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DATA SHEET

ARUBA 500 SERIES WIRELESS ACCESS POINTS

Cost-effective Wi-Fi 6 (802.11ax) for medium-density indoor environments

These affordable Wi-Fi 6 access points provide high-performance connectivity for any organization experiencing growing numbers of mobile, IoT and mobility requirements. With a maximum real-world aggregate data rate of 1.49 Gbps (HE80/HE20), they deliver the speed and reliability needed for venues and workplaces such as schools, midsize offices and retailers.



KEY FEATURES

- 1.49 Gbps maximum real-world speed (HE80/HE20)
- WPA3 and Enhanced Open security
- Built-in technology that resolves sticky client issues for Wi-Fi 6 and Wi-Fi 5 devices
- OFDMA and MU-MIMO for enhanced multi-user efficiency
- IoT-ready Bluetooth 5 and Zigbee support

INCREDIBLE EFFICIENCY

The 500 Series APs are also designed to optimize user experience by maximizing Wi-Fi efficiency and dramatically reducing airtime contention between clients.

Features include Orthogonal frequency-division multiple access (OFDMA), bi-directional multi-user MIMO and cellular optimization. With up to 2 spatial streams (2SS) and 80MHz channel bandwidth (HE80), the 500 Series provides groundbreaking wireless capabilities for budget-conscious deployments.

Read the Multi-User 802.11ax white paper for further information.

Advantages of OFDMA

This capability allows Aruba's APs to handle multiple Wi-Fi 6 capable clients on each channel simultaneously, regardless of device or traffic type. Channel utilization is optimized by handling each transaction via smaller sub-carriers or resource units (RUs), which means that clients are sharing a channel and not competing for airtime and bandwidth.

Aruba Air Slice™ for Extended Application Assurance

Initially, APs in controller-less mode (Instant) can provide SLA-grade performance by allocating radio resources, such as time, frequency, and spatial streams, to specific traffic types. By combining Aruba's Policy Enforcement Firewall (PEF) and Layer 7 deep packet inspection (DPI) to identify user roles and applications, the APs will dynamically allocate the bandwidth needed. Non-Wi-Fi 6 clients can also benefit.

Air Slice™ for APs uses Aruba Central for management. Controller-based APs will be supported in a future software release.

Multi-user MIMO (MU-MIMO)

The 500 Series AP supports downlink MU-MIMO just like Wi-Fi 5 (802.11ac Wave 2) APs. The added benefit is the ability to multiply the number of clients that can now send traffic, thus optimizing client-to-AP spatial stream diversity.

Wi-Fi 6 and MU-MIMO aware client optimization

Aruba's patented AI-powered ClientMatch technology eliminates sticky client issues by placing Wi-Fi 6 capable devices on the best available AP. Session metrics are used to steer mobile devices to the best AP based on available bandwidth, types of applications being used and traffic type – even as users roam.

Aruba Advanced Cellular Coexistence (ACC)

This feature uses built-in filtering to automatically minimize the impact of interference from cellular networks, distributed antenna systems (DAS), and commercial small cell or femtocell equipment.

Intelligent Power Monitoring (IPM)

Aruba APs continuously monitor and report hardware energy consumption. They can also be configured to enable or disable capabilities based on available PoE power – ideal when wired switches have exhausted their power budget.

Green AP energy efficiency

Aruba Wi-Fi 6 APs utilize analytics from NetInsight to automatically transition in and out of a sleep mode based on client density. Learn more in the Green AP At-A-Glance.

IOT PLATFORM CAPABILITIES

Like all Aruba Wi-Fi 6 APs, the 500 Series includes an integrated Bluetooth 5 and 802.15.4 radio (for Zigbee support) to simplify deploying and managing IoT-based location services, asset tracking services, security solutions and IoT sensors. This allows organizations to leverage the 500 Series as an IoT platform, which eliminates the need for an overlay infrastructure and additional IT resources.

Target Wake Time (TWT)

Ideal for IoTs that communicate infrequently, TWT establishes a schedule for when clients need to communicate with an AP. This helps improve client power savings and reduces airtime contention with other clients.

ARUBA SECURE INFRASTRUCTURE

The Aruba 500 Series includes components of Aruba's 360 Secure Fabric to help protect user authentication and wireless traffic. Select capabilities include:

WPA3 and Enhanced Open

Support for stronger encryption and authentication is provided via the latest version of WPA for enterprise protected networks.

Enhanced Open offers seamless new protection for users connecting to open networks where each session is automatically encrypted to protect user passwords and data on guest networks.

WPA2-MPSK

MPSK enables simpler passkey management for WPA2 devices – should the Wi-Fi password on one device or device type change, no additional changes are needed for other devices. Requires ClearPass Policy Manager.

VPN Tunnels

In Remote AP (RAP) and IAP-VPN deployments, the Aruba 500 Series can be used to establish a secure SSL/IPSec VPN tunnel to a Mobility Controller that is acting as a VPN concentrator.

Trusted Platform Module (TPM)

For enhanced device assurance, all Aruba APs have an installed TPM for secure storage of credentials and keys, and boot code.

SIMPLE AND SECURE ACCESS

To simplify policy enforcement, the Aruba 500 Series uses Aruba's policy enforcement firewall (PEF) feature to encapsulate all traffic from the AP to the Mobility Controller (or Gateway) for end-to-end encryption and inspection. Policies are applied based on user role, device type, applications, and location. This reduces the manual configuration of SSIDs, VLANs and ACLs. PEF also serves as the underlying technology for Aruba Dynamic Segmentation.

HIGH-DENSITY CONNECTIVITY

Each 500 Series AP provides connectivity for a maximum of 256 associated clients per radio (512 in total). In real-world scenarios, the maximum recommended client density is dependent on environmental conditions.

FLEXIBLE OPERATION AND MANAGEMENT

A unique feature of Aruba APs is the ability to operate in either controllerless (Instant) or controller-based mode.

Controller-less (Instant) mode

In controllerless mode, one AP serves as a virtual controller for the entire network. Learn more about Instant mode in this technology brief.

Mobility Controller mode

For optimized network performance, roaming and security, APs tunnel all traffic to a mobility controller for centrally managed traffic forwarding and segmentation, data encryption, and policy enforcement. Learn more in the ArubaOS datasheet.

Management options

Available management solutions include Aruba Central (cloud-managed) or Aruba AirWave – a multi-vendor on-premises management solution.

For large installations across multiple sites, APs can be factory-shipped and can be activated with Zero Touch Provisioning through Aruba Central or AirWave. This reduces deployment time, centralizes configuration, and helps manage inventory.

ADDITIONAL WI-FI FEATURES

Each AP also includes the following standards-based technologies:

Transmit beamforming (TxBF)	Increased signal reliability and range
Passpoint Wi-Fi (Release 2) (Hotspot 2.0)	Seamless cellular-to-Wi-Fi carryover for guests
Dynamic Frequency Selection (DFS)	Optimized use of available RF spectrum
Maximum Ratio Combining (MRC)	Improved receiver performance
Cyclic Delay/Shift Diversity (CDD/CSD)	Greater downlink RF performance
Space-Time Block Coding	Increased range and improved reception
Low-Density Parity Check (LDPC)	High-efficiency error correction for increased throughput

TECHNICAL SPECIFICATIONS

Model	AP-504	AP-505
AP type	Indoor, dual radio, 5GHz and 2.4GHz 802.11ax 2x2 MIMO	
5GHz radio	Two spatial stream Single User (SU) MIMO for up to 1.2Gbps wireless data rate with individual 2SS HE80 802.11ax client devices, or with two 1SS HE80 802.11ax MU-MIMO capable client devices simultaneously	
2.4GHz radio	Two spatial stream Single User (SU) MIMO for up to 574Mbps (287 Mbps) wireless data rate with individual 2SS HE40 (HE20) 802.11ax client devices or with two 1SS HE40 (HE20) 802.11ax MU-MIMO capable client devices simultaneously	
Maximum number of associated client devices	Up to 256 associated client devices per radio	
Maximum number of BSSIDs	16 BSSIDs per radio	
Supported frequency bands (country-specific restrictions apply)	• 2.400 to 2.4835GHz • 5.150 to 5.250GHz • 5.250 to 5.350GHz • 5.470 to 5.725GHz • 5.725 to 5.850GHz	
Available channels	Dependent on configured regulatory domain	
Supported radio technologies	• 802.11b: Direct-sequence spread-spectrum (DSSS) • 802.11a/g/n/ac: Orthogonal frequency-division multiplexing (OFDM) • 802.11ax: Orthogonal frequency-division multiple access (OFDMA) with up to 8 resource units	
Supported modulation types:	• 802.11b: BPSK, QPSK, CCK • 802.11a/g/n: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM (proprietary extension) • 802.11ac: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM (proprietary extension) • 802.11ax: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM	
802.11n high-throughput (HT) support:	HT20/40	
802.11ac very high throughput (VHT) support:	VHT20/40/80	
802.11ax high efficiency (HE) support:	HE20/40/80	
Supported data rates (Mbps):	• 802.11b: 1, 2, 5.5, 11 • 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 • 802.11n: 6.5 to 300 (MCS0 to MCS15, HT20 to HT40), 400 with 256-QAM • 802.11ac: 6.5 to 867 (MCS0 to MCS9, NSS = 1 to 2, VHT20 to VHT80), 1,083 with 1024-QAM • 802.11ax (2.4GHz): 3.6 to 574 (MCS0 to MCS11, NSS = 1 to 2, HE20 to HE40) • 802.11ax (5GHz): 3.6 to 1,201 (MCS0 to MCS11, NSS = 1 to 2, HE20 to HE80)	
802.11n/ac/ax packet aggregation:	A-MPDU, A-MSDU	
Transmit power:	Configurable in increments of 0.5 dBm	
Maximum (aggregate, conducted total) transmit power (limited by local regulatory requirements):	2.4 GHz band: +21 dBm (18dBm per chain) 5 GHz band: +21 dBm (18 dBm per chain) Note: conducted transmit power levels exclude antenna gain. For total (EIRP) transmit power, add antenna gain.	

WI-FI ANTENNAS

AP-504	AP-505
Two (female) RP-SMA connectors for external dual band antennas (A0 and A1, corresponding with radio chains 0 and 1). Worst-case internal loss between radio interface and external antenna connectors (due to diplexing circuitry): 0.7dB in 2.4GHz and 1.3dB in 5GHz.	Two integrated dual-band downtilt omni-directional antennas for 2x2 MIMO with peak antenna gain of 4.9dBi in 2.4GHz and 5.7dBi in 5GHz. Built-in antennas are optimized for horizontal ceiling mounted orientation of the AP. The downtilt angle for maximum gain is roughly 30 degrees. • Combining the patterns of each of the antennas of the MIMO radios, the peak gain of the combined, average pattern is 4.3dBi in 2.4GHz and 5.6dBi in 5GHz.

OTHER INTERFACES

Model	AP-504	AP-505
E0: Ethernet wired network port (RJ-45)	• Auto-sensing link speed (10/100/1000BASE-T) and MDI/MDX • POE-PD: 48Vdc (nominal) 802.3af/at POE (class 3 or 4) • 802.3az Energy Efficient Ethernet (EEE)	
DC power interface	12Vdc (nominal, +/- 5%), accepts 2.1mm/5.5mm center-positive circular plug with 9.5mm length	
USB 2.0 host interface (Type A connector)	Capable of sourcing up to 1A / 5W to an attached device	
Bluetooth Low Energy (BLE5.0) and Zigbee (802.15.4) radio	• BLE: up to 7dBm transmit power (class 1) and -93dBm receive sensitivity (1Mbps) • Zigbee: up to 6dBm transmit power and -96dBm receive sensitivity Integrated vertically polarized omnidirectional antenna with roughly 30 degrees downtilt and peak gain of 3.3dBi	
Visual indictors (two multi-color LEDs):	For System and Radio status	
Reset button:	Factory reset, LED mode control (normal/off)	
Serial console interface	Proprietary, micro-B USB physical jack	
Security slot	Kensington security slot	

POWER SOURCES AND POWER CONSUMPTION

Model	AP-504	AP-505
Power Sources: The AP supports direct DC power and Power over Ethernet	• The AP supports direct DC power and Power over Ethernet • When both DC and POE power sources are available, DC power takes priority over POE • Power sources are sold separately; see the 500 Series Ordering Guide for details • When powered by DC or 802.3at (class 4) POE, the AP will operate without restrictions. • When powered by 802.3af (class 3) POE and with the IPM feature disabled, the AP will disable the USB port. In the same configuration but with IPM enabled, the AP will start up in unrestricted mode, but may dynamically apply restrictions depending on the POE budget and actual power. The feature restrictions and order can be programmed.	
Maximum (worst-case) power consumption (without / with a USB device attached):	• DC powered: 8.9W / 14.2W. • POE powered (802.3at): 11.0W / 16.5W. • POE powered (802.3af): 11.0W / 13.5W. • This assumes that up to 5W is supplied to the attached USB device.	
Maximum (worst-case) power consumption in idle mode:	4.3W (DC) or 6.2W (POE).	
Maximum (worst-case) power consumption in deep-sleep mode:	1.7W (DC) or 3.7W (POE).	

MECHANICAL SPECIFICATIONS

Model	AP-505
Dimensions/weight (AP-505; unit, excluding mount bracket):	160mm (W) x 161mm (D) x 37mm (H) 500g
Dimensions/weight (AP-505; shipping):	193mm (W) x 183mm (D) x 63mm (H) 645g
Mounting details	A mounting bracket has been pre-installed on the back of the AP. This bracket is used to secure the AP to any of the mount kits (sold separately); see the 500 Series Ordering Guide for details.

ENVIRONMENTAL SPECIFICATIONS

Model	AP-504	AP-505
Operating conditions	• Temperature: 0C to +50C / +32F to +122F • Humidity: 5% to 93% non-condensing • AP is plenum rated for use in air-handling spaces • ETS 300 019 class 3.2 environments	
Storage and transportation conditions	• Temperature: -40C to +70C / -40F to +158F • Humidity: 5% to 93% non-condensing • ETS 300 019 classes 1.2 and 2.3 environments	

RELIABILITY

Model	AP-504	AP-505
Mean Time Between Failure (MTBF):	1.3Mhrs (148yrs) at +25C operating temperature.	

REGULATORY AND SAFETY COMPLIANCE

Model	AP-504	AP-505
Regulatory model numbers	APIN0504	APIN0505
Minimum ArubaOS Release	ArubaOS and Aruba InstantOS 8.6.0.0	
Regulatory compliance (For more country-specific regulatory information and approvals, please see your Aruba representative.)	• FCC/ISED • CE Marked • RED Directive 2014/53/EU • EMC Directive 2014/30/EU • Low Voltage Directive 2014/35/EU • UL/IEC/EN 60950 • EN 60601-1-1, EN60601-1-2	
Certifications	• UL2043 plenum rating • Wi-Fi Alliance: - Wi-Fi CERTIFIED a, b, g, n, ac - Wi-Fi CERTIFIED 6 (ax) - WPA, WPA2 and WPA3 – Enterprise with CNSA option, Personal (SAE), Enhanced Open (OWE) - WMM, WMM-PS, Wi-Fi Vantage, W-Fi Agile Multiband - Wi-Fi Location - Passpoint (release 2) • Bluetooth SIG • Ethernet Alliance (POE, PD device, class 4)	

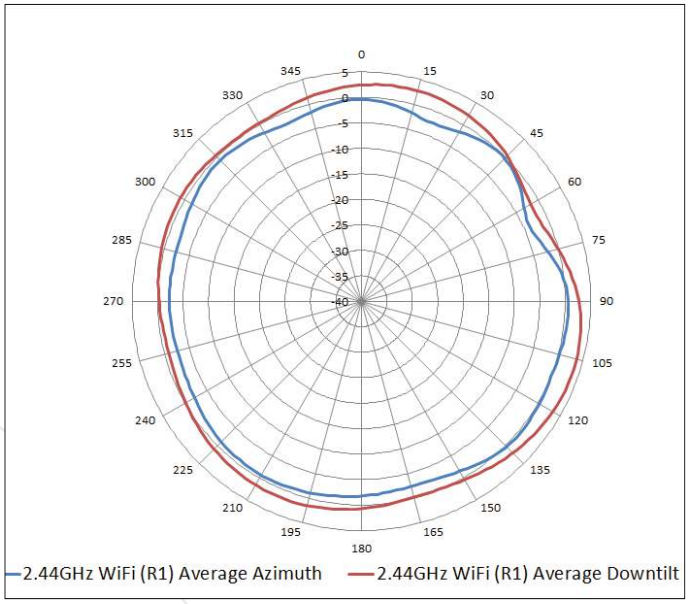
RF PERFORMANCE TABLE

Band, rate	Maximum transmit power (dBm) per transmit chain	Receiver sensitivity (dBm) per receive chain
2.4GHz, 802.11b		
1Mbps	18	-98
11Mbps	18	-90
2.4GHz, 802.11g		
6Mbps	18	-93
54Mbps	18	-76
2.4GHz, 802.11n HT20		
MCS0	18	-93
MCS7	16	-75
2.4GHz, 802.11ax HE20		
MCS0	18	-93
MCS11	14	-62
5GHz, 802.11a		
6Mbps	18	-92
54Mbps	18	-75
5GHz, 802.11n HT20		
MCS0	18	-92
MCS7	16	-74
5GHz, 802.11n HT40		
MCS0	18	-90
MCS7	16	-71
5GHz, 802.11ac VHT20		
MCS0	18	-92
MCS9	16	-69
5GHz, 802.11ac VHT40		
MCS0	18	-90
MCS9	16	-65
5GHz, 802.11ac VHT80		
MCS0	18	-87
MCS9	16	-62
5GHz, 802.11ax HE20		
MCS0	18	-93
MCS11	14	-62
5GHz, 802.11ax HE40		
MCS0	18	-90
MCS11	14	-59
5GHz, 802.11ax HE80		
MCS0	18	-87
MCS11	14	-56

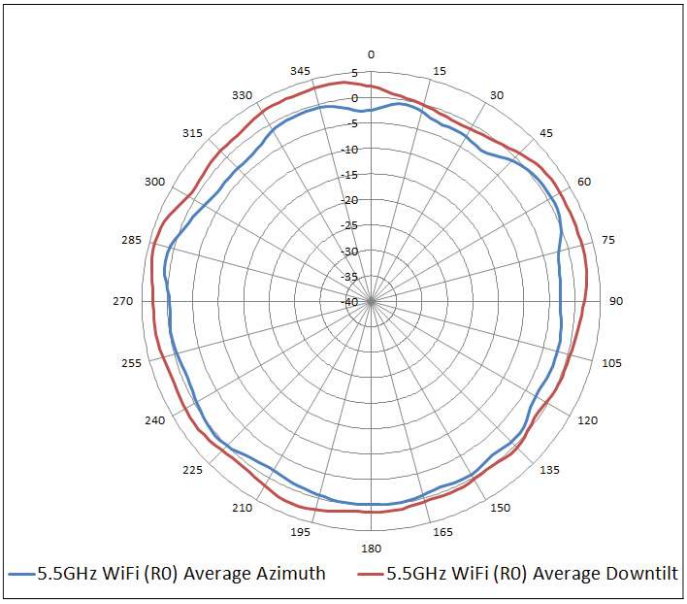
ANTENNA PATTERNS

Horizontal planes (top view)

Showing azimuth (0 degrees) and 30 degrees downtilt patterns (averaged patterns for all applicable antennas)



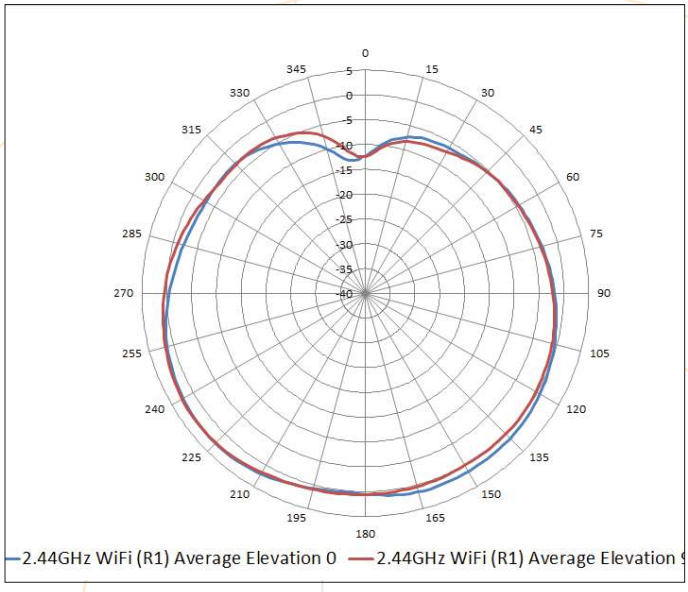
2.44GHz Wi-Fi (antennas 1, 2)



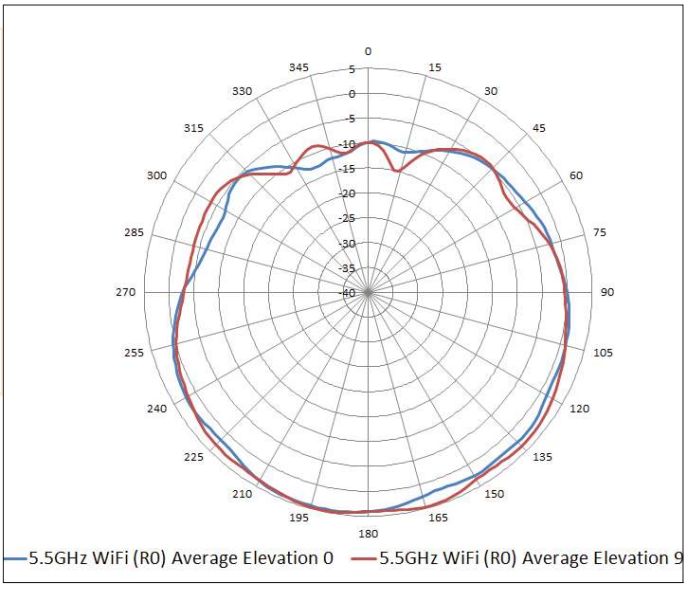
5.5GHz Wi-Fi (antennas 1, 2)

Vertical (elevation) planes (side view, AP facing down)

Showing side view with AP rotated 0 and 90 degrees (averaged patterns for all applicable antennas)



2.44GHz Wi-Fi (antennas 1, 2)



5.5GHz Wi-Fi (antennas 1, 2)

ORDERING INFORMATION

Part number	Description
Aruba 500 Series Campus Access Points	
Internal antenna access points	
R2H25A	Aruba AP-505 (EG) Dual Radio 2x2:2 802.11ax Internal Antennas Unified Campus AP
R2H26A	Aruba AP-505 (IL) Dual Radio 2x2:2 802.11ax Internal Antennas Unified Campus AP
R2H27A	Aruba AP-505 (JP) Dual Radio 2x2:2 802.11ax Internal Antennas Unified Campus AP
R2H28A	Aruba AP-505 (RW) Dual Radio 2x2:2 802.11ax Internal Antennas Unified Campus AP
R2H28ACM	Aruba CM AP-505 (RW) Dual Radio 2x2:2 802.11ax Internal Antennas Unified Campus AP
R2H29ACM	Aruba CM AP-505 (US) Dual Radio 2x2:2 802.11ax Internal Antennas Unified Campus AP
R2H29A	Aruba AP-505 (US) Dual Radio 2x2:2 802.11ax Internal Antennas Unified Campus AP
External antenna access points	
R2H19A	Aruba AP-504 (EG) Dual Radio 2x2:2 802.11ax External Antennas Unified Campus AP
R2H20A	Aruba AP-504 (IL) Dual Radio 2x2:2 802.11ax External Antennas Unified Campus AP
R2H21A	Aruba AP-504 (JP) Dual Radio 2x2:2 802.11ax External Antennas Unified Campus AP
R2H22A	Aruba AP-504 (RW) Dual Radio 2x2:2 802.11ax External Antennas Unified Campus AP
R2H23A	Aruba AP-504 (US) Dual Radio 2x2:2 802.11ax External Antennas Unified Campus AP
Internal antenna access points – TAA models	
R2H35A	Aruba AP-505 (EG) TAA Dual Radio 2x2:2 802.11ax Internal Antennas Unified Campus AP
R2H36A	Aruba AP-505 (IL) TAA Dual Radio 2x2:2 802.11ax Internal Antennas Unified Campus AP
R2H37A	Aruba AP-505 (JP) TAA Dual Radio 2x2:2 802.11ax Internal Antennas Unified Campus AP
R2H38A	Aruba AP-505 (RW) TAA Dual Radio 2x2:2 802.11ax Internal Antennas Unified Campus AP
R2H39A	Aruba AP-505 (US) TAA Dual Radio 2x2:2 802.11ax Internal Antennas Unified Campus AP
External antenna access points – TAA models	
R2H30A	Aruba AP-504 (EG) TAA Dual Radio 2x2:2 802.11ax External Antennas Unified Campus AP
R2H31A	Aruba AP-504 (IL) TAA Dual Radio 2x2:2 802.11ax External Antennas Unified Campus AP
R2H32A	Aruba AP-504 (JP) TAA Dual Radio 2x2:2 802.11ax External Antennas Unified Campus AP
R2H33A	Aruba AP-504 (RW) TAA Dual Radio 2x2:2 802.11ax External Antennas Unified Campus AP
R2H34A	Aruba AP-504 (US) TAA Dual Radio 2x2:2 802.11ax External Antennas Unified Campus AP
For compatible accessories, see the 500 Series Ordering Guide	

Note: All hardware SKUs can be managed by Aruba Central. Central Managed (CM) SKUs are used for simplified ordering within US and Canada only.

Resources:

1. 500 Series Ordering Guide
2. Aruba Access Points webpage

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