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.
**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.

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

**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, 80, 160 MHz

**Modulation**
- OFDMA (up to 1024-QAM)

**Security**
- WMM, Power Save, TxBF, LDPC, STBC, 802.11r/k/v
- WPS/PSK, 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 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 TX Power Target (Per Chain)

<table>
<thead>
<tr>
<th>Rate</th>
<th>Pout (dBm) - Full Power</th>
<th>Pout (dBm) - 802.3at</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCS0 HT20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>MCS7 HT20</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>MCS8 VHT20</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>MCS9 VHT40</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>MCS11 HE40</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>

### 5GHz TX Power Target (Per Chain)

<table>
<thead>
<tr>
<th>Rate</th>
<th>Pout (dBm) - Full Power</th>
<th>Pout (dBm) - 802.3at</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCS0 VHT20</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>MCS7 VHT40, VHT80</td>
<td>16.5</td>
<td>16.5</td>
</tr>
<tr>
<td>MCS9 VHT40, VHT80</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>MCS11 HE20, HE40, HE80</td>
<td>12.5</td>
<td>12.5</td>
</tr>
</tbody>
</table>

### Performance and Capacity

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak PHY Rates</td>
<td>2.4GHz: 1.148 Gbps (11ax)</td>
</tr>
<tr>
<td>5GHz: 4.8 Gbps (11ax)</td>
<td></td>
</tr>
<tr>
<td>Client Capacity</td>
<td>Up to 1024 clients per AP</td>
</tr>
<tr>
<td>Simultaneous VoIP Clients</td>
<td>Up to 60 per AP</td>
</tr>
<tr>
<td>SSID</td>
<td>Up to 16 per radio</td>
</tr>
</tbody>
</table>

### 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
**NETWORKING**

- **Controller Platform Support**
  - SmartZone
  - ZoneDirector
  - Standalone
  - Cloud
  - Unleashed

- **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 & Suppliant

- **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**
  - -0°C (32°F) to 50°C (122°F)

- **Operating Humidity**
  - Up to 95%, non-condensing

**POWER CONSUMPTION**

<table>
<thead>
<tr>
<th>Mode</th>
<th>Power Consumption</th>
<th>System Configuration</th>
<th>Wi-Fi Radios</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC Power, PoE, uPoE (Idle)</td>
<td>16.1W</td>
<td>5Gbps Ethernet Enabled</td>
<td>2.4GHz (4x4) Enabled</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1Gbps Ethernet Enabled</td>
<td>5GHz (8x8) Enabled</td>
</tr>
<tr>
<td></td>
<td></td>
<td>USB Enabled (3W)</td>
<td>(No Clients Associated)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Zigbee/BLE Enabled (0.5W)</td>
<td></td>
</tr>
</tbody>
</table>

| DC Power, PoE, uPoE (Max) | 31.0W | 5Gbps Ethernet Enabled | 2.4GHz (4x4) Tx 20 dBm |
|  |  | 1Gbps Ethernet Enabled | 5GHz (8x8) Tx 22 dBm |
|  |  | USB Enabled (3W) |  |
|  |  | Zigbee/BLE Enabled (0.5W) |  |

| 802.3at (Mode 0)** | 23.8W | 5Gbps Ethernet Enabled | 2.4GHz (4x4) Tx 20 dBm |
|  |  | 1Gbps Ethernet Enabled | 5GHz (4x4) Tx 22 dBm |
|  |  | USB Enabled (3W) |  |
|  |  | Zigbee/BLE Disabled |  |

| 802.3at (Mode 1)** | 25.31W | 5Gbps Ethernet Enabled | 2.4GHz (4x4) Tx 20 dBm |
|  |  | 1Gbps Ethernet Disabled | 5GHz (8x8) Tx 20 dBm |
|  |  | USB Disabled |  |
|  |  | Zigbee/BLE Disabled |  |

| 802.3af (Not recommended) | 12.4W | 5Gbps & 1Gbps Ethernet enabled | 2.4GHz disabled |
|  |  | USB Disabled | 5GHz disabled |
|  |  | Zigbee/BLE 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
  - Passport
  - Vantage

- **Standards Compliance**
  - EN 60950-1 Safety
  - EN 60601-2 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
**RUCKUS® R850**

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

<table>
<thead>
<tr>
<th>ORDERING INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>901-R850-XX00</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>OPTIONAL ACCESSORIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>902-0180-XX00</td>
</tr>
<tr>
<td>902-1170-XX00</td>
</tr>
<tr>
<td>902-1180-XX00</td>
</tr>
<tr>
<td>902-0120-0000</td>
</tr>
</tbody>
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