



RG-AP680-CD(V3) Wi-Fi 6 Dual-radio Access Point



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| Product Overview

The RG-AP680-CD(V3) is a Wi-Fi 6 wireless access point that delivers dual radios, high performance, and enterprise-grade encryption. Its hybrid cloud management mode and high-density access design allow the RG-AP680-CD(V3) to be flexibly deployed in high-quality outdoor network scenarios, including outdoor hotspots such as squares, parks, and streets in smart cities, sports field scenarios in the education industry, and scenarios related to energy and rail transportation industry.

Product Highlights



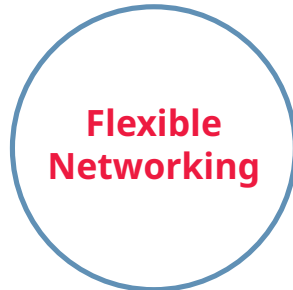
Ultra-High Performance

Ultra-High Performance

- Dual-band design (2.4 GHz + 5 GHz), four spatial streams, 1024-Quadrature Amplitude Modulation (QAM) high-speed access, up to 2.976 Gbps peak data rate, and built-in intelligent directional antenna, realizing high-speed wireless access experience
- RF power adjustment and intelligent channel allocation to solve the problems such as co-channel interference and adjacent channel interference, thereby improving network transmission efficiency and stability

Flexible Networking

- Local and cloud management modes, and intelligent wireless network optimization, reducing TCO and maximizing ROI
- Access through optical and Ethernet cables for flexible networking and high-speed backhaul over 2.5 Gbps wired links
- Wireless distribution system (WDS) for wireless network coverage or a wireless bridge; high-performance wireless bridging with the distance of 3 km (1.86 miles); point-to-multipoint wireless bridging for the customer-premises equipment (CPE), making wireless networking more flexible



Flexible Networking

- IEEE 802.11k/v/r support and roaming stickiness optimization, achieving seamless user roaming
- Rich IoT features: PoE output, Bluetooth 5.0, and wireless locating

High Security and Reliability

- IP68 rated housing, adapting to harsh outdoor environments
- Encryption and authentication technologies including Wi-Fi Protected Access 3 (WPA3), enhanced open security, 802.1X, and Private Pre-shared Key (PPSK), enhancing data security
- Dynamic Frequency Selection (DFS), optimizing the use of available RF spectrum to prevent radar channel interference
- Cyclic Delay/Shift Diversity (CDD/CSD), Maximum Ratio Combining (MRC), Space-Time Block Coding (STBC), and Low-Density Parity Check (LDPC), improving the signal quality, signal receiving, and reliability and performance of data transmission
- Transmit beam-forming (TxBF) expands the signal coverage and enhances the reliability of specific devices, thereby improving the data rate
- Intelligent identification and monitoring, multicast-to-unicast conversion, and other features, enhancing network security and reliability



High Security and Reliability

Applicable Scenarios

Smart City

Parks

With Wi-Fi deployed in parks, people can enjoy high-speed mobile internet access anytime, anywhere. They can flexibly and easily enjoy Internet services, including browsing the web, watching videos, and engaging in voice and video chats with friends.



Squares

People can access high-speed mobile Wi-Fi and instantly share photos and videos of activities on squares with their friends.



Higher Education

Sports Field

You can cheer and show support for sports events on the sports field, and share moments in real time on social media. High-speed mobile Wi-Fi allows you to leave real-time memories.



Product Features

Multi-scenario Adaptability

The RG-AP680-CD(V3), a dual-band wall-mounted wireless access point, is ideal for a wide range of applications, including higher education, government, general education, finance, and business sectors, providing flexible solutions to meet diverse service needs.

High-speed Access and Compatibility

The RG-AP680-CD(V3) supports various wireless protocols, such as 802.11ax, 802.11ac Wave2, 802.11ac Wave1, and 802.11n. It features a hardware-independent dual-band

design to deliver a data rate of up to 2.976 Gbps, effectively eliminating wireless performance bottlenecks. Additionally, it is compatible with an extensive array of devices, promoting seamless interconnectivity among employees and customers.

Security and Scalability

The RG-AP680-CD(V3) stands out with its exceptional wireless network security, RF control, mobile access, QoS guarantee, and seamless roaming. With Ruijie's wireless access controller (AC), it enables wireless user data forwarding, security, and access control to cope with diverse service needs.

Product Specifications

Hardware Specifications

Hardware Specifications	RG-AP680-CD(V3)
802.11n	<p>Four spatial streams</p> <ul style="list-style-type: none"> • Radio 1 – 2.4 GHz: 2x2 MU-MIMO, two spatial streams • Radio 2 – 5 GHz: 4x4 MU-MIMO, two spatial streams <p>Channels:</p> <ul style="list-style-type: none"> • Radio 1 – 2.4 GHz: 20 MHz and 40 MHz • Radio 2 – 5 GHz: 20 MHz and 40 MHz <p>Combined peak data rate: 0.6 Gbps</p> <ul style="list-style-type: none"> • Radio 1 – 2.4 GHz: 6.5 Mbps to 300 Mbps (MCS0 to MCS15) • Radio 2 – 5 GHz: 6.5 Mbps to 300 Mbps (MCS0 to MCS15) <p>Radio technologies: Orthogonal Frequency-Division Multiplexing (OFDM) Modulation types: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM Packet aggregation:</p> <ul style="list-style-type: none"> • Aggregate MAC Protocol Data Unit (A-MPDU) • Aggregate MAC Service Data Unit (A-MSDU) <p>Dynamic Frequency Selection (DFS) Cyclic Delay/Shift Diversity (CDD/CSD) Maximum Ratio Combining (MRC) Space-Time Block Coding (STBC) Low-Density Parity Check (LDPC) Transmit beam-forming (TxBF)</p>
802.11ac	<p>Two spatial streams</p> <ul style="list-style-type: none"> • Radio 2 – 5 GHz: 2x2 MU-MIMO, two spatial streams <p>Channels:</p> <ul style="list-style-type: none"> • Radio 2 – 5 GHz: 20 MHz, 40 MHz, 80 MHz, and 160 MHz <p>Combined peak data rate: 1.733 Gbps</p> <ul style="list-style-type: none"> • Radio 2 – 5 GHz: 6.5 Mbps to 1.733 Gbps (MCS0 to MCS9) <p>Radio technologies: Orthogonal Frequency-Division Multiplexing (OFDM) Modulation types: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM Packet aggregation:</p> <ul style="list-style-type: none"> • Aggregate MAC Protocol Data Unit (A-MPDU) • Aggregate MAC Service Data Unit (A-MSDU) <p>Dynamic Frequency Selection (DFS) Cyclic Delay/Shift Diversity (CDD/CSD) Maximum Ratio Combining (MRC) Space-Time Block Coding (STBC) Low-Density Parity Check (LDPC) Transmit beam-forming (TxBF)</p>
802.11ax	<p>Four spatial streams</p> <ul style="list-style-type: none"> • Radio 1 – 2.4 GHz: 2x2 uplink/downlink MU-MIMO, two spatial streams • Radio 2 – 5 GHz: 2x2 uplink/downlink MU-MIMO, two spatial streams <p>Channels:</p> <ul style="list-style-type: none"> • Radio 1 – 2.4 GHz: 20 MHz and 40 MHz • Radio 2 – 5 GHz: 20 MHz, 40 MHz, 80 MHz, and 160 MHz <p>Combined peak data rate: 2.976 Gbps:</p> <ul style="list-style-type: none"> • Radio 1 – 2.4 GHz: 8.6 Mbps to 0.574 Gbps (MCS0 to MCS11) • Radio 2 – 5 GHz: 8.6 Mbps to 2.402 Gbps (MCS0 to MCS11)

Hardware Specifications	RG-AP680-CD(V3)
802.11ax	Radio technologies: uplink/downlink Orthogonal Frequency-Division Multiple Access (OFDMA) Modulation types: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM Packet aggregation: <ul style="list-style-type: none"> • Aggregate MAC Protocol Data Unit (A-MPDU) • Aggregate MAC Service Data Unit (A-MSDU) Dynamic Frequency Selection (DFS) Cyclic Delay/Shift Diversity (CDD/CSD) Maximum Ratio Combining (MRC) Space-Time Block Coding (STBC) Low-Density Parity Check (LDPC) Transmit beam-forming (TxBF) WPA3
Antenna	Wi-Fi <ul style="list-style-type: none"> • 2.4 GHz: two built-in directional antennas, the max. antenna gain is 9 dBi. • 5 GHz: two built-in directional antennas, the max. antenna gain is 9 dBi. Bluetooth <ul style="list-style-type: none"> • One integrated vertically polarized omnidirectional antenna, the max. antenna gain is 4.5 dBi.
Port	1 x 2.5GE SFP port 1 x 10/100/1000Base-T RJ45 Ethernet port with auto-negotiation 1 x RJ45 console port (serial console port) 1 x Bluetooth 5.0
Status LED	1 x multi-color system status LED <ul style="list-style-type: none"> • AP power-on status • Software initialization status and upgrade status • Uplink service interface status • Wireless user online status • CAPWAP tunnel timeout • Specific AP locating Three single-color signal strength LEDs: <ul style="list-style-type: none"> • Whether bridging is enabled • Whether bridging is successful • Wireless signal strength after successful bridging
Button	1 x Reset button <ul style="list-style-type: none"> • Press the button for shorter than 2 seconds. Then the device restarts. • Press the button for longer than 5 seconds. Then the device restores to factory settings.
Dimensions (W x D x H)	Main unit: 251 mm x 168 mm x 64 mm (9.88 in. x 6.61 in. x 2.52 in.) Shipping: 405 mm x 232 mm x 325 mm (15.94 in. x 9.13 in. x 12.8 in.)
Weight	Main unit: 1.5 kg (3.31 lbs) Mounting bracket: 0.2 kg (0.44 lbs) Shipping: 2.92 kg (6.44 lbs)
Mounting	Wall- or pole-mounting (a mounting bracket is delivered with the main unit)
Input power supply	The AP supports the following two power supply modes: <ul style="list-style-type: none"> • 48 V DC/0.35 A power input over DC connector: The DC connector accepts 2.0 mm/6.3 mm center-positive circular plug. A DC power supply needs to be purchased independently. • PoE input over ETH/PoE: The power source equipment (PSE) complies with IEEE 802.3af/at standard (PoE/PoE+). Note: If both DC power and PoE are available, DC power is preferred.

Hardware Specifications	RG-AP680-CD(V3)
Power consumption	Maximum power consumption: 12.95 W <ul style="list-style-type: none"> • DC power: 12.95 W • 802.3at (PoE+): 12.95 W • 802.3af (PoE): 12.95 W • Idle mode: 6.0 W
Environment	Storage temperature: -40°C to +85°C (-40°F to +185°F) Storage humidity: 0% RH to 100% RH (non-condensing) Operating temperature: -40°C to +65°C (-40°F to +149°F) Operating humidity: 0% RH to 100% RH (non-condensing) At an altitude between 3,000 m (9,842.52 ft.) and 5,000 m (16,404.20 ft.), every time the altitude increases by 166 m (546 ft.), the maximum temperature decreases by 1°C (1.8°F).
Mean Time Between Failure (MTBF)	200,000 hours (22 years) at the operating temperature of 25°C (77°F)
System memory	512 MB DRAM, 128 MB flash
Transmit power	2.4 GHz <ul style="list-style-type: none"> • Max. transmit power: 28 dBm (631mW) • Minimum transmit power: 10 dBm (10 mW) 5 GHz <ul style="list-style-type: none"> • Max. transmit power: 28 dBm (631mW) • Minimum transmit power: 10 dBm (10 mW) Note: The transmit power adjusted in percentage. The transmit power is limited by local regulatory requirements.

The following table lists the radio frequency performance of Wi-Fi including different frequency bands, protocols, and data rates. It is country-specific, and Ruijie Networks reserves the right of interpretation.

Radio Frequency Performance	RG-AP680-CD(V3)		
Frequency Band and Protocol	Data Rate	Max. Transmit Power per Transmit Chain	Max. Receive Sensitivity per Receive Chain
2.4 GHz, 802.11b	1 Mbps	25 dBm	-92 dBm
	2 Mbps	25 dBm	-82 dBm
	5.5 Mbps	25 dBm	-84 dBm
	11 Mbps	25 dBm	-78 dBm
2.4 GHz, 802.11g	6 Mbps	25 dBm	-84 dBm
	24 Mbps	23 dBm	-74 dBm
	36 Mbps	23 dBm	-72 dBm

Radio Frequency Performance	RG-AP680-CD(V3)		
Frequency Band and Protocol	Data Rate	Max. Transmit Power per Transmit Chain	Max. Receive Sensitivity per Receive Chain
2.4 GHz, 802.11g	54 Mbps	20 dBm	-67 dBm
2.4 GHz, 802.11n (HT20)	MCS0	25 dBm	-84 dBm
	MCS7	20 dBm	-66 dBm
2.4 GHz, 802.11n (HT40)	MCS0	25 dBm	-79 dBm
	MCS7	20 dBm	-63 dBm
2.4 GHz, 802.11ax (HE20)	MCS0	25 dBm	-84dBm
	MCS11	18 dBm	-54 dBm
2.4 GHz, 802.11ax (HE40)	MCS0	25 dBm	-80 dBm
	MCS11	18 dBm	-51 dBm
5 GHz, 802.11a	6 Mbps	25 dBm	-84 dBm
	24 Mbps	23 dBm	-74 dBm
	36 Mbps	23 dBm	-72 dBm
	54 Mbps	20 dBm	-67 dBm
5 GHz, 802.11n (HT20)	MCS0	25 dBm	-84 dBm
	MCS7	20 dBm	-66 dBm
5 GHz, 802.11n (HT40)	MCS0	25 dBm	-81 dBm
	MCS7	20 dBm	-63 dBm
5 GHz, 802.11ac (VHT20)	MCS0	25 dBm	-84 dBm
	MCS9	19 dBm	-61 dBm
5 GHz, 802.11ac (VHT40)	MCS0	25 dBm	-81 dBm
	MCS9	19 dBm	-56 dBm
5 GHz, 802.11ac (VHT80)	MCS0	25 dBm	-78 dBm
	MCS9	19 dBm	-53 dBm

Radio Frequency Performance	RG-AP680-CD(V3)		
Frequency Band and Protocol	Data Rate	Max. Transmit Power per Transmit Chain	Max. Receive Sensitivity per Receive Chain
5 GHz, 802.11ax (HE20)	MCS0	25 dBm	-84 dBm
	MCS11	18 dBm	-54 dBm
5 GHz, 802.11ax (HE40)	MCS0	25 dBm	-81 dBm
	MCS11	18 dBm	-51 dBm
5 GHz, 802.11ax (HE80)	MCS0	25 dBm	-78 dBm
	MCS11	18 dBm	-48 dBm
5 GHz, 802.11ax (HE160)	MCS0	25 dBm	-73 dBm
	MCS11	18 dBm	-43 dBm

Software Specifications

Software Specifications	RG-AP680-CD(V3)
Basic Functions	
Applicable software version	RGOS11.9(6)W2B4 or later
WLAN	
Max. number of associated STAs	1024 (up to 512 STAs per radio)
Max. number of BSSIDs	32 (up to 16 BSSIDs per radio)
Max. number of WLAN IDs	16
STA management	SSID hiding Band steering Each SSID can be configured with the authentication mode, encryption mechanism, and VLAN attributes independently. Remote Intelligent Perception Technology (RIPT) Intelligent load balancing based on the STA quantity or traffic Rate set settings Intelligent STA identification
STA limiting	SSID-based STA limiting Radio-based STA limiting

Software Specifications	RG-AP680-CD(V3)
Bandwidth limiting	STA/SSID/AP-based rate limiting
CAPWAP	IPv4/IPv6 CAPWAP Layer 2 and Layer 3 topology between an AP and an AC An AP can automatically discover the accessible AC. An AP can be automatically upgraded through the AC. An AP can automatically download the configuration file from the AC. CAPWAP through NAT
Data forwarding	Centralized and local forwarding
Wireless roaming	Layer 2 and Layer 3 roaming
Wireless locating	MU and TAG device locating
Security and Authentication	
Authentication and encryption	Remote Authentication Dial-In User Service (RADIUS) EXEC authorization, specifying the source IP address of RADIUS packets, and built-in authentication server PSK, UPPSK and web authentication QR code-based guest authentication, SMS authentication, and MAC address bypass (MAB) authentication Data encryption: WEP (64/128 bits), WPA (TKIP), WPA-PSK, WPA2 (AES), WPA3-Enterprise, WPA3-Individual
Data frame filtering	Allowlist, static blocklist, and dynamic blocklist
WIDS	Wireless Intrusion Detection System(WIDS) Wireless Intrusion Protection System(WIPS) User isolation Rogue AP detection and containment
Dynamic Policy	IP standard ACL, MAC extended ACL, IP extended ACL, and expert-level ACL IPv6 ACL Time range-based ACL ACL based on a Layer 2 interface ACL based on a Layer 3 interface Ingress ACL based on a wireless interface Dynamic ACL assignment based on 802.1X authentication (used with the AC) CoA/DM ACL REMARK
CPP	CPU Protect Policy (CPP)
NFPP	Network Foundation Protection Policy (NFPP)
Routing and Switching	
MAC	Static and filtered MAC addresses MAC address table size: 1,024 Max. number of static MAC addresses: 1,024 Max. number of filtered MAC addresses: 1,024

Software Specifications	RG-AP680-CD(V3)
Ethernet	Jumbo frame length: 1518 Full-duplex and half-duplex modes of interfaces IEEE802.1p and IEEE802.1Q
VLAN	Interface-based VLAN assignment Max. number of SVIs: 200 Max. number of VLANs: 4,094 VLAN ID range: 1–4,094
ARP	ARP entry aging, gratuitous ARP learning, and proxy ARP Max. number of ARP entries: 1,024 ARP check
IPv4 services	Static and DHCP-assigned IPv4 addresses NAT, FTP ALG and DNS ALG
IPv6 services	IPv6 addressing, Neighbor Discovery (ND), ICMPv6, IPv6 ping IPv6 DHCP client
IP routing	IPv4/IPv6 static route Max. number of static IPv4 routes: 1,024 Max. number of static IPv6 routes: 1,000
Multicast	Multicast-to-unicast conversion
VPN	PPPoE client IPsec VPN
Network Management and Monitoring	
Network management	NTP server and NTP client SNTP client SNMPv1/v2c/v3 Fault detection and alarm Information statistics and logging
Network management platform	Web management (Eweb)
User access management	Telnet, SSH, FTP client, and FTP management
Switchover among Fat, Fit, and cloud modes	When the AP works in Fit mode, it can be switched to Fat mode through an AC. When the AP works in Fat mode, it can be switched to Fit mode through the console port or Telnet mode. When the AP works in cloud mode, it can be managed through Ruijie Cloud.

Value-added Software

The following value-added software functions can be achieved with the WIS solution (used with RG-iData-WIS and wireless controller).

Value-added Software	RG-AP680-CD(V3)
Intelligent O&M	
Experience	<p>Network operation analysis, such as device stability and signal coverage</p> <p>Measuring users' network experience based on indicators such as the latency, packet loss, signal strength, and channel utilization, and visualizing results of the network experience</p> <p>Statistics on the number of online and offline failures of STAs associated with different APs, average signal strength, and other parameters</p> <p>VIP monitoring and alarm, and custom alarm thresholds</p> <p>STA global experience map and experience coverage evaluation based on the time range</p> <p>STA access protocol replay and fine-grained STA fault diagnosis</p> <p>Note: To support the preceding functions, ensure that the AP works in Fit mode.</p>
Network optimization	<p>Network performance optimization, including one-click network optimization and scenario-based optimization</p> <p>Client steering to cope with roaming stickiness, and experience indicator comparison</p> <p>Client steering to cope with remote association, and experience indicator comparison</p> <p>One-click diagnosis – analyzing problems and providing suggestions</p>
Big data	<p>Baseline analysis – recording the configuration, version, and other changes, and tracking network KPI changes</p> <p>Time capsule – analyzing the device version and configuration change history</p>
Regional analysis	<p>Batch generation of building floor information – uploading floor plans, and dragging and dropping AP positions</p>
One-click report	<p>One-click health report – generating a report on the overall operation of a network</p>
Security radar	<p>Unauthorized Wi-Fi signal location, presentation by category, and containment</p>
Cloud Management	
Management and maintenance	<p>Uniformly connecting, managing, and maintaining APs, ACs, and other devices, batch device configuration and upgrade, and other functions</p> <p>Deployment through Zero Touch Provisioning (ZTP) – creating configuration templates and automatically applying configured templates</p> <p>One-click discovery of the wired and wireless network topology and topology generation</p>
Cloud Authentication	
Authentication mode	<p>SMS authentication, fixed account authentication, one-click authentication, Facebook authentication, Instagram authentication, voucher authentication, and other authentication modes</p> <p>Authentication implemented in the cloud, without the need to deploy the local authentication server</p>
Customized portal	<p>Customized Portal authentication page for mobile phones and PCs</p>
SMS gateway	<p>Interconnection with SMS gateways of GUODULINK and Alibaba Cloud</p>

Value-added Software	RG-AP680-CD(V3)
Platform Capabilities	
Big data capabilities	Mainstream persistence solutions based on Hadoop, MongoDB, and MySQL, providing distributed storage capabilities Spark-based big data computing capabilities Data warehouse building based on Hive, and data model conversion, integration, and other functions
Hierarchy and decentralization	Authorizing different applications for different users to meet service needs of different departments Granting operation permissions to administrators in different scenarios
System management	Account operation, authorization configuration, email configuration, configuration backup, exception alarms, and other system management functions

Note: For details, refer to the latest hybrid cloud management solution.

Regulatory Compliance

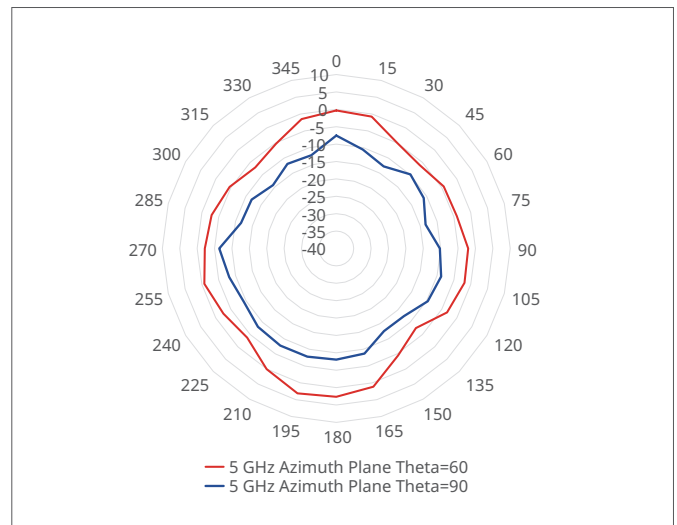
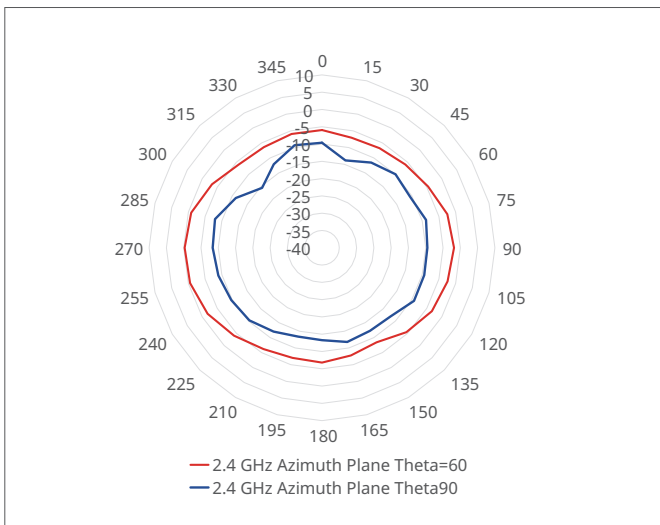
Regulatory Compliance	RG-AP680-CD(V3)
Regulatory compliance	EN 55032, EN 55035, EN 61000-3-3, EN IEC 61000-3-2, EN 301 489-1, EN 301 489-3, EN 301 489-17, EN 300 328, EN 301 893, EN 300 440, FCC Part 15, EN IEC 62311, IEC 62368-1, EN 62368-1, and IEC 60950-22

* For more country-specific regulatory information and approvals, contact your local sales agency.

Antenna Pattern Plots

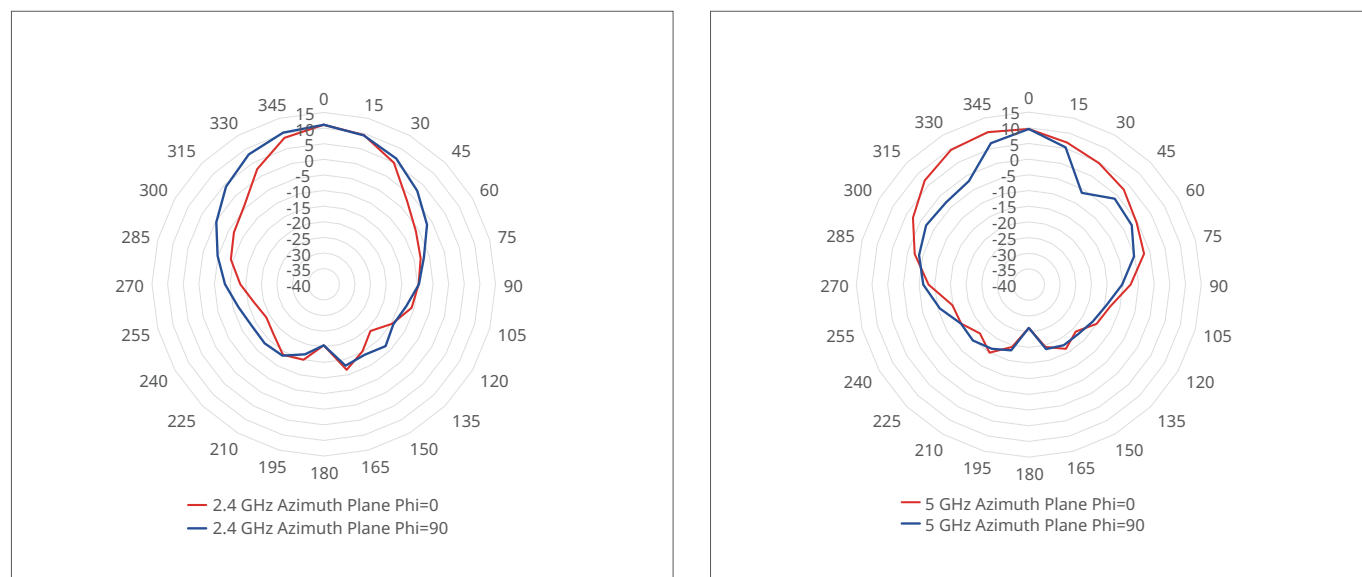
Horizontal Planes (Top View)

The following figures show the azimuth antenna pattern at 2.4 GHz and 5 GHz radios.



Vertical Planes (Side View, AP Facing Down)

The following figures shows the elevation antenna pattern at 2.4 GHz and 5 GHz radios.



Note: Operating frequency bands are country-specific.

Ordering Information

Model	Description
RG-AP680-CD(V3)	<p>802.11ax-compliant outdoor high-density wireless access point Dual radios, four spatial streams, peak data rate of 2.976 Gbps</p> <ul style="list-style-type: none"> • Radio 1: 2.4 GHz: two spatial streams, 2x2 MU-MIMO, peak data rate of 574 Mbps • Radio 2: 5 GHz: two spatial streams, 2x2 MU-MIMO, peak data rate of 2.402 Gbps <p>802.11a/b/g/n/ac/ax, switching between Fat, Fit, and cloud modes, and 802.3af/at PoE and local DC power supply</p> <p>Note:</p> <ul style="list-style-type: none"> • The power source equipment (PSE) needs to be purchased separately. • The DC power supply needs to be purchased separately, and the output voltage/current must be 48 V/0.35 A.

Package Contents

Item	Quantity
Main unit	1
Mounting bracket	1

Item	Quantity
Support for pole-mounted or wall-mounted installation	1
Machine tooth screw M5 x 10 mm	4
Machine tooth screw M6 x 20 mm	2
M6x50 expansion bolt	4
Waterproof PG head	2
Fiber cable waterproof connector	1
Metal hook	2
Ground cable	1
<i>Product Warranty</i>	1
<i>Hardware Installation Manual</i>	1
Dustproof cover	3

Warranty

For more information about warranty terms and period, contact your local sales agency:

- Warranty terms: <https://www.ruijienetworks.com/support/servicepolicy>
- Warranty period: <https://www.ruijienetworks.com/support/servicepolicy/Service-Support-Summary/>

Note: The warranty terms are subject to the terms of different countries and distributors.

More Information

For more information about Ruijie Networks, visit the official Ruijie website or contact your local sales agency:

- Ruijie Networks official website: <https://www.ruijienetworks.com/>
- Online support: <https://www.ruijienetworks.com/support>
- Hotline support: <https://www.ruijienetworks.com/support/hotline>
- Email support: service_rj@ruijienetworks.com



Ruijie Networks Co., Ltd.

For more information, visit www.ruijienetworks.com or call 86-400-620-8818.