

# RG-AP7176-R(V2)

Wi-Fi 7 Quad-Radio Indoor  
Wireless Access Point



## 01 Product Overview

The RG-AP7176-R(V2) is a quad-radio Wi-Fi 7 access point (AP) launched by Ruijie Networks for indoor scenarios in various sectors covering higher education, government, general education, and business.

In compliance with IEEE 802.11be, IEEE 802.11ax, IEEE 802.11ac Wave2, IEEE 802.11ac Wave1, and IEEE 802.11n standards, the RG-AP7176-R(V2) adopts a hardware-independent quad-radio design and delivers a combined peak data rate of 17.982 Gbps, eliminating the performance bottleneck.

The RG-AP7176-R(V2) 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-AP7176-R(V2) is designed considering factors such as wireless network security, radio control, mobile access, QoS, seamless roaming, and Internet of Things (IoT). The RG-AP7176-R(V2) can be used together with Ruijie access controllers (ACs) and RG-WIS to implement wireless user data forwarding, security, and access control.

## 02 Product Appearance



RG-AP7176-R(V2)



RG-AP7176-R(V2)

## 03 Product Highlights

**Ultra-High Performance**

**Flexible Networking**

**High Security and Reliability**

### Ultra-High Performance

- Quad-radio design (2.4 GHz + 5 GHz + 5 GHz/6 GHz

+ AI Radio), twelve spatial streams, 4096-Quadrature Amplitude Modulation (QAM) high-speed access, and up to 17.982 Gbps peak data rate, delivering high-

speed wireless access experience

- Intelligent 5 GHz/6 GHz band switching optimizes the Wi-Fi coverage, data rates, and network stability, delivering a future-proof, high-performance Wi-Fi experience across various environments.
- Hardware-independent AI radio card to implement better roaming policies through real-time client scanning, thereby providing optimal roaming experience for mobile office, mobile video conferencing, or network courses
- 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

- Access through optical and Ethernet cables for flexible networking and high-speed backhaul over 10 Gbps optical links
- Rich IoT features: PoE output, Bluetooth 5.3, and wireless locating

- Flexible deployment options with support for Fat, Fit, and Cloud modes, offering simplified provisioning and comprehensive remote management.
- Integration with WIS Cloud for centralized management, including device configuration, real-time monitoring, and one-click optimization for end-to-end network lifecycle management.

### 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

## 04 Applicable Scenarios

### Manufacturing Industry

#### Production Workshop

In the era of Industry 4.0, deploying roaming-free Wi-Fi enables automated and intelligent production workshops.



### 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.



Note: For more applicable scenarios, contact Ruijie pre-sales engineers.

## 05 Product Features

### 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.

### High-Speed Wireless Access, High Energy Efficiency and Reliability

#### 4096-QAM for High Data Rate

The RG-AP7176-R(V2) adopts a quad-radio design and complies with the next-generation IEEE 802.11be standard. When three radios are enabled, the RG-AP7176-R(V2) can provide a combined peak data rate of 17.982 Gbps, delivering high-speed access experience.

#### OFDMA for High-Density Client Access

The Orthogonal Frequency Division Multiple Access (OFDMA) feature in IEEE 802.11be enables the RG-AP7176-R(V2) to divide a Wireless Local Area Network (WLAN) channel into multiple sub-channels, with each client consuming one or more sub-channels. The RG-AP7176-R(V2) can implement scheduling for multiple clients to receive and send packets concurrently. This reduces contention for air interface resources and backoff, shortens network latency, and boosts network efficiency.

In a high-density deployment and access scenario, the average rate per client can be increased compared to IEEE 802.11ax.

#### Advanced Wi-Fi Technologies

The RG-AP7176-R(V2) supports the following radio transmission technologies:

- Dynamic frequency selection (DFS) optimizes the use

of available radio spectrum to prevent radar channel interference.

- Cyclic delay/shift diversity (CDD/CSD) improves downlink radio frequency (RF) performance, and converts spatial diversity to frequency diversity to avoid intersymbol interference, thus decreasing the bit error rate (BER) and effectively reducing signal distortion.
- Maximum ratio combining (MRC) improves the signal quality at the receiver end and enhances reliability and performance of received signals.
- The RG-AP7176-R(V2) supports the following radio channel coding technologies:
  - Space-time block coding (STBC) increases the range and improves the signal reception, and enhances the 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 5 GHz/6 GHz Band Switching

By automatically adapting to the 5 GHz band (offering wide coverage and backward compatibility) and 6 GHz band (providing high bandwidth and low interference), intelligent 5 GHz/6 GHz band switching maximizes data rates and ensures network stability across various environments. This delivers a seamless, future-proof network experience.

#### Intelligent Identification

The RG-AP7176-R(V2) is capable of identifying smart mobile terminals (such as iOS and Android terminals) and PCs. The RG-AP7176-R(V2) can be interconnected with WIS Cloud to implement visualized wireless network management based on wireless endpoint types and perform network optimization with one click.

#### Intelligent Local Forwarding

The RG-AP7176-R(V2) integrates the intelligent local forwarding technology of Ruijie Networks, eliminating the traffic bottleneck of ACs. The data forwarding mode of the RG-AP7176-R(V2) can be pre-configured through a Ruijie AC. The RG-AP7176-R(V2) determines whether data needs to be forwarded by the AC or be sent to a wired network for data exchange based on SSIDs or user VLANs.

The local forwarding technology enables the RG-AP7176-R(V2) to forward delay-sensitive data that requires real-time high-performance transmission over a wired network. This greatly reduces the traffic forwarding burden of the AC to better adapt to high-throughput transmission on 802.11be networks.

#### Abundant QoS Policies

The RG-AP7176-R(V2) provides abundant QoS policies. It supports WLAN/AP/STA-based bandwidth limiting as well as Wi-Fi Multimedia (WMM) that defines priorities for different service data. Therefore, the RG-AP7176-R(V2) can provide timely and quantitative transmission of audio and video services, and ensure smooth application of multimedia services.

The multicast-to-unicast conversion technology supported by the RG-AP7176-R(V2) addresses the problem of video freezing caused by packet loss or high latency in Video on Demand (VoD) and other multicast applications on wireless networks, improving the user experience in multicast video services.

### Comprehensive Security Protection and Ease of Use

#### Comprehensive Wireless Security Protection

Working with Ruijie RG-WIS network management system and RG-WS series ACs, the RG-AP7176-R(V2) can provide a wide range of wireless security protection features, including Wireless Intrusion Detection System (WIDS), radio interference positioning, rogue AP containment, ARP anti-spoofing, and DHCP snooping, to build a secure and reliable wireless network for users.

#### Multiple Easy-to-Use Authentication Modes

When used together with Ruijie authentication system or multi-service ACs, the RG-AP7176-R(V2) supports multiple efficient and convenient authentication modes including MAC address bypass (MAB) authentication. MAB authentication eliminates the need for a client to enter the username and password repeatedly after the first login.

### Flexible Device Management

#### Flexible Fit/Fat/Cloud Mode Switching

The RG-AP7176-R(V2) supports flexible switching among Fat, Fit, and Cloud modes. In Fit mode, the RG-AP7176-R(V2) allows for quick provisioning and installation. Comprehensive remote management greatly improves the operation and maintenance (O&M) and management efficiency for wireless network.

#### Eweb-based Management

The RG-AP7176-R(V2) provides the Eweb for AC and AP management. O&M personnel can implement wireless configurations easily and manage a wireless network in an all-round manner. On the Eweb of ACs, O&M personnel can manage APs as well as clients connected to the APs and limit the rates and network access behaviors of clients. Through the Eweb, O&M personnel can plan, manage, and maintain wireless networks conveniently.



# 07 Specifications

## Hardware Specifications

Hardware Specifications	RG-AP7176-R(V2)
802.11n	<p>12 spatial streams</p> <ul style="list-style-type: none"> <li>Radio 1 - 2.4 GHz: 2x2 MIMO, two spatial streams</li> <li>Radio 2 - 5 GHz: 4x4 MIMO, four spatial streams</li> <li>Radio 3 - 5 GHz: 4x4 MIMO, four spatial streams</li> <li>Radio 4 - AI Radio, 2.4 GHz/5 GHz: 2x2, MIMO two spatial streams</li> </ul> <p>Channel:</p> <ul style="list-style-type: none"> <li>Radio 1 - 2.4 GHz: 20 MHz and 40 MHz</li> <li>Radio 2 - 5 GHz: 20 MHz and 40 MHz</li> <li>Radio 3 - 5 GHz: 20 MHz and 40 MHz</li> <li>Radio 4 - AI Radio, 2.4 GHz/5 GHz: 20 MHz and 40 MHz</li> </ul> <p>Combined peak data rate: 1.5 Gbps</p> <ul style="list-style-type: none"> <li>Radio 1 - 2.4 GHz: 6.5 Mbps to 300 Mbps (MCS0 to MCS31)</li> <li>Radio 2 - 5 GHz: 6.5 Mbps to 600 Mbps (MCS0 to MCS31)</li> <li>Radio 3 - 5 GHz: 6.5 Mbps to 600 Mbps (MCS0 to MCS31)</li> <li>Radio 4 - AI Radio, 2.4 GHz/5 GHz: AI Radio for scanning only</li> </ul> <p>Radio technologies: Orthogonal Frequency-Division Multiplexing (OFDM)                      Modulation types: BPSK, QPSK, 16-QAM, and 64-QAM                      Packet aggregation:</p> <ul style="list-style-type: none"> <li>Aggregate MAC Protocol Data Unit (A-MPDU)</li> <li>Aggregate MAC Service Data Unit (A-MSDU)</li> </ul> <p>Dynamic Frequency Selection (DFS)                      Cyclic Delay/Shift Diversity (CDD/CSD)                      Maximum Ratio Combining (MRC)                      Space-Time Block Coding (STBC)                      Low-Density Parity Check (LDPC)                      Transmit beam-forming (TxBF)</p>
802.11ac	<p>10 spatial streams</p> <ul style="list-style-type: none"> <li>Radio 2 - 5 GHz: 4x4 MU-MIMO, four spatial streams</li> <li>Radio 3 - 5 GHz: 4x4 MIMO, four spatial streams</li> <li>Radio 4 - AI Radio, 5 GHz: 2x2 MIMO, two spatial streams</li> </ul> <p>Channel:</p> <ul style="list-style-type: none"> <li>Radio 2 - 5 GHz: 20 MHz, 40 MHz, and 80 MHz</li> <li>Radio 3 - 5 GHz: 20 MHz, 40 MHz, 80 MHz, and 160 MHz</li> <li>Radio 4 - AI Radio, 5 GHz: 20 MHz, 40 MHz, and 80 MHz</li> </ul> <p>Combined peak data rate: 5.200 Gbps</p> <ul style="list-style-type: none"> <li>Radio 2 - 5 GHz: 6.5 Mbps to 1.733 Gbps (MCS0 to MCS9)</li> <li>Radio 3 - 5 GHz: 6.5 Mbps to 3.467 Gbps (MCS0 to MCS9)</li> <li>Radio 4 - AI Radio, 5 GHz: AI Radio for scanning only</li> </ul> <p>Radio technologies: Orthogonal Frequency-Division Multiplexing (OFDM)                      Modulation types: BPSK, QPSK, 16-QAM, 64-QAM, and 256-QAM                      Packet aggregation:</p> <ul style="list-style-type: none"> <li>Aggregate MAC Protocol Data Unit (A-MPDU)</li> <li>Aggregate MAC Service Data Unit (A-MSDU)</li> </ul> <p>Dynamic Frequency Selection (DFS)                      Cyclic Delay/Shift Diversity (CDD/CSD)                      Maximum Ratio Combining (MRC)                      Space-Time Block Coding (STBC)                      Low-Density Parity Check (LDPC)                      Transmit beam-forming (TxBF)</p>

Hardware Specifications	RG-AP7176-R(V2)
802.11ax	<p>12 spatial streams</p> <ul style="list-style-type: none"> <li>• Radio 1 - 2.4 GHz: 2x2 MIMO, two spatial streams</li> <li>• Radio 2 - 5 GHz: 4x4 uplink/downlink MU-MIMO, four spatial streams</li> <li>• Radio 3 - 5 GHz/6 GHz: 4x4 uplink/downlink MU-MIMO, four spatial streams</li> <li>• Radio 4 - AI Radio, 2.4 GHz/5 GHz: 2x2 uplink/downlink MU-MIMO, two spatial streams</li> </ul> <p>Channel:</p> <ul style="list-style-type: none"> <li>• Radio 1 - 2.4 GHz: 20 MHz and 40 MHz</li> <li>• Radio 2 - 5 GHz: 20 MHz, 40 MHz, 80 MHz, and 160 MHz</li> <li>• Radio 3 - 5 GHz/6 GHz: 20 MHz, 40 MHz, 80 MHz, and 160 MHz</li> <li>• Radio 4 - AI Radio, 2.4 GHz/5 GHz: 20 MHz, 40 MHz, and 80 MHz</li> </ul> <p>Combined peak data rate: 10.182 Gbps</p> <ul style="list-style-type: none"> <li>• Radio 1 - 2.4 GHz: 7.3 Mbps to 0.574 Gbps (MCS0 to MCS11)</li> <li>• Radio 2 - 5 GHz: 7.3 Mbps to 4.804 Gbps (MCS0 to MCS11)</li> <li>• Radio 3 - 5 GHz/6 GHz: 7.3 Mbps to 4.804 Gbps (MCS0 to MCS11)</li> <li>• Radio 4 - AI Radio, 2.4 GHz/5 GHz: AI Radio for scanning only</li> </ul> <p>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:</p> <ul style="list-style-type: none"> <li>• Aggregate MAC Protocol Data Unit (A-MPDU)</li> <li>• Aggregate MAC Service Data Unit (A-MSDU)</li> </ul> <p>Dynamic Frequency Selection (DFS)  Cyclic Delay/Shift Diversity (CDD/CSD)  Maximum Ratio Combining (MRC)  Space-Time Block Coding (STBC)  Low-Density Parity Check (LDPC)  Transmit beam-forming (TxBF)  WPA3</p>
802.11be	<p>10 spatial streams</p> <ul style="list-style-type: none"> <li>• Radio 1 - 2.4 GHz: 2x2 MIMO, two spatial streams</li> <li>• Radio 2 - 5 GHz: 4x4 uplink/downlink MU-MIMO, four spatial streams</li> <li>• Radio 3 - 5 GHz/6 GHz: 4x4 uplink/downlink MU-MIMO, four spatial streams</li> </ul> <p>Channel:</p> <ul style="list-style-type: none"> <li>• Radio 1 - 2.4 GHz: 20 MHz and 40 MHz</li> <li>• Radio 2 - 5 GHz: 20 MHz, 40 MHz, 80 MHz, and 160 MHz</li> <li>• Radio 3 - 5 GHz/6 GHz: 20 MHz, 40 MHz, 80 MHz, 160 MHz, and 320 MHz</li> </ul> <p>Combined peak data rate: 12.218 Gbps/17.982 Gbps</p> <ul style="list-style-type: none"> <li>• Radio 1 - 2.4 GHz: 7.3 Mbps to 0.688 Gbps (MCS0 to MCS13)</li> <li>• Radio 2 - 5 GHz: 7.3 Mbps to 5.765 Gbps (MCS0 to MCS13)</li> <li>• Radio 3 - 5 GHz/6 GHz: 7.3 Mbps to 5.765 Gbps/11.529 Gbps (MCS0 to MCS13)</li> </ul> <p>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:</p> <ul style="list-style-type: none"> <li>• Aggregate MAC Protocol Data Unit (A-MPDU)</li> <li>• Aggregate MAC Service Data Unit (A-MSDU)</li> </ul> <p>Dynamic Frequency Selection (DFS)  Cyclic Delay/Shift Diversity (CDD/CSD)  Maximum Ratio Combining (MRC)  Space-Time Block Coding (STBC)  Low-Density Parity Check (LDPC)  Transmit beam-forming (TxBF)  WPA3</p>

Hardware Specifications	RG-AP7176-R(V2)
Antenna	Wi-Fi <ul style="list-style-type: none"> <li>• 2.4 GHz: two built-in omnidirectional smart antennas, with peak antenna gain of 3 dBi</li> <li>• 5 GHz: four built-in omnidirectional smart antennas, with peak antenna gain of 3 dBi</li> <li>• 5 GHz/6 GHz: four built-in omnidirectional smart antennas, with peak antenna gain of 3 dBi</li> </ul> Bluetooth <ul style="list-style-type: none"> <li>• One integrated vertically polarized omnidirectional antenna, with peak antenna gain of 3 dBi</li> </ul>
Port	1 x 100/1000/2.5G/5G/10GBASE-T port , shared with one 10GE SFP+ port 1 x 10GE SFP+ port, compatibility with 1GE/2.5GE/10GE modules, shared with one 10GE RJ45 port 1 x 10/100/1000BASE-T port, supplying IEEE 802.3af power to an IoT unit 1 x RJ45 console port 1 x USB 2.0 (Type-A connector) 1 x Bluetooth 5.3
Status LED	1 x multi-color system status LED <ul style="list-style-type: none"> <li>• AP power-on status</li> <li>• Software initialization status and upgrade status</li> <li>• Uplink service interface status</li> <li>• Wireless user online status</li> <li>• CAPWAP tunnel timeout</li> <li>• Specific AP locating</li> </ul>
Button	1 x Reset button <ul style="list-style-type: none"> <li>• Press the button for shorter than 2 seconds. Then the device restarts.</li> <li>• Press the button for longer than 5 seconds. Then the device restores to factory settings.</li> </ul>
Dimensions (W x D x H)	Main unit: 220 mm x 220 mm x 42.7 mm (8.66 in. x 8.66 in. x 1.68 in.) Shipping: 495mm x 379mm x 261mm (19.49 in. x 14.92 in. x 10.28 in.)
Weight	Main unit: 1.2 kg (2.65 lbs) Mounting bracket: 0.05 kg (0.11 lbs) Shipping: 1.5 kg (3.31 lbs)
Mounting	Wall/Ceiling-mount (a mounting bracket is delivered with the main unit)
Lock option	Kensington lock and securing latch
Input power supply	The AP supports the following power supply modes: <ul style="list-style-type: none"> <li>• 54 V DC/1.25 A power input over DC connector</li> <li>• PoE/PoE+/PoE++ input, in compliance with IEEE 802.3af/at/bt standard</li> </ul> Note: if both DC power and PoE are available, DC power is preferred. Maximum power consumption: 55 W <ul style="list-style-type: none"> <li>• DC power: 55 W, Radio 1 (2.4 GHz) 2x2, Radio 2 (5 GHz) 4x4, Radio 3 (5 GHz/6 GHz) 4x4, Radio 4 (AI Radio) 2x2, LAN 1 for PoE power supply (48 V/12.95 W), USB port for external power supply (5 V/2.5 W)</li> <li>• 802.3bt (PoE++): 55 W, Radio 1 (2.4 GHz) 2x2, Radio 2 (5 GHz) 4x4, Radio 3 (5 GHz/6 GHz) 4x4, Radio 4 (AI Radio) 2x2, LAN 1 for PoE power supply (48 V/12.95 W), USB port for external power supply (5 V/2.5 W)</li> <li>• 802.3at (PoE+): 25.5 W, Radio 1 (2.4 GHz) 2x2, Radio 2 (5 GHz) 2x2, Radio 3 (5 GHz/6 GHz) 2x2, Radio 4 (AI Radio) is disabled, LAN 1 supports data transmission but does not provide PoE output. The USB port is disabled and does not supply power to external devices.</li> <li>• 802.3af (PoE): 12.95 W, Radio 1 (2.4 GHz) 2x2, Radio 2 (5 GHz) , Radio 3 (5 GHz/6 GHz) , Radio 4 (AI Radio) is disabled, LAN 1 supports data transmission but does not provide PoE output. The USB port is disabled and does not supply power to external devices.</li> <li>• Idle mode: 12.2 W</li> </ul>

Hardware Specifications		RG-AP7176-R(V2)	
Maximum power consumption		Maximum power consumption: 55 W <ul style="list-style-type: none"> <li>• DC power: 55 W, Radio 1 (2.4 GHz) 2x2, Radio 2 (5 GHz) 4x4, Radio 3 (5 GHz/6 GHz) 4x4, Radio 4 (AI Radio) 2x2, LAN 1 for PoE power supply (48 V/12.95 W), USB port for external power supply (5 V/2.5 W)</li> <li>• 802.3bt (PoE++): 55 W, Radio 1 (2.4 GHz) 2x2, Radio 2 (5 GHz) 4x4, Radio 3 (5 GHz/6 GHz) 4x4, Radio 4 (AI Radio) 2x2, LAN 1 for PoE power supply (48 V/12.95 W), USB port for external power supply (5 V/2.5 W)</li> <li>• 802.3at (PoE+): 25.5 W, Radio 1 (2.4 GHz) 2x2, Radio 2 (5 GHz) 2x2, Radio 3 (5 GHz/6 GHz) 2x2, Radio 4 (AI Radio) is disabled, LAN 1 supports data transmission but does not provide PoE output. The USB port is disabled and does not supply power to external devices.</li> <li>• 802.3af (PoE): 12.95 W, Radio 1 (2.4 GHz) 2x2, Radio 2 (5 GHz) , Radio 3 (5 GHz/6 GHz) , Radio 4 (AI Radio) is disabled, LAN 1 supports data transmission but does not provide PoE output. The USB port is disabled and does not supply power to external devices.</li> <li>• Idle mode: 12.2 W</li> </ul>	
External power supply		When powered by 802.3bt (PoE++), the AP can supply power to an external device. <ul style="list-style-type: none"> <li>• The USB port can source 5 V/2.5 W power to an attached device.</li> <li>• The LAN 1 port can source IEEE 802.3af power to an IoT unit.</li> </ul>	
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 (-1640.42 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 +5,000 m (-1640.42 ft. to +16,404.20 ft.) Note: At an altitude in the range of 3,000-5,000 m (9,842.52-16,404.20 ft.), every time the altitude increases by 220 m (721.78 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		1024 MB DRAM, 256 MB flash	
Transmit power		2.4 GHz <ul style="list-style-type: none"> <li>• Maximum transmit power: 23 dBm (199.53 mW)</li> <li>• Minimum transmit power: 6 dBm (3.98 mW)</li> </ul> 5 GHz <ul style="list-style-type: none"> <li>• Maximum transmit power: 23 dBm (199.53 mW)</li> <li>• Minimum transmit power: 6 dBm (3.98 mW)</li> </ul> 6 GHz <ul style="list-style-type: none"> <li>• Maximum transmit power: 22 dBm (158.49 mW)</li> <li>• Minimum transmit power: 6 dBm (3.98 mW)</li> </ul> Note: <ul style="list-style-type: none"> <li>• Adjusting the transmit power by percentage (recommended) and in 1dBm increments.</li> <li>• The transmit power adjusted in percentage. The transmit power is limited by local regulatory requirements. For details, see <a href="#">WLAN Country or Region Codes and Channel Compliance</a>.</li> </ul>	

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

Radio Frequency Performance		RG-AP7176-R(V2)	
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	23 dBm	-91 dBm

Radio Frequency Performance	RG-AP7176-R(V2)		
Frequency Band and Protocol	Data Rate	Maximum Transmit Power per Transmit Chain	Maximum Receive Sensitivity per Receive Chain
2.4 GHz 802.11g	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	23 dBm	-85 dBm
	MCS7	20 dBm	-67 dBm
2.4 GHz 802.11n (HT40)	MCS0	23 dBm	-82 dBm
	MCS7	20 dBm	-64 dBm
2.4 GHz 802.11ax (HE20)	MCS0	23 dBm	-85 dBm
	MCS11	17 dBm	-58 dBm
2.4 GHz 802.11ax (HE40)	MCS0	23dBm	-82 dBm
	MCS11	17dBm	-54 dBm
2.4 GHz 802.11be(EHT20)	MCS0	23 dBm	-85 dBm
	MCS13	16 dBm	-52 dBm
2.4 GHz 802.11be(EHT40)	MCS0	23dBm	-82 dBm
	MCS13	16dBm	-49 dBm
5 GHz 802.11a	6 Mbps	23 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	23 dBm	-85 dBm
	MCS7	20 dBm	-67 dBm
5 GHz 802.11n (HT40)	MCS0	23 dBm	-82 dBm
	MCS7	20 dBm	-64 dBm
5 GHz 802.11ac (VHT20)	MCS0	23 dBm	-85 dBm
	MCS9	18 dBm	-60 dBm
5 GHz 802.11ac (VHT40)	MCS0	23 dBm	-82 dBm
	MCS9	18 dBm	-57 dBm
5 GHz 802.11ac (VHT80)	MCS0	23 dBm	-82 dBm
	MCS9	18 dBm	-56 dBm
5 GHz, 802.11ac (VHT160)	MCS0	23 dBm	-79 dBm
	MCS9	18 dBm	-53 dBm

Radio Frequency Performance	RG-AP7176-R(V2)		
Frequency Band and Protocol	Data Rate	Maximum Transmit Power per Transmit Chain	Maximum Receive Sensitivity per Receive Chain
5 GHz 802.11ax (HE20)	MCS0	23 dBm	-85 dBm
	MCS11	17 dBm	-58dBm
5 GHz 802.11ax (HE40)	MCS0	23 dBm	-82dBm
	MCS11	17 dBm	-54dBm
5 GHz 802.11ax (HE80)	MCS0	23 dBm	-82 dBm
	MCS9	18 dBm	-56 dBm
	MCS11	17 dBm	-52dBm
5 GHz 802.11ax (HE160)	MCS0	23 dBm	-79 dBm
	MCS9	18 dBm	-53 dBm
	MCS11	17 dBm	-50 dBm
5 GHz 802.11be (EHT80)	MCS0	23 dBm	-82 dBm
	MCS9	18 dBm	-56 dBm
	MCS11	17 dBm	-52 dBm
	MCS13	15 dBm	-46 dBm
5 GHz 802.11be (EHT160)	MCS0	23 dBm	-79 dBm
	MCS9	18 dBm	-53 dBm
	MCS11	17 dBm	-50 dBm
	MCS13	15 dBm	-44 dBm
6 GHz, 802.11ax (HE20)	MCS0	23 dBm	-88 dBm
	MCS11	18 dBm	-58dBm
6 GHz, 802.11ax (HE40)	MCS0	23 dBm	-85dBm
	MCS11	18 dBm	-55dBm
6 GHz, 802.11ax (HE80)	MCS0	23 dBm	-82 dBm
	MCS9	20 dBm	-57 dBm
	MCS11	18 dBm	-52 dBm
6 GHz, 802.11ax (HE160)	MCS0	23 dBm	-79 dBm
	MCS9	20 dBm	-54 dBm
	MCS11	18 dBm	-49 dBm
6 GHz, 802.11be (EHT20)	MCS0	23 dBm	-88 dBm
	MCS11	18 dBm	-58dBm
6 GHz, 802.11be (EHT40)	MCS0	23 dBm	-85dBm
	MCS11	18 dBm	-55dBm

Radio Frequency Performance	RG-AP7176-R(V2)		
Frequency Band and Protocol	Data Rate	Maximum Transmit Power per Transmit Chain	Maximum Receive Sensitivity per Receive Chain
6 GHz, 802.11be (EHT80)	MCS0	23 dBm	-82 dBm
	MCS9	20 dBm	-57 dBm
	MCS11	18 dBm	-52 dBm
	MCS13	16 dBm	-46 dBm
6 GHz, 802.11be (EHT160)	MCS0	23 dBm	-79 dBm
	MCS9	20 dBm	-54 dBm
	MCS11	18 dBm	-49 dBm
	MCS13	16 dBm	-43 dBm
6 GHz, 802.11be (EHT320)	MCS0	23 dBm	-76 dBm
	MCS9	20 dBm	-51 dBm
	MCS11	18 dBm	-46 dBm
	MCS13	16 dBm	-40 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 Specifications

### Basic Functions

Basic Function	RG-AP7176-R(V2)
Applicable software version	RGOS11.9(6)W5B10 or later
<b>WLAN</b>	
Maximum number of associated STAs	1280 <ul style="list-style-type: none"> <li>• Radio 1: Up to 256 STAs</li> <li>• Radio 2: Up to 512 STAs</li> <li>• Radio 3: Up to 512 STAs</li> </ul>
Maximum number of BSSIDs	48 (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, traffic, or band Intelligent STA identification technology Rate set settings
STA limiting	SSID-based STA limiting Radio-based STA limiting

Basic Function	RG-AP7176-R(V2)
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
Application management	Application identification
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, PPSK, 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-Personal, WPA-Enterprise, WPA2-Personal (PSK, TKIP, CCMP), WPA2-Enterprise, WPA3-Personal (SAE, WPA2/WPA3 transition mode), WPA3-Enterprise (CCMP, GCMP), WPA3-OWE
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, expert-level ACL, and IPv6 ACL Time range-based ACL ACL based on a Layer 2 interface ACL based on a Layer 3 interface Ingress ACL based on a wireless interface Dynamic ACL assignment based on 802.1X authentication (used with the AC)
CPP	CPU Protect Policy (CPP)
NFPP	Network Foundation Protection Policy (NFPP) ARP attack defense, ICMP attack defense, and DHCP attack defense
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 IEEE802.1p and IEEE802.1Q Optical module information display, alarms about faults, and diagnosis parameter measurement (QSFP+/SFP+/SFP)

Basic Function	RG-AP7176-R(V2)
VLAN	Interface-based VLAN assignment VLAN Group (dynamic VLAN assignment based on the MAC address and 802.11 key) 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 proxy ARP Identification of IP address conflicts between downlink users Maximum number of ARP entries: 2,048 ARP check
IPv4 services	Static IPv4 address and DHCP-assigned IPv4 address Maximum number of IPv4 addresses configured on each Layer 3 interface: 200 NAT, FTP ALG, and DNS ALG
IPv6 services	IPv6 addressing, Neighbor Discovery (ND), IPv6 ND proxy, ICMPv6, and IPv6 ping IPv6 DHCP client Maximum number of IPv6 addresses configured on each Layer 3 interface: 400
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 SNMPv1/v2c/v3 Fault detection and alarm Information statistics and logging
Network management platform	Web management (Eweb)
User access management	Console, Telnet, SSH, FTP client, FTP server, and TFTP client
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 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-AP7176-R(V2)
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.

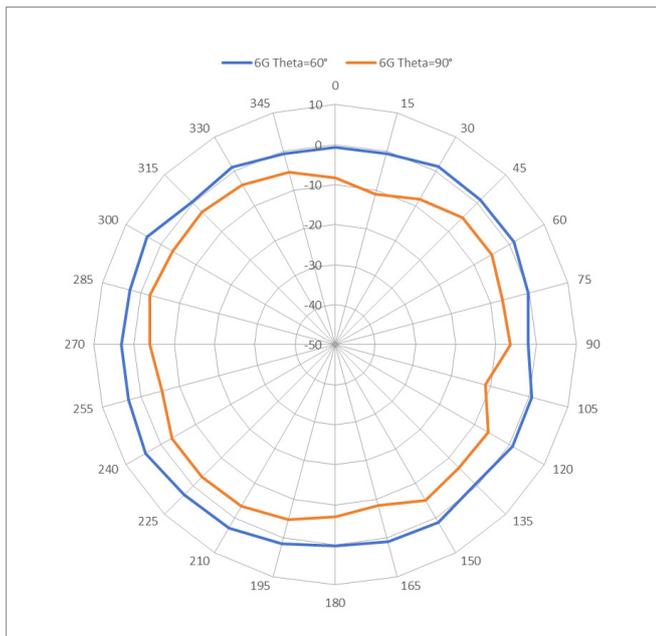
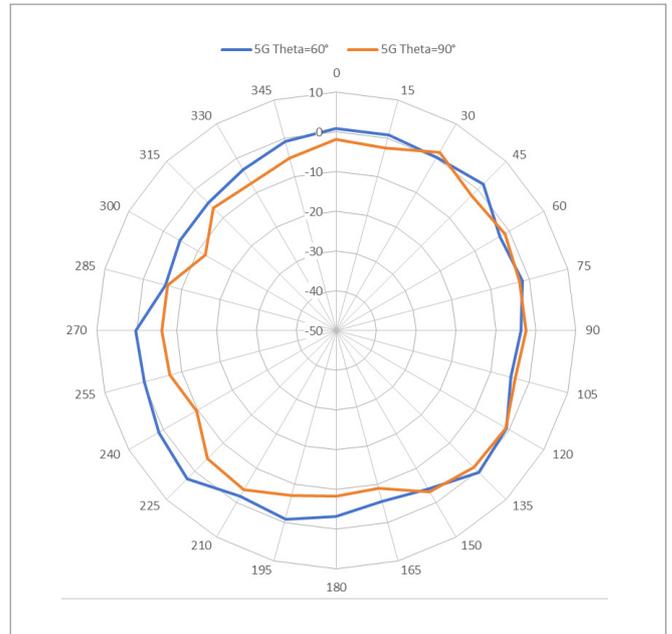
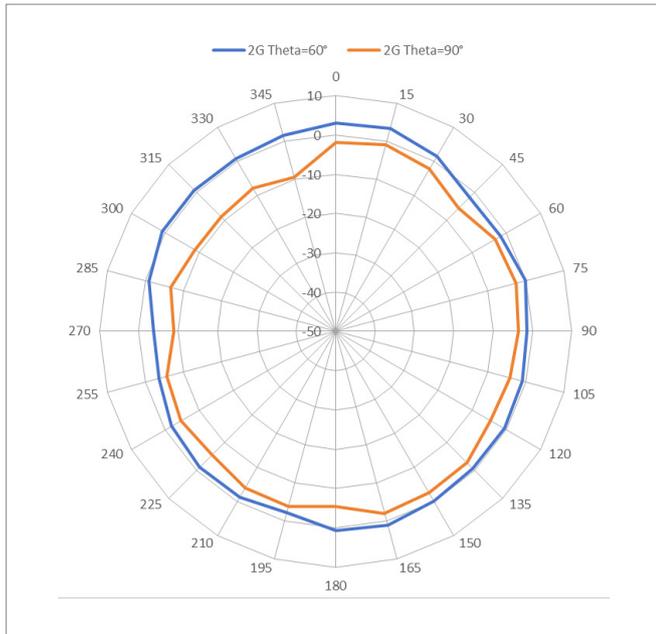
Value-added Software	RG-AP7176-R(V2)
Network optimization	Network performance optimization, including one-click network optimization and scenario-based optimization Client steering to cope with roaming stickiness, and experience indicator comparison Client steering to cope with remote association, and 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 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	
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.

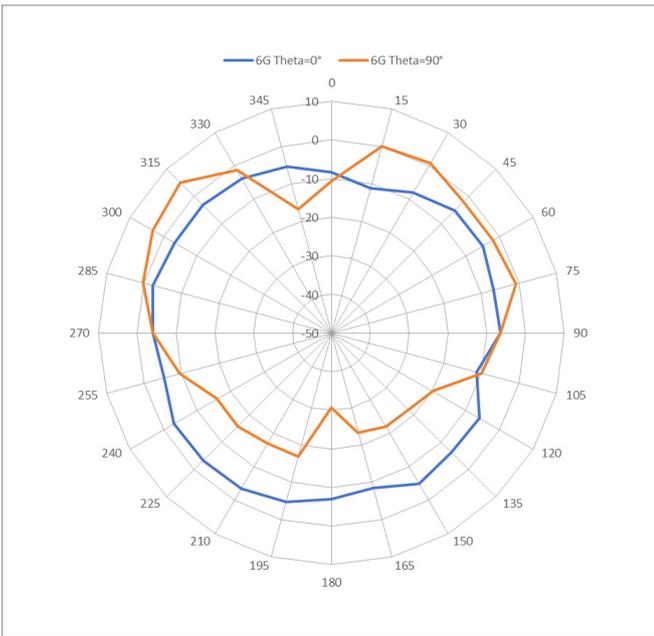
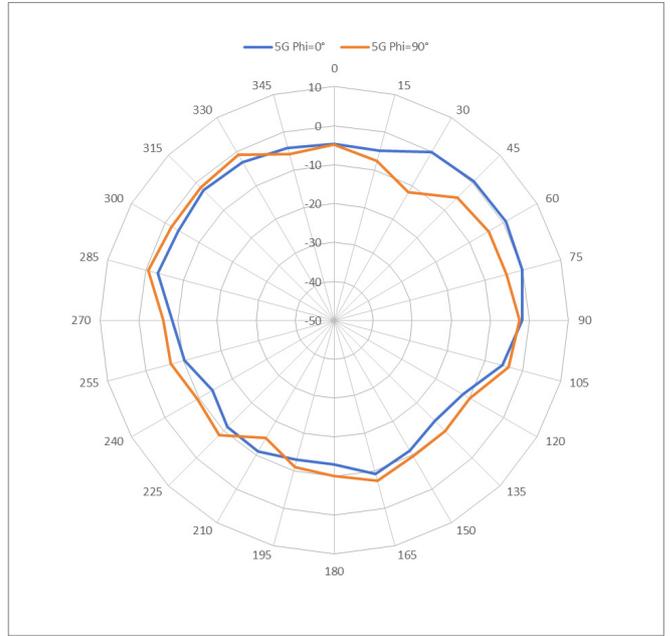
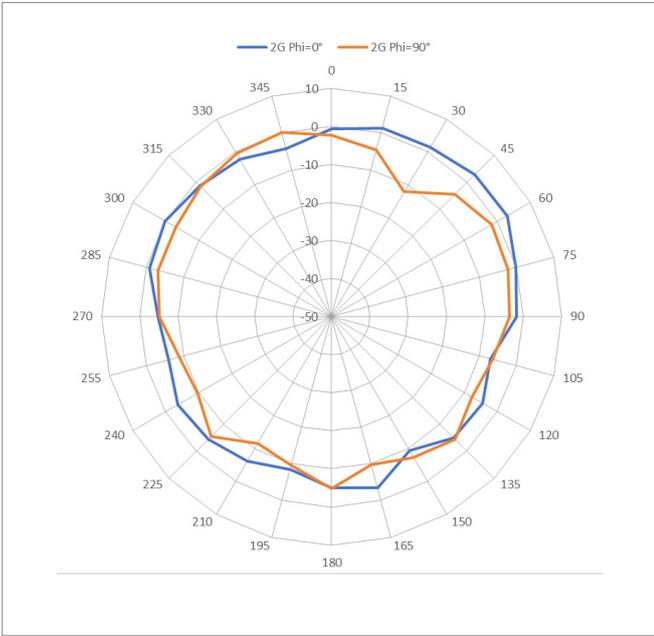
Note: Ruijie wireless products provide only secure and reliable network protocols and communication ports by default. For details, see [Ruijie Default Protocols and Ports for Wireless Products](#). Proper firewall and security policies can be implemented based on this document to ensure the normal operation of wireless services.

# 08 Antenna Pattern Plots

## Horizontal Planes (Top View)



### Vertical Planes (Front View)



## 09 Ordering Information

Model	Description
RG-AP7176-R(V2)	<p>Wi-Fi 7 quad-radio indoor high-density wireless access point                      Up to 12 spatial streams, peak data rate of 17.982 Gbps</p> <ul style="list-style-type: none"> <li>• Radio1 - 2.4 GHz: 2 spatial streams, 2x2 MIMO, peak data rate of 0.688 Gbps</li> <li>• Radio2 - 5 GHz: 4 spatial streams, 4x4 MU-MIMO, peak data rate of 5.765 Gbps</li> <li>• Radio3 - 5 GHz/6 GHz: 4 spatial streams, 4x4 MU-MIMO, peak data rate of 11.529 Gbps</li> <li>• Radio4 - AI Radio, 2.4 GHz/5 GHz: 2 spatial streams, 2x2 MIMO, for scanning only</li> </ul> <p>The AP consumes one license of an AC.                      In compliance with IEEE 802.11a/b/g/n/ac/ax/be standard                      Fat/Fit/Cloud mode switching. IEEE 802.3af/at/bt-compliant (PoE/PoE+/PoE++) and DC power supply                      Note:</p> <ul style="list-style-type: none"> <li>• The power source equipment (PSE) needs to be purchased separately.</li> <li>• The DC power supply needs to be purchased separately, and the output voltage/current must be 54 V/1.25 A.</li> </ul>
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
XG-SFP-LR10-SM1330-BIDI-I	SFP+ BIDI Transceiver-TX1330/RX1270, 10km, LC
XG-SFP-LR-SM1310	10GBASE-SR, SFP+ Transceiver (1310nm, 10km, LC)

## 10 Package Contents

Item	Quantity
RG-AP7176-R(V2) AP	1
Mounting bracket	1
ST4.2 x 20 mm PWA Philips pan head self-tapping screw	4
Plastic expansion anchor	4
M4 x 16 mm Philips self-tapping screw	1
<i>Quick Installation Guide</i>	1
<i>Warranty Card and Hazardous Substance Table</i>	1
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.ruijie.com/support/servicepolicy>
- Warranty period: <https://www.ruijie.com/support/servicepolicy/Service-Support-Summary>

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 Ruijie website or contact your local sales agency:

- Ruijie Networks official website: <https://www.ruijie.com>
- Online support: <https://www.ruijie.com/support>
- Hotline support: <https://www.ruijie.com/support/hotline>
- Email support: [EBGITSC@ruijie.com.cn](mailto:EBGITSC@ruijie.com.cn)
- *WLAN Country or Region Codes and Channel Compliance*: [https://www.ruijie.com/support/documents/slide\\_wlan-country-codes-overview](https://www.ruijie.com/support/documents/slide_wlan-country-codes-overview)
- *Ruijie Default Protocols and Ports for Wireless Products*: [https://www.ruijie.com/en-global/support/documents/slide\\_wlan-network-protocol-port/](https://www.ruijie.com/en-global/support/documents/slide_wlan-network-protocol-port/)



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For more information, visit [www.ruijie.com](http://www.ruijie.com) or call 86-400-620-8818.