## Outdoor Wi-Fi 7 (802.11be) Access Point with 9.34 Gbps Data Rate





## **Benefits**

#### Connect more devices simultaneously

Improve device performance, by enabling more simultaneous device connections with 6 spatial streams (2x2:2 in 2.4GHz, 5GHz, and 6GHz) technology. 9.34 Gbps Combined data rate.

## High client density and performance

Provides exceptional end-user experience within large meeting halls, general enterprise spaces, and large classrooms.

#### BeamFlex+ Adaptive Antenna Technology

For greater speed, fewer errors, and instant bandwidth delivery, RUCKUS BeamFlex+ patented technology offers first-of-its-kind smart antenna technology that maximizes signal coverage, throughput, and network capacity and work with any client. It further increases MIMO diversity gain and maximizes spatial multiplexing potential.

### Great Outdoor Wi-Fi

Experience high performance outdoor Wi-Fi 7 with IP-67 weather proofing and multi-gigabit 5 GbE Ethernet port.

## 5 GbE eliminates bottleneck

Optimized multi-gigabit Wi-Fi performance delivered using the built-in 1/2.5/5GbE port to connect to multi-gigabit switches.

### Built-in GPS

Facilitate the deployment of Automated Frequency Coordination (AFC) ensuring adherence to regulatory requirements for 6GHz frequency use.

### Multiple management options

Manage the T670 with on premise physical/virtual appliances and control auto-provisioning for faster deployment and seamless firmware upgrades.

### **Enhanced Security**

The latest Wi-Fi security standard with WPA3 and receive enhanced protection from man-in-the-middle attacks. Adds the power of RUCKUS DPSK3 to WPA3/SAE combining enhanced security with the flexibility and ease of use of dynamic passphrase to secure network access.

### More Than Wi-Fi

Support solutions beyond Wi-Fi with RUCKUS AI, RUCKUS One, RUCKUS Cloudpath Enrollment System and onboarding software

Bandwidth-hungry ultra-high definition video, virtual reality, an explosion of new devices and content. With these kinds of demands, organizations in every industry need more from their Wi-Fi. But with hundreds of devices and nonstop wireless noise and interference, busy outdoor spaces can make challenging wireless environments.

The dawn of the Wi-Fi 7 era ushers in a new wave of possibilities. With its groundbreaking advancements in speed, capacity, latency, and reliability, Wi-Fi 7 will transform the way we connect and interact with the digital world.

From seamless streaming of ultra-high-definition content to immersive virtual and augmented reality experiences, Wi-Fi 7 enables applications that were previously unimaginable. Real-time social gaming can reach new heights, allowing for lag-free, competitive multiplayer experiences with unparalleled responsiveness.

Moreover, industries such as hospitality and education can benefit immensely from Wi-Fi 7 low latency and high reliability. Other verticals like, MDUs, large public venues and service providers gain greatly from Wi-Fi 7 unprecedented advancements in speed and capacity.

The RUCKUS T670 is a high-end Wi-Fi 7, tri-band concurrent outdoor AP that delivers 6 spatial streams (2x2:2 in 2.4GHz/5GHz/6GHz or, in dual-band mode, 2x2:2 in 2.4GHz and 4x4:4 in 5GHz) With Multi-Link-Operation (MLO), Preamble Puncturing, 4K QAM Modulation and 320MHz channels. It delivers industry-leading performance environments with a combined data rate of 9.34 Gbps. Furthermore, a 5 Gbps Ethernet port eliminates wired backhaul bottleneck for full use of available Wi-Fi capacity.

The T670 addresses the increasing client demands in transit hubs, stadiums, conference centers, and other high traffic outdoor spaces. It is the perfect choice for data-intensive streaming multimedia applications like 4K/8K video transmissions, while supporting latency sensitive voice and data applications with stringent quality-of-service requirements.

The T670, with built-in RUCKUS exclusive technology, dramatically improves network performance through a combination of patented wireless innovations and learning algorithms that includes:

- · Airtime Decongestion: Increases average network throughput in heavily congested environments
- Transient Client management: Reduces interference traffic from unconnected Wi-Fi devices
- BeamFlex\* + Adaptive Antennas: Extended coverage range and optimized throughput with patented dynamic multi-directional antennas and radio patterns and work with any client.

Whether you are deploying ten or ten thousand APs, the T670 is also easy to manage through RUCKUS multiple management options including cloud based and on premises controllers.

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RUCKUS BeamFlex® Smart Adaptive Antenna





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## Access Point BeamFlex Antenna Pattern

RUCKUS' BeamFlex+ adaptive antennas allow the T670 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

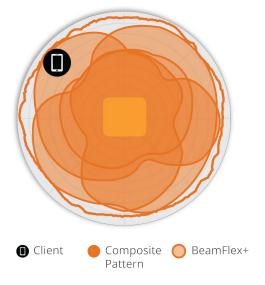


Figure 2. T670 2.4GHz Azimuth Antenna Patterns

Figure 5. T670 2.4GHz Elevation Antenna Patterns



Figure 3. T670 5GHz Azimuth Antenna Patterns

Figure 6. T670 5GHz Elevation Antenna Patterns



Figure 4. T670 6GHz Azimuth Antenna Patterns

Figure 7. T670 6GHz 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/ax/be, Wi-Fi 7
Supported Rates	<ul> <li>802.11be: 4 to 5765 Mbps</li> <li>802.11ax: 4 to 4804 Mbps</li> <li>802.11ac: 6.5 to 866 Mbps</li> <li>802.11n: 6.5 to 300 Mbps</li> <li>802.11a/g: 6 to 54 Mbps</li> <li>802.11b: 1 to 11 Mbps</li> </ul>
Supported Channels	<ul> <li>2.4GHz: 1-13</li> <li>5GHz: 36-64, 100-144, 149-165</li> <li>6GHz: 1-233</li> </ul>
МІМО	2x2 SU-MIMO in tri-band mode. 4x4(5GHz) in dual-band     2x2 MU-MIMO in tri-band mode. 4x4(5GHz) in dual-band
Spatial Streams	2 in tri-band mode or 4 in dual-band mode at 5GHz
Radio Chains and Streams	2x2:2 in all 3 bands. 4x4:4(5GHz) in dual-band mode
Channelization	• 20, 40, 80, 160, 320 MHz
Security	WEP, WPA, WPA-PSK, WPA2, WPA2-PSK, WPA3, WPA3-SAE, OWE, PMF (802.11w), Dynamic PSK, DPSK3 WIPS/WIDS. TPM 2.0, Secure Boot
Other Wi-Fi Features	WMM, Power Save, Tx Beamforming, LDPC, STBC, 802.11r/k/v, MBO MLO (Multi-link operation), Preamble Puncturing Web Authentication and Guest Access Hotspot, Hotspot 2.0 Captive Portal WISPr

RF	
Antenna Type	BeamFlex+ adaptive antennas with polarization diversity     Adaptive antenna that provides 4,000+ unique antenna patterns per band
Antenna Gain (max)	• Up to 4dBi
Peak Transmit Power (Tx port/ chain + Combining gain)	<ul><li>2.4GHz: 26dBm</li><li>5GHz: 25dBm(2x2). 28dBm(4x4)</li><li>6GHz: 25dBm</li></ul>
Frequency Bands	<ul> <li>ISM (2.4-2.484GHz)</li> <li>U-NII-1 (5.15-5.25GHz)</li> <li>U-NII-2A (5.25-5.35GHz)</li> <li>U-NII-2C (5.47-5.725GHz)</li> <li>U-NII-3 (5.725-5.85GHz)</li> <li>U-NII-5 (5.925-6.425GHz)</li> <li>U-NII-6 (6.425-6.525GHz)</li> <li>U-NII-7 (6.525-6.875GHz)</li> <li>U-NII-8 (6.875-7.125GHz)</li> </ul>

2.4GHZ RECEIVE SENSITIVITY (dBm)								
НТ	20	D HT40			T20	VHT40		
MCS0	MCS7	MCS0	MCS7	MCS0	MCS7	MCS0	MCS7	
-97	-79	-94	-76	-97	-79	-94	-76	
	HE	20/EHT20			HE	40/EHT40		
MCS0	MCS7	MCS9	MCS11	MCS0	MCS7	MCS9	MCS11	
-97	-79	-74	-68	-94	-76	-71	-65	

5GHZ	5GHZ RECEIVE SENSITIVITY (dBm) in 2x2 tri-band mode											
HT20/VHT20				HT40/VHT40				VHT80				
MCS0	MCS7	MCS8	MCS9	MCS0	MCS7	MCS8	MCS9	MCS0	MCS7	MCS8	MCS9	
-96	-79	-76	-73	-93	-75	-73	-70	-90	-72	-70	-67	
HE	HE20/EHT20 H				E40/EHT40			HE80/EHT80		HE160/EHT160		
MCS0	MCS9	MCS13	MCS0	MCS9	MCS13	MCS0	MCS9	MCS13	MCS0	MCS9	MCS13	
-96	-73	-61	-93	-70	-58	-90	-67	-55	-87	-64	-52	

5GHZ	5GHZ RECEIVE SENSITIVITY (dBm) in 4x4 dual-band mode										
	HT20/	VHT20		HT40/VHT40				VHT80			
MCS0	MCS7	MCS8	MCS9	MCS0	MCS7	MCS8	MCS9	MCS0	MCS7	MCS8	MCS9
-100	-82	-79	-76	-97	-79	-76	-73	-94	-76	-73	-70
HI	HE20/EHT20 H			E40/EH1	Γ40	Н	E80/EH	Г80	HE:	160/EHT	160
MCS0	MCS9	MCS13	MCS0	MCS9	MCS13	MCS0	MCS9	MCS13	MCS0	MCS9	MCS13
-100	-76	-64	-97	-73	-61	-94	-70	-58	-91	-67	-55

6GHZ RE	6GHZ RECEIVE SENSITIVITY (dBm)										
		HE40/EHT40				HE80/EHT80					
MCS0	MCS9	MCS13	М	CS0	MCS	9	MCS1	3	MCS0	MCS9	MCS13
-96	-73	-61		93	-70		-58		-90	-67	-55
	HE160/EHT160								EH1	г <b>32</b> 0	
MCS0	MCSS	М	S11	М	CS13	N	/ICSO		MCS9	MCS11	MCS13
-87	-64	-5	8	-	52		-84		-61	-55	-49

2.4GHZ TX POWER TARGET (PER CHAIN)				
Rate	Pout (dBm)			
MCS0, HT20	22			
MCS7, HT20	19			
MCS9, VHT20	18			
MCS11, HE40	16			
MCS13, EHT40	12			

5GHZ TX POWER TARGET (PER CHAIN)				
Rate	Pout (dBm)			
MCS0, HT40	22			
MCS7, HT40	19			
MCS9, VHT80	17.5			
MCS11, HE160	16			
MCS13, EHT160	14			

6GHZ TX POWER TARGET (PER CHAIN)				
Rate	Pout (dBm)			
MCSO, HT40	22			
MCS7, HT40	17.5			
MCS9, VHT80	16.5			
MCS11, HE160	15			
MCS13, EHT320	13			

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POWER CONSU	POWER CONSUMPTION								
Mode	Power Consumption	System Configuration	Wi-Fi Radios						
DC Power	33W	<ul><li>5Gbps Ethernet Enabled</li><li>1Gbps Ethernet Enabled</li><li>GPS Enabled</li></ul>	2.4GHz (2x2) Tx 22dBm 5GHz (2x2) Tx 22dBm 6GHz (2x2) Tx 22dBm						
802.3bt5 PoH, uPoE	33W	5Gbps Ethernet Enabled     1Gbps Ethernet Enabled     GPS Enabled	2.4GHz (2x2) Tx 22dBm 5GHz (2x2) Tx 22dBm 6Ghz (2x2) Tx 22dBm						
802.3at	25.5W	<ul><li>5Gbps Ethernet Enabled</li><li>1Gbps Ethernet Disabled</li><li>GPS Enabled</li></ul>	2.4GHz (2x2) Tx 16dBm 5GHz (2x2) Tx 17dBm 6Ghz (2x2) Tx 17dBm						

PERFORMANCE AND CAPACITY				
Peak PHY Rates	<ul><li>2.4GHz: 689 Mbps</li><li>5GHz: 5765 Mbps (4x4:4) or 2882 Mbps (2x2:2)</li><li>6GHz: 5765 Mbps</li></ul>			
Client Capacity	Up to 768 clients per AP			
SSID	Up to 36 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	<ul> <li>Adaptive Band Balancing</li> <li>Client Load Balancing</li> <li>Airtime Fairness</li> <li>Airtime-based WLAN Prioritization</li> </ul>			
SmartCast Quality of Service	<ul> <li>QoS-based scheduling, QoS Mirroring</li> <li>Directed Multicast</li> <li>L2/L3/L4 ACLs</li> </ul>			
Mobility	SmartRoam			
Diagnostic Tools	Spectrum Analysis     SpeedFlex			

NETWORKING	
Controller Platform Support	SmartZone     RUCKUS Unleashed*     RUCKUS One
Mesh	SmartMesh <sup>™</sup> wireless meshing technology. Self-healing Mesh in 2.4 GHz, 5GHz, and 6GHz
IP	IPv4, IPv6, dual-stack
VLAN	802.1Q (1 per BSSID or dynamic per user based on RADIUS)     VLAN Pooling     Port-based
802.1x	Authenticator & Supplicant
Tunnel	GRE, Soft-GRE
Policy Management Tools	Application Recognition and Control     Access Control Lists     Device Fingerprinting     Rate Limiting     URL Filtering

PHYSICAL INTERFACES	
Ethernet	One 100M/1/2.5/5GbE Ethernet (PoE) port and one 10M/100M/1GbE Ethernet port  Power over Ethernet (802.3af/at/bt) with Category 5e (or better) cable  LLDP support
DC Power	48V DC Terminal Block

PHYSICAL CHARACTERISTICS	
Physical Size	24.8cm (L), 23.8cm (W), 10.8.cm (H)     9.8in (L) x 9.4in (W) x 4.3in (H)
Weight	• 2.8kg • 5lbs
Mounting	Wall Mount, Pole Mount, Flat Surface.     Bracket included in the box
Operating Temperature	• -40°C (-40°F) to 65°C (145°F)
Operating Humidity	Up to 95%, non-condensing
Wind Survivability	165 Miles Per Hour

Product owner is responsible to abide by the country of deployment spectrum regulations when configuring and deploying this product/device.

The 6GHz band is enabled in countries where it is authorized by the local regulations. AP operates as per local regulations via country regulatory domain, otherwise 6GHz radio is disabled. Once this product is certified to operate in a particular country the 6GHz band may be enabled with a future software release..

<sup>\*</sup> Expected in a future software release

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CERTIFICATIONS AND COMPLIANCE	
Wi-Fi Alliance <sup>1</sup>	<ul> <li>Wi-Fi CERTIFIED™ a, b, g, n, ac, ax, be (Wi-Fi 6, Wi-Fi 7)</li> <li>Passpoint®, Vantage</li> </ul>
Standards Compliance <sup>2</sup>	IEC/EN/UL 60950-1 Safety     IEC/EN/UL 62368-1 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     EN 62311 Human Safety/RF Exposure     WEEE & ROHS     ISTA 2A Transportation

SOFTWARE AND SERVICES	
Cloud Based Services	RUCKUS One
Network Analytics	RUCKUS AI (Formerly known as RUCKUS Analytics)
Security and Policy	Cloudpath

ORDERING INFORMATION	
901-T670-XX01	RUCKUS T670 Wi-Fi 7 tri-band outdoor wireless Access Point with 2x2:2 (2.4GHz) + 2x2:2 (5GHz) + 2x2:2 (6GHz). Wi-Fi 7 in all three bands. 6GHz SP mode support with AFC. Software configurable to 2x2 (2.4GHz) + 4x4 (5GHz) dual-band mode. BeamFlex+, one 5/2.5/1-Gigabit Ethernet backhaul, one 1-Gigabit port, PoH/uPoE/ 802.3bt PoE support, TPM 2.0, and Secure Boot. Built-in GPS Power adapter not included. Includes one year limited warranty. Mounting brackets included.

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

OPTIONAL ACCESSORIES	
902-1180-XX00	Multigigabit PoE injector (2.5/5/10)-BaseT PoE port, 60W
902-0125-0000	Secure Articulating Mounting Bracket
902-0134-0000	Secure Articulating Mounting Bracket with 10° increment
902-0183-0000	Spare cable gland for weathering the RJ45 port, outdoor AP

PLEASE NOTE: When ordering 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.

## **About RUCKUS Networks**

RUCKUS Networks builds and delivers purpose-driven networks that perform in the demanding environments of the industries we serve. Together with our network of trusted go-to-market partners, we empower our customers to deliver exceptional experiences to the guests, students, residents, citizens and employees who count on them.

## www.ruckusnetworks.com

Visit our website or contact your local RUCKUS representative for more information.

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 $<sup>^{\</sup>rm 1}$  For complete list of WFA certifications, please see Wi-Fi Alliance website.

<sup>&</sup>lt;sup>2</sup> For current certification status, please see price list.