

Dear Sir/ Madam,

Sub: Request for Quotation for Cisco Controller and Cisco AP (detailed specifications is mentioned below).

PTC India Financial Services Limited (herein after referred to as "PFS") requires Cisco Controller and Cisco AP. In this respect, we would appreciate your sales quotation to be submitted & would appreciate a competitive price and a prompt response.

It is requested to submit your bid for said assignment latest by 15 September 2017 by 03.00 P.M.

The bid needs to be submitted in the given below format: -

Proposal of Cisco Controller and Cisco AP (Attached Datasheet of below Cisco Controller and Cisco AP for reference)

Proposal of Cisco Wireless Controller and Cisco Aironet system: - NOTE THAT THE COMPONENTS SHOULD BE IPv6 COMPLIANT (Configuration for Cisco Wireless Controller and Cisco Aironet AP system)

S .NO	Part Code	Make	Description	QTY	Unit Price INR	Total Price INR
1	AIR-CT2504-25-K9Z	Cisco	2504 Wireless Controller with 25 AP Licenses	1		
1.1	CON-SNT-CT255	Cisco	1 Year SNTC-8X5XNBD 2504 Wireless LAN Co	1		
1.2	LIC-CT2504-BASE	Cisco	Base Software License	1		
1.3	CON-ECMU-LIT4BASE	Cisco	SWSS UPGRADES Base Software License	1		
1.4	AIR-CT2504-CCBL	Cisco	2504 Wireless Controller Console Cable	1		
1.5	AIR-CT2504-SW-8.0	Cisco	Cisco 2504 Wireless Controller SW Rel. 8.0	1		
1.6	CAB-AC2E	Cisco	AC Power cord India	1		
2	AIR-CT2504-RMNT	Cisco	2504 Wireless Controller Rack Mount Bracket	1		
2.1	PS-SWITCH-AC-2P	Cisco	2 Prong C7/C8 On-Off AC Power Supply Switch	1		
3	L-LIC-CT2504-UPG	Cisco	Upgrade Options for 2504 WLAN Controller (e-Delivery)	1		
3.1	CON-ECMU-LCT25UP	Cisco	SWSS UPGRADES Upgrade Options for 2504 WLAN Controller	1		
4	AIR-AP2802I-D-K9	Cisco	802.11ac W2 AP w/CA; 4x4:3; Int Ant; 2xGbE D	9		
4.1	CON-SNT-AI2I0DK9	Cisco	1 Year SNTC-8X5XNBD 802.11ac W2 AP w/CA;	9		
4.2	AIR-AP-T-RAIL-R	Cisco	Ceiling Grid Clip for Aironet APs - Recessed Mount (Default)	9		

4.3	AIR-AP-BRACKET-1	Cisco	802.11n AP Low Profile Mounting Bracket (Default)	9		
4.4	SW2802-CAPWAP-K9	Cisco	Cisco Aironet 2800 Series CAPWAP Software Image	9		
4.5		Cisco	PWR-2504-AC Power Injector for Aironet Access Point	9		
5			One Time Installation, Testing and Commissioning	1		
Total Value						

Note: -

- i) Quotes can be sent by E-mail only at "it-bid@ptcfinancial.com" latest by 15 September 2017 by 03.00 P.M
- ii) PFS reserves sole right to disqualify any incomplete bid or bid received after specified time.

Payment Terms:

- i) 100% payment will be made 30 days after delivery & hardware verification at our end.
- ii) Price should be inclusive of delivery & installation.
- iii) Taxes, if any, should be mentioned as extra.

Award of Contract: -

Recommendation of award will be based on L1 basis.

In submitting a response to above, the respondent agrees that the decision of PTC India Financial Services Limited will be final. Respondents acknowledge and understand that PFS is not obligated to seek clarification concerning the proposals decision.

PFS reserves the right to:

- a) Select & negotiate with more than one respondent,
- b) Cease this request-for-quotation process,
- c) Seek additional information or clarification from the respondents,
- d) Cancel, add to or amend the information, requirement, terms set out herein.

Neither this request nor any response to it by any party commits obligates or otherwise creates legal relationship between PFS and that party.

After finalization of the Vendor a Letter of Award documenting the List of Items with agreed rates and the terms & conditions binding both PFS & Vendor will be issued.

Cisco 2500 Series Wireless Controllers

Small to Medium-Sized Enterprise and Branch Office Controller

- Support for up to 75 access points and 1000 clients.
- 802.11n and 802.11ac ready support up to 1 Gbps.
- Payment Card Industry (PCI) support enables certification for scanner and kiosk deployments.

Licensing Flexibility and Investment Protection

- Additional access point licenses may be added over time.

Comprehensive Security

- Full Control and Provisioning of Wireless Access Points (CAPWAP) access point to controller encryption.
- Supports rogue access point detection and detection of denial-of-service attacks.
- Management frame protection detects malicious users and alerts network administrators.

Cisco CleanAir[®] Technology

- Detects, classifies, locates, and mitigates RF interference to provide performance protection for 802.11n and 802.11ac networks.

Cisco OfficeExtend Solution

- Secure, simple, cost-effective mobile teleworker solution.

Product Overview

The Cisco[®] 2500 Series [Wireless Controller](#) enables systemwide [wireless](#) functions in small to medium-sized enterprises and branch offices. Designed for [802.11n](#) and [802.11ac](#) performance, Cisco 2500 Series Wireless Controllers are entry-level controllers that provide real-time communications between [Cisco Aironet[®] access points](#) to simplify the deployment and operation of wireless networks (Figure 1).

Figure 1. Cisco 2500 Series Wireless Controller



As a component of the [Cisco Unified Wireless Network](#), this controller delivers centralized security policies, wireless intrusion prevention system (wIPS) capabilities, award-winning RF management, and quality of service (QoS) for voice and video. Delivering 802.11ac performance and scalability, the Cisco 2500 Series provides low total cost of ownership and flexibility to scale as network requirements grow.

The Cisco 2504 Wireless Controller supports Cisco Application Visibility and Control (AVC), the technology that includes Cisco's Network-Based Application Recognition 2 (NBAR-2) engine. N-BAR-2 does deep packet inspection (DPI) to classify applications and tie into quality of service (QoS) to either drop or mark the traffic, thereby prioritizing business-critical applications in the network. Cisco AVC uses NetFlow Version 9 to export the flows to [Cisco Prime[™] Infrastructure](#) or a third-party NetFlow Collector. The Cisco 2504 Wireless Controller also supports Bonjour Services Directory, which enables Bonjour (Apple) Services to be advertised and utilized in a separate Layer 3 network. Wireless Policy engine is a wireless profiler and policy feature on the Cisco 2500 Series Wireless Controller that enables profiling of wireless devices and enforcement of policies such as VLAN assignment, QoS, ACL, and time-of-day-based access.

Cisco 2500 Series Wireless Controller-based [access point](#) licensing offers flexibility with 5, 15, 25, or 50 [access points](#). Additional access point support can be added in increments of 1, 5, or 25.

Table 1 lists the features and benefits of the Cisco 2500 Series Wireless Controllers.

Table 1. Cisco 2500 Series Wireless Controller Features and Benefits

Feature	Benefits
Scalability	<ul style="list-style-type: none"> • Supports up to 75 access points • Supports up to 1000 clients
Ease of Deployment	<ul style="list-style-type: none"> • For quick and easy deployment Access Points can be connected directly to 2504 Wireless LAN Controller via two PoE (Power over Ethernet) ports
High Performance	<ul style="list-style-type: none"> • Wired-network speed and nonblocking performance for 802.11n and 802.11ac networks. Supports up to 1 Gbps throughput
RF Management	<ul style="list-style-type: none"> • Provides both real-time and historical information about RF interference impacting network performance across controllers, via systemwide Cisco CleanAir® technology integration
Comprehensive End-to-End Security	<ul style="list-style-type: none"> • Offers CAPWAP-compliant Datagram Transport Layer Security (DTLS) encryption to help ensure full-line-rate encryption between access points and controllers across remote WAN/LAN links
End-to-end Voice	<ul style="list-style-type: none"> • Supports Unified Communications for improved collaboration through messaging, presence, and conferencing • Supports all Cisco Unified Wireless IP Phones for cost-effective, real-time voice services
High-Performance Video	<ul style="list-style-type: none"> • Integrates Cisco VideoStream technology as part of the Cisco medianet framework to optimize the delivery of video applications across the WLAN
PCI Integration	<ul style="list-style-type: none"> • Part of Payment Card Industry (PCI) certified architecture, and are well-suited for retail customers who deploy transactional data applications such as scanners and kiosks
OfficeExtend	<ul style="list-style-type: none"> • Supports corporate wireless service for mobile and remote workers with secure wired tunnels to the Cisco Aironet® 600, 1130, 1140 or 3500 Series Access Points • Extends the corporate network to remote locations with minimal setup and maintenance requirements • Improves productivity and collaboration at remote site locations • Separate service set identifier (SSID) tunnels allow both corporate and personal Internet access • Reduced carbon dioxide emissions from a decrease in commuting • Higher employee job satisfaction from ability to work at home • Improves business resiliency by providing continuous, secure connectivity in the event of disasters, pandemics, or inclement weather
Enterprise Wireless Mesh	<ul style="list-style-type: none"> • Allows access points to dynamically establish wireless connections without the need for a physical connection to the wired network • Available on select Cisco Aironet access points, Enterprise Wireless Mesh is ideal for warehouses, manufacturing floors, shopping centers, and any other location where extending a wired connection may prove difficult or aesthetically unappealing
Environmentally Responsible	<ul style="list-style-type: none"> • Organizations may choose to turn off access point radios to reduce power consumption during off-peak hours
Mobility, Security and Management for IPv6 & Dual-Stack Clients	<ul style="list-style-type: none"> • Secure, reliable wireless connectivity and consistent end-user experience • Increased network availability by proactive blocking of known threats • Equips administrators for IPv6 troubleshooting, planning, client traceability from a common wired and wireless management system
Guest Anchor and Wired Guest Access	<ul style="list-style-type: none"> • Supports up to 15 guest anchor Ethernet over IP (EoIP) tunnels for path isolation of guest traffic from enterprise data traffic • Extends the guest access services to the wired clients on par with other WLAN Controllers

Product Specifications

Table 2 lists the product specification for Cisco 2500 Series Wireless Controllers.

Table 2. Product Specifications for the Cisco 2500 Wireless Controller

Item	Specification
Wireless Standards	IEEE 802.11a, 802.11ac, 802.11b, 802.11g, 802.11d, WMM/802.11e, 802.11h, 802.11k, 802.11n, 802.11r, 802.11u, 802.11w, 802.11ac
Wired/Switching/Routing	IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE-TX specification, 1000BASE-T, and IEEE 802.1Q VLAN tagging

Item	Specification
Data Request for Comments (RFCs)	<ul style="list-style-type: none"> • RFC 768 UDP • RFC 791 IP • RFC 2460 IPv6 (passthrough bridging mode only) • RFC 792 ICMP • RFC 793 TCP • RFC 826 ARP • RFC 1122 Requirements for Internet Hosts • RFC 1519 CIDR • RFC 1542 BOOTP • RFC 2131 DHCP • RFC 5415 CAPWAP Protocol Specification
Security Standards	<ul style="list-style-type: none"> • Wi-Fi Protected Access (WPA) • IEEE 802.11i (WPA2, RSN) • RFC 1321 MD5 Message-Digest Algorithm • RFC 1851 The ESP Triple DES Transform • RFC 2104 HMAC: Keyed Hashing for Message Authentication • RFC 2246 TLS Protocol Version 1.0 • RFC 2401 Security Architecture for the Internet Protocol • RFC 2403 HMAC-MD5-96 within ESP and AH • RFC 2404 HMAC-SHA-1-96 within ESP and AH • RFC 2405 ESP DES-CBC Cipher Algorithm with Explicit IV • RFC 2406 IP Encapsulating Security Payload (ESP) • RFC 2407 Interpretation for ISAKMP • RFC 2408 ISAKMP • RFC 2409 IKE • RFC 2451 ESP CBC-Mode Cipher Algorithms • RFC 3280 Internet X.509 PKI Certificate and CRL Profile • RFC 3602 The AES-CBC Cipher Algorithm and Its Use with IPsec • RFC 3686 Using AES Counter Mode with IPsec ESP • RFC 4347 Datagram Transport Layer Security • RFC 4346 TLS Protocol Version 1.1
Encryption	<ul style="list-style-type: none"> • WEP and Temporal Key Integrity Protocol-Message Integrity Check (TKIP-MIC): RC4 40, 104 and 128 bits (both static and shared keys) • Advanced Encryption Standard (AES): CBC, CCM, Counter Mode with Cipher Block Chaining Message Authentication Code Protocol (CCMP) • DES: DES-CBC, 3DES • Secure Sockets Layer (SSL) and Transport Layer Security (TLS): RC4 128-bit and RSA 1024- and 2048-bit • DTLS: AES-CBC
Authentication, Authorization, and Accounting (AAA)	<ul style="list-style-type: none"> • IEEE 802.1X • RFC 2548 Microsoft Vendor-Specific RADIUS Attributes • RFC 2716 PPP EAP-TLS • RFC 2865 RADIUS Authentication • RFC 2866 RADIUS Accounting • RFC 2867 RADIUS Tunnel Accounting • RFC 3576 Dynamic Authorization Extensions to RADIUS • RFC 3579 RADIUS Support for EAP • RFC 3580 IEEE 802.1X RADIUS Guidelines • RFC 3748 Extensible Authentication Protocol • Web-based authentication • TACACS support for management users

Item	Specification
Management	SNMP v1, v2c, v3 RFC 854 Telnet RFC 1155 Management Information for TCP/IP-Based Internets RFC 1156 MIB RFC 1157 SNMP RFC 1213 SNMP MIB II RFC 1350 TFTP RFC 1643 Ethernet MIB RFC 2030 SNMP RFC 2616 HTTP RFC 2665 Ethernet-Like Interface types MIB RFC 2674 Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering, and Virtual Extensions RFC 2819 RMON MIB RFC 2863 Interfaces Group MIB RFC 3164 Syslog RFC 3414 User-Based Security Model (USM) for SNMPv3 RFC 3418 MIB for SNMP RFC 3636 Definitions of Managed Objects for IEEE 802.3 MAUs Cisco private MIBs
Management Interfaces	<ul style="list-style-type: none"> • Designed for use with Cisco Wireless Control System • Web-based: HTTP/HTTPS individual device manager • Command-line interface: Telnet, SSH, serial port
Interfaces and Indicators	<ul style="list-style-type: none"> • Console port: RJ-45 connector • Network: Four 1 Gbps Ethernet (RJ-45) • LED indicators: Link Activity (each 1 Gigabit Ethernet port), Power, Status, Alarm
Physical and Environmental	Dimensions: 1.73 x 8.00 x 6.75 in. (43.9 x 203.2 x 271.5mm) Weight: 3.5 lbs (with power supply) Temperature: <ul style="list-style-type: none"> • Operating: 32 to 104 °F (0 to 40°C) • Storage: -13 to 158°F (-25 to 70°C) Humidity: <ul style="list-style-type: none"> • Operating humidity: 10 to 95 percent, noncondensing • Storage humidity: Up to 95 percent Power adapter: Input power: 100 to 240 VAC; 50/60 Hz Heat dissipation: 72 BTU/hour
Regulatory Compliance	Safety: <ul style="list-style-type: none"> • UL 60950-1, 2nd Edition • EN 60950:2005 EMI and susceptibility (Class B): <ul style="list-style-type: none"> • U.S.: FCC Part 15.107 and 15.109 • Canada: ICES-003 • Japan: VCCI • Europe: EN 55022, EN 55024

Ordering Information

Tables 3 and 4 provide ordering information for the Cisco 2500 Series Wireless Controllers. To place an order, visit the Cisco ordering website: <http://www.cisco.com/en/US/ordering/index.shtml>.

Table 3. Ordering Information for Cisco 2500 Series Wireless Controllers

Part Number	Description	Cisco SMARTnet® 8x5xNBD
AIR-CT2504-5-K9	2500 Series Wireless Controller for up to 5 Cisco access points	CON-SNT-CT255
AIR-CT2504-15-K9	2500 Series Wireless Controller for up to 15 Cisco access points	CON-SNT-CT2515
AIR-CT2504-25-K9	2500 Series Wireless Controller for up to 25 Cisco access points	CON-SNT-CT2525
AIR-CT2504-50-K9	2500 Series Wireless Controller for up to 50 Cisco access points	CON-SNT-CT2550
AIR-CT2504-HA-K9*	Cisco 2500 Series Wireless Controller for High Availability	CON-SNT-CT2504HA

* Please note AIR-CT2504-HA-K9 does not support access point and client stateful switchover.

Table 4. Ordering Information for Cisco 2500 Series Wireless Controllers: Optional Accessories

Part Number	Product Name
AIR-CT2504-RMNT=	Cisco 2504 Wireless Controller Rack Mount Bracket
PWR-2504-AC=	Cisco 2504 Wireless Controller Spare Power Supply (not necessary with original order as 1 power supply is included)

Additive Capacity Upgrade Licenses

Tables 5 and 6 summarize additive capacity upgrade licenses that are available for the Cisco 2500 Series.

Table 5. Ordering Information for Cisco 2500 Series Wireless Controllers: Access Point Adder Licenses (e-Delivery PAKs)

Part Number	Description	SWSS 8x5xNBD
L-LIC-CT2504-UPG	Primary upgrade SKU: Pick any number or combination of the following options under this SKU to upgrade one or many controllers under one product authorization key	CON-ECMU-LCT25UP
L-LIC-CT2504-1A	1 Access Point Adder License for Cisco 2504 Wireless Controller (e-Delivery)	CON-ECMU-LICCT2504
L-LIC-CT2504-5A	5 Access Point Adder License for Cisco 2504 Wireless Controller (e-Delivery)	CON-ECMU-LCT255A
L-LIC-CT2504-25A	25 Access Point Adder License for Cisco 2504 Wireless Controller (e-Delivery)	CON-ECMU-LCT2525A

Table 6. Ordering Information for Cisco 2500 Series Wireless Controllers: Access Point Adder Licenses (Paper PAKs)

Part Number	Description	SWSS 8x5xNBD
LIC-CT2504-UPG	Primary upgrade SKU: Pick any number or combination of the following options under this SKU to upgrade one or many controllers under one product authorization key	CON-ECMU-LCT25UP
LIC-CT2504-1A	1 Access Point Adder License for Cisco 2504 Wireless Controller (Paper Certificate - U.S. Mail)	CON-ECMU-LICCT2504
LIC-CT2504-5A	5 Access Point Adder License for Cisco 2504 Wireless Controller (Paper Certificate - U.S. Mail)	CON-ECMU-LCT255A
LIC-CT2504-25A	25 Access Point Adder License for Cisco 2504 Wireless Controller (Paper Certificate - U.S. Mail)	CON-ECMU-LCT2525A

Table 7 shows the optional DTLS license for Cisco 2500 Series Wireless Controllers. When the customer orders the 2500 Series and chooses "none selected (the default) in the Optional Licenses tab, data DTLS encryption is disabled.

Datagram Transport Layer Security (DTLS) is required for all Cisco OfficeExtend deployments to encrypt the data plane traffic. To enable this functionality, you must obtain a \$0 DTLS license. **Customers planning to install this device physically in Russia must obtain a physical PAK in order to enable a DTLS license and should not download the license from Cisco.com.** Please consult your local government regulations to ensure that data DTLS encryption is permitted.

The DTLS Paper PAK license is designated for customers who purchase a controller with DTLS disabled due to import restrictions but get permission to add DTLS support after initial purchase. This optional DTLS license is required for Cisco OfficeExtend deployment.

Table 7. Optional Licensing for Cisco 2500 Series Wireless Controllers (PAKs)

Part Number	Description
LIC-CT2504-UPG	Primary upgrade SKU: Pick any number or combination of the following options under this SKU to upgrade one or many controllers under one product authorization key
LIC-CT25-DTLS-K9	Cisco 2504 Controller DTLS License (Paper Certificate - U.S. Mail)
L-LIC-CT2504-UPG	Primary upgrade SKU: Pick any number or combination of the following options under this SKU to upgrade one or many controllers under one product authorization key
L-LIC-CT25-DTLS-K9	Cisco 2504 Controller DTLS License (electronic Certificate; must not be ordered by Russian customers)

Other customers can simply use the following procedure in order to download the DTLS license from Cisco.com.

To obtain/download a Data DTLS License:

- Step 1. Browse to <http://cisco.com/go/license>.
- Step 2. On the Product License Registration page, choose **Licenses Not Requiring a PAK**.
- Step 3. Choose **Cisco Wireless Controllers DTLS License** under Wireless.
- Step 4. Complete the remaining steps to generate the license file. The license will be provided online or via email.
- Step 5. Copy the license file to your Trivial File Transfer Protocol (TFTP) server.
- Step 6. Install the license by browsing to the WLC Web Administration page:

Management --> Software Activation --> Commands --> Action: Install License

Service and Support

Realize the full business value of your wireless network and mobility services investments faster with intelligent, customized services from Cisco and our partners. Backed by deep networking expertise and a broad ecosystem of partners, Cisco professional and technical services enable you to successfully plan, build, and run your network as a powerful business platform. Our services can help you successfully deploy the Cisco Wireless Controller and integrate mobility solutions effectively to lower the total cost of ownership and secure your wireless network.

To learn more about Cisco wireless LAN service offers, visit: <http://www.cisco.com/go/wirelesslanservices>.

Cisco Capital

Financing to Help You Achieve Your Objectives

Cisco Capital[®] financing can help you acquire the technology you need to achieve your objectives and stay competitive. We can help you reduce CapEx, accelerate your growth, and optimize your investment dollars and ROI. Cisco Capital financing gives you flexibility in acquiring hardware, software, services, and complementary third-party equipment. And there's just one predictable payment. Cisco Capital is available in more than 100 countries. [Learn more.](#)

For More Information

For more information about Cisco wireless controllers, contact your local account representative or visit: <http://www.cisco.com/en/US/products/ps6366/index.html>.

For more information about the Cisco Unified Wireless Network framework, visit: <http://www.cisco.com/go/unifiedwireless>.



Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV Amsterdam,
The Netherlands

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Cisco Aironet 2800 Series Access Points

The Cisco® Aironet® 2800 Series Wi-Fi access points are highly versatile and deliver the most functionality in the industry.

Product Overview



For organizations paving the way for the new 802.11ac Wave 2 standard, the Cisco Aironet 2800 Series is the perfect solution. The access points go beyond getting ready for the new standard, providing the ultimate in flexibility and versatility.

For large enterprise organizations that rely on Wi-Fi to engage with customers, the 2800 Series is a hands-off product that's intelligent enough to make decisions based on end-device activities and usage. This automation allows you to devote time to other pressing matters, secure in the knowledge that your Wi-Fi network is performing to its utmost potential.

The Aironet 2800 Series is packed with the features and capabilities that have made Cisco the industry leader, at a price point that is ideal for managing wireless growth, capacity, and coverage gaps in dense indoor environments.

Features and Benefits

Feature	Benefit
802.11ac Wave 2 support	Provides a theoretical connection rate of up to 2.6 Gbps per radio—roughly double the rates offered by today's high-end 802.11ac access points.
High Density Experience (HDX)	Best-in-class RF architecture, which provides high-performance coverage for a high density of client devices, giving the end user a seamless wireless experience. HDX includes features such as custom hardware in 802.11ac Wave 2 radios, Cisco CleanAir®, ClientLink 4.0, cross-access point noise reduction, and an optimized client roaming experience.
Multuser Multiple-Input Multiple-Output (MU-MIMO) technology	Supporting three spatial streams, MU-MIMO enables access points to split spatial streams between client devices, to maximize throughput.

Feature	Benefit
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: <ul style="list-style-type: none"> • 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 802.11ac Wave 2 and increasing client device capacity. • Security Monitoring and 5-GHz mode, One radio will serve 5-GHz clients, while the other is scanning the full spectrum for WPS attackers, CleanAir interferers, and rogue devices.
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 2800 Series models 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.
160-MHz channel support	Supporting channels up to 160 MHz wide, Dynamic Bandwidth Selection allows the access point to dynamically switch between 20-, 40-, 80-, and 160-MHz channels, depending on the RF channel conditions, providing the industry's best-performing wireless network.
Optimized access point roaming	Helps ensure that client devices associate with the access point in their coverage range that offers the fastest data rate available.
Zero Impact Application Visibility and Control	Uses dedicated hardware acceleration to improve the performance of line-speed applications such as Application Visibility and Control.
Auto Link Aggregation (LAG) support	802.3ad (LACP) compliant, allowing both Gigabit Ethernet interfaces to automatically LAG, increasing overall throughput to the access point.
ClientLink 4.0	Cisco ClientLink 4.0 technology to improve downlink performance to all mobile devices, including one-, two-, and three-spatial-stream devices on 802.11a/b/g/n/ac while improving battery life on mobile devices such as smartphones and tablets.
CleanAir 160 MHz*	Cisco CleanAir technology, enhanced with 160-MHz channel support, provides proactive, high-speed spectrum intelligence across 20-, 40-, 80-, or 160-MHz-wide channels to combat performance problems due to wireless interference.
Cisco Mobility Express	Flexible deployment mode through the Cisco Mobility Express Solution is ideal for medium-sized deployments and can support up to 100 access points. Easy setup allows the 2800 Series Access Points to be deployed on networks without a physical controller.

* Available in a future release.

802.11ac Wave 2 and Beyond

The Aironet 2800 Series extends 802.11ac speed and features to a new generation of smartphones, tablets, and high-performance laptops, providing a greater end-user experience. Whether your project involves wholesale changes to your current wireless network or upgrading your legacy Wi-Fi deployments (802.11a/b/g/n/ac wave 1 deployments), the 2800 Series can handle the job.

The 2800 Series supports 802.11ac Wave 2, providing a theoretical connection rate of up to 5.2 Gbps—that's roughly 4x the rates offered by today's high-end 802.11ac access points. The boost helps you stay ahead of the performance and bandwidth expectations of today's mobile worker, who usually uses multiple Wi-Fi devices instead of just one. As such, users are adding proportionally larger traffic loads to the wireless LAN, which has outpaced Ethernet as the default enterprise access network.

Cisco DNA Support

Pairing the 2800 Series access points with the Cisco Digital Network Architecture (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. By decoupling network functions from the hardware, you can build and manage your entire wired and wireless network from a single user interface.

Working together, the 2800 Series and DNA offer such features as:

- Flexible Radio Assignment
- Cisco Connected Mobile Experiences
- Cisco High Density Experience
- Apple FastLane
- Cisco Identity Services Engine
- And much more

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

High Density Experience

Building on the Cisco Aironet heritage of RF excellence, the 2800 Series access points run on a purpose-built, innovative chipset with a best-in-class RF architecture. This chipset provides a high-density experience for enterprise networks designed for mission-critical, high-performance applications.

The 2800 Series is a component of Cisco's portfolio of flagship, 802.11ac-enabled access points, and delivers a robust mobility experience based on the following product features:

- 802.11ac Wave 2 with 4x4 multiuser multiple-input multiple-output (MU-MIMO) technology supporting three spatial streams. MU-MIMO enables access points to split spatial streams between client devices to maximize throughput.

With two radios built into each access point, the 2800 Series is more versatile than any access point currently on the market. These radios are outfitted with Flexible Radio Assignment, which means that the access points automatically self-optimize to better serve the environment. For example, one of the radios broadcasts its signal on the 5-GHz channel and the other sends out a 2.4-GHz signal. The access point understands the wireless environment and will automatically switch the 2.4-GHz signal to a 5-GHz signal, increasing the reliability of your Wi-Fi use. This setting automatically works in reverse too, the access point recognizes that the RF environment has changed as reverts changes back to its original configuration.

The access point also dynamically changes the radio settings based on the wireless environment. The 2800 Series Wave 2 access point will allow one of the radios to operate in Wireless Security Monitoring mode. Allowing you to detect wireless security threats, interference, and combat rogue access. This valuable information can be culled in an easy-to-understand matrix to inform you about your customers.

- **Optimized AP Roaming** to ensure that client devices associate with the access point in their coverage range that offers the fastest data rate available.
- **Cisco ClientLink 4.0** technology to improve downlink performance to all mobile devices, including one-, two-, and three-spatial-stream devices on 802.11a/b/g/n/ac. At the same time, the technology improves battery life on mobile devices.
- **Cisco CleanAir** technology enhanced with 160-MHz channel support. CleanAir delivers proactive, high-speed spectrum intelligence across 20-, 40-, and 80-, and 160-MHz^{*} wide channels to combat performance problems due to wireless interference.
- **MIMO equalization** capabilities, which optimize uplink performance and reliability by reducing the impact of signal fade.

Product Specifications

Item	Specification
Part numbers	<p>Cisco Aironet 2800i Access Point: Indoor environments, with internal antennas</p> <ul style="list-style-type: none"> • AIR-AP2802I-x-K9: Dual-band, controller-based 802.11a/g/n/ac • AIR-AP2802I-xK910: Eco-pack (dual-band 802.11a/g/n/ac) 10 quantity access points <p>Cisco Aironet 2800i Access Point Configurable: Indoor environments, with internal antennas</p> <ul style="list-style-type: none"> • AIR-AP2802I-x-K9C: Dual-band, controller-based 802.11a/g/n/ac, configurable • AIR-AP2802I-xK910C: Eco-pack (dual-band 802.11a/g/n/ac) 10 quantity access points, configurable <p>Cisco Aironet 2800e Access Point: Indoor, challenging environments, with external antennas</p> <ul style="list-style-type: none"> • AIR-AP2802E-x-K9: Dual-band controller-based 802.11a/g/n/ac • AIR-AP2802E-xK910: Eco-pack (dual-band 802.11a/g/n/ac), 10 quantity access points <p>Cisco Aironet 2800e Access Point Configurable: Indoor, challenging environments, with external antennas</p> <ul style="list-style-type: none"> • AIR-AP2802E-x-K9C: Dual-band controller-based 802.11a/g/n/ac, configurable • AIR-AP2802E-xK910C: Eco-pack (dual-band 802.11a/g/n/ac), 10 quantity access points, configurable <p>Regulatory domains: (x = regulatory domain)</p> <p>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 http://www.cisco.com/go/aironet/compliance.</p> <p>Not all regulatory domains have been approved. As they are approved, the part numbers will be available on the Global Price List.</p> <p>Cisco Wireless LAN Services</p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Cisco Unified Wireless Network Software Release 8.2.111.0 or later • Cisco IOS® XE Software Release 16.3
Supported wireless LAN controllers	<ul style="list-style-type: none"> • Cisco 2500 Series Wireless Controllers, Cisco Wireless Controller Module for ISR G2, Cisco Wireless Services Module 2 (WiSM2) for Catalyst® 6500 Series Switches, Cisco 5500 Series Wireless Controllers, Cisco Flex® 7500 Series Wireless Controllers, Cisco 8500 Series Wireless Controllers, Cisco Virtual Wireless Controller • Cisco Catalyst 3850 Series Switches, Cisco Catalyst 3650 Series Switches • Cisco Mobility Express
802.11n version 2.0 (and related) capabilities	<ul style="list-style-type: none"> • 4x4 MIMO with three spatial streams • Maximal ratio combining (MRC) • 802.11n and 802.11a/g beamforming • 20- and 40-MHz channels • PHY data rates up to 450 Mbps (40 MHz with 5 GHz) • Packet aggregation: A-MPDU (Tx/Rx), A-MSDU (Tx/Rx) • 802.11 dynamic frequency selection (DFS) • Cyclic shift diversity (CSD) support
802.11ac Wave 1 capabilities	<ul style="list-style-type: none"> • 4x4 MIMO with three spatial streams • MRC • 802.11ac beamforming • 20-, 40-, and 80-MHz channels • PHY data rates up to 1.3 Gbps (80 MHz in 5 GHz) • Packet aggregation: A-MPDU (Tx/Rx), A-MSDU (Tx/Rx) • 802.11 DFS • CSD support
802.11ac Wave 2 capabilities	<ul style="list-style-type: none"> • 4x4 MU-MIMO with three spatial streams • MRC • 802.11ac beamforming • 20-, 40-, 80, 160-MHz channels • PHY data rates up to 5.2 Gbps • Packet aggregation: A-MPDU (Tx/Rx), A-MSDU (Tx/Rx) • 802.11 DFS • CSD support

Item	Specification		
Integrated antenna	<p>Flexible radio (either 2.4 GHz or 5 GHz)</p> <ul style="list-style-type: none"> • 2.4 GHz, gain 4 dBi, internal antenna, omnidirectional in azimuth • 5 GHz, gain 6 dBi, internal directional antenna, elevation plane beamwidth 90° <p>Dedicated 5-GHz radio</p> <ul style="list-style-type: none"> • 5 GHz, gain 5 dBi, internal antenna, omnidirectional in azimuth 		
External antenna (sold separately)	<ul style="list-style-type: none"> • 2802e Series access points are certified for use with antenna gains up to 6 dBi (2.4 GHz and 5 GHz) • Cisco offers the industry's broadest selection of antennas, delivering optimal coverage for a variety of deployment scenarios 		
Smart antenna connector	<ul style="list-style-type: none"> • Available on the 2802e Series access points only • Requires the AIR-CAB002-DART-R= 2 ft smart antenna connector to RP-TNC connectors to connect a second antenna to the access point • Required when running the flexible radio as either a second 5-GHz serving radio or Wireless Security Monitoring radio 		
Interfaces	<ul style="list-style-type: none"> • 2802I/E <ul style="list-style-type: none"> ◦ 2x100/1000BASE-T autosensing (RJ-45) • Management console port (RJ-45) • USB 2.0 (enabled via future software) 		
Indicators	<ul style="list-style-type: none"> • Status LED indicates boot loader status, association status, operating status, boot loader warnings, boot loader errors 		
Dimensions (W x L x H)	<ul style="list-style-type: none"> • Access point (without mounting brackets): 2802I: 8.66" x 8.68" x 2.17", 2802E: 8.66" x 8.77" x 2.50" 		
Weight	<p>Cisco Aironet 2802i</p> <ul style="list-style-type: none"> • 3.53 lb (1.6 kg) <p>Cisco Aironet 2802e</p> <ul style="list-style-type: none"> • 4.6 lb (2.09 kg) 		
Input power requirements	<ul style="list-style-type: none"> • 802.3at PoE+, Cisco Universal PoE (Cisco UPOE[®]) • 802.3at power injector (AIR-PWRINJ6=) 		
Power draw	<ul style="list-style-type: none"> • 26W at the PSE with all features enabled except for the USB 2.0 port • 30W at the PSE with the USB 2.0 port enabled 		
Environmental	<p>Cisco Aironet 2802i</p> <ul style="list-style-type: none"> • Nonoperating (storage) temperature: -22° to 158°F (-30° to 70°C) • Nonoperating (storage) altitude test: 25°C, 15,000 ft. • Operating temperature: 32° to 104°F (0° to 40°C) • Operating humidity: 10% to 90% (noncondensing) • Operating altitude test: 40°C, 9843 ft. <p>Cisco Aironet 2802e</p> <ul style="list-style-type: none"> • 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. 		
System memory	<ul style="list-style-type: none"> • 1024 MB DRAM • 256 MB flash 		
Warranty	Limited lifetime hardware warranty		
Available transmit power settings	<table border="0"> <tr> <td style="vertical-align: top;"> <p>2.4 GHz</p> <ul style="list-style-type: none"> • 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) </td> <td style="vertical-align: top;"> <p>5 GHz</p> <ul style="list-style-type: none"> • 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) </td> </tr> </table>	<p>2.4 GHz</p> <ul style="list-style-type: none"> • 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) 	<p>5 GHz</p> <ul style="list-style-type: none"> • 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)
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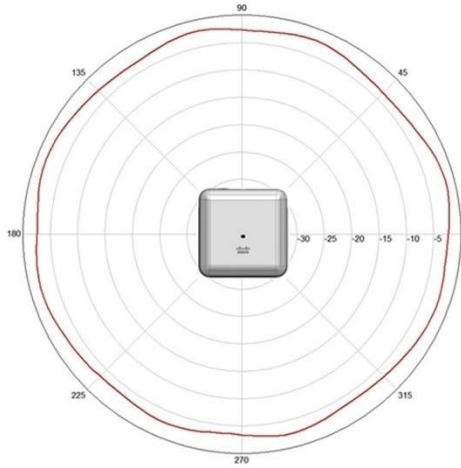
Item	Specification	
Frequency band and 20-MHz operating channels	<div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <p>A (A regulatory domain):</p> <ul style="list-style-type: none"> • 2.412 to 2.462 GHz; 11 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.700 GHz; 8 channels (excludes 5.600 to 5.640 GHz) • 5.745 to 5.825 GHz; 5 channels <p>B (B regulatory domain):</p> <ul style="list-style-type: none"> • 2.412 to 2.462 GHz; 11 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.720 GHz; 12 channels • 5.745 to 5.825 GHz; 5 channels <p>C (C regulatory domain):</p> <ul style="list-style-type: none"> • 2.412 to 2.472 GHz; 13 channels • 5.745 to 5.825 GHz; 5 channels <p>D (D regulatory domain):</p> <ul style="list-style-type: none"> • 2.412 to 2.462 GHz; 11 channels • 5.180 to 5.320 GHz; 8 channels • 5.745 to 5.825 GHz; 5 channels <p>E (E regulatory domain):</p> <ul style="list-style-type: none"> • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.700 GHz; 8 channels (excludes 5.600 to 5.640 GHz) <p>F (F regulatory domain):</p> <ul style="list-style-type: none"> • 2.412 to 2.472 GHz; 13 channels • 5.745 to 5.805 GHz; 4 channels <p>G (G regulatory domain):</p> <ul style="list-style-type: none"> • 2.412 to 2.472 GHz; 13 channels • 5.745 to 5.825 GHz; 5 channels <p>H (H regulatory domain):</p> <ul style="list-style-type: none"> • 2.412 to 2.472 GHz; 13 channels • 5.150 to 5.350 GHz; 8 channels • 5.745 to 5.825 GHz; 5 channels </div> <div style="width: 48%;"> <p>I (I regulatory domain):</p> <ul style="list-style-type: none"> • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels <p>K (K regulatory domain):</p> <ul style="list-style-type: none"> • 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 <p>N (N regulatory domain):</p> <ul style="list-style-type: none"> • 2.412 to 2.462 GHz; 11 channels • 5.180 to 5.320 GHz; 8 channels • 5.745 to 5.825 GHz; 5 channels <p>Q (Q regulatory domain):</p> <ul style="list-style-type: none"> • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.700 GHz; 11 channels <p>R (R regulatory domain):</p> <ul style="list-style-type: none"> • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels • 5.660 to 5.805 GHz; 7 channels <p>S (S regulatory domain):</p> <ul style="list-style-type: none"> • 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 <p>T (T regulatory domain):</p> <ul style="list-style-type: none"> • 2.412 to 2.462 GHz; 11 channels • 5.280 to 5.320 GHz; 3 channels • 5.500 to 5.700 GHz; 8 channels (excludes 5.600 to 5.640 GHz) • 5.745 to 5.825 GHz; 5 channels <p>Z (Z regulatory domain):</p> <ul style="list-style-type: none"> • 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 </div> </div>	
<p>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 http://www.cisco.com/go/aironet/compliance</p>		
Maximum number of nonoverlapping channels	<p>2.4 GHz</p> <ul style="list-style-type: none"> • 802.11b/g: <ul style="list-style-type: none"> ◦ 20 MHz: 3 • 802.11n: <ul style="list-style-type: none"> ◦ 20 MHz: 3 	<p>5 GHz</p> <ul style="list-style-type: none"> • 802.11a: <ul style="list-style-type: none"> ◦ 20 MHz: 25 FCC, 16 EU • 802.11n: <ul style="list-style-type: none"> ◦ 20 MHz: 25 FCC, 16 EU ◦ 40 MHz: 12 FCC, 7 EU ◦ 20 MHz: 25 FCC, 16 EU ◦ 40 MHz: 12 FCC, 7 EU ◦ 80 MHz: 6 FCC, 3 EU ◦ 160 MHz 2 FCC, 1 EU
<p>Note: This varies by regulatory domain. Refer to the product documentation for specific details for each regulatory domain.</p>		

Item	Specification						
Compliance standards	<ul style="list-style-type: none"> ◦ UL 60950-1 ◦ CAN/CSA-C22.2 No. 60950-1 ◦ UL 2043 ◦ IEC 60950-1 ◦ EN 60950-1 ◦ EN 50155 • Radio approvals: <ul style="list-style-type: none"> ◦ FCC Part 15.107, 15.109, 15.247, 15.407, 14-30 ◦ RSS-247 (Canada) ◦ EN 300.328, EN 301.893 (Europe) ◦ ARIB-STD 66 (Japan) ◦ ARIB-STD T71 (Japan) ◦ EMI and susceptibility (Class B) ◦ ICES-003 (Canada) ◦ VCCI (Japan) ◦ EN 301.489-1 and -17 (Europe) ◦ EN 60601-1-2 EMC requirements for the Medical Directive 93/42/EEC • IEEE standards: <ul style="list-style-type: none"> ◦ IEEE 802.11a/b/g, 802.11n, 802.11h, 802.11d ◦ IEEE 802.11ac • Security: <ul style="list-style-type: none"> ◦ 802.11i, Wi-Fi Protected Access 2 (WPA2), WPA ◦ 802.1X ◦ Advanced Encryption Standards (AES) • Extensible Authentication Protocol (EAP) types: <ul style="list-style-type: none"> ◦ EAP-Transport Layer Security (TLS) ◦ EAP-Tunneled TLS (TTLS) or Microsoft Challenge Handshake Authentication Protocol Version 2 (MCSHAPv2) ◦ Protected EAP (PEAP) v0 or EAP-MSCHAPv2 ◦ EAP-Flexible Authentication via Secure Tunneling (FAST) ◦ PEAP v1 or EAP-Generic Token Card (GTC) ◦ EAP-Subscriber Identity Module (SIM) • Multimedia: <ul style="list-style-type: none"> ◦ Wi-Fi Multimedia (WMM) • Other: <ul style="list-style-type: none"> ◦ FCC Bulletin OET-65C ◦ RSS-102 						
Data rates supported	<p>802.11b: 1, 2, 5.5, and 11 Mbps</p> <p>802.11a/g: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps</p> <p>802.11n HT20: 6.5 to 216.7 Mbps (MCS0 to MCS23)</p> <p>802.11n HT40: 13.5 to 450 Mbps (MCS0 to MCS23)</p> <p>802.11ac VHT20: 6.5 to 288.9 Mbps (MCS0 to 8 – SS 1, MCS0 to 9 – SS 2 and 3)</p> <p>802.11ac VHT40: 13.5 to 600 Mbps (MCS0 to 9 – SS 1 to 3)</p> <p>802.11ac VHT80: 29.3 to 1300 Mbps (MCS0 to 9 – SS 1 to 3)</p> <p>802.11ac VHT160: 58.5 to 2304 Mbps (MCS0 to 9 – SS 1 and 2, MCS0 to 8 – SS 3)</p>						
Transmit Power and Receive Sensitivity							
		5-GHz Radio		2.4-GHz Flexible Radio		5-GHz Flexible Radio	
	Spatial Streams	Total Tx Power (dBm)	Rx Sensitivity (dBm)	Total Tx Power (dBm)	Rx Sensitivity (dBm)	Total Tx Power (dBm)	Rx Sensitivity (dBm)
802.11/11b							
1 Mbps	1	NA	NA	23	-101	NA	NA
11 Mbps	1	NA	NA	23	-88	NA	NA

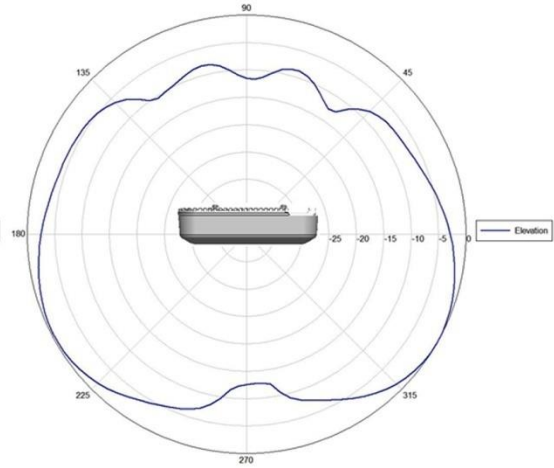
Item		Specification					
802.11a/g							
6 Mbps	1	23	-93	23	-91	23	-92
24 Mbps	1	23	-89	23	-87	23	-89
54 Mbps	1	23	-81	23	-77	22	-80
802.11n HT20							
MCS0	1	23	-93	23	-91	23	-93
MCS4	1	23	-88	23	-86	23	-87
MCS7	1	23	-79	23	-77	22	-78
MCS8	2	23	-93	23	-91	21	-93
MCS12	2	23	-86	23	-85	23	-86
MCS15	2	23	-79	23	-77	21	-78
MCS16	3	23	-93	23	-91	23	-92
MCS20	3	23	-85	23	-84	22	-84
MCS23	3	23	-78	23	-76	18	-77
802.11n HT40							
MCS0	1	23	-90			23	-89
MCS4	1	23	-85			23	-84
MCS7	1	23	-76			23	-75
MCS8	2	23	-90			23	-89
MCS12	2	23	-83			23	-83
MCS15	2	23	-76			21	-76
MCS16	3	23	-90			23	-89
MCS20	3	23	-82			23	-81
MCS23	3	23	-75			20	-74
802.11ac VHT20							
MCS0	1	23	-93			23	-92
MCS4	1	23	-88			23	-87
MCS7	1	23	-82			22	-80
MCS8	1	23	-77			21	-75
MCS0	2	23	-93			23	-91
MCS4	2	23	-86			23	-84
MCS7	2	23	-79			21	-77
MCS8	2	23	-75			20	-73
MCS9	2	NA	NA			NA	NA
MCS0	3	23	-93			23	-91
MCS4	3	23	-85			22	-83
MCS7	3	23	-78			20	-76
MCS8	3	23	-74			19	-72
MCS9	3	23	-72			18	-70
802.11ac VHT40							
MCS0	1	23	-90			23	-89
MCS4	1	23	-85			23	-84
MCS7	1	23	-78			22	-77
MCS8	1	23	-75			21	-73

Item		Specification					
MCS9	1	23	-73			20	-72
MCS0	2	23	-90			23	-89
MCS4	2	23	-83			23	-82
MCS7	2	23	-76			21	-75
MCS8	2	23	-73			20	-72
MCS9	2	23	-71			19	-69
MCS0	3	23	-90			23	-89
MCS4	3	23	-82			23	-80
MCS7	3	23	-74			20	-73
MCS8	3	23	-70			19	-68
MCS9	3	23	-69			18	-67
802.11ac VHT80							
MCS0	1	23	-87			23	-86
MCS4	1	23	-83			23	-81
MCS7	1	23	-76			22	-74
MCS8	1	23	-72			21	-70
MCS9	1	23	-69			20	-68
MCS0	2	23	-87			23	-86
MCS4	2	23	-80			23	-79
MCS7	2	23	-73			21	-72
MCS8	2	23	-69			20	-68
MCS9	2	23	-67			19	-66
MCS0	3	23	-87			23	-86
MCS4	3	23	-77			23	-77
MCS7	3	23	-72			20	-70
MCS8	3	23	-67			19	-66
MCS9	3	22	-65			18	-64
802.11ac VHT160							
MCS0	1	23	-83			23	-83
MCS4	1	23	-78			23	-78
MCS7	1	23	-71			22	-71
MCS8	1	23	-67			21	-68
MCS9	1	23	-66			20	-66
MCS0	2	23	-83			23	-83
MCS4	2	23	-76			23	-76
MCS7	2	23	-69			21	-69
MCS8	2	23	-65			20	-66
MCS9	2	23	-63			19	-63
MCS0	3	23	-82			23	-83
MCS4	3	23	-74			22	-74
MCS7	3	23	-67			20	-68
MCS8	3	23	-62			19	-62

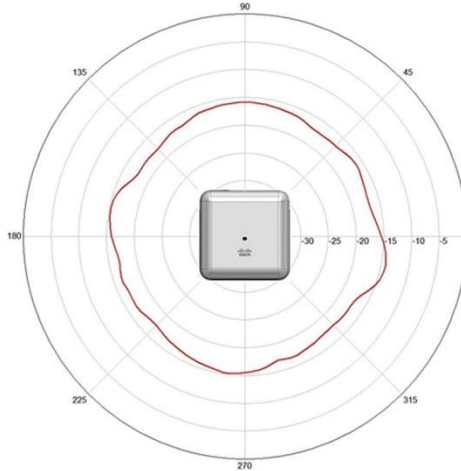
2.4 GHz Azimuth Micro



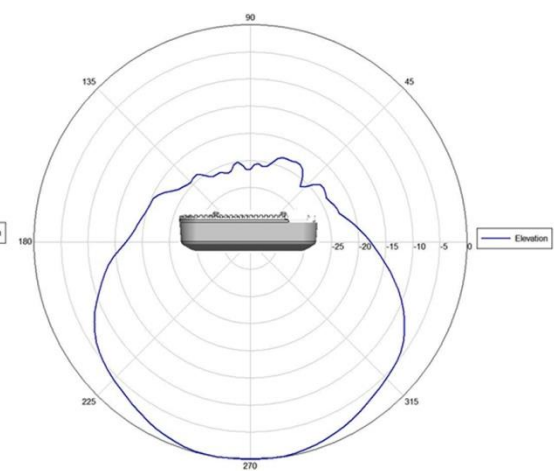
2.4 GHz Elevation Micro



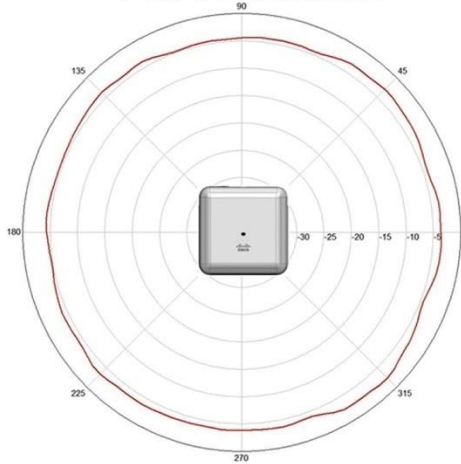
5 GHz Azimuth Micro



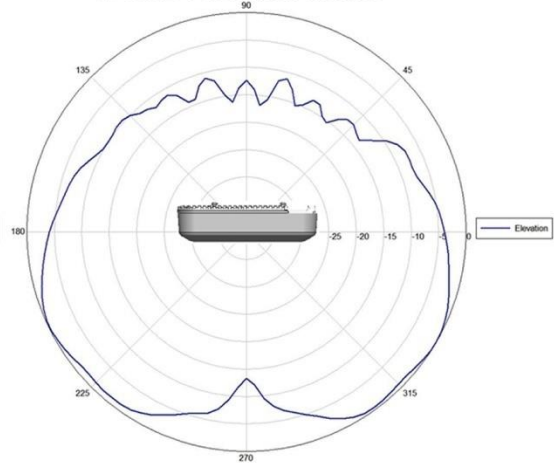
5 GHz Elevation Micro



5 GHz Azimuth Macro



5 GHz Elevation Macro



Warranty Information

The Cisco Aironet 2800 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 <http://www.cisco.com/go/warranty>.

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