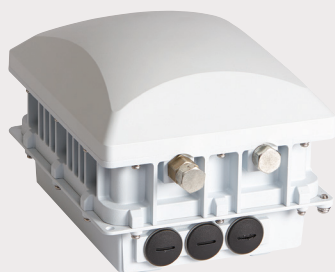


7781-CM

Outdoor 802.11n 3x3:3 Wi-Fi Access Point



DATA SHEET



BENEFITS

GOOD OUTDOOR WI-FI

Industrial-grade IP-67 hardened enclosures (-40°C to +65°C) with GPS and DOCSIS 3.0 cable modem

GOOD WI-FI PERFORMANCE

Provide a great user experience no matter how challenging the environment with BeamFlex+™ adaptive antenna technology using over 2,000 directional antenna patterns.

GET OPTIMAL THROUGHPUT

Improve performance automatically with ChannelFly and machine learning, which finds less congested Wi-Fi channels with dynamic RF channel selection.

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 7781-CM outdoor access point delivers the industry's highest performing 802.11n 3x3:3 Wi-Fi in a lightweight, 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 3.0-, EuroDOCSIS-, and Japan-certified cable modem. Available with an omnidirectional antenna, the 7781-CM can provide consistent, reliable data access in a wide range of high-density environments.

The 7781-CM is a perfect choice for MSOs looking to deliver branded Wi-Fi connectivity for hotspot services in neighborhoods, resorts, train stations, and other public locations across their coverage areas. Its low-profile form factor can be easily installed and integrated 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.

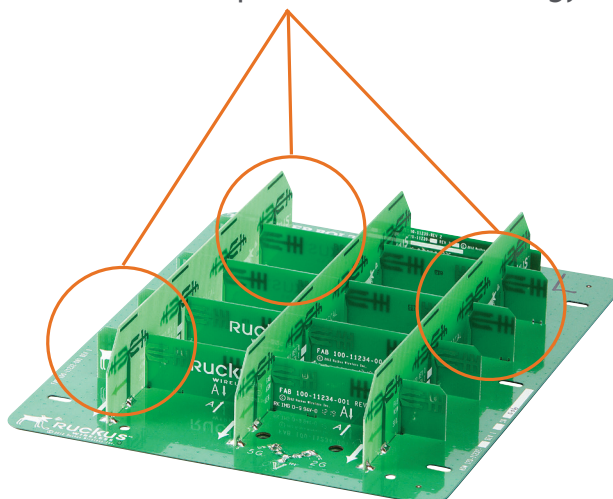
The 7781-CM AP incorporates patented technologies found only in the Ruckus Wi-Fi portfolio.

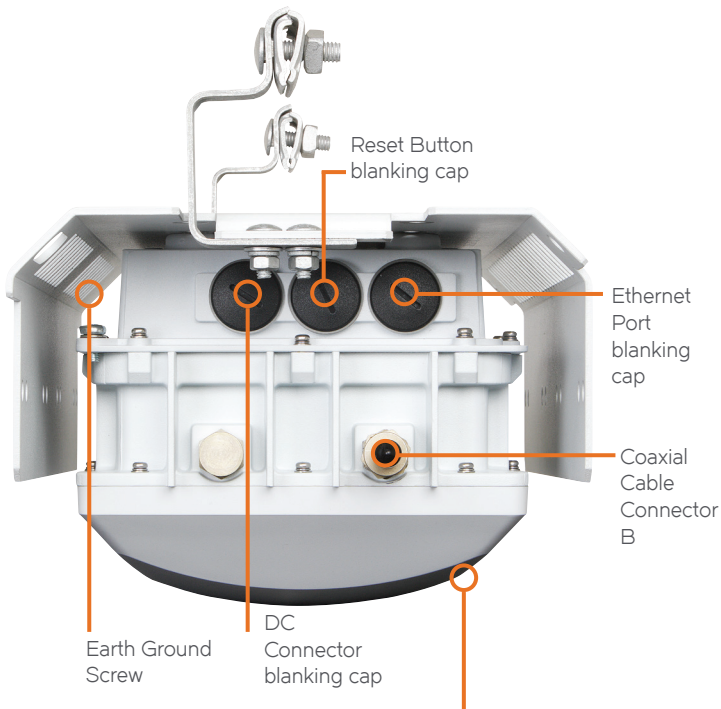
- Extended coverage with patented BeamFlex+ utilizing mult-directional antenna patterns.
- Improve throughput with ChannelFly, which dynamically finds less congested Wi-Fi channels to use.

The 7781-CM also features a separate monitoring radio sensor to perform real-time spectrum analysis with no packet loss. Additionally, using the 7781-CM's integrated GPS capabilities, operators can automatically establish the exact location of each access point on a network map—greatly simplifying installation and maintenance.

Whether operators deploying ten or ten thousand APs, the 7781-CM is also easy to manage through Ruckus' appliance, virtual and cloud management options.

BeamFlex Adaptive Antenna Technology





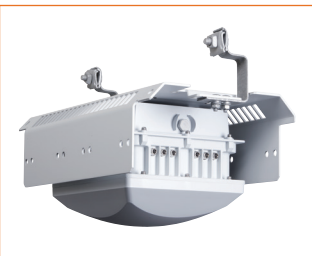
A patented adaptive antenna integrates high-gain vertically-polarized and horizontally-polarized antenna elements. With BeamFlex+ adaptive antenna technology, this enables over 2,000 potential antenna combinations and up to an additional 6dB BeamFlex+ gain on top of the physical antenna gain, thereby delivering unprecedented range extension and signal reliability.



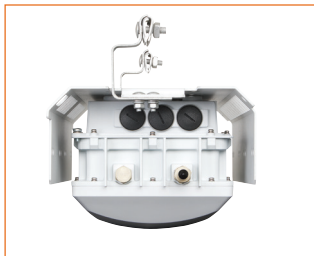
Lightweight for ease of installation. Environmentally hardened outdoor enclosure



Bare unit for mounting on pedestal, pole, or wall with accessory bracket



Internal 2.4/5GHz BeamFlex Adaptive Antenna



Integrated DOCSIS 3.0 cable modem leverages existing MSO cable plant

FEATURES

WIRELESS

- 3x3:3 streams concurrent dual-band (2.4GHz/5GHz) operation
- BeamFlex+ adaptive antenna technology and advanced RF management
- Automatic interference mitigation, optimized for high-density environments
- Advanced QoS packet classification and automatic priority for latency sensitive traffic
- Airtime fairness
- Continuous spectrum analysis
- WPA-PSK (AES), 802.1X support Up to 9dB added signal gain (Rx and Tx combined) / 15dB interference mitigation
- Polarization diversity for ideal mobile device performance
- Flexible tunneling
- Dynamic channel management remote monitoring and network management
- Band steering, Band balancing

INTERFACES

- Integrated DOCSIS 3.0 / EuroDOCSIS / JCTEA (JapanDOCSIS) cable modem with 8x4 channel bonding
- Integrated GPS for location based services

POWER

- Standard 15.4W PoE output, for powering IP surveillance camera, small cell, or fiber interface
- Powered by cable infrastructure

ACCESSORIES

- Flexible mounting: strand, pedestal, pole, facade

SOFTWARE

- Application recognition and control
- Smart Positioning Technology (Real-time location engine and analytics software)
- Cloudpath (Security and management software)
- SmartCell Insight (Network analytics engine)

REMOTE MONITORING AND NETWORK MANAGEMENT

- The 7781-CM can be managed using either the SCG 200, FlexMaster management platform and/or the Service Provider's own Cable Management system to take advantage of the best of both worlds in terms of cable network management and wireless monitoring.
- The integrated management approach provides complete network-wide support for Fault, Configuration, and Performance Management. Patent pending software algorithm allows the 7781-CM to be remotely controlled from either the Cable MSO management system or from the wireless mesh interface in the case of temporary network interruptions, thereby avoiding expensive and inefficient truck rolls.

PHYSICAL CHARACTERISTICS	
Power	<ul style="list-style-type: none"> Power over cable (40-90 VAC quasi-square wave 47-63Hz) through common 5/8" hardline or F connector
Operating Temperature*	<ul style="list-style-type: none"> -40°C to +65°C (-US01/WW01/JP21) -10°C to +65°C (WW11)
Physical Size	<ul style="list-style-type: none"> With strand-mount: 41.4cm x 23.9cm x 23.1cm (16.3 in x 9.4 in x 9.1 in) No hangar: 26.6cm x 19.5cm x 16.8cm (10.5 in x 7.7 in x 6.6 in)
Weight	<ul style="list-style-type: none"> With strand-mount: 5.65 Kg (12.5 lbs) Bare unit: 4.00 Kg (8.8 lbs)
Ethernet Ports	PoE Output: <ul style="list-style-type: none"> 10/100/1000Base-T 802.3.802.3u, 802.3ab, 802.3 PoE PSE Output up to 15.4W Jumbo frame support (2000 byte max)
Power Consumption	PoE AC Input (PoE Output Off/Heater-Off): <ul style="list-style-type: none"> Idle: 21W Typical: 24W Peak: 34W PoE AC Input (PoE Output Off/Heater-On): <ul style="list-style-type: none"> Idle: 32W Typical: 35W Peak: 44W PoE AC Input (PoE Output 15.4W/Heater-On): <ul style="list-style-type: none"> Idle: 56W Typical: 59W Peak: 69W (PoE output 15.4W)

* 901-7781-WW11 no-heater installed: Operating temp -10°C to +65°C

PERFORMANCE AND CAPACITY	
Concurrent Stations	<ul style="list-style-type: none"> up to 512
Simultaneous VoIP Clients	<ul style="list-style-type: none"> up to 30

RF	
Antenna	<ul style="list-style-type: none"> 2000+ patterns
Physical antenna gain	<ul style="list-style-type: none"> 3dBi both 2.4/5GHz bands
Beamflex* SINR TX gain	<ul style="list-style-type: none"> 6dB
Beamflex* SINR RX gain	<ul style="list-style-type: none"> 4dB (PD-MRC)
Interference mitigation	<ul style="list-style-type: none"> 15dB
Minimum RX sensitivity	<ul style="list-style-type: none"> -100dBm (2.4GHz); -98dBm (5GHz)

*BeamFlex gains are statistical system level effects translated to enhanced SINR based on observations over time in real-world conditions with multiple APs and many client

** Rx sensitivity varies by band, channel width, and MCS rate

MANAGEMENT	
Deployment options	<ul style="list-style-type: none"> Managed by ZoneDirector Supported by FlexMaster Managed by SmartCell™ Gateway (SCG 200)
Configuration	<ul style="list-style-type: none"> Web User Interface (HTTP/S) CLI (Telnet/SSH), SNMP v1, 2, 3 TR-069 vis FlexMaster

WI-FI	
Standards	<ul style="list-style-type: none"> IEEE 802.11a/b/g/n 2.4GHz and 5GHz concurrent operation
Radio Chains	<ul style="list-style-type: none"> 3 x 3:3
Frequency Band	<ul style="list-style-type: none"> IEEE 802.11n: 2.4 - 2.484 GHz and 5.15 - 5.85 GHz IEEE 802.11a: 5.15 - 5.875 GHz IEEE 802.11g: 2.4 - 2.484 GHz
BSSID	<ul style="list-style-type: none"> 32 per radio (64 per AP)**
Advanced Radio Features	<ul style="list-style-type: none"> BeamFlex+ Adaptive Antenna Technology TxBF, LDPC, PD-MRC, and ML receiver GPS Continuous Spectrum Analysis
Wireless security	<ul style="list-style-type: none"> WPA-PSK, WPA-TKIP, WPA2 AES, 802.11i Authentication via 802.1X, local authentication database, support for RADIUS and ActiveDirectory

* Maximum power varies by country

**With 9.6 release

CABLE MODEM SPECIFICATIONS	
Standard	<ul style="list-style-type: none"> DOCSIS 3.0 with 8 x 4 bonding EuroDOCSIS JCTEA STD-005 (Japan)
Cable modem throughput	<ul style="list-style-type: none"> 304/108 Mbps (DOCSIS 3.0, JCTEA) 400/108 Mbps (EuroDOCSIS)
Protection circuits	<ul style="list-style-type: none"> IEEE C62.41-1991 GRI089 - 6 kV (3000 A) surge

PRODUCT ORDERING INFORMATION

MODEL	DESCRIPTION
7781-CM Outdoor Access Points	
901-7781-US01	7781-CM concurrent dual-band 3x3:3 802.11n outdoor wireless access point with 360 degree BeamFlex+ 2.4GHz/5GHz antennas and integrated cable modem (DOCSIS 3.0). Includes strand-mount bracket. US country code.
901-7781-WW01	7781-CM concurrent dual-band 3x3:3 802.11n outdoor wireless access point with 360 degree BeamFlex+ 2.4GHz/5GHz antennas and integrated cable modem (DOCSIS 3.0). Includes strand-mount bracket.
901-7781-WW11	7781-CM concurrent dual-band 3x3:3 802.11n outdoor wireless access point with 360 degree Beamflex 2.4GHz/5GHz antennas and integrated cable modem (EuroDOCSIS). Mounting bracket not included.
901-7781-JP21	7781-CM concurrent dual-band 3x3:3 802.11n outdoor wireless access point with 360 degree BeamFlex+ 2.4GHz/5GHz antennas and integrated cable modem (JCTEA STD-005). Includes strand-mount bracket.
Optional Accessories	
902-0182-0003	Outdoor Mounting Bracket, Bare Metal, Any-Angle. For pole or wall mounting.
903-0183-0000	Spare data connector; weatherizing data cable gland.

*7781-CM is only sold through authorized resellers