# RG-AP180(V3)
Wi-Fi 6 Dual-radio Access Point

Product Pictures

Product Overview

The RG-AP180(V3) is a Wi-Fi 6 wireless access point that delivers dual radios, high performance, and enterprise-grade encryption. Due to the hybrid cloud management mode and high-speed access design, it is suitable for flexible deployment in high-quality network scenarios, such as classroom, dormitory, and office scenarios in the education industry, office scenarios of small- and medium-scale enterprises, outpatient clinics and office scenarios in the medical industry, and hotel apartments.

Product Highlights

Ultra-High Performance

Flexible Networking

High Security and Reliability
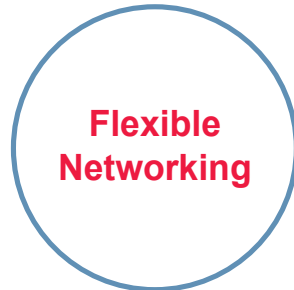
Ultra-High Performance

- Dual-band design (2.4 GHz + 5 GHz), four spatial streams, 1024-Quadrature Amplitude Modulation (QAM) high-speed access, and up to 2.976 Gbps peak data rate, realizing high-speed wireless access experience
- Orthogonal Frequency-Division Multiple Access (OFDMA), Multi-User Multiple-Input Multiple-Output (MU-MIMO), and Wi-Fi Multimedia (WMM), increasing the average rate per user in high-density deployment environments
- 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
- IEEE 802.11k/v/r support and roaming stickiness optimization, achieving seamless user roaming

- Rich IoT features: Bluetooth 5.0, and wireless locating

High Security and Reliability

- 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

Applicable Scenarios

Higher Education

Classroom and Lab

Deploying Wi-Fi in classrooms and labs enables students and teachers to access network resources with ease, thereby enhancing the quality of teaching and learning. Students can engage in online learning, access course materials, and collaborate with classmates, while teachers can access teaching resources and deliver multimedia lessons.

Office

Deploying Wi-Fi in the office can help teachers quickly search for and access online educational resources, improving lesson preparation efficiency.

Healthcare

Outpatient Service

The Wi-Fi network provides a mobile office environment for medical staff. Medical staff can use mobile devices to view patient information in real time, which significantly improves treatment efficiency. Patients can access relevant medical

information through smart devices online, resulting in improved satisfaction.

Remote Monitoring and Management of Medical Devices

With Wi-Fi deployment, remote monitoring and management of medical devices become possible. Wireless medical devices such as ECG monitors and blood pressure monitors can transmit patient data in real time, thereby improving information security. Additionally, these wireless medical devices can be easily maintained and upgraded, resulting in cost reductions.

Hotel Apartments

Chain Hotels

By deploying a Wi-Fi network, travelers can enjoy convenient, high-speed Internet access to ensure a fulfilling stay.

Product Features

Multi-scenario Adaptability

The RG-AP180(V3), a dual-band wall plate wireless access point, is ideal for a wide range of applications, including higher education, government, general education, finance, business, and hotel sectors, meeting diverse service needs.

High-speed Access and Compatibility

The RG-AP180(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-AP180(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.

Flexible Deployment and Power Supply

The RG-AP180(V3) supports both local power supply and Power over Ethernet (PoE), providing you with the flexibility to choose the power supply mode. In addition, the RG-AP180(V3) can be installed in the 86 mm x 86 mm junction box and integrates Ethernet interfaces. With simple and beautiful appearance design, it is easy to deploy. It can be installed in a junction box without damaging wall decoration. It is the optimal choice for wireless network construction in small- and medium-sized offices, hotel apartments, and other environments.

Solution Scalability Capabilities

Ruijie WIS Cloud Management Network Solution (WIS for short) provides full-lifecycle cloud management network services covering network procurement, planning, deployment, acceptance, and O&M. When the AP connects to WIS, it can meet various needs in multiple scenarios including planning, deployment, acceptance, and operation through cloud management, cloud O&M, cloud authentication, and other value-added services provided by WIS.

Network-wide Cloud Management

WIS supports integrated management and control of various types of devices including APs, ACs, switches, gateways, and routers. It supports remote O&M management operations such as adding or batch importing of multi-branch network devices, online status monitoring, configuration delivery, upgrade, restart, configuration backup, and restoration. It supports network-wide topology auto-discovery and topology status monitoring.

Wireless Network Visualization

The overview function module of WIS provides a comprehensive view of the network running status from the perspective of overview, experience, users, devices, and environment. The network running information includes the following items:
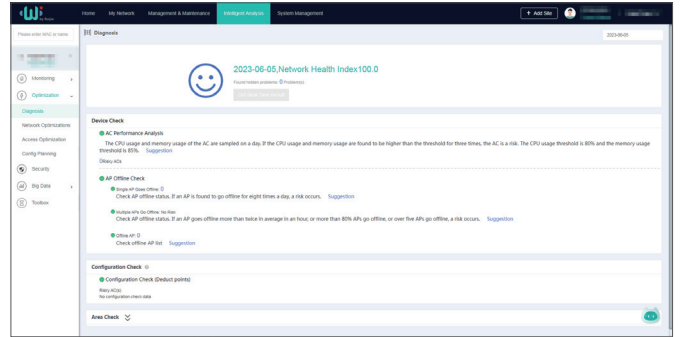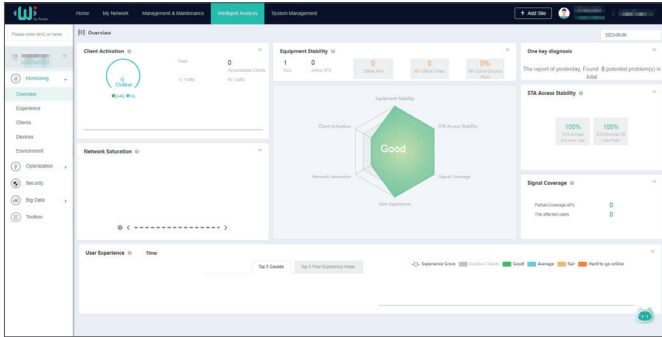
● Network basic information: device stability, device health,

user stability, network signal coverage, and network association.

- User usage: user activity (network dependency), and user online experience and analysis.
- Network saturation: network capacity usage and channel usage.

Intelligent Network Diagnosis

With WIS, wireless network diagnosis and health index assessment can be completed in just one click, providing test results for each item. The health index provided by WIS enables you to rapidly assess the state of your live network. WIS can locate faulty areas, APs, and STAs, and provides potential risks and corresponding optimization suggestions.

Product Specifications

Hardware Specifications

Hardware Specifications	RG-AP180(V3)
802.11n	Four spatial streams ● Radio 1 – 2.4 GHz: 2x2 MIMO, two spatial streams ● Radio 2 – 5 GHz: 2x2 MIMO, two 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: 600 Mbps ● 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) Radio technologies: Orthogonal Frequency-Division Multiplexing (OFDM) Modulation types: BPSK, QPSK, 16-QAM, 64-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-AP180(V3)
802.11ac	Two spatial streams ● Radio 2 – 5 GHz: 2x2 MIMO, two spatial streams Channels: ● Radio 2 – 5 GHz: 20 MHz, 40 MHz, 80 MHz, and 160 MHz Combined peak data rate: 1.732 Gbps ● Radio 2 – 5 GHz: 6.5 Mbps to 1.732 Gbps (MCS0 to MCS9) 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)
802.11ax	Four spatial streams ● 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 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: 2.976 Gbps: ● 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) 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: two built-in omnidirectional antennas, the max. antenna gain is 2 dBi. ● 5 GHz: two built-in omnidirectional antennas, the max. antenna gain is 2 dBi. Bluetooth ● One integrated vertically polarized omnidirectional antenna, the max. antenna gain is 2 dBi.
Port	Uplink: 1 x 10/100/1000Base-T auto-negotiation RJ45 Ethernet port, 802.3af/at-compliant PoE Downlink: 4 x 10/100/1000Base-T auto-negotiation RJ45 Ethernet ports 1 x micro USB console port (serial console port) 1 x Bluetooth 5.0

Hardware Specifications	RG-AP180(V3)
Status LED	1 x multi-color system status LED ● AP power-on status ● Software initialization status and upgrade status ● Uplink service interface status ● CAPWAP tunnel timeout ● Specific AP locating
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.
Dimensions (W x D x H)	Main unit: 86 mm x 116 mm x 43 mm (3.39 in. x 4.57 in. x 1.70 in.) Shipping: 128 mm x 96 mm x 59 mm (5.04 in. x 3.78 in. x 2.33 in.)
Weight	Main unit: 0.22 kg (0.49 lbs) Shipping: 0.31 kg (0.68 lbs)
Mounting	Mounting in 86 mm x 86 mm junction box
Input power supply	The AP supports the following two power supply modes: ● 12 V DC/1 A power input over DC connector: The DC connector accepts 2.1 mm/5.5 mm center-positive circular plug. A DC power supply needs to be purchased independently. ● PoE input over the backplane interface: compliance with 802.3af/at standard (PoE/PoE+) Note: If both DC power and PoE are available, DC power is preferred.
Power consumption	Maximum power consumption: 10 W ● DC power: 10 W ● 802.3at (PoE+): 10 W ● 802.3af (PoE): 10 W ● Idle mode: 3.5 W
Environment	Storage temperature: –40°C to +70°C (–40°F to +158°F) Storage humidity: 5% RH to 95% RH (non-condensing) Operating temperature: –10°C to +45°C (14°F to 113°F) Operating humidity: 5% RH to 95% 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	RAM: 2 GB SPI: 8 MB Nand: 128 MB
Transmit power	2.4 GHz ● Max. transmit power: +21 dBm (126 mW) ● Minimum transmit power: +8 dBm (6.31 mW) 5 GHz ● Max. transmit power: +21 dBm (126 mW) ● Minimum transmit power: +8 dBm (6.31 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.

Radio Frequency Performance	RG-AP180(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	18 dBm	–91 dBm
	2 Mbps	17 dBm	–91 dBm
	5.5 Mbps	16 dBm	–90 dBm
	11 Mbps	15 dBm	–87 dBm
2.4 GHz, 802.11g	6 Mbps	18 dBm	–89 dBm
	24 Mbps	16 dBm	–82 dBm
	36 Mbps	16 dBm	–78 dBm
	54 Mbps	15 dBm	–72 dBm
2.4 GHz, 802.11n (HT20)	MCS0	18 dBm	–85 dBm
	MCS7	15 dBm	–67 dBm
2.4 GHz, 802.11n (HT40)	MCS0	18 dBm	–82 dBm
	MCS7	15 dBm	–64 dBm
2.4 GHz, 802.11ax (HE20)	MCS0	18 dBm	–85 dBm
	MCS11	12 dBm	–58 dBm
2.4 GHz, 802.11ax (HE40)	MCS0	18 dBm	–82 dBm
	MCS11	12 dBm	–54 dBm
5 GHz, 802.11a	6 Mbps	18 dBm	–89 dBm
	24 Mbps	16 dBm	–82 dBm
	36 Mbps	16 dBm	–78 dBm
	54 Mbps	15 dBm	–72 dBm

Radio Frequency Performance	RG-AP180(V3)		
Frequency Band and Protocol	Data Rate	Max. Transmit Power per Transmit Chain	Max. Receive Sensitivity per Receive Chain
5 GHz, 802.11n (HT20)	MCS0	18 dBm	–85 dBm
	MCS7	15 dBm	–67 dBm
5 GHz, 802.11n (HT40)	MCS0	18 dBm	–82 dBm
	MCS7	15 dBm	–64 dBm
5 GHz, 802.11ac (VHT20)	MCS0	18 dBm	–85 dBm
	MCS9	15 dBm	–60 dBm
5 GHz, 802.11ac (VHT40)	MCS0	24 dBm	–88 dBm
	MCS9	18 dBm	–63 dBm
5 GHz, 802.11ac (VHT80)	MCS0	18 dBm	–79 dBm
	MCS9	15 dBm	–53 dBm
5 GHz, 802.11ax (HE20)	MCS0	18 dBm	–85 dBm
	MCS11	12 dBm	–58 dBm
5 GHz, 802.11ax (HE40)	MCS0	18 dBm	–82 dBm
	MCS11	12 dBm	–54 dBm
5 GHz, 802.11ax (HE80)	MCS0	18 dBm	–79 dBm
	MCS11	12 dBm	–52 dBm
5 GHz, 802.11ax (HE160)	MCS0	16 dBm	–75 dBm
	MCS11	9 dBm	–47 dBm

Software Specifications

Software Specifications	RG-AP180(V3)
Basic Function	

Software Specifications	RG-AP180(V3)
Applicable software version	RGOS11.9(6)B9 or higher
WLAN	
Max. number of associated STAs	256 (up to 128 STAs per radio)
Max. number of BSSIDs	16 (up to 8 BSSIDs per radio)
Max. number of WLAN IDs	8
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 STA identification technology Intelligent load balancing based on the STA quantity or traffic Rate set settings
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 MTU setting and fragmentation over CAPWAP tunnels Encryption over CAPWAP data channels Encryption over CAPWAP control channels
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) 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

Software Specifications	RG-AP180(V3)
Data frame filtering	Allowlist, static blocklist, and dynamic blocklist VLAN-based user isolation
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 (used with the AC)
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
Ethernet	Jumbo frame length: 1,518 Full-duplex and half-duplex modes of interfaces IEEE802.1p and IEEE802.1Q
VLAN	Interface-based VLAN assignment Max. number of VLANs: 4,094 VLAN ID range: 1–4,094
ARP	ARP entry aging and proxy ARP Max. number of ARP entries: 1,024 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
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

Software Specifications	RG-AP180(V3)
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	Console, Telnet, and TFTP client 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-AP180(V3)
Intelligent O&M	
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

Value-added Software	RG-AP180(V3)
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	
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	
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	
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.

Certifications and Regulatory Compliance

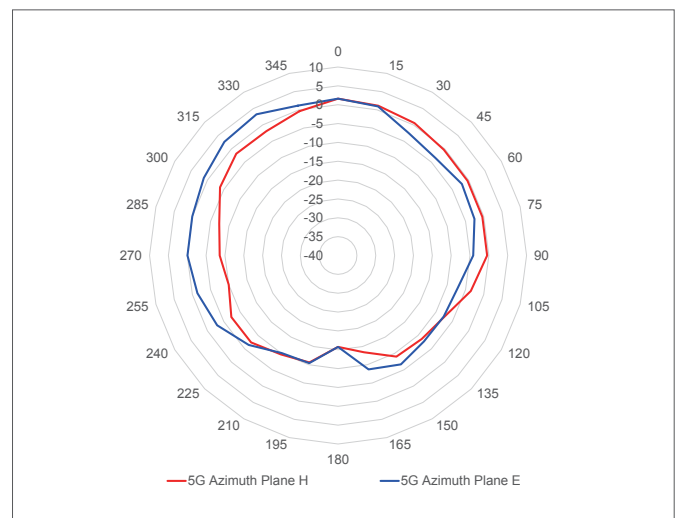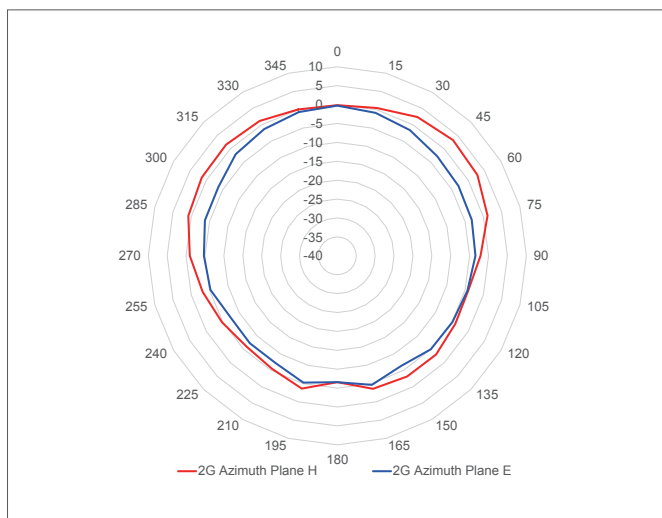| Certifications and Regulatory Compliance	RG-AP180(V3)
Regulatory compliance	EN 55032 EN 55035 EN 61000-3-3 EN IEC 61000-3-2 IEC 62368-1 EN 62368-1 EN 301 489-1 EN 301 489-3 EN 301 489-17

Certifications and Regulatory Compliance	RG-AP180(V3)
Regulatory compliance	EN 300 328 EN 301 893 EN 300 440 FCC Part 15 EN IEC 62311

* 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.

Note: Operating frequency bands are country-specific.

Ordering Information

Model	Description
RG-AP180(V3)	Wi-Fi 6 dual-radio wall plate wireless access point that can be installed in the 86 mm x 86 mm junction box Four spatial streams, peak data rate of 2.976 Gbps ● Radio 1: 2.4 GHz: two spatial streams, 2x2 MU-MIMO, peak data rate of 574 Mbps ● Radio 2: 5 GHz: four spatial streams, 2x2 MU-MIMO, peak data rate of 2.4 Gbps 802.11a/b/g/n/ac, switching between Fat, Fit, and cloud modes, and 802.3af/at PoE and local DC power supply Note: ● 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 12 V/1 A.

Package Contents

Item	Quantity
Main unit	1
Quick Start Guide	1
Product Warranty	1
4.2 mm x 20 mm Phillips pan head self-tapping screw	2

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