Cisco Catalyst 9120 Series Access Points

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The Cisco® Catalyst® 9120 Series Access Points are the next generation of enterprise access points. They are resilient, secure, and intelligent.

We are more dependent on our wireless networks than ever before. Additional devices connect to the network every year and the Cisco Catalyst 9120 Series Access Points will provide a seamless experience anywhere for everyone. Going beyond the Wi-Fi 6 (802.11ax) standard, the Catalyst 9120 provides integrated security, resiliency and operational flexibility as well as increased network intelligence.

Extending Cisco's intent-based network and perfect for networks of all sizes, the Catalyst 9120 scales to the growing demands of IoT while fully supporting the latest innovations and new technologies. Not only that, but the Catalyst 9120 is the leaders in performance, security and analytics.

The Catalyst 9120 Series Access Points, paired with Cisco DNA, are enterprise-class products that will address your current and future needs. These access points are the first step in updating your network and are able to take better advantage of all of the features and benefits that Wi-Fi 6 provides.

Key features:

- Wi-Fi 6 certifiable
- Four radios: 5 GHz (4x4) Flexible radio with 2.4 or 5 GHz (4x4), Unified RF Engine, and IoT ready (BLE, Zigbee, Thread and other multiprotocol 802.15.4 devices)
- OFDMA and MU-MIMO
- Multigigabit support
- Internal, external antenna and also external antenna for professional installations

The Cisco Catalyst 9120 Series Access Points support both orthogonal frequency-division multiple access (OFDMA) and multiuser multiple-input, multiple-output (MU-MIMO), delivering more predictable performance for advanced applications and IoT. Additionally, with up to 2.5 Gbps with NBASE-T and IEEE 802.3bz Ethernet compatibility, the Cisco Catalyst 9120 Series can seamlessly offload network traffic without any bottlenecks. With Cisco's Multigigabit technology, you can use your existing Category 5e or 6 cabling to achieve speeds up to 2.5 Gbps, allowing for higher throughputs with minimum cost. And with different antenna choices, you're able to decide which option works best for you.

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Table 1. Features and Benefits

Feature	Benefits
Wi-Fi 6 (802.11ax)	The IEEE 802.11ax emerging standard, also known as High-Efficiency-Wireless (HEW) or Wi-Fi 6, builds on 802.11ac. It delivers a better experience in typical environments with more predictable performance for advanced applications such as 4K or 8K video, high-density, high-definition collaboration apps, all-wireless offices, and IoT. Wi-Fi 6 is designed to use both the 2.4-Ghz and 5-GHz bands, unlike the 802.11ac standard.
Cisco RF ASIC	Cisco RF ASIC is a fully integrated Software Defined Radio (SDR) that can perform advanced RF spectrum analysis and delivers features like CleanAir, Wireless Intrusion Prevention System (WIPS), Fast Locate*, DFS detection. (* - Future)
Uplink/downlink OFDMA	OFDMA-based scheduling splits the bandwidth into smaller chunks called resource units (RUs), which can be allocated to individual clients in both the downlink and uplink directions to reduce overhead and latency.
MU-MIMO technology	Supporting four spatial streams, MU-MIMO enables access points to split spatial streams between client devices, to maximize throughput.
BSS coloring	Spatial reuse (also known as Basic Service Set [BSS] coloring) allows the access points and their clients to differentiate between BSSs, thus permitting more simultaneous transmissions.
Target wake time	A new power savings mode called Target Wake Time (TWT) allows the client to stay asleep and to wake up only at prescheduled (target) times to exchange data with the access point. This offers significant energy savings for battery-operated devices, up to 3x to 4x compared to 802.11n and 802.11ac.
Intelligent Capture	Intelligent Capture probes the network and provides Cisco DNA Center with deep analysis. The software can track over 240 anomalies and instantaneously review all packets on demand, emulating the onsite network administrator. Intelligent Capture allows for more informed decisions on your wireless networks.
Flexible Radio Assignment	Allows the access points to intelligently determine the operating mode of serving radios based on the RF environment. The access points can operate in the following modes: • 2.4-GHz and 5-GHz mode: One radio will serve clients in 2.4-GHz mode, while the other serves clients in 5-GHz mode. • Dual 5-GHz mode: Both radios inside the access point operate on the 5-GHz band, maximizing the benefits of Wi-Fi 6 and increasing client device capacity.
Dual 5-GHz radio support	Enables both radios to operate in 5-GHz client serving mode, allowing an industry-leading 5.2 Gbps (2 x 2.6 Gbps) over-the-air speeds while increasing client capacity.
Smart antenna connector	An intelligent second physical antenna connector is included on Catalyst 9120 Access Points with an external antenna. This connector provides advanced network design flexibility for high-density and large open-area environments such as auditoriums, convention centers, libraries, cafeterias, and arenas/stadiums, allowing two sets of antennas to be connected and active on a single access point.
Cisco Mobility Express	Mobility Express is designed for networks of all sizes, including small and medium-sized businesses and distributed enterprises. It provides industry-leading wireless LAN technology without the need for a physical controller or additional licenses.
Multigigabit Ethernet support	Provides uplink speeds of 2.5 Gbps, in addition to 100 Mbps and 1 Gbps. All speeds are supported on Category 5e cabling for an industry first, as well as 10GBASE-T (IEEE 802.3bz) cabling.
Bluetooth 5	Integrated Bluetooth Low Energy (BLE) 5 radio to enable IoT use cases such as location tracking and wayfinding.

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Feature	Benefits
Container support for applications	Enables edge computing capabilities for IoT applications on the host access point.
Apple Features	Apple and Cisco have partnered to create an optimal mobile experience for iOS devices on corporate networks based on Cisco technologies. Using new features in iOS 10, in combination with the latest software and hardware from Cisco, businesses can now more effectively use their network infrastructure to deliver an enhanced user experience across all business applications. At the center of the collaboration is a unique handshake between the Cisco WLAN and Apple devices. This handshake enables the Cisco WLAN to provide an optimal Wi-Fi roaming experience to Apple devices. Additionally, the Cisco WLAN trusts Apple devices and gives priority treatment for business-critical applications specified by the Apple device. This feature is also known as Fast Lane.

Note: Features available in a future releases – Cisco Mobility Express, Target Wake Time, BSS Coloring, Uplink/downlink OFDMA, Cisco Intelligent Capture

Resilient - Steady Performance in Demanding Environments

Networks infrastructure that upgrade to Wi-Fi 6 enabled devices will get up to four times the capacity boost needed to support the additional devices connected to the network as well as the data that they generate. Wi-Fi 6 will offer multi-gigabit performance which will feature a seamless connectivity with higher throughput compared to the 802.11ac standard. This means you'll see your network performance run smoother. With support for BSS coloring, the new standard eases high device dense deployments by allowing simultaneous transmissions, ultimately increasing network capacity, customer interactions, and value-add services. BSS coloring allows the limited channels in the 2.4 GHz to have better spectral re-use benefiting IoT and 2.4 GHz clients.

Wi-Fi 6, with better coordination of transit time to and from devices, will also bring about a reduction in latency and a greater reliability allowing for hundreds of devices per access point. This allows for IoT devices to be reliably deployed at scale. And an overall improved user experience will be seen as well, as Wi-Fi 6 will improve device battery life of devices such as smartphones, tablets and IoT when compared to prior standards. For more details about Wi-Fi 6 please check Cisco's Technical Whitepaper on Wi-Fi 6.

Secure Infrastructure

Trustworthy systems built with Cisco Trust Anchor Technologies provide a highly secure foundation for Cisco products. With the Catalyst 9100 Series, these technologies enable hardware and software authenticity assurance for supply chain trust and strong mitigation against man-in-the-middle attacks that compromise software and firmware. Trust Anchor capabilities include:

- **Image signing:** Cryptographically signed images provide assurance that the firmware, BIOS, and other software are authentic and unmodified. As the system boots, the system's software signatures are checked for integrity.
- **Secure Boot:** Cisco Secure Boot technology anchors the boot sequence chain of trust to immutable hardware, mitigating threats against a system's foundational state and the software that is to be loaded, regardless of a user's privilege level. It provides layered protection against the persistence of illicitly modified firmware.
- **Cisco Trust Anchor module:** A tamper-resistant, strong cryptographic, single-chip solution provides hardware authenticity assurance to uniquely identify the product so that its origin can be confirmed to Cisco. This provides assurance that the product is genuine.

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Aesthetically Redesigned For Next Generation Enterprise

The Catalyst 9100 series access points are built from the ground-up, with new aerodynamic look and smooth finish, integrating RF excellence and next generation technologies to provide the best-in-class wireless experience without compromise. While packing several high-performance features, the hardware is redesigned to deliver higher efficiencies in a more compact form-factor to make visually appealing Wi-Fi deployments commonplace.

Cisco DNA Support

Pairing the Cisco Catalyst 9120 Series Access Points with the Cisco Digital Network Architecture (Cisco DNA) allows for a total network transformation. Cisco DNA allows you to truly understand your network with real-time analytics, quickly detect and contain security threats, and easily provide networkwide consistency through automation and virtualization.

Cisco DNA with Software-Defined Access (SD-Access) is the network fabric that powers business. It is an open and extensible, software-driven architecture that accelerates and simplifies your enterprise network operations. The programmable architecture frees your IT staff from time-consuming, repetitive network configuration tasks so they can focus instead on innovation that positively transforms your business. By decoupling network functions from the hardware, you can build and manage your entire wired and wireless network from a single user interface. SD-Access enables policy-based automation from edge to cloud with foundational capabilities. These include:

- Simplified device deployment
- Unified management of wired and wireless networks
- Network virtualization and segmentation
- Group-based policies
- Context-based analytics

The Cisco Catalyst 9120 Series Access Points support Software-Defined Access, Cisco's leading enterprise architecture.

Working together, the Cisco Catalyst 9120 Series and Cisco DNA offer such features as:

- Cisco DNA Spaces
- Cisco Identity Services Engine
- Cisco DNA Analytics and Assurance

The result? Your network stays relevant, becomes digital ready, and is the lifeblood of your organization.

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Product Specifications

Item	Specification
Part numbers	**Cisco Catalyst 9120I Access Point: Indoor environments, with internal antennas** • C9120AXI-x: Cisco Catalyst 9120 Series **Cisco Catalyst 9120E Access Point: Indoor, challenging environments, with external antennas** • C9120AXE-x: Cisco Catalyst 9120 Series **Cisco Catalyst 9120P Access Point: Indoor, professional installations** • C9120AXP-x: Cisco Catalyst 9120 Series **Regulatory domains: (x = regulatory domain)** Customers are responsible for verifying approval for use in their individual countries. To verify approval and to identify the regulatory domain that corresponds to a particular country, visit https://www.cisco.com/go/aironet/compliance. Not all regulatory domains have been approved. As they are approved, the part numbers will be available on the Global Price List. **Cisco Wireless LAN Services** • AS-WLAN-CNSLT: Cisco Wireless LAN Network Planning and Design Service • AS-WLAN-CNSLT: Cisco Wireless LAN 802.11n Migration Service • AS-WLAN-CNSLT: Cisco Wireless LAN Performance and Security Assessment Service
Software	• Cisco Unified Wireless Network Software Release 8.9.x or later • Cisco IOS® XE Software Release 16.11 with AP Device Pack, or later
Supported wireless LAN controllers	• Cisco Catalyst 9800 Series Wireless Controllers • Cisco 3500, 5520, and 8540 Series Wireless Controllers and Cisco Virtual Wireless Controller
802.11n version 2.0 (and related) capabilities	• 4x4 MIMO with four spatial streams • Maximal Ratio Combining (MRC) • 802.11n and 802.11a/g beamforming • 20- and 40-MHz channels • PHY data rates up to 890 Mbps (40 MHz with 5 GHz and 20 MHz with 2.4 GHz) • Packet aggregation: A-MPDU (transmit and receive), A-MSDU (transmit and receive) • 802.11 Dynamic Frequency Selection (DFS) • Cyclic Shift Diversity (CSD) support
802.11ac	• 4x4 downlink MU-MIMO with four spatial streams • MRC • 802.11ac beamforming • 20-, 40-, 80-, and 160-MHz channels • PHY data rates up to 3.47 Gbps (160 MHz with 5 GHz) • Packet aggregation: A-MPDU (transmit and receive), A-MSDU (transmit and receive) • 802.11 DFS • CSD support

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Item	Specification
802.11ax	• 4x4 downlink MU-MIMO with four spatial streams • Uplink/downlink OFDMA • TWT • BSS coloring • MRC • 802.11ax beamforming • 20-, 40-, 80-, and 160-MHz channels • PHY data rates up to 5.38 Gbps (160 MHz with 5 GHz and 20 MHz with 2.4 GHz) • Packet aggregation: A-MPDU (transmit and receive), A-MSDU (transmit and receive) • 802.11 DFS • CSD support
Integrated antenna	Flexible radio (either on 2.4GHz or on 5GHz) • 2.4 GHz, peak gain 4 dBi, internal antenna, omnidirectional in azimuth • 5 GHz, peak gain 5 dBi, internal antenna, omnidirectional in azimuth Dedicated 5GHz radio • 5 GHz, peak gain 4 dBi, internal antenna, omnidirectional in azimuth
External antenna (sold separately)	• Cisco Catalyst 9120E Access Points are certified for use with antenna gains up to 6 dBi (2.4 GHz and 5 GHz) • Cisco Catalyst 9120P Access Points) are certified for use with antenna gains up to 13 dBi (2.4 GHz and 5 GHz) with the AIR-ANT2513-P4M-N= antenna • Cisco offers the industry's broadest selection of antennas, delivering optimal coverage for a variety of deployment scenarios • Supports Self-Identifiable Antennas (SIA) on one RP-TNC port
Smart Antenna Connector	• Available on the 9120E and on the 9120P only • Compact multi RF connector with DART interface • Requires the AIR-CAB002-DART-R= 2 ft smart antenna connector when used with antennas with RP-TNC connector • Required when running the flexible radio as either a second 5-GHz serving radio or a Wireless Security Monitoring radio
Interfaces	• 1x 100, 1000, 2500 Multigigabit Ethernet (RJ-45) – IEEE 802.3bz • Management console port (RJ-45) • USB 2.0 @ 3.75W (enabled via future software)
Indicators	• Status LED indicates boot loader status, association status, operating status, boot loader warnings, and boot loader errors
Dimensions (W x L x H)	• Access point (without mounting brackets): C9120I: 8.5 x 8.5 x 1.7" (21.6 x 21.6 x 4.3 cm), C9120E and C9120P: 8.5 x 8.05x 2.0 (21.6 x 21.6 x 5.1 cm)"
Weight	**Cisco Catalyst 9120I** • 2.87 lbs (1.3 kg) **Cisco Catalyst 9120E/P** • 3 lbs (1.36 kg)

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<table>
<tr><th>Item</th><th>Specification</th></tr>
<tr><td>Input power requirements</td><td>
• 802.3at Power over Ethernet Plus (PoE+), Cisco Universal PoE (Cisco UPOE®)
• Cisco power injector, AIR-PWRINJ6=
• 802.3af PoE
• Cisco power injector, AIR-PWRINJ5= (Note: This injector supports only 802.3af)
</td></tr>
<tr><td>Power draw</td><td>
Catalyst 9120AXI
<table>
<tr><th>PoE Power Consumption</th><th>2.4-GHz radio</th><th>5-GHz radio</th><th>Link speed</th><th>USB</th><th>LLDP</th></tr>
<tr><td>802.3at (PoE+)</td><td>4x4</td><td>4x4</td><td>2.5G</td><td>Y</td><td>25.5W</td></tr>
</table>
Catalyst 9120AXE / 9120AXP
<table>
<tr><th>PoE Power Consumption</th><th>2.4-GHz radio</th><th>5-GHz radio</th><th>Link speed</th><th>USB</th><th>LLDP</th></tr>
<tr><td>802.3at (PoE+)</td><td>4x4</td><td>4x4</td><td>2.5G</td><td>Y</td><td>25.5W</td></tr>
</table>
Catalyst 9120AXI / 9120AXE / 9120AXP
<table>
<tr><th colspan="2">PoE Power Consumption</th><th>2.4-GHz radio</th><th>5-GHz radio</th><th>Link speed</th><th>USB</th><th>LLDP</th></tr>
<tr><td>802.3af</td><td>PoE</td><td>1x1</td><td>1x1</td><td>1G</td><td>N</td><td>13.4W</td></tr>
<tr><td>802.3af</td><td>PoE</td><td>2x2</td><td>N</td><td>1G</td><td>N</td><td>13.4W</td></tr>
<tr><td>802.3af</td><td>PoE</td><td>N</td><td>2x2</td><td>1G</td><td>N</td><td>13.4W</td></tr>
</table>
</td></tr>
<tr><td>Environmental</td><td>
Cisco Catalyst 9120AXI
• Nonoperating (storage) temperature: -22° to 158°F (-30° to 70°C)
• Nonoperating (storage) altitude test: 25˚C, 15,000 ft.
• Operating temperature: 32° to 122°F (0° to 50°C)
• Operating humidity: 10% to 90% (noncondensing)
• Operating altitude test: 40˚C, 9843 ft.
Note: When the ambient operating temperature exceeds 40°C, the access point will shift from 4x4 to 2x2 on both the 2.4-GHz and 5-GHz radios, uplink Ethernet will downgrade to 1 Gigabit Ethernet; however, the USB interface will remain enabled
Cisco Catalyst 9120AXE and 9120AXP
• Nonoperating (storage) temperature: -22° to 158°F (-30° to 70°C)
• Nonoperating (storage) altitude test: 25˚C, 15,000 ft.
• Operating temperature: -4° to 122°F (-20° to 50°C)
• Operating humidity: 10% to 90% (noncondensing)
• Operating altitude test: 40˚C, 9843 ft.
</td></tr>
</table>

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Item	Specification	
System memory	• 2048 MB DRAM • 1024 MB flash	
Warranty	Limited lifetime hardware warranty	
Available transmit power settings	**2.4 GHz** • 23 dBm (200 mW) • 20 dBm (100 mW) • 17 dBm (50 mW) • 14 dBm (25 mW) • 11 dBm (12.5 mW) • 8 dBm (6.25 mW) • 5 dBm (3.13 mW) • 2 dBm (1.56 mW) • -1dBm (0.79mW) • -4dBm(0.39mW)	**5 GHz** • 26 dBm (400 mW) • 23 dBm (200 mW) • 20 dBm (100 mW) • 17 dBm (50 mW) • 14 dBm (25 mW) • 11 dBm (12.5 mW) • 8 dBm (6.25 mW) • 5 dBm (3.13 mW) • 2 dBm (1.56 mW) • -1dBm (0.79mW)
Frequency band and 20-MHz operating channels	**A (A regulatory domain):** • 2.412 to 2.462 GHz; 11 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.700 GHz; 8 channels (excludes 5.600 to 5.640 GHz) • 5.745 to 5.825 GHz; 5 channels **B (B regulatory domain):** • 2.412 to 2.462 GHz; 11 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.700 GHz; 11 channels • 5.745 to 5.865 GHz; 7 channels **C (C regulatory domain):** • 2.412 to 2.472 GHz; 13 channels • 5.745 to 5.825 GHz; 5 channels **D (D regulatory domain):** • 2.412 to 2.462 GHz; 11 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.700 GHz; 11 channels • 5.745 to 5.865 GHz; 7 channels **E (E regulatory domain):** • 2.412 to 2.4835; 13 channels • 5.150 to 5.350 GHz; 8 channels • 5.470 to 5.725 GHz; 8 channels **F (F regulatory domain):** • 2.412 to 2.472 GHz; 13 channels • 5.745 to 5.805 GHz; 4 channels **G (G regulatory domain):** • 2.412 to 2.472 GHz; 13 channels • 5.745 to 5.865 GHz; 7 channels	**I (I regulatory domain):** • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels **K (K regulatory domain):** • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.620 GHz; 7 channels • 5.745 to 5.805 GHz; 4 channels **N (N regulatory domain):** • 2.412 to 2.462 GHz; 11 channels • 5.180 to 5.320 GHz; 8 channels • 5.745 to 5.825 GHz; 5 channels **Q (Q regulatory domain):** • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.700 GHz; 11 channels **R (R regulatory domain):** • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels • 5.660 to 5.850 GHz; 11 channels (excludes 5.480 to 5.640 GHz) **S (S regulatory domain):** • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.700 GHz; 11 channels • 5.745 to 5.825 GHz; 5 channels **T (T regulatory domain):** • 2.412 to 2.462 GHz; 11 channels • 5.180 to 5.320 GHz; 8 channels

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Item	Specification	
	H (H regulatory domain): • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels • 5.745 to 5.825 GHz; 5 channels	• 5.500 to 5.700 GHz; 12 channels • 5.745 to 5.850 GHz; 7 channels **Z (Z regulatory domain):** • 2.412 to 2.462 GHz; 11 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.700 GHz; 8 channels (excludes 5.600 to 5.640 GHz) • 5.745 to 5.825 GHz; 5 channels
Note: Customers are responsible for verifying approval for use in their individual countries. To verify approval and to identify the regulatory domain that corresponds to a particular country, visit https://www.cisco.com/go/aironet/compliance		
Maximum number of nonoverlapping channels	**2.4 GHz** • 802.11b/g: ◦ 20 MHz: 3 • 802.11n: ◦ 20 MHz: 3 • 802.11ax: ◦ 20MHz:3	**5 GHz** • 802.11a: ◦ 20 MHz: 26 FCC, 16 EU • 802.11n: ◦ 20 MHz: 26 FCC, 16 EU ◦ 40 MHz: 12 FCC, 7 EU • 802.11ac/ax: ◦ 20 MHz: 26 FCC, 16 EU ◦ 40 MHz: 12 FCC, 7 EU ◦ 80 MHz: 5 FCC, 3 EU ◦ 160 MHz 2 FCC, 1 EU
Note: This varies by regulatory domain. Refer to the product documentation for specific details for each regulatory domain.		
Compliance standards	• **Safety:** ◦ IEC 60950-1 ◦ EN 60950-1 ◦ UL 60950-1 ◦ CAN/CSA-C22.2 No. 60950-1 ◦ AS/NZS 60950-1 ◦ UL 2043 ◦ Class III equipment • **Emissions:** ◦ CISPR 32 (rev. 2015) ◦ EN 55032 (rev. 2012/AC:2013) ◦ EN 55032 (rev. 2015) ◦ EN 55035 2010 ◦ EN61000-3-2 (rev. 2014) ◦ EN61000-3-3 (rev. 2013) ◦ KN61000-3-2 ◦ KN61000-3-3 ◦ AS/NZS CISPR 32 Class B (rev. 2015) ◦ 47 CFR FCC Part 15B ◦ ICES-003 (rev. 2016 Issue 6, Class B) ◦ VCCI-CISPR 32:2016 ◦ VCCI (V3) ◦ CNS (rev. 13438) ◦ KN-32 ◦ KN-35 ◦ KN 301 489-17 ◦ TCVN 7189 (rev. 2009)	

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Item	Specification
	• **Immunity:** ◦ CISPR 24 (rev. 2010) ◦ EN 55024 / EN 55035 (rev. 2010) • **Emissions and immunity:** ◦ EN 301 489-1 (v2.1.1 2017-02) ◦ EN 301 489-17 (v3.1.1 2017-02) ◦ QCVN (18:2014) ◦ KN 489-1 ◦ KN 489-17 ◦ EN 60601 (1-1:2015) • **Radio:** ◦ EN 300 328 (v2.1.1) ◦ EN 301 893 (v2.1.1) ◦ AS/NZS 4268 (rev. 2017) ◦ 47 CFR FCC Part 15C, 15.247, 15.407 ◦ RSP-100 ◦ RSS-GEN ◦ RSS-247 ◦ China regulations SRRC ◦ LP0002 (rev 2018.1.10) ◦ Japan Std. 33a, Std. 66, and Std. 71 • **RF safety:** ◦ EN 50385 (rev. Aug 2002) ◦ ARPANSA ◦ AS/NZS 2772 (rev. 2016) ◦ EN 62209-1 (rev. 2016) ◦ EN 62209-2 (rev. 2010) ◦ 47 CFR Part 1.1310 and 2.1091 ◦ RSS-102 • **IEEE standards:** ◦ IEEE 802.3 ◦ IEEE 802.3ab ◦ IEEE 802.3af/at ◦ IEEE 802.11 a/b/g/n/ac/ax ◦ IEEE 802.11h, 802.11d • **Security:** ◦ 802.11i, Wi-Fi Protected Access 2 (WPA2), WPA ◦ 802.1X ◦ Advanced Encryption Standard (AES) • **Extensible Authentication Protocol (EAP) types:** ◦ EAP-Transport Layer Security (TLS) ◦ EAP-Tunneled TLS (TTLS) or Microsoft Challenge Handshake Authentication Protocol Version 2 (MSCHAPv2) ◦ Protected EAP (PEAP) v0 or EAP-MSCHAPv2 ◦ EAP-Flexible Authentication via Secure Tunneling (EAP-FAST) ◦ PEAP v1 or EAP-Generic Token Card (GTC) ◦ EAP-Subscriber Identity Module (SIM)

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Item	Specification				
Data rates supported	802.11b: 1, 2, 5.5, and 11 Mbps				
	802.11a/g: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps				
	802.11n data rates on 2.4 GHz (only 20 MHz and MCS 0 to MCS 31): and 5 GHz				
	MCS Index[1]	GI[2] = 800 ns	GI = 800 ns	GI = 400 ns	GI = 400 ns
		20-MHz rate (Mbps)	40-MHz rate (Mbps)	20-MHz rate (Mbps)	40-MHz rate (Mbps)
	0	6.5	13.5	7.2	15
	1	13	27	14.4	30
	2	19.5	40.5	21.7	45
	3	26	54	28.9	60
	4	39	81	43.3	90
	5	52	108	57.8	120
	6	58.5	121.5	65	135
	7	65	135	72.2	150
	8	13	27	14.4	30
	9	26	54	28.9	60
	10	39	81	43.3	90
	11	52	108	57.8	120
	12	78	162	86.7	180
	13	104	216	115.6	240
	14	117	243	130	270
	15	130	270	144.4	300
	16	19.5	40.5	21.7	45
	17	39	81	43.4	90
	18	58.5	121.5	65	135
	19	78	162	86.7	180
	20	117	243	130	270
	21	156	324	173.3	360
	22	175.5	364.5	195	405
	23	195	405	216.7	450
	24	26	54	28.9	60
	25	52	108	57.8	120

[1] MCS Index: The Modulation and Coding Scheme (MCS) index determines the number of spatial streams, the modulation, the coding rate, and data rate values.

[2] GI: A Guard Interval (GI) between symbols helps receivers overcome the effects of multipath delay spreads.

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Item	Specification					
	26	78	162	86.7	180	
	27	104	216	115.6	240	
	28	156	324	173.3	360	
	29	208	432	231.1	480	
	30	234	486	260	540	
	31	260	540	288.9	600	
	802.11ac data rates (5 GHz):					
	MCS Index	**Spatial streams**	**GI = 800 ns**				**GI = 400 ns**			
			20-MHz rate (Mbps)	**40-MHz rate (Mbps)**	**80-MHz rate (Mbps)**	**160-MHz rate (Mbps)**	**20-MHz rate (Mbps)**	**40-MHz rate (Mbps)**	**80-MHz rate (Mbps)**	**160-MHz rate (Mbps)**
	0	1	6.5	13.5	29.3	58.5	7.2	15	32.5	65
	1	1	13	27	58.5	117	14.4	30	65	130
	2	1	19.5	40.5	87.8	175.5	21.7	45	97.5	195
	3	1	26	54	117	234	28.9	60	130	260
	4	1	39	81	175.5	351	43.3	90	195	390
	5	1	52	108	234	468	57.8	120	260	520
	6	1	58.5	121.5	263.3	526.5	65	135	292.5	585
	7	1	65	135	292.5	585	72.2	150	325	650
	8	1	78	162	351	702	86.7	180	390	780
	9	1	-	180	390	780	-	200	433.3	866.7
	MCS Index	**Spatial streams**	**GI = 800 ns**				**GI = 400 ns**			
			20-MHz rate (Mbps)	**40-MHz rate (Mbps)**	**80-MHz rate (Mbps)**	**160-MHz rate (Mbps)**	**20-MHz rate (Mbps)**	**40-MHz rate (Mbps)**	**80-MHz rate (Mbps)**	**160-MHz rate (Mbps)**
	0	2	13	27	58.5	117	14.4	30	65	130
	1	2	26	54	117	234	28.9	60	130	260
	2	2	39	81	175.5	351	43.3	90	195	390
	3	2	52	108	234	468	57.8	120	260	520
	4	2	78	162	351	702	86.7	180	390	780
	5	2	104	216	468	936	115.6	240	520	1040
	6	2	117	243	526.5	1053	130	270	585	1170
	7	2	130	270	585	1170	144.4	300	650	1300
	8	2	156	324	702	1404	173.3	360	780	1560
	9	2	-	360	780	1560	-	400	866.7	1733.4

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Item	Specification									
	MCS Index	Spatial streams	GI = 800 ns				GI = 400 ns			
			20-MHz rate (Mbps)	40-MHz rate (Mbps)	80-MHz rate (Mbps)	160-MHz rate (Mbps)	20-MHz rate (Mbps)	40-MHz rate (Mbps)	80-MHz rate (Mbps)	160-MHz rate (Mbps)
	0	3	19.5	40.5	87.8	175.5	21.7	45	97.5	195
	1	3	39	81	175.5	351	43.3	90	195	390
	2	3	58.5	121.5	263.3	526.5	65	135	292.5	585
	3	3	78	162	351	702	86.7	180	390	780
	4	3	117	243	526.5	1053	130	270	585	1170
	5	3	156	324	702	1404	173.3	360	780	1560
	6	3	175.5	364.5	789.9	1579.5	195	405	877.5	1755
	7	3	195	405	877.5	1755	216.7	450	975	1950
	8	3	234	486	1053	2106	260	540	1170	2340
	9	3	260	540	1170	2340	288.9	600	1300	2600.1
	MCS Index	Spatial streams	GI = 800 ns				GI = 400 ns			
			20-MHz rate (Mbps)	40-MHz rate (Mbps)	80-MHz rate (Mbps)	160-MHz rate (Mbps)	20-MHz rate (Mbps)	40-MHz rate (Mbps)	80-MHz rate (Mbps)	160-MHz rate (Mbps)
	0	4	26	54	117	234	28.8	60	130	260
	1	4	52	108	234	468	57.8	120	260	520
	2	4	78	162	351	702	86.6	180	390	780
	3	4	104	216	468	936	115.6	240	520	1040
	4	4	156	324	702	1404	173.4	360	780	1560
	5	4	208	432	936	1872	231.2	480	1040	2080
	6	4	234	486	1053	2106	260	540	1170	2340
	7	4	260	540	1170	2340	288.8	600	1300	2600
	8	4	312	648	1404	2808	346.6	720	1560	3120
	9	4	-	720	1560	3120	-	800	1733	3466.8

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Item	Specification

802.11ax data rates (20 MHz on both 2.4- and 5-GHz bands and 40, 80, and 160 MHz only on 5-GHz band):

MCS Index	Spatial streams	GI = 1600 ns				GI = 800 ns			
		20-MHz rate (Mbps)	40-MHz rate (Mbps)	80-MHz rate (Mbps)	160-MHz rate (Mbps)	20-MHz rate (Mbps)	40-MHz rate (Mbps)	80-MHz rate (Mbps)	160-MHz rate (Mbps)
0	1	4.3	8	17	**34**	4.3	9	18	**36**
1	1	16	33	68	**136**	17	34	72	**144**
2	1	24	49	102	**204**	26	52	108	**216**
3	1	33	65	136	**272**	34	69	144	**282**
4	1	49	98	204	**408**	52	103	216	**432**
5	1	65	130	272	**544**	69	138	288	**576**
6	1	73	146	306	**613**	77	155	324	**649**
7	1	81	163	340	**681**	86	172	360	**721**
8	1	98	195	408	817	103	207	432	865
9	1	108	217	453	907	115	229	480	961
10	1	122	244	510	1021	129	258	540	1081
11	1	135	271	567	1134	143	287	600	1201
0	2	8.6	16	34	68	8.6	18	36	72
1	2	32	66	136	272	34	68	144	288
2	2	48	98	204	408	52	104	216	432
3	2	66	130	272	544	68	138	288	564
4	2	98	196	408	816	104	206	432	864
5	2	130	260	544	1088	138	276	576	1152
6	2	146	292	612	1226	154	310	648	1298
7	2	162	326	680	1362	172	344	720	1442
8	2	196	390	816	1634	206	414	864	1730
9	2	216	434	906	1814	230	458	960	1922
10	2	244	488	1020	2042	258	516	1080	2162
11	2	270	542	1134	2268	286	574	1200	2402
0	3	12.9	24	51	102	12.9	27	54	108
1	3	48	99	204	408	51	102	216	432
2	3	72	147	306	612	78	156	324	648
3	3	99	195	408	816	102	207	432	846
4	3	147	294	612	1224	156	309	648	1296
5	3	195	390	816	1632	207	414	864	1728

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Item	Specification									
	6	3	219	438	918	1839	231	465	972	1947
	7	3	243	489	1020	2043	258	516	1080	2163
	8	3	294	585	1224	2451	309	621	1296	2595
	9	3	324	651	1359	2721	345	687	1440	2883
	10	3	366	732	1530	3063	387	774	1620	3243
	11	3	405	813	1701	3402	429	861	1800	3603
	0	4	17.2	32	68	136	17.2	36	72	144
	1	4	64	132	272	544	68	136	288	576
	2	4	96	196	408	816	104	208	432	864
	3	4	132	260	544	1088	136	276	576	1128
	4	4	196	392	816	1632	208	412	864	1728
	5	4	260	520	1088	2176	276	552	1152	2304
	6	4	292	584	1224	2452	308	620	1296	2596
	7	4	324	652	1360	2724	344	688	1440	2884
	8	4	392	780	1632	3268	412	828	1728	3460
	9	4	432	868	1812	3628	460	916	1920	3844
	10	4	488	976	2040	4084	516	1032	2160	4324
	11	4	540	1084	2268	4536	572	1148	2400	4804
	MCS Index	**Spatial streams**	**GI = 3200 ns**							
			20-MHz rate (Mbps)	**40-MHz rate (Mbps)**	**80-MHz rate (Mbps)**	**160-MHz rate (Mbps)**				
	0	1	3.9	7.2	15.3	**30.6**				
	1	1	14.4	29.7	61.2	**122.4**				
	2	1	21.6	44.1	91.8	**183.6**				
	3	1	29.7	58.5	122.4	**244.8**				
	4	1	44.1	88.2	183.6	**367.2**				
	5	1	58.5	117.0	244.8	**489.6**				
	6	1	65.7	131.4	275.4	**551.7**				
	7	1	72.9	146.7	306.0	**612.9**				
	8	1	88.2	175.5	367.2	**735.3**				
	9	1	97.2	195.3	407.7	**816.3**				
	10	1	109.8	219.6	459.0	**918.9**				
	11	1	121.5	243.9	510.3	**1020.6**				
	0	2	7.7	14.4	30.6	**61.2**				

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Item	Specification									
	1	2	28.8	59.4	122.4	**244.8**				
	2	2	43.2	88.2	183.6	**367.2**				
	3	2	59.4	117.0	244.8	**489.6**				
	4	2	88.2	176.4	367.2	**734.4**				
	5	2	117.0	234.0	489.6	**979.2**				
	6	2	131.4	262.8	550.8	**1103.4**				
	7	2	145.8	293.4	612.0	**1225.8**				
	8	2	176.4	351.0	734.4	**1470.6**				
	9	2	194.4	390.6	815.4	**1632.6**				
	10	2	219.6	439.2	918.0	**1837.8**				
	11	2	243.0	487.8	1020.6	**2041.2**				
	0	3	11.6	21.6	45.9	**91.8**				
	1	3	43.2	89.1	183.6	**367.2**				
	2	3	64.8	132.3	275.4	**550.8**				
	3	3	89.1	175.5	367.2	**734.4**				
	4	3	132.3	264.6	550.8	**1101.6**				
	5	3	175.5	351.0	734.4	**1468.8**				
	6	3	197.1	394.2	826.2	**1655.1**				
	7	3	218.7	440.1	918.0	**1838.7**				
	8	3	264.6	526.5	1101.6	**2205.9**				
	9	3	291.6	585.9	1223.1	**2448.9**				
	10	3	329.4	658.8	1377.0	**2756.7**				
	11	3	364.5	731.7	1530.9	**3061.8**				
	0	4	15.5	28.8	61.2	**122.4**				
	1	4	57.6	118.8	244.8	**489.6**				
	2	4	86.4	176.4	367.2	**734.4**				
	3	4	118.8	234.0	489.6	**979.2**				
	4	4	176.4	352.8	734.4	**1468.8**				
	5	4	234.0	468.0	979.2	**1958.4**				
	6	4	262.8	525.6	1101.6	**2206.8**				
	7	4	291.6	586.8	1224.0	**2451.6**				
	8	4	352.8	702.0	1468.8	**2941.2**				
	9	4	388.8	781.2	1630.8	**3265.2**				
	10	4	439.2	878.4	1836.0	**3675.6**				
	11	4	486.0	975.6	2041.2	**4082.4**				

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Item	Specification						
Transmit power and receive sensitivity							
		5-GHz radio		2.4-GHz radio flexible radio		5-GHz radio flexible radio	
	Spatial streams	Total transmit power (dBm)	Receive sensitivity (dBm)	Total transmit power (dBm)	Receive sensitivity (dBm)	Total transmit power (dBm)	Receive sensitivity (dBm)
802.11/11b							
1 Mbps	1	-	-	23	-98	-	-
11 Mbps	1	-	-	23	-90	-	-
802.11a/g							
6 Mbps	1	23	-96	23	-95	23	-96
24 Mbps	1	23	-86	23	-86	23	-86
54 Mbps	1	23	-77	23	-77	23	-77
802.11n HT20							
MCS0	1	23	-96	23	-96	23	-96
MCS4	1	23	-85	23	-85	23	-85
MCS7	1	23	-78	23	-77	23	-78
MCS8	2	23	-93	23	-93	23	-94
MCS12	2	23	-81	23	-82	23	-82
MCS15	2	23	-74	23	-74	23	-75
MCS16	3	23	-92	23	-92	23	-92
MCS20	3	23	-80	23	-80	23	-81
MCS23	3	23	-73	23	-73	23	-73
MCS24	4	23	-91	23	-91	23	-91
MCS28	4	23	-74	23	-74	23	-74
MCS31	4	23	-72	23	-71	23	-72

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Item	Specification						
802.11n HT40							
MCS0	1	23	-95	-	-	23	-95
MCS4	1	23	-83	-	-	23	-83
MCS7	1	23	-75	-	-	23	-75
MCS8	2	23	-90	-	-	23	-91
MCS12	2	23	-79	-	-	23	-80
MCS15	2	23	-72	-	-	23	-72
MCS16	3	23	-89	-	-	23	-90
MCS20	3	23	-78	-	-	23	-78
MCS23	3	23	-70	-	-	23	-71
MCS24	4	23	-88	-	-	23	-88
MCS30	4	23	-71	-	-	23	-71
MCS31	4	23	-69	-	-	23	-69
802.11ac VHT20							
MCS0	1	23	-96	-	-	23	-96
MCS4	1	23	-85	-	-	23	-85
MCS7	1	23	-77	-	-	23	-77
MCS8	1	23	-73	-	-	23	-74
MCS9	1	-	-	-	-	-	-
MCS0	2	23	-94	-	-	23	-94
MCS4	2	23	-81	-	-	23	-82
MCS7	2	23	-75	-	-	23	-75
MCS8	2	23	-71	-	-	23	-71
MCS9	2	-	-	-	-	-	-
MCS0	3	23	-92	-	-	23	-92
MCS4	3	23	-80	-	-	23	-80
MCS7	3	23	-74	-	-	23	-73

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Item	Specification						
MCS8	3	23	-70	-	-	23	-70
MCS9	3	-	-	-	-	-	-
MCS0	4	23	-91	-	-	23	-91
MCS4	4	23	-79	-	-	23	-79
MCS7	4	23	-72	-	-	23	-72
MCS8	4	23	-68	-	-	23	-68
MCS9	4	-	-	-	-	-	-
802.11ac VHT40							
MCS0	1	23	-95	-	-	23	-95
MCS4	1	23	-82	-	-	23	-82
MCS7	1	23	-75	-	-	23	-75
MCS8	1	23	-71	-	-	23	-71
MCS9	1	22	-70	-	-	22	-68
MCS0	2	23	-91	-	-	23	-91
MCS4	2	23	-79	-	-	23	-79
MCS7	2	23	-72	-	-	23	-72
MCS8	2	23	-68	-	-	23	-69
MCS9	2	22	-66	-	-	22	-68
MCS0	3	23	-90	-	-	23	-90
MCS4	3	23	-78	-	-	23	-78
MCS7	3	23	-70	-	-	23	-70
MCS8	3	23	-67	-	-	23	-67
MCS9	3	22	-65	-	-	22	-65
MCS0	4	23	-88	-	-	23	-88
MCS4	4	23	-77	-	-	23	-77
MCS7	4	23	-69	-	-	23	-69
MCS8	4	23	-65	-	-	23	-66

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Item	Specification						
MCS9	4	22	-63	-	-	22	-64
802.11ac VHT80							
MCS0	1	23	-91	-	-	23	-91
MCS4	1	23	-79	-	-	23	-79
MCS7	1	23	-72	-	-	23	-72
MCS8	1	23	-68	-	-	23	-68
MCS9	1	22	-66	-	-	22	-66
MCS0	2	23	-88	-	-	23	-88
MCS4	2	23	-76	-	-	23	-76
MCS7	2	23	-68	-	-	23	-69
MCS8	2	23	-65	-	-	23	-65
MCS9	2	22	-63	-	-	22	-64
MCS0	3	23	-86	-	-	23	-86
MCS4	3	23	-74	-	-	23	-74
MCS7	3	23	-67	-	-	23	-67
MCS8	3	23	-64	-	-	23	-64
MCS9	3	22	-62	-	-	22	-62
MCS0	4	23	-85	-	-	23	-85
MCS4	4	23	-73	-	-	23	-73
MCS7	4	23	-66	-	-	23	-66
MCS8	4	23	-62	-	-	23	-62
MCS9	4	22	-60	-	-	22	-61
802.11ac VHT160							
MCS0	1	23	-85			23	-85
MCS4	1	23	-73			23	-73
MCS7	1	23	-66			23	-66
MCS8	1	23	-62			23	-62

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Item	Specification						
MCS9	1	22	-60			22	-60
MCS0	2	23	-82			23	-82
MCS4	2	23	-70			23	-70
MCS7	2	23	-63			23	-63
MCS8	2	23	-59			23	-59
MCS9	2	22	-57			22	-57
MCS0	3	23	-80			23	-80
MCS4	3	23	-69			23	-69
MCS7	3	23	-62			23	-62
MCS8	3	23	-58			23	-58
MCS9	3	-	-				
MCS0	4	23	-78			23	-78
MCS4	4	23	-67			23	-67
MCS7	4	23	-59			23	-60
MCS8	4	23	-56			23	-56
MCS9	4	22	-54			22	-54
802.11ax HE20							
MCS0	1	23	-95	23	-94	23	-95
MCS4	1	23	-83	23	-82	23	-82
MCS7	1	23	-76	21	-76	23	-76
MCS8	1	23	-72	21	-71	23	-72
MCS9	1	22	-70	21	-70	22	-71
MCS10	1	20	-67	19	-66	20	-66
MCS11	1	20	-64	19	-63	20	-64
MCS0	2	23	-92	23	-91	23	-92
MCS4	2	23	-80	23	-80	23	-80
MCS7	2	23	-74	21	-73	23	-74

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Item	Specification						
MCS8	2	23	-69	21	-69	23	-70
MCS9	2	22	-68	21	-68	22	-68
MCS10	2	20	-64	19	-63	20	-65
MCS11	2	20	-61	19	-61	20	-61
MCS0	3	23	-90	23	-89	23	-90
MCS4	3	23	-79	23	-78	23	-79
MCS7	3	23	-72	21	-71	23	-72
MCS8	3	23	-68	21	-67	23	-68
MCS9	3	22	-67	21	-66	22	-67
MCS10	3	20	-63	19	-62	20	-63
MCS11	3	20	-60	19	-59	20	-60
MCS0	4	23	-88	23	-87	23	-88
MCS4	4	23	-77	23	-77	23	-77
MCS7	4	23	-70	21	-70	23	-70
MCS8	4	23	-66	21	-66	23	-67
MCS9	4	22	-64	21	-65	22	-65
MCS10	4	20	-62	19	-61	20	-62
MCS11	4	20	-59	19	-58	20	-59
802.11ax HE40							
MCS0	1	23	-92	-	-	23	-93
MCS4	1	23	-80	-	-	23	-80
MCS7	1	23	-74	-	-	23	-74
MCS8	1	23	-70	-	-	23	-69
MCS9	1	22	-68	-	-	22	-68
MCS10	1	20	-65	-	-	20	-65
MCS11	1	20	-61	-	-	20	-61
MCS0	2	23	-89	-	-	23	-89

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Item	Specification						
MCS4	2	23	-77	-	-	23	-78
MCS7	2	23	-70	-	-	23	-71
MCS8	2	23	-66	-	-	23	-67
MCS9	2	22	-65	-	-	22	-65
MCS10	2	20	-62	-	-	20	-62
MCS11	2	20	-59	-	-	20	-59
MCS0	3	23	-87	-	-	23	-87
MCS4	3	23	-76	-	-	23	-76
MCS7	3	23	-69	-	-	23	-69
MCS8	3	23	-65	-	-	23	-65
MCS9	3	22	-63	-	-	22	-63
MCS10	3	20	-60	-	-	20	-60
MCS11	3	20	-57	-	-	20	-57
MCS0	4	23	-85	-	-	23	-85
MCS4	4	23	-74	-	-	23	-74
MCS7	4	23	-67	-	-	23	-67
MCS8	4	23	-63	-	-	23	-64
MCS9	4	22	-61	-	-	22	-62
MCS10	4	20	-58	-	-	20	-58
MCS11	4	20	-55	-	-	20	-55
802.11ax HE80							
MCS0	1	23	-88	-	-	23	-89
MCS4	1	23	-78	-	-	23	-78
MCS7	1	23	-70	-	-	23	-71
MCS8	1	23	-67	-	-	23	-67
MCS9	1	22	-65	-	-	22	-65
MCS10	1	20	-61	-	-	20	-61

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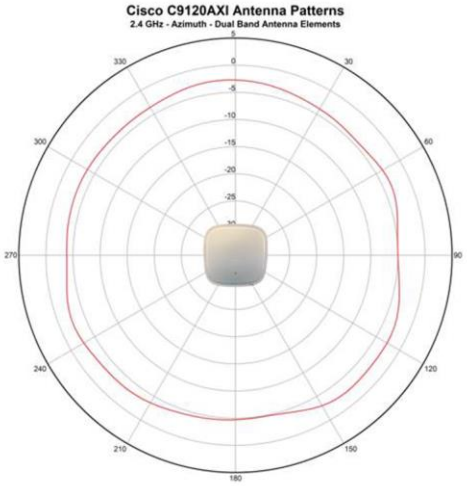
Item	Specification						
MCS11	1	20	-59	-	-	20	-59
MCS0	2	23	-86	-	-	23	-86
MCS4	2	23	-74	-	-	23	-75
MCS7	2	23	-67	-	-	23	-67
MCS8	2	23	-64	-	-	23	-63
MCS9	2	22	-61	-	-	22	-62
MCS10	2	20	-58	-	-	20	-58
MCS11	2	20	-55	-	-	20	-55
MCS0	3	23	-84	-	-	23	-84
MCS4	3	23	-74	-	-	23	-73
MCS7	3	23	-66	-	-	23	-66
MCS8	3	23	-62	-	-	23	-62
MCS9	3	22	-60	-	-	22	-60
MCS10	3	20	-57	-	-	20	-56
MCS11	3	20	-54	-	-	20	-54
MCS0	4	23	-82	-	-	23	-82
MCS4	4	23	-71	-	-	23	-71
MCS7	4	23	-64	-	-	23	-64
MCS8	4	23	-60	-	-	23	-60
MCS9	4	22	-58	-	-	22	-58
MCS10	4	20	-55	-	-	20	-55
MCS11	4	20	-52	-	-	20	-52
802.11ax HE160							
MCS0	1	23	-86	-	-	23	-86
MCS4	1	23	-75	-	-	23	-75
MCS7	1	23	-67	-	-	23	-68
MCS8	1	23	-64	-	-	23	-64

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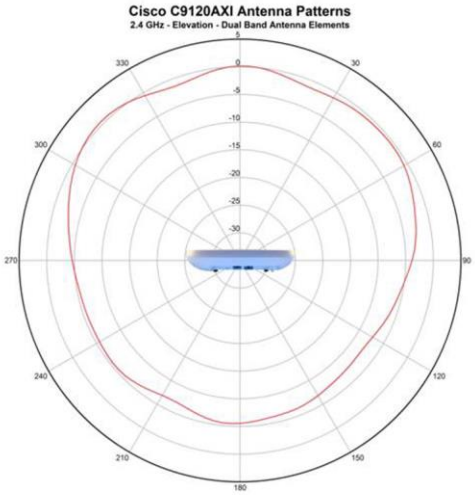
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MCS9	1	22	-62	-	-	22	-62
MCS10	1	20	-58	-	-	20	-58
MCS11	1	20	-56	-	-	20	-56
MCS0	2	23	-83	-	-	23	-83
MCS4	2	23	-71	-	-	23	-72
MCS7	2	23	-64	-	-	23	-64
MCS8	2	23	-60	-	-	23	-61
MCS9	2	22	-58	-	-	22	-59
MCS10	2	20	-54	-	-	20	-55
MCS11	2	20	-52	-	-	20	-53
MCS0	3	23	-81	-	-	23	-81
MCS4	3	23	-70	-	-	23	-70
MCS7	3	23	-62	-	-	23	-62
MCS8	3	23	-59	-	-	23	-59
MCS9	3	22	-58	-	-	22	-57
MCS10	3	20	-53	-	-	20	-53
MCS11	3	20	-51	-	-	20	-51
MCS0	4	23	-79	-	-	23	-79
MCS4	4	23	-68	-	-	23	-68
MCS7	4	23	-61	-	-	23	-61
MCS8	4	23	-59	-	-	23	-57
MCS9	4	22	-55	-	-	22	-56
MCS10	4	20	-51	-	-	20	-52
MCS11	4	20	-49	-	-	20	-49

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Cisco Catalyst 9120i – 2.4 GHz Antenna Patterns

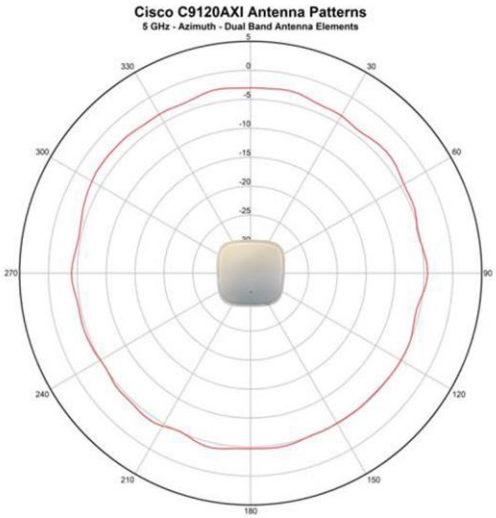


2.4 GHz Azimuth

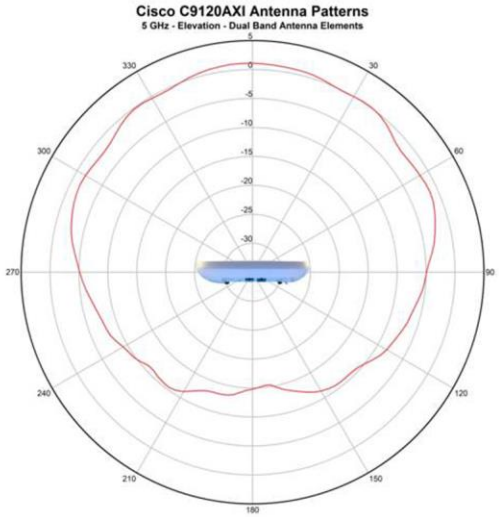


2.4 GHz Elevation

Cisco Catalyst 9120i – 5 GHz Antenna Patterns



5 GHz Azimuth

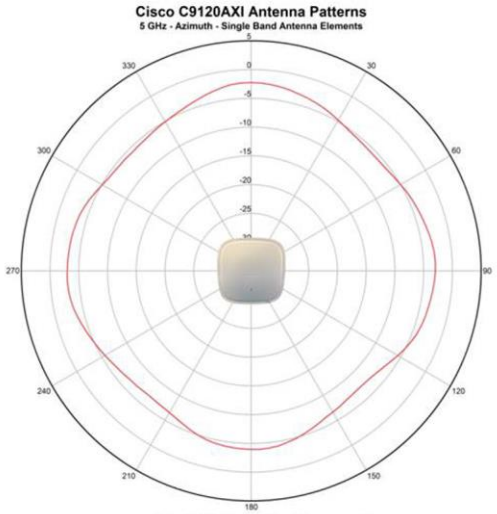


5 GHz Elevation

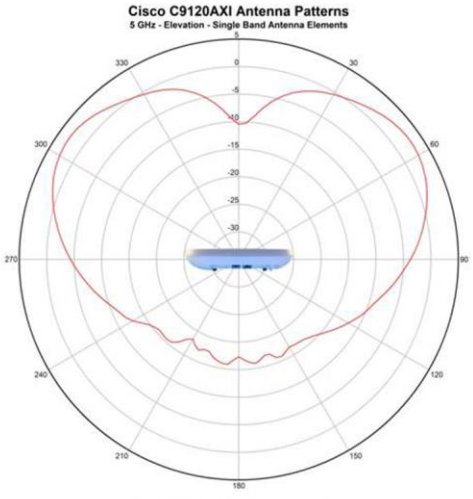
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Cisco Catalyst 9120i – 5 GHz Antenna Patterns

Single Band – Single Radiating Element (SRE) antennas

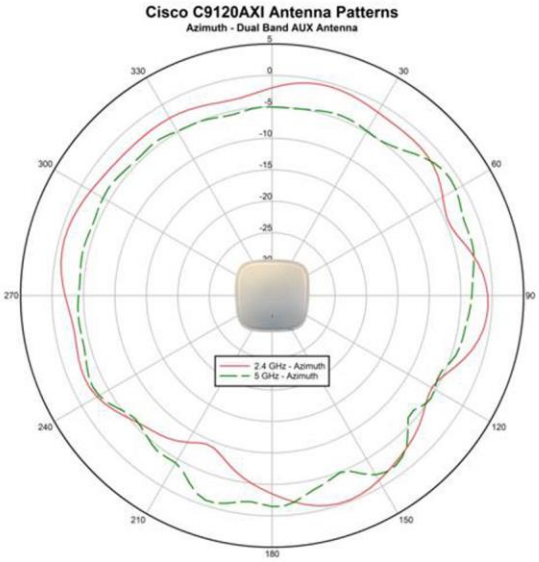


5 GHz Azimuth

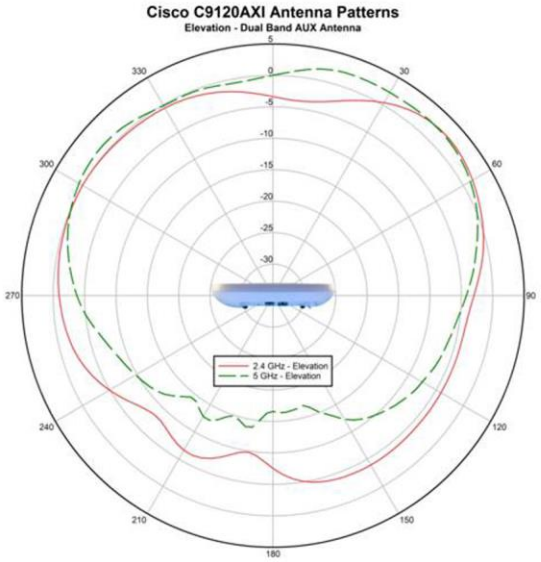


5 GHz Elevation

Cisco Catalyst 9120i – RF ASIC Antenna



Azimuth



Elevation

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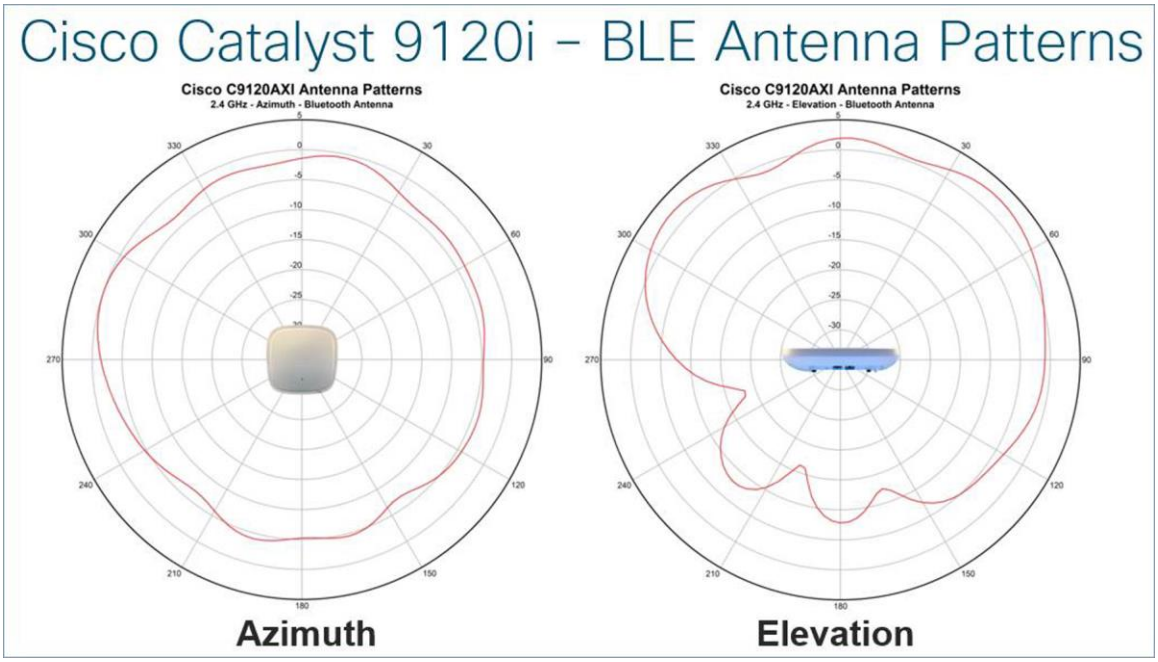


Figure 1.
Antenna Radiation Patterns

Packaging

The Cisco Catalyst 9100 Series requires mandatory Smart Licensing. This provides ease of use for Cisco DNA license management, consumption, and tracking. The Cisco Catalyst 9100 Series uses packaging that includes vastly simplified base network packages (Network Essentials and Network Advantage) and term-based software packages (Cisco DNA Essentials, Cisco DNA Advantage) as add-ons. The Cisco DNA packages, in addition to on-box capabilities, also unlock additional functionality in Cisco DNA Center, enabling controller-based software-defined automation and assurance in your network.

The Cisco Catalyst 9100 Series can support 3 types of Cisco DNA license: Cisco DNA Essentials, Cisco DNA Advantage and Cisco DNA Premier. The Cisco DNA licenses provide Cisco innovations on the AP. The Cisco DNA license also includes the Network Essentials and Network Advantage licensing options which cover wireless fundamentals such as 802.1x authentication, QoS, PnP etc, telemetry and visibility, SSO, as well as security controls. These Network essentials and Network advantage components are perpetual and is valid till the life of the AP. Cisco DNA subscription licenses have to be purchased for a 3-, 5-, or 7-year subscription term. However, upon expiry of Cisco DNA license, Cisco DNA features will expire, whereas network essentials and network advantage features will remain.

Note that it is not required to deploy Cisco DNA Center just to use one of the above packages. Refer to https://www.cisco.com/c/dam/en/us/products/collateral/software/one-wireless-subscription/q-and-a-c67-739601.pdf for additional details about the Essentials and Advantage packages.

For information about feature support please refer to the Cisco Catalyst 9100 Series Release Notes.

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Managing Licenses with Smart Accounts

Creating Smart Accounts by using the Cisco Smart Software Manager (CSSM) enables you to order devices and licensing packages and also manage your software licenses from a centralized website. You can set up the Smart Account to receive daily email alerts and to be notified of expiring add-on licenses that you want to renew. A Smart Account is mandatory for Catalyst 9100 access points. For more information on Smart Account refer to https://www.cisco.com/go/smartaccounts.

Warranty Information

The Cisco Catalyst 9120 Series Access Points come with a limited lifetime warranty that provides full warranty coverage of the hardware for as long as the original end user continues to own or use the product. The warranty includes 10-day advance hardware replacement and ensures that software media are defect-free for 90 days. For more details, visit https://www.cisco.com/go/warranty.

Cisco Services

With Cisco Services, you can achieve infrastructure excellence faster with less risk. From initial WLAN readiness assessment to implementation, full solution support and in-depth training, our services for the Cisco Catalyst 9120 Access Points provide expert guidance to help you successfully plan, deploy, manage, and support your new access points. With unmatched networking expertise, best practices, and innovative tools, Cisco Services can help you reduce overall upgrade, refresh, and migration costs as you introduce new hardware, software, and protocols into the network. With a comprehensive lifecycle of services, Cisco experts will help you minimize disruption and improve operational efficiency to extract maximum value from your Cisco DNA ready infrastructure.

Cisco Capital

Flexible Payment Solutions to Help You Achieve Your Objectives

Cisco Capital makes it easier to get the right technology to achieve your objectives, enable business transformation and help you stay competitive. We can help you reduce the total cost of ownership, conserve capital, and accelerate growth. In more than 100 countries, our flexible payment solutions can help you acquire hardware, software, services and complementary third-party equipment in easy, predictable payments. Learn more.

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