

# RUCKUS® R850

Indoor Wi-Fi 6 8x8:8 Access Point with 5.9 Gbps Data Rate



## Benefits

### Connect More Devices Simultaneously

Improve device performance, by enabling more simultaneous device connections with built-in 12 spatial streams (8x8:8 in 5GHz, 4x4:4 in 2.4GHz), MU-MIMO and OFDMA technology.

### Ultra-High-Density Performance

Provides exceptional end-user experience within stadiums, large public venues, convention centers and school auditoriums with the RUCKUS® Ultra-High-Density Technology Suite.

### Enhanced Security

Supports the latest Wi-Fi security standard, WPA3, for enhanced protection from man-in-the-middle attacks in the most secure way.

### Multi-Gigabit Access Speeds

Optimized multi-gigabit Wi-Fi performance delivered using built-in 5GbE/2.5GbE Ethernet ports to connect to multi-gigabit switches.

### Device Management Options

Manage the R850 with cloud, on premise physical/virtual appliances and control auto-provisioning for faster deployment and seamless firmware upgrades.

### Better Mesh Networking

Minimize complexity by reducing expensive cabling with SmartMesh that dynamically creates self-forming, self-healing mesh networks.

### Converged Access Point

Eliminate siloed wireless networks with a unified platform that augments Wi-Fi with onboard BLE & Zigbee radios with the option to integrate other wireless technologies via the USB port.

### 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](#).

**The RUCKUS® R850 is based on the latest Wi-Fi standard, Wi-Fi 6, which bridges the performance gap from 'gigabit' Wi-Fi to 'multi-gigabit' Wi-Fi in support of the insatiable demand for better and faster Wi-Fi.**

The RUCKUS R850 is our highest capacity dual-band, dual-concurrent Wi-Fi 6 access point (AP) that supports 12 spatial streams (8x8:8 in 5GHz, 4x4:4 in 2.4GHz). The R850, with OFDMA, TWT and MU-MIMO capabilities, efficiently manages up to 1,024 client connections with increased capacity, improved coverage and performance in ultra-high dense environments. Furthermore, a 5 Gbps multi-gigabit Ethernet port mitigates backhaul capacity bottlenecks.

Additionally, the R850 is IoT- and LTE-ready, and supports wireless standards beyond Wi-Fi in combination with the RUCKUS IoT Suite and our CBRs/OpenG modules.

The R850 addresses the increasing client demands in transit hubs, auditoriums, stadiums, conference centers, and other highly trafficked indoor spaces. It is the perfect choice for data-intensive streaming multimedia applications like 4K video transmissions, while supporting latency sensitive voice and data applications with stringent quality-of-service requirements.

The R850 when paired with the RUCKUS Ultra-High-Density Technology Suite found only in the RUCKUS Wi-Fi portfolio, dramatically improves network performance through a combination of patented wireless innovations and learning algorithms that includes:

- **Airtime Decongestion:** Increases average network throughput in heavily congested environments
- **Transient Client Management:** Reduces interference traffic from unconnected Wi-Fi devices
- **BeamFlex® Antennas:** Extended coverage and optimized throughput with patented multi-directional antennas and radio patterns

Whether you're deploying ten or ten thousand APs, the R850 is also easy to manage through our collection of on-premises or cloud-based management options.

# RUCKUS<sup>®</sup> R850

Indoor Wi-Fi 6 8x8:8 Access Point with 5.9 Gbps Data Rate

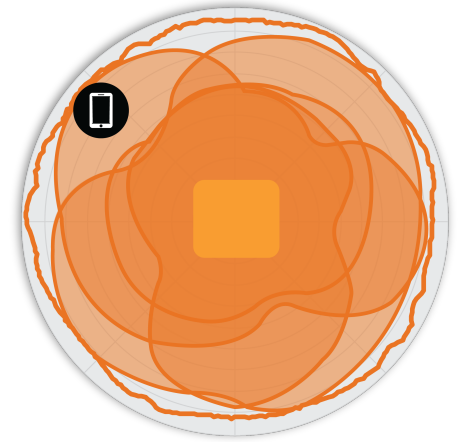
## Access Point Antenna Pattern

RUCKUS' BeamFlex+ adaptive antennas allow the R850 AP to dynamically choose among a host of antenna patterns (over 4,000 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+ Pattern

Figure 2. R850 2.4GHz Azimuth Antenna Patterns



Figure 3. R850 5GHz Azimuth Antenna Patterns



Figure 4. R850 2.4GHz Elevation Antenna Patterns

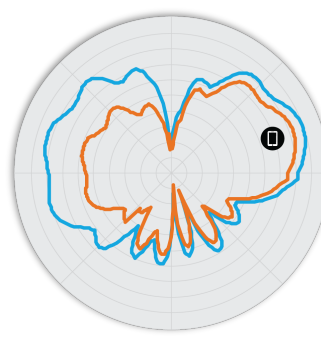
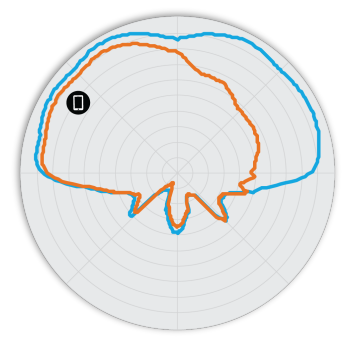


Figure 5. R850 5GHz Elevation Antenna Patterns



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.

# RUCKUS® R850

Indoor Wi-Fi 6 8x8:8 Access Point with 5.9 Gbps Data Rate

WI-FI	
Wi-Fi Standards	<ul style="list-style-type: none"> <li>IEEE 802.11a/b/g/n/ac/ax</li> </ul>
Supported Rates	<ul style="list-style-type: none"> <li>802.11ax: 4 to 4800 Mbps</li> <li>802.11ac: 6.5 to 3467 Mbps</li> <li>802.11n: 6.5 to 600 Mbps</li> <li>802.11a/g: 6 to 54 Mbps</li> <li>802.11b: 1 to 11 Mbps</li> </ul>
Supported Channels	<ul style="list-style-type: none"> <li>2.4GHz: 1-13</li> <li>5GHz: 36-64, 100-144, 149-165</li> </ul>
MIMO	<ul style="list-style-type: none"> <li>8x8 MU-MIMO</li> <li>8x8 SU-MIMO</li> </ul>
Spatial Streams	<ul style="list-style-type: none"> <li>8 MU-MIMO</li> <li>8 SU-MIMO</li> </ul>
Radio Chains and Streams	<ul style="list-style-type: none"> <li>8x8:8</li> </ul>
Channelization	<ul style="list-style-type: none"> <li>20, 40, 80, 160 MHz</li> </ul>
Modulation	<ul style="list-style-type: none"> <li>OFDMA (up to 1024-QAM)</li> </ul>
Security	<ul style="list-style-type: none"> <li>WPA-PSK, WPA-TKIP, WPA2 AES, 802.11i, Dynamic PSK</li> <li>WIPS/WIDS</li> </ul>
Other Wi-Fi Features	<ul style="list-style-type: none"> <li>WMM, Power Save, TxBF, LDPC, STBC, 802.11r/k/v/Hotspot</li> <li>Hotspot 2.0</li> <li>Captive Portal</li> <li>WISPr</li> </ul>

RF	
Antenna Type	<ul style="list-style-type: none"> <li>BeamFlex+ Adaptive Antennas with 4000+ unique antenna patterns</li> <li>Horizontal and Vertical polarization (PD-MRC)</li> </ul>
Antenna Gain (max)	<ul style="list-style-type: none"> <li>Up to 2 dBi</li> </ul>
Frequency Bands	<ul style="list-style-type: none"> <li>2.4 - 2.484 GHz</li> <li>5.17 - 5.33 GHz</li> <li>5.49 - 5.71 GHz</li> <li>5.735 - 5.835 GHz</li> </ul>

2.4GHZ RECEIVE SENSITIVITY							
HT20		HT40		VHT20		VHT40	
MCS0	MCS7	MCS0	MCS7	MCS0	MCS7	MCS0	MCS7
-91	-73	-88	-70	-91	-73	-88	-70
HE20				HE40			
MCS0	MCS7	MCS9	MCS11	MCS0	MCS7	MCS9	MCS11
-91	-73	-68	-62	-88	-70	-65	-59

5GHZ RECEIVE SENSITIVITY											
VHT20				VHT40				VHT80			
MCS0	MCS7	MCS8	MCS9	MCS0	MCS7	MCS8	MCS9	MCS0	MCS7	MCS8	MCS9
-91	-72	-69	—	-88	-69	—	-65	-85	-66	—	-62
HE20				HE40				HE80			
MCS0	MCS7	MCS9	MCS11	MCS0	MCS7	MCS9	MCS11	MCS0	MCS7	MCS9	MCS11
-91	-72	-68	-62	-88	-69	-65	-59	-85	-66	-62	-56

2.4GHZ TX POWER TARGET (PER CHAIN)		
Rate	Pout (dBm) - Full Power	Pout (dBm) - 802.3at
MCS0 HT20	20	20
MCS7 HT20	16	16
MCS8 VHT20	15	15
MCS9 VHT40	14	14
MCS11 HE40	12	12

5GHZ TX POWER TARGET (PER CHAIN)		
Rate	Pout (dBm) - Full Power	Pout (dBm) - 802.3at
MCS0 VHT20	22	22
MCS7 VHT40, VHT80	16.5	16.5
MCS9 VHT40, VHT80	15	15
MCS11 HE20, HE40, HE80	12.5	12.5

PERFORMANCE AND CAPACITY	
Peak PHY Rates	<ul style="list-style-type: none"> <li>2.4GHz: 1.148 Gbps (11ax)</li> <li>5GHz: 4.8 Gbps (11ax)</li> </ul>
Client Capacity	<ul style="list-style-type: none"> <li>Up to 1024 clients per AP</li> </ul>
Simultaneous VoIP Clients	<ul style="list-style-type: none"> <li>Up to 60 per AP</li> </ul>
SSID	<ul style="list-style-type: none"> <li>Up to 16 per radio</li> </ul>

RUCKUS RADIO MANAGEMENT	
Antenna Optimization	<ul style="list-style-type: none"> <li>BeamFlex+</li> <li>PD-MRC</li> </ul>
Wi-Fi Channel Management	<ul style="list-style-type: none"> <li>ChannelFly</li> </ul>
Client Density Management	<ul style="list-style-type: none"> <li>Band Balancing</li> <li>Client Load Balancing</li> <li>Airtime Fairness</li> <li>Airtime-based WLAN Prioritization</li> </ul>
Queuing & Scheduling	<ul style="list-style-type: none"> <li>SmartCast</li> </ul>
Mobility	<ul style="list-style-type: none"> <li>SmartRoam</li> </ul>
Diagnostic Tools	<ul style="list-style-type: none"> <li>Spectrum Analysis</li> <li>SpeedFlex</li> </ul>
High Density Deployments (RF Innovations)	<ul style="list-style-type: none"> <li>Perpacket Adaptive Power</li> <li>Adaptive Wi-Fi Cell Size</li> <li>Transient Client Management</li> <li>Airtime Decongestion</li> </ul>

# RUCKUS® R850

Indoor Wi-Fi 6 8x8:8 Access Point with 5.9 Gbps Data Rate

NETWORKING	
Controller Platform Support	<ul style="list-style-type: none"> <li>SmartZone</li> <li>ZoneDirector</li> <li>Standalone</li> <li>Cloud</li> <li>Unleashed</li> </ul>
Mesh	<ul style="list-style-type: none"> <li>SmartMesh™ wireless meshing technology</li> </ul>
IP	<ul style="list-style-type: none"> <li>IPv4, IPv6</li> </ul>
VLAN	<ul style="list-style-type: none"> <li>802.1Q</li> <li>BSSID-based (16 BSSIDs / radio)</li> <li>Port-based</li> <li>Dynamic, per user based on RADIUS</li> </ul>
802.1x	<ul style="list-style-type: none"> <li>Wired &amp; wireless</li> <li>Authenticator &amp; Supplicant</li> </ul>
Tunnel	<ul style="list-style-type: none"> <li>RuckusGRE, SoftGRE</li> </ul>
Policy Management Tools	<ul style="list-style-type: none"> <li>Application Recognition and Control</li> <li>Access Control Lists</li> <li>Device Fingerprinting</li> </ul>
IoT Capable	<ul style="list-style-type: none"> <li>Yes</li> </ul>

OTHER RADIO TECHNOLOGIES	
IoT	<ul style="list-style-type: none"> <li>BLE, Zigbee</li> </ul>

PHYSICAL INTERFACES	
Ethernet	<ul style="list-style-type: none"> <li>1x 1/2.5/5 Gbps port, RJ-45</li> <li>1x 10/100/1000 Mbps port, RJ-45</li> </ul>
USB	<ul style="list-style-type: none"> <li>1 USB 2.0 port, Type A</li> </ul>

PHYSICAL CHARACTERISTICS	
Physical Size	<ul style="list-style-type: none"> <li>22.19 x 24.96 x 6 cm</li> <li>8.74 x 9.83 x 2.36 in.</li> </ul>
Weight	<ul style="list-style-type: none"> <li>1.53 kg</li> <li>3.37 lbs</li> </ul>
Mounting	<ul style="list-style-type: none"> <li>Wall, Acoustic ceiling, Desk</li> <li>Secure Bracket (sold separately)</li> </ul>
Physical Security	<ul style="list-style-type: none"> <li>Hidden Latching Mechanism</li> </ul>
Operating Temperature	<ul style="list-style-type: none"> <li>-0C (32F) to 50°C (122°F)</li> </ul>
Operating Humidity	<ul style="list-style-type: none"> <li>Up to 95%, non-condensing</li> </ul>

POWER CONSUMPTION			
Mode	Power Consumption	System Configuration	Wi-Fi Radios
DC Power, PoH, uPoE (Idle)	16.1W	<ul style="list-style-type: none"> <li>5Gbps Ethernet Enabled</li> <li>1Gbps Ethernet Enabled</li> <li>USB Enabled (3W)</li> <li>Zigbee/BLE Enabled (0.5W)</li> </ul>	2.4GHz (4x4) Enabled 5GHz (8x8) Enabled <i>(No Clients Associated)</i>
DC Power, PoH, uPoE (Max)	31.0W	<ul style="list-style-type: none"> <li>5Gbps Ethernet Enabled</li> <li>1Gbps Ethernet Enabled</li> <li>USB Enabled (3W)</li> <li>Zigbee/BLE Enabled (0.5W)</li> </ul>	2.4GHz (4x4) Tx 20 dBm 5GHz (8x8) Tx 22 dBm
802.3at (Mode 0)*	23.8W	<ul style="list-style-type: none"> <li>5Gbps Ethernet Enabled</li> <li>1Gbps Ethernet Enabled</li> <li>USB Enabled (3W)</li> <li>Zigbee/BLE <b>Disabled</b></li> </ul>	2.4GHz (4x4) Tx 20 dBm 5GHz (4x4) Tx 22 dBm
802.3at (Mode 1)*	25.31W	<ul style="list-style-type: none"> <li>5Gbps Ethernet Enabled</li> <li>1Gbps Ethernet <b>Disabled</b></li> <li>USB <b>Disabled</b> (3W)</li> <li>Zigbee/BLE <b>Disabled</b></li> </ul>	2.4GHz (4x4) Tx 20 dBm 5GHz (8x8) Tx 20 dBm
802.3af (Not re-commended)	12.4W	<ul style="list-style-type: none"> <li>5Gbps &amp; 1Gbps Ethernet enabled</li> <li>USB <b>Disabled</b></li> <li>Zigbee/BLE <b>Disabled</b></li> </ul>	2.4GHz disabled 5GHz disabled

\*For 802.3at Mode 0/Mode 1 details - please refer to R850 AP Release Notes.

CERTIFICATIONS AND COMPLIANCE	
Wi-Fi Alliance	<ul style="list-style-type: none"> <li>Wi-Fi CERTIFIED™ a, b, g, n, ac, ax</li> <li>Passpoint®</li> <li>Vantage</li> </ul>
Standards Compliance	<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>EN 62311 Human Safety/RF Exposure</li> <li>UL 2043 Plenum</li> <li>WEEE &amp; RoHS</li> <li>ISTA 2A Transportation</li> </ul>

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

# RUCKUS<sup>®</sup> R850

Indoor Wi-Fi 6 8x8:8 Access Point with 5.9 Gbps Data Rate

## ORDERING INFORMATION

901-R850-XX00	R850 dual-band (5GHz and 2.4GHz concurrent) 802.11ax wireless access point, Ultra-High Density performance, 12 spatial streams, adaptive antennas, PoE support. Includes adjustable acoustic drop ceiling bracket. Two Ethernet ports with 1GbE and 5Gbe. Does not include power adaptor
---------------	--

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.

## OPTIONAL ACCESSORIES

902-0180-XX00	<ul style="list-style-type: none"><li>PoE Injector (60W)</li></ul>
902-1170-XX00	<ul style="list-style-type: none"><li>Power Supply (48V, 0.75A, 36W)</li></ul>
902-1180-XX00	<ul style="list-style-type: none"><li>Multigigabit PoE injector (2.5/5/10)-BaseT PoE port, 60W</li></ul>
902-0120-0000	<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, or -W 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.

CommScope pushes the boundaries of communications technology with game-changing ideas and ground-breaking discoveries that spark profound human achievement. We collaborate with our customers and partners to design, create and build the world's most advanced networks. It is our passion and commitment to identify the next opportunity and realize a better tomorrow. Discover more at [commscope.com](https://commscope.com)

[commscope.com](https://commscope.com)

Visit our website or contact your local CommScope representative for more information.

© 2022 CommScope, Inc. All rights reserved.

All trademarks identified by ™ or ® are trademarks or registered trademarks in the US and may be registered in other countries. All product names, trademarks and registered trademarks are property of their respective owners. This document is for planning purposes only and is not intended to modify or supplement any specifications or warranties relating to CommScope products or services.

PA-114450.5-EN (09/21)

**RUCKUS<sup>®</sup>**  
**COMMSCOPE**