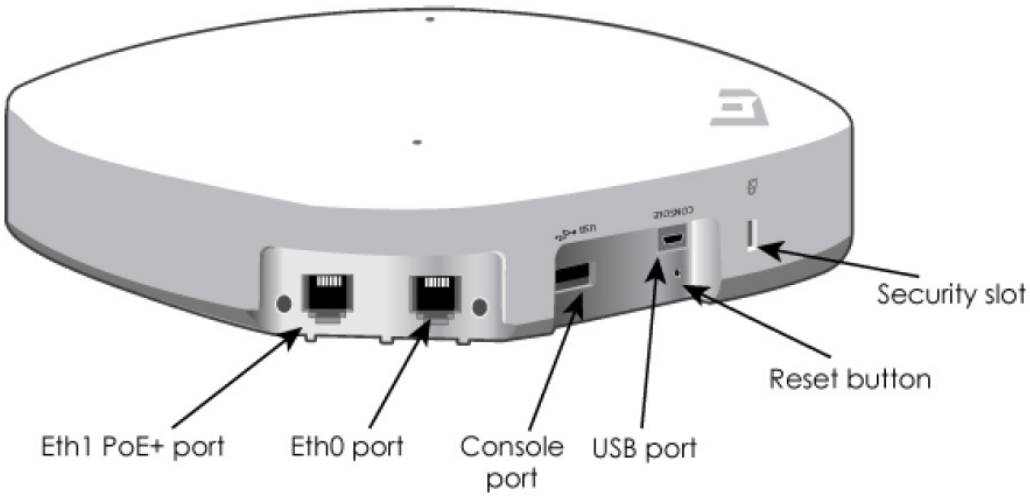
Use the holes in the bracket as a template to mark the wall. Drill holes in the wall and attach the bracket to the wall using wall screws and wall anchors if necessary. Attach the AP to the bracket in the same manner as shown in the previous section.

Lock the AP

You can secure the AP using a Kensington® lock in the lock slot on 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 AP410C in the illustration below and read about them in the sections that follow.



Component Descriptions

Status Light
The status light conveys operational states for system power, firmware updates, Ethernet and wireless interface activity, andmajor alarms. The AP410C has two status lights on the top of the chassis. At setup, this light cycles through the following sequence:

- Solid White: The power is on and the device is operational..
- Solid Amber: The device is on and is booting..
- Blinking Amber: The device is performing a firmware upgrade.

- Dark: The power is off.

Light Sensor LED
The AP410C also has a light sensor on the top of the device.

Ethernet Ports
Two RJ45 Ethernet ports (Eth0 and Eth1) automatically negotiate half- and full-duplex connections with the connecting device. Eth0 is 100/1000/2500 BASE-T, and Eth1 is 10/100/1000 BASE-T. These ports are autosensing and adjust to straight-through and crossover standard Cat5 or better Ethernet cables automatically. The AP receives power through an Ethernet connection to the ETH1 port from PSE (power sourcing equipment) that is compatible with the 802.3at and 802.3at standards.

Micro USB Console Port Micro USB Console Port
Use the Console port to make a serial connection between your management system and the AP. When you connect to the device using the Console port, the management station from which you connect to the device must have a VT100 emulation program, such as Tera Term Pro© (a free terminal emulator) or Hilgraeve HyperTerminal® (provided with Windows® operating systems from XP forward).The serial connection settings are: 9600 bits per second, 8 data bits, no parity, 1 stop bit, no flow control.

Reset Button
Use the Reset button to reset the device or restore the factory default settings. Insert a paper clip or similar tool into the Reset pinhole and press the button. To reboot the device, press the button for 5 seconds. To return the configuration to the factory default settings, press it for at least 10 seconds. After releasing the button, the indicator light goes dark, and then glows steady amber while the firmware loads and the system per-forms a self-test. After the software finishes loading and the AP has connected to Extreme Cloud IQ, the status indicator glows steady white. To prevent the reset button from resetting the configuration, enter this command:
no reset-button reset-config-enable
When this command is enabled, pressing the button for 5 seconds will still reboot the AP, but pressing it for more than 10 seconds will not reset its configuration.
Security Slot
The AP410C has a security slot for locking the device.
Extreme Networks recommends a variety of Kensington® locks. For more information, contact your sales representative.

Hardware Specifications

The following sections list radio, device, power, and environmental specifications for the AP410C.

Radio Specifications

- Radio 1: 5 GHx 2×2 band 1 and 2 + 2.4 GHz 2×2
- Radio 2: 2.4 Hz 1×1+ 5 GHz 1×1 (scanner)
- Radio 3: 5 GHz 4×4 full band or 5 GHz band 3 and 4

Operating Frequency:

- 2402 – 2483.5 MHz for the 2.4 GHz radio
- 5150-5850 MHz for the 5 GHz radio

Wi-Fi Channel Support

- WiFi 2.4G RX requirement: -96dBm@1Mbps
- WiFi 5G RX requirement: -93dBm@6M

Bluetooth BLE Beacon (BLE 5.0)

- 2402 – 2480 MHz
- Frequency Hopping Spread-spectrum (FHSS) 802.11a
- 5150-5250, 5250-5350, 5500-5720, 5725-5850 MHz 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

- 5 GHz 5150-5250, 5250-5350, 5500-5720, 5725-5850 MHz operating frequency
- 802.11n modulation
- Rates: MCS0 – MCS7
- 2×2 MIMO radio
- HT20/HT40 support (HT40 is for 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=1-2
- 5150-5250, 5250-5350, 5500-5720, 5725-5850 MHz operating frequency Rates: MCS0 – MCS9, NSS = 1-2
- 2×2 MIMO radio
- VHT20/VHT40/VHT80 support (VT40 and VT80 for 5 GHz only)

802.11ax

- 5150-5250, 5250-5350, 5500-5720, 5725-5850 MHz operating frequency
- 2.4 – 2.48 GHz operation frequency

- 802.11ax modulation (1024-QAM)
- Rates: MCS0 – MCS11, NSS = 1-2
- OFDMA support
- 2×2 MU-MIMO
- HE20/HE40/HE80 support (HE40 and HE80 for 5GHz only)

Transmit Power and Sensitivity Specifications
Output power may be limited by regulatory requirements.
Power: 2.4 GHz:
Tolerance +2/-2 dB @25°C

	Channel	Data Rate	Power (dBm)	
	11b	1,2,5.5,11	18	
11g		54 Mbps	15	
		48 Mbps	16	
		36 Mbps	17	
		6 Mbps	18	
HE20		MCS 0,1,2	18	
		MCS 3	17	
		MCS 4, 5	16	
		MCS 6,7	15	
		MCS 8,9	14	
		MCS 10,11	12	
2.4 G Sensitivity				
	11b	1 Mbps	-99	
		11 Mbps	-90	
	11g	6 Mpbs	-96	
		36 Mpbs	-84	
		48 Mbps	-80	
		54 Mbps	-78	
	HE20	MCS 0	-95	
		MCS 1	-91	
		MCS 2	-89	

	MCS 3	-86
	MCS 4	-83
	MCS 5	-79
	MCS 6	-77
	MCS 7	-76
	MCS 8	-72
	MCS 9	-70
	MCS 10	-67
	MCS 11	-64

Power: 5 GHz:

	Channel	**Data Rate**	**Power (dBm)**
	11b	1,2,5.5,11	18
11g		54 Mbps	15
		48 Mbps	16
		36 Mbps	17
		6 Mbps	18
HE20		MCS 0,1,2	18
		MCS 3	17
		MCS 4, 5	16
		MCS 6,7	15

		MCS 8,9	14
		MCS 10,11	12
2.4 G Sensitivity			
	11b	1 Mbps	-99
		11 Mbps	-90
	11g	6 Mpbs	-96
		36 Mpbs	-84
		48 Mbps	-80
		54 Mbps	-78
	HE20	MCS 0	-95
		MCS 1	-91
		MCS 2	-89
		MCS 3	-86
		MCS 4	-83
		MCS 5	-79
		MCS 6	-77
		MCS 7	-76

		MCS 8	-72	
		MCS 9	-70	
		MCS 10	-67	
		MCS 11	-64	

	Mode	**Data Rate**	**Power (dBm)**	
		MCS 10	-66	
		MCS 11	-63	
	11n HE40	MCS 0	-92	
		MCS 1	-88	
		MCS 2	-86	
		MCS 3	-83	
		MCS 4	-80	
		MCS 5	-76	
		MCS 6	-74	
		MCS 7	-73	

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

		MCS 10	-60	
		MCS 11	-57	

Tolerance +2/-2 dB @25° C

	Mode	**Data Rate**	**Power (dBm)**	
	11a	6 Mbps	19	
		36 Mbps	18	
		48 Mbps	16	
		54 Mbps	15	
	11n HE20	MCS 0,1, 2, 3, 4, 8, 9, 10, 11	19	
		MCS 13, 21	18	
		MCS 14, 22	16	
		MCS 15, 23	15	
		MCS 12, 16, 17, 18, 19, 20	19	
	11n HT40	MCS 0,1,2, 3, 4, 8	19	

		MCS 5, 13, 21	18	
		MCS 7, 15, 23	14	
		MCS 9, 10, 11, 12, 16	19	
		MCS 10	13	
		MCS 17, 18, 19, 20	19	
HE80		MCS 0,1,2	17	
		MCS 3,4,5	16	
		MCS 6,7,8	15	
		MCS 9	14	
		MCS 10	13	
		MCS 11	12	
Sensitivity				
	11a	6 Mbps	-94	
		36 Mbps	-83	
		48 Mbps	-79	

		54 Mbps	-77
	11n HE20	MCS 0	-94
		MCS 1	-91
		MCS 2	-88
		MCS 3	-86
		MCS 4	-82
		MCS 5	-78
		MCS 6	-77
		MCS 7	-75
		MCS 8	-71
		MCS 9	-69
		MCS 10	-66
		MCS 11	-63

	Mode	**Data Rate**	**Power (dBm)**

	11n HE40	MCS 0	-92
		MCS 1	-88
		MCS 2	-86
		MCS 3	-83
		MCS 4	-80
		MCS 5	-76
		MCS 6	-74
		MCS 7	-73
		MCS 8	-69
		MCS 9	-67
		MCS 10	-63
		MCS 11	-60
	HE80	MCS 0	-88
		MCS 1	-85

		MCS 2	-83	
		MCS 3	-80	
		MCS 4	-77	
		MCS 5	-73	
		MCS 6	-71	
		MCS 7	-69	
		MCS 8	-66	
		MCS 9	-64	
		MCS 10	-60	
		MCS 11	-57	

Device Specifications

- **Chassis dimensions:** Per hardware spec: 8.07” x 8.07” x 1.46” (205 mm x 205 mm x 37 mm
- **Weight:** 2.61 lbs (1.18 kilograms) approximate weight
- **Antennas:** Four dual band and three 5 GHz single band omnidirectional antennas
- **Ethernet ports:**
- Eth0: autosensing 100/1000G BASE-T/TX Mbps, requiring Cat5 or better cable.
- Eth1: autosensing 10/100/1000G BASE-T/TX Mbps, requiring Cat5 or better cable. The AP receives power through an Ethernet connection to the ETH1 port from PSE (power sourcing equipment) that is compatible with the 802.3at and 802.3at standards.

- **5.0 BLE**

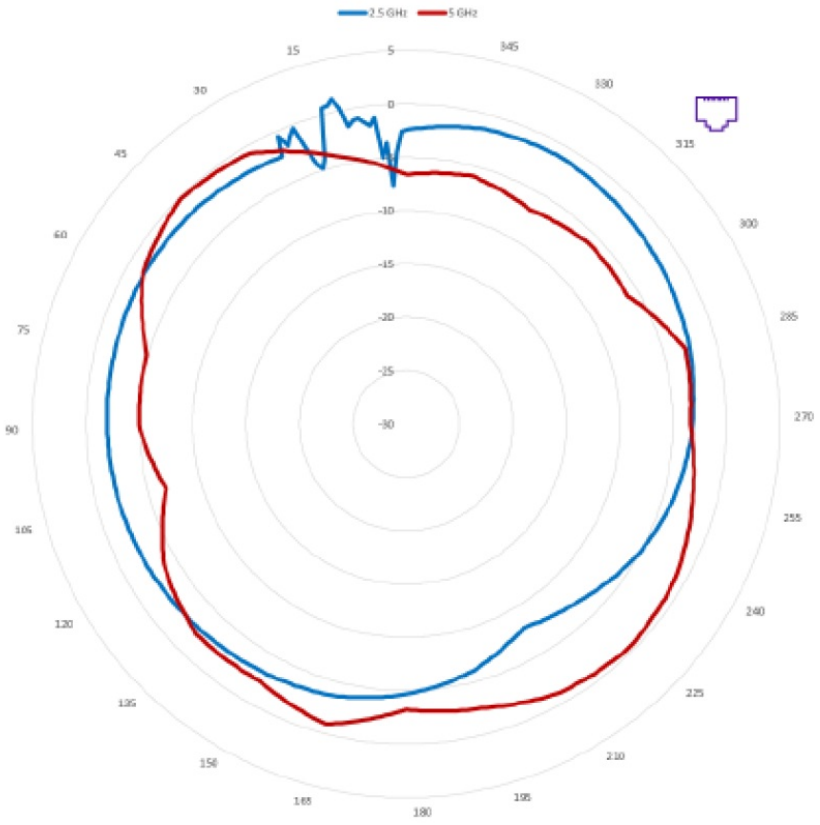
Antenna Gain

- WiFi 2.4 GHz: 3.9 dBi gain max
- WiFi 5 GHz: 4.7 dBi gain max

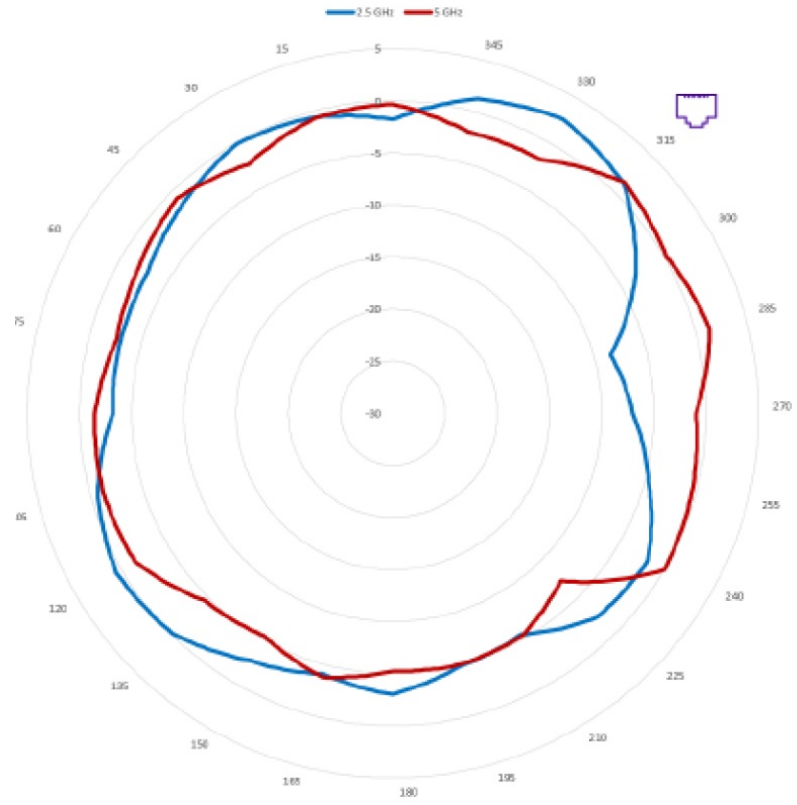
Antenna Plots
The antenna plots for the AP410C are available below. The Ethernet port location is noted on each chart.

AP410C

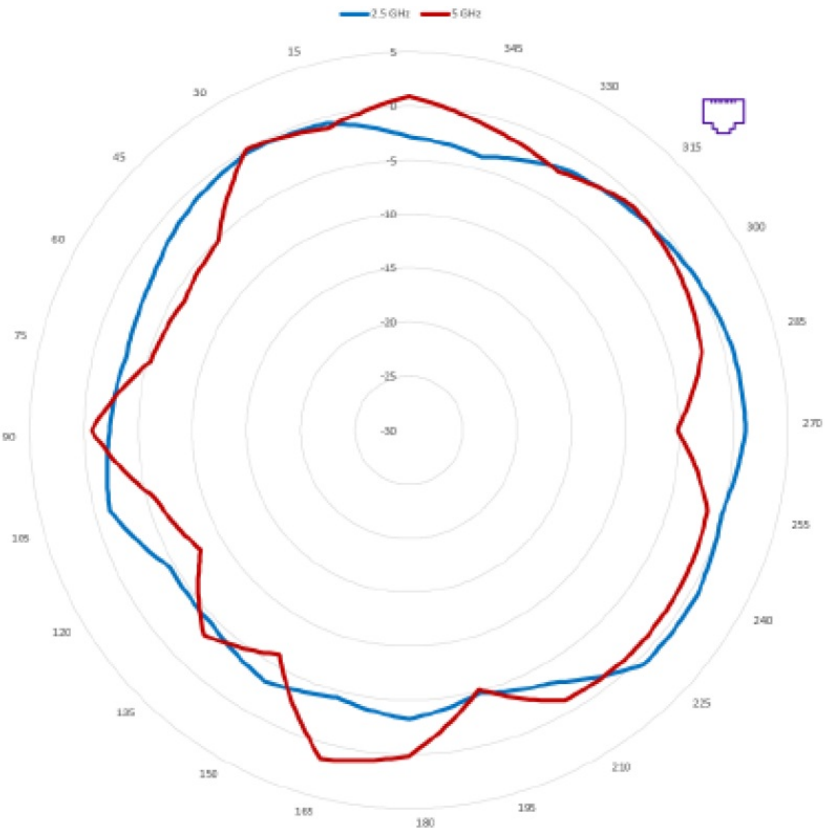
AP410C Antenna 1



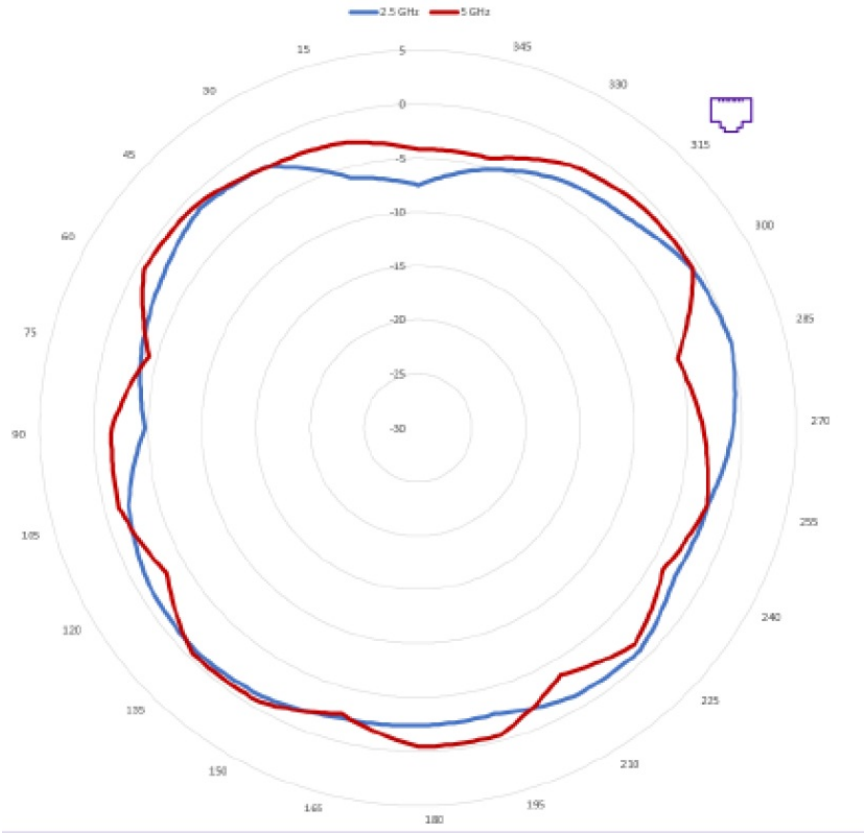
AP410C Antenna 2



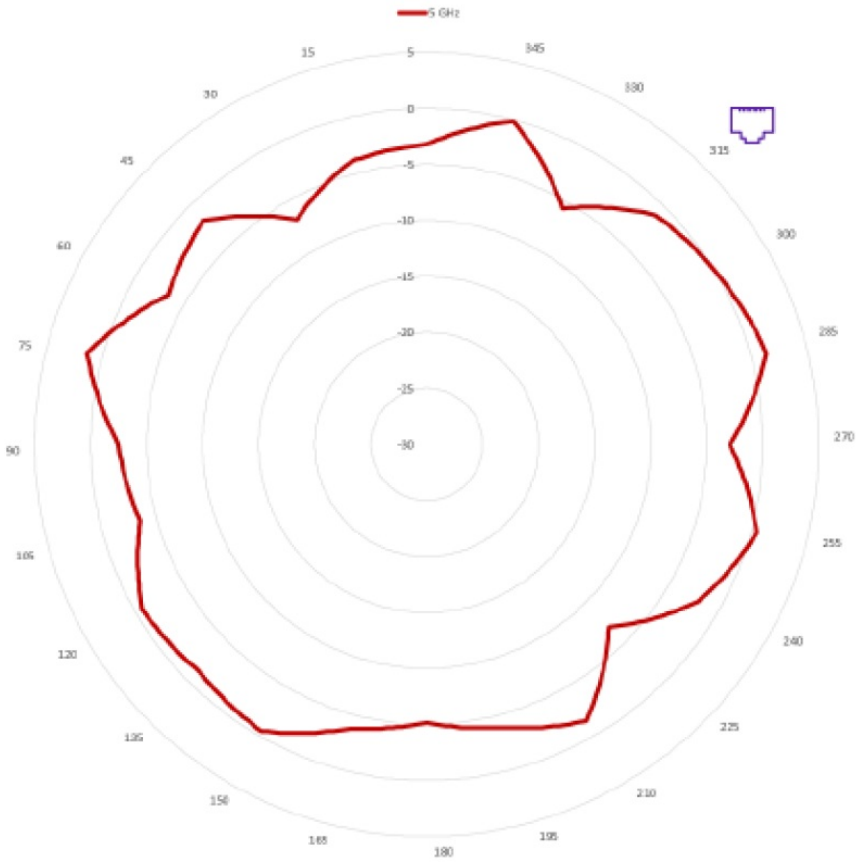
AP410C Antenna 3



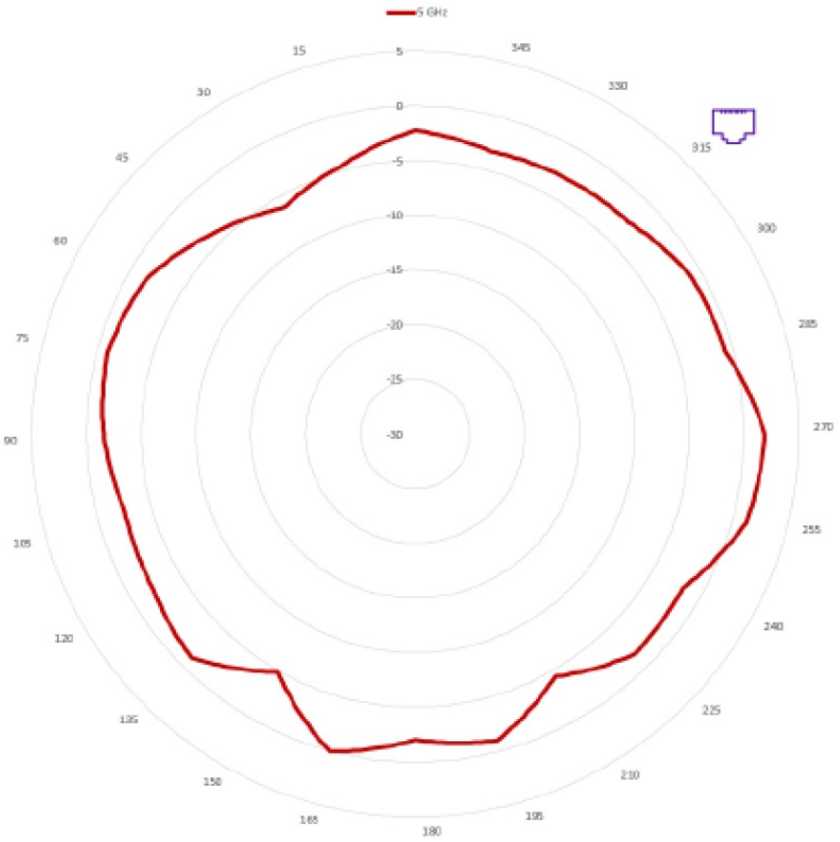
AP410C Antenna 4



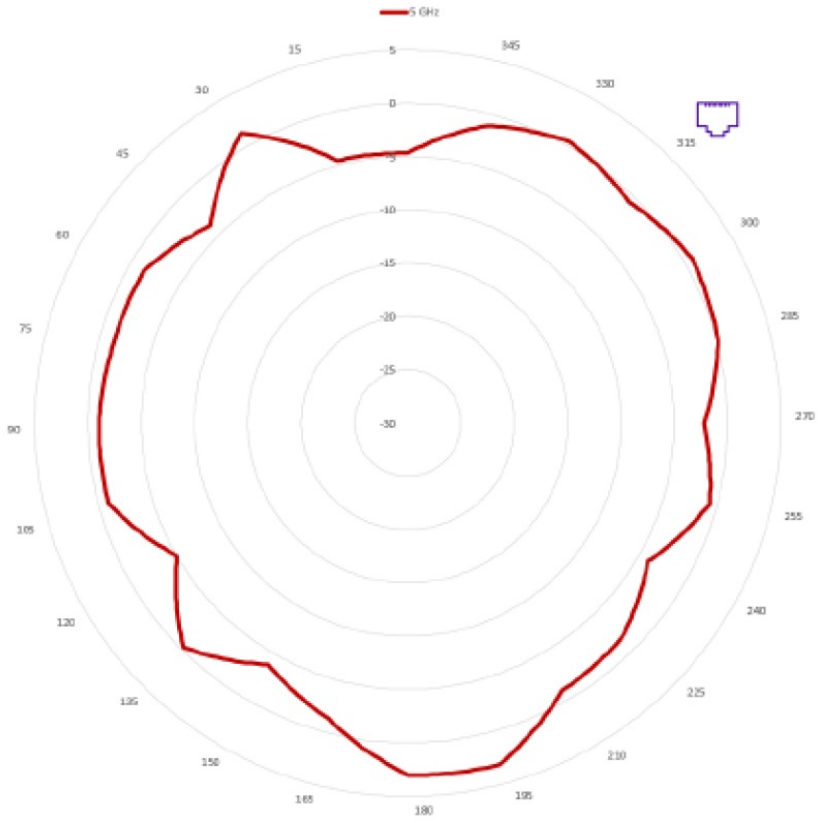
AP410C Antenna 5



AP410C Antenna 6



AP410C Antenna 7



Power and Environmental Specifications

Power and Environmental Specifications

- PoE input voltage range: 37-57 V

- ESD Protection: 8 kV contact discharge / 15 kV air discharge

Power Consumption

- PoE: 26.7W with USB, 5V/1A, 21.7W without USB
- 802.3at at Ethernet switch
- Surge Protection: 1.0 kV DM, 2 kVCM

Environmental Specifications

- Operating temperature: 32° to 104°F (0° to 40°C)
- Storage temperature: -40° to 176°F (-40° to 80°C)
- Relative Humidity: 10 to 95% RH (noncondensing)

Regulatory Compliance Statements

The regulatory compliance statements in this section apply to Extreme Networks devices.
Japan Indoor Use
For Japan, the AP410C is restricted for indoor use in the 5150-5350 MHz band only.

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 Equipment Directive 2014/53/EU.
- Hereby, [Extreme Networks], declares that this [AP410C] is in compliance with the essential requirements and other relevant pro-visions of Directive 2014/53/EU.

USA and Canada Radio Frequency Bands

- **USA**
  - l 802.11b/g/n/ac: 2.4 GHz band: 2400-2483 MHz
  - l 802.11a/n/ac/ax: 5 GHz band: 5150-5250,5250-5350, 5500-5720, 5725-5850 MHz
  - l BLE: 2402-2480 MHz
- **b. Canada**
  - l 802.11b/g/n/ac: 2.4 GHz band: 2400-2483 MHz
  - l 802.11a/n/ac/ax: 5 GHz band: 5150-5250,5250-5350, 5500-5720, 5725-5850 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/ac, 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, 5470-5725 MHz EIRP<30 dBm, 5730-5850 MHz<14 dBm
- l BLE: 2402-2480 MHz EIRP<8 dBm

EU Radiation Warning Statement

- 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:

- l Reorient or relocate the antenna of the receiving devices.
- l Increase the separation between this equipment and receiving equipment.
- l Connect this equipment into an outlet on a circuit different from that to which the receiving equipment is connected.
- l 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 8″ (20 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.
Warning: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

European Waste Electrical and Electronic Equipment (WEEE) Notice

In accordance with Directive 2012/19/EU of the European Parliament on waste electrical and electronic equipment (WEEE):

1. The symbol above indicates that separate collection of electrical and electronic equipment is required.
2. When this product has reached the end of its serviceable life, it cannot be disposed of as unsorted municipal waste. It must be collected and treated separately.
3. It has been determined by the European Parliament that there are potential negative effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic

equipment.

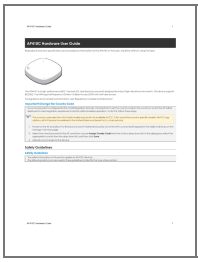
4. It is the users' responsibility to utilize the available collection system to ensure WEEE is properly treated.

For information about the available collection system, please contact Extreme Environmental Compliance at green@extremenetworks.com.

Hazardous Substances Statement and RoHS Chart

Hazardous Substances
This product complies with the requirements of Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

Documents / Resources

	Extreme networks AP410C WiFi 6 Tri-Radio Wireless Access Point [pdf] User Guide AP410CNB, QXO-AP410CNB, QXOAP410CNB, AP410C, WiFi 6 Tri-Radio Wireless Access Point, AP410C WiFi 6 Tri-Radio Wireless Access Point

References

- Legal - Extreme Networks
- Legal - Extreme Networks