INNOVATION
Beyond Networks

RG-AP9861-R

Wi-Fi 7 Five-Radio Flagship Indoor Access Point

Datasheet

01 Product Overview

The RG-AP9861-R is a Wi-Fi 7 five-radio flagship access point (AP) launched by Ruijie Networks for high-density indoor scenarios in the sectors covering higher education, government, general education, finance, and business.

In compliance with the IEEE 802.11be, IEEE 802.11ax, IEEE 802.11ac Wave2, IEEE 802.11ac Wave1, and IEEE 802.11n standards, the RG-AP9861-R adopts a hardware-independent five-radio design and delivers a combined peak data rate of 24.436 Gbps, eliminating the performance bottleneck.

The RG-AP9861-R integrates Ruijie AI radio design. The additional intelligent radio enables real-time full-band scanning, ensuring high security and superior user experience in the Wi-Fi environment.

The RG-AP9861-R is designed considering factors such as wireless network security, radio control, mobile access, QoS, seamless roaming, and Internet of Things (IoT) module expansion. The IoT radio frequency (RF) connector supports Bluetooth 5.3, Zigbee module, and Power over Ethernet (PoE) output. The RG-AP9861-R can be used together with Ruijie access controllers (ACs), RG-INC, and RG-WIS to implement wireless user data forwarding, security, access control, and IoT application expansion.

The RG-AP9861-R supports local power supply and PoE, which can be selected based on power supply conditions. In addition, the RG-AP9861-R can be mounted on a wall or ceiling, making it ideal for high-density scenarios including large campuses, conference centers, plazas, enterprise offices, and operation hotspots.

02 Product Appearance

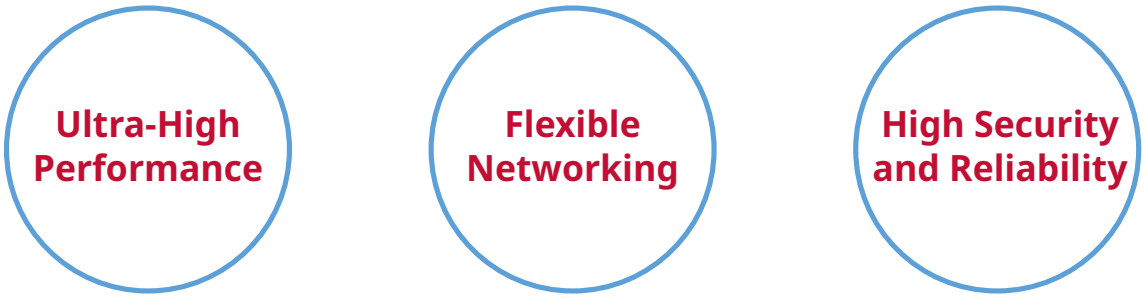
Top View of the RG-AP9861-R

Bottom View of the RG-AP9861-R

Right Side View of the RG-AP9861-R

Left Side View of the RG-AP9861-R

03 Product Highlights



Ultra-High Performance

- Five-radio design (2.4 GHz + 5 GHz + 5 GHz + 6 GHz + AI Radio), 18 spatial streams, 4096-Quadrature Amplitude Modulation (QAM) high-speed access, and up to 24.436 Gbps peak data rate, delivering high-speed wireless access experience
- Hardware-independent AI radio card to implement better roaming policies through real-time client scanning, thereby providing superior roaming experience for mobile office, mobile video conferencing, or network courses
- Wi-Fi 7 technologies and 6 GHz spectrum resources to enable a peak data rate of up to 11.529 Gbps in the 6 GHz frequency band, thereby providing users with high-performance wireless 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 the total cost of operation (TCO) and maximizing the return on investment (ROI)
- Access through optical and Ethernet cables for flexible networking and high-speed backhaul over 10 Gbps optical links
- IEEE 802.11k/v/r support, roaming stickiness optimization, and client steering, achieving seamless roaming and improved user experience
- Rich IoT features: PoE output, Bluetooth 5.3

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
- Hardware-independent AI radio card, safeguarding the security of 2.4 GHz/5 GHz radio in 24/7 mode and carrying out radar scanning on wireless networks to eliminate potential risks
- 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

04 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.

Library

Wi-Fi deployment in libraries facilitates quick access to online resources such as e-books and academic papers for research and study by students and teachers.

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.

Government and Commerce

Large Conference Center

Deploying Wi-Fi in conference centers enables high-definition conference broadcasting, remote conferencing, and allows all attendees to simultaneously access wireless networks, thereby improving conference efficiency.

05 Product Features

Multi-scenario Adaptability

The RG-AP9861-R, a five-radio 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-AP9861-R supports various wireless protocols, including 802.11be, 802.11ax, 802.11ac Wave2, 802.11ac Wave1, and 802.11n. It features a hardware-independent five-radio design to deliver a data rate of up to 24.436 Gbps, effectively eliminating wireless performance bottlenecks. Additionally, it is compatible with an extensive array of devices, promoting seamless interconnectivity among employees and customers.

Independent AI Radio Design

The hardware-independent AI radio card can safeguard the security of 2.4 GHz/5 GHz radio in 24/7 mode and carry out radar scanning on wireless networks to eliminate potential risks. Better roaming policies are implemented through real-time client scanning, providing superior roaming experience for mobile office, mobile video conferencing, or network courses.

Security and Scalability

The RG-AP9861-R stands out with its exceptional wireless network security, radio control, mobile access, QoS, seamless roaming, and IoT module expansion. Working with Ruijie's AC, it enables wireless user data forwarding, security, access control, and IoT application expansion to cope with diverse service needs.

Flexible Deployment and Power Supply

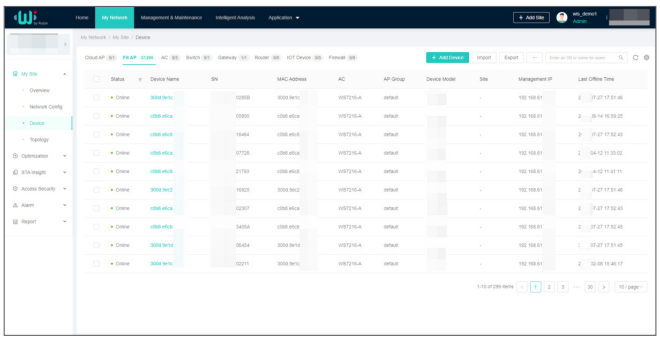
The RG-AP9861-R supports both local power supply and PoE, providing you with flexible power supply options. In addition, the RG-AP9861-R can be mounted on a wall or ceiling, making space deployment and environmental requirements less challenging. This makes the RG-AP9861-R particularly suitable for large campuses, conference centers, enterprise offices, and operational hotspots.

06 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

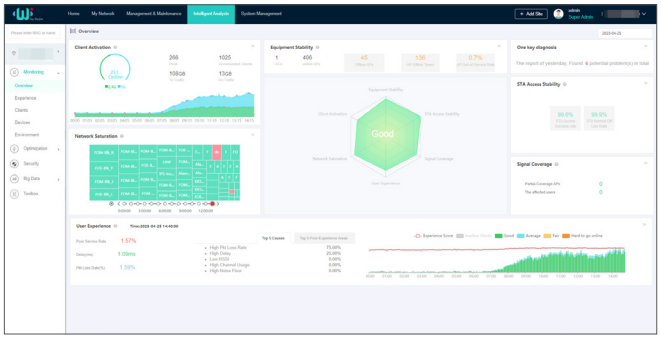
WIS supports integrated management and control of various types of devices including APs, ACs, switches, gateways, and routers. It supports remote O&M management operations such as adding or batch importing of multi-branch network devices, online status monitoring, configuration delivery, upgrade, restart,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



Wireless Network Visualization

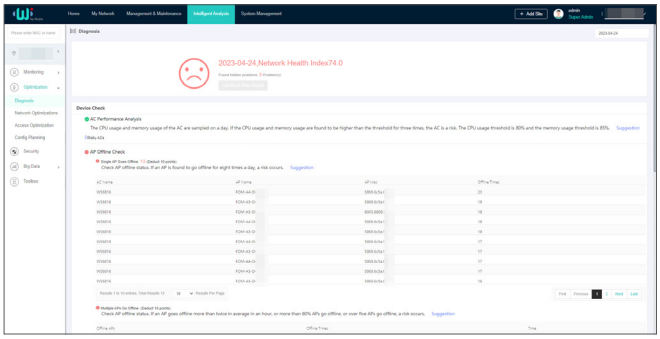
The overview function module of WIS provides a comprehensive view of the network running status from the perspective of overview, experience, users, devices, and environment. The network running information includes the following items:

- 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.



07 Product Specifications

Hardware Specifications

Radio Specifications	RG-AP9861-R
802.11n	14 spatial streams • Radio 1 – 2.4 GHz: 4x4 MIMO, four spatial streams • Radio 2 – 5 GHz: 4x4 MIMO, four spatial streams • Radio 3 – 5 GHz: 4x4 MIMO, four spatial streams • Radio 5 – AI Radio, 2.4 GHz/5 GHz: 2x2 MIMO, two spatial streams Channel: • Radio 1 – 2.4 GHz: 20 MHz and 40 MHz • Radio 2 – 5 GHz: 20 MHz and 40 MHz • Radio 3 – 5 GHz: 20 MHz and 40 MHz • Radio 5 – AI Radio, 2.4 GHz/5 GHz: 20 MHz and 40 MHz Combined peak data rate: 1.800 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 3 – 5 GHz: 6.5 Mbps to 600 Mbps (MCS0 to MCS31) Radio 5 – AI Radio, 2.4 GHz/5 GHz: AI Radio for scanning only Radio technologies: Orthogonal Frequency-Division Multiplexing (OFDM) Modulation types: BPSK, QPSK, 16-QAM, and 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)

Radio Specifications	RG-AP9861-R
802.11ac	10 spatial streams • Radio 2 – 5 GHz: 4x4 MIMO, four spatial streams • Radio 3 – 5 GHz: 4x4 MIMO, four spatial streams • Radio 5 – AI Radio, 5 GHz: 2x2 MIMO, two spatial streams Channel: • Radio 2 – 5 GHz: 20 MHz, 40 MHz, 80 MHz, and 160 MHz • Radio 3 – 5 GHz: 20 MHz, 40 MHz, 80 MHz, and 160 MHz • Radio 5 – AI Radio, 5GHz: 20 MHz, 40 MHz, and 80 MHz Combined peak data rate: 6.934 Gbps Radio 2 – 5 GHz: 6.5 Mbps to 3.467 Gbps (MCS0 to MCS9) Radio 3 – 5 GHz: 6.5 Mbps to 3.467 Gbps (MCS0 to MCS9) Radio 5 – AI Radio, 5 GHz: AI Radio for scanning only Radio technologies: Orthogonal Frequency-Division Multiplexing (OFDM) Modulation types: BPSK, QPSK, 16-QAM, 64-QAM, and 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	16 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 • Radio 3 – 5 GHz: 4x4 uplink/downlink MU-MIMO, four spatial streams • Radio 4 – 6 GHz: 4x4 uplink/downlink MU-MIMO, four spatial streams Channel: • Radio 1 – 2.4 GHz: 20 MHz and 40 MHz • Radio 2 – 5 GHz: 20 MHz, 40 MHz, 80 MHz, and 160 MHz • Radio 3 – 5 GHz: 20 MHz, 40 MHz, 80 MHz, and 160 MHz • Radio 4 – 6 GHz: 20 MHz, 40 MHz, 80 MHz, 160 MHz, and 320 MHz Combined peak data rate: 20.363 Gbps • Radio 1 – 2.4 GHz: 7.3 Mbps to 1.147 Gbps (MCS0 to MCS11) • Radio 2 – 5 GHz: 7.3 Mbps to 4.804 Gbps (MCS0 to MCS11) • Radio 3 – 5 GHz: 7.3 Mbps to 4.804 Gbps (MCS0 to MCS11) • Radio 4 – 6 GHz: 7.3 Mbps to 9.608 Gbps (MCS0 to MCS11) Radio technologies: uplink/downlink Orthogonal Frequency-Division Multiple Access (OFDMA) Modulation types: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, and 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

Radio Specifications	RG-AP9861-R
802.11be	16 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 • Radio 3 – 5 GHz: 4x4 uplink/downlink MU-MIMO, four spatial streams • Radio 4 – 6 GHz: 4x4 uplink/downlink MU-MIMO, four spatial streams Channel: • Radio 1 – 2.4 GHz: 20 MHz and 40 MHz • Radio 2 – 5 GHz: 20 MHz, 40 MHz, 80 MHz, and 160 MHz • Radio 3 – 5 GHz: 20 MHz, 40 MHz, 80 MHz, and 160 MHz • Radio 4 – 6 GHz: 20 MHz, 40 MHz, 80 MHz, 160 MHz, and 320 MHz Combined peak data rate: 24.436 Gbps • Radio 1 – 2.4 GHz: 7.3 Mbps to 1.377 Gbps (MCS0 to MCS13) • Radio 2 – 5 GHz: 7.3 Mbps to 5.765 Gbps (MCS0 to MCS13) • Radio 3 – 5 GHz: 7.3 Mbps to 5.765 Gbps (MCS0 to MCS13) • Radio 4 – 6 GHz: 7.3 Mbps to 11.529 Gbps (MCS0 to MCS13) Radio technologies: uplink/downlink Orthogonal Frequency-Division Multiple Access (OFDMA) Modulation types: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM, and 4096-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 smart antennas, with peak antenna gain of 3 dBi • 5 GHz: eight built-in omnidirectional smart antennas, with peak antenna gain of 3 dBi • 6 GHz: four built-in omnidirectional smart antennas, with peak antenna gain of 3 dBi Bluetooth • One built-in omnidirectional antenna, with peak antenna gain of 3 dBi
Port	1 x 100/1000/2.5G/5G/10GBase-T port (10G/PoE IN port on the AP) 1 x 1000/2.5G/5G/10GBase-T port (10G/WAN2 port on the AP), shared with one 10GE SFP+ port 1 x 10GE SFP+ port, compatibility with 10GE/2.5GE/1GE modules, shared with one 10GE RJ45 port (10G/WAN2 port on the AP) 1 x 10/100/1000Base-T port 1 x RJ45 console port (serial console port) 1 x USB 3.0 (Type-A connector) 1 x Bluetooth 5.3
GPS positioning	Supported
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
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: 245 mm x 245 mm x 67 mm (9.65 in. x 9.65 in. x 2.64 in.) Shipping: 485 mm x 346 mm x 340 mm (19.09 in. x 13.62 in. x 13.39 in.)

Radio Specifications	RG-AP9861-R
Weight	Main unit: 2.0 kg (4.41 lbs) Mounting bracket: 0.2 kg (0.44 lbs) Shipping weight: 2.76 kg (6.08 lbs)
Mounting	Wall/Ceiling-mount (a mounting bracket is delivered with the main unit)
Lock option	Securing latch and Kensington lock
Input power supply	The AC supports the following two power supply modes: • 54 V DC/1.25 A power input over DC connector: The DC connector accepts the center-positive circular plug with the inner diameter of 2.5 mm (0.10 in.) or outer diameter of 5.5 mm (0.22 in.) and the length of 9.5 mm (0.37 in.). A DC power supply needs to be purchased independently. • PoE input over WAN 1: The power sourcing equipment (PSE) complies with IEEE 802.3at/bt standard (PoE+/PoE++) Note: if both DC power and PoE are available, DC power is preferred.
Maximum power consumption	Maximum power consumption: 60 W • DC power: 60 W, Radio 1 (2.4 GHz) 4x4, Radio 2 (5 GHz) 4x4, Radio 3 (5 GHz) 4x4, Radio 4 (6 GHz) 4x4, Radio 5 (AI Radio) 2x2, LAN 1 for PoE power supply (48 V/12.95 W), USB port for external power supply (5 V/5 W) • 802.3bt (PoE++): 60 W, Radio 1 (2.4 GHz) 4x4, Radio 2 (5 GHz) 4x4, Radio 3 (5 GHz) 4x4, Radio 4 (6 GHz) 4x4, Radio 5 (AI Radio) 2x2, LAN 1 for PoE power supply (48 V/12.95 W), USB port for external power supply (5 V/5 W) • 802.3at (PoE+): 25 W, Radio 1 (2.4 GHz) 2x2, Radio 2 (5 GHz) 2x2, Radio 3 (5 GHz) 2x2, both Radio 4 and AI Radio disabled, LAN 1 that can transmit data but does not support PoE power supply, USB port that fails to supply power to an external device • Idle mode: 20 W
External power supply	When powered by 802.3bt (PoE++), the AP can supply power to an external device. • The USB port can source 5 V/5 W power to an attached device. • The LAN 1 port can source 48 V/12.95 W power to an IoT unit.
Environment	Storage temperature: –40°C to +70°C (–40°F to +158°F) Storage humidity: 5% RH to 95% RH (non-condensing) Storage altitude: –500 m to +5,000 m (–1,640.42 ft. to +16,404.20 ft.) Operating temperature: –10°C to +50°C (14°F to 122°F) Operating humidity: 5% RH to 95% RH (non-condensing) Operating altitude: –500 m to +3,000 m (–1,640.42 ft. to +9,842.52 ft.) Note: At an altitude in the range of 1,800–3,000 m (5,905.51–9,842.52 ft.), every time the altitude increases by 166 m (544.62 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	SDRAM: 8 GB NAND: 2 GB SPI: 32 MB
Transmit power	2.4 GHz • Maximum transmit power: 30 dBm (1000 mw) • Minimum transmit power: 10 dBm (10 mw) 5 GHz • Maximum transmit power: 30 dBm (1000 mw) • Minimum transmit power: 10 dBm (10 mw) 6 GHz • Maximum transmit power : 30 dBm (1000 mw) • Minimum transmit power : 10 dBm (10 mw) Note: The transmit power adjusted in percentage. The transmit power is limited by local regulatory requirements. For details, see *WLAN Country or Region Codes and Channel Compliance*.

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-AP9861-R		
Frequency Band and Protocol	**Data Rate**	**Maximum Transmit power per Transmit Chain**	**Maximum Receive Sensitivity per Receive Chain**
2.4 GHz, 802.11g	6 Mbps	24 dBm	–91 dBm
	24 Mbps	23 dBm	–85 dBm
	36 Mbps	23 dBm	–80 dBm
	54 Mbps	21 dBm	–74 dBm
2.4 GHz, 802.11n (HT20)	MCS0	24 dBm	–85 dBm
	MCS7	20 dBm	–67 dBm
2.4 GHz, 802.11n (HT40)	MCS0	24 dBm	–82 dBm
	MCS7	20 dBm	–64 dBm
2.4 GHz, 802.11ax (HE20)	MCS0	24 dBm	–85 dBm
	MCS11	17 dBm	–58 dBm
2.4 GHz, 802.11ax (HE40)	MCS0	24dBm	–82 dBm
	MCS11	17dBm	–54 dBm
5 GHz, 802.11a	6 Mbps	24 dBm	–91 dBm
	24 Mbps	23 dBm	–85 dBm
	36 Mbps	23 dBm	–80 dBm
	54 Mbps	21 dBm	–74 dBm
5 GHz, 802.11n (HT20)	MCS0	24 dBm	–85 dBm
	MCS7	20 dBm	–67 dBm
5 GHz, 802.11n (HT40)	MCS0	24 dBm	–82 dBm
	MCS7	20 dBm	–64 dBm
5 GHz, 802.11ac (VHT20)	MCS0	24 dBm	–85 dBm
	MCS9	18 dBm	–60 dBm
5 GHz, 802.11ac (VHT40)	MCS0	24 dBm	–82 dBm
	MCS9	18 dBm	–57 dBm
5 GHz, 802.11ac (VHT80)	MCS0	24 dBm	–82 dBm
	MCS9	18 dBm	–56 dBm
5 GHz, 802.11ac (VHT160)	MCS0	24 dBm	–79 dBm
	MCS9	18 dBm	–53 dBm
5 GHz, 802.11ax (HE20)	MCS0	24 dBm	–85 dBm
	MCS11	17 dBm	–58dBm
5 GHz, 802.11ax (HE40)	MCS0	24 dBm	–82dBm
	MCS11	17 dBm	–54dBm
5 GHz, 802.11ax (HE80)	MCS0	24 dBm	–82 dBm
	MCS9	18 dBm	–56 dBm
	MCS11	17 dBm	–52dBm

Radio Frequency Performance	RG-AP9861-R		
Frequency Band and Protocol	**Data Rate**	**Maximum Transmit power per Transmit Chain**	**Maximum Receive Sensitivity per Receive Chain**
5 GHz, 802.11ax (HE160)	MCS0	24 dBm	–79 dBm
	MCS9	18 dBm	–53 dBm
	MCS11	17 dBm	–50 dBm
5 GHz, 802.11be (EHT80)	MCS0	24 dBm	–82 dBm
	MCS9	18 dBm	–56 dBm
	MCS11	17 dBm	–52 dBm
	MCS13	15 dBm	–46 dBm
5 GHz, 802.11be (EHT160)	MCS0	24 dBm	–79 dBm
	MCS9	18 dBm	–53 dBm
	MCS11	17 dBm	–50 dBm
	MCS13	15 dBm	–44 dBm
6 GHz, 802.11ax (HE20)	MCS0	24 dBm	–85 dBm
	MCS11	17 dBm	–58dBm
6 GHz, 802.11ax (HE40)	MCS0	24 dBm	–82dBm
	MCS11	17 dBm	–54dBm
6 GHz, 802.11ax (HE80)	MCS0	24 dBm	–82 dBm
	MCS9	18 dBm	–56 dBm
	MCS11	17 dBm	–52 dBm
	MCS13	15 dBm	–46 dBm
6 GHz, 802.11ax (HE160)	MCS0	24 dBm	–79 dBm
	MCS9	18 dBm	–53 dBm
	MCS11	17 dBm	–50 dBm
	MCS13	15 dBm	–44 dBm
6 GHz, 802.11ax (HE320)	MCS0	24 dBm	–79 dBm
	MCS9	18 dBm	–51 dBm
	MCS11	17 dBm	–50 dBm
	MCS13	15 dBm	–44 dBm
6 GHz, 802.11be (EHT20)	MCS0	24 dBm	–85 dBm
	MCS11	17 dBm	–58dBm
6 GHz, 802.11be (EHT40)	MCS0	24 dBm	–82dBm
	MCS11	17 dBm	–54dBm
6 GHz, 802.11be (EHT80)	MCS0	24 dBm	–82 dBm
	MCS9	18 dBm	–56 dBm
	MCS11	17 dBm	–52 dBm
	MCS13	15 dBm	–46 dBm
6 GHz, 802.11be (EHT160)	MCS0	24 dBm	–79 dBm
	MCS9	18 dBm	–53 dBm
	MCS11	17 dBm	–50 dBm
	MCS13	15 dBm	–44 dBm

Radio Frequency Performance	RG-AP9861-R		
Frequency Band and Protocol	**Data Rate**	**Maximum Transmit power per Transmit Chain**	**Maximum Receive Sensitivity per Receive Chain**
6 GHz, 802.11be (EHT320)	MCS0	24 dBm	–79 dBm
	MCS9	18 dBm	–51 dBm
	MCS11	17 dBm	–50 dBm
	MCS13	15 dBm	–44 dBm

Note: Available frequency bands may vary with countries or regions. To use the above-mentioned frequency bands, ensure that they are supported in your country or region. For details, see *WLAN Country or Region Codes and Channel Compliance*.

Software Specification

Software Specification	RG-AP9861-R
Basic Function	
Applicable software version	RGOS11.9(6)W3B17 or later
WLAN	
Maximum number of associated STAs	2,048 (up to 512 STAs per radio)
Maximum number of BSSIDs	64 (up to 16 BSSIDs per radio)
Maximum 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
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
Security and Authentication	
Authentication and encryption	Remote Authentication Dial-In User Service (RADIUS) EXEC authorization, specifying source IP addresses of RADIUS packets, supporting authentication of other vendors, and built-in authentication server PSK, web, 802.1X, WPA, WPA2, and WPA3 authentication QR code-based guest authentication, SMS-based authentication, and MAC address bypass (MAB) authentication Data encryption: WEP (64/128 bits), WPA (TKIP), WPA-PSK, WPA2 (AES 128/192 bits), and WPA3

Software Specification	RG-AP9861-R
Data frame filtering	Allowlist, static blocklist, and dynamic blocklist
WIDS	Wireless Intrusion Detection System (WIDS) User isolation Rogue AP detection and containment
Dynamic Policy	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 MAC address, MAC address filtering, MAC address limiting MAC address table size: 4,096 Maximum number of static MAC addresses: 2,048 Maximum number of filtered MAC addresses: 2,048
Ethernet	Jumbo frame length: 1,518 Full-duplex and half-duplex modes of interfaces IEEE 802.1p and IEEE 802.1Q
VLAN	Interface-based VLAN assignment Maximum number of SVIs: 200 Maximum number of VLANs: 4,094 VLAN ID range: 1–4,094
ARP	ARP entry aging, gratuitous ARP learning, and ARP proxy Maximum number of ARP entries: 2,048 ARP check
IPv4 services	Static and DHCP-assigned IPv4 addresses NAT, FTP ALG, and DNS ALG
IPv6 services	IPv6 SAVI IPv6 addressing, Neighbor Discovery (ND), IPv6 ND proxy, ICMPv6, IPv6 ping IPv6 DHCP client
IP routing	IPv4/ IPv6 static route Maximum number of static IPv4 routes: 1,024 Maximum 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 SNMP v1/v2c/v3 Fault detection and alarming Information statistics collection and logging
Network management platform	Web management (Eweb)

Software Specification	RG-AP9861-R
User access management	Console, Telnet, SSH, FTP client, FTP server, and TFTP client
Fat/Fit/Cloud mode switchover	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. When the AP works in Cloud mode, it can be managed through WIS 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-AP9861-R
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
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-based authentication, built-in account authentication, one-click authentication, Facebook authentication, Instagram authentication, Voucher authentication, and other authentication modes Authentication implemented on the cloud, eliminating 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

Value-added Software	RG-AP9861-R
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.

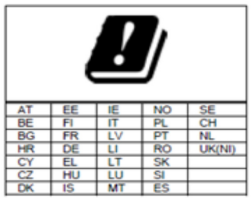
Regulatory Compliance

Regulatory Compliance	RG-AP9861-R
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 301 489-19 EN 300 328 EN 301 893 EN 300 440 EN 303 413 EN 303 687 FCC Part 15 EN IEC 62311 IEC 62368-1 EN 62368-1

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

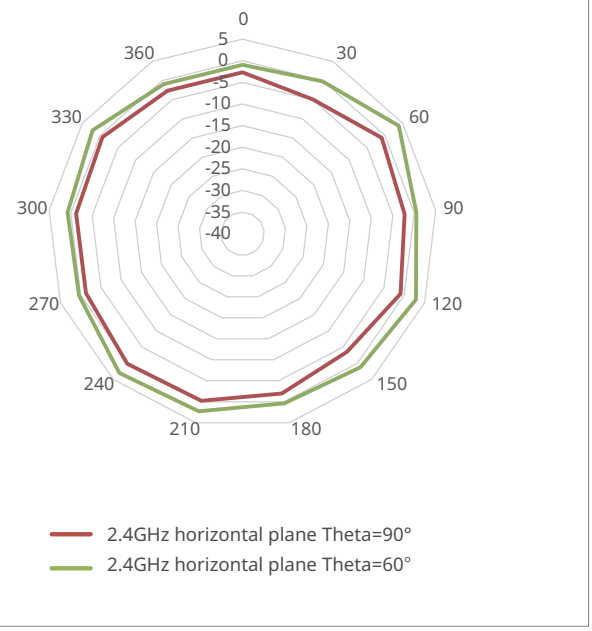
Note:

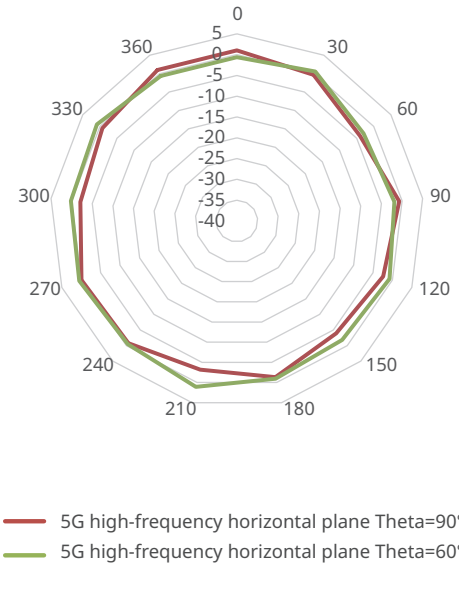
- EU simplified DoC: Hereby, [Ruijie Networks Co., Ltd.] declares that the radio equipment type [RG-AP9861-R] is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: https://www.ruijienetworks.com/.
- UK simplified DoC: Hereby, [Ruijie Networks Co., Ltd.] declares that the radio equipment type [RG-AP9861-R] is in compliance with UK Radio Equipment Regulation 2017. The full text of the UK declaration of conformity is available at the following internet address: https://www.ruijienetworks.com/.
- The functions of Wireless Access Systems including Radio Local Area Networks(WAS/RLANs) within the band 5150-5350 MHz for this device are restricted to indoor use only within all European Union countries (BE/BG/CZ/DK/DE/EE/IE/EL/ES/FR/HR/ IT/CY/LV/LT/LU/HU/MT/NL/AT/PL/PT/RO/SI/SK/FI/SE/TR/ N O/CH/IS/LI/UK(NI)

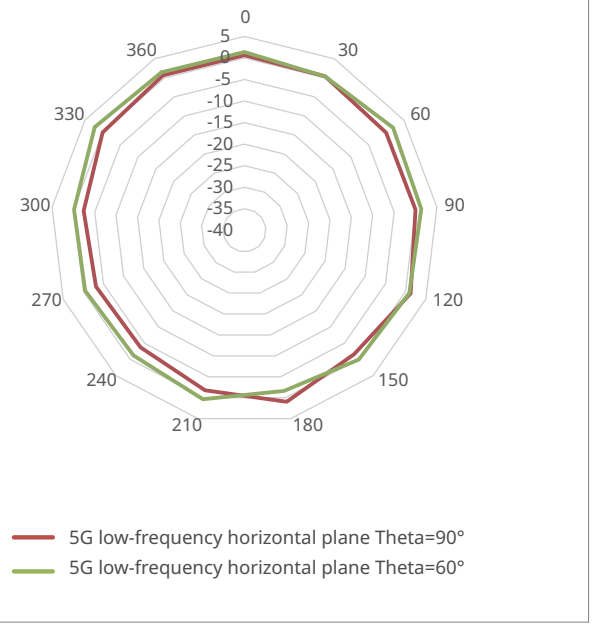


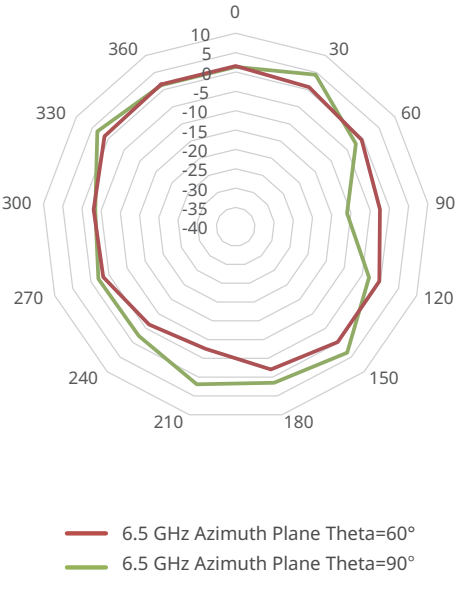
08 Antenna Pattern Plots

Horizontal Planes (Top View)

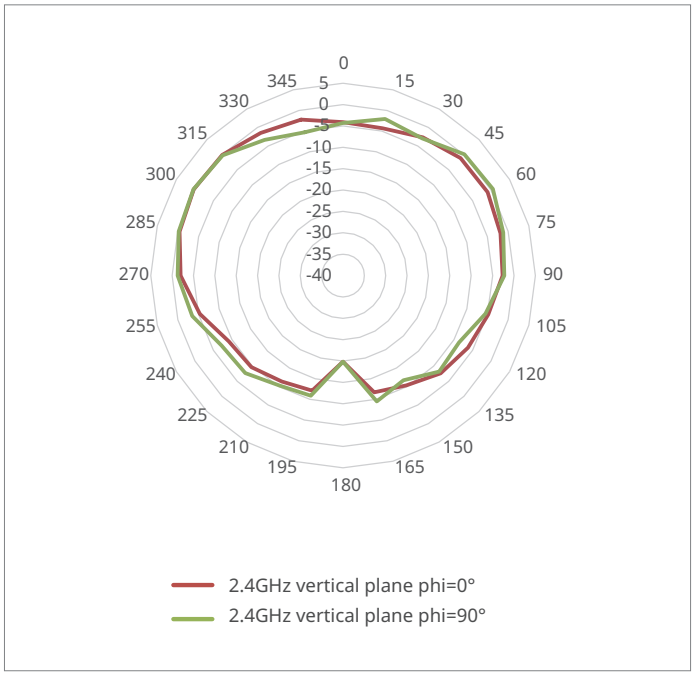


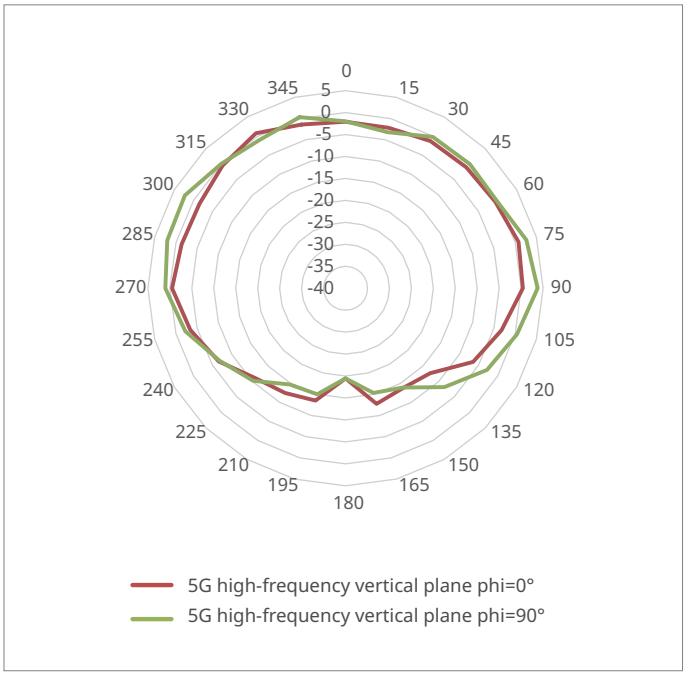


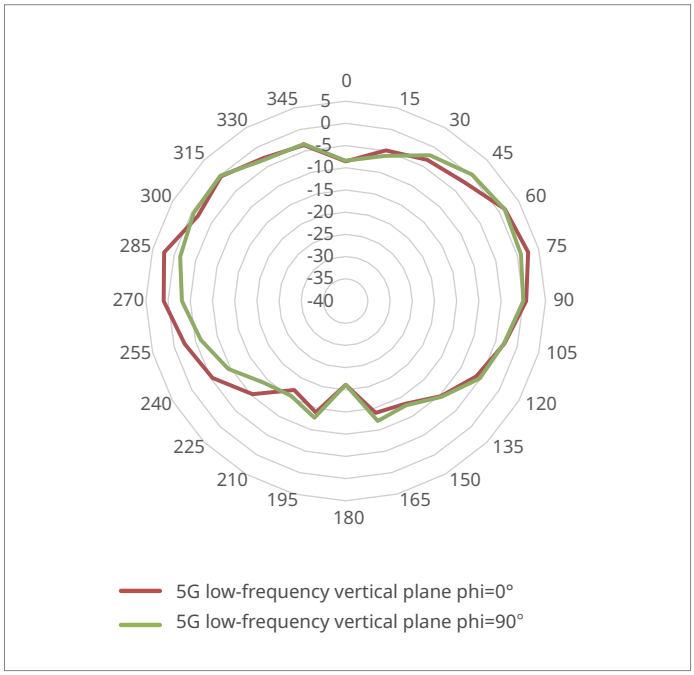


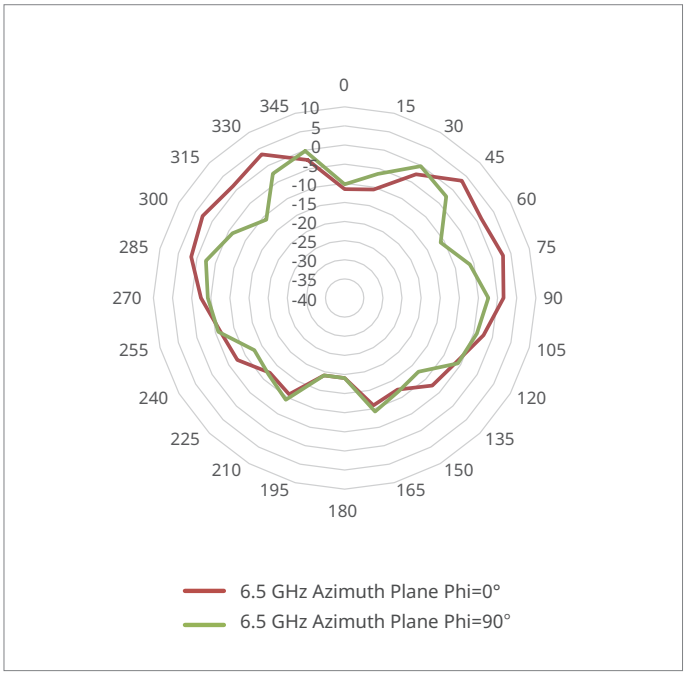


Vertical Planes (Front View)









09 Order Information

Model	Description
RG-AP9861-R	Wi-Fi 7 flagship high-density indoor access point Five radios, 18 spatial streams, peak data rate of 24.436 Gbps • Radio 1 – 2.4 GHz: four spatial streams, 4x4 MU-MIMO, peak data rate of 1.377 Gbps • Radio 2 – 5 GHz: four spatial streams, 4x4 MU-MIMO, peak data rate of 5.765 Gbps • Radio 3 – 5 GHz: four spatial streams, 4x4 MU-MIMO, peak data rate of 5.765 Gbps • Radio 4 – 6 GHz: four spatial streams, 4x4 MU-MIMO, peak data rate of 11.529 Gbps • Radio 5 – AI Radio, 2.4 GHz/5 GHz: two spatial streams, 2x2 MIMO, AI Radio for scanning only Consuming one AC license per device In compliance with IEEE 802.11a/b/g/n/ac/ax/be standard Fat/Fit/Cloud mode switching 802.3at/bt-compliant PoE and DC power supply • The power sourcing equipment (PSE) needs to be purchased separately. • The DC power supply needs to be purchased separately, and the output voltage/current must be 54 V/1.25 A.
GE-SFP-LX20-SM1550-BIDI	SFP BIDI Transceiver-TX1550/RX1310，20km，LC
2.5G-SFP-LX03-SM1550-BIDI	SFP 2.5G BIDI Transceiver-TX1550/RX1310，3km，LC

Note: Currently, only some supported optical transceiver models are displayed. For more information about optical transceiver models, contact Ruijie pre-sales engineers.

10 Package Contents

Item	Quantity
RG-AP9861-R AP	1
Mounting bracket	1
Quick Installation Guide	1
Warranty Card and Hazardous Substance Table	1
Package Contents	1
M3 x 20 mm security screw	1
M6 x 50 mm expansion anchor	2
Ruijie wireless product management software (pre-installed on the AP)	1

11 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-Summany/

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

12 More Information

For more information about Ruijie Networks, visit the official website of Ruijie Networks 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
- *WLAN Country or Region Codes and Channel Compliance:* https://www.ruijienetworks.com/support/documents/slide_wlan-country-codes-overview

Ruijie Networks Co., Ltd.

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