RG-AP680-IO

Wi-Fi 6 Dual-Radio
Access Point

INNOVATION
Beyond Networks

Ruijie

01
Product Overview

The RG-AP680-IO is an 802.11ax-compliant dual-radio wireless access point (AP) provided by Ruijie Networks and is fit for higher education, wireless city, energy, and plaza scenarios.

It complies with 802.11ax, 802.11ac Wave2, 802.11ac Wave1, and 802.11n. With a hardware-independent dual-radio design, the RG-AP680-IO can provide a data rate of up to 5.951 Gbps. The ultra-fast wireless rate eliminates the performance bottleneck.

The design of the RG-AP680-IO considers factors such as wireless network security, radio control, mobile access, QoS, seamless roaming, and Internet of Things (IoT) scalability. With Ruijie's access controller (AC) and Ruijie Cloud servers, the RG-AP680-IO can implement wireless client data forwarding, security features, access control, and IoT application extension.

The RG-AP680-IO adopts IP68 rated housing. It is applicable to harsh outdoor environments and easy to install and maintain.
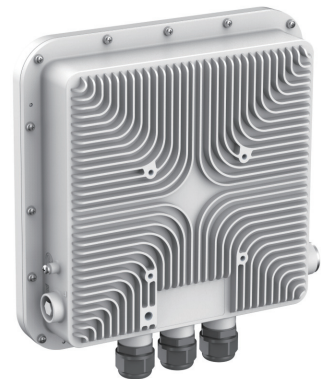
02
Product Appearance

Front View

Right View

Rear View

03
Product Highlights

- **Wi-Fi 6 certification**
- **Data rate of up to 5.951 Gbps and concurrent dual-radio design**
- **Up to 1024 client connections**
- **Built-in smart omnidirectional antenna**
- **Excellent environmental adaptability: IP68, –40°C to +65°C (–40°F to +149°F), and 6 kV surge protection**

- **OFDMA, MU-MIMO technologies for minimal wireless signal interference**
- **Hybrid management: support for thousands of standalone APs, and AC management and public cloud deployment options**
- **Mobile management: free mobile applications for Ruijie Cloud customers**

04
Product Features

Multiple Service Ports

The RG-AP680-IO supports dual uplink Ethernet ports: one 100/1000/2500/5000Base-T Ethernet electrical port and one 1 G/2.5 G/10 G Ethernet optical port.

The auto-negotiation Ethernet optical port provide a maximum data rate of 10 Gbps, guaranteeing high-speed transmission of service data between wireless and wired networks.

High-speed Wireless Access for Better Experience

The RG-AP680-IO optimizes user experience by maximizing Wi-Fi utilization and substantially reducing airtime competition between clients. It provides Orthogonal Frequency-Division Multiple Access (OFDMA) and Multi-User Multiple-Input Multiple-Output (MU-MIMO). With up to 4 spatial streams (4SS) and 160 MHz channel bandwidth (HE160), the RG-AP680-IO delivers the data rate of up to 4.804 Gbps at 5 GHz band, providing pioneering wireless capabilities for enterprises.

1024-QAM High-Speed Access

The RG-AP680-IO adopts the dual-radio design and complies with the next-generation Wi-Fi standard IEEE 802.11ax. When dual radios are enabled, it can provide a wireless data rate of up to 5.951 Gbps to realize high-speed access experience.

OFDMA High-Density User Access

OFDMA enables the RG-AP680-IO to divide a WLAN channel into multiple narrower sub-channels, with each user occupying one or more sub-channels. The RG-AP680-IO can schedule services of multiple users, and receive and send packets concurrently. This reduces contention for air interface resources and backoff, shortens the network latency, and improves the network efficiency.

MU-MIMO

The RG-AP680-IO maximizes the use of MU-MIMO, which can effectively improve the throughput of a wireless network by exchanging data with multiple single-stream or dual-stream client devices simultaneously.

Diverse Wi-Fi Technologies

It supports RF transmission technologies:

- Dynamic frequency selection (DFS) optimizes the use of available RF spectrum to prevent radar channel interference.
- Cyclic delay/shift Diversity (CDD/CSD) improves downlink RF performance, and converts spatial diversity to frequency diversity to avoid intersymbol interference, thus reducing bit error rate (BER) and effectively reducing signal distortion.
- Maximum ratio combining (MRC) improves the signal quality at the receiving end and enhances reliability and performance of received signals.

It supports RF channel coding technologies:

- Space-time block coding (STBC) increases the range and improves signal receiving, and enhances reliability of data transmission.
- Low-density parity check (LDPC) corrects errors efficiently and improves the throughput.
- Transmit beam-forming (TxBF) expands the signal coverage and enhances the reliability of specific devices, thereby improving the data rate.

Intelligent Optimization, Reliability Guarantee

Intelligent Recognition, One-Click Network Optimization

The RG-AP680-IO can intelligently identify mobile clients such as iOS and Android clients and PCs. It can be used to implement visualized wireless network management based on the wireless client type and optimize a network in one-click mode.

The RG-AP680-IO embeds client experience measurement and environment collection capability. It can be used with the RG-WS wireless access controller for intelligent analysis and automatic RF resource scheduling. It can adjust the RF power and intelligently allocate channels to solve problems such as co-channel interference, adjacent channel

interference, and roaming stickiness.

Flexible WDS Networking Modes

The RG-AP680-IO supports the wireless distribution system (WDS) and can provide wireless network coverage or a wireless bridge. It can provide high-performance wireless bridging with a distance of 3 km (1.86 miles). Therefore, it is suitable for wide outdoor wireless network coverage and high-speed wireless network in a long distance, facilitating outdoor wireless network deployment.

Intelligent Local Forwarding

The RG-AP680-IO integrates intelligent local forwarding technology and eliminates the traffic bottleneck on its connected wireless access controller. The data forwarding mode of the RG-AP680-IO can be flexibly pre-configured through Ruijie's wireless access controller. Then the RG-AP680-IO determines whether data needs to be forwarded by the AC or be sent to a wired network for data exchange based on the SSID or user VLAN.

With the local forwarding technology, the RG-AP680-IO classifies the data that is sensitive to the delay and requires real-time high-performance transmission, and forwards it through a wired network. This greatly relieves the traffic burden of the wireless access controller and better adapts to heavy-traffic transmission on 802.11ax networks.

Client Access Optimization

The RG-AP680-IO can dynamically measure parameters such as the uplink Received Signal Strength Indicator (RSSI), noise floor, and channel utilization to intelligently identify the client network status. Moreover, it can steer clients to preferentially connect to 5 GHz or APs with better experience. This solves the problems of roaming stickiness, remote association, and load imbalance, and improves user experience.

Advanced Network Coexistence

The RG-AP680-IO supports advanced network coexistence. It uses the built-in filter to automatically minimize the impact of interference from non-Wi-Fi network devices.

Abundant QoS Policies

The RG-AP680-IO provides abundant QoS policies. It supports bandwidth limiting based on the

WLAN, AP, and STA, and provides Wi-Fi Multimedia (WMM) that defines priorities for different service data. Therefore, it implements immediate and quantitative transmission of audio and video data, and guarantees smooth application of multimedia services.

The multicast-to-unicast technology supported by the RG-AP680-IO solves the video freezing problem caused by packet loss or long latency in Video on Demand (VoD) and other multicast applications on a wireless network. It enhances the experience in the use of multicast video services on a wireless network.

Green Design and Low Power Consumption

The RG-AP680-IO incorporates packet-based power control technology. With high-performance power design, the RG-AP680-IO is energy-efficient while providing high-speed wireless access services.

Rich IoT Platform Features

The RG-AP680-IO integrates Bluetooth 5.1 and 802.15.4 RF to simplify deployment and management of IoT-based location services, asset tracking services, security solutions, and IoT sensors. It allows access through Bluetooth serial ports.

Comprehensive Security Protection and Ease of Use

Comprehensive Wireless Security Protection

The RG-AP680-IO supports WEP (64/128 bits), WPA-TKIP, WPA-PSK, WPA2-AES, WPA3 authentication and encryption methods, and PPSK and UPSK technologies. Only the AC is needed to provide security for user data without the need for an authentication server.

It supports the following WPA3 types: WPA3-Personal (SAE), WPA3-Personal mixed mode, and WPA3-Enterprise (CCMP, 128 bits).

The RG-AP680-IO used with the RG-WS series wireless access controller can provide a series of wireless security protection functions such as Wireless Intrusion Detection System (WIDS), radio interference tracking, rogue AP containment, anti-ARP spoofing, and DHCP protection, to build a secure and reliable wireless network.

Multiple Easy-to-Use Authentication Modes

Together with Ruijie authentication system or multi-service AC, the RG-AP680-IO supports a variety of efficient and easy authentication modes such as web, 802.1X, MAC address bypass (MAB), SMS, and QR code-based guest authentication. It conforms to the principle of authentication security upon network access.

MAB authentication frees the client from entering the username and password repeatedly. The username and password are required only upon the first login.

When a guest accesses a wireless network through SMS authentication, an authentication page pops up. On the authentication page, a guest can register an account using the mobile number, and accesses the Internet using the username and password in the SMS received.

QR code-based authentication is easy for guests to access the Internet. After accessing a wireless network, guests can receive a QR code prompt. They can access the network after being authorized by the visited employee, providing better security.

Flexible Device Management Modes

Flexible Switching Between Fat, Fit, and Cloud Modes

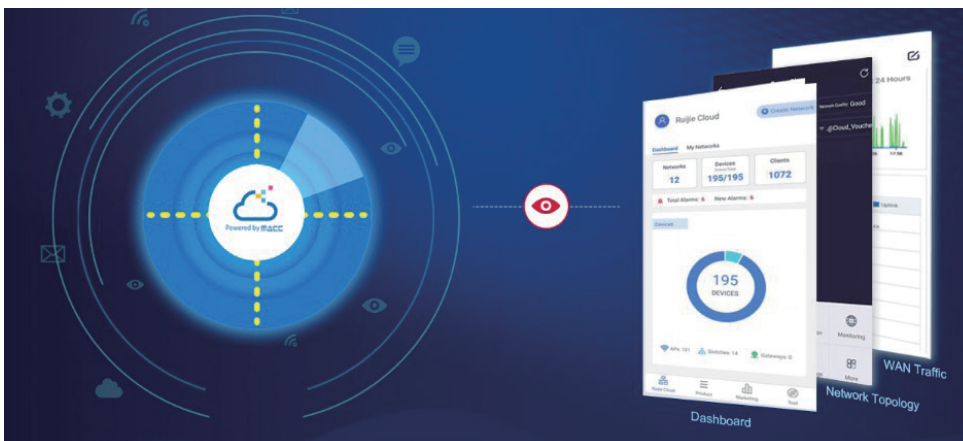The RG-AP680-IO supports flexible switchover among Fat, Fit, and cloud deployment modes.

When the RG-AP680-IO is deployed in Fat and cloud mode, it can operate as a single device and be managed by the local access controller (AC). It can also be connected to the Ruijie public cloud for cloud-based management. When the RG-AP680-IO is deployed in Fit mode, it can be used with the AC to achieve more functions. In Fit mode, the RG-AP840-L can be deployed through Zero Touch Provisioning (ZTP). In addition, complete remote management also greatly enhances the O&M management efficiency of a wireless network.

Bluetooth Serial Port for Easy Maintenance

The RG-AP680-IO supports switching between Bluetooth serial port and iBeacon. If the Bluetooth serial port is used by default, a network administrator can manage the device through the mobile phone upon device faults, without onsite device maintenance.

Mobile Monitoring and Optimization

You can use the free Ruijie Cloud App to achieve simple network management experience. This app features unified device lifecycle management, switches, and security gateways. The app also simplifies device configuration, monitoring, and optimization. For details, visit official website at *https://www.ruijienetworks.com/products/smb/cloud-service/cloud-service/ruijie-cloud-solution/mobile-app.*

All-in-One for Small Branch Office

In small branch office scenarios, the RG-AP680-IO serves as an AP to provide the wireless access service for the office area, and also functions as a VPN gateway. This all-in-one design simplifies network deployment and saves building costs.
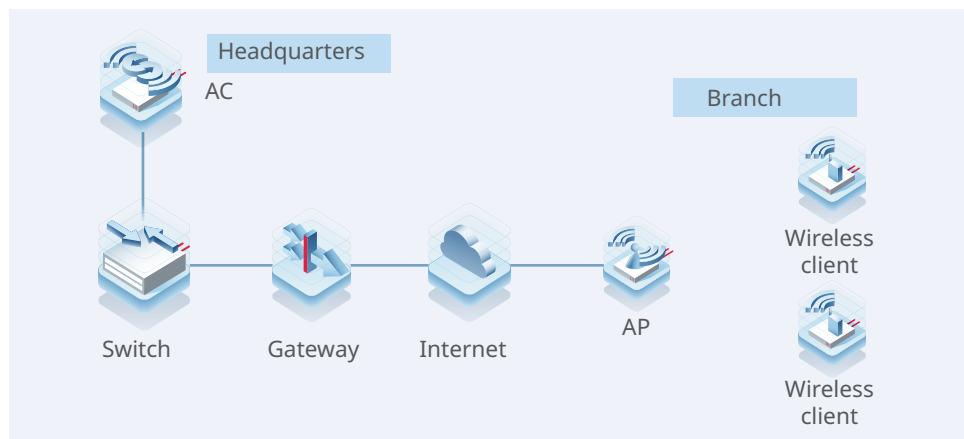
PPPoE

The RG-AP680-IO can function as a PPPoE client and connects to the Internet through PPPoE. In this case, no gateway needs to be deployed in a branch office area for Internet access.

NAT

The RG-AP680-IO supports the Network Address Translation (NAT) function to translate addresses between the LAN in the branch office and the Internet.

IPsec VPN

The RG-AP680-IO can establish IPsec VPN tunnels between the headquarters and branch offices to implement LAN interconnection.

05
Specifications

Hardware Specifications

Hardware Specifications	RG-AP680-IO
802.11n	Eight spatial streams • Radio 1 – 2.4 GHz: 4x4 MIMO, four spatial streams • Radio 2 – 5 GHz: 4x4 MIMO, four spatial streams Channels: • Radio 1 – 2.4 GHz: 20 MHz and 40 MHz • Radio 2 – 5 GHz: 20 MHz and 40 MHz Combined peak data rate: 1.2 Gbps • Radio 1 – 2.4 GHz: 6.5 Mbps to 600 Mbps (MCS0 to MCS31) • Radio 2 – 5 GHz: 6.5 Mbps to 600 Mbps (MCS0 to MCS31) Radio technologies: Orthogonal Frequency-Division Multiplexing (OFDM) Modulation types: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM Packet aggregation: • 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)

Hardware Specifications	RG-AP680-IO
802.11ac	Four spatial streams • Radio 2 – 5 GHz: 4x4 MIMO, four spatial streams Channels: • Radio 2 – 5 GHz: 20 MHz, 40 MHz, 80 MHz, and 160 MHz Combined peak data rate: 3.467 Gbps • Radio 2 – 5 GHz: 6.5 Mbps to 3.467 Gbps (MCS0 to MCS9) Radio technologies: Orthogonal Frequency-Division Multiplexing (OFDM) Modulation types: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1,024-QAM Packet aggregation: • 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)
802.11ax	Eight spatial streams • Radio 1 – 2.4 GHz: 4x4 uplink/downlink MU-MIMO, four spatial streams • Radio 2 – 5 GHz: 4x4 uplink/downlink MU-MIMO, four spatial streams Channels: • Radio 1 – 2.4 GHz: 20 MHz and 40 MHz • Radio 2 – 5 GHz: 20 MHz, 40 MHz, 80 MHz, and 160 MHz Combined peak data rate: 5.951 Gbps: • Radio 1 – 2.4 GHz: 8.6 Mbps to 1.147 Gbps (MCS0 to MCS11) • Radio 2 – 5 GHz: 8.6 Mbps to 4.804 Gbps (MCS0 to MCS11) Radio technologies: uplink/downlink Orthogonal Frequency-Division Multiple Access (OFDMA) Modulation types: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM Packet aggregation: • 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 • 2.4 GHz: four built-in omnidirectional antennas, the max. antenna gain is 6 dBi. • 5 GHz: four built-in omnidirectional antennas, the max. antenna gain is 5 dBi. Bluetooth • One integrated vertically polarized omnidirectional antenna, the max. antenna gain is 2 dBi.
Port	1 x 100/1000/2500/5000Base-T RJ45 Ethernet port with auto-negotiation 1 x 100/1000Base-T RJ45 Ethernet port with auto-negotiation 1 x 10GE optical port,compatibility with 1GE and 2.5GE 1 x RJ45 console port (serial console port) 1 x Bluetooth 5.1
Status LED	1 x multi-color system status LED • 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: • Whether bridging is enabled • Whether bridging is successful • Wireless signal strength after successful bridging
Button	1 x Reset button • 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.

Hardware Specifications	RG-AP680-IO
Dimensions (W x D x H)	Main unit: 300 mm x 300 mm x 94 mm (11.8 in. x 11.8 in. x 3.7 in.) Shipping: 470 mm x 410 mm x 170 mm (18.5 in. x 16.1 in. x 6.7 in.)
Weight	Main unit: 3.3 kg (7.28 lbs) Mounting bracket: 1.2 kg (2.65 lbs) Shipping: 6.5 kg (14.33 lbs)
Mounting	Wall- or pole-mounting (a mounting bracket is delivered with the main unit)
Input power supply	PoE input over LAN 1: The power source equipment (PSE) complies with IEEE 802.3af/at/bt standard (PoE/PoE+/PoE++).
Power consumption	Maximum power consumption: 40 W • 802.3bt (PoE+): 40 W, the AP operates with the optimal performance. • 802.3at (PoE+): 12.95 W, the AP starts up normally. LAN 2 cannot supply power to external devices. • 802.3af (PoE): 12.95 W, the AP starts up normally. Bluetooth and GPS work properly; all RF cards do not work; external power supply of the PSE is disabled. • Idle mode: 10 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	2 GB DRAM, 256 MB flash
Transmit power	2.4 GHz • Max. transmit power: 30 dBm (1,000 mW) 5 GHz • Max. transmit power: 29 dBm (795 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 date rates. It is country-specific, and Ruijie Networks reserves the right of interpretation.

Wi-Fi Radio Frequency Performance	RG-AP680-IO		
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	24 dBm	–94 dBm
	2 Mbps	24 dBm	–91 dBm
	5.5 Mbps	23 dBm	–90 dBm
	11 Mbps	22 dBm	–88 dBm
2.4 GHz 802.11g	6 Mbps	24 dBm	–89.5 dBm
	24 Mbps	23 dBm	–83 dBm
	36 Mbps	23 dBm	–79 dBm
	54 Mbps	21 dBm	–73 dBm
2.4 GHz 802.11n (HT20)	MCS0	24 dBm	–86 dBm
	MCS7	21 dBm	–68 dBm

Wi-Fi Radio Frequency Performance	RG-AP680-IO		
Frequency Band and Protocol	**Data Rate**	**Max. Transmit Power per Transmit Chain**	**Max. Receive Sensitivity per Receive Chain**
2.4 GHz 802.11n (HT40)	MCS0	24 dBm	−83 dBm
	MCS7	21 dBm	−65 dBm
2.4 GHz 802.11ax (HE20)	MCS0	24 dBm	−86 dBm
	MCS11	19 dBm	−68 dBm
2.4 GHz 802.11ax (HE40)	MCS0	24 dBm	−83 dBm
	MCS11	19 dBm	−65 dBm
5 GHz 802.11a	6 Mbps	23 dBm	−89.5 dBm
	24 Mbps	22 dBm	−83 dBm
	36 Mbps	22 dBm	−79 dBm
	54 Mbps	20 dBm	−73 dBm
5 GHz 802.11n (HT20)	MCS0	23 dBm	−86 dBm
	MCS7	20 dBm	−68 dBm
5 GHz 802.11n (HT40)	MCS0	23 dBm	−83 dBm
	MCS7	20 dBm	−65 dBm
5 GHz 802.11ac (VHT20)	MCS0	23dBm	−86 dBm
	MCS9	19 dBm	−61 dBm
5 GHz 802.11ac (VHT40)	MCS0	23 dBm	−83 dBm
	MCS9	19 dBm	−57 dBm
5 GHz 802.11ac (VHT80)	MCS0	23 dBm	−80 dBm
	MCS9	19 dBm	−53 dBm
5 GHz 802.11ax (HE20)	MCS0	23 dBm	−86 dBm
	MCS11	16 dBm	−58 dBm
5 GHz 802.11ax (HE40)	MCS0	23 dBm	−83 dBm
	MCS11	16 dBm	−54 dBm
5 GHz 802.11ax (HE80)	MCS0	23 dBm	−80 dBm
	MCS11	16 dBm	−52 dBm
5 GHz 802.11ax (HE160)	MCS0	23 dBm	−77 dBm
	MCS11	16 dBm	−49 dBm

Software Specifications

Basic Functions

Basic Functions	RG-AP680-IO
Applicable software version	RGOS11.9(6)W3B6 or higher

WLAN

WLAN	RG-AP680-IO
Max. number of associated STAs	1,024 (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 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 Intelligent STA identification
STA limiting	SSID-based STA limiting Radio-based STA limiting
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

Security and Authentication	RG-AP680-IO
Authentication and encryption	Remote Authentication Dial-In User Service (RADIUS) PSK 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) User isolation Rogue AP detection and containment
ACL	IP standard ACL, MAC extended ACL, IP extended ACL, and expert-level 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
CPP	CPU Protect Policy (CPP)
NFPP	Network Foundation Protection Policy (NFPP)

Routing and Switching

Routing and Switching	RG-AP680-IO
MAC	Static and filtered MAC addresses MAC address table size: 2,048 Max. number of static MAC addresses: 2,048 Max. number of filtered MAC addresses: 2,048
Ethernet	Jumbo frame length: 1,518 bytes Full-duplex and half-duplex modes of interfaces IEEE802.1p and IEEE802.1Q Optical module information display, alarms about faults, and diagnosis parameter measurement (QSFP+/SFP+/SFP)
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: 2,408 ARP check
IPv4 services	Static and DHCP-assigned IPv4 addresses Max. number of IPv4 addresses configured on each Layer 3 interface: 200 NAT, FTP ALG, and DNS ALG
IPv6 services	IPv6 addressing, Neighbor Discovery (ND), ICMPv6, IPv6 ping IPv6 DHCP client Max. number of IPv6 addresses configured on each Layer 3 interface: 400
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 and Monitoring	RG-AP680-IO
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, SNMP 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).

Intelligent O&M	RG-AP680-CD(V3)
Experience	Network operation analysis, such as device stability and signal coverage 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 Statistics on the number of online and offline failures of STAs associated with different APs, average signal strength, and other parameters VIP monitoring and alarm, and custom alarm thresholds STA global experience map and experience coverage evaluation based on the time range STA access protocol replay and fine-grained STA fault diagnosis Note: To support the preceding functions, ensure that the AP works in Fit mode.
Network optimization	Network performance optimization, including one-click network optimization and scenario-based optimization Client steering to cope with roaming stickiness, and experience indicator comparison Client steering to cope with remote association, and experience indicator comparison One-click diagnosis – analyzing problems and providing suggestions
Big data	Baseline analysis – recording the configuration, version, and other changes, and tracking network KPI changes Time capsule – analyzing the device version and configuration change history
Regional analysis	Batch generation of building floor information – uploading floor plans, and dragging and dropping AP positions
One-click report	One-click health report – generating a report on the overall operation of a network
Security radar	Unauthorized Wi-Fi signal location, presentation by category, and containment

Cloud Management

Cloud Management	RG-AP680-CD(V3)
Management and maintenance	Uniformly connecting, managing, and maintaining APs, ACs, and other devices, batch device configuration and upgrade, and other functions Deployment through Zero Touch Provisioning (ZTP) – creating configuration templates and automatically applying configured templates One-click discovery of the wired and wireless network topology and topology generation

Cloud Authentication

Cloud Authentication	RG-AP680-CD(V3)
Authentication mode	SMS authentication, fixed account authentication, one-click authentication, Facebook authentication, Instagram authentication, voucher authentication, and other authentication modes Authentication implemented in the cloud, without the need to deploy the local authentication server
Customized portal	Customized Portal authentication page for mobile phones and PCs
SMS gateway	Interconnection with SMS gateways of GUODULINK and Alibaba Cloud

Platform Capabilities

Platform Capabilities	RG-AP680-CD(V3)
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-IO
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.

06
Antenna Pattern Plots

Horizontal Planes (Top View)

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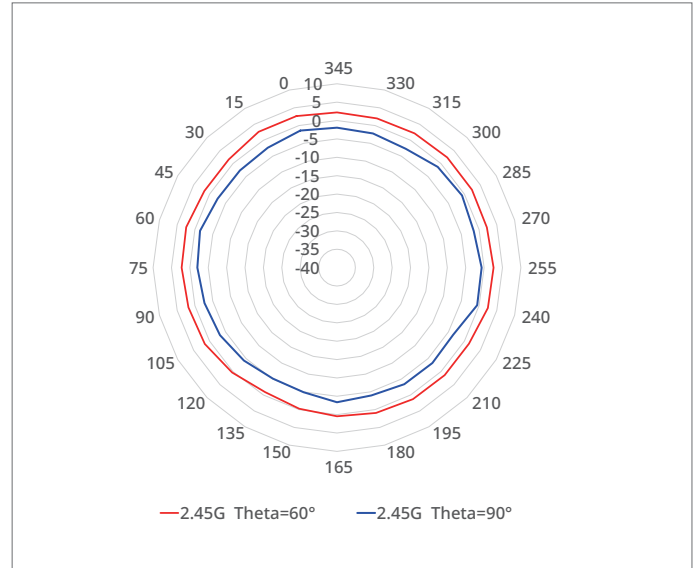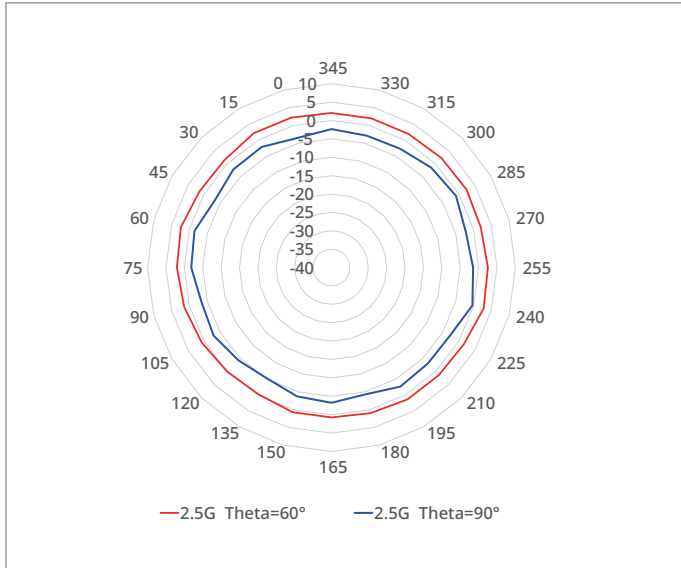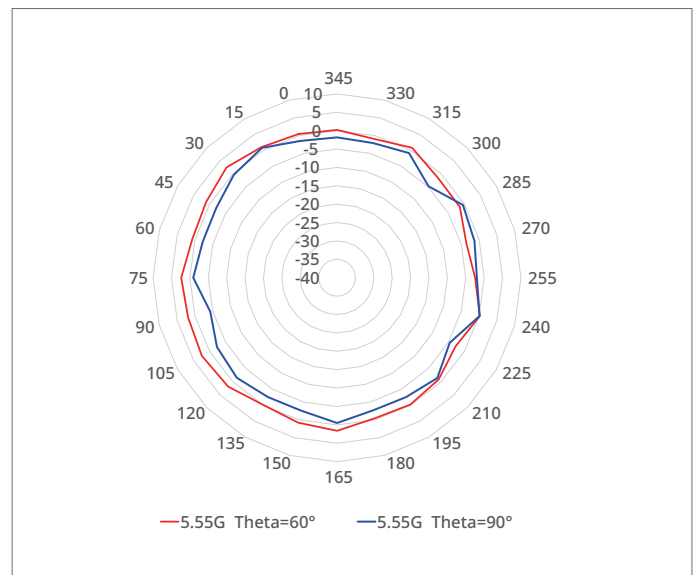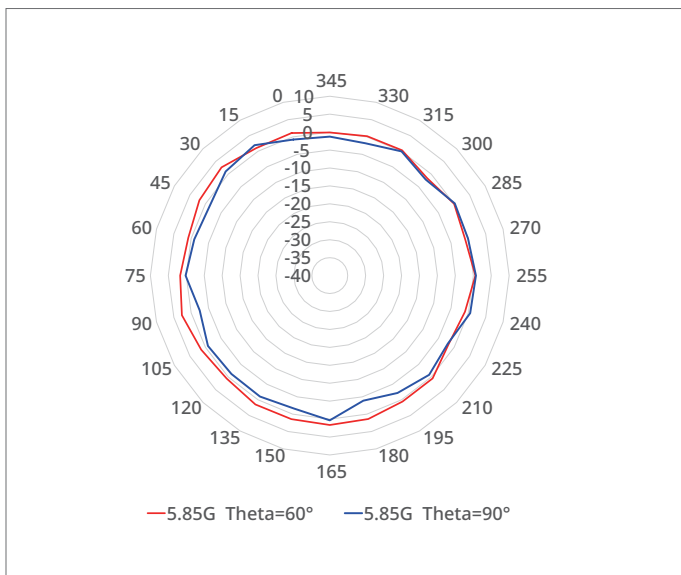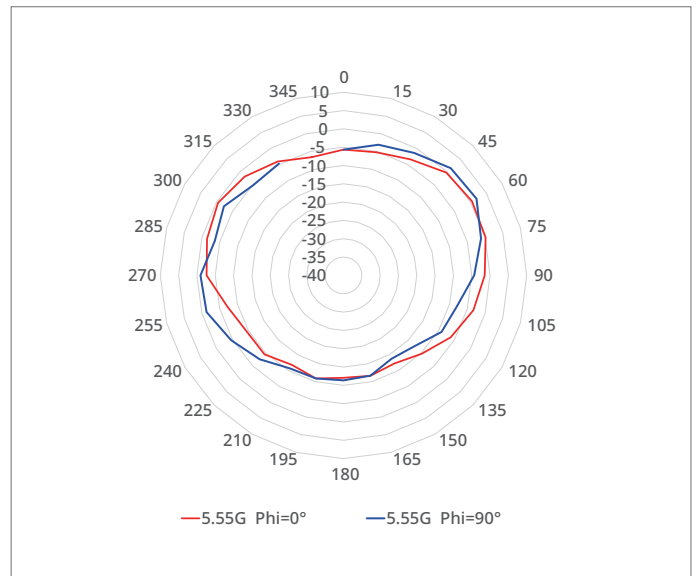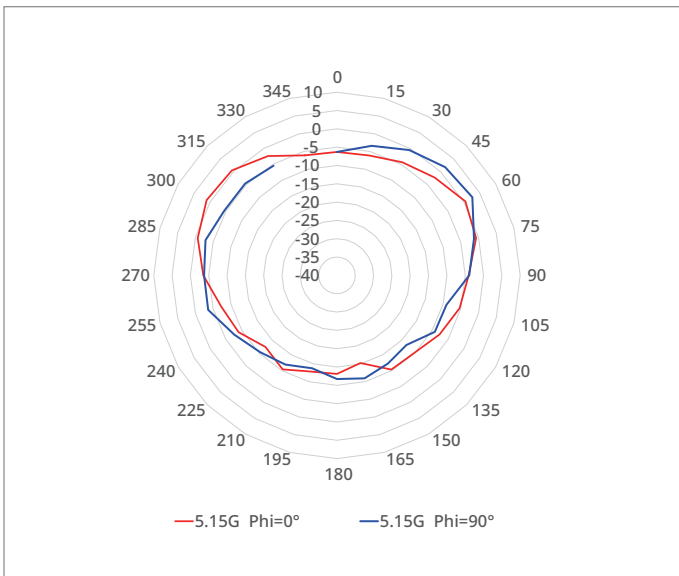

2.4 GHz (ANT1, 2, 3, 4)

5.5 GHz (ANT1, 2, 3, 4)

Vertical Planes (Side View, AP Facing Down)

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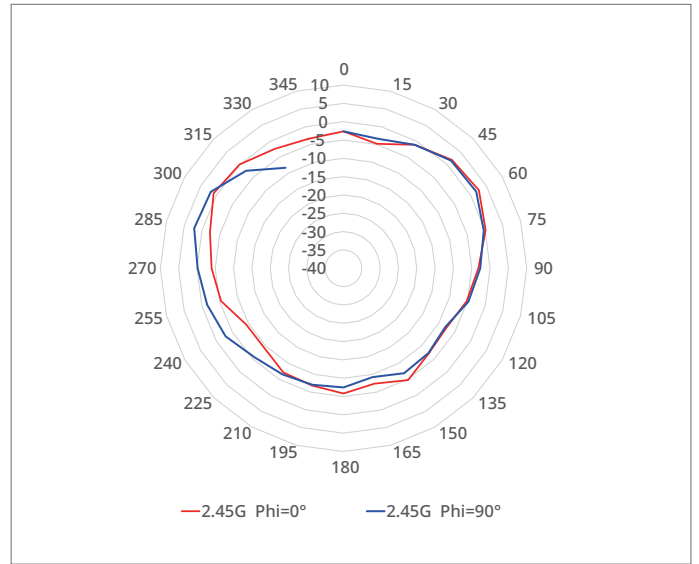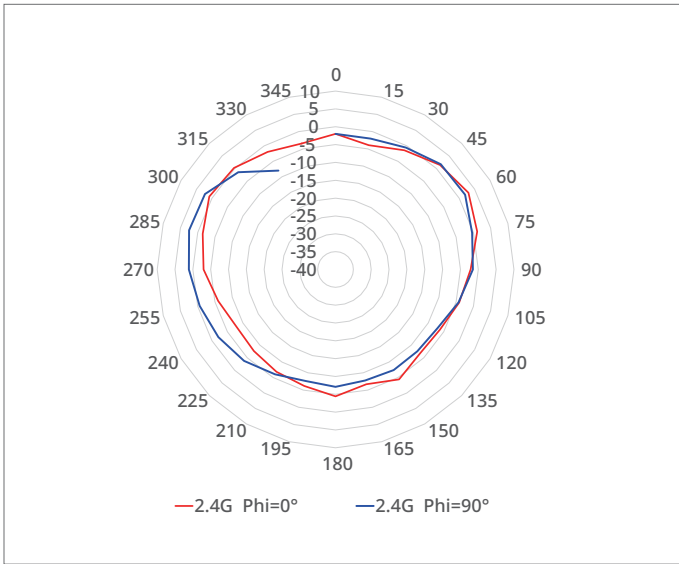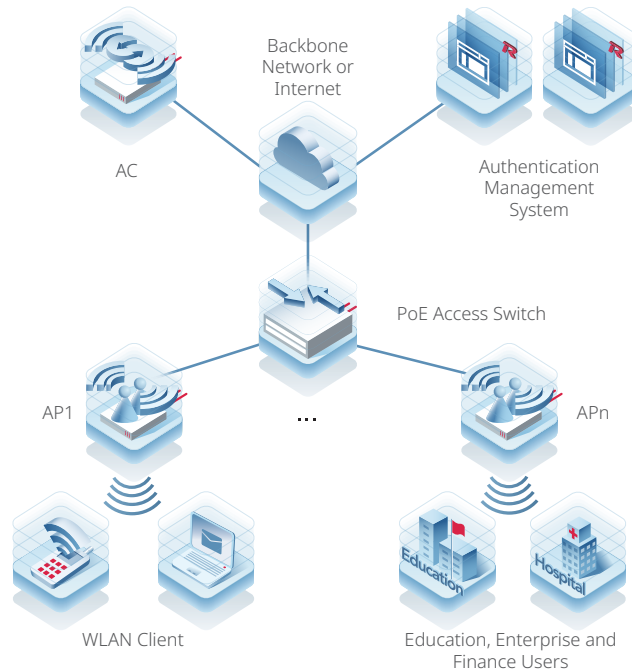

2.4 GHz (ANT1, 2, 3, 4)

5.5 GHz (ANT1, 2, 3, 4)

Note: Operating frequency bands are country-specific.

07
Typical Scenario

Typical Scenario

The AP is applicable to densely populated areas with simple building structures, no special obstructions, and a large capacity demand. Such areas cover the scenarios of higher education, wireless city, energy, and plaza. The AP can be flexibly deployed based on the environment.

Public Cloud Deployment

With Ruijie public cloud service, the RG-AP680-IO is fit for SME scenarios, including small offices, boutique hotels, and retail stores. Ruijie Networks provides customers with Ruijie Cloud lifetime free licenses. It significantly streamlines the IT operational efficiency, and simplifies wireless deployment with cost-effective options for SMEs.

The Ruijie Cloud service provides network provisioning, monitoring, optimization, operation, and maintenance. Devices can be easily deployed or swapped in plug-and-play mode. Automatic RF planning meets the needs of increasing user experience.

Key Features:

- Unified device management
- Fast provisioning by Cloud and App
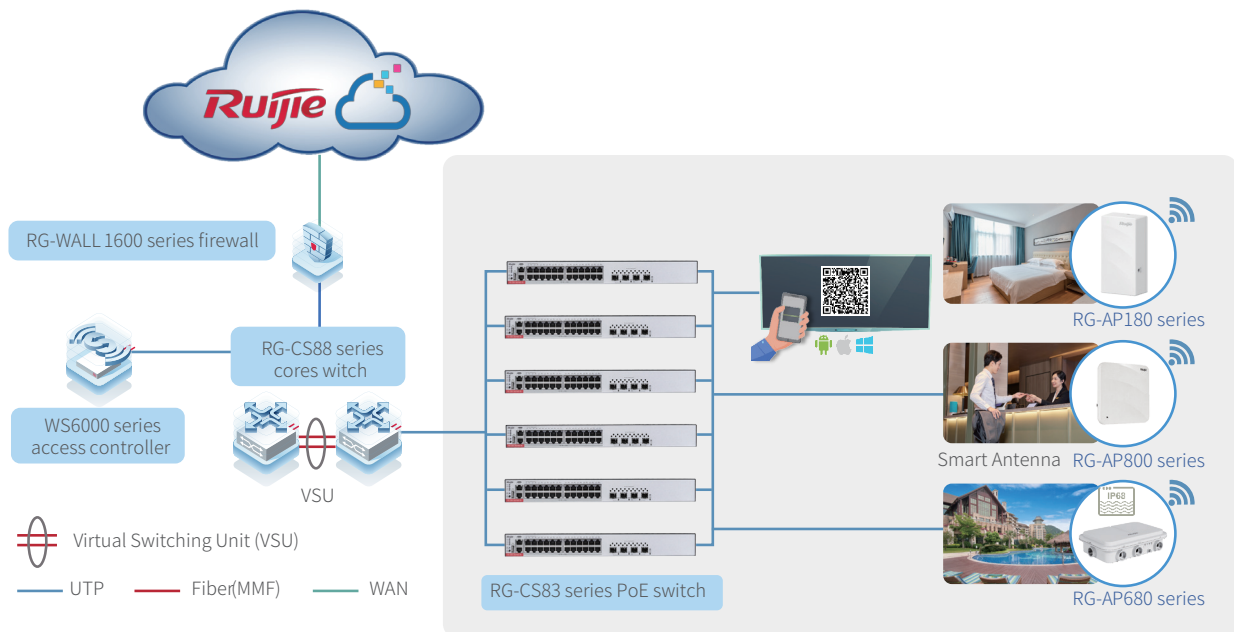- Secure PPSK/UPSK authentication
- Captive portal & social media authentication
- App-based monitoring and alarm

Hybrid Cloud Deployment

For enterprise office, campus network, and hospitality customers with single or multiple sites, a hybrid mode consisting of Ruijie RG-WS series wireless access controller (on-premises) and cloud-based management (optional) is recommended for high-density AP deployment. Wireless access controllers are installed at the customer's site with fully integrated wireless management and authentication features, supporting large-scale AP management with cluster-based controller architecture. Optionally, the cloud management platform allows for value-added features such as centralized device configuration and monitoring, AI radio optimization, and reporting.

RG-WALL 1600 series firewall

RG-CS88 series core switch

WS6000 series access controller

VSU

Virtual Switching Unit (VSU)

UTP — Fiber(MMF) — WAN

RG-CS83 series PoE switch

RG-AP180 series

Smart Antenna RG-AP800 series

RG-AP680 series

Key Features:

- Centralized device management and reporting by Ruijie Cloud
- Ultra-seamless roaming management
- AI radio optimization with one click
- High performance and security with all user authentication and traffic forwarding handled locally
- Flexible authentication options, including 802.1X, PPSK/UPSK, and voucher authentication
- Unified management of all series of Ruijie APs

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Ordering Information

Model	Description
RG-AP680-IO	Wi-Fi 6 dual-radio wireless access point Compliance with IEEE 802.11a/b/g/n/ac and 802.11ax standards Built-in omnidirectional antennas Up to eight spatial streams Data rate of up to 5.951 Gbps Fat/Fit/Cloud mode switchover Electrical and optical uplink ports IEEE 802.3af/at/bt-compliant (PoE/PoE+/PoE++) power supply

09
Package Contents

Item	Quantity
Main unit	1
Mounting plate assembly	1
Wall/Pole-mount bracket	1
M5 × 10 machine screw	4
M6 × 16 machine screw	2
M8 × 20 machine screw	2
M6 x 40 mm expansion anchor	4
Hose clamp	2
Watertight cable gland for the Ethernet cable and	0
power cord	2
Watertight cable gland for the optical cable	1
Dust cap	4
Grounding cable	1
Warranty Card	1
Quick Start Guide	1

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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.

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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*

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