RUCKUS[®] T310

Outdoor 802.11ac Wave 2 2x2:2 Wi-Fi Access Point

COMMSCOPE® RUCKUS®



Benefits

SIMPLICITY

RUCKUS' Outdoor APs make Wi-Fi deployments extremely simple to deploy with one-touch technologies like SmartMesh[™].

STUNNING WI-FI PERFORMANCE

Extends coverage with patented BeamFlex^{*} + adaptive antenna technology while mitigating interference by utilizing up to 64 directional antenna patterns.

GREAT OUTDOOR WI-FI

Experience high performance outdoor 802.11ac Wave 2 Wi-Fi with IP-67 weather proofing.

MULTIPLE MANAGEMENT OPTIONS

Manage the T310 Series with physical or virtual controller appliances.

SERVE MORE DEVICES

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

AUTOMATE OPTIMAL THROUGHPUT

 $\label{eq:channelFly*} ChannelFly* dynamic channel technology uses machine learning to automatically find the least congested channels. You always get the highest throughput the band can support.$

MORE THAN WI-FI

Support services beyond Wi-Fi with <u>RUCKUS IoT Suite</u>, <u>Cloudpath</u>^{*} security and onboarding software, <u>SPoT</u> Wi-Fi locationing engine, and <u>SCI</u> network analytics. Modern Wi-Fi device users expect reliable connectivity— anywhere, anytime. But in crowded outdoor venues with thousands of users and constant RF noise, they are often frustrated by poor coverage, dropped connections, and reduced data rates. These aggravating Wi-Fi experiences can easily translate to negative perceptions of the venue and the service provider, resulting in loss of business. The quality of the network experience becomes the "litmus test" for acceptance or rejection.

As the market leader in outdoor Wi-Fi deployments, RUCKUS[®] knows that one AP solution cannot meet every possible challenge of varied and complex outdoor requirements. This is why the RUCKUS T310 802.11ac Wave 2 series is designed with more variety than any other outdoor AP in the market today. Available with either internal omni-directional antennas or internal high-gain directional antenna models, the T310 Series uses patented RUCKUS antenna optimization and interference mitigation technologies to improve throughput, connection reliability, and deliver industry-leading 802.11ac Wave 2 performance to every connected client. At the same time, the T310 Series is designed for fast, simple installation with an ultra-lightweight, low profile, IP-67 rated enclosure that can stand up to the most challenging outdoor environments.

At RUCKUS, we know that outdoor AP deployments are especially challenging for installation and maintenance, which is why RUCKUS outdoor APs use a variety of technologies, like SmartMesh that help simplify outdoor AP deployment.

The RUCKUS T310 Series is perfect for high-density outdoor public venues such as airports, convention centers, plazas, malls, smart cities, and other dense urban environments. By providing a superior Wi-Fi experience to every user in high-density outdoor locations, venue operators can improve guest satisfaction and loyalty, deliver new kinds of wireless application services, and increase revenues.

The RUCKUS T310 Series 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.

Whether you're deploying ten or ten thousand APs, the T310 Series is easy to manage through RUCKUS' appliance and virtual management options.

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Access Point Antenna Pattern

Figure 2. T310d 2.4GHz Azimuth

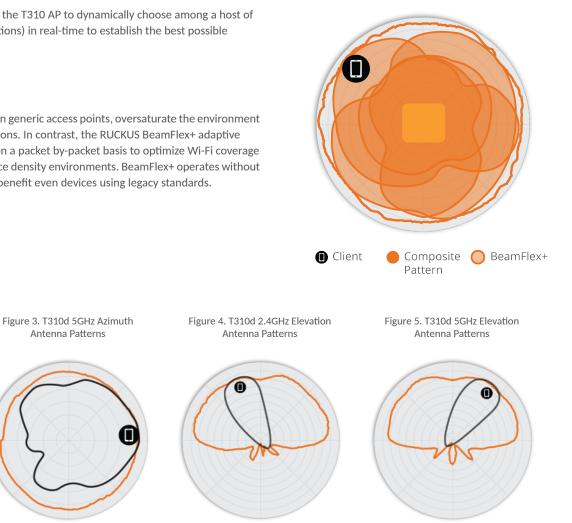
Antenna Patterns

RUCKUS' BeamFlex+ adaptive antennas allow the T310 AP to dynamically choose among a host of antenna patterns (up to 64 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



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 Wave 2
Supported Rates	 802.11ac: 6.5 to 867 Mbps (MCS0 to MCS9, NSS=1to2 for VHT20/40/80 802.11n: 6.5 Mbps to 300Mbps (MCS0 to MCS15) 802.11a/g: 54, 48, 36, 24, 18, 12, 9, 6Mbps 802.11b: 11, 5.5, 2 and 1 Mbps
Supported Channels	 2.4GHz: 1-13 5GHz: 36-64, 100-144, 149-165
МІМО	 2x2 SU-MIMO 2x2 MU-MIMO
Spatial Streams	2 SU-MIMO2 MU-MIMO
Radio Chains and Streams	• 2x2:2
Channelization	• 20, 40, 80MHz
Security	 WPA-PSK, WPA-TKIP, WPA2-Personal, WPA2-Enterprise, WPA3-Personal, WPA3-Enterprise, 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 WISPr

5GHZ RECE	IVE SENSITI	VITY					
VHT20		VHT40			VHT80		
MCS0	MCS7	MCS0	MCS7	MCS9	MCS0	MCS7	MCS9
-96	-77	-93	-74	-69	-90	-71	-66

2.4GHZ TX POWER TARGET		
Rate	Pout (dBm)	
MCS0 HT20	23	
MCS7 HT20	18	
MCS0 HT40	22	
MCS7 HT40	18	

5GHZ TX POWER TARGET		
Rate	Pout (dBm)	
MCS0 VHT20	24	
MCS7 VHT20	20	
MCS9 VHT20	18	
MCS0 VHT40, VHT80	23	
MCS7 VHT40, VHT80	20	
MCS9 VHT40, VHT80	18	

PERFORMANCE AND CAPACITY	
Peak PHY Rates	• 2.4GHz: 300Mbps 5GHz: 867Mbps
Client Capacity	• Up to 512 clients per AP
SSID	• Up to 31 per AP

RUCKUS RADIO MANAGEMENT		
Antenna Optimization	 BeamFlex+ Polarization Diversity with Maximal Ratio Combining (PD-MRC) 	
Wi-Fi Channel Management	ChannelFlyBackground Scan Based	
Client Density Management	 Adaptive Band Balancing Client Load Balancing Airtime Fairness Airtime-based WLAN Prioritization 	
SmartCast Quality of Service	 QoS-based scheduling Directed Multicast L2/L3/L4 ACLs 	
Mobility	• SmartRoam	
Diagnostic Tools	Spectrum AnalysisSpeedFlex	

BeamFlex+ SINR Transmit Power Gain [*]	• Up to 6 dB	
BeamFlex+ SINR Receive Power Gain [*]	• Up to 4 dB	
Minimum Receive Sensitivity ¹	• -101dBm	
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 AGH7 RECEIVE SENSITIVITY		

• Up to 3dBi

.

• 2.4GHz: 23dBm

5GHz: 24dBm

• BeamFlex+ adaptive antennas with polarization diversity

• Up to 9dBi

24dBm

21dBm

• 2.4GHz:

• 5GHz:

2.4GHZ RECEIVE SENSITIVITY			
HT20		HT40	
MCS0 MCS7		MCS0	MCS7
-95	-78	-92	-75

* 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 clients.

 Up to 13 dBi

• 2.4GHz:

• 5GHz:

21dBm

17dBm

 $^{1}\,\mathrm{Rx}$ sensitivity varies by band, channel width and MCS rate.

Antenna Type

chains)

Antenna Gain (max)

Peak Transmit Power

(aggregate across MIMO

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NETWORKING	
Controller Platform Support	 SmartZone ZoneDirector Unleashed Cloud Standalone
Mesh	 SmartMesh[™] wireless meshing technology. Self-healing Mesh
IP	• IPv4, IPv6
VLAN	 802.1Q (1 per BSSID or dynamic per use based on RADIUS) VLAN Pooling Port-based
802.1x	Authenticator & Supplicant
Tunnel	L2TP, GRE, soft-GRE
Policy Management Tools	 Application Recognition and Control Access Control Lists Device Fingerprinting Rate Limiting
IoT Capbale	• Yes

CERTIFICATIONS AND COMPLIANCE		
Wi-Fi Alliance ³	 Wi-Fi CERTIFIED[™] a, b, g, n, ac Wi-Fi Enhanced Open[™] WPA2[™] - Personal WPA3[™] - Enterprise WPA[™] - Enterprise Wi-Fi Agile Multiband[™] Wi-Fi Optimized Connectivity[™] Wi-Fi Vantage[™] WMM[*] Passpoint[*] 	
Standards Compliance ⁴	 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 UL 2043 Plenum EN 62311 Human Safety/RF Exposure WEEE & RoHS ISTA 2A Transportation 	

PHYSICAL INTERFACES				
	T310c	T310d	T310s	T310n
Ethernet	1 x 1GbE port, RJ-45			
USB	— 1 USB 2.0 port, Type A			e A
DC Power	—	12V DC -	Terminal Block (8	3V - 20V)

SOFTWARE AND SERVICES	
Location Based Services	• SPoT
Network Analytics	SmartCell Insight (SCI) RUCKUS Analytics
Security and Policy	Cloudpath

PHYSICAL CHARACTERISTICS				
	T310c	T310d	T310s	T310n
Physical Size	18.1(L) x 15.1(W) x 7.9 (H) cm		26(L) x 20.9(W) x 10.3(H) cm	
	7.1(L) x 5.9(W) x 3.1(H) in.		10.2(L) x 8.2(W) x 4.1(H) in.	
Weight	1kg (2.1lbs)		1.65kg (3.6lbs)	
Ingress Protection	IP-67			
h de constitue d	Wall, Drop ceiling, Desk			
Mounting	Pole Mount Diameter 1" to 2.5"			
Operating Temperature	-20°C -(4°F) to 65°C (149°F)	-40°C -(-40°F) to 65°C (149°F)		
Operating Humidity	Up to 95%, non-condensing			
Wind Survivability	Up to 266km/h (165 mph)			

MODEL FEATURE DIFFERENCES				
Model	Antenna	Low Temp	USB	DC Power
T310c	Omni	-20°C	N	N
T310d	Omni	-40°C	Y	Y
T310n	Narrow Sector (30°)	-40°C	Y	Y
T310s	Sector (120°)	-40°C	Y	Y

POWER ²				
	T310c	T310d	T310s	T310n
Power Supply	Max Power Consumption (includes USB power)			
802.3af/at (PoE)	7.92W	11.86W	11.86W	11.86W
DC	—	11.7W	12.11W	11.7W

 $^{2}\ \mathrm{Max}$ power varies by country setting, band, and MCS rate.

 $^{\rm 3}$ For complete list of WFA certifications, please see Wi-Fi Alliance website.

 $^{\rm 4}$ For current certification status, please see price list.

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ORDERING INFORMATION		
T310 OUTDOOR APS		
901-T310-XX20	T310c, omni, outdoor access point, 802.11ac Wave 2 2x2:2 internal BeamFlex+, dual band concurrent. One Ethernet port, PoE input20°C to 65°C Operating Temperature. Includes mounting bracket and one year warranty. Does not include PoE injector.	
901-T310-XX40	T310d, omni, outdoor access point, 802.11ac Wave 2 2x2:2 internal BeamFlex+, dual band concurrent. One Ethernet port, PoE input, DC input and USB port40°C to 65°C Operating Temperature. Includes mounting bracket and one year warranty. Does not include PoE injector.	
901-T310-XX51	T310s, 120x30 deg, Outdoor 802.11ac Wave 2 2x2:2, 120 degree sector, dual band concurrent access point. One Ethernet port, PoE input, DC input and USB port40°C to 65°C Operating Temperature. Includes adjustable mounting bracket and one year warranty. Does not include PoE injector	
901-T310-XX61	T310n, 30x30 deg, Outdoor 802.11ac 2x2:2 Wave 2, narrow beam, dual band concurrent access point. One Ethernet port, PoE input, DC Input and USB port40°C to 65°C Operating Temperature. Includes adjustable mounting bracket and one year warranty. Does not include PoE injector.	

OPTIONAL ACCESSORIES	
902-0162-XXYY	• PoE injector (24W) (Sold in quantities of 1, 10 or 100)
902-0125-0000	Secure articulating mounting bracket
902-0134-0000	• Outdoor AP mounting bracket (weatherized aluminum), 180- degree adjustment range in both azimuth and elevation. Mounting support for solid wall or ceiling, vertical or horizontal pole 1" to 4" in diameter using enclosed mounting hardware. Pole diameter greater than 4" can be supported with user-supplied clamps. For use with T310n and T310s.
902-0127-0000	• Extended cap to accommodate up to 6 cm long USB dongle
902-1121-0000	• Spare weatherizing cable gland with option of one hole or 2 hole connection

PLEASE NOTE: 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.

See RUCKUS price list for country-specific ordering information. PLEASE NOTE: When ordering outdoor APs, you must specify the destination region by indicating -US, -WW, or -Z2 instead of XX. For access points, -Z2 applies to the following countries: Algeria, Egypt, Israel, Morocco, Tunisia, and Vietnam.

Warranty: Sold with a limited one year warranty.

For details see: http://support.ruckuswireless.com/warranty

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