DATA SHEET

T310

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

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

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 Ruckus IoT Suite, Cloudpath security and onboarding software, SPoT Wi-Fi locationing engine, and SCI 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

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

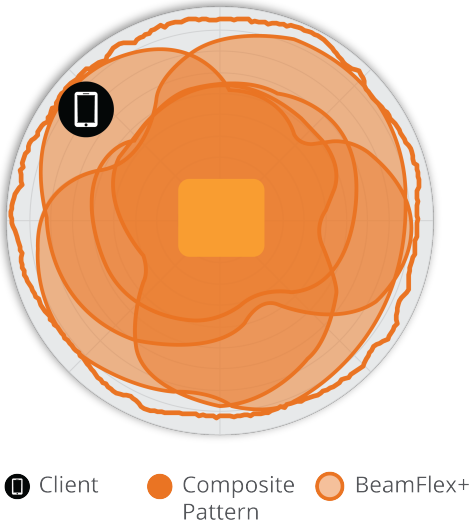


Figure 2. T310d 2.4GHz Azimuth Antenna Patterns

Figure 3. T310d 5GHz Azimuth Antenna Patterns

Figure 4. T310d 2.4GHz Elevation Antenna Patterns

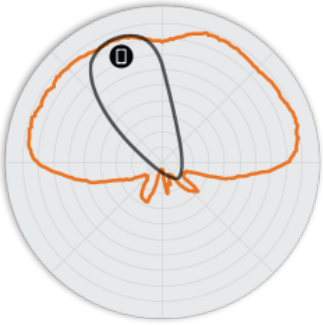
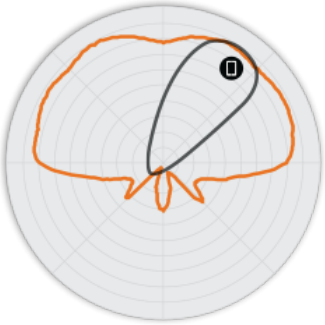


Figure 5. T310d 5GHz Elevation Antenna Patterns



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
MIMO	• 2x2 SU-MIMO • 2x2 MU-MIMO
Spatial Streams	• 2 SU-MIMO • 2 MU-MIMO
Radio Chains and Streams	• 2x2:2
Channelization	• 20, 40, 80MHz
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 • WISPr

RF				
	T310c	T310d	T310s	T310n
Antenna Type	• BeamFlex+ adaptive antennas with polarization diversity			
Antenna Gain (max)	• Up to 3dBi		• Up to 9dBi	• Up to 13 dBi
Peak Transmit Power (aggregate across MIMO chains)	• 2.4GHz: 23dBm • 5GHz: 24dBm		• 2.4GHz: 24dBm • 5GHz: 21dBm	• 2.4GHz: 21dBm • 5GHz: 17dBm
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)			

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

5GHZ RECEIVE SENSITIVITY							
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	• ChannelFly • Background 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 Analysis • SpeedFlex

* 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.

[1] Rx sensitivity varies by band, channel width and MCS rate.

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NETWORKING	
Controller Platform Support	• SmartZone • ZoneDirector • 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

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

PHYSICAL CHARACTERISTICS				
	T310c	T310d	T310s	T310n
Physical Size	18.1(L) x 15.1(W) x 7.9 (H) cm 7.1(L) x 5.9(W) x 3.1(H) in.		26(L) x 20.9(W) x 10.3(H) cm 10.2(L) x 8.2(W) x 4.1(H) in.	
Weight	1kg (2.1lbs)		1.65kg (3.6lbs)	
Ingress Protection	IP-67			
Mounting	Wall, Drop ceiling, Desk 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)			

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

CERTIFICATIONS AND COMPLIANCE	
Wi-Fi Alliance[3]	• Wi-Fi CERTIFIED™ a, b, g, n, ac • Passpoint®, Vantage
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

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

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

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 input. -20°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 port. -40°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 port. -40°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 port. -40°C to 65°C Operating Temperature. Includes adjustable mounting bracket and one year warranty. Does not include PoE injector.

See Ruckus price list for country-specific ordering information.
Warranty: Sold with a limited one year warranty.
For details see: http://support.ruckuswireless.com/warranty

[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.

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OPTIONAL ACCESSORIES	
902-0162-XXYY	• PoE injector (24W) (Sold in quantities of 1, 10 or 100)
902-0125-0000	• Secure articulating mounting bracket
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 outdoor 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.

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