DATA SHEET

RUCKUS® R550

Indoor Wi-Fi 6 (802.11ax) Access Point for Dense Environments



Benefits

Stunning Wi-Fi performance

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

Serve more devices

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

Converged Access Point

Allows customers to eliminate siloed networks and unify WiFi and non-WiFi wireless technologies into one single network by using built-in BLE and Zigbee, and also expand to any future wireless technologies through the USB port.

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.

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.

More Than Wi-Fi

Support services beyond Wi-Fi with Ruckus IoT Suite, Cloudpath® security and onboarding software, SPoT Wi-Fi locationing engine, and RUCKUS analytics.

Wi-Fi capacity requirements in classrooms, office spaces, and medium-size venues are rising due to the increase in the number of Wi-Fi connected devices. An increase in bandwidth requirements for applications and an ever-growing assortment of IoT devices puts further strain on already stretched Wi-Fi networks.

The RUCKUS® R550 access point (AP) with the latest Wi-Fi 6 (802.11 ax) technology delivers the ideal combination of increased capacity, improved coverage and affordability in dense environments. The R550 is our mid- range dual-band, dual-concurrent AP that supports four spatial streams (2x2:2 in 2.4GHz/5GHz). The R550 supports peak data rates of up to 1774 Mbps and efficiently manages up to 512 clients connections.

Also, wireless requirements within enterprises are expanding beyond Wi-Fi with BLE, Zigbee and many other non-Wi-Fi wireless technologies resulting in creation of network silos. Enterprises need a unified platform to eliminate network silos. The RUCKUS AP portfolio is equipped to solve these challenges.

The R550 has built-in IoT radios with onboard BLE and Zigbee capabilities. In addition, the R550 is a converged access point that allows customers to seamlessly integrate any new wireless technologies with the pluggable IoT module.

The R550 is packed with ruckus patented technologies in addition to Wi-Fi 6 features such as OFDMA, MU-MIMO and TWT. The R550 is ideal for medium-density deployments such a, K-12 classrooms, residence halls, hallways and office spaces.

The R550 Wi-Fi 6 AP incorporates patented technologies found only in the RUCKUS Wi-Fi portfolio.

- **BeamFlex®+ Antennas:** Extended coverage and optimized throughput with patented multi- directional antennas and radio patterns
- **ChannelFly®:** Improved throughput with dynamically changing the channels to use least congested channel

Whether you are deploying ten or ten thousand APs, the R550 is also easy to manage through RUCKUS' cloud, physical, virtual and controllerless management options.

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Front view



Weight: 1.24 lbs (0.562 kg)

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Access Point Antenna Pattern

RUCKUS' BeamFlex+ adaptive antennas allow the R550 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

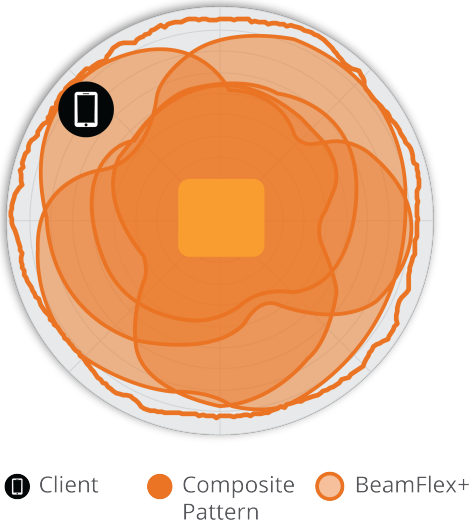


Figure 2. R550 2.4GHz Azimuth Antenna Patterns

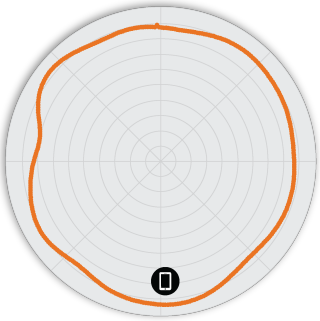


Figure 3. R550 5GHz Azimuth Antenna Patterns

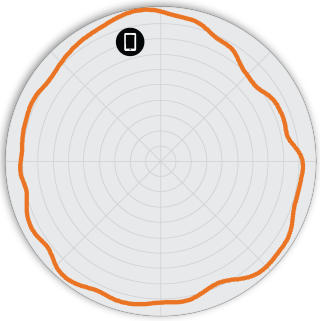
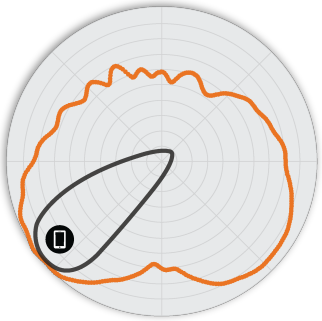


Figure 4. R550 2.4GHz Elevation Antenna Patterns



Figure 5. R550 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.

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RUCKUS® R550

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WI-FI	
Wi-Fi Standards	• IEEE 802.11a/b/g/n/ac/ax
Supported Rates	• 802.11ax: 4 to 1774 Mbps • 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: 6 to 54 Mbps • 802.11b: 1 to 11 Mbps
Supported Channels	• 2.4GHz: 1-13 • 5GHz: 36-64, 100-144, 149-165
MIMO	• 2x2 SU-MIMO • 2x2 MU-MIMO
Spatial Streams	• 2 streams SU/MU MIMO 5GHz • 2 streams SU/MU MIMO 2.4GHz
Radio Chains and Streams	• 2x2:2 (5GHz) • 2x2:2 (2.4GHz)
Channelization	• 20, 40, 80MHz
Security	• WPA-PSK, WPA-TKIP, WPA2 AES, WPA3-Personal, WPA3-Enterprise, 802.11i, Dynamic PSK, OWE • 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)	• Up to 3dBi
Peak Transmit Power (Tx port/chain + Combining gain)	• 2.4GHz: 26 dBm • 5GHz: 25 dBm
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 (dBm)

HT20		HT40		VHT20		VHT40	
MCS0	**MCS7**	**MCS0**	**MCS7**	**MCS0**	**MCS7**	**MCS0**	**MCS7**
-97	-78	-94	-75	-97	-78	-94	-75
HE 20				HE40			
MCS0	**MCS7**	**MCS9**	**MCS11**	**MCS0**	**MCS7**	**MCS9**	**MCS11**
-97	-78	-73	-67	-94	-75	-70	-64

5GHZ RECEIVE SENSITIVITY (dBm)

VHT20				VHT40				VHT80			
MCS0	**MCS7**	**MCS8**	**MCS9**	**MCS0**	**MCS7**	**MCS8**	**MCS9**	**MCS0**	**MCS7**	**MCS8**	**MCS9**
-97	-78	-75	-72	-94	-75	-72	-69	-91	-72	-69	-66
HE20				HE40				HE80			
MCS0	**MCS7**	**MCS9**	**MCS11**	**MCS0**	**MCS7**	**MCS9**	**MCS11**	**MCS0**	**MCS7**	**MCS9**	**MCS11**
-97	-78	-72	-67	-94	-75	-69	-64	-91	-72	-66	-61

2.4GHZ TX POWER TARGET (PER CHAIN)

Rate	Pout (dBm)
MCS0 HT20	22
MCS7 HT20	18
MCS8 VHT20	17
MCS9 VHT40	16
MCS11 HE40	14

5GHZ TX POWER TARGET (PER CHAIN)

Rate	Pout (dBm)
MCS0, VHT20	22
MCS7, VHT40, VHT80	17.5
MCS9, VHT40, VHT80	16
MCS11, HE20, HE40, HE80	13

PERFORMANCE AND CAPACITY	
Peak PHY Rates	• 2.4GHz: 574 Mbps • 5GHz: 1200 Mbps
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

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NETWORKING	
Controller Platform Support	• SmartZone • ZoneDirector • Unleashed[1] • Standalone • Cloud
Mesh	• SmartMesh™ wireless meshing technology. Self-healing Mesh
IP	• IPv4, IPv6, dual-stack
VLAN	• 802.1Q (1 per BSSID or dynamic per user based on RADIUS) • VLAN Pooling • Port-based
802.1x	• Authenticator & Supplicant
Tunnel	• L2TP, GRE, Soft-GRE
Policy Management Tools	• Application Recognition and Control • Access Control Lists • Device Fingerprinting • Rate Limiting
IoT Capable	• Integrated BLE and ZigBee (1 radio, switchable)

PHYSICAL INTERFACES	
Ethernet	• 2 x 1GbE Ethernet ports • Power over Ethernet (802.3af/at) with Category 5/5e/6 cable • LLDP
USB	• 1 USB 2.0 port, Type A

PHYSICAL CHARACTERISTICS	
Physical Size	• 17.60cm (L), 19.02cm (W), 4.78cm (H) • 6.93in (L) x 7.49in (W) x 1.88in (H)
Weight	• 0.562 kg • 1.24 lbs
Mounting	• Wall, acoustic ceiling, desk • Secure bracket (sold separately)
Physical Security	• Hidden latching mechanism • Kensington lock • Bracket (902-0120-0000)
Operating Temperature	• 0°C (32°F) - 50°C (122°F)
Operating Humidity	• Up to 95%, non-condensing

POWER[2]

Power Supply	Operating Characteristics	Max Power Consumption
802.3af PoE	• 2.4GHz radio: 2x2, 19dBm per chain • 5GHz radio: 2x,2 18dBm per chain • 2nd Ethernet port, onboard IoT & USB disabled	PoE: 12.71W
802.3at PoE+	Full Functionality	PoE+ : 18.71W
DC Input 12VDC	Full Functionality	16.58W

CERTIFICATIONS AND COMPLIANCE	
Wi-Fi Alliance[3]	• Wi-Fi CERTIFIED™ a, b, g, n, ac • Wi-Fi CERTIFIED 6™ • WPA3™-Enterprise, Personal • Wi-Fi Enhanced Open™ • Wi-Fi Agile Multiband™ • Passpoint® • Vantage • WMM®
Standards Compliance[4]	• 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), Ruckus Analytics
Security and Policy	• Cloudpath

ORDERING INFORMATION	
901-R550-XX01	• R550 dual-band (5GHz and 2.4GHz concurrent) 802.11ax wireless access point, 2x2:2 + 2x2:2 streams, adaptive antennas, dual ports, onboard BLE and Zigbee, PoE support. Not plenum rated. Includes adjustable acoustic drop ceiling bracket. Does not include power adaptor.
901-R550-XX00	• R550 dual-band (5GHz and 2.4GHz concurrent) 802.11ax wireless access point, 2x2:2 + 2x2:2 streams, adaptive antennas, dual ports, onboard BLE and Zigbee, PoE support. Plenum rated. Includes adjustable acoustic drop ceiling bracket. Does not include power adaptor.

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

[1] Refer to Unleashed datasheets for SKU ordering information.
[2] Max power varies by country setting, band, and MCS rate.
[3] For complete list of WFA certifications, please see Wi-Fi Alliance website.
[4] For current certification status, please see price list.

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OPTIONAL ACCESSORIES	
902-0162-XXYY	• PoE injector (24W) (Sold in quantities of 1, 10 or 100)
902-1169-XX00	• Power Supply (12V, 2.0A, 24W)
902-0120-0000	• Spare, Accessory Mounting Bracket
902-0195-0000	• Spare, T-bar ceiling mount kit for mounting to flush frame ceiling

PLEASE NOTE: When ordering Indoor APs, you must specify the destination region by indicating -US, -WW, or -Z2 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, -Z2 applies to the following countries: Algeria, Egypt, Israel, Morocco, Tunisia, and Vietnam.

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