In a fiercely competitive marketplace, multiple system cable operators (MSOs) are looking for new ways to differentiate their services and open new revenue streams. To do it, many are looking to expand branded broadband Wi-Fi throughout their coverage areas. But overlaying existing hybrid fiber coax (HFC) cable networks with new Wi-Fi services can be a complex and expensive proposition.

The Ruckus T811-CM outdoor access point is the industry's highest performing outdoor 802.11ac 4x4:4 Wave 2 Wi-Fi in a strand-mounted form factor designed to easily integrate with existing HFC networks. It features patented Ruckus BeamFlex+ adaptive antenna technology for RF optimization and interference mitigation to extend wireless range and reliability, combined with an integrated DOCSIS 3.1-backhaul. Available with an omnidirectional antenna, the T811-CM can provide consistent, reliable data access in a wide range of high-density client environments.

The T811-CM is a perfect choice for MSOs looking to deliver branded Wi-Fi connectivity for outdoor hotspot services in neighborhoods, resorts, train stations, and other public locations across their coverage areas. The form factor design affords easy installation and integration with HFC networks—using existing mounting, power, backhaul, customer service systems, and other existing cable assets. Network operators can easily create tiered wireless services at different quality levels, data offload solutions, and other new revenue-generating Wi-Fi services. And they can extend reliable managed wireless services outdoors to locations where Ethernet cabling is too expensive or impractical.

The T811-CM AP incorporates patented technologies found only in the Ruckus Wi-Fi portfolio.

- Extended coverage with patented BeamFlex+ utilizing multi-directional antenna patterns.
- Improve throughput with ChannelFly, which dynamically finds less congested Wi-Fi channels to use.

Additionally, using the T811-CM's integrated GPS, operators can automatically establish the exact location of each access point on a network map; greatly simplifying installation and maintenance.

Whether operators are deploying ten or ten thousand APs, the T811-CM is easy to manage through Ruckus SmartZone management services.
ACCESS POINT ANTENNA PATTERN

Ruckus' BeamFlex+ adaptive antennas allow the T811-CM Series 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 Wave 2

### Supported Rates
- **802.11ac**: 6.5 to 1733 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
- 4x4

### Spatial Streams
- 4 streams SU/MU

### Radio Chains and Streams
- 4x4:4

### Channelization
- 20, 40, 80, 160 MHz

### Security
- WPA-PSK, WPA-TKIP, WPA2 AES, 802.11i, Dynamic PSK
- WIPS/WIDS

### Other Wi-Fi Features
- WMM, Power Save, Tx Beamforming, LDPC, STBC, 802.11r/k/v
- Hotspot, Hotspot 2.0
- Captive Portal
- Wi5Pr

## RF

### Antenna Type
- BeamFlex+ adaptive antennas
- Polarization: 2 Vertical & 2 Horizontal

### Antenna Gain (max)
- 3dBi for both 2.4GHz and 5GHz

### Peak Transmit Power (aggregate across MIMO chains)
- 2.4GHz: 28dBm
- 5GHz: 30dBm

### Minimum Receive Sensitivity
- 2.4GHz: -102dBm
- 5GHz: -96dBm

### 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 TX POWER TARGET

<table>
<thead>
<tr>
<th>Rate</th>
<th>Pout (dBm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MC50 HT20</td>
<td>22</td>
</tr>
<tr>
<td>MC57 HT20</td>
<td>18</td>
</tr>
<tr>
<td>MC50 HT40</td>
<td>17</td>
</tr>
<tr>
<td>MC57 HT40</td>
<td>16</td>
</tr>
<tr>
<td>MC58 VHT20</td>
<td>17</td>
</tr>
<tr>
<td>MC59 VHT40</td>
<td>16</td>
</tr>
</tbody>
</table>

## 5GHz TX POWER TARGET

<table>
<thead>
<tr>
<th>Rate</th>
<th>Pout (dBm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MC50 VHT20</td>
<td>25</td>
</tr>
<tr>
<td>MC50 VHT80</td>
<td>23</td>
</tr>
<tr>
<td>MC57 VHT40, VHT80</td>
<td>22</td>
</tr>
<tr>
<td>MC59 VHT40, VHT80</td>
<td>19</td>
</tr>
</tbody>
</table>

## PERFORMANCE AND CAPACITY

### Peak PHY Rates
- 2.4GHz: 600Mbps

### Client Capacity
- Up to 512 clients per AP

### SSID per radio
- Up to 32 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
- Airtime Fairness
- Airtime-based WLAN
- Prioritization

### Queuing and Scheduling
- SmartCast

### Mobility
- SmartRoam

### Diagnostic Tools
- Spectrum Analysis
- SpeedFlex

## NETWORKING

### Controller Platform Support
- SmartZone

### Mesh
- SmartMesh™ wireless meshing technology. Self-healing Mesh

### 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 Visibility and Control
- Access Control Lists
- Device Fingerprinting

### IoT Capable
- Yes

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1 Rx sensitivity varies by band, channel width and MCS rate.
## T811-CM
**Outdoor 802.11ac Wave2 4x4:4 Wi-Fi Access Point**

### PHYSICAL INTERFACES

<table>
<thead>
<tr>
<th>Interface</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethernet</td>
<td>• 1 x 1GbE port PoE-out (802.3at), RJ-45</td>
</tr>
<tr>
<td>USB</td>
<td>• 1 USB 2.0 port, Type A</td>
</tr>
<tr>
<td>Fiber</td>
<td>• SFP, 1Gbps, EPON, 1000BASE-Lx</td>
</tr>
<tr>
<td>Cable Modem</td>
<td>• Type F, DOCSIS 3.1</td>
</tr>
</tbody>
</table>

### PHYSICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Size</td>
<td>• 44.2 (L) x 24.98 (W) x 15.43 (H) cm</td>
</tr>
<tr>
<td></td>
<td>• 17.4 (L) x 9.84 (W) x 6.07 (H) in</td>
</tr>
<tr>
<td>Weight</td>
<td>• 7.15kg (15.73lbs)</td>
</tr>
<tr>
<td>Ingress Protection</td>
<td>• IP-67; ASTM B117 (Salt Spray)</td>
</tr>
<tr>
<td>Mounting</td>
<td>• Strand</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>• -40°C to 65°C (149°F)</td>
</tr>
<tr>
<td>Operating Humidity</td>
<td>• Up to 95%, non-condensing</td>
</tr>
</tbody>
</table>

### POWER

**AC Input (over Coax)**

- 40V to 90V RMS 50/60Hz Quasi-Square Wave

<table>
<thead>
<tr>
<th>Operating Modes</th>
<th>Maximum Current Draw</th>
<th>Power Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>PoE Out Enabled</td>
<td>Max Current</td>
<td>Min: 56.7W</td>
</tr>
<tr>
<td></td>
<td>Draw: 1.75A @50V</td>
<td>Typical: 67.8W</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max: 93.7W</td>
</tr>
<tr>
<td>PoE Out Disabled</td>
<td>Max Current</td>
<td>Min: 23.0W</td>
</tr>
<tr>
<td></td>
<td>Draw: 1.02A @50V</td>
<td>Typical: 31.6W</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max: 51.7W</td>
</tr>
</tbody>
</table>

### CERTIFICATIONS AND COMPLIANCE

**Wi-Fi Alliance**

- Wi-Fi CERTIFIED™ a, b, g, n, ac
- Passpoint®, Vantage

**Standards Compliance**

- EN 60950-1 Safety
- EN 60950-22 Safety
- 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
- WEEE & RoHS
- ISTA 2A Transportation

### OTHER RADIO TECHNOLOGIES

- GPS, GLONASS

### SOFTWARE AND SERVICES

- **Location Based Services**
  - SPoT

- **Network Analytics**
  - SmartCell Insight (SCI)

- **Security and Policy**
  - Cloudpath

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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.