

# ZoneFlex T610

DUAL-BAND 4X4:4 802.11AC WAVE 2  
OUTDOOR SMART WI-FI AP



## DATA SHEET



## BENEFITS

### INDUSTRY'S HIGHEST PERFORMING 802.11AC WAVE 2 AP

ZoneFlex T610 delivers better performance over competitive 802.11ac APs

### MU-MIMO INCREASES EFFICIENCY AND CAPACITY

MU-MIMO allows for clients to utilize the RF spectrum much more efficiently by allowing multiple AP to client transmissions

### DUAL CONCURRENT 4X4:4 MIMO AND BEAMFLEX+

Four spatial streams combined with BeamFlex+ adaptive antenna technology ensures an aggregate throughput of 2.5 Gbps

### ADAPTIVE POLARIZATION DIVERSITY WITH BEAMFLEX+ (PD-MRC)

Dual-polarized antennas provide better reception for hard-to-hear clients and more consistent performance for mobile clients that constantly change orientation. BeamFlex+ with 802.11ac enables better throughput and coverage in dense environments

### REDUCED WI-FI INTERFERENCE

Up to 15 dB of interference mitigation and a 50 percent reduction in co-channel interference to neighboring APs

### ENVIRONMENTALLY HARDENED

Enables fast and easy mounting to street lights, traffic controls and other street furniture. Includes hardened enclosures for outdoor deployment with industrial grade IP67 rated enclosure (-40°C to +65°C)

### FIELD ACCESSIBLE IP67 USB INTERFACE FOR IOT APPLICATIONS

Enables outdoor IoT applications in a plug-and-play manner and thereby future proofs the access point install.

### FLEXIBLE DEPLOYMENT OPTIONS

Flexible deployment options enable AP's to be supported across various management platforms: standalone, on-premise/virtual controller or cloud-managed

## RUCKUS' HIGHEST CAPACITY, HIGHEST PERFORMING FOUR-STREAM WAVE 2 802.11AC OUTDOOR AP

The ZoneFlex T610 combines Ruckus patented technologies and best-in-class design with the next generation of 802.11ac Wave 2 features to deliver industry-leading Wi-Fi performance and reliability.

Featuring BeamFlex+ adaptive antenna technology, the ZoneFlex T610 offers a substantial increase in performance and range by optimizing antenna coverage on a per-client, per-transmission basis. BeamFlex+ additionally mitigates co-channel interference by directing Wi-Fi signals where they are needed instead of towards neighboring access points. The T610's BeamFlex+ adaptive antenna system is also equipped with dual polarization antennas, allowing the access point to adapt to the physical orientation of client devices and maximize uplink performance.

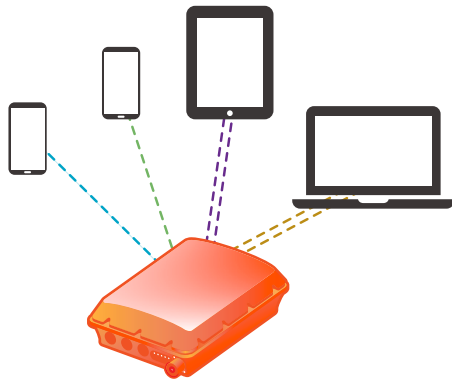
With throughput capacities of 800 Mbps (2.4GHz) and 1733 Mbps (5GHz), the ZoneFlex T610 supports the highest available throughput for Wi-Fi clients.

802.11ac Multi-User MIMO (MU-MIMO) support allows the T610 to simultaneously transmit to multiple client devices, drastically improving airtime efficiency, overall throughput, and availability.

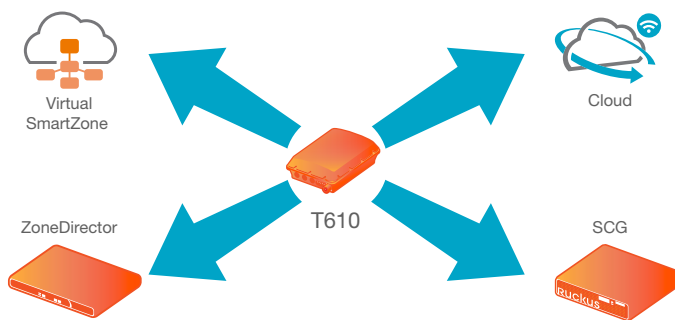
The ZoneFlex T610 is backward compatible with all existing Wi-Fi clients, and can function either as a standalone AP or as part of centrally-managed Wireless LAN.

The ZoneFlex T610 is specifically designed with industrial grade features such as secure image download. The T610 also has an IP67 compliant USB port that enables field-installable connectivity for IoT applications.

ZoneFlex T610 is purpose-built for high-capacity, high performance and interference-laden environments such as outdoor campuses, smart cities, arenas, convention centers and transportation hubs.



Blinding fast Wave 2 4x4:4 802.11ac with MU-MIMO



Flexible Deployment Options



Rapid deployment: Smart Mesh



## FEATURES

### Wireless

- 802.11ac Multi-User MIMO (MU-MIMO)
- Concurrent dual-band (5 GHz/2.4 GHz) support
- 2533 Mbps maximum PHY rate (1733 Mbps in 5GHz; 800 Mbps in 2.4GHz)
- BeamFlex+ (PD-MRC) smart antenna, with support for 4000+ unique antenna patterns enables up to 4 dB of additional gain and up to 10 dB of additional interference mitigation
- Unmatched Rx sensitivity down to -104 dBm
- 802.11ac standard Tx Beamforming
- Space Time Block Coding for optimized client performance
- Improved Maximum Ratio Combining (MRC) for best-in-class receive sensitivity
- Low Density Parity Check (LDPC) for increased data throughput at all ranges
- 256-QAM support on 5GHz and 2.4GHz
- Backward compatible with legacy 802.11 clients

### Interfaces

- One 10/100/1000 Ethernet port that can be used for PoE Input
- Second 10/100/1000 Ethernet port, with Link Aggregation between the 2 Ethernet ports enabled
- 802.3at (PoE+) mode of operation
- Support for IoT applications and enhanced location-based services via an IP67 compliant USB interface

### Outdoor Characteristics and Mounting

- IP67 rated, -40 °C to +65 °C
- Mounting options for fast and easy deployment: wall or pole mountable

### Enterprise Features

- Enhanced hardware-based platform security enabling secure image download
- Either standalone or centrally managed
- Multicast IP video streaming support
- Four software QoS queues per client station
- Up to 16 BSSIDs per radio with unique QoS and security policies
- WPA-PSK (AES), 802.1X support for RADIUS and AD\*
- Zero-IT and Dynamic PSK\*
- Admission control/load balancing\*
- Band balancing
- Captive portal and guest accounts\*
- Support for Smart Mesh to eliminate cost and time associated with cumbersome Ethernet drops

\* when used with management.

### **PATENTED BEAMFLEX+ TECHNOLOGY EXTENDS SIGNAL RANGE, IMPROVES RELIABILITY OF CLIENT CONNECTIONS**

The ZoneFlex T610 integrates patented software-controlled adaptive antennas that delivers additional signal gain per radio chain. As BeamFlex+ adapts to client locations and antenna polarity, the smart antenna technology optimizes the RF energy toward client on a per packet basis. This allows for substantial performance improvement and a reduction in packet loss from the ability to automatically mitigate interference and obstacles. BeamFlex+ with PD-MRC or polarization diversity ensures the T610 listens in all polarizations simultaneously. This results in significant receive signal gain from mobile devices with weak transmitters.

### **MULTI-USER MIMO (MU-MIMO)**

802.11ac MU-MIMO allows the ZoneFlex T610 to transmit multiple spatial streams to multiple client devices simultaneously, increasing the total throughput and capacity of the wireless network. The ZoneFlex T610 is able to provide up to three clients each their own dedicated full-bandwidth channel using an MU-MIMO technique known as spatial reuse. This capability enables several benefits.

Efficient use of available spectrum effectively multiplies the total capacity of a network, allowing it to meet the increasing data demand driven by the proliferation of mobile Wi-Fi clients and data-hungry applications and uses such as high-definition video streaming. Additionally, MU-MIMO does not require client devices to time-share connections with other clients on the network as in legacy Wi-Fi, which means each device experiences less wait time and makes the network more responsive overall. Even legacy clients benefit from MU-MIMO on the wireless network, because substantially increased efficiency for MU clients leaves the network with more free time and capacity by supporting multiple users.

### **ADVANCED WLAN APPLICATIONS**

When used with the Ruckus Smart WLAN management systems, the ZoneFlex T610 supports a wide range of value-added applications such as guest networking, Dynamic PSK, hotspot authentication, wireless intrusion prevention and many more. WLANs can also be grouped and shared by specific APs. In a centrally managed configuration, the ZoneFlex T610 works with various authentication servers including AD, LDAP, and RADIUS.

PHYSICAL CHARACTERISTICS	
Power	<ul style="list-style-type: none"> <li>PoE: 802.3at, af *</li> </ul>
Physical Size	<ul style="list-style-type: none"> <li>31.7 cm (L), 24.1 cm (W), 9.5 cm (H)</li> </ul>
Weight	<ul style="list-style-type: none"> <li>6 lbs (without mounting hardware)</li> </ul>
RF	<ul style="list-style-type: none"> <li>Adaptive antennas: 4,000+ unique antenna patterns, polarization diversity</li> <li>Maximum Transmit Power:                             <ul style="list-style-type: none"> <li>28 dBm on 2.4 GHz; 28 dBm on 5 GHz</li> </ul> </li> <li>Physical antenna gain: 3 dBi                             <ul style="list-style-type: none"> <li>(2.4 and 5GHz)</li> </ul> </li> <li>BeamFlex SINR Tx gain: up to 6 dB</li> <li>BeamFlex SINR Rx gain: up to 3-5 dB</li> <li>Interference mitigation: up to 15 dB</li> <li>Minimum Rx sensitivity: -104 dBm</li> </ul>
Interfaces	<ul style="list-style-type: none"> <li>1 Ethernet port, auto MDX, auto-sensing, 10/100/1000 Mbps, RJ-45, 802.3at PoE input, 802.3af PoE input (reduced operation)</li> <li>1 Ethernet port, auto MDX, auto-sensing, 10/100/1000 Mbps, RJ-45, support for link aggregation of the two Ethernet ports</li> <li>1 field accessible IP67 USB port</li> </ul>
Powering Options	<ul style="list-style-type: none"> <li>Power over Ethernet (802.3at) with</li> <li>Category 5/5e/6 cable</li> </ul>
Environmental Conditions	<ul style="list-style-type: none"> <li>Operating Temperature:                             <ul style="list-style-type: none"> <li>-40°F (-40°C) to 149°F (65°C)</li> </ul> </li> <li>Operating Humidity: up to 95% non-condensing</li> </ul>
Power Consumption	<ul style="list-style-type: none"> <li>5.5W (minimum)</li> <li>10.4W (typical)</li> <li>25W peak</li> </ul>

\* reduced operation: 2x2, 1 Ethernet port powers off, USB powers off

PERFORMANCE AND CAPACITY	
Phy Data Rates	<ul style="list-style-type: none"> <li>Up to 800 Mbps (2.4GHz)</li> <li>Up to 1733 Mbps (5GHz)</li> </ul>
Concurrent Stations	<ul style="list-style-type: none"> <li>Up to 512</li> </ul>

NETWORK ARCHITECTURE	
IP	<ul style="list-style-type: none"> <li>IPv4, IPv6, dual-stack</li> </ul>
VLANs	<ul style="list-style-type: none"> <li>802.1Q (1 per BSSID or dynamic, per user based on RADIUS)</li> <li>Port-based</li> </ul>
802.1X for wired ports	<ul style="list-style-type: none"> <li>Authenticator</li> <li>Supplicant</li> </ul>
Tunneling	<ul style="list-style-type: none"> <li>L2TP</li> </ul>

MANAGEMENT	
DEPLOYMENT OPTIONS	<ul style="list-style-type: none"> <li>Standalone (individually managed)</li> <li>Centrally managed</li> <li>Cloud managed</li> </ul>

Warranty: THIS PRODUCT HAS A ONE YEAR WARRANTY.  
For details see: <http://support.ruckuswireless.com/warranty>

**NOTE: SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE**

Wi-Fi	
Standards	<ul style="list-style-type: none"> <li>IEEE 802.11a/b/g/n/ac</li> </ul>
Supported data rates	<ul style="list-style-type: none"> <li>802.11ac: 29.3 Mbps – 1733 Mbps (80MHz)</li> <li>802.11n: 6.5 Mbps – 216.7 Mbps (20MHz) 13.5 Mbps – 800 Mbps (40MHz)</li> <li>802.11a: 54, 48, 36, 24, 18, 12, 9 and 6 Mbps</li> <li>802.11b: 11, 5.5, 2 and 1 Mbps</li> <li>802.11g: 54, 48, 36, 24, 18, 12, 9 and 6 Mbps</li> </ul>
Radio Chains/ Streams	<ul style="list-style-type: none"> <li>4x4:4</li> </ul>
MIMO	<ul style="list-style-type: none"> <li>SU-MIMO – Up to 4 streams</li> <li>MU-MIMO – Up to 3 streams</li> </ul>
Channelization	<ul style="list-style-type: none"> <li>20 MHz, 40 MHz, and/or 80 MHz</li> </ul>
Frequency Band	<ul style="list-style-type: none"> <li>IEEE 802.11ac: 5.15 – 5.85 GHz</li> <li>IEEE 802.11a/n: 5.15 – 5.85 GHz</li> <li>IEEE 802.11b: 2.4 – 2.484 GHz</li> </ul>
BSSIDs	<ul style="list-style-type: none"> <li>Up to 16 (2.4 GHz)</li> <li>Up to 16 (5 GHz)</li> </ul>
Power Save	<ul style="list-style-type: none"> <li>Supported</li> </ul>
Certifications*	<ul style="list-style-type: none"> <li>WEEE/RoHS compliance</li> <li>EN 60601-1-2 Medical</li> <li>Wi-Fi Alliance certified*</li> </ul>
Subway And Railroad Certifications	<ul style="list-style-type: none"> <li>EN50121-1 EMC</li> <li>EN50121-4 Immunity</li> <li>IEC 61373 Shock &amp; Vibration</li> </ul>

\*Wi-Fi Alliance certification in process

1. Max power varies by country setting, band, and MCS rate
2. BeamFlex+ gains are statistical, system-level effects including TxBF, translated to enhanced SINR here and based on observations over time in real-world conditions with multiple APs and many clients
3. Rx sensitivity varies by band, channel width and MCS rate
4. Refer to price list for current country certifications

## PRODUCT ORDERING INFORMATION

MODEL	DESCRIPTION
ZoneFlex T610 Dual band 802.11ac Wave 2 Access Point	
901-T610-XX01	ZoneFlex 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, -40 to 65C 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	ZoneFlex 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, -40 to 65C Operating Temperature. Includes standard 1-year warranty. Mounting kit sold as separate accessory (902-0125-0000). For box contents, see Shipping Container Contents.
Optional Accessories	
902-0125-0000	Secure articulating mounting bracket
902-0127-0000	Extended cap to accommodate up to 6 cm long USB dongle
902-0180-XX00	Spares of Power over Ethernet (PoE) Injector (10/100/1000 Mbps) quantity of 1 unit (7762-series, 7782-series, 8800-S, T610 and T610 access points)
902-0183-0000	Spare Data Connector for T300-series, 7782-series, 8800, T610 and T610; contains 1 weatherizing data cable gland

PLEASE NOTE: When ordering ZoneFlex 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, -IN, -JP, -SA, -UK, or -UN instead of XX.

For access points, -Z2 applies to the following countries: Algeria, Egypt, Israel, Morocco, Tunisia, and Vietnam