A510
Indoor 802.11ac Wave 2 2X2:2 Wi-Fi Access Point

ACCESS NETWORKS

DATA SHEET

BENEFITS

STUNNING WI-FI PERFORMANCE

Provide a great user experience no matter how challenging the environment with BeamFlex+™ adaptive antenna technology and a library of 64 directional antenna patterns.

SERVE MORE DEVICES

Connect more devices simultaneously with two MU-MIMO spatial streams and concurrent dual-band 2.4/5GHz radios while enhancing non-Wave 2 device performance.

AUTOMATE OPTIMAL THROUGHPUT

ChannelFly™ dynamic channel technology uses machine learning to automatically find the least congested channels. You always get the highest throughput the band can support.

MULTIPLE MANAGEMENT OPTIONS

Manage the A510 from the cloud, with on-premises physical/virtual appliances, or without a controller.

BETTER MESH NETWORKING

Reduce expensive cabling, and complex mesh configurations by checking a box with SmartMesh™ wireless meshing technology to dynamically create self-forming, self-healing mesh networks.

By definition, small and medium-size projects host a smaller number of users and devices. But high-performance Wi-Fi is just as important to each and every one of them. People are still accessing the same bandwidth-hungry applications and cloud services they would use anywhere else. Users and guests still expect consistent, reliable connectivity wherever they roam.
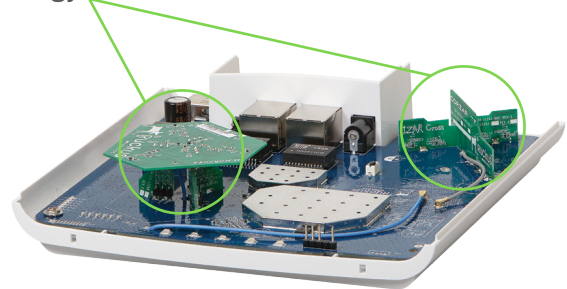
The A510 802.11ac Wave 2 access point delivers the ideal combination of performance, reliability, and coverage for medium-density indoor locations. Using the same patented technologies found in our premier high-density APs, it supports data rates up to 1.2Gbps, along with industry-leading Wi-Fi intelligence to extend range and mitigate interference.

The A510 802.11ac Wave 2 Wi-Fi AP and switch incorporates patented technologies found only in the Ruckus Wi-Fi portfolio.

- Extended coverage with patented BeamFlex+ utilizing multi-directional antenna patterns.
- Improve throughput with ChannelFly, which dynamically finds less congested Wi-Fi channels to use.

Additionally, the A510 provides next-generation 802.11ac features like MultiUser MIMO (MU-MIMO) connectivity. It can simultaneously transmit to multiple client devices, drastically improving airtime efficiency, overall throughput for all users—even those with non-Wave 2 clients.

Whether you're deploying ten or ten thousand APs, the A510 is also easy to manage through Ruckus' appliance, virtual and cloud management options.

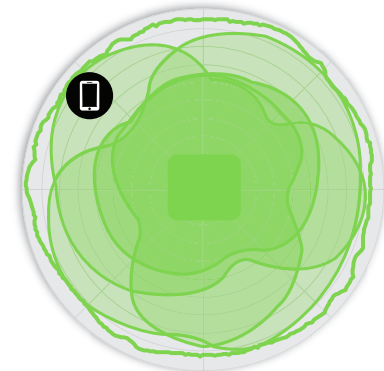**BeamFlex+ Adaptive Antenna Technology**

ACCESS POINT ANTENNA PATTERN

Ruckus' BeamFlex+ adaptive antennas allow the A510 AP to dynamically choose among a host of antenna patterns (up to 64 possible combinations) in real-time to establish the best possible connection with every device. This leads to:

• Better Wi-Fi coverage

• Reduced RF interference

Traditional omni-directional antennas, found in generic access points, oversaturate the environment by needlessly radiating RF signals in all directions. In contrast, the Ruckus BeamFlex+ adaptive antenna directs the radio signals per-device on a packet by-packet basis to optimize Wi-Fi coverage and capacity in real-time to support high device density environments. BeamFlex+ operates without the need for device feedback and hence can benefit even devices using legacy standards.

Figure 1. Example of BeamFlex+ pattern

● Client   ● Composite Pattern   ● BeamFlex+

Figure 2. A510 2.4GHz Azimuth Antenna Patterns

Figure 3. A510 5GHz Azimuth Antenna Patterns

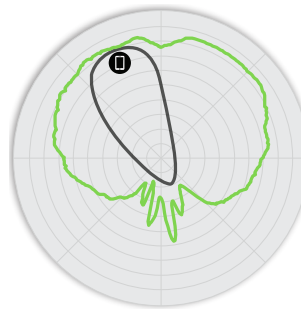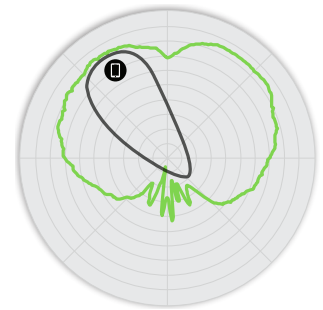**Figure 4. A510 2.4GHz Elevation Antenna Patterns**

Figure 5. A510 5GHz Elevation Antenna Patterns

Note: The outer trace represents the composite RF footprint of all possible BeamFlex+ antenna patterns, while the inner trace represents one BeamFlex+ antenna pattern within the composite outer trace.

WI-FI

Wi-Fi Standards	• IEEE 802.11a/b/g/n/ac Wave 2
Supported Rates	• 802.11ac: 6.5 to 867Mbps (MCS0 to MCS9, NSS = 1 to 2 for VHT20/40/80) • 802.11n: 6.5 Mbps to 300Mbps (MCS0 to MCS15) • 802.11a/g: 54, 48, 36, 24, 18, 12, 9 , 6Mbps • 802.11b: 11, 5.5, 2 and 1 Mbps
Supported Channels	• 2.4GHz: 1-13 • 5GHz: 36-64, 100-144, 149-165
MIMO	• 2x2 SU-MIMO • 2x2 MU-MIMO
Spatial Streams	• 2 SU-MIMO • 2 MU-MIMO
Channelization	• 20, 40, 80MHz
Security	• WPA-PSK, WPA-TKIP, WPA2 AES, 802.11i, Dynamic PSK • WIPS/WIDS
Other Wi-Fi Features	• WMM, Power Save, Tx Beamforming, LDPC, STBC, 802.11r/k/v • Hotspot • Hotspot 2.0 • Captive Portal • WISPr

RF

Antenna Type	• BeamFlex+ adaptive antennas with polarization diversity • Adaptive antenna that provides up to 64 unique antenna patterns per band
Antenna Gain (max)	• 2.4GHz: 1dBi • 5GHz: 3dBi
Peak Transmit Power (aggregate across MIMO chains)	• 2.4GHz: 26dBm • 5GHz: 25dBm
Minimum Receive Sensitivity[1]	• -101dBm (2.4GHz) • -96dBm (5GHz)
Frequency Bands	• ISM 2.4-2.484GHz • U-NII-1 5.15-5.25GHz • U-NII-2A 5.25-5.35GHz • U-NII-2C 5.47-5.725GHz • U-NII-3 5.725-5.85GHz

2.4GHZ RECEIVE SENSITIVITY

HT20		HT40	
MCS0	MCS7	MCS0	MCS7
-95	-77	-92	-74

5GHZ RECEIVE SENSITIVITY

VHT20		VHT40		VHT80	
MCS0	MCS7	MCS0	MCS7	MCS0	MCS7
-96	-77	-93	-75	-90	-72

2.4GHZ TX POWER TARGET

Rate	Pout (dBm)
MCS0 HT20	22
MCS7 HT20	19

5GHZ TX POWER TARGET

Rate	Pout (dBm)
MCS0 VHT20	22
MCS7 VHT20	19
MCS0 VHT40, VHT80	22
MCS7 VHT40, VHT80	19

PERFORMANCE AND CAPACITY

Peak PHY Rates	• 2.4GHz: 400Mbps • 5GHz: 867Mbps
Client Capacity	• Up to 512 clients per AP
SSID	• Up to 31 per AP

RUCKUS RADIO MANAGEMENT

Antenna Optimization	• BeamFlex+ • Polarization Diversity with Maximal Ratio Combining (PD-MRC)
Wi-Fi Channel Management	• ChannelFly • Background Scan Based
Client Density Management	• Adaptive Band Balancing • Client Load Balancing • Airtime Fairness • Airtime-based WLAN Prioritization
SmartCast Quality of Service	• QoS-based scheduling • Directed Multicast • L2/L3/L4 ACLs
Mobility	• SmartRoam
Diagnostic Tools	• Spectrum Analysis • SpeedFlex

NETWORKING

Controller Platform Support	• SmartZone • ZoneDirector • Unleashed [2] • Cloud Wi-Fi • Standalone
Mesh	• SmartMesh™ wireless meshing technology. Self-healing Mesh
IP	• IPv4, IPv6
VLAN	• 802.1Q (1 per BSSID or dynamic per use based on RADIUS) • VLAN Pooling • Port-based
802.1x	• Authenticator & Supplicant
Tunnel	• L2TP, GRE, Soft-GRE

[1] Rx sensitivity varies by band, channel width and MCS rate.
[2] Refer to Unleashed datasheets for SKU ordering information.

NETWORKING

Policy Management Tools	• Application Recognition and Control • Access Control Lists • Device Fingerprinting • Rate Limiting

PHYSICAL INTERFACES

Ethernet	• 2 x 1GbE ports, RJ-45, PoE in on one port
USB	• USB 2.0 port, Type A connector

PHYSICAL CHARACTERISTICS

Physical Size	• 16.8(L) x 16.5(W) x 4.1(H) cm • 6.6 (L) x 6.49(W) x 1.6(H) in
Weight	• 350g (0.77oz)
Mounting	• Wall, Drop ceiling, Desk • Secure bracket (sold separately)
Physical Security	• Hidden latching mechanism • Kensington lock • T-bar Torx • Bracket (902-0108-0000) Torx screw & padlock (sold separately)
Operating Temperature	• 0°C (32°F) to 50°C (122°F)
Operating Humidity	• Up to 95%, non-condensing

POWER²

Power Supply	Maximum Power Consumption
802.3af	• 12.6W
DC Input 12 VDC 10A	• 11.9W

CERTIFICATIONS AND COMPLIANCE

Wi-Fi Alliance⁴	• Wi-Fi CERTIFIED™ a, b, g, n, ac • Passpoint®, Vantage
Standards Compliance⁵	• EN 60950-1 Safety • EN 60601-1-2 Medical • EN 61000-4-2/3/5 Immunity • EN 50121-1 Railway EMC • EN 50121-4 Railway Immunity • IEC 61373 Railway Shock & Vibration • UL 2043 Plenum • EN 62311 Human Safety/RF Exposure • WEEE & RoHS • ISTA 2A Transportation

SOFTWARE AND SERVICES

Location Based Services	• SPoT
Network Analytics	• SmartCell Insight (SCI)
Security and Policy	• Cloudpath

ORDERING INFORMATION

901-A510-XX00	• Concurrent dual band 802.11ac AP, no power adapter

See Ruckus Price List for country-specific ordering information.
Warranty: Sold with a limited lifetime warranty.
For details see: http://support.ruckuswireless.com/warranty.

OPTIONAL ACCESSORIES

902-0108-0000	• Spare, Accessory Mounting Bracket with padlock support
902-0120-0000	• Spare, Accessory Mounting Bracket
902-0195-0000	• Spare, T-bar ceiling mount kit for R510 and other APs for mounting to flush frame ceiling
902-0173-XXYY	• Power Adapter, AC/DC wall plug,100-240Vac 50/60Hz
902-0162-XXYY	• PoE injector (sold in quantities of 10 or 100)

XX: US/KS/JP/Z2/WW
For expansion of XX and YY: Please consult current Ruckus Price List.
Region availability subject to Certification Date per region.

³ Max power varies by country setting, band, and MCS rate.
⁴ For complete list of WFA certifications, please see Wi-Fi Alliance website.
⁵ For current certification status, please see price list.