

T811-CM Series

802.11ac Wave2 4x4:4 Wi-Fi Access Point



DATA SHEET



BENEFITS

GREAT OUTDOOR WI-FI

Experience high performance outdoor Wave 2 Wi-Fi with Industrial-grade IP-67 hardened enclosure (-40°C to +65°C) with GPS and DOCSIS 3.1 cable modem.

GREAT WI-FI PERFORMANCE

Provide a great user experience no matter how challenging the environment with BeamFlex+™ adaptive antenna technology using multiple directional antenna patterns. Additionally, with DOCSIS 3.1, the T811-CM delivers 1+Gbps over coax cable on the backhaul.

GET OPTIMAL THROUGHPUT

ChannelFly™ dynamic channel technology uses machine learning to automatically find the least congested channels. You always get the highest throughput the band can support.

SERVE MORE DEVICES

Connect more devices simultaneously with two MU-MIMO spatial streams and concurrent dual-band 2.4/5GHz radios while enhancing non-Wave 2 device performance.

MULTIPLE MANAGEMENT OPTIONS

Manage the T811-CM from on-premises or remote physical/virtual appliances.

MORE THAN WI-FI

Enhance your network with Cloudpath security and management software, SPoT real-time Wi-Fi location engine and analytics software, and SCI network analytics.

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-, and EuroDOCSIS- 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.

FEATURES

WIRELESS

- 802.11ac Wave2 4x4:4 streams concurrent dual-band (2.4GHz/5GHz) operation
- BeamFlex+ adaptive antenna technology and advanced RF management
- Automatic interference mitigation, optimized for high-density environments
- 2.33Gbps maximum PHY rate (1733Mbps in 5GHz; 600Mbps in 2.4GHz)
- 802.11ac standard Tx Beamforming
- Advanced QoS packet classification and automatic priority for latency sensitive traffic
- Airtime fairness
- WPA-PSK (AES), 802.1X support
- Polarization diversity for ideal mobile device performance
- Up to 32 BSSIDs per AP; with unique QoS and security policies
- Flexible tunneling options
- Dynamic channel management, remote monitoring and network management
- Band balancing and Load balancing

INTERFACES

- Integrated DOCSIS 3.1 / EuroDOCSIS cable modem with 8x4 channel bonding
- Support for SFP as an alternative backhaul
- 1 x 1GbE port with PoE- out (802.3at)
- USB 2.0 for IoT support
- Integrated GPS for location based services

POWER

- Standard 30W PoE output, for powering IP surveillance camera, small cell, or fiber interface
- Powered by cable infrastructure

SOFTWARE

- Application Recognition and Control
- Dynamic PSK
- Multicast IP video streaming support
- Captive portal and guest accounts
- SPoT™ (Real-time location engine and analytics software)
- Cloudpath™ (Security and management software)
- SmartCell Insight (Network analytics engine)



ACCESS POINT ANTENNA PATTERN

The T811-CM incorporates the Ruckus' BeamFlex adaptive antenna technology which manages RF coverage dynamically on a packet-by-packet basis to optimize signal strength, data-rates and connection reliability.

BeamFlex+ adaptive antenna combines physical antenna elements and up to 4,000+ algorithmically generated antenna patterns (see Figure 1) to optimize in real-time for:

- Stronger coverage with longer range
- Reduced RF environmental interference
- Concurrent user and device count

Traditional omnidirectional 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 to each client on a packet-by-packet basis to manage Wi-Fi coverage in real-time to support high device density environments and to solve challenging deployment scenarios.

Figure 1 - Example of BeamFlex pattern

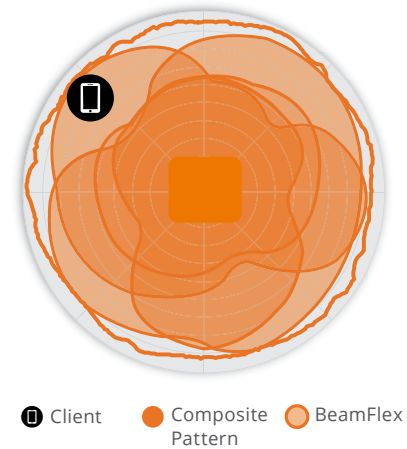


Figure 2 - T811 2.4GHz Azimuth Antenna Patterns



Figure 3 - T811 5GHz Azimuth Antenna Patterns



Figure 4 - T811 2.4GHz Elevation Antenna Patterns

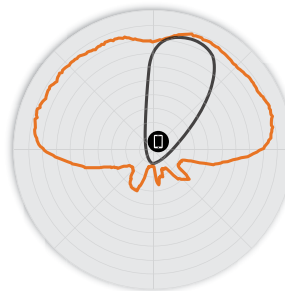
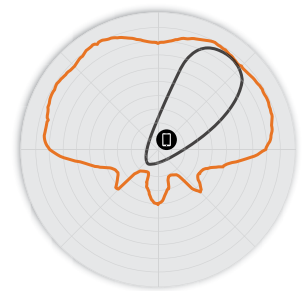


Figure 5 - T811 5GHz Elevation Antenna Patterns



The four figures above exhibit the unique design of the BeamFlex technology in the two Wi-Fi RF bands. The outer trace represents the composite RF footprint of all possible BeamFlex patterns. The inner trace represents an individual adaptive antenna pattern that will be positioned within the outer trace, providing greater SNR and increased performance to the target client on a packet-by-packet basis.

BeamFlex operates without any need for client feedback and irrespective of the 802.11 standard the client may be running and hence benefits even legacy clients.

WI-FI	
Wi-Fi Standards	<ul style="list-style-type: none"> IEEE 802.11a/b/g/n/ac Wave 2
Supported rates	<ul style="list-style-type: none"> 802.11ac: 6.5 to 1733 Mbps 802.11n: 6.5 to 600Mbps 802.11a/g: 6 to 54 Mbps 802.11b: 1 to 11 Mbps
Supported channels	<ul style="list-style-type: none"> 2.4GHz: 1-13 5GHz: 36-64, 100-144, 149-165
MIMO	<ul style="list-style-type: none"> 4x4
Spatial Streams	<ul style="list-style-type: none"> 4 streams SU/MU
Channelization	<ul style="list-style-type: none"> 20, 40, 80, 160MHz
Security	<ul style="list-style-type: none"> WPA-PSK, WPA-TKIP, WPA2 AES, 802.11i, Dynamic PSK WIPS/WIDS
Other Wi-Fi Features	<ul style="list-style-type: none"> WMM, Power Save, Tx Beamforming, LDPC, STBC, 802.11r/k/v Hotspot, Hotspot 2.0 Captive Portal WISPr

RF	
Antenna type	<ul style="list-style-type: none"> BeamFlex+ adaptive antennas Polarization: 2 Vertical & 2 Horizontal
Antenna gain (max)	<ul style="list-style-type: none"> 3dBi for both 2.4GHz and 5GHz
Peak transmit power (aggregate across MIMO chains)	<ul style="list-style-type: none"> 2.4GHz: 28dBm 5GHz: 30dBm
Minimum receive sensitivity	<ul style="list-style-type: none"> 2.4GHz: -102dBm 5GHz: -96dBm
Frequency bands	<ul style="list-style-type: none"> 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 T811 RECEIVE SENSITIVITY			
HT20		HT40	
MCS0	MCS7	MCS0	MCS7
-98	-79	-95	-77

5GHZ T811 RECEIVE SENSITIVITY					
VHT20		VHT40			VHT80
MCS0	MCS7	MCS0	MCS7	MCS0	MCS7
-97	-78	-95	-77	-92	-74

T811 2.4GHZ TX POWER TARGET	
Rate	Pout (dBm)
2.4GHz Tx	
MCS0 HT20	22
MCS7 HT20	18
MCS0 HT40	17
MCS7 HT40	16
MCS8 VHT20	17
MCS9 VHT40	16

T811 5GHZ TX POWER TARGET	
Rate	Pout (dBm)
5GHz Tx	
MCS0 VHT20	25
MCS0 VHT80	23
MCS7 VHT40, VHT80	22
MCS9 VHT40, VHT80	19

PERFORMANCE & CAPACITY	
Peak PHY rates	<ul style="list-style-type: none"> 2.4GHz: 600 Mbps
Client capacity	<ul style="list-style-type: none"> Up to 512 clients per AP
SSID per radio	<ul style="list-style-type: none"> Up to 32 per AP

RUCKUS RADIO MANAGEMENT	
Antenna Optimization	<ul style="list-style-type: none"> BeamFlex+ Polarization Diversity with Maximal Ratio Combining (PD-MRC)
Wi-Fi Channel Management	<ul style="list-style-type: none"> ChannelFly Background Scan Based
Client Density Management	<ul style="list-style-type: none"> Band Balancing Client Load Balancing Airtime Fairness Airtime-based WLAN Prioritization
Queuing & Scheduling	<ul style="list-style-type: none"> SmartCast
Mobility	<ul style="list-style-type: none"> SmartRoam
Diagnostic Tools	<ul style="list-style-type: none"> Spectrum Analysis SpeedFlex

NETWORKING	
Controller platform support	<ul style="list-style-type: none"> SmartZone
Mesh	<ul style="list-style-type: none"> SmartMesh™ wireless meshing technology. Self-healing Mesh
IP	<ul style="list-style-type: none"> IPv4, IPv6
VLAN	<ul style="list-style-type: none"> 802.1Q BSSID-based (16 BSSIDs / radio) Port-based Dynamic, per user based on RADIUS
802.1x	<ul style="list-style-type: none"> Wired & wireless authenticator & Supplicant
Tunnel	<ul style="list-style-type: none"> RuckusGRE, softGRE
Policy Management Tools	<ul style="list-style-type: none"> Application Visibility and Control Access Control Lists Device Fingerprinting

T811 Series

802.11ac Wave2 4x4:4 Wi-Fi Access Point

PHYSICAL INTERFACES	
Ethernet	• 1 x 1GbE port PoE-out (802.3at), RJ-45
USB	• 1 USB 2.0 port, Type A
Fiber	• SFP, 1Gbps, EPON, 1000BASE-lx
Cable Modem	• Type F, DOCSIS 3.1

PHYSICAL CHARACTERISTICS	
Physical Size	• 44.2 (L) x 24.98 (W) x 15.43 (H) cm • 17.4 (L) x 9.84 (W) x 6.07 (H) in.
Weight	• 7.15kg (15.73lbs)
Ingress Protection	• IP-67. ASTM B117 (Salt Spray)
Mounting	• Strand
Operating Temperature	• -40°C (-40°F) to 65°C (149°F)
Operating Humidity	• Up to 95%, non-condensing

CERTIFICATIONS AND COMPLIANCE	
Wi-Fi Alliance	<ul style="list-style-type: none"> • Wi-Fi CERTIFIED™ a, b, g, n, ac • Passpoint®, Vantage
Standards Compliance**	<ul style="list-style-type: none"> • 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

** For current certification status, please see price list

POWER ²		
AC Input (over Coax)	40V to 90V RMS 50/60Hz Quasi-Square Wave	
Operating Modes	Maximum Current Draw	Power Consumption
PoE Out Enabled	<ul style="list-style-type: none"> • Max Current • Draw: 1.75A @50V 	<ul style="list-style-type: none"> • Min: 56.7W • Typical: 67.8W • Max: 93.7W
PoE Out Disabled	<ul style="list-style-type: none"> • Max Current • Draw: 1.02A @50V 	<ul style="list-style-type: none"> • Min: 23.0W • Typical: 31.6W • Max: 51.7W

²Max power varies by country setting, band, and MCS rate.

SUPPORTED SERVICES	
Location Based Services	• SPoT
Network Analytics	• SmartCell Insight (SCI)
Security & Policy	• Cloudpath

OTHER RADIO TECHNOLOGIES	
GPS	GPS, GLONASS

ORDERING INFORMATION	
T811 OUTDOOR APS	
901-T811-US01	T811-CM 802.11ac Wave 2 Outdoor Wireless Access Point, 4x4:4 Stream, Omnidirectional Beamflex+ coverage, 2.4GHz and 5GHz concurrent dual band, one 1GbE PoE+ port, IP-67 Outdoor enclosure. DOCSIS 3.1, supports Low+Mid Frequency Splits on both US and DS. Wi-Fi is band-locked for North America use. -40°C to 65°C Operating Temperature. For box contents, see Shipping Container Contents.
901-T811-WW01	T811-CM 802.11ac Wave 2 Outdoor Wireless Access Point, 4x4:4 Stream, Omnidirectional Beamflex+ coverage, 2.4GHz and 5GHz concurrent dual band, one 1GbE PoE+ port, IP-67 Outdoor enclosure. DOCSIS 3.1, supports Low+Mid Frequency Splits on both US and DS. Wi-Fi is NOT band-locked for World-Wide use. -40°C to 65°C Operating Temperature. For box contents, see Shipping Container Contents.
901-T811-WW11	T811-CM 802.11ac Wave 2 Outdoor Wireless Access Point, 4x4:4 Stream, Omnidirectional Beamflex+ coverage, 2.4GHz and 5GHz concurrent dual band, one 1GbE PoE+ port, IP-67 Outdoor enclosure. EuroDOCSIS 3.1, supports Mid+High Frequency Splits on both US and DS. Wi-Fi is NOT band-locked for World-Wide use. -40°C to 65°C Operating Temperature. For box contents, see Shipping Container Contents.

Warranty: Sold with a limited one year warranty.

For details, see: <http://support.ruckuswireless.com/warranty>