

## RUCKUS R850

### INDOOR WI-FI 6 8X8:8 ACCESS POINT WITH 5.9 GBPS DATA RATE



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.

### FEATURES

- Connect more Devices simultaneously
- Built-in 12 spatial streams (8x8:8 in 5GHz, 4x4:4 in 2.4GHz)
- MU-MIMO and OFDMA Technology
- Ultra-High-Density Performance (Stadiums, large public Venues, Convention Centers)
- Enhanced Security with WPA3 for enhanced Protection from man-in-the-middle attacks
- Multi-Gigabit Access Speeds using built-in 5GbE/2.5GbE Ethernet Ports
- Device Management Options
- Better Mesh Networking, selfhealing Mesh Networks
- Converged Access Point, Option to integrate other wireless Technologies via the USB Port
- Support Services beyond Wi-Fi

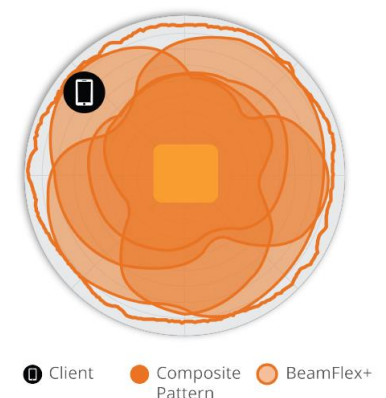
### Access Point Antenna Pattern

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



BeamFlex+ operates without the need for device feedback and hence can benefit even devices using legacy standards.

Figure 2. R850 2.4GHz Azimuth Antenna Patterns



Figure 3. R850 5GHz Azimuth Antenna Patterns



Figure 4. R850 2.4GHz Elevation Antenna Patterns

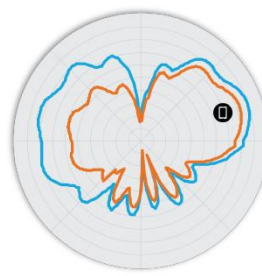
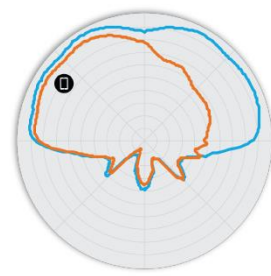


Figure 5. R850 5GHz Elevation Antenna Patterns



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.

## SPECIFICATIONS

WI-FI	
Wi-Fi Standards	IEEE 802.11a/b/g/n/ac/ax
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>2.4 GHz: 1-13</li> <li>5 GHz: 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	8x8:8
Channelization	20, 40, 80, 160 MHz
Modulation	OFDMA (up to 1024-QAM)
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/vHotspot</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)	Up to 2 dBi
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>

**2.4 GHZ 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

**5 GHZ 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

**2.4 GHZ 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

**5 GHZ 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>2.4 GHz: 1.148 Gbps (11ax)</li> <li>5 GHz: 4.8 Gbps (11ax)</li> </ul>
Client Capacity	Up to 1024 clients per AP
Simultaneous VoIP Clients	Up to 60 per AP
SSID	Up to 16 per radio

**RUCKUS RADIO MANAGEMENT**

Antenna Optimization	<ul style="list-style-type: none"> <li>BeamFlex+</li> <li>PD-MRC</li> </ul>
Wi-Fi Channel Management	ChannelFly
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	SmartCast
Mobility	SmartRoam
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>

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	SmartMesh™ wireless meshing technology
IP	IPv4, IPv6
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	RuckusGRE, SoftGRE
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	Yes

OTHER RADIO TECHNOLOGIES	
IoT	BLE, Zigbee

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	1 USB 2.0 port, Type A

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	Hidden Latching Mechanism
Operating Temperature	-0C (32F) to 50°C (122°F)
Operating Humidity	Up to 95%, non-condensing

POWER CONSUMPTION			
Mode	Power Consumption	System Configuration	Wi-Fi Radios
DC Power, PoH, uPoE (Idle)	16.1 W	<ul style="list-style-type: none"> <li>• 5 Gbps Ethernet Enabled</li> <li>• 1 Gbps Ethernet Enabled</li> <li>• USB Enabled (3W)</li> <li>• Zigbee/BLE Enabled (0.5W)</li> </ul>	2.4 GHz (4x4) Enabled 5 GHz (8x8) Enabled (No Clients Associated)
DC Power, PoH, uPoE (Max)	31.0 W	<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>	2.4 GHz (4x4) Tx 20 dBm 5 GHz (8x8) Tx 22 dBm
802.3at (Mode 0)*	23.8 W	<ul style="list-style-type: none"> <li>• 5 Gbps Ethernet Enabled</li> <li>• 1 Gbps Ethernet Enabled</li> <li>• USB Enabled (3W)</li> <li>• Zigbee/BLE Disabled</li> </ul>	2.4 GHz (4x4) Tx 20 dBm 5 GHz (4x4) Tx 22 dBm
802.3at (Mode 1)*	25.31 W	<ul style="list-style-type: none"> <li>• 5 Gbps Ethernet Enabled</li> <li>• 1 Gbps Ethernet Disabled</li> <li>• USB Disabled (3W)</li> <li>• Zigbee/BLE Disabled</li> </ul>	2.4 GHz (4x4) Tx 20 dBm 5 GHz (8x8) Tx 20 dBm
802.3af (Not recommended)	12.4 W	<ul style="list-style-type: none"> <li>• 5Gbps &amp; 1Gbps Ethernet enabled</li> <li>• USB Disabled</li> <li>• Zigbee/BLE Disabled</li> </ul>	2.4 GHz disabled 5 GHz 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	SPoT
Network Analytics	SmartCell Insight (SCI), Ruckus Analytics
Security and Policy	Cloudpath
IoT	Ruckus IoT Suite

## ORDERING INFORMATION

PART NUMBER	DESCRIPTION
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	PoE Injector (60W)
902-1170-XX00	Power Supply (48V, 0.75A, 36W)
902-0120-0000	Spare, Accessory Mounting Bracket

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