

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.

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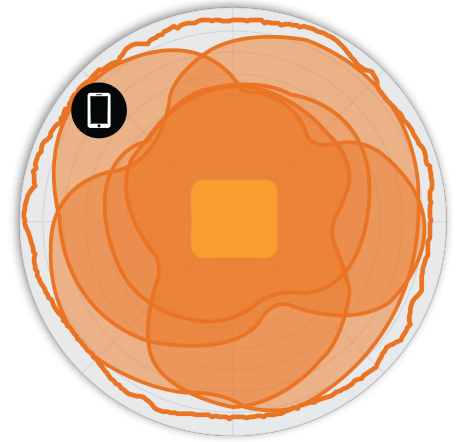
Access Point Antenna Pattern

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

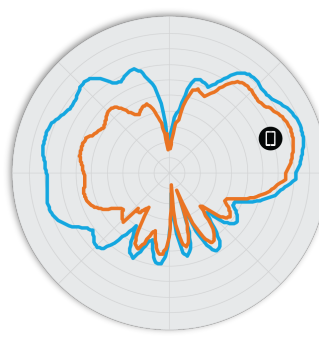
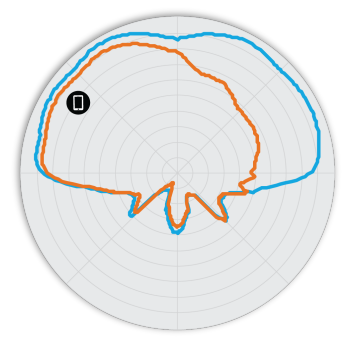


Figure 5. R850 5GHz Elevation Antenna Patterns



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.

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Wi-Fi	
Wi-Fi Standards	IEEE 802.11a/b/g/n/ac/ax
Supported Rates	802.11ax: 4 to 4800 Mbps 802.11ac: 6.5 to 3467 Mbps 802.11n: 6.5 to 600 Mbps 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	8x8 MU-MIMO 8x8 SU-MIMO
Spatial Streams	8 MU-MIMO 8 SU-MIMO
Radio Chains and Streams	8x8:8
Channelization	20, 40, 80MHz
Modulation	OFDMA (up to 1024-QAM)
Security	- WPA-PSK, WPA-TKIP, WPA2 AES, 802.11i, Dynamic PSK - WIPS/WIDS
Other Wi-Fi Features	- WMM, Power Save, TxBF, LDPC, STBC, 802.11r/k/v/Hotspot - Hotspot 2.0 - Captive Portal - WISPr

RF	
Antenna Type	- BeamFlex+ Adaptive Antennas with 4000+ unique antenna patterns - Horizontal and Vertical polarization (PD-MRC)
Antenna Gain (max)	Up to 2 dBi
Frequency Bands	2.4 - 2.484 GHz 5.17 - 5.33 GHz 5.49 - 5.71 GHz 5.735 - 5.835 GHz

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	2.4GHz: 1.148 Gbps (11ax) 5GHz: 4.8 Gbps (11ax)
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	- BeamFlex+ - PD-MRC
Wi-Fi Channel Management	ChannelFly
Client Density Management	- Band Balancing - Client Load Balancing - Airtime Fairness - Airtime-based WLAN Prioritization
Queuing & Scheduling	SmartCast
Mobility	SmartRoam
Diagnostic Tools	- Spectrum Analysis - SpeedFlex
High Density Deployments (RF Innovations)	- Perpacket Adaptive Power - Adaptive Wi-Fi Cell Size - Transient Client Management - Airtime Decongestion

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NETWORKING	
Controller Platform Support	- SmartZone - ZD - Standalone - Cloud
Mesh	SmartMesh™ wireless meshing technology
IP	IPv4, IPv6
VLAN	802.1Q - BSSID-based (16 BSSIDs / radio) - Port-based - Dynamic, per user based on RADIUS
802.1x	- Wired & wireless - Authenticator & Supplicant
Tunnel	RuckusGRE, SoftGRE
Policy Management Tools	- Application Recognition and Control - Access Control Lists - Device Fingerprinting
IoT Capable	Yes

OTHER RADIO TECHNOLOGIES	
IoT	BLE, Zigbee

PHYSICAL INTERFACES	
Ethernet	1x 1/2.5/5 Gbps port, RJ-45 1x 10/100/1000 Mbps port, RJ-45
USB	1 USB 2.0 port, Type A

PHYSICAL CHARACTERISTICS	
Physical Size	22.19 x 24.96 x 6 cm 8.74 x 9.83 x 2.36 in.
Weight	1.53 kg 3.37 lbs
Mounting	- Wall, Acoustic ceiling, Desk - Secure Bracket (sold separately)
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)	16.1W	5Gbps Ethernet Enabled 1Gbps Ethernet Enabled - USB Enabled (3W) - Zigbee/BLE Enabled (0.5W)	2.4GHz (4x4) Enabled 5GHz (8x8) Enabled (No Clients Associated)
DC Power, PoH, uPoE (Max)	31.0W	5Gbps Ethernet Enabled 1Gbps Ethernet Enabled - USB Enabled (3W) - Zigbee/BLE Enabled (0.5W)	2.4GHz (4x4) Tx 20 dBm 5GHz (8x8) Tx 22 dBm
802.3at (Mode 0)*	23.8W	5Gbps Ethernet Enabled 1Gbps Ethernet Enabled - USB Enabled (3W) - Zigbee/BLE Disabled	2.4GHz (4x4) Tx 20 dBm 5GHz (4x4) Tx 22 dBm
802.3at (Mode 1)*	25.31W	5Gbps Ethernet Enabled 1Gbps Ethernet Disabled - USB Disabled (3W) - Zigbee/BLE Disabled	2.4GHz (4x4) Tx 20 dBm 5GHz (8x8) Tx 20 dBm
802.3af (Not re-commended)	12.4W	5Gbps & 1Gbps Ethernet enabled - USB Disabled - Zigbee/BLE Disabled	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	- Wi-Fi CERTIFIED™ a, b, g, n, ac, ax - Passpoint® - Vantage
Standards Compliance	- 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 - EN 62311 Human Safety/RF Exposure - UL 2043 Plenum - WEEE & RoHS - ISTA 2A Transportation

SOFTWARE AND SERVICES	
Location Based Services	SPoT
Network Analytics	SmartCell Insight (SCI), Ruckus Analytics
Security and Policy	Cloudpath
IoT	Ruckus IoT Suite

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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
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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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