RG-AP820-L(V3)

Wi-Fi 6 AX3000 Multi-Gigabit SME Access Point Datasheet

Ruijie

Product Overview

Ruijie RG-AP820-L(V3) is a cost-effective entry level wireless access point with Wi-Fi 6 dual-radio, dual-band design. It not only has the simplicity and flexibility for small and medium sized enterprise, but the features, functionality, and performance quality to scale up to large-enterprise network deployments.

Ruijie RG-AP820-L(V3) supports maximum of 2.97Gbps wireless throughput when 160MHz bandwidth in 5G radio mode adopted (HE160). It fully complies with Wi-Fi 6 features and guarantees minimal signal interference and 512 clients.

Highlights:

- ■ Maximum ROI (Lifetime free cloud management & WIS optimization service)
- ■ HE160 Supported for Higher Throughput with Latest Wi-Fi 6 Chipsets
- ■ Hybrid Management (Cloud / Controller / Standalone)
- ■ Automated Radio Optimization by Artificial Intelligence
- ■ 3-Year Hardware Warranty

Upon the uprising challenges of management efficiency and wireless security, all Ruijie enterprise APs support hybrid management mode. Either deployed as standalone AP (Fat Mode) or managed AP (Fit Mode and Cloud Managed Mode), the AP will detect the operation mode automatically without extra effort on firmware upgrade. For additional security and operation features, we recommend the enterprise customers to choose one of the below options depending on the functionality and capacity needed:

Public Cloud: Ruijie Cloud – Ruijie Public Cloud service (powered by RG-MACC) is targeted for the SME segment with integrated captive portal, authentication (such as PPSK for employees, Facebook, voucher, account, etc.), and reporting features. Together with Ruijie Cloud Mobile App (free download), SME customers can provision and manage their networks at fingertips.

Hybrid Cloud: RG-WS Series Wireless Controller (On-premises) Plus Cloud Management (Optional) – targeted for enterprise office, campus, and hospitality customers with single or multiple sites and high-density AP deployment. The controller devices with cluster-based architecture are installed at the customer's sites with fully integrated wireless management and authentication features, supporting large scale AP management. Optionally, the cloud management platform allows for value-added features like centralized device configuration and monitoring, AI radio (RF) optimization, reporting, etc.

Product Features

High Speed Wi-Fi 6 and Energy Saving

1024-QAM High-speed Access
RG-AP820-L(V3) adopts the dual-radio dual-band design. With the next-generation 802.11ax for 5GHz band, the maximum access rate can reach 2.4Gbps. If dual-radio is enabled concurrently, the high-speed Wi-Fi throughput can reach 2.97Gbps, offering the true high-speed experience.

OFDMA High-density User Access
RG-AP820-L(V3) supports OFDMA of 802.11ax, which divides the WLAN channel into plurality of narrower subchannels, with each user occupying one or more subchannels. By scheduling multiple users to receive and send packets concurrently via the AP, user competition and back-off can be reduced, thereby reducing network latency, and improving network efficiency. In a high-density deployment environment, the average rate per user is increased by four times compared with Wi-Fi 5 devices.

Spatial Reuse with BSS Color
RG-AP820-L(V3) supports spatial reuse with basic service set (BSS) color of 802.11ax. It marks the BSSs of different WLANs in the network by different color identifiers (BSS color), and further divides them into internal and external BSS. Packet receiving and sending thresholds for the internal and external BSS are maintained separately. When receiving packets, the BSS color is retrieved to quickly identify the packets of the external BSS. If the signal strength is lower than the receiving threshold of the external BSS, the packet will be ignored. At the same time the transmission of the internal BSS packet will not be affected. This technology enhances channel reuse in a high-density scenario, greatly reducing the impact of co-channel interference for the actual network deployment.

Performance Boost from Wi-Fi 5
RG-AP820-L(V3) provides considerable performance boost even in an environment with Wi-Fi 5 only user devices. This means RG-AP820-L(V3) is not only future-proof but also able to provide instant improvement over the Wi-Fi 5 APs.

Energy Saving for Green and Low-carbon Network
Several energy saving technologies have been used in RG-AP820-L(V3), such as single antenna standby, dynamic MIMO, enhanced auto power-saving transmission and packet power control. With the high-performance power circuit design, RG-AP820-L(V3) is able to save energy while providing high-speed wireless access.

Industry-leading Local Forwarding Technology
Employing an industry-leading local forwarding technology, RG-AP820-L(V3) breaks through the limitation of traffic bottleneck of wireless controllers. In collaboration with the RG-WS wireless controller series, users can flexibly pre-configure the data forwarding mode for RG-AP820-L(V3). The AP also controls whether the data will be forwarded via the wireless controller according to the SSID and user VLAN, or directly sent to the wired network for data exchange.

The local forwarding technology can classify and forward time-sensitive data which requires real-time transmission through the wired network, in order to greatly alleviate the traffic pressure on the wireless controllers and meet the need of high traffic transmission requirements of the 802.11ax standard network.
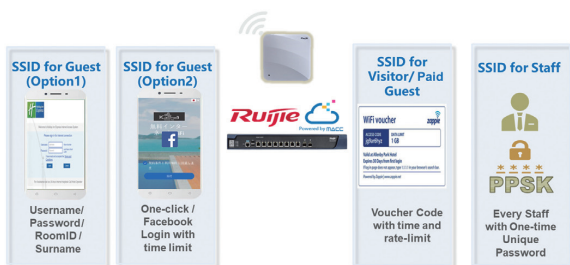
Abundant QoS Policies
RG-AP820-L(V3) supports a wide variety of QoS policies. For example, it provides WLAN/AP/STA-based bandwidth limitations and Wi-Fi multimedia (WMM) which defines different priorities for different service data. RG-AP820-L(V3) realizes timely and quantitative transmission of audio/video and guarantees smooth operation of multi-media applications.

With the multicast-to-unicast technology, RG-AP820-L(V3) resolves the video lagging problem due to packet loss or high latency, and greatly enhances user experience of the multicast video services of the wireless network.

Comprehensive Security Protection

Secure User Access

RG-AP820-L(V3) supports a wide range of authentication methods such as web, 802.1X, PPSK (one-time dynamic password), voucher/access code, user account and social authentication (Ruijie Cloud Required). Being complied with the standard NAC, it offers a set of control policies in terms of authentication, authorization, device compliance check, and network attack detection/prevention etc. All these features guarantee high network security for authenticated users.
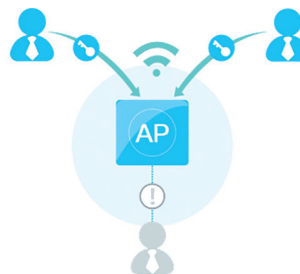

Simple and effective wireless security practice

Various enterprise authentication options for guest and employees

Virtual AP Technology

With the virtual AP technology, RG-AP820-L(V3) supports up to 16 ESSIDs. Network administrator can separately encrypt and isolate VLANs or subnets of the same SSID, thereby enabling specified authentication mode and encryption mechanism for each SSID.

Comprehensive Wireless Protection

Coupled with RG-WS series wireless controllers, RG-AP820-L(V3) offers a breadth of security features include WIDS (Wireless Intrusion Detection System), RF interference tracking, rogue AP containment, anti-ARP spoofing, DHCP protection and beyond for all-around security protection.

Personal Pre-shared Keys (PPSK)

Traditional Pre-shared Keys (PSK) shared by all users on a WLAN have high risk of PSK leak. Ruijie Personal PSK (PPSK) is an easy-to-setup wireless authentication method with enterprise-grade security level. Credentials can be created and revoked individually. Each PPSK can also be tied to a unique user/machine.

With PPSK, the benefits are:

■ High security by providing different passwords for each user and device for the same SSID

■ Simple deployment with batch account creation

■ Ease of use, offering the same experience as WPA/WPA2-PSK

■ Out-of-box feature in Wireless Access Controller and Ruijie Cloud Service

■ No Additional AAA server required

Hybrid Management

Flexible Management Options

All Ruijie enterprise APs support hybrid management mode. Either deployed as standalone AP (Fat Mode) or managed AP (Fit Mode and Cloud Managed Mode), the AP will detect the operation mode automatically without extra effort on firmware upgrade. For additional security and operation features, the enterprise customers can choose one of the below options depending on the functionality and capacity needed.

Category	Standalone AP	Wireless Controller (RG-WS Series) Hybrid Mode Available	Public Cloud
Target Segment	Small Office	Enterprise, Hospitality, Education, Large Campus Network	Small and Medium Enterprise, Managed Service Provider
Deployment Mode	On-premises	On-premises	Cloud Service
Device Capacity	N/A	Up to 5000	Virtually Unlimited
Unified Management	N/A	AP Only	AP, Switch, Gateway
Radio Optimization	N/A	Y	Y
Employee Authentication	Basic PSK	PSK, PPSK, 802.1X	PSK, PPSK, 802.1X, Access Code, Account
Guest Authentication	Basic PSK	Basic Captive Portal	Customized Captive Portal, Social Media Login, Voucher
Reporting	N/A	N/A	Y
Mobile APP	N/A	Y	Y

Web and CLI Management Interface

RG-AP820-L(V3) provides both web and command-line interface (CLI) for the AP and wireless controller, suitable for application in different scenarios. CLI design allows the networking professionals to perform fast troubleshooting and bulk configuration import/modification. Web GUI management is best suited for most of the general planning, operation, and maintenance, thus eliminating room for human error.

Mobile Monitor and Optimization

Simple network management experience can be obtained by using the free Ruijie Cloud mobile app. It features unified device lifecycle management, not only for access points but also for switches and security gateways. It simplifies device provisioning, monitoring, configurations and optimizations. For details visit official website at https://www.ruijienetworks.com/products/smb/cloud-service/cloud-service/ruijie-cloud-solution/mobile-app

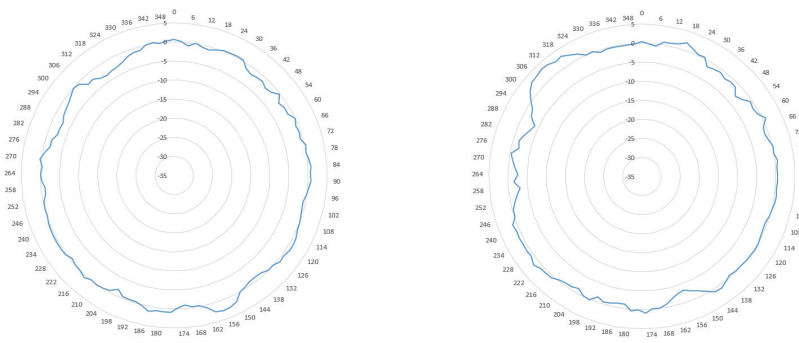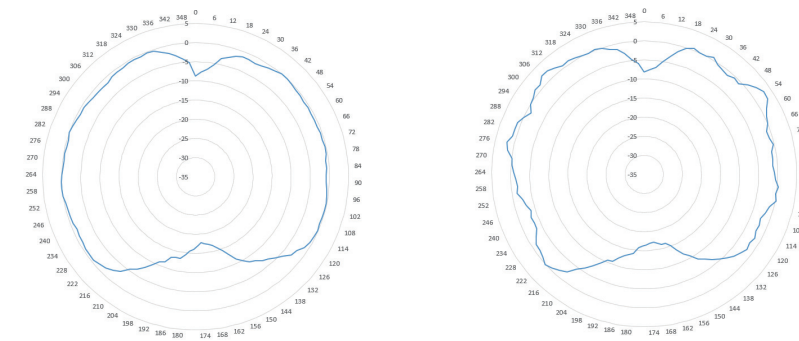# Antenna Patterns

Horizontal Planes (Top View)

Below are the RG-AP820-L(V3) 2.4GHz and 5GHz azimuth antenna patterns:

RG-AP820-L(V3) 2.4GHz (Left) and 5GHz (Right) azimuth antenna patterns

Vertical (Elevation) Planes (Side View, AP Facing Down)

Below are the RG-AP820-L(V3) 2.4GHz and 5GHz elevation antenna patterns:

RG-AP820-L(V3) 2.4GHz (Left) and 5GHz (Right) elevation antenna patterns

Warranty Information

Ruijie RG-AP820-L(V3) access point comes with 3-year warranty. For more details, please visit https://www.ruijienetworks.com/support/servicepolicy.

Technical Specifications

Hardware Specifications

Physical Specifications

RG-AP820-L(V3)	
Dimensions (W × D × H)	220mm×220mm×49mm
Weight	Device: 0.6kg Mounting Kit: 0.2kg
Installation	Ceiling / Wall
Anti-theft Lock	Support

Radio Specifications

RG-AP820-L(V3)	
Radio	Dual-radio dual-band: Radio1: 2.4GHz 11ax, 2×2 MIMO Radio2: 5GHz 11ax, 2×2 MIMO
Operating Band	Radio1: 802.11b/g/n/ax, 2.4GHz, 2.483GHz, HE40 Radio2: 802.11a/n/ac/ax, 5.150GHz, 5.350GHz, HE80/HE160 802.11a/n/ac, 5.470GHz, 5.725GHz, 5.725GHz, 5.850GHz, HE80 Note: vary depending on different countries
Max Throughput	Radio1: 2.4GHz, 0.574Gbps Radio2: 5GHz, 2.402Gbps Maximum throughput per AP: 2.4GHz+5GHz, 2.976Gbps
Antenna Type	Integrated Omnidirectional
Antenna Gain	2.4GHz: 2dBi 5GHz: 2dBi
Transmit Power	20dBm Note: vary depending on different countries

RG-AP820-L(V3)
Adjustable Power 1dBm
Modulation OFDM: BPSK@6/9Mbps, QPSK@12/18Mbps, 16-QAM@24Mbps, 64-QAM@48/54Mbps DSSS: DBPSK@1Mbps, DQPSK@2Mbps, and CCK@5.5/11Mbps MIMO-OFDM: BPSK, QPSK, 16QAM, 64QAM, 256QAM and1024QAM OFDMA
Receiver Sensitivity 11b: -96dBm (1Mbps), -93dBm (5Mbps), -89dBm (11Mbps) 11a/g: -91dBm (6Mbps), -85dBm (24Mbps), -80dBm (36Mbps), -74dBm (54Mbps) 11n: -90dBm@MCS0, -70dBm@MCS7, -89dBm@MCS8, -68dBm@MCS15 11ac: HT20: -88dBm (MCS0), -63dBm (MCS9) 11ac: HT40: -85dBm (MCS0), -60dBm (MCS9) 11ac: HT80: -82dBm (MCS0), -57dBm (MCS9) 11ax: HE80: -82dBm (MCS0), -57dBm (MCS9), -52dBm (MCS11) 11ax: 160MHz: -77dBm (MCS0),-50dBm (MCS11)

Interfaces

RG-AP820-L(V3)
Interfaces 1 10/100/1000M BASE-T Ethernet Port, PoE In (Support IEEE 802.3af/at) Full Spectrum Operation in IEEE 802.3af Mode 1 1G/2.5G SFP Port
Management Port 1 RJ45 Console Port
LED Indicator 1 LED Indicator
Reset Button Support

Power

RG-AP820-L(V3)
Power Supply Local Power Supply (DC 48V/0.6A) Note: DC power adapters should be purchased separately from third-party vendors if needed. PoE (IEEE 802.3af Standard) - Full Spectrum Operation
Power Consumption 12.95W

Environment

RG-AP820-L(V3)	
Temperature	Operating Temperature: -10°C~50°C Storage Temperature: -40°C~70°C
Humidity	Operating Humidity: 5%~95% (non-condensing) Storage Temperature: 5%~95% (non-condensing)
IP Rating	IP41
Safety Standard	GB 4943.1-2011, IEC 62368-1
EMC Standard	EN 300386, GB 19286-2003, GB 17618-1998

Software Specifications

RG-AP820-L(V3)	
WLAN	Maximum Clients: 512 Recommended Client: 120 SSID Hiding: Support 5G Priority (Band Steering): Support Configuring the authentication mode, encryption mechanism and VLAN attributes for each SSID: Support Remote Intelligent Perception Technology (RIPT): Support Intelligent Device Recognition Technology: Support Intelligent Load Balancing Based on the Number of Users or Traffic: Support STA Limit Control: SSID/Radio based Bandwidth Control: STA/SSID/AP-based
Security	Support PSK and Web authentication Data Encryption: WPA (TKIP), WPA-PSK、WPA2 (AES)、WPA3、WEP (64/128bits) PPSK authentication: Support 802.1X authentication: Support PEAP authentication: Support Data Frame Filtering: Allowlist, Static/Dynamic Blocklist User Isolation: Support Rogue AP Detection and Countermeasure: Support Dynamic ACL Assignment: Support RADIUS: Support CPU Protection Policy (CPP) Support Network Foundation Protection Policy (NFPP): Support
IP	IPv4: Support Static and DHCP IP Address Support Multicast to Unicast Conversion DHCP Service: Support DHCP Snooping, Option 82, Server, Client Support PPPoE client Support IPsec VPN Support FTP ALG/DNS ALG

RG-AP820-L(V3)
Operation & Management   Support Wireless LAN Controllers: Ruijie RG-WS Series Wireless Controller   Ruijie Cloud (Public Cloud)   Ruijie Private Cloud   Management Protocol: Telnet, SSH, TFTP, FTP, Web   Wireless Intelligent AI Optimization Service (WIS): Support   SNMP: Support V1, V2c, V3   Syslog / Debug: Support   FAT/FIT/Cloud Managed Mode Firmware: Support FAT (Standalone) or FIT (WS Controller) or Cloud Managed (Ruijie Public/Private Cloud) Management

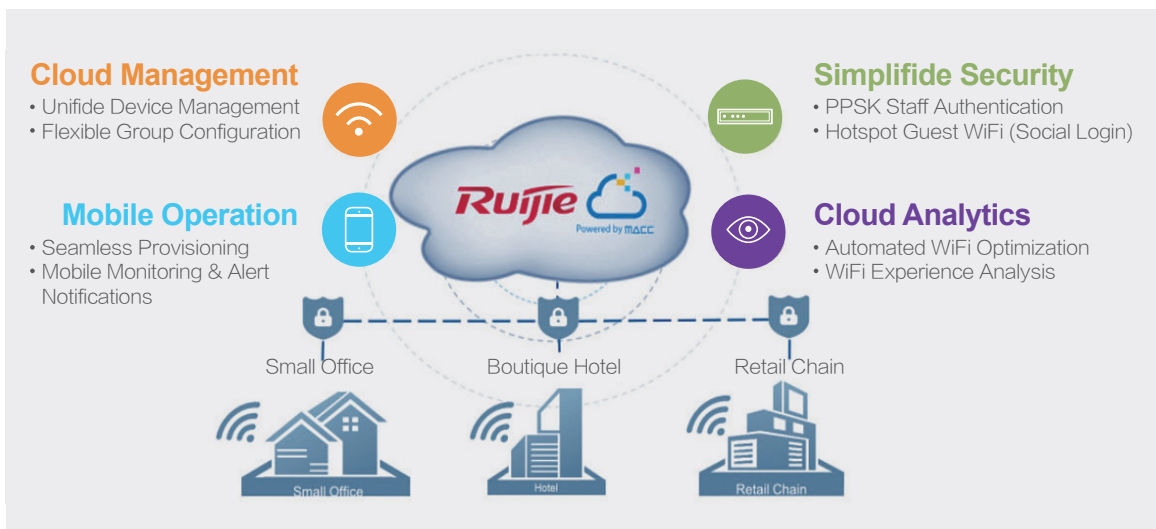# Application Scenarios

Public Cloud Deployment

With Ruijie public cloud service, RG–AP820–L(V3) access point is best suited for SME scenarios including small offices, boutique hotel, and retail store etc. Ruijie Cloud is the only vendor offering enterprise cloud with lifetime free licenses. It significantly streamlines the IT operational efficiency, and reduces the wireless deployment complexity with cost–effective options for SMEs.

The Ruijie Cloud service provides network provisioning, monitoring, optimization, operation, and maintenance.

Devices can be deployed or swapped with a simple plug–and–play manner. Automatic RF planning feature meets the needs of increasing user experiences demand.

Key Features:
- Unified Device Management
- Fast Provisioning by Cloud and Mobile APP
- Secure PPSK Authentication
- Captive Portal & Social Media Authentication
- Mobile APP Monitoring and Alert

Cloud Management
- Unifide Device Management
- Flexible Group Configuration

Simplifide Security
- PPSK Staff Authentication
- Hotspot Guest WiFi (Social Login)

Mobile Operation
- Seamless Provisioning
- Mobile Monitoring & Alert Notifications

Cloud Analytics
- Automated WiFi Optimization
- WiFi Experience Analysis

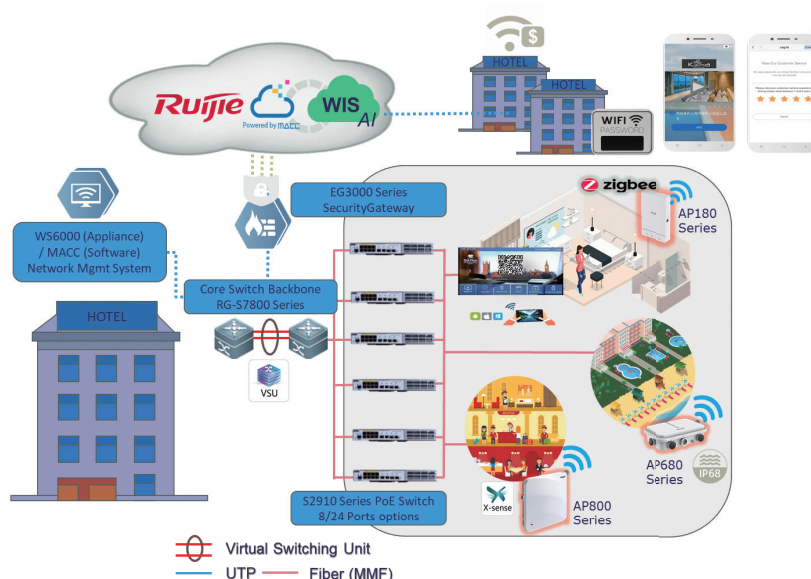Small Office   Boutique Hotel   Retail Chain

Hybrid Cloud Deployment

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

Key Features:
- Support Centralized Device Management and Reporting by Ruijie Cloud
- Support Ultra-seamless Roaming Management
- Support One-click AI Radio (RF) Optimization Powered by WIS AI Engine
- High Performance and Security with All User Authentication and Traffic Forwarding Handled Locally
- Support Flexible Authentication Options, e.g., 802.1X, PPSK, Voucher, etc.
- Support All Series of Ruijie Wireless Access Points with Unified Management

Ordering Information

Model	Description	Note
RG-AP820-L(V3)	Wi-Fi 6(802.11ax) indoor wireless access point, dual-radio, dual-band, up to 4 spatial streams and maximum of 2.97Gbps wireless throughput, 1 10/100/1000M BASE-T uplink port and 1 1G/2.5G SFP uplink port, support PoE and local power supply; Bundled with Ruijie Cloud Service lifetime license (PoE Adapters are sold separately, which could be purchased from Ruijie; While DC adapters should be purchased from third-party vendors separately if needed)	Mandatory
RG-E-120(GE)	1-port PoE adapter (1000BASE-T, 802.3af)	Optional