

## Highlights

### Advanced Radio Technology

#### Tri-Radio Design

- 5 GHz 4x4:4
- 2.4 GHz 2x2:2
- Sensor 2x2:2 (2.4 GHz / 5 GHz)

### High Density Environments

- Delivers exceptional end-user experience even in the densest user environments

### WPA3 Support

- Includes the latest WPA3 Wi-Fi security standard delivering robust protections for users and IoT devices

### Cellular Coexistence Filter (CCF)

- Minimizes the impact of interference from cellular networks

### Fully Functional over 802.3af

- Capable of operation over 802.3af

### Smart Management Choices

- ExtremeCloud<sup>™</sup> IQ delivers powerful, simple and secure public or private cloud management capabilities [Future]
- ExtremeCloud Appliance or VX or NX controller is ideal for on-premises requirements



## ExtremeWireless<sup>™</sup> AP410i/e

### Wi-Fi 6 (802.11ax) Tri-Radio Access Point With Integrated or External Antenna Options

The AP410i/e provides high-efficiency, high-performance 802.11ax aggregate data rates up to 4.8 Gbps in the 5 GHz band and concurrent 2.4 Gbps in the 2.4 GHz band. Designed for high density environments, AP410 is powerful enough and smart enough to provide the highest level of client services without compromising security monitoring. Unlike other access points that scan only part time, the dedicated, dual-band sensor scans for rogue devices full time, eliminating the risk of vulnerability or attacks.

With more users, more devices, more things, more applications and more threats straining the infrastructure, the AP410 was engineered to meet those challenges. The AP410 combines powerful 802.11ax Wi-Fi 6 technology, advanced security and ML/AI management capabilities together into an enterprise class solution that allows you to deploy high speed, highly secure Wi-Fi into the toughest environments.



### Built to Suit Your Business Needs

**Extreme Elements** are the building blocks that allow you to tailor your network to your specific business environment, goals, and objectives. They enable the creation of an Autonomous Network that delivers the positive experiences and business outcomes most important to your organization.

Combining architecture, automation, and artificial intelligence, Extreme Elements enable you to ensure that your users get what they need — when and where they need it. Providing these superior user experiences is as simple as mixing and matching the right elements.

Learn more at [www.extremenetworks.com/extreme-elements/](http://www.extremenetworks.com/extreme-elements/).





## Security

The AP410i/e delivers the highest level of security services, beginning with support for the latest Wi-Fi Alliance WPA3 security certifications. Additionally, supporting a stateful L2-L7 DPI firewall for context-based access security.

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## Wi-Fi 6 (802.11ax) Technology

Prior generations of 802.11n, 802.11ac wave 1 and 2, can be considered generational improvements with an emphasis on faster speed. 802.11ax technology instead enhances Wi-Fi efficiency as well as speed, taking Wi-Fi networks to an entirely new level. To learn more about 802.11ax, go to: <https://www.extremenetworks.com/are-you-ready-for-802-11ax/>

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## Smart Sensor

Industry's first tri-radio 802.11ax access point with Smart Sensor capability to optimally manage radios to provide the highest level of client performance while simultaneously providing continuous RF monitoring for security threats.

The AP410i/e Patent Pending Smart-Sensor feature automates the provisioning of ADSP Sensors in customer setup without compromising their security performance. This feature intelligently selects and configures the Radio on APs that must act as sensors to cover entire site from wireless security perspective reducing the burden of network engineers.



## Management Analytics

In conjunction with management system, cloud or On-premises the AP410 provides a very rich set of data displayed via context driven widgets, representing historical data or a combination of historical and current data. This provides context-specific granularity with perspective views for locations, network, APs, individual client devices as well as policy roles. In each context, administrators can adjust dashboards from widget library.

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## RF Monitoring

Network managers will appreciate a powerful choice of RF management for their Wi-Fi networks, with SmartRF, a robust RF management system with AI/ML like functionality. Built on 10 years of experience across thousands of large scale networks and millions of access points, SmartRF algorithms manage channels, radios, load balancing, band steering and many other attributes of the RF.

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## Integrated BLE

To support both IoT and Guest Engagement services the AP410 integrates Bluetooth to connect with IoT devices with Thread wireless or engage loyalty customers with Apple iBeacon. Enterprises can use Google Eddystone to send advertisements directly to shoppers, guests, and conference attendees. This makes it ideal for businesses to advertise their app-download pages, captive portals, or site-specific information.

# Product Specifications

## Radio Specifications

### 802.11a

- 5.150–5.850 GHz Operating Frequency
- Orthogonal Frequency Division Multiplexing (OFDM) Modulation
- Rates (Mbps): 54, 48, 36, 24, 18, 12, 9, 6 w/ auto fallback

### 802.11b

- 2.4–2.5 GHz Operating Frequency
- Direct-Sequence Spread-Spectrum (DSSS) Modulation
- Rates (Mbps): 11, 5.5, 2, 1 w/ auto fallback

### 802.11g

- 2.4–2.5 GHz Operating Frequency
- Orthogonal Frequency Division Multiplexing (OFDM) Modulation
- Rates (Mbps): 54, 48, 36, 24, 18, 12, 9, 6 w/ auto fallback

### 802.11n

- 2.4–2.5 GHz & 5.150–5.850 GHz Operating Frequency
- 802.11n Modulation
- HT20 High-Throughput (HT) Support (for both 2.4 GHz and 5 GHz)
- HT40 High-Throughput (HT) Support for 5 GHz
- A-MPDU and A-MSDU Frame Aggregation

### 802.11ac

- 5.150–5.850 GHz Operating Frequency
- 802.11ac Modulation (256-QAM)
- Rates (Mbps): MCS0 – MCS31 (6.5Mbps - 600Mbps)
- 5G: 4x4 Multiple-In, Multiple-Out (MIMO) Radio
- 2.4G: 2x2 Multiple-In, Multiple-Out (MIMO) Radio
- Rates (Mbps): MCS0-MCS9 (6.5Mbps - 3467Mbps), NSS = 1-4.
- 4x4:4 Stream Multiple-In, Multiple-Out (MIMO) Radio
- VHT20/VHT40/VHT80/VHT160 support
- TxBF (Transmit Beamforming)

### 802.11ax

- 2.4–2.5 GHz & 5.150–5.850 GHz Operating Frequency
- 802.11ax Modulation (1024-QAM)
- Dual-band OFDMA
- Rates (Mbps):
  - 5G: HE0-HE11 (8 Mbps - 4800 Mbps)
  - 2.4G: HE0-HE11 (8Mbps - 574 Mbps)
- HE20/HE40/HE80/HE160 support for 5 GHz
- HE20/HE40 support for 2.4 GHz
- DL SU-MIMO and MU-MIMO
- TxBF (Transmit Beamforming)

## IOT Radio

- BLE Radio Bluetooth® Low Energy (BLE) and IEEE® 802.15.4 compliant

## Interfaces

- (1) 100/1000/2500 Mbps auto-negotiation Ethernet port, RJ45 PoE (Power over Ethernet 802.3at) Port
- (1) 10/100/1000 Mbps auto-negotiation Ethernet port, RJ45
- USB3.0, Type A , 0.5A

## Power Specifications

- IEEE 802.3at PoE Power

## Power Options

- Power Draw: Typical: 14.6 W; Max: 18.7 W (w/o USB)  
Typical: 17.6 W; Max: 21.7 W (w/ USB)
- 802.3at Power over Ethernet (PoE) capable
- Gigabit Ethernet port (RJ-45 power input pins:
  - Wires 4,5,7,8 or 1,2,3,6)
- 802.3af Power over Ethernet injector

## Physical

- 6.5" x 7" x 1.8" (165mm x 180mm x 47mm)
- AP410i/e: 1.5 lbs

## Antennas

### AP410i - Internal Antennas

- (2) Integrated single band, 2.4-2.5 GHz omnidirectional antennas
- (4) Integrated single band, 5.1-5.8 GHz omnidirectional antennas
- (2) Integrated dual band, 2.4-2.5 GHz and 5.1-5.8 GHz omnidirectional antennas for Sensor
- (1) Integrated single band, 2.4-2.5 GHz omnidirectional antennas for BLE

### AP410e - External Antennas

- 6 RP SMAs connectors
- 1 RP SMAs connector for BLE

## Mounting

- Wall, and flat tile and 15/16" wide tbar, mount included as part of AP.
- Built-in slot for Kensington type locks
- 5/8" Ceiling tile protrusions on 9/16". 15/16" and 1.5" wide t-bars sold as an accessory
- Flush ceiling tiles with 9/16". 15/16" and 1.5" wide t-bars sold as an accessory

## Environmental

- Operating: AP410i: 0 to 50°C  
AP410e: -20 to 55°C
- Storage: -40 to 70°C
- Humidity: 0% to 95% (non-condensing)

## Environmental Compliance

- UL2043 - Plenum Rated

## Regulatory Compliance

### Product Safety Certifications

- IEC 60950-1, EN 60950-1, UL 60950-1, CSA 22.2 No.60950-1-03 AS/NZS 60950.1,
- RoHS Directive 2011/65/EU

## Radio Approvals

- FCC CFR 47 Part 15, Class B
- ICES-003, Class B
- FCC Subpart C 15.247
- FCC Subpart E 15.407
- RSS247
- AS/NZS4268 + CISPR32
- IEC/EN 60601-1-2,
- EN 62479
- EN 62311
- EN 50385
- EN 301 489-1
- EN 301 489-3
- EN 301 489-17
- EN 55032, (Class B)
- EN 55011, (Group 1, Class B)
- EN 55024
- EN 60601-1-2
- EN 61000-3-2
- EN 61000-3-3
- EN 300 328
- EN 301 893
- EN 300 440
- EN 50581

## Support

- Limited Lifetime Warranty WiNG

## AP410i

### Power and Receive Sensitivity - 2.4 GHz

Channel	Data Rate	Power (dBm)	Sensitivity
11b	1 - 11 Mbps	20	-96, -89
11g	6 Mbps	20	-92
	54 Mbps	19	-75
11n HT20	MCS0, 7	20, 19	-92, -72
11n HT40	MCS0, 7	20, 19	-89, -69
11ax HE20	HE0, 11	20, 18	-91, -62
11ax HE40	HE0, 11	20, 18	-88, -59

### Power and Receive Sensitivity - 5 GHz

Channel	Data Rate	Power (dBm)	Sensitivity
11a	6 Mbps	20	-94
	54 Mbps	19	-76
11n HT20	MCS0, 7	20, 18	-93, -74
11n HT40	MCS0, 7	20, 18	-90, -71
11ac VHT20	MCS0, 8	20, 17	-92, -71
11ac VHT40	MCS0, 9	20, 17	-89, -65
11ac VHT80	MCS0, 9	20, 17	-86, -62
11ac VHT160	MCS0, 9	20, 17	-83, -59
11ax HE20	HE0, 11	20, 16	-91, -61
11ax HE40	HE0, 11	20, 16	-88, -58
11ax HE80	HE0, 11	20, 16	-85, -55
11ax HE160	HE0, 11	20, 16	-82, -52

### (Sensor) Receive Sensitivity - 2.4 GHz

Channel	Data Rate	Sensitivity
11b	1 - 11 Mbps	-95, -88
11g	6 Mbps	-91
	54 Mbps	-74
11n HT20	MCS0, 7	-91, -71
11n HT40	MCS0, 7	-88, -68
11ax HE20	HE0, 11	-90, -61
11ax HE40	HE0, 11	-87, -58

### Receive Sensitivity - 5 GHz

Channel	Data Rate	Sensitivity
11a	6 Mbps	-93
	54 Mbps	-75
11n HT20	MCS0, 7	-92, -72
11n HT40	MCS0, 7	-89, -69
11ac VHT20	MCS0, 8	-91, -68
11ac VHT40	MCS0, 9	-88, -64
11ac VHT80	MCS0, 9	-85, -61
11ax HE20	HE0, 11	-91, -61
11ax HE40	HE0, 11	-88, -58
11ax HE80	HE0, 11	-85, -55

## AP410e

### Power and Receive Sensitivity - 2.4 GHz

Channel	Data Rate	Power (dBm)	Sensitivity
11b	1 - 11 Mbps	19	-95, -88
11g	6 Mbps	19	-91
	54 Mbps	18	-74
11n HT20	MCS0, 7	19, 18	-91, -71
11n HT40	MCS0, 7	19, 18	-88, -68
11ax HE20	HE0, 11	19, 17	-90, -61
11ax HE40	HE0, 11	19, 17	-87, -58

### Power and Receive Sensitivity - 5 GHz

Channel	Data Rate	Power (dBm)	Sensitivity
11a	6 Mbps	18	-92
	54 Mbps	17	-74
11n HT20	MCS0, 7	18, 16	-91, -72
11n HT40	MCS0, 7	18, 16	-88, -69
11ac VHT20	MCS0, 8	18, 15	-90, -69
11ac VHT40	MCS0, 9	18, 15	-87, -63
11ac VHT80	MCS0, 9	18, 15	-84, -60
11ac VHT160	MCS0, 9	18, 15	-81, -57
11ax HE20	HE0, 11	18, 14	-89, -59
11ax HE40	HE0, 11	18, 14	-86, -56
11ax HE80	HE0, 11	18, 14	-83, -53
11ax HE160	HE0, 11	18, 14	-80, -50

### (Sensor) Receive Sensitivity - 2.4 GHz

Channel	Data Rate	Sensitivity
11b	1 - 11 Mbps	-94, -87
11g	6 Mbps	-90
	54 Mbps	-73
11n HT20	MCS0, 7	-90, -70
11n HT40	MCS0, 7	-87, -67
11ax HE20	HE0, 11	-89, -60
11ax HE40	HE0, 11	-86, -57

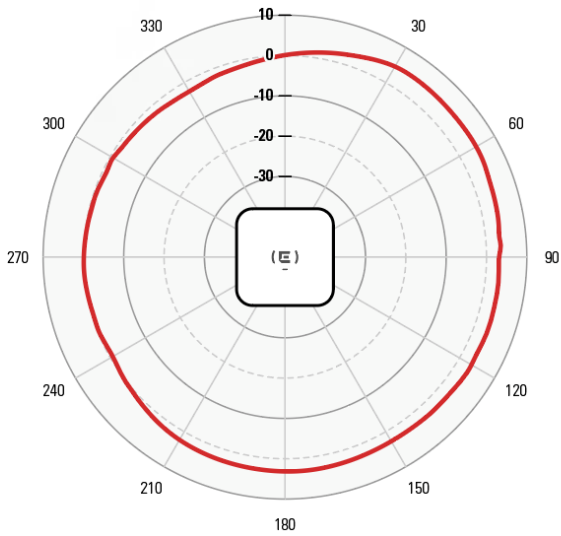
### Receive Sensitivity - 5 GHz

Channel	Data Rate	Sensitivity
11a	6 Mbps	-92
	54 Mbps	-74
11n HT20	MCS0, 7	-91, -72
11n HT40	MCS0, 7	-88, -69
11ac VHT20	MCS0, 8	-90, -69
11ac VHT40	MCS0, 9	-87, -63
11ac VHT80	MCS0, 9	-84, -60
11ax HE20	HE0, 11	-89, -59
11ax HE40	HE0, 11	-86, -56
11ax HE80	HE0, 11	-83, -53

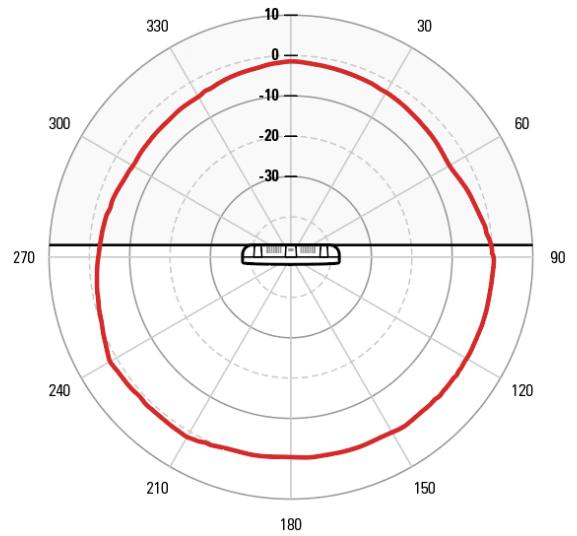
# Radiation Patterns – Azimuth and Elevation

## AP410i Antenna Radiation Patterns – 2.4GHz

AZIMUTH 2.4 GHZ

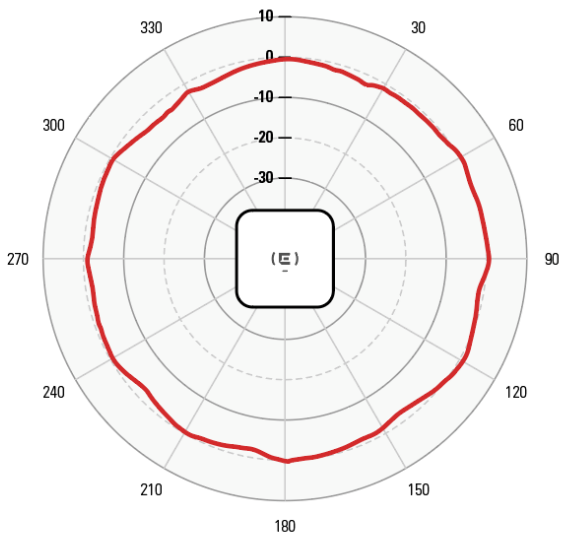


ELEVATION 2.4 GHZ

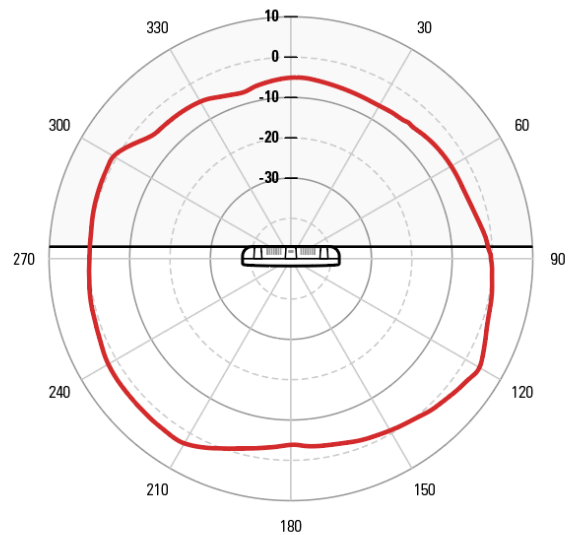


## AP410i Antenna Radiation Patterns – 5.0GHz

AZIMUTH 5 GHZ



ELEVATION 5 GHZ



# Ordering Information

## AP410i/e

Mkt Part #	Description
AP410i-FCC	Tri Radio 802.11ax - 4x4:4 + 2x2:2, Full time 2x2:2 Sensor, Indoor Internal Antenna Access Point. Domain: US, and Puerto Rico
AP410i-CAN	Tri Radio 802.11ax - 4x4:4 + 2x2:2, Full time 2x2:2 Sensor, Indoor Internal Antenna Access Point. Domain: Canada
AP410i-WR	Tri Radio 802.11ax - 4x4:4 + 2x2:2, Full time 2x2:2 Sensor, Indoor Internal Antenna Access Point. Domain: EMEA, Rest of World
AP410e-FCC	Tri Radio 802.11ax - 4x4:4 + 2x2:2, Full time 2x2:2 Sensor, Indoor External Antenna Access Point. Domain: US, and Puerto Rico
AP410e-CAN	Tri Radio 802.11ax - 4x4:4 + 2x2:2, Full time 2x2:2 Sensor, Indoor External Antenna Access Point. Domain: Canada
AP410e-WR	Tri Radio 802.11ax - 4x4:4 + 2x2:2, Full time 2x2:2 Sensor, Indoor External Antenna Access Point. Domain: EMEA, Rest of World

## AP410i/e - Mounting Options

Mkt Part #	Description
37201	Mounting Plate for Indoor APs (included in box)
KT-135628-01	Universal Mounting Kit for WLAN APs Requires (37201) bracket for mounting
BRKT-000147A-01	Beam Clip Accessory
37210	Flat Metal Indoor Bracket
30518	WS-MBI-DCMTR01 bracket
30516	WS-MBI-WALL04
37211	WS-MBI-DCFLUSH

## AP410i/e - Power Options

Mkt Part #	Description
PD-3501G-ENT	Single Port 802.3AF Midspan Device
PD-9001GR-ENT	Single Port 802.3AT Compliant Midspan
37215	PWR 12VDC, 2A, 2.5mm x 5.5mm connector

## Antennas - AP410e

Mkt Part #	Description
ML-2452-APA2-01	Dipole, 3.2dBi/4.9dBi, dual band, black with RPSMA plug connector (up to 7 per AP)
ML-2452-APA2-02	Dipole, 3.2dBi/4.9dBi, dual band, white with RPSMA plug connector (up to 7 per AP)
ML-2452-HPA5-036	Dipole, 3.9dBi/ 5.7dBi, dual band, outdoor, white with RPSMA plug connector (up to 7 per AP)
ML-2452-HPAG4A6-01	Dipole, 4dBi/ 7.3dBi, dual band, outdoor, white with standard N plug connector (up to 7 per AP)
ML-2452-PNA5-01R	Panel, 120 deg sector, 4.5dBi/ 5dBi, dual band, outdoor, 4" lead with standard N plug connector (up to 7 per AP)
ML-2452-PTA4M4-036	Patch, 360 deg, 4dBi/ 5dBi, dual band, indoor, with quad feed 36" leads and RPSMA plug connectors
ML-2452-HPAG5A8-01	Dipole Omni, 7.5dBi/8dBi, dual band, outdoor with standard N Plug connector (up to 7 per AP)
ML-2452-SEC6M4-036	Polarized Panel, 10 O/ 80 deg, 6.92dBi/ 7.23dBi, dual band, indoor with quad feed 32" leads and standard RP SMA plug connectors
ML-2452-PNA7-01R	Panel, 68/ 52 deg sector, 7.8dBi/ 10.7dBi, dual band, outdoor, 4" lead with standard N plug connector (up to 7 per AP)
AI-DQ04360S	Dipole Omni Array, 5.5dBi/ 6dBi, dual band, outdoor with quad feed 36" leads and RPSMA connectors
30702	WS-AI-DQ05120 Indoor, 2.3-2.7/4.9-6.1GHz, 4-feed, 5dBi, 120 degree sector antenna with standard RPSMA-type plug connector
30705	WS-AI-DE07025 Indoor 2.4GHz/5GHz, eight feed, 6.5/5.5dBi, 25 degree sector antenna with standard RPSMA-type plug connector
30707	WS-AI-DE10055 Indoor 2.4GHz/5GHz, eight feed, 10/6dBi, 55 degree sector antenna with standard RPSMA-type plug connector



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