AP4000

Highlights

Advanced Radio Technology: Tri-Radio Design
- 2.4 GHz (2x2:2)
- 5 GHz (2x2:2)
- 6 GHz (2x2:2)

Operational modes
- Mode 1: 2.4 GHz/5 GHz/6 GHz Data Radios
- Mode 2: 2.4 GHz/5GHz Data radios + Tri-frequency band sensor (2.4 GHz/5 GHz/6 GHz)

Universal Hardware Platform
- Cloud: ExtremeCloud™ IQ
- On-Premises: ExtremeCloud IQ Controller

Superior Tri-Frequency Radio Performance
- Multi-band filter reduces interference and enables 5 GHz and 6 GHz operation
- Multi-band functionality out-of-the-box without a software or hardware upgrade

Cellular Coexistence Filter (CCF)
- Minimizes the impact of interference from cellular networks

Fully Functional over 802.3at
Smart Management Choices
- ExtremeCloud IQ for public, private, and ExtremeCloud Edge cloud management capabilities
- ExtremeCloud Appliance controller is ideal for on-premises requirements

Wi-Fi 6E Tri-Radio Indoor Access Point with Support for Multiple Extreme Operating Systems

The AP4000 is a Universal and World SKU Wi-Fi 6E Wireless Access point that can run multiple Extreme operating systems for on-premises or cloud deployments. This innovation simplifies the sales ordering process and reinforces Extreme's commitment to the journey to the "Infinite Enterprise." The World SKU allows customers, partners, and distributors to order one model for any region, replacing the age-old problem of country specific SKUs.

The AP4000 Wi-Fi 6E access point, with three 2x2:2 radios, provides high-efficiency, high-performance 802.11ax aggregate data rates up to 3.9 Gbps in the 6 GHz, 5 GHz, and 2.4 GHz band. Designed for high density environments, such as schools, warehouses, healthcare facilities, and stadiums, the AP4000 is powerful and intelligent enough to provide the highest level of client services without compromising security. Despite powerful capabilities, the AP4000 allows for flexible placement with a small form-factor, emphasizing aesthetics.

With more users, more devices, more things, more applications, and more threats straining the infrastructure, the AP4000 was engineered to meet those challenges. The AP4000 combines powerful 802.11ax Wi-Fi 6E technology, advanced security, and ML/AI management capabilities together as an enterprise-class solution that allows you to deploy high speed, highly secure Wi-Fi into high-density environments.

Unlike other access points that scan only part-time, the AP4000 features a dedicated tri-frequency sensor that monitors for rogue devices full time, eliminating the risk of vulnerability and attacks. This tri-radio AP is capable of multiple operating modes, optimizing for maximum performance without trading off security. The AP4000 is the first enterprise Wi-Fi 6E access point that features a fully functional Multi-Band filter, enabling simultaneous operations with no performance degradation between all the 5 GHz frequencies and the entire range of 6 GHz frequencies (U-NII-5 through U-NII-8 bands).*

* Country dependent

Wi-Fi 6E Enhanced Capacity

By utilizing the additional 6 GHz spectrum offered by Wi-Fi 6E, the AP4000 operates across three times as much spectrum as previous generations of Wi-Fi to deliver enhanced wireless experiences, faster speeds, and less interference.

Band	No. of 20 MHz Channels	Max Channel Size	Max throughput
6 GHz	59	160 MHz	2.4 Gbps
5 GHz	25	80 MHz	1.2 Gbps
2.4 GHz	3	20 MHz	287 Mbps
Total	87		3.9 Gbps

For US regulatory environments (20 MHz channels)

Wi-Fi 6E (802.11ax) Technology

Wi-Fi 6 ushered a new generation of Wi-Fi. While prior generations emphasized on higher speeds, 802.11ax technology instead focused on improving Wi-Fi efficiency as well as speed, taking Wi-Fi networks to an entirely new level. Now, with addition of the 6 GHz band for unlicensed operation, Wi-Fi 6E has access to up to 1,200 MHz of spectrum*, which is three times that of existing "usable" spectrum and which enables improved quality of service (QoS) in dense environments, new applications and use cases, and an improved user experience. Visit here to learn more about 802.11ax and Wi-Fi 6E.

* Country dependent

Management Analytics

In conjunction with Extreme centralized management software, cloud or on-premises, the AP4000 provides a rich set of data displayed via context driven widgets, representing unlimited 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, and policy roles. In each context, administrators can adjust dashboards using a widget library.

Tri-Radio Programmable AP

Extreme launched the industry's first software defined Wi-Fi 6E access point supporting two software programmable modes to optimally manage radios to provide the highest level of client performance. The AP4000 is a tri-radio access point and can transmit with three data radios or with two data radios and a dedicated tri-frequency sensor. The AP4000 intelligently monitors the software-configurable radios, enabling network managers to configure network RF technology based on the user environment and configure the access points in different modes as required.

Security

The AP4000 delivers the highest level of security services, beginning with support for the latest Wi-Fi Alliance WPA3 security certifications. Additionally, the access point supports a stateful L2-L7 DPI firewall for context-based access security, tri-frequency security and location analytics sensor, Private Pre-Shared Key (PPSK), and much more..

Universal Hardware

The AP4000 as a universal hardware platform comes with a muti-persona capability allowing user choice of the Wi-Fi operating system (OS). The ExtremeCloud IQ operating system, the ExtremeCloud IQ Controller Engine operating system, or the WiNG operating system persona can be enabled as required. The desired persona can be selected at start-up or changed at a later stage. After you select the persona, the AP4000 assumes the features or capabilities of the selected OS. When first booted, the AP4000 automatically connects to ExtremeCloud IQ to find its persona. The pre-provisioned OS persona is then remotely enabled on the AP4000 system, eliminating the need for manual selection.

Integrated Bluetooth Low Energy and USB Port

To support both IoT and Guest Engagement services, the AP4000 integrates Bluetooth® to connect with IoT devices to engage loyalty customers with Apple iBeacon. Enterprises can use API driven applications 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
Max Users

SSID per Radio/Total: 16/48

Users per Radio/total: 512/1536

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 and 5.150–5.850 GHz Operating Frequency

802.11n Modulation

HT 20 High-Throughput (HT) Support (for both 2.4 GHz and 5 GHz)

HT 40 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: 2x2 Multiple-In, Multiple-Out (MIMO) Radio

2.4G: 2x2 Multiple-In, Multiple-Out (MIMO) Radio

Rates (Mbps): MCS0–MCS9 (6.5Mbps), 1734Mbps, NSS = 1-2.

2x2:2 Stream Multiple-In, Multiple-Out (MIMO) Radio

VHT20/VHT40/VHT80 support

TxBF (Transmit Beamforming)

802.11ax

2.4-2.5GHz, 5.50-5.850 and 5.925-7.125 GHz Operating Frequencies

802.11ax Modulation (1024-QAM)

Dual-band OFDMA

6G Rate: HE0-HE11 (8 Mbps – 2400 Mbps)

5G Rate : HE0-HE11 (8 Mbps – 1200 Mbps)

2.4G Rate: HE0-HE11 (8Mbps – 574 Mbps)

2x2:2 Stream Multiple-In, Multiple-Out (MIMO) Radio @ 6 GHz

2x2:2 Stream Multiple-In, Multiple-Out (MIMO) Radio @ 5 GHz

2x2:2 Stream Multiple-In, Multiple-Out (MIMO) Radio @ 2.4 GHz

HE20/HE40/HE80/HE160 support for 6 GHz

HE20/HE40/HE80 support for 5 GHz

HE20/HE40 support for 2.4 GHz

DL SU-MIMO and MU-MIMO

TxBF (Transmit Beamforming)

IoT Radio
Thread, Zigbee®, Bluetooth® 5.2 Low Energy, IEEE 802.15.4

Note: IoT Radio is included for certain AP4000 model SKUs.

Interfaces
Eth0, Eth1: (2) Wired Ethernet ports (RJ-45)

(1) 100/1000/2500Mbps auto-sensing link speed Ethernet port, POE 802.3at

(1) 10/100/1000 Mbps auto-sensing link speed Ethernet port

802.3az Energy Efficient Ethernet (EEE)

USB 2.0, Type A, 5V/500mA

Power Specifications
IEEE 802.3at PoE Power

Power Options
Power Draw: Typical: 12.3W; Max: 13.8W (w/o USB), Typical: 15W; Max: 16.6W (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)

Physical
Dimensions: 8" x 8" x 1.5" (205mm x 205mm x 37mm)

Weight: 1.88 pounds (.85 kg)

Kensington lock slot

Trusted Platform Module(TPM)

Internal Antennas
(2) Integrated single band, 5.925-7.125 GHz omnidirectional antennas

(2) Integrated dual band, 2.4-2.5 GHz and 5.1-5.8 GHz omnidirectional

(2) Integrated dual band, 2.4-2.5 GHz and 5.1-5.8 GHz omnidirectional for sensor

(1) Integrated dual band, 2.4-2.5 GHz omnidirectional for IoT

Mounting
AP support 15/16 flush ceiling tile included in box

Wall mount included in box or sold as an accessory

Ceiling Tile Recessed 15/16 sold as accessory

Beam sold as an accessory

Junction Box sold as an accessory

IL or 9/16 t-bar sold as an accessory

SL (Silhouette) sold as an accessory

Wing Main Plate adaptor sold as an accessory

Built in slot for Kensington

Environmental Specifications

Operating: 0°C to 50°C (32°F to 122°F)

Storage: -40°C to 70°C (-40°F to 158°F)

Humidity: 0% to 95% (non-condensing)

Environmental Compliance

EU RoHS – 2011/65/EU

EU WEEE – 2012/19/EU

EU REACH - Regulation (EC) No 1907/2006 – Reporting

EU SCIP – EU Waste Framework Directive

China RoHS – SJ/T 11363-2006

Taiwan RoHS CNS 15663 (2013.7)

Regulatory Compliance

Radio Standards USA

Part 15C - 15.247

Part 15E - 15.407

Part 15B EMC class B

RF exposure - KDB 447498D01V06 FCC Part 1.1310

ANSI C63.4 test methods

IEC 60601-1-2 EMC for medical devices

Radio Standards Canada

RSS 247 for 2.4G 802.11

IECS-003 class B

RF exposure - RSS-102: Issue 5, 2015

Radio Standards CE

2014/53/EU Radio Equipment Directive

EN 300 328, EN 301 893, EN 302 502, EN 300 440

EN 301 489 1, EN 301 489 17, EN 62311, EN 62479, EN 50385

Regulatory and Safety

North American ITE

UL 60950-1 2nd edition Listed device (U.S.)

CSA 22.2 No. 60950-1 2nd edition 2014 (Canada)

UL/CuL 62368-1 Listed

UL 2043 Plenum rated

European ITE

EN 62368-1

2014/35/EU Low Voltage Directive

International ITE

CB Report and Certificate per IEC 60950-1 + National Differences

CB Report and IEC 62368-1

AS/NZS 60950-1 (Australia/New Zealand)

EMI/EMC Standards

North American EMC Standards

FCC CFR 47 part 15 Class A (USA)

ICES-003 Class A (Canada)

European EMC Standards

EN 55032 Class A

EN 55035

EN 55011

EN 61000-3-2 (Harmonics)

EN 61000-3-3 (Flicker)

EN 300 386 (EMC Telecommunications)

2014/30/EU EMC Directive

International EMC Certifications

CISPR 32 Class A (International Emissions)

AS/NZS CISPR 32

CISPR 24 Class A (International Immunity)

IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6

IEC/EN 61000-4-11

Wi-Fi Alliance Certifications

Connectivity	Wi-Fi CERTIFIED 6™ Wi-Fi CERTIFIED™ a,b, g, n, ac Enhanced Open
Optimization	WMM® Wi-Fi Agile Multiband™
Security	Protected Management Frames WPA™ – Enterprise, Personal WPA2™ – Enterprise, Personal WPA3™ – Enterprise, Personal

Power and Sensitivity Tables

Power and Receive Sensitivity - 2.4 GHz Radio

Channel	DataRate	Power(dBm)	Sensitivity (dBm)
11b	1 - 11 Mbps	19	-94, -87
11g	6 Mbps	19	-91
	54 Mbps	16	-73
11n HT20	MCS0,7	19, 16	-91,-72
11n HT40	MCS0,7	18, 16	-88,-69
11ax HE20	HE0,11	19, 14	-90,-60
11ax HE40	HE0,11	18, 14	-87,-57

Maximum EIRP may vary based upon deployed country.

Power and Receive Sensitivity - 5 GHz Radio

Channel	DataRate	Power(dBm)	Sensitivity (dBm)
11a	6 Mbps	18	-94
	54 Mbps	17	-75
11n HT20	MCS0,7	18, 16	-94,-75
11n HT40	MCS0,7	18, 16	-91,-72
11ac VHT20	MCS0,8	18, 15	-94,-71
11ac VHT40	MCS0,9	18, 15	-91,-67
11ac VHT80	MCS0,9	18, 15	-88,-64
11ax HE20	HE0,11	18, 14	-93,-64
11ax HE40	HE0,11	18, 14	-90, -60
11ax HE80	HE0,11	18, 14	-87, -57

Maximum EIRP may vary based upon deployed country.

Power and Receive Sensitivity - 6 GHz Radio

Channel	DataRate	Power(dBm)	Sensitivity (dBm)
11a	6 Mbps	18	-93
	54 Mbps	16	-75
11n HT20	MCS0,7	18, 15	-93,-75
11n HT40	MCS0,7	17, 15	-91,-72
11acVHT20	MCS0,8	18, 14	-93,-71
11ac VHT40	MCS0,9	17, 13	-91,-67
11acVHT80	MCS0,9	17, 13	-88,-64
11ac VHT160	MCS0,9	17, 11	-85, -61
11ax HE20	HE0,11	18, 12	-92,-63
11ax HE40	HE0,11	17, 12	-90,-60
11ax HE80	HE0,11	17, 12	-87, -57
11ax HE160	HE0,11	17, 11	-84, -54

Maximum EIRP may vary based upon deployed country.

Power and Receive Sensitivity - 2.4 GHz Sensor

Channel	DataRate	Power(dBm)	Sensitivity (dBm)
11b	1 - 11 Mbps	16	-95, -88
11g	6 Mbps	16	-94
	54 Mbps	16	-77
11n HT20	MCS0,7	16, 15	-93,-75
11n HT40	MCS0,7	16, 15	-90,-72
11ax HE20	HE0,11	16, 14	-92,-62
11ax HE40	HE0,11	16, 14	-89,-59

Maximum EIRP may vary based upon deployed country.

Power and Receive Sensitivity - 5 GHz Sensor

Channel	DataRate	Power(dBm)	Sensitivity (dBm)
11a	6 Mbps	20	-95
	54 Mbps	17	-76
11n HT20	MCS0,7	20, 17	-95,-75
11n HT40	MCS0,7	20, 17	-92,-72
11ac VHT20	MCS0,8	20, 16	-94,-72
11ac VHT40	MCS0,9	20, 15	-91,-67
11ac VHT80	MCS0,9	20, 15	-88,-64
11ac VHT160	MCS0,9	20, 15	-85, -61
11ax HE20	HE0,11	20, 15	-94,-64
11ax HE40	HE0,11	20, 15	-91, -61
11ax HE80	HE0,11	20, 15	-88, -58
11ax HE160	HE0,11	20, 15	-85, -55

Maximum EIRP may vary based upon deployed country.

Power and Receive Sensitivity - 6 GHz Sensor

Channel	DataRate	Power(dBm)	Sensitivity (dBm)
11a	6 Mbps	18	-93
	54 Mbps	16	-75
11n HT20	MCS0,7	18, 16	-93,-75
11n HT40	MCS0,7	17, 16	-91,-72
11ac VHT20	MCS0,8	18, 14	-93,-71
11ac VHT40	MCS0,9	17, 13	-91,-67
11ac VHT80	MCS0,9	17, 13	-88,-64
11ac VHT160	MCS0,9	17, 11	-85, -61
11ax HE20	HE0,11	18, 12	-92,-63
11ax HE40	HE0,11	17, 12	-90,-60
11ax HE80	HE0,11	17, 12	-87,-57
11axHE160	HE0,11	17, 11	-84, -54

Maximum EIRP may vary based upon deployed country.

AP4000 Antenna Gains

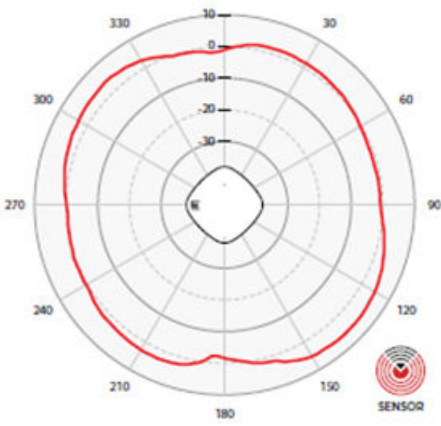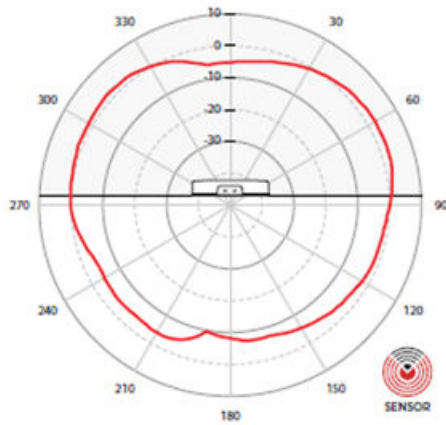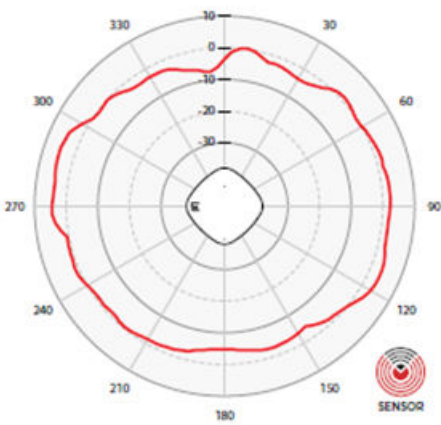| Mode	Radio 1	Radio 2	Radio 3	IoT
1	2.4G: 3.9 dBi	5G: 5.1 dBi	6G: 5.3 dBi	5.3 dBi
2	2.4G: 3.9 dBi	5G: 5.1 dBi	2.4G: 5.3 dBi 5G: 5.9 dBi 6G: 5.3 dBi	5.3 dBi

Antenna Radiation Patterns

Azimuth – 6 GHz
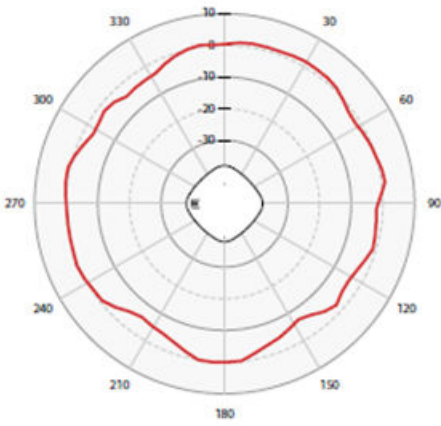
Azimuth – 2 GHz

Azimuth – 5 GHz

Elevation – 6 GHz

Elevation – 2 GHz

Elevation – 5 GHz
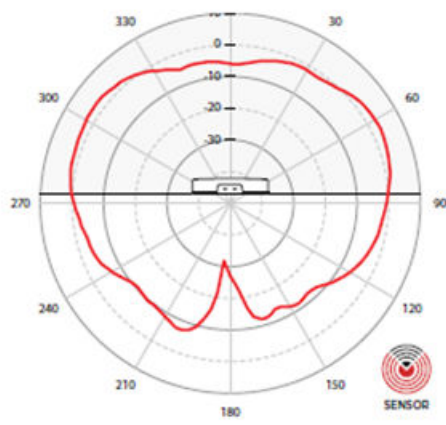
Antenna Radiation Patterns

Dual Band Azimuth – 2 GHz
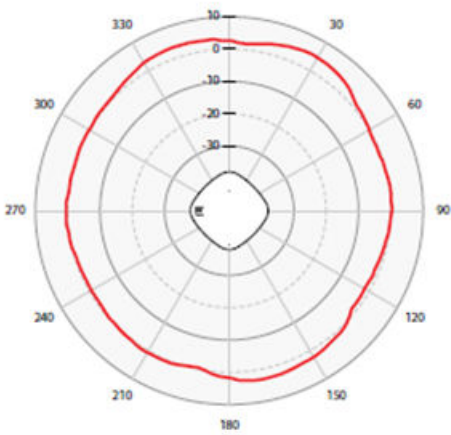
Dual Band Elevation – 2 GHz
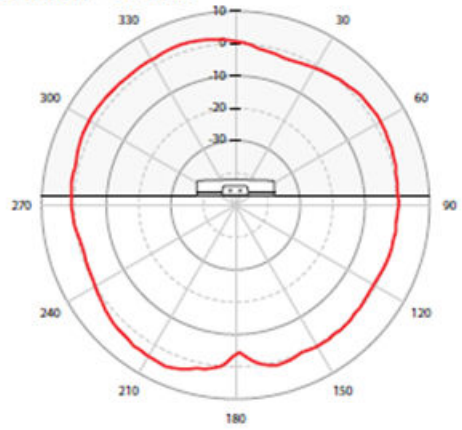
Dual Band Azimuth – 5 GHz
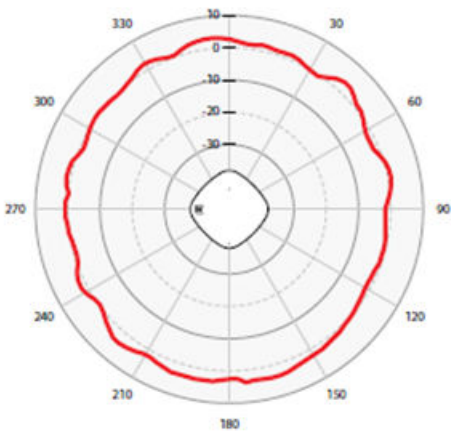
Dual Band Elevation – 5 GHz
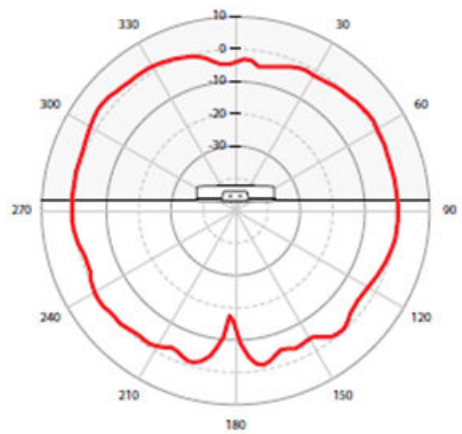
BLE Azimuth – 2 GHz
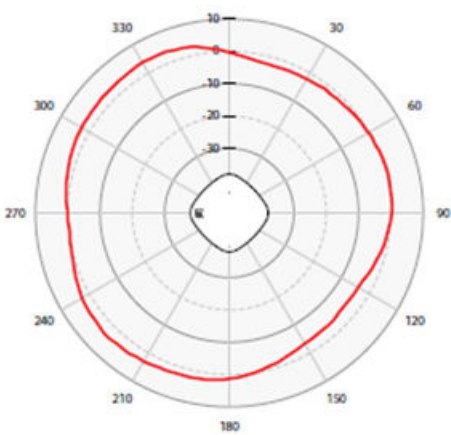
BLE Elevation – 2 GHz
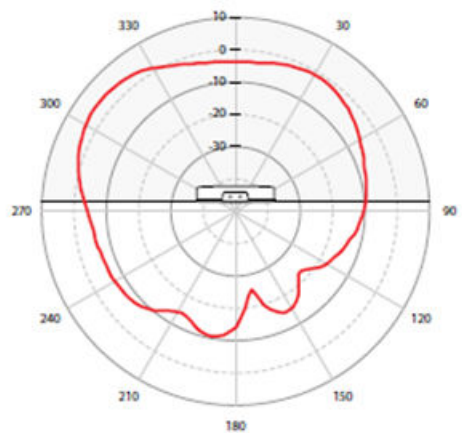
Ordering Information

AP4000 SKUs

Part Number	Description
AP4000-WW	Indoor Tri Radio WiFi 6E AP, 2.4 GHz, 5GHz, 6GHz and Multirate Port. Integrated Light, power sensors, BLE/Zigbee. AI/ ML green mode. INT antennas. T-Bar, Incl Mt (AH-ACC-BKT-AX-TB). Domain: World SKU
AP4000-1-WW*	Indoor Tri Radio WiFi 6E AP, 2.4 GHz, 5GHz, 6GHz & Multi-rate Port. Integrated Light, power sensors. AI/ ML green mode. INT antennas. T-Bar, Incl Mt (AH-ACC-BKT-AX-TB). Domain: World SKU
AP4000-IL	Indoor Tri Radio WiFi 6E AP, 2.4 GHz, 5GHz, 6GHz & Multirate Port. Integrated Light, power sensors, BLE/Zigbee. AI/ ML green mode. INT antennas. T-Bar, Incl Mt (AH-ACC-BKT-AX-TB). Domain: Israel

*Non-BLE SKU. AP4000-1-WW has identical functionality as AP4000-WW, with the exception of IoT radio and Bluetooth functionality.

Mounting Accessories

Marketing Part #	Indoor AP Mounting	Notes
ACC-4000-ETH-CAP	Cable cover for AP4000 to hide Ethernet Port and Ethernet cable	Hides Ethernet cable for aesthetically pleasing installation Includes a 7" Flat Cat6 RJ45 Cable (5 Pack Kit)
AH-ACC-BKT-AX-TB	Mounting bracket for prelude 15/16" and suprafine 9/16" ceilings and walls	Ships with AP5010 Can be used for wall - .25"
AH-ACC-BKT-AX-WL	Mounting bracket for direct-to-wall installations	Can be used for wall - 1.25"
AH-ACC-BKT-AX-IL	Mounting bracket for interlude ceilings	
AH-ACC-BKT-AX-SL	Mounting bracket for Armstrong 1/8" and 1/4" main beam silhouette reveal ceiling grids	Up to .33" ceiling tile protrusion
ACC-BKT-AX-JB	Junction box or wall mounting for indoor access points	Gang/Junction Box
ACC-BKT-AX-BEAM	Beam mounting for indoor access points	Up to 0.78" thick beam.
AH-ACC-BKT-916-KIT	9/16" ceiling mount brackets for Non-Flat/Protruded ceiling tiles - Use with AH-ACC-BKT-AX-TB	9/16" Non-Flat/Protruded ceiling tiles
ACC-BKT-TB-NF	Adapter bracket AH-ACC-BKT-TB for 15/16" Wide T-Bars Non-Flat/Protruded ceiling tiles	5/16"Wide T-Bars Non-Flat/Protruded ceiling tiles
ACC-BKT-AX-WNGADAPT	Adapter bracket for Cloud AP to WiNG Mounting Plate (#37201). 10 pack	Allow twist mount to mount to legacy mounts

Power Accessories

Part Number	Description
PD-9001GR-ENT	Single port 802.3at compliant midspan
10061	Pwr Cord, 10A, NEMA 5-15P, IEC320-C13,125V, 18AWG (for US)
10034	Pwr Cord,10A, BS1363, IEC320-C13,250V, 0.75MMSQ (for UK)
10033	Pwr Cord,10A, CEE 7/7, IEC320-C13,250V, 0.75MMSQ (for EU)
10036	Pwr Cord,10A, AS3112, IEC320-C13,250V, 0.75MMSQ (for AU)

Part Number	Description
10062	Pwr Cord,12A, JISC8303, IEC320-C13,125V, 1.25MMSQ (for Japan)
10033	Pwr Cord,10A, CEE 7/7, IEC320-C13,250V, 0.75MMSQ (for Korea)

See the Product Installation guide for more details.

Warranty

The AP4000 is covered under Extreme's Universal LLW policy. For warranty details, visit: http://www.extremenetworks.com/support/policies