T610

Outdoor 802.11ac Wave 2 4x4:4 Wi-Fi Access Point

DATA SHEET

BENEFITS

GREAT OUTDOOR WI-FI

Experience high performance outdoor Wave 2 Wi-Fi with IP-67 weather proofing and 2 gigabit Ethernet ports.

STUNNING WI-FI PERFORMANCE

Extends coverage with patented BeamFlex+™ adaptive antenna technology while mitigating interference by utilizing over 4,000 directional antenna patterns.

MULTIPLE MANAGEMENT OPTIONS

Manage the T610 from the cloud, or with on-premises physical/virtual appliances.

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.

SERVE MORE DEVICES

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

EXPANDED BACKHAUL

Pair two onboard 1GbE ports with link aggregation (LACP) to maximize throughput between the AP and wired switch.

EXPANDABLE CAPABILITIES

Augment AP capabilities through the onboard USB 2.0 port to support additional technologies.

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.

In busy outdoor public venues, users and operators need fast, reliable connectivity. Whether it's smartphones running bandwidth-hungry voice and video applications, Internet of Things (IoT) sensors, or "Smart City" connected devices, crowded outdoor spaces demand high-performance Wi-Fi.

The Ruckus T610 delivers blazing-fast connectivity for medium-density outdoor deployments, with data rates up to 2.5Gbps—the highest available data rates for Wi-Fi clients. Patented Ruckus adaptive antenna technology improves signal quality for every connected device, everywhere. And the AP delivers all of this in an industrial-grade enclosure that can stand up to the rigors of the elements in practically any outdoor space.

The T610 is purpose-built for busy public venues such as outdoor campuses and hotspots, arenas, convention centers, and transportation hubs. It provides industrial-grade features such as secure image download and an IP67-compliant USB port, making it easy to deploy IoT applications for Smart Cities or large-scale video surveillance/monitoring systems. It's the perfect choice for medium-density deployments with standard Ethernet backhaul that require premium wireless performance.

The T610 802.11ac Wi-Fi 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, the T610 provides a full complement of next-generation 802.11ac features. 802.11ac Multi-User MIMO (MU-MIMO) support allows the AP to simultaneously transmit to multiple client devices, drastically improving airtime efficiency and overall throughput for all clients—even non-Wave 2 devices. SmartMesh™ wireless meshing technology accelerates time-to-deployment and eliminates the cost associated with running Ethernet cabling between multiple access points in the network.

Whether you're deploying ten or ten thousand APs, the T610 is also easy to manage through Ruckus' appliance, virtual and cloud management options.

ACCESS POINT ANTENNA PATTERN

Ruckus' BeamFlex+ adaptive antennas allow the T610 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.

Figure 1. Example of BeamFlex+ pattern

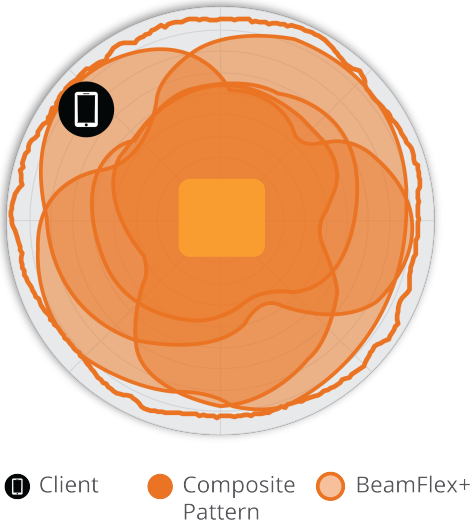


Figure 2. T610o 2.4GHz Azimuth Antenna Patterns

Figure 3. T610o 5GHz Azimuth Antenna Patterns

Figure 4. T610o 2.4GHz Elevation Antenna Patterns

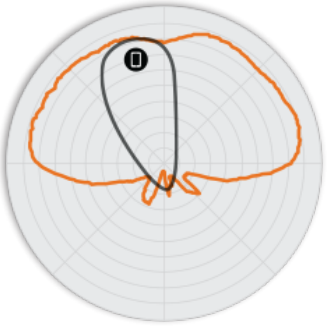
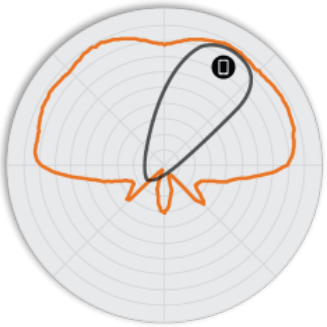


Figure 5. T610o 5GHz Elevation Antenna Patterns



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.

WI-FI	
Wi-Fi Standards	• IEEE 802.11a/b/g/n/ac Wave 2
Supported Rates	• 802.11ac: 6.5 to 1,733Mbps (MCS0 to MCS9, NSS = 1 to 4 for VHT20/40/80) • 802.11n: 6.5Mbps to 600Mbps (MCS0 to MCS 31) • 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	• 4x4 SU-MIMO • 4x4 MU-MIMO
Spatial Streams	• 4 SU-MIMO • 3 MU-MIMO
Radio Chains and Streams	• 4x4:4
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	
Antenna Type	• BeamFlex+ adaptive antennas with polarization diversity • Adaptive antenna that provides up to 4,000+ unique antenna patterns
Antenna Gain (max)	• Omni - Up to 3dBi • Sector - Up to 8dBi
Peak Transmit Power (aggregate across MIMO chains)	• 28dBm for both 2.4GHz & 5GHz
BeamFlex+ SINR Transmit Power Gain*	• Up to 6 dB
BeamFlex+ SINR Receive Power Gain*	• Up to 4 dB
Minimum Receive Sensitivity[1]	• -104dBm
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
-97	-79	-94	-78

5GHZ RECEIVE SENSITIVITY					
VHT20		VHT40		VHT80	
MCS0	MCS7	MCS0	MCS7	MCS0	MCS7
-96	-80	-94	-77	-91	-74

2.4GHZ TX POWER TARGET	
Rate	Pout (dBm)
MCS0 HT20	20
MCS7 HT20	17
MCS0 HT40	22
MCS7 HT40	19

5GHZ TX POWER TARGET	
Rate	Pout (dBm)
MCS0 VHT20	22
MCS7 VHT20	19
MCS0 VHT40, VHT80	22
MCS7 VHT40, VHT80	19

PERFORMANCE AND CAPACITY	
Peak PHY Rates	• 2.4GHz: 600Mbps • 5GHz: 1733Mbps
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.

NETWORKING	
Controller Platform Support	• SmartZone • ZoneDirector • Unleashed[2] • Cloud Wi-Fi • 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 and Supplicant
Tunnel	• L2TP, GRE, Soft-GRE
Policy Management Tools	• Application Recognition and Control • Access Control Lists • Device Fingerprinting • Rate Limiting
IoT Capable	• Yes

PHYSICAL INTERFACES	
Ethernet	• 2 x 1GbE ports, RJ-45 • LACP
USB	• 1 USB 2.0 port, Type A connector

PHYSICAL CHARACTERISTICS	
Physical Size	• 31.7(L) x 24.1(W) x 9.5(H) cm • 12.8(L) x 9.5(W) x 3.7(H) in
Weight	• 2.7kg (6lbs) without mounting hardware
Ingress Protection	• IP-67
Mounting	• Wall • Pole Mount
Physical Security	• Hidden latching mechanism • Kensington lock • T-bar Torx
Operating Temperature	• -40°C (-40°F) to 65°C (149°F)
Operating Humidity	• Up to 95%, non-condensing
Wind Survivability	• Up to 266 km/h (165mph)

POWER[3]

Power Supply	Feature Limitation	Max Power Consumption
802.3af	• 2.4GHz radio: 2x2, 18dBm per chain • 5GHz radio: 4x4, 20dBm per chain • 2nd Ethernet port & USB disabled	10.4W
802.3at	• 2.4GHz radio: 4x4, 22dBm per chain • 5GHz radio: 4x4, 20dBm per chain • 2nd Ethernet port & USB enabled	24W

CERTIFICATIONS AND COMPLIANCE	
Wi-Fi Alliance[4]	• Wi-Fi CERTIFIED™ a, b, g, n, ac • Passpoint®, Vantage
Standards Compliance[5]	• 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

ORDERING INFORMATION	
901-T610-XX00	• T610 802.11ac Outdoor Wireless Access Point, 4x4:4 Stream, Omnidirectional Beamflex+ coverage, 2.4GHz and 5GHz concurrent dual band, Dual 10/100/1000 Ethernet ports, POE in, IP-67 Outdoor enclosure, -40ºC to 65ºC Operating Temperature. Includes standard 1-year warranty. Mounting kit sold as separate accessory (902-0125-0000). For box contents, see Shipping Container Contents.
901-T610-XX51	• T610s 802.11ac Outdoor Wireless Access Point, 4x4:4 Stream, 120 degree sector Beamflex+ coverage, 2.4GHz and 5GHz concurrent dual band, Dual 10/100/1000 Ethernet ports, POE in, IP-67 Outdoor enclosure, -40ºC to 65ºC Operating Temperature. Includes standard 1-year warranty. Mounting kit sold as separate accessory (902-0125-0000). For box contents, see Shipping Container Contents.

See Ruckus price list for country-specific ordering information.
Warranty: Sold with a limited 1-year warranty.
For details see: http://support.ruckuswireless.com/warranty.

[2] Refer to Unleashed datasheets for SKU ordering information.
[3] Max power varies by country setting, band, and MCS rate.
[4] For complete list of WFA certifications, please see Wi-Fi Alliance website.
[5] For current certification status, please see price list.

OPTIONAL ACCESSORIES	
902-0125-0000	• Secure articulating mounting bracket
902-0127-0000	• Extended cap to accommodate up to 6 cm long USB dongle
902-0183-0000	• Spare Weatherizing Cable Gland with 1 hole
902-0162-XXYY	• PoE injector (24W) (Sold in quantities of 1, 10 or 100)

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.