DATA SHEET

ARUBA 503 SERIES WI-FI 6 CAMPUS ACCESS POINTS

Affordable Wi-Fi 6 (802.11ax) for low-to-medium-density indoor environments

The Aruba 503 Series Access Points (APs) provide cost-effective, high-performance connectivity for any organization experiencing device growth due to increased mobility, the shift to cloud, or IoT. With a maximum real-world aggregate data rate of 1.49 Gbps (HE80/HE20), the 503 Series deliver the speed and reliability needed for medium-density venues and workplaces such as schools, midsize offices, and retailers. Each 503 Series AP provides connectivity for a maximum of 256 associated clients per radio (512 in total).

OPTIMIZED USER EXPERIENCE

The 503 Series APs are 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) and cellular optimization. With up to 2 spatial streams (2SS) and 80MHz channel bandwidth (HE80), the 503 Series provides the next generation of wireless capabilities for cost-conscious deployments.

Read the Wi-Fi 6 Reference Guide 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 multiple clients are sharing a channel and not competing for airtime and bandwidth.

Aruba Air Slice™ for application assurance

Aruba Air Slice delivers application assurance in order to optimize the user experience. By allocating radio resources such as time, frequency, and spatial stream to specific traffic types, Aruba APs can provide SLA-grade performance to client devices whether they support Wi-Fi 6 or prior standards.

KEY FEATURES

- 1.49 Gbps maximum real-world speed (HE80/HE20)
- WPA3 and Enhanced Open security
- Built-in technology that resolves sticky client issues
- OFDMA for enhanced multi-user efficiency
- IoT-ready Bluetooth 5 and Zigbee support (requires optional radio dongle)
- Offered as optional eco-friendly 10-packs

Aruba Air Slice relies on Aruba's Policy Enforcement Firewall and Deep Packet Inspection (DPI) to identify user roles and applications so that bandwidth can be dynamically allocated to ensure performance. Air Slice is available for APs running controller-less mode (Instant) and with Aruba Central; controller-based APs will be supported in a future software release.

Wi-Fi 6 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.

Resource management with AirMatch

To better support growth in client device density and in data volumes, AirMatch uses machine learning techniques that provide automated radio frequency optimization.

By analyzing the entire wireless network, AirMatch determines the optimum radio configuration and enables the network to automatically adapt in real time to changing RF conditions such as high noise and radar. It also adjusts for higher density, co-channel interference, and coverage gaps.

Aruba Advanced Cellular Coexistence (ACC)

Using built-in filtering, Aruba Advanced Cellular Coexistence automatically minimizes the impact of interference from cellular networks, distributed antenna systems (DAS), and commercial small cell or femtocell equipment.

IOT PLATFORM CAPABILITIES

Using an optional IoT expansion radio, the 503 Series can use the Bluetooth 5 and 802.15.4/Zigbee radio to simplify deploying and managing IoT-based location services, asset tracking services, security solutions, and IoT sensors. This allows organizations to leverage the 503 Series as an IoT platform, which eliminates the need for an overlay infrastructure and additional IT resources.

Target Wake Time (TWT)

Ideal for IoT devices 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 503 Series supports a Zero Trust/Secure Access Service Edge (SASE) architecture to better 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 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. This capability requires Aruba ClearPass Policy Manager.
- **Simple and secure access:** To improve security and ease of management, IT can centrally configure and automatically enforce rolebased policies that define proper access privileges for employees, guests, contractors, and other user groups – no matter where users connect on wired and WLANs. Dynamic Segmentation eliminates the time consuming and error-prone task of managing complex and static VLANs, ACLs, and subnets by dynamically assigning policies and keeping traffic secure and separated.
- **Seamless handoffs to cellular:** Built on the technical foundations of Passpoint® and Wi-Fi Calling, Aruba Air Pass creates a roaming network across the Aruba enterprise customer footprint, extending cellular coverage and enhancing the visitor and subscriber experience to deliver a great experience for your guests while reducing costs and management overhead for DAS.

FLEXIBLE OPERATION AND MANAGEMENT

Our unified APs can operate as standalone access points or with a gateway for greater scalability, security, and manageability. APs can be deployed using zero touch provisioning – without on-site technical expertise – for ease of implementation in branch offices and for remote work.

Aruba APs can be managed using cloud-based or on-premises solutions for any campus, branch, or remote work environment. As the management and orchestration console for Aruba ESP (Edge Services Platform), Aruba Central provides a single pane of glass for overseeing every aspect of wired and wireless LANs, WANs, and VPNs. AI-powered analytics, end-to-end orchestration and automation, and advanced security features are built natively into the solution. The 503 Series APs can also be deployed using HPE Greenlake for Aruba for flexible consumption and financing options.

ADDITIONAL WI-FI FEATURES

Each AP also includes the following standards-based technologies:

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

SPECIFICATIONS

Hardware variants

- AP-503: Campus AP platform, integrated antennas

Wi-Fi radio specifications

- AP type: Indoor, dual-radio, 2.4GHz and 5GHz (dual concurrent) 802.11ax 2x2 MIMO
- 2.4GHz radio: Two spatial stream Single User (SU) MIMO for up to 574Mbps wireless data rate with 2SS HE40 802.11ax client devices (287Mbps for HE20)
- 5GHz radio: Two spatial stream Single User (SU) MIMO for up to 1.2Gbps wireless data rate with 2SS HE80 802.11ax client devices
- Up to 256 associated client devices per radio, and up to 16 BSSIDs per radio
- Supported frequency bands (country-specific restrictions apply):
  - 2.400 to 2.4835GHz ISM
  - 5.150 to 5.250GHz U-NII-1
  - 5.250 to 5.350GHz U-NII-2A
  - 5.470 to 5.725GHz U-NII-2C
  - 5.725 to 5.850GHz U-NII-3/ISM
  - 5.850 to 5.895GHz U-NII-4
- Available bands and channels: Dependent on configured regulatory domain (country)
- Dynamic frequency selection (DFS) optimizes the use of available RF spectrum in the 5GHz band
- 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 and 256-QAM (proprietary extension)
  - 802.11ac: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM and 1024-QAM (proprietary extension)
  - 802.11ax: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM and 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 (proprietary extension)
  - 802.11ac: 6.5 to 867 (MCS0 to MCS9, NSS = 1 to 2, VHT20 to VHT80); 1,083 with 1024-QAM (MCS10 and MCS11, proprietary extension)
  - 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 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):
  - Per radio (2.4GHz / 5GHz): +21 dBm (18dBm per chain)
  - Note: conducted transmit power levels exclude antenna gain. For total (EIRP) transmit power, add antenna gain.
- Advanced Cellular Coexistence (ACC) minimizes the impact of interference from cellular networks
- Maximum ratio combining (MRC) for improved receiver performance
- Cyclic delay/shift diversity (CDD/CSD) for improved downlink RF performance
- Space-time block coding (STBC) for increased range and improved reception
- Low-density parity check (LDPC) for high-efficiency error correction and increased throughput

- Transmit beam-forming (TxBF) for increased signal reliability and range
- 802.11ax Target Wait Time (TWT) to support low-power client devices

Wi-Fi antennas

- AP-503: Integrated downtilt omni-directional antennas for 2x2 MIMO with peak antenna gain of 1.7dBi in 2.4GHz and 4.8dBi 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 1.5dBi in 2.4GHz and 3.9dBi in 5GHz.

Other interfaces and features

- E0: Ethernet wired network port (RJ-45)
  - Auto-sensing link speed (10/100/1000BASE-T) and MDI/MDX
  - POE-PD: 48Vdc (nominal) 802.3af POE (class 3 or higher)
  - 802.3az Energy Efficient Ethernet (EEE)
- USB 2.0 host interface (Type A connector)
  - Capable of sourcing up to 100mA / 500mW to an attached device
- Built-in Trusted Platform Module (TPM) for enhanced security and anti-counterfeiting
- Visual indicators (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)
- Automatic thermal shutdown and recovery function

Power sources and power consumption

- The AP supports Power over Ethernet (POE) on port E0
- Power sources are sold separately; see the 503 Series Ordering Guide for details
- Maximum (worst-case) power consumption: 10.9W
- Maximum (worst-case) power consumption in idle mode: 4.7W
- Both numbers assume no power is drawn from the USB interface
  - Drawing 0.5W from the USB interface increases max AP power consumption by up to 0.7W

Mounting details

A generic mount bracket to attach the AP-503 to suspended ceiling rails ships with the AP. Alternate or spare brackets can be ordered separately; see the 503 Series Ordering Guide for details.

Mechanical specifications

- Dimensions/weight (AP-503; unit with mount bracket):
  - 145mm (W) x 145mm (D) x 51mm (H)
  - 270g
- Dimensions/weight (AP-503; unit without mount bracket):
  - 145mm (W) x 145mm (D) x 35mm (H)
  - 255g
- Dimensions/weight (AP-503; shipping):
  - 196mm (W) x 183mm (D) x 67mm (H)
  - 515g

Environmental specifications

- Operating conditions
  - Temperature: 0C to +40C / +32F to +104F
  - Relative humidity: 5% to 95%
  - ETS 300 019 class 3.2 environments
  - AP is plenum rated for use in air-handling spaces
- Storage conditions
  - Temperature: -25C to +55C / +13F to +131F
  - Relative humidity: 10% to 100%
  - ETS 300 019 class 1.2 environments
- Transportation conditions
  - Temperature: -40C to +70C / -40F to +158F
  - Relative humidity: up to 95%
  - ETS 300 019 class 2.3 environments

Reliability

Mean Time Between Failure (MTBF): 930khrs (106yrs) at +25C operating temperature.

Regulatory compliance

- FCC/ISED
- CE Marked
- RED Directive 2014/53/EU
- EMC Directive 2014/30/EU
- Low Voltage Directive 2014/35/EU
- UL/IEC/EN 60950
- IEC/EN 62368-1
- UL2043

For more country-specific regulatory information and approvals, please see your Aruba representative.

Regulatory model numbers

- AP-503 (all models): APIN0503

Certifications

- Wi-Fi Alliance (WFA):
  - Wi-Fi CERTIFIED a, b, g, n, ac
  - Wi-Fi CERTIFIED 6
  - WPA, WPA2 and WPA3 – Enterprise with CNSA option, Personal (SAE), Enhanced Open (OWE)
  - WMM, WMM-PS, Wi-Fi Agile Multiband
  - Passpoint (release 2)
  - Wi-Fi CERTIFIED Location™
- Ethernet Alliance (POE, PD device, class 3)

Warranty

- Aruba's hardware limited lifetime warranty

Minimum operating system software versions

- ArubaOS and Aruba InstantOS 8.11.1.0, ArubaOS 10.5.0.0

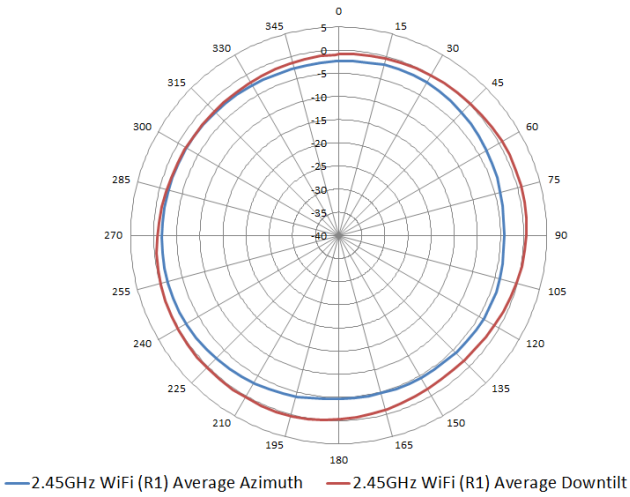
RF PERFORMANCE TABLE

Band, Rate	Maximum transmit power (dBm) per transmit chain	Receiver sensitivity (dBm) per receive chain
2.4GHz, 802.11b		
1Mbps	18.0	-96.0
11Mbps	18.0	-88.0
2.4GHz, 802.11g		
6Mbps	18.0	-92.0
54Mbps	18.0	-74.0
2.4GHz, 802.11n HT20		
MCS0	18.0	-93.0
MCS7	16.0	-72.0
2.4GHz, 802.11ax HE20		
MCS0	18.0	-92.0
MCS11	12.0	-62.0
5GHz, 802.11a		
6Mbps	18.0	-94.0
54Mbps	16.0	-74.0
5GHz, 802.11n HT20 / HT40		
MCS0	18.0 / 18.0	-93.0 / -90.0
MCS7	16.0 / 16.0	-73.0 / -70.0
5GHz, 802.11ac VHT20 / VHT40 / VHT80		
MCS0	18.0 / 18.0 / 18.0	-93.0 / -90.0 / -87.0
MCS9	14.0 / 14.0 / 14.0	-67.0 / -64.0 / -61.0
5GHz, 802.11ax HE20 / HE40 / HE80		
MCS0	18.0 / 18.0 / 18.0	-93.0 / -90.0 / -87.0
MCS11	12.0 / 12.0 / 12.0	-64.0 / -61.0 / -58.0

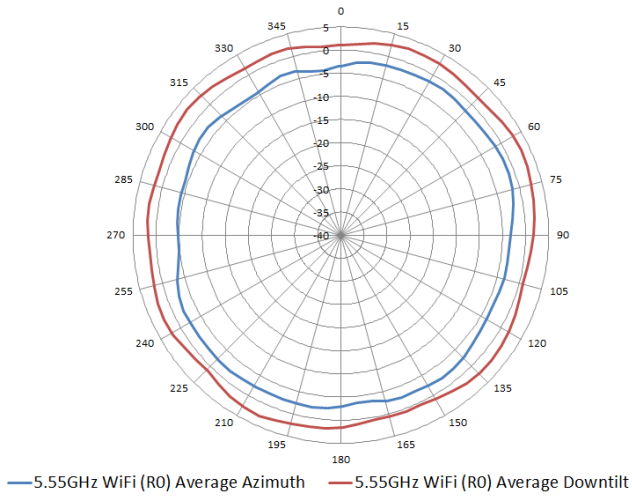
ANTENNA PATTERNS

Horizontal planes (top view)

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



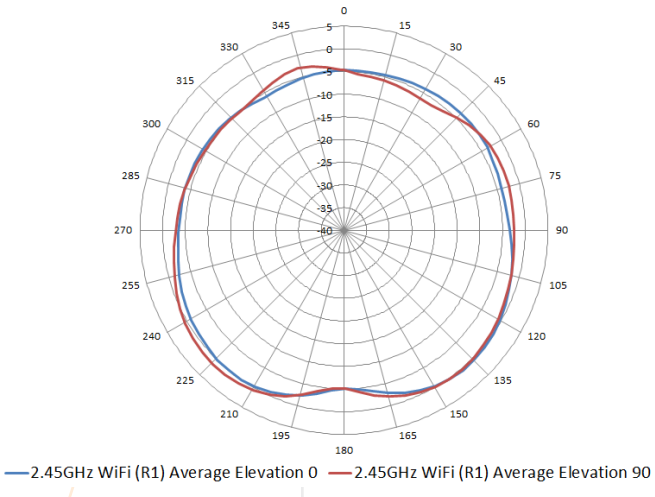
2.45GHz Wi-Fi (antennas 1, 2)



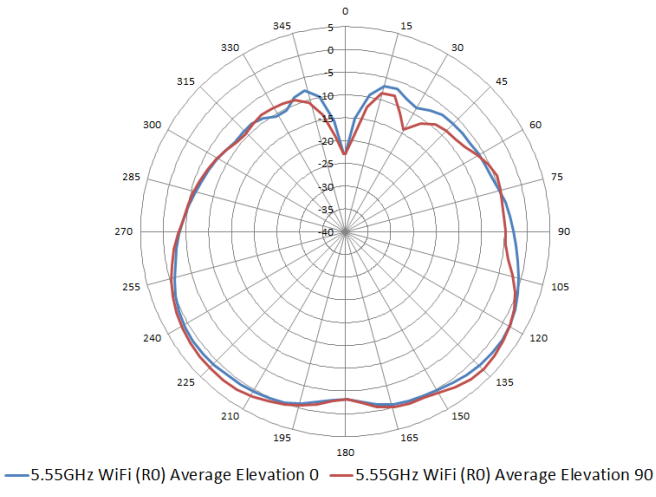
5.55GHz Wi-Fi (antennas 1, 2)

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

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



2.45GHz Wi-Fi (antennas 1, 2)



5.55GHz Wi-Fi (antennas 1, 2)

ORDERING INFORMATION

Part Number	Description
Aruba 503 Series Campus Access Points	
Internal antenna access points (1-packs)	
R8M95A	Aruba Access Point-503 (EG) Dual Radio 2x2:2 802.11ax Wi-Fi 6 Campus Access Point
R8M96A	Aruba Access Point-503 (IL) Dual Radio 2x2:2 802.11ax Wi-Fi 6 Campus Access Point
R8M97A	Aruba Access Point-503 (JP) Dual Radio 2x2:2 802.11ax Wi-Fi 6 Campus Access Point
R8M98A	Aruba Access Point-503 (RW) Dual Radio 2x2:2 802.11ax Wi-Fi 6 Campus Access Point
R8M99A	Aruba Access Point-503 (US) Dual Radio 2x2:2 802.11ax Wi-Fi 6 Campus Access Point
Internal antenna access points (eco-friendly 10-packs)	
S1E83A	Aruba Access Point-503 (RW) 10-Pack Dual Radio 2x2:2 802.11ax Wi-Fi 6 Campus Access Point
S1E84A	Aruba Access Point-503 (US) 10-Pack Dual Radio 2x2:2 802.11ax Wi-Fi 6 Campus Access Point

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Contact us at www.arubanetworks.com/contact