

# TQ5403e

## Hybrid Outdoor 3-radio 802.11ac Wave 2 Wireless Access Point

The Allied Telesis Enterprise-class TQ5403e outdoor wireless Access Point (AP) features IEEE 802.11ac Wave 2 technology with two spatial streams, to deliver a raw capacity of 2.133 Gigabits.



### Overview

The innovative Channel Blanket hybrid mode of the TQ5403e enables optimized wireless networking for all environments—indoors and outdoors. By allowing simultaneous multi-channel and single-channel WLAN connectivity from the same AP, network administrators can combine performance attributes of the two architectures to best suit their specific deployment requirements.

The TQ5403e has a single 2.4GHz radio and dual 5GHz IEEE 802.11ac radios, and supports Multi-User Multiple Input and Multiple Output (MU-MIMO), allowing multiple clients to send and receive data at the same time—substantially increasing throughput. Combined with a comprehensive feature set, these APs provide superior wireless solutions for a wide range of customers, from SMBs to large Enterprises.

Smaller businesses can operate the TQ5403e in standalone mode, by using its intuitive web-based user interface. In larger installations it can be managed by Allied Telesis Autonomous Wave Control (AWC). AWC regularly analyzes the wireless network, and dynamically updates APs to reduce interference, minimize coverage gaps and optimize performance—all with no user intervention. Further, the Allied Telesis robust network management platform Vista Manager EX has an AWC wireless management plugin that supports up to 3,000 APs.

The TQ5403e shines in harsh outdoor environments and is accompanied by a wall/pole mounting kit and six omni-directional antennas. Power is supplied via Power over Ethernet (IEEE 802.11at, PoE Plus).

## Key Features

### Channel Blanket Hybrid Operation

- ▶ The TQ5403e supports operation in multi-channel, single-channel (Channel Blanket) and hybrid (multi-channel and Channel Blanket) modes, for the most flexible wireless solution available.
- ▶ Multi-channel operation provides maximum throughput for high-bandwidth clients, while Channel Blanket operation supports seamless roaming for dynamic environments like warehouses and hospitals, as all APs appear as a single virtual AP.
- ▶ Hybrid mode combines the best of both architectures, enabling an innovative wireless solution that maximizes performance for a superior user experience.

### IEEE 802.11ac Wave 2

- ▶ IEEE 802.11ac Wave 2 wireless connectivity delivers Gigabit performance and throughput. In crowded wireless environments, efficient bandwidth distribution is important. Wave 2 uses Multi-user MIMO technology to simultaneously communicate with multiple clients at once, reducing contention and improving capacity and throughput by up to three times.
- ▶ Multi-user MIMO uses beamforming, where the AP focuses wireless signal towards connected devices, rather than simply radiating the signal evenly. This improves range and speed for each user, and reduces interference.

### Tri-Radio, with Band Steering

- ▶ The TQ5403e contains three IEEE 802.11 2ss radios to enable concurrent Wi-Fi communications: one at 2.4GHz band, and two at 5GHz band. This alleviates network congestion and isolates any legacy client devices affecting performance.
- ▶ Band steering prompts newly connecting devices to use a band with little current congestion to distribute wireless traffic, provide maximum throughput, and the best user experience.

### Virtual APs with Multiple SSIDs

- ▶ The TQ5403e supports Virtual AP (VAP) functionality, with the assignment of different SSIDs and security policies for each VAP on the physical device.
- ▶ VAPs can be mapped to VLANs for logical network separation and improved throughput. Enable communication by application, function or users.

### Captive Portal

- ▶ Manage user access to the Wi-Fi network with captive portal. New users are taken to a login page to authenticate before gaining access to any online resources and applications.

### Dynamic VLANs

- ▶ Dynamic VLANs simplify management by separating users into different VLANs according to rules defined in a user database. When a user connects, their credentials are checked and the VLAN is assigned automatically. An external RADIUS server is supported and a secondary RADIUS server can also be specified for redundancy.

### Weather Resistant Enclosure

- ▶ The TQ5403e is equipped with high power radio transceivers (>20dBm) for best-in-class performances and lightning arresters/surge protector as recommended for outdoor installation. The metallic enclosure and the plastic cover are manufactured to repel ultraviolet (UV) radiation from the sun. These protective measures, the extended operating range (-40°C~65°C), and the vent for internal pressure equalization, make the TQ5403e ideal for any location including resorts, sports arenas, college and corporate campuses, indoor industrial environments and businesses located in snowy, rainy and arid climates.

### Fast Roaming

- ▶ Fast roaming 802.11k, 802.11v, and 802.11r optimize discovering and selecting the best available AP in a Wi-Fi network. It establishes rapid connectivity for users to seamlessly move between APs, as the APs exchange security keys, so the client device does not need to re-authenticate on the RADIUS server as they roam.

### Mounting Options

- ▶ The TQ5403e comes with wall/pole mounting and antenna kits. The external antenna kit has two (2) detachable antenna for the 2.4 GHz radio and four (4) detachable antennas for the 5 GHz radio.
- ▶ The N-type female connectors allow replacement of the supplied omni-directional antennas with the most appropriate for the use case.

### IEEE 802.11e Wireless Multimedia (WMM)

- ▶ Quality of Service (QoS) optimizes the performance of voice, video, and data applications, as each has different latency, bandwidth and performance requirements. QoS traffic prioritization ensures the timely delivery of these services.

### IEEE 802.11i Security

- ▶ This feature set facilitates strong encryption, authentication and key management strategies, guaranteeing data and system security. In addition to Counter Mode with Cipher Block Chaining Message Authentication Code Protocol (CCMP), IEEE 802.1X key distribution via RADIUS controls access to the network.

## Specifications

### Physical Specifications

PRODUCT	WIDTH X DEPTH X HEIGHT	WEIGHT	10/100/1000T (RJ-45) COPPER PORTS	PROTECTION RATING
TQ5403e	257 x 227 x 90 mm (10.12 x 8.94 x 3.54 in)	4.0 kg*	1 (PoE-in port)	IP67

\*Main chassis, surge protector (x6) and antenna (x6) are included in this weight. Wall mountable and pole mountable kits are not included.

### Power Characteristics

PRODUCT	POWER SUPPLY	POWER CONSUMPTION		MAX HEAT DISSIPATION
		AVERAGE	MAXIMUM	
TQ5403e	POE	9.3W	16W	54 BTU/h

### Wireless

- ▶ Multi-channel, single-channel, or hybrid operation
- ▶ Airtime fairness
- ▶ Automatic channel selection
- ▶ Automatic control of transmission power
- ▶ Band Steering
- ▶ Fast roaming
- ▶ RF load balancing
- ▶ Wireless Distribution System (WDS)
- ▶ Wi-Fi Multimedia (WMM) for traffic prioritization

### Operational Modes

- ▶ Centrally managed in multi-channel mode by Vista Manager EX (up to 3,000 APs)
- ▶ Centrally managed in single-channel or hybrid mode (multi-channel and single-channel) by Vista Manager EX (100 APs per Channel Blanket<sup>1</sup>)
- ▶ Standalone<sup>2</sup>

### Management

- ▶ Graphical User Interface (HTTP/HTTPS)
- ▶ Simple Network Management Protocol (SNMPv1, v2c)
- ▶ Firmware upgrade
- ▶ Backup/restore settings
- ▶ Syslog notification
- ▶ DHCP client
- ▶ NTP client

### Security

- ▶ Authentication and accounting  
Captive Portal (External RADIUS, Click-Through)  
IEEE 802.1X authentication and accounting  
IEEE 802.1X RADIUS support  
Shared Key Authentication  
WPA (Enterprise, Personal)  
WPA2 (Enterprise, Personal)  
WPA3 (Enterprise, Personal)<sup>3</sup>
- ▶ Encryption  
WEP: 64/128 bit (IEEE 802.11a/b/g only)  
WPA/WPA2: CCMP (AES), TKIP  
WPA3: CCMP (AES/CNSA)<sup>3</sup>
- ▶ MAC address filtering (Up to 1024 MAC address)
- ▶ SSID hiding/ignoring
- ▶ Client isolation
- ▶ Neighbor AP detection

### Compliance

- Certificates
- ▶ FCC
  - ▶ CE
  - ▶ RCM
  - ▶ Wi-Fi certified (ID:WFA75927)
  - ▶ IC (For Canada)
  - ▶ IMDA (For Singapore)
  - ▶ KC (For South Korea)
  - ▶ MIC (For Vietnam)
  - ▶ BSMI/NCC (For Taiwan)
  - ▶ OFCA (For Hong Kong)
  - ▶ SIRIM (For Malaysia)

- Safety approvals
- ▶ AS/NZS 60950.1
  - ▶ AS/NZS 62368.1
  - ▶ CAN/CSA C22.2 No. 60950-1
  - ▶ CAN/CSA C22.2 No. 62368-1
  - ▶ CAN/CSA C22.2 No. 60950-22
  - ▶ EN 60950-1
  - ▶ EN 62368-1
  - ▶ EN 60950-22
  - ▶ IEC 60950-1
  - ▶ IEC 62368-1
  - ▶ IEC 60950-22
  - ▶ UL 60950-1
  - ▶ UL 62368-1
  - ▶ UL 60950-22

- EMC approvals
- ▶ EN 301 489-1
  - ▶ EN 301 489-17
  - ▶ EN 55024 / EN55035
  - ▶ EN 55032 Class B
  - ▶ FCC Part 15 Subpart B Class B
  - ▶ IEC 61000-4-2
  - ▶ IEC 61000-4-3
  - ▶ IEC 61000-4-4
  - ▶ IEC 61000-4-5
  - ▶ IEC 61000-4-6
  - ▶ IEC 61000-4-8
  - ▶ RCM AS/NZS CISPR 32 Class B
  - ▶ VCCI Class B

- Outdoor Enclosure approvals
- ▶ IEC 60068-2-52 (Salt Mist test)
  - ▶ IEC 60068-2-5 (Solar Radiation (Sunshine) test / Ultraviolet test)
  - ▶ IEC 60068-2-5 (Sun Exposure test)
  - ▶ IEC 60529 (IP67 test)

- Radio equipment
- ▶ 47 CFR FCC Part 15, Subpart C (Section 15.247)
  - ▶ 47 CFR FCC Part 15, Subpart E (Section 15.407)<sup>4</sup>
  - ▶ ARIB STD-T66
  - ▶ ARIB STD-T71
  - ▶ AS/NZS 4268
  - ▶ EN 300 328 V2.1.1
  - ▶ EN 301 893 V2.1.1

### Environmental Specifications

- ▶ Operating temperature range:  
-40°C to 65°C (-40°F to 149°F)
- ▶ Storage temperature range:  
-40°C to 80°C (-40°F to 176°F)
- ▶ Operating relative humidity range:  
5 to 95% non-condensing
- ▶ Storage relative humidity range:  
5 to 95% non-condensing
- ▶ Operating altitude:  
3,048 m (10,000 ft)

### Supplied External Antennas

- Omni-directional
- ▶ Frequency band: 2.4 GHz
  - ▶ Max. peak gain: 5.2 dBi
  - ▶ Supports Channel Blanket
- Omni-directional
- ▶ Frequency band: 5GHz (5.2-5.3GHz)
  - ▶ Max. peak gain: 6.91 dBi
  - ▶ Supports Channel Blanket
- Omni-directional
- ▶ Frequency band: 5GHz (5.6-5.8GHz)
  - ▶ Max. peak gain: 7.08 dBi

### Radio Characteristics

- Supported Frequencies:
- ▶ 2.400 ~ 2.4835 GHz
  - ▶ 5.150 ~ 5.250 GHz
  - ▶ 5.250 ~ 5.350 GHz
  - ▶ 5.470 ~ 5.725 GHz
  - ▶ 5.725 ~ 5.850 GHz
- Modulation Technique
- ▶ 802.11a/g/n/ac: OFDM
  - ▶ 802.11b: DSSS, CCK, DQPSK, DBPSK
  - ▶ 802.11ac: BPSK, QPSK, 16QAM, 64QAM, 256QAM
  - ▶ 802.11a/g/n: BPSK, QPSK, 16QAM, 64QAM, 256QAM

<sup>1</sup> Supports 4 Channel Blankets total per TQ5403e, 2 VAPs each at 2.4GHz and 5GHz (W52). Supports 500 clients maximum per Channel Blanket.

<sup>2</sup> 200 clients maximum per AP in standalone mode

<sup>3</sup> WPA3 security standard support available in Q2 2020

<sup>4</sup> Supported frequencies: 5.150 ~ 5.250 GHz  
5.725 ~ 5.850 GHz

# TQ5403e | Hybrid Outdoor 3-radio 802.11ac Wave 2 Wireless Access Point

## Data Rate

- ▶ 802.11a/g: 54/48/36/24/18/12/9/6Mbps
- ▶ 802.11b: 11/5.5/2/1Mbps
- ▶ 802.11n: 6.5 - 400Mbps<sup>5</sup> (MCS 0 - 15)
- ▶ 802.11n: 6.5 - 300Mbps (MCS 0 - 15)
- ▶ 802.11ac: 6.5 – 866.7Mbps (MCS 0 - 9, NSS 1 - 2)

## Media Access

- ▶ CSMA/CA + Ack with RTS/CTS

## Diversity

- ▶ Spatial diversity

## Standards

### Ethernet

- IEEE 802.3 10BASE-T
- IEEE 802.3u 100BASE-TX
- IEEE 802.3ab 1000BASE-T
- IEEE 802.3x Flow Control
- IEEE 802.3at Power over Ethernet+
- IEEE 802.1Q VLAN Tagging

### Wireless

- IEEE 802.11 a/b/g/n/ac (Wave 2) 2x2:2ss MU-MIMO
- IEEE 802.11k Radio Resource Measurement of Wireless LANs
- IEEE 802.11v Basic Service Set Transition Management Frames
- IEEE 802.11r Fast Basic Service Set Transition
- IEEE 802.11e WMM for Quality of Service
- IEEE 802.11i WPA/WPA2/WPA3 802.1x for Security<sup>6</sup>

<sup>5</sup> Using 256 Quadrature Amplitude Modulation

<sup>6</sup> WPA3 security standard support available in Q2 2020

## Wireless Management Licenses

Wireless management of the TQ5403e is available from the Vista Manager EX network management platform, and from Vista Manager mini running on our SwitchBlade x908 GEN2, x950, x930, x550, x530 Series switches or AR-Series firewalls and routers.

PLATFORM	LICENSE NAME	DESCRIPTION
Vista Manager EX	AT-FL-VISTA-BASE-1/5YR	Vista Manager EX network monitoring and management software license
Vista Manager EX	AT-FL-VISTA-AWC10-1/5YR <sup>7</sup>	Autonomous Wave Controller (AWC) license for Vista Manager
Vista Manager EX	AT-FL-VISTA-CB10-1/5YR <sup>8</sup>	Channel Blanket Hybrid (multi-channel and single-channel) license for AWC plug-in
SwitchBlade x908 GEN2	AT-FL-GEN2-AWC40-1/5YR <sup>9</sup>	Autonomous Wave Controller (AWC) license for SBx908 GEN2 (Up to 40 access points)
SwitchBlade x908 GEN2	AT-FL-GEN2-AWC80-1/5YR <sup>9</sup>	Autonomous Wave Controller (AWC) license for SBx908 GEN2 (Up to 80 access points)
SwitchBlade x908 GEN2	AT-FL-GEN2-AWC120-1/5YR <sup>9</sup>	Autonomous Wave Controller (AWC) license for SBx908 GEN2 (Up to 120 access points)
SwitchBlade x908 GEN2	AT-FL-GEN2-AWC180-1/5YR <sup>9</sup>	Autonomous Wave Controller (AWC) license for SBx908 GEN2 (Up to 180 access points)
SwitchBlade x908 GEN2	AT-FL-GEN2-AWC250-1/5YR <sup>9</sup>	Autonomous Wave Controller (AWC) license for SBx908 GEN2 (Up to 250 access points)
SwitchBlade x908 GEN2	AT-FL-GEN2-AWC300-1/5YR <sup>9</sup>	Autonomous Wave Controller (AWC) license for SBx908 GEN2 (Up to 300 access points)
SwitchBlade x908 GEN2	AT-FL-GEN2-CB40-1/5YR <sup>10</sup>	AWC-Channel Blanket license for SBx908 GEN2 (Up to 40 access points)
SwitchBlade x908 GEN2	AT-FL-GEN2-CB80-1/5YR <sup>10</sup>	AWC-Channel Blanket license for SBx908 GEN2 (Up to 80 access points)
SwitchBlade x908 GEN2	AT-FL-GEN2-CB120-1/5YR <sup>10</sup>	AWC-Channel Blanket license for SBx908 GEN2 (Up to 120 access points)
SwitchBlade x908 GEN2	AT-FL-GEN2-CB180-1/5YR <sup>10</sup>	AWC-Channel Blanket license for SBx908 GEN2 (Up to 180 access points)
SwitchBlade x908 GEN2	AT-FL-GEN2-CB250-1/5YR <sup>10</sup>	AWC-Channel Blanket license for SBx908 GEN2 (Up to 250 access points)
SwitchBlade x908 GEN2	AT-FL-GEN2-CB300-1/5YR <sup>10</sup>	AWC-Channel Blanket license for SBx908 GEN2 (Up to 300 access points)
x950 Series	AT-FL-x950-AWC40-1/5YR <sup>9</sup>	Autonomous Wave Controller (AWC) license for x950 (Up to 40 access points)
x950 Series	AT-FL-x950-AWC80-1/5YR <sup>9</sup>	Autonomous Wave Controller (AWC) license for x950 (Up to 80 access points)
x950 Series	AT-FL-x950-AWC120-1/5YR <sup>7</sup>	Autonomous Wave Controller (AWC) license for x950 (Up to 120 access points)
x950 Series	AT-FL-x950-AWC180-1/5YR <sup>9</sup>	Autonomous Wave Controller (AWC) license for x950 (Up to 180 access points)
x950 Series	AT-FL-x950-CB40-1/5YR <sup>10</sup>	AWC-Channel Blanket license for x950 (Up to 40 access points)
x950 Series	AT-FL-x950-CB80-1/5YR <sup>10</sup>	AWC-Channel Blanket license for x950 (Up to 80 access points)
x950 Series	AT-FL-x950-CB120-1/5YR <sup>10</sup>	AWC-Channel Blanket license for x950 (Up to 120 access points)
x950 Series	AT-FL-x950-CB180-1/5YR <sup>10</sup>	AWC-Channel Blanket license for x950 (Up to 180 access points)
x930 Series	AT-FL-x930-AWC40-1/5YR <sup>9</sup>	Autonomous Wave Controller (AWC) license for x930 (Up to 40 access points)
x930 Series	AT-FL-x930-AWC80-1/5YR <sup>9</sup>	Autonomous Wave Controller (AWC) license for x930 (Up to 80 access points)
x930 Series	AT-FL-x930-AWC120-1/5YR <sup>9</sup>	Autonomous Wave Controller (AWC) license for x930 (Up to 120 access points)
x930 Series	AT-FL-x930-CB40-1/5YR <sup>10</sup>	AWC-Channel Blanket license for x930 (Up to 40 access points)
x930 Series	AT-FL-x930-CB80-1/5YR <sup>10</sup>	AWC-Channel Blanket license for x930 (Up to 80 access points)
x930 Series	AT-FL-x930-CB120-1/5YR <sup>10</sup>	AWC-Channel Blanket license for x930 (Up to 120 access points)
x550 Series	AT-FL-x550-AWC40-1/5YR <sup>9</sup>	Autonomous Wave Controller (AWC) license for x550 (Up to 40 access points)
x550 Series	AT-FL-x550-CB40-1/5YR <sup>10</sup>	AWC-Channel Blanket license for x550 (Up to 40 access points)
x530 Series	AT-FL-x530-AWC40-1/5YR <sup>9</sup>	Autonomous Wave Controller (AWC) license for x530 (Up to 40 access points)
x530 Series	AT-FL-x530-CB40-1/5YR <sup>10</sup>	AWC-Channel Blanket license for x530 (Up to 40 access points)
AR4050S UTM Firewall	AT-FL-AR4-AWC20-1/5YR <sup>9</sup>	Autonomous Wave Controller (AWC) license for AR4050S (Up to 20 access points)
AR4050S UTM Firewall	AT-FL-AR4-CB5-1/5YR <sup>10</sup>	AWC-Channel Blanket license for AR4050S (Up to 5 access points)

<sup>7</sup> The AWC license also requires the Vista Manager EX license to operate

<sup>8</sup> The Channel Blanket license requires both the AWC and Vista Manager EX licenses to operate

<sup>9</sup> 5 APs can be managed for free. Additional APs can be managed by purchasing AWC licenses

<sup>10</sup> Channel Blanket is not available as a free service. Both an AWC-CB license and an AWC license are required for Channel Blanket to operate

## Ordering Information

### AT-TQ5403e-xx

Advanced Enterprise-Class 802.11ac Wave 2  
Wireless Access Point with 3 radios and embedded  
antenna

Where xx =

01 Regulatory Domain: United States Reserved

02 Regulatory Domain: Taiwan

03 Regulatory Domain: Canada

[none] Regulatory Domain: Other countries<sup>11, 12</sup>

<sup>11</sup> Please check the Compliance section on page 2 to see which  
countries are certified to use this access point.

<sup>12</sup> To order this access point for use in Japan, please see the Japanese  
datasheet.

## Related Products

### AT-6101GP

PoE+ Injector

