

Highlights

High Density Environments

- Delivers exceptional end-user experience even in dense user environments such as stadiums, large public venues, convention centers and school auditoriums
- Industry's first 802.11ax access point with three software programmable modes to optimally manage Enterprise networks, including a mode for dual 5 GHz radios for the most dense environments

Connects More Users and Devices Simultaneously

- Improve user experience and device performance with 4x4:4 5 GHz and 4x4:4 2.4 GHz, with OFDMA technology

Latest in Secure Wi-Fi

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

Optimizes RF for the Optimal User Experience

- ExtremeAI and SmartRF uses AI/ML technology to monitor and automatically adjust Wi-Fi radios to achieve the best coverage and greatest client performance, even in dynamic RF environments

Redundant PoE

- Mission critical networks for 24/7 operations

Cellular Coexistence Filter (CCF)

- Minimizes the impact of interference from cellular networks

Fully Functional AP510i on 802.3af

- Capable of being powered on 802.3af

Integrated Bluetooth for IoT and Guest Engagement

- Leverage the integrated Bluetooth to connection to IoT devices with Thread™ or engage loyalty customers with Apple iBeacon™. Enterprises can use Google Eddystone™ to send advertisements directly to shoppers, guests, and conference attendees, even without a loyalty app pre-installed. This makes it ideal for businesses to advertise their app-download pages, captive portals, or site-specific information

Adaptive Smart OmniEdge Management

- ExtremeCloud™ delivers a powerful user experience with simple and secure network management
- ExtremeCloud™ Appliance is ideal for campus or private cloud requirements

* Available in future software release



ExtremeMobility™ AP510i/e 802.11ax Indoor Access Point

Setting New Standards in High-Performance
Enterprise Wi-Fi 6

Product Overview

The mobile revolution is upon us. Enterprises are implementing digital transformation to connect with users, employees, guests, customers and IoT devices to help them better understand and manage their business, improve efficiencies, as well as the experience of their brand to customers and stock holders. However, today's Wi-Fi users have higher expectations, consume more bandwidth, and have less patience with a poor Wi-Fi experience. This is a challenge for every enterprise, as they struggle to keep pace with the seemingly exponential growth of Wi-Fi demand and data hungry applications - until now.

Designed to expand upon the performance improvements delivered with 802.11ac wave 2, 802.11ax borrows key technology from cellular to increase device capacity and improve spectral efficiency, extracting more out of available Wi-Fi spectrum. Bottom line, 802.11ax will support more users and IoT devices, providing each the spectrum they require, future proofing enterprise wireless networks, while minimizing the upgrade fatigue they have been experiencing to date.

Purpose Built to Meet the Needs of Many

Extreme's AP510i/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 AP510i/e is managed by the Smart OmniEdge solution and 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

distributed solutions comprised of branch sites with up to 256 access points per site. The solution can scale to 25,000 access points and are managed with a simple, cloud UI and workflow with ExtremeCloud or ExtremeCloud Appliance for campus and private cloud networks.

Extreme Software Configurable Radio

Industry's first 802.11ax access point with three software programmable modes to optimally manage for dual 5 GHz radios for the most dense environments. The AP510i/e is managed by the Smart OmniEdge solution and powered by the WiNG 7 operating system allows for software configurable radios. Network managers can determine software network topology based on user environment and configure the access points in different modes of operations:

Mode 1 - Traditional dual radio 2.4 GHz and 5 GHz radio

Mode 2 - 2.4 GHz/5 GHz sensor Radio 1 and 5 GHz on Radio 2

Mode 3 - Dual 5 GHz radio

Managing the Complexity of RF

Network managers will appreciate a powerful choice of RF management for their 802.11 networks, with SmartRF or ExtremeAI. WiNG's SmartRF, is 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's algorithms manage channels, radios, load balancing, band steering and many other attributes of the RF.

For enterprises with highly dynamic RF environments, ExtremeAI is a hosted service which delivers the latest in AI/ML technology for RF networks. ExtremeAI monitors and learns the behavior of all your Smart OmniEdge RF networks and applies artificial intelligence to auto tune the network to achieve optimum performance and user experience. Applied to 802.11ax, this technology will lessen the workload of network engineers, while ensuring their network users have the best experience.

ExtremeCloud and ExtremeCloud Appliance

The AP510i/e is the latest access point in the Smart OmniEdge portfolio. Network managers have a choice of cloud or premise-based solutions; both using the same UI and workflows. ExtremeCloud is a hosted cloud service, while ExtremeCloud Appliance is designed for premise-base solutions of campus and private cloud. Both support secure zero touch provisioning that significantly reduces deployment time connectivity via a single pane of glass for unified management of Extreme wired and wireless components in your network.







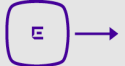
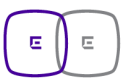
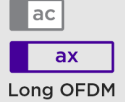
See the [ExtremeCloud](#) and [ExtremeCloud Appliance](#) data sheets for details and ordering part numbers.

802.11ax Technology

Whereas prior generations of 802.11n, 802.11ac wave 1 and 2, can be considered generational improvements, each building on the prior standard, the new PHY technology of 802.11ax adds a significant level of new technology which takes Wi-Fi networks to an entirely new level.

The following table provides a brief description of the various new elements in the 802.11ax standard. To learn more about 802.11ax, go to: <https://www.extremenetworks.com/are-you-ready-for-802-11ax/>

Key 802.11ax Client Technologies

		AP510i/e Features Supported
 OFDMA	Central scheduling of 802.11ax clients reduces contention and overhead, which increases efficiency in scenarios of dense deployments	Yes
 Supports up to 8 MU-MIMO Clients/TxOP	Capable up supporting up to 8 clients simultaneously, uplink and downlink	Yes, dual 4x4:4 radios
 Up Link Scheduler	Scheduled Up Link access for increased capacity and efficiency	Future
 1024 QAM	Gigabit Wi-Fi with only 2x2 Delivering up to 25% higher data rate vs 256QAM	Yes
 Target Wake Time	Devices decide the frequency they wake to send or receive data, increasing sleep time, while conserving battery life	Future
 More Spatial Streams	Supports 8 spatial streams, 2X more than 11ac	Yes
 Extended Range	Extends range and performance for clients at the cell boundary	Yes
 BSS Coloring	Coloring enables devices to achieve better channel reuse in their own networks	Future
 Long OFDM Symbol	Enables larger coverage areas: e.g. outdoor deployments	Yes

Specifications

Product Features	AP 510i/e
General	
Fully-Featured Enterprise Class AP	✓
Number of Wi-Fi Radios	2
Internet of Things (IoT) Radio	Dual mode selectable (2.4 GHz with coexistence) Bluetooth Low Energy (BLE) 4.1 - Single and Dual mode operation (Classic and Low Power Profiles 802.15.4 -2011)
MIMO Implementation for High-Performance 11ax, 11ac & 11n	4x4
Number of Spatial Streams	4 per radio
Number of Simultaneous Streams	5 GHz radio: Four spatial stream Multi User (MU) MIMO for up to 4.8 Gbps wireless data rate to up to four 1 SS or two 2SS HE160 802.11ax DL-MU-MIMO capable client devices simultaneously (max)* Four spatial stream Multi User (MU) MIMO for up to 2.4 Gbps wireless data rate to up to four 1 SS or two 2SS HE80 802.11ax DL-MU-MIMO capable client devices simultaneously (typical)* 2.4 GHz radio: Four spatial stream Multi User (MU) MIMO for up to 1.148 Gbps wireless data rate to up to four 1 SS or two 2SS HE40 802.11ax DL-MU-MIMO capable client devices simultaneously (max)* Four spatial stream Multi User (MU) MIMO for up to 572 Mbps wireless data rate to up to four 1 SS or two 2SS HE20 802.11ax DL-MU-MIMO capable client devices simultaneously (typical)*
Maximum 2.4 GHz Radio	1.148 Gbps (40 MHz)
Maximum 5 GHz Radio	4.8 Gbps (Full 5 GHz 160 MHz)
Number of SSIDs Supported Per Radio/Total	8/16
Simultaneous Users Per Radio/Total	256/512 Per AP
Mode of Operation	Semi-autonomous/Autonomous
Plug and Play Operation/Zero Touch Deployment	Yes
Security and Standards	WPA, WPA2 (AES), WPA3*, 802.11i, 802.1x, IPSec, IKEV2, PKCS #10, X509 DER / PKCS #12, SSL
Multiple Operating Modes	
Centralized Data Paths Within Same SSID	✓
Application Based Distributed and Centralized Data Paths Within Same User / Device Session	✓
Simultaneous RF Monitoring and Client Services	✓
BYOD / Device Fingerprinting Visibility	✓
Application / Layer 7 Visibility and Control	✓
In-Channel WIDS	✓
In-Channel WIPS	✓
Dedicated Multi-Channel WIDS (Guardian Mode)	✓
Dedicated Multi-Channel WIPS (Guardian mode)	✓
Locates Devices and Threats via RF Triangulation	✓
Remote Access Point	✓

* Available in future software release

Product Features	AP 510i/e
Hardware-Based, End-to-End Data and Control Plane Encryption	✓
Private and Public Cloud Deployments	✓
Policy Enforcement for Wireless Clients (L2-L7 Access Control, QoS, Rate Limiting, and VLAN Containment)	✓
Hybrid Operation	
Security Scanning and Serve Clients On Same Radio	✓
Multi-Channel Dedicated Security Scanning	✓

Product Features	AP 510i/e
Adaptive Radio Management	
Dynamic Channel Control	802.11h: DFS and TPC support (ETSI)
Efficient Use of the Spectrum with A Multi-Channel Architecture	✓
Automatic Transmit Power and Channel Control	✓
Self-Healing with Coverage Gap Detection	✓
Band Steering with Multiple Steering Modes	✓
Per-Area Intelligent load balancing	✓
Airtime Fairness	✓
Performance Protection In Congested Rf Environments	✓
Fast Transition Roaming (802.11r)	✓
Mitigates Co-Channel Interference with Coordinated Access	✓
Mitigates Adjacent Channel Interference with Optimized Receive Sensitivity	✓
Efficient Reuse of Channels At Shorter Intervals	✓
Mitigates Non 802.11 Interference Without Dedicated Radios	✓
Probe Suppression and Client Link Monitoring	✓
Management Frame Protection (802.11w)	✓
Quality of Service	
Quality of Service (WMM, 802.11e)	✓
Power Save WMM-PS	✓
Fast BSS Transition, Voice-Enterprise (802.11r)	✓
Pre-Authentication (Pre-Auth)	✓
Opportunistic Key Caching (OKC)	✓
Bonjour/LlMnr/UPNP Identification, Containment and Control	✓
Supports Voice, Video, and Data Using the Same SSID	✓
Prioritizes Voice Over Data for Both Tagged and Untagged Traffic	✓
Rate Limiting (Rule and User-Based)	✓
Rule and Role Based Qos Processing	✓
Multicast Rate Control	
Multicast to Unicast Conversion	✓
Adaptable Rate Multicast	✓
Power Save Mode Optimization for Multicast	✓

Product Features	AP 510i/e
Wireless Services	
Media Access Protocol	CSMA/CA with ACK
Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11g: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, 54 Mbps 802.11n: (2.4 GHz); 6.5 to 300 (MCS0 to MCS15, HT20 to HT40) 802.11n: (5 GHz); 6.5 to 300 (MCS0 to MCS15, HT20 to HT40) 802.11ac: 6.5 to 3467 (MCS0 to MCS9, NSS=1 to 4, VHT20 to VHT160) 802.11ax: (2.4 GHz): 3.6 to 574(MCS0 to MCS11, NSS = 1 to 2, HE20 to HE40) 802.11ax: (5 GHz): 3.6 to 4803 (MCS0 to MCS11, NSS = 1 to 4, HE20 to HE160) See 802.11n Receiver Sensitivity Table below See 802.11ac Receiver Sensitivity Table below See 802.11ax Receiver Sensitivity Table below
Frequency Bands	802.11ax/ac/a/n: 5.15 to 5.25 GHz (FCC/ IC/ ETSI) 5.25 to 5.35 GHz (FCC/ IC/ ETSI)* 5.47 to 5.725 GHz (FCC/ IC/ ETSI)* 5.725 to 5.850 GHz (FCC/ IC) 802.11b/g/n: 2.400 to 2.4720 GHz (FCC/ IC) 2.400 to 2.4835 GHz (ETSI) *FCC/ IC DFS certification in progress
Wireless Modulation	802.11ax: OFDMA (1024-QAM) 802.11ac: OFDM(BPSK, QPSK, 16-QAM, 64QAM, 256-QAM) 802.11ac Packet Aggregation: A-MPDU, A-MSDU 802.11ac Very High- Throughput (VHT): VHT20/40/80 802.11ac Advanced Features: LDPC, STBC, Maximum Likelihood (ML) Detection 802.11n: OFDM (BPSK, QPSK, 16-QAM, 64-QAM) 802.11n High-throughput (HT) support: HT 20/40 802.11n Packet aggregation: A-MPDU, A-MSDU 802.11n Advanced Features: LDPC, STBC and TxBF 802.11a: OFDM(BPSK, QPSK, 16-QAM, 64-QAM) 802.11g: DSSS and OFDM 802.11b: DSSS

Max Antenna Gain (Integrated Antenna)

Software Mode	Radio 1	Radio 2	IoT Radio
Mode 1	2.4 GHz 4 dBi	5 GHz 6 dBi	5 dBi
Mode 2	2.4 GHz 4 dBi 5 GHz 5 dBi	5 GHz 6 dBi	5 dBi
Mode 3	5 GHz 5 dBi	5 GHz 6 dBi	5 dBi

Physical Characteristics

Dimensions	AP510i - 9" x 9" x 1.89" (229mm x229mm x 48.15 mm) AP510e - 9" x 9" x 1.89" (229mm x229mm x 48.15 mm)
Housing	AP510i - 3.40 lbs - 1.54 kg AP510e - 3.45 lbs - 1.56 kg
Mounting	WiNG bracket compatible, Extreme, Multi-Tbar (see mounting section below)
Configurations	Above drop ceiling under ceiling or on wall
LAN Ethernet	1 x 100/1000/2500/5000 Mbps auto-negotiation Ethernet port, RJ45 1 x 10/100/1000 Mbps auto-negotiation Ethernet port, RJ45
Console port	RJ45
USB Port	USB 3.0 port , Type A for purpose built modules
PoE Failover	Redundant PoE Capable
LEDs Activity Indication	Two top mounted LEDs - multiple LED radio Indicators
Antenna Connectors	AP510e - nine RP SMAs
Energy Efficient	802.3az Energy-Efficient Ethernet
Anti-Theft Locks	Kensington Lock Security Hanger Lock
Security	Trusted Platform Module (TPM) for secure storage of credentials and keys
Warranty	Limited Lifetime Warranty WiNG
MTBF	322,164 Hours AP510i. 323,158 AP510e @ 25° C

Note: Actual available power would vary based on local regulatory requirement and actual channels used for operation

Environmental	
Operating Temperature -AP510i	Temperature 0° C to +40 ° C (+32° F to +104° F) @ 6000ft Temperature 0° C to +45 ° C (+32° F to +113° F) @ Sea Level
Operating Temperature -AP510e	Temperature -20° C to +50 ° C (-4° F to + 122° F) @ 6000ft Temperature -20° C to +55 ° C (-4° F to + 131° F) @ Sea Level
Humidity	0 - 95% (noncondensing)
Storage and Transportation	Temperature -40 ° C to +70 ° C (-40 ° F to + 158° F)
Electrostatic Discharge	15kV air, 8kV contact

Power Specifications	
Operating Voltage	PoE-PD: 48-57VDC, Wall brick 12VDC
Operating Current	PoE-PD: 500mA at 48V, Wall brick 2A
PoE PD Class	802.3at
Power consumption	Max: 22 W (specify mode without USB) Idle (radios ON) : 9.5 W Typical 18 W; Max 22 W

Wireless and EMC	
Compliance	FCC CFR 47 Part 15, Class B ICES-003 Class B FCC Subpart C 15.247 FCC Subpart E 15.407 RSS-247 EN 301 893 EN 300 328
Safety	EN 60950-1, 62368-1 UL 60950-1, 62368-1 CAS 22.2 No. 60950-1-03, 62368-1 AS/NZS 60950.1, 62368-1

Ordering Information

Part Number	Description
AP510i-FCC	Cloud-Ready, Dual 5 GHz, Dual band, Sensor radio, Dual Radio 802.11ax/ac/abgn, 4x4:4 MIMO Indoor 11ax access point. Internal Antenna Domain: US, Puerto Rico, and Colombia
AP510i-WR	Cloud-Ready, Dual 5 GHz, Dual band, Sensor radio, Dual Radio 802.11ax/ac/abgn, 4x4:4 MIMO Indoor 11ax access point Internal Antenna. Domain: EMEA and Rest Of World
AP510e-FCC	Cloud-Ready, Dual 5 GHz, Dual band, Sensor radio, Dual Radio 802.11ax/ac/abgn, 4x4:4 MIMO Indoor 11ax access point with external antenna ports. Domain: US, Puerto Rico, and Colombia
AP510e-WR	Cloud-ready, Dual 5 GHz, Dual band, Sensor radio, Dual Radio 802.11ax/ac/abgn, 4x4:4 MIMO Indoor 11ax access point with external antenna ports. Domain: US, Puerto Rico, and Colombia
AP510i-FCC-TAA	Cloud-ready, Dual 5 GHz, Dual band, Sensor radio, Dual Radio 802.11ax/ac/abgn, 4x4:4 MIMO Indoor 11ax access point Internal Antenna. Domain: US, Puerto Rico, and Colombia TAA Compliant
AP510e-FCC-TAA	Cloud-ready, Dual 5 GHz, Dual band, Sensor radio, Dual Radio 802.11ax/ac/abgn, 4x4:4 MIMO Indoor 11ax access point with external antenna ports. Domain: US, Puerto Rico, and Colombia. TAA Compliant

Mounting Options	
Part Number	Description
37201	Mounting Plate for Indoor APs (included in box)
KT-135628-01	Universal Mounting Kit for WLAN APs Requires (37201) bracket for mounting
30518	WS-MBI-DCMTR01 bracket
30516	WS-MBI-WALLO4
37211	WS-MBI-DCFLUSH
BRKT-000147A-01	Beam Clip Accessory

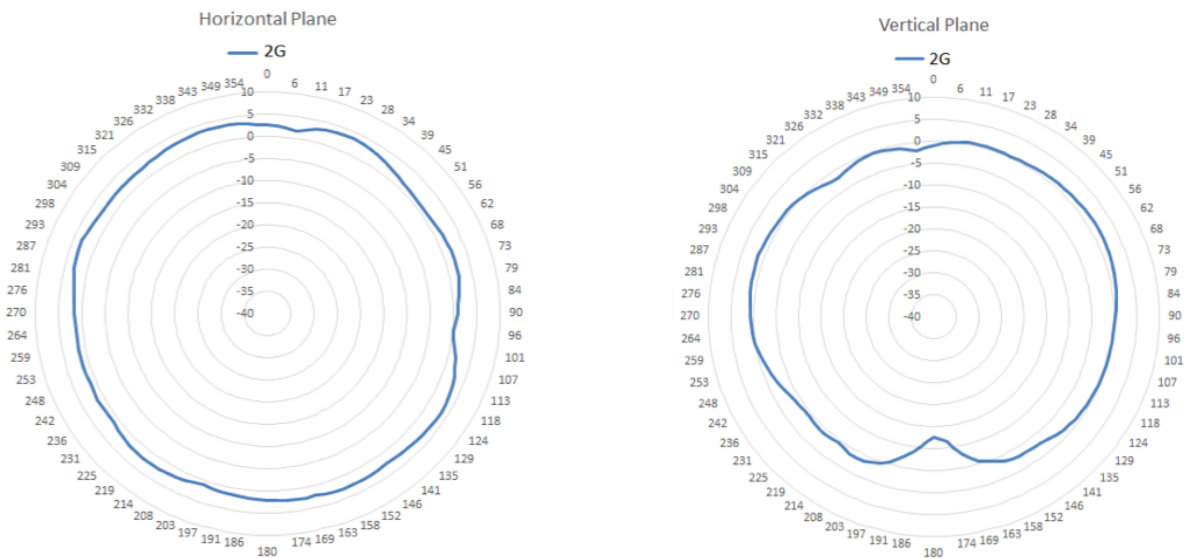
Note: See installation guide for mounting descriptions and information.

Mid-Span PoE Devices	
Part Number	Description
PD-9001GR-ENT	Single Port, 1 Gigabit 802.3at PoE Midspan
37219	PWR 12VDC, 3A, 2.5mm x 5.5mm connector

Antennas (AP510e)	
Part Number	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-HPAG5A8-01	Dipole, 5dBi/8dBi, dual band, outdoor, white 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 (up to 2 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-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 (up to 2 per AP)
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, 120 degree sector antenna with standard RPSMA-type plug connector (up to 2 per AP)

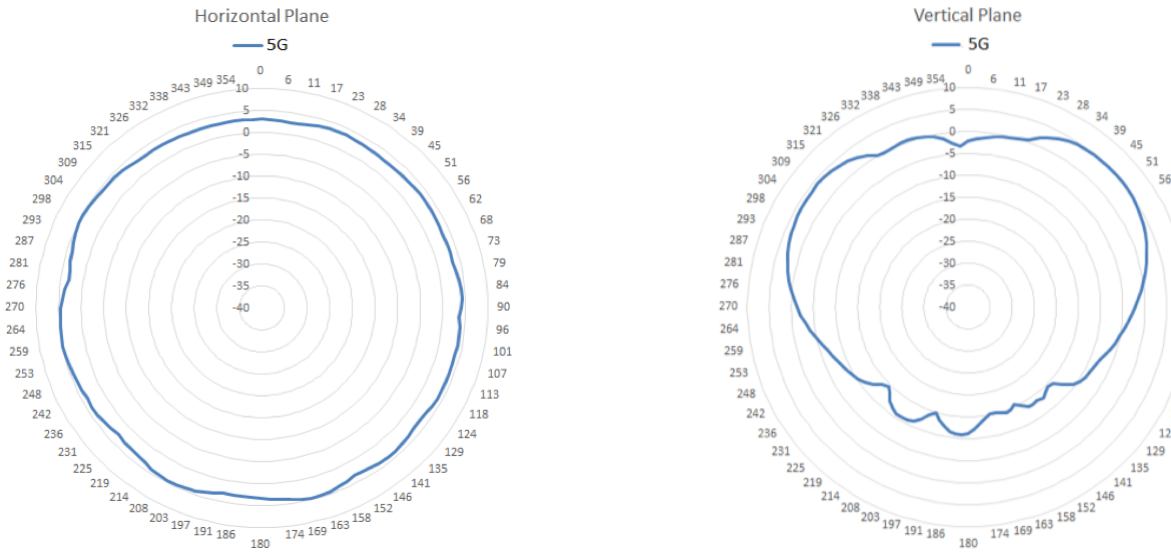
AP510i Antenna Radiation Patterns

2.4 GHz



AP510i Antenna Radiation Patterns (cont.)

5 GHz - Radio 2

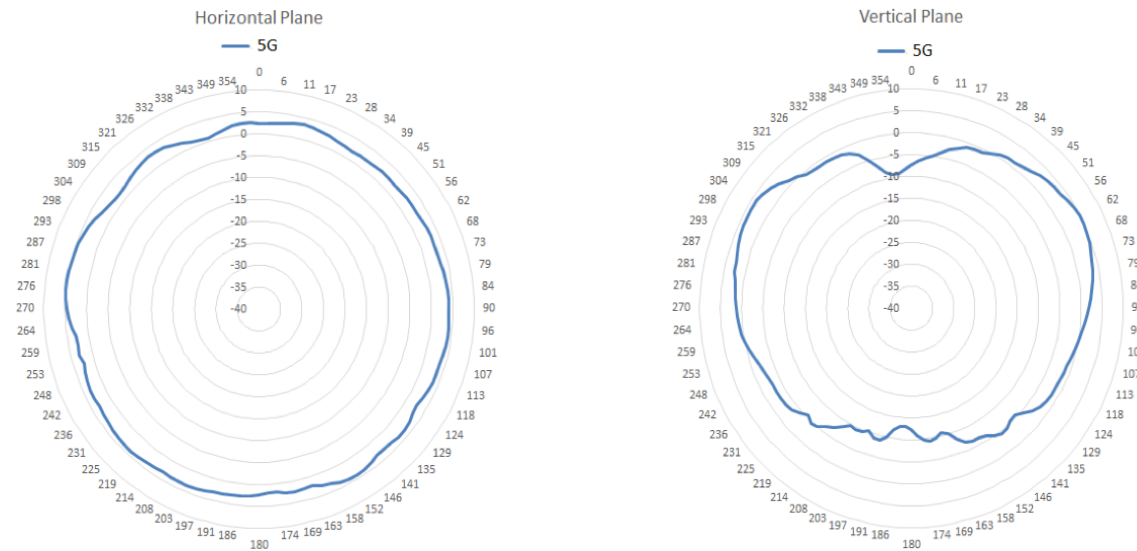


IoT Radio Sensitivity

Typical Receiver Sensitivity	dBm
BlueTooth Low Energy	-90
802.15.4	-100

AP510i Antenna Radiation Patterns

5 GHz - Radio 1



Radio RF Performance

2.4 GHz

	Maximum Transmit Power (dBm) per Transmit Chain		Receiver Sensitivity (dBm) per Receiver Chain	
	For mode 1 and 2. For Dual 5G (mode 3) target power reduces by 2dB.		For mode 1 and 2. For Dual 5G (mode 3) sensitivity reduces by 2dB.	
	AP 510i	AP 510e	AP 510i	AP 510e
802.11b				
1 Mbps	18	16	-97	-95
11 Mbps	18	16	-89	-87
802.11g				
6 Mbps	18	16	-95	-93
54 Mbps	16	14	-76	-74
802.11n HT20				
MCS 0	18	16	-93	-91
MCS 7	16	14	75	-73
802.11ax HE20				
MCS 0	18	16	-93	-91
MCS 11	14	12	-63	-61

Radio RF Performance

5 GHz

	Maximum Transmit Power (dBm) per Transmit Chain		Receiver Sensitivity (dBm) per Receiver Chain	
	For mode 1 and 2. For Dual 5G (mode 3) target power reduces by 2dB.		For mode 1 and 2. For Dual 5G (mode 3) sensitivity reduces by 2dB.	
	AP 510i	AP 510e	AP 510i	AP 510e
802.11a				
6 Mbps	18	16	-91	-89
54 Mbps	17	15	-74	-72
802.11n HT20				
MCS 0	18	16	-91	-89
MCS 7	16	14	-72	-70
802.11n HT40				
MCS 0	18	16	-89	-87
MCS 7	16	14	-69	-67
802.11ac VHT20				
MCS 0	18	16	-91	-89
MCS 8	15	13	-68	-66
802.11ac VHT40				
MCS 0	18	16	-89	-87
MCS 9	15	13	-63	-61
802.11ac VHT80				
MCS 0	18	16	-86	-84
MCS 9	15	13	-60	-58
5 GHz, 802.11ac VHT160				
MCS 0	18	16	-81	-79
MCS 9	15	13	-57	-55
5 GHz, 802.11ax HE20				
MCS 0	18	16	-90	-88
MCS 11	14	12	-60	-58

Warranty

As a customer-centric company, Extreme Networks is committed to providing quality products and solutions. In the event that one of our products fails due to a defect, we have developed a comprehensive warranty that protects you and provides a simple way to get your products repaired or media replaced as soon as possible.

Service and Support

Extreme Networks provides comprehensive service offerings that range from Professional Services to design, deploy and optimization of customer networks, customized technical training, to service and support tailored to individual customer needs.

Please contact your Extreme Networks account executive for more information about Extreme Networks Service and Support. For full warranty terms and conditions please go to: support.extremenetworks.com



<http://www.extremenetworks.com/contact>

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