

Highlights

Advanced Radio Technology

Radio Design

- 5 GHz 4x4:4
- 2.4 GHz 4x4:4

Radio Modes - SSR

- 2.4GHz/5GHz
- 2.4/5 Sensor + 5GHz
- Dual 5GHz

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 802.3at

- Capable of operation over 802.3af

Smart Management Choices

- Extreme Campus Controller or VX/NX controller is ideal for on-premises requirements
- Extreme Campus Controller, /VX or NX controller plus additional cloud management capabilities provided via ExtremeCloud™ IQ



ExtremeWireless™ AP 510i/e

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

Extreme's AP 510i/e is a high performance, enterprise class 802.11ax access point at the price/performance point that is ideal for many verticals, including; retail, education, hospitality and healthcare. These enterprises need to support a high density of users and IoT devices, while delivering an exceptional user experience.

The AP 510i/e is powered by the WiNG 7 operating system. WiNG's legendary distributed architecture places the intelligence at the edge where it unleashes the true capabilities and performance of 802.11ax, without bottlenecks and limits. WiNG incorporates the functionality of a controller in each access point, enabling network solutions with controller-less solutions using a virtual controller that supports up to 64 access points or hardware / VM controllers that can support up to 25000 access points.



Security

The AP 510i/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.



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/>



Smart Sensor

Industry's first Dual-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 AP 510i/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 AP510 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.



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.



Integrated BLE

To support both IoT and Guest Engagement services the AP510 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

- SSID per Radio/Total: 8/16
- Users per Radio/total: 512/1024
- TPM (Trusted Platform Module)

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
- 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
- CSD and CDD

802.11ac

- 5.150–5.850 GHz Operating Frequency
- 802.11ac Modulation (256-QAM)
- Rates (Mbps): MCS0 – MCS9 (6.5Mbps - 800Mbps)
- 5G: 4x4 Multiple-In, Multiple-Out (MIMO) Radio (MRC)
- 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 and 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 - 1148 Mbps)
- HE20/HE40/HE80/HE160 support for 5 GHz
- HE20/HE40 support for 2.4 GHz
- DL SU-MIMO and MU-MIMO (MRC)
- TxBF (Transmit Beamforming)

Interfaces

- (1) 100/1000/2500/5000 Mbps auto-negotiation Ethernet port, RJ45 PoE (Power over Ethernet 802.3at) Port. (802.3bz supported)
- (1) 10/100/1000 Mbps auto-negotiation Ethernet port, PoE (power over Ethernet) port, RJ4
- POE redundancy supported
- USB3.0, Type A, 0.5A

Power Options

- Power Draw: Typical: 18 W; Max: 22 W
- 802.3at Power over Ethernet (PoE) capable (Full Functionality)
- Gigabit Ethernet port (RJ-45 power input pins):
 - Wires 4,5,7,8 or 1,2,3,6)
- 802.3af Power over Ethernet injector (Reduced Functionality)

Physical

- 9" x 9" x 1.89" (229mm x 229mm x 48.15mm)
- AP510i: 3.4 lbs (1.45 kg)
- AP510e: 3.45 lbs (1.56 kg)

Max Antenna Gain (Integrated Antenna)

Software Mode	Radio 1	Radio 2	Radio 3
Mode 1	2.4 Ghz 4dBi	5 Ghz 5dBi	5dBi
Mode 2	2.4 Ghz 4dBi 5 Ghz 6dBi	5 Ghz 6dBi	5dBi
Mode 3	5 Ghz 6dBii	5 Ghz 6dBi	5dBi

Antennas

- AP510i - Internal Antennas
- (4) Integrated dual band, 2.4-2.5 GHz and 5.1-5.8 GHz omnidirectional antennas
- (4) Integrated single band, 5.1-5.8 GHz omnidirectional antennas
- (1) Integrated single band, 2.4-2.5 GHz omnidirectional antennas for BLE

AP510e - External Antennas

- 8 RP SMA's connectors
- 1 RP SMA's connector for BLE

Mounting

- Wing Bracket Compatible
- Extreme Multi-Tbar
- Kensington Lock

Security

- WPA, WPA2(AES), WPA3, 802.11i, 802.11x, IPSec, IKEv2, PKCS#10, x509 DER / PKCS #12 SSL

IEEE Standards

- IEEE 802.11d, 802.11h, 802.11k, 802.11r, 802.11v
- EAP-SIM

Environmental

- Operating: AP510i: 0 to 50°C
AP510e: -20 to 55°C
- Storage: -40 to 70°C
- Humidity: 0% to 95% (non-condensing)
- Electrostatic Discharge: 15kV air, 8kV contact

Environmental Compliance

- UL2043 - Plenum Rated

IOT Radio

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

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
- 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

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

Support

- Limited Lifetime Warranty WiNG

Wi-Fi Alliance Certifications	
Connectivity	Wi-Fi CERTIFIED 6™ Wi-Fi CERTIFIED™ a, b, g, n, ac WPA™ - Enterprise, Personal WPA2™ - Enterprise, Personal WPA3™ - Enterprise, Personal
Optimization	Wi-Fi Agile Multiband™ Wi-Fi Vantage™ WMM® WMM®-Admission Control WMM®-Power Save
Access	Passpoint®
Applications and Services	Voice-Enterprise

AP 510i

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

AP510e

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
	24	18	-88
	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
11n HT80	MCS0, 7	18, 16	-69
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

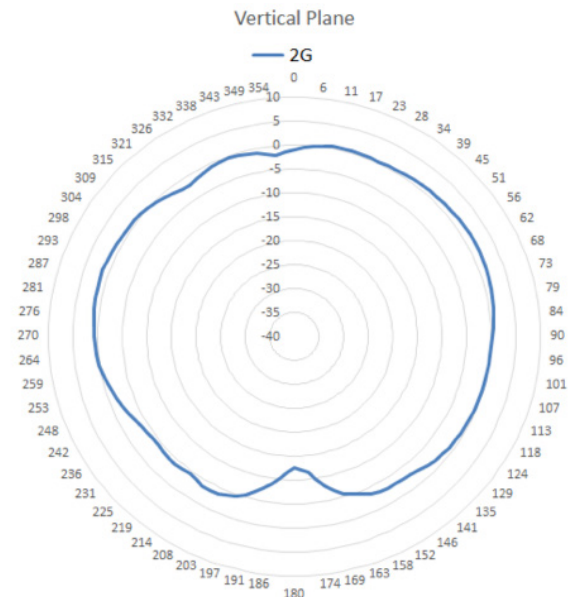
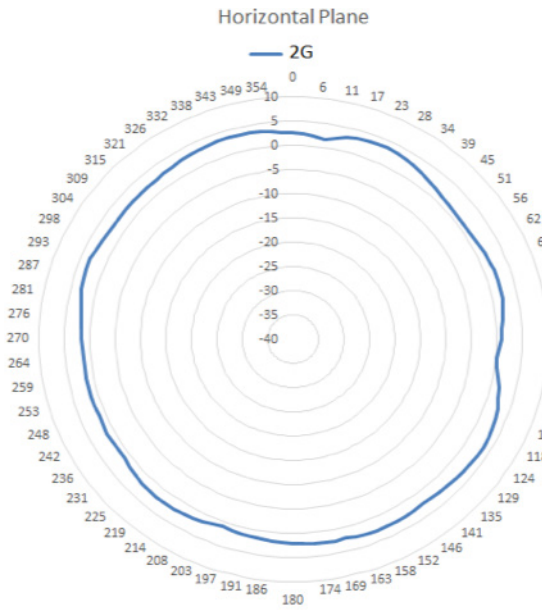
Receive Sensitivity - 5 GHz

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

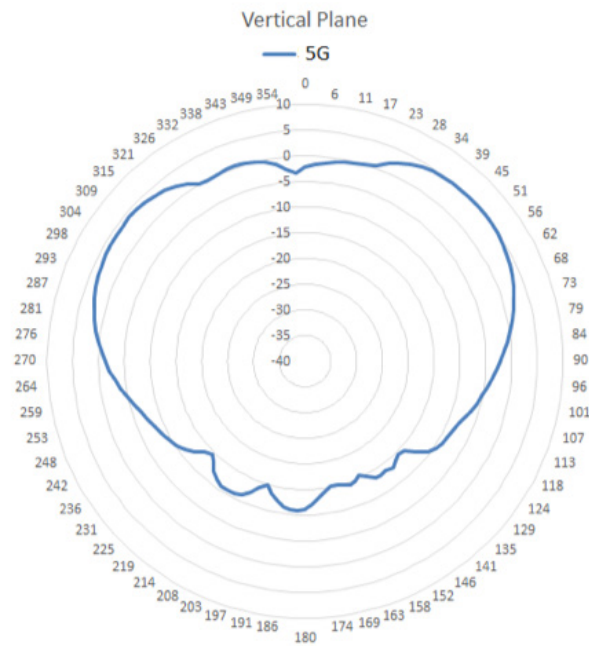
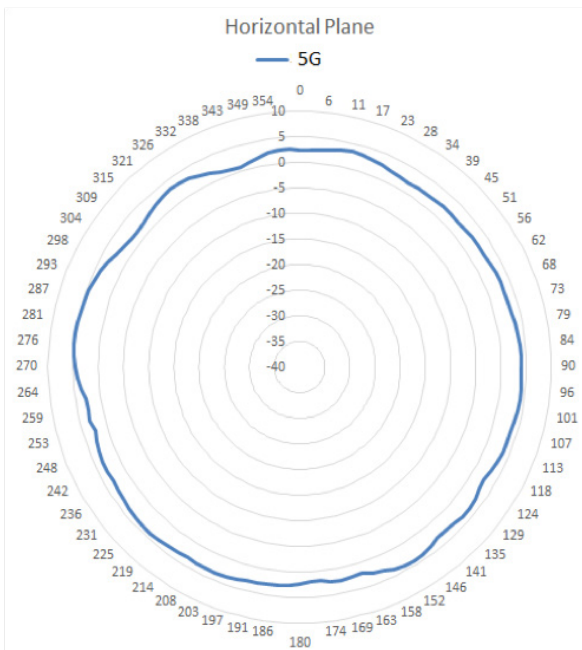
Maximum EIRP may vary based upon deployed country

Radiation Patterns - Azimuth and Elevation

AP 510i Antenna Radiation Patterns — 2.4 GHz



AP 510i Antenna Radiation Patterns — 5.0 GHz



Ordering Information

AP 510i/e

Mkt Part #	Description
AP510i-FCC	Dual Radio 802.11ax - 4x4:4 + 4x4:4, Indoor Internal Antenna Access Point. Domain: US, and Puerto Rico
AP510i-CAN	Dual Radio 802.11ax - 4x4:4 + 4x4:4, Indoor Internal Antenna Access Point. Domain: Canada
AP510i-WR	Dual Radio 802.11ax - 4x4:4 + 4x4:4, Indoor Internal Antenna Access Point. Domain: EMEA, Rest of World
AP510e-FCC	Dual Radio 802.11ax - 4x4:4 + 4x4:4, Indoor External Antenna Access Point. Domain: US, and Puerto Rico
AP510e-CAN	Dual Radio 802.11ax - 4x4:4 + 4x4:4, Indoor External Antenna Access Point. Domain: Canada
AP510e-WR	Dual Radio 802.11ax - 4x4:4 + 4x4:4, Indoor External Antenna Access Point. Domain: EMEA, Rest of World

AP 510i/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-WALLO4
37211	WS-MBI-DCFLUSH

AP 510i/e - Power Options

Mkt Part #	Description
PD-3501G-ENT	Single Port 802.3AF Midspan Device
PD-9001GR-ENT	Single Port 802.3AT Compliant Midspan
37219	PWR 12VDC, 3A, 2.5mm x 5.5mm connector

Antennas - AP 510e

Mkt Part #	Description
ML-2452-APA2-01	Dipole, 3.2dBi/4.9dBi, dual band, black with RPSMA plug connector (up to 9 per AP)
ML-2452-APA2-02	Dipole, 3.2dBi/4.9dBi, dual band, white with RPSMA plug connector (up to 9 per AP)
ML-2452-HPA5-036	Dipole, 3.9dBi/ 5.7dBi, dual band, outdoor, white with RPSMA plug connector (up to 9 per AP)
ML-2452-HPAG4A6-01	Dipole, 4dBi/ 7.3dBi, dual band, outdoor, white with standard N plug connector (up to 9 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 9 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 9 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 9 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, 120degree sector antenna with standard RPSMA-type plug connector
30705	WS-AI-DE07025 Indoor 2.4GHz/5GHz, eight feed, 6.5/5.5dBi, 25degree sector antenna with standard RPSMA-type plug connector
30707	WS-AI-DE10055 Indoor 2.4GHz/5GHz, eight feed, 10/6dBi, 55degree sector antenna with standard RPSMA-type plug connector



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