

# R610

Indoor 802.11ac Wave 2 3x3:3 Wi-Fi Access Point



## DATA SHEET



### BENEFITS

#### STUNNING WI-FI PERFORMANCE

Mitigate interference and extend coverage with patented BeamFlex+™ adaptive antenna technology utilizing 512 directional antenna patterns.

#### SERVE MORE DEVICES

Connect more devices simultaneously with three 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 R610 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.

#### EXPANDED BACKHAUL

Pair two onboard 1GbE ports with link aggregation (LACP) to maximize throughput between the AP and wired switch.

#### MORE THAN WI-FI

Support services beyond Wi-Fi with [Ruckus IoT Suite](#), [Cloudpath](#) security and onboarding software, [SPoT](#) Wi-Fi locationing engine, and [SCI](#) network analytics.

Busy indoor locations like classrooms, retail venues, and branch offices can be among the most challenging Wi-Fi environments. Dozens of users share the same crowded spectra and they all expect fast, reliable connectivity to their content and applications.

The Ruckus R610 delivers the ideal combination of performance, affordability, and 802.11ac features for medium-density locations. It provides fast data rates (up to 1900Mbps) and Ruckus density-handling intelligence to support dozens of users with guaranteed throughput, at a cost you can afford.

The R610 is a perfect fit for environments like K-12 classrooms, university lecture halls, libraries, retail locations, and branch offices. It can easily support online digital learning deployments with 30+ students per classroom, or university lecture halls serving concurrent HD video streams to dozens of student devices.

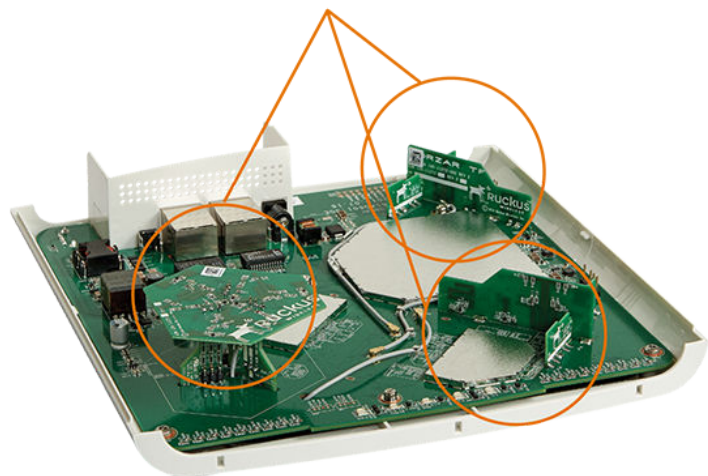
The R610 802.11ac Wi-Fi AP incorporates patented technologies found only in the Ruckus Wi-Fi portfolio.

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

With three streams of MultiUser MIMO (MU-MIMO) connectivity, the R610 can simultaneously transmit to multiple client devices, improving RF efficiency and overall throughput, for all users—even those with non-Wave 2 clients. The R610 also features a USB port for hosting IOT devices and dual Gigabit Ethernet ports that support of Link Aggregation for higher throughput to the switch.

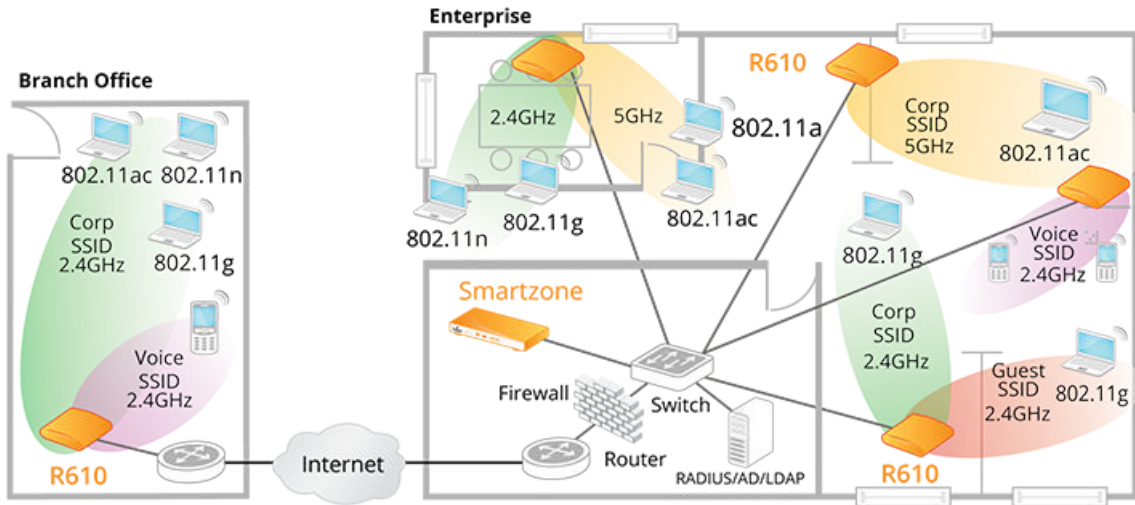
Whether you're deploying ten or ten thousand APs, the R610 is also easy to manage through Ruckus' appliance, virtual and cloud management options.

#### BeamFlex+ Adaptive Antenna Technology



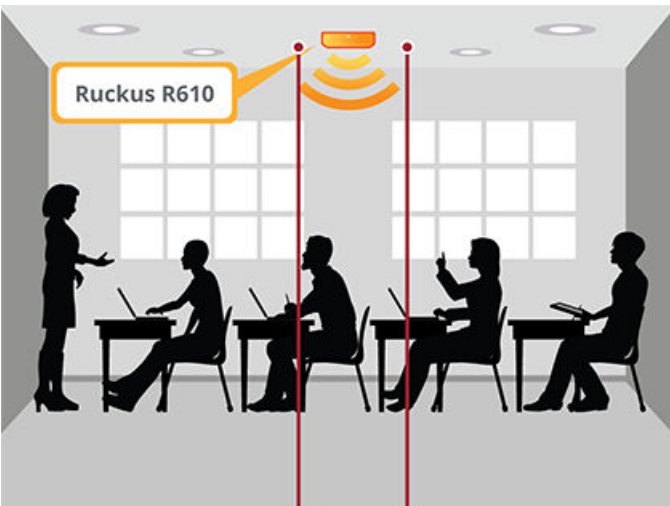
### THE R610 INTEGRATES WITH YOUR EXISTING NETWORK INFRASTRUCTURE

Delivering best-in-class 802.11ac performance and reliability—making it the ideal wireless solution for mid-range enterprise and branch office applications.



### DEPLOYMENTS FOR CLASSROOMS AND LIBRARIES

The R610 is ideal for deployment in education common areas providing high quality wireless access in high density locations

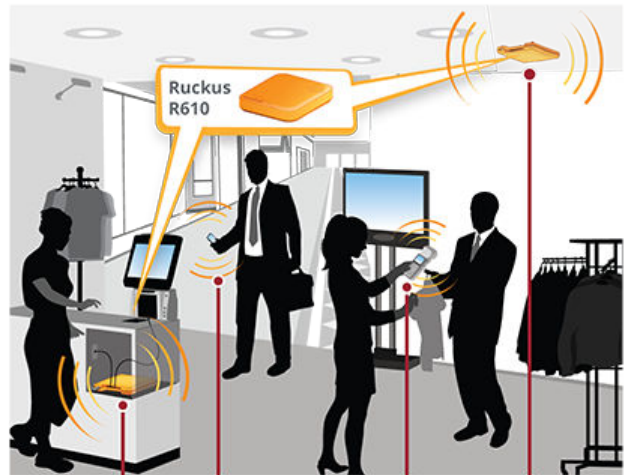


Dual-band (2.4/5GHz) support allows for concurrent Internet and IP-based video services

Sleek, elegant design easily concealed

### DEPLOYMENT FOR RETAIL / BRANCH OFFICES

The R610 is ideal for deployment in retail stores to provide inconspicuous wireless connection to high quality video, wireless IP phones and data access for handheld PoS barcode scanners



Wired ports to connect devices such as cash registers, printers, etc.

Multiple SSIDs for differentiated user services (e.g., guest Wi-Fi, point of sale, voice)

Reliable Wi-Fi connectivity for point of sale devices

5GHz band and smart antenna system ideal for 802.11ac clients

### ACCESS POINT ANTENNA PATTERN

Ruckus' BeamFlex+ adaptive antennas allow the R610 AP to dynamically choose among a host of antenna patterns (up to 512 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

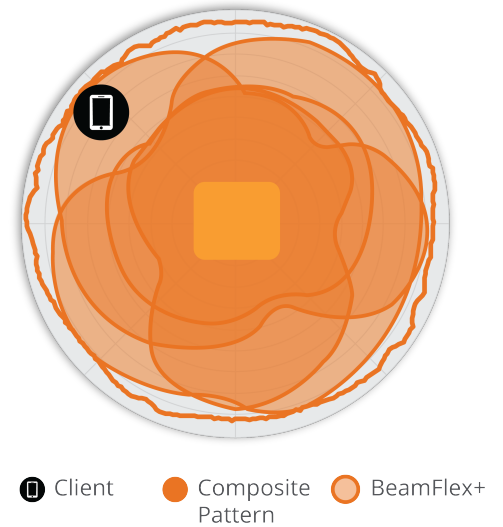


Figure 2. R610 2.4GHz Azimuth Antenna Patterns



Figure 3. R610 5GHz Azimuth Antenna Patterns



Figure 4. R610 2.4GHz Elevation Antenna Patterns

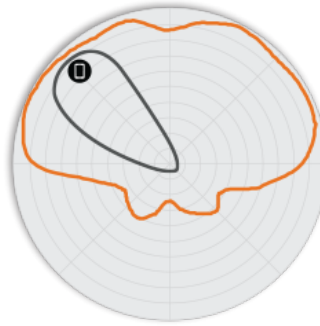


Figure 5. R610 5GHz Elevation Antenna Patterns



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	
<b>Wi-Fi Standards</b>	<ul style="list-style-type: none"> <li>IEEE 802.11a/b/g/n/ac Wave 2</li> </ul>
<b>Supported Rates</b>	<ul style="list-style-type: none"> <li>802.11ac: 6.5 to 1,300Mbps (MCS0 to MCS9, NSS = 1 to 3 for VHT20/40/80 or 1 for VHT160)</li> <li>802.11n: 6.5 Mbps to 450Mbps (MCS0 to MCS23)</li> <li>802.11a/g: 54, 48, 36, 24, 18, 12, 9, 6Mbps</li> <li>802.11b: 11, 5.5, 2 and 1 Mbps</li> </ul>
<b>Supported Channels</b>	<ul style="list-style-type: none"> <li>2.4GHz: 1-13</li> <li>5GHz: 36-64, 100-144, 149-165</li> </ul>
<b>MIMO</b>	<ul style="list-style-type: none"> <li>3x3 SU-MIMO</li> <li>3x3 MU-MIMO</li> </ul>
<b>Spatial Streams</b>	<ul style="list-style-type: none"> <li>3 SU-MIMO</li> <li>3 MU-MIMO</li> </ul>
<b>Radio Chains and Streams</b>	<ul style="list-style-type: none"> <li>3x3:3</li> </ul>
<b>Channelization</b>	<ul style="list-style-type: none"> <li>20, 40, 80, 160/80+80 MHz</li> </ul>
<b>Security</b>	<ul style="list-style-type: none"> <li>WPA-PSK, WPA-TKIP, WPA2 AES, 802.11i, Dynamic PSK</li> <li>WIPS/WIDS</li> </ul>
<b>Other Wi-Fi Features</b>	<ul style="list-style-type: none"> <li>WMM, Power Save, Tx Beamforming, LDPC, STBC, 802.11r/k/v</li> <li>Hotspot</li> <li>Hotspot 2.0</li> <li>Captive Portal</li> <li>WISPr</li> </ul>

RF	
<b>Antenna Type</b>	<ul style="list-style-type: none"> <li>BeamFlex+ adaptive antennas with polarization diversity</li> <li>Adaptive antenna that provides up to 512 unique antenna patterns by band</li> </ul>
<b>Antenna Gain (max)</b>	<ul style="list-style-type: none"> <li>Up to 3dBi</li> </ul>
<b>Peak Transmit Power (aggregate across MIMO chains)</b>	<ul style="list-style-type: none"> <li>2.4GHz: 27dBm</li> <li>5GHz: 25dBm</li> </ul>
<b>Minimum Receive Sensitivity<sup>1</sup></b>	<ul style="list-style-type: none"> <li>-100dBm</li> </ul>
<b>Frequency Bands</b>	<ul style="list-style-type: none"> <li>ISM (2.4-2.484GHz)</li> <li>U-NII-1 (5.15-5.25GHz)</li> <li>U-NII-2A (5.25-5.35GHz)</li> <li>U-NII-2C (5.47-5.725GHz)</li> <li>U-NII-3 (5.725-5.85GHz)</li> </ul>

2.4GHZ RECEIVE SENSITIVITY			
HT20		HT40	
MCS0	MCS7	MCS0	MCS7
-94	-74	-91	-71

5GHZ RECEIVE SENSITIVITY					
VHT20		VHT40		VHT80	
MCS0	MCS7	MCS0	MCS7	MCS0	MCS7
-91	-71	-89	-71	-85	-68

2.4GHZ TX POWER TARGET	
Rate	Pout (dBm)
MCS0 HT20	22.5
MCS7 HT20	19.5

5GHZ TX POWER TARGET	
Rate	Pout (dBm)
VHT20	20
MCS0 VHT40	22
MCS7 VHT40, VHT80	19

PERFORMANCE AND CAPACITY	
<b>Peak PHY Rates</b>	<ul style="list-style-type: none"> <li>2.4GHz: 450Mbps</li> <li>5GHz: 1300Mbps</li> </ul>
<b>Client Capacity</b>	<ul style="list-style-type: none"> <li>Up to 512 clients per AP</li> </ul>
<b>SSID</b>	<ul style="list-style-type: none"> <li>Up to 31 per AP</li> </ul>

RUCKUS RADIO MANAGEMENT	
<b>Antenna Optimization</b>	<ul style="list-style-type: none"> <li>BeamFlex+</li> <li>Polarization Diversity with Maximal Ratio Combining (PD-MRC)</li> </ul>
<b>Wi-Fi Channel Management</b>	<ul style="list-style-type: none"> <li>ChannelFly</li> <li>Background Scan Based</li> </ul>
<b>Client Density Management</b>	<ul style="list-style-type: none"> <li>Adaptive Band Balancing</li> <li>Client Load Balancing</li> <li>Airtime Fairness</li> <li>Airtime-based WLAN Prioritization</li> </ul>
<b>SmartCast Quality of Service</b>	<ul style="list-style-type: none"> <li>QoS-based scheduling</li> <li>Directed Multicast</li> <li>L2/L3/L4 ACLs</li> </ul>
<b>Mobility</b>	<ul style="list-style-type: none"> <li>SmartRoam</li> </ul>
<b>Diagnostic Tools</b>	<ul style="list-style-type: none"> <li>Spectrum Analysis</li> <li>SpeedFlex</li> </ul>

<sup>1</sup> Rx sensitivity varies by band, channel width and MCS rate.

NETWORKING	
<b>Controller Platform Support</b>	<ul style="list-style-type: none"> <li>SmartZone</li> <li>ZoneDirector</li> <li>Cloud Wi-Fi</li> <li>Unleashed<sup>2</sup></li> <li>Standalone</li> </ul>
<b>Mesh</b>	<ul style="list-style-type: none"> <li>SmartMesh™ wireless meshing technology. Self-healing Mesh</li> </ul>
<b>IP</b>	<ul style="list-style-type: none"> <li>IPv4, IPv6</li> </ul>
<b>VLAN</b>	<ul style="list-style-type: none"> <li>802.1Q (1 per BSSID or dynamic per use based on RADIUS)</li> <li>VLAN Pooling</li> <li>Port-based</li> </ul>
<b>802.1x</b>	<ul style="list-style-type: none"> <li>Authenticator &amp; Supplicant</li> </ul>
<b>Tunnel</b>	<ul style="list-style-type: none"> <li>L2TP, GRE, Soft-GRE</li> </ul>
<b>Gateway and Routing</b>	<ul style="list-style-type: none"> <li>NAT/DHCP</li> </ul>
<b>Policy Management Tools</b>	<ul style="list-style-type: none"> <li>Application Recognition and Control</li> <li>Access Control Lists</li> <li>Device Fingerprinting</li> <li>Rate Limiting</li> </ul>
<b>IoT Capable</b>	<ul style="list-style-type: none"> <li>Yes</li> </ul>

PHYSICAL INTERFACES	
<b>Ethernet</b>	<ul style="list-style-type: none"> <li>2 x 1GbE ports, RJ-45</li> <li>Link Aggregation (LACP)</li> </ul>
<b>USB</b>	<ul style="list-style-type: none"> <li>1 USB 2.0 port, Type A connector</li> </ul>

PHYSICAL CHARACTERISTICS	
<b>Physical Size</b>	<ul style="list-style-type: none"> <li>20.1(L), 19.5(W), 5.1 (H)cm</li> <li>7.9 (L), 7.68 (W), 2.00 (H)in</li> </ul>
<b>Weight</b>	<ul style="list-style-type: none"> <li>578g (1.3lb)</li> </ul>
<b>Mounting</b>	<ul style="list-style-type: none"> <li>Wall, Drop ceiling, Desk</li> <li>Secure bracket (sold separately)</li> </ul>
<b>Physical Security</b>	<ul style="list-style-type: none"> <li>Hidden latching mechanism</li> <li>Kensington lock</li> <li>T-bar Torx</li> </ul>
<b>Operating Temperature</b>	<ul style="list-style-type: none"> <li>0°C (32°F) - 40°C (104°F)</li> </ul>
<b>Operating Humidity</b>	<ul style="list-style-type: none"> <li>Up to 95%, non-condensing</li> </ul>

POWER <sup>3</sup>		
Power Supply	Mode Feature	Maximum Power Consumption
<b>DC Input 12V DC, 2.0A</b>	<ul style="list-style-type: none"> <li>Full functionality</li> </ul>	<ul style="list-style-type: none"> <li>19.1W</li> </ul>
<b>802.3af</b>	<ul style="list-style-type: none"> <li>Limits 2.4GHz to 2x3 (2-chain transmit at 21dBm aggregate power, 3-chain receive)</li> <li>Turns off USB port</li> <li>Turns off 1 Ethernet port</li> </ul>	<ul style="list-style-type: none"> <li>15W</li> </ul>
<b>802.3at</b>	<ul style="list-style-type: none"> <li>Full functionality</li> </ul>	<ul style="list-style-type: none"> <li>18.8W</li> </ul>

CERTIFICATIONS AND COMPLIANCE	
<b>Wi-Fi Alliance<sup>4</sup></b>	<ul style="list-style-type: none"> <li>Wi-Fi CERTIFIED™ a, b, g, n, ac</li> <li>Passpoint®, Vantage</li> </ul>
<b>Standards Compliance<sup>5</sup></b>	<ul style="list-style-type: none"> <li>EN 60950-1 Safety</li> <li>EN 60601-1-2 Medical</li> <li>EN 61000-4-2/3/5 Immunity</li> <li>EN 50121-1 Railway EMC</li> <li>EN 50121-4 Railway Immunity</li> <li>IEC 61373 Railway Shock &amp; Vibration</li> <li>UL 2043 Plenum</li> <li>EN 62311 Human Safety/RF Exposure</li> <li>WEEE &amp; RoHS</li> <li>ISTA 2A Transportation</li> </ul>

SOFTWARE AND SERVICES	
<b>Location Based Services</b>	<ul style="list-style-type: none"> <li>SPoT</li> </ul>
<b>Network Analytics</b>	<ul style="list-style-type: none"> <li>SmartCell Insight (SCI)</li> </ul>
<b>Security and Policy</b>	<ul style="list-style-type: none"> <li>Cloudpath</li> </ul>

ORDERING INFORMATION	
<b>901-R610-XX00</b>	<ul style="list-style-type: none"> <li>Concurrent dual band 802.11ac AP, no power adapter</li> </ul>

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	
<b>902-1169-XX00</b>	<ul style="list-style-type: none"> <li>Power Supply (12V, 2.0A, 24W)</li> </ul>
<b>902-0162-XXYY</b>	<ul style="list-style-type: none"> <li>PoE injector (24W) (Sold in quantities of 1, 10 or 100)</li> </ul>
<b>902-0195-0000</b>	<ul style="list-style-type: none"> <li>Spare, T-bar ceiling mount kit for mounting to flush frame ceiling</li> </ul>
<b>902-0120-0000</b>	<ul style="list-style-type: none"> <li>Spare, Accessory Mounting Bracket</li> </ul>

PLEASE NOTE: When ordering Indoor APs, you must specify the destination region by indicating -US, -WW, or -ZZ instead of XX. When ordering PoE injectors or power supplies, you must specify the destination region by indicating -US, -EU, -AU, -BR, -CN, -IN, -JP, -KR, -SA, -UK, or -UN instead of -XX. For access points, -ZZ applies to the following countries: Algeria, Egypt, Israel, Morocco, Tunisia, and Vietnam.

<sup>2</sup> Refer to Unleashed datasheets for SKU ordering information.

<sup>3</sup> Max power varies by country setting, band, and MCS rate.

<sup>4</sup> For complete list of WFA certifications, please see Wi-Fi Alliance website.

<sup>5</sup> For current certification status, please see price list.