Datasheet

# RG-AP680-IO

## Wi-Fi 6 Dual-Radio Access Point

INNOVATION
Beyond Networks

## 01 Product Overview

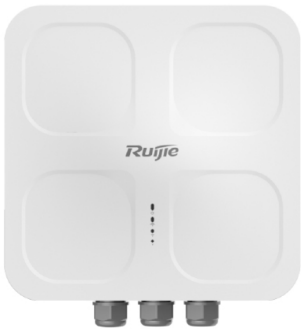
The RG-AP680-IO is an 802.11ax-compliant dual-radio wireless access point (AP) provided by Ruijie Networks and is fit for higher education, wireless city, energy, and plaza scenarios.

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

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

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

## 02 Product Appearance



Front View

Right View

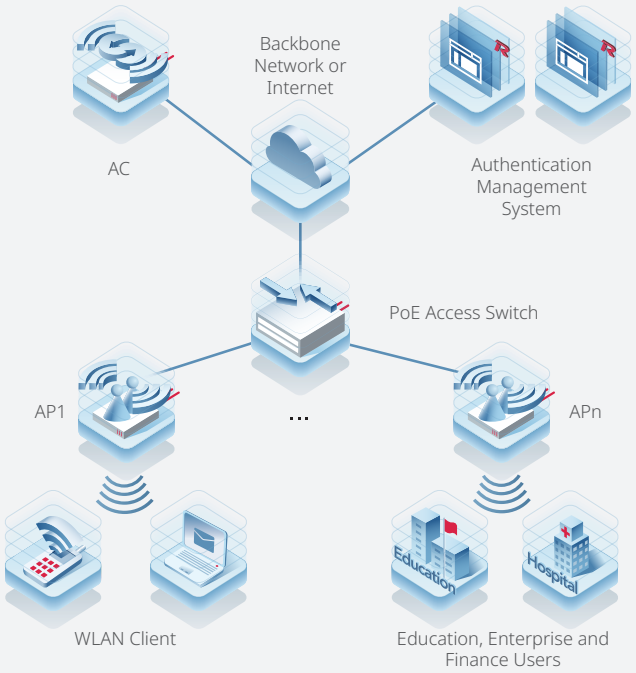
Rear View

## 03 Product Highlights

- **Wi-Fi 6 certification**
- **Data rate of up to 5.951 Gbps and concurrent dual-radio design**
- **Up to 1024 client connections**
- **Built-in smart omnidirectional antenna**
- **Excellent environmental adaptability: IP68, –40°C to +65°C (–40°F to +149°F), and 6 kV surge protection**
- **OFDMA, MU-MIMO technologies for minimal wireless signal interference**
- **Hybrid management: support for thousands of standalone APs, and AC management and public cloud deployment options**

# 04 Applicable Scenarios

## Typical Scenario




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

## Rail Transportation

### Subways

Multi-link communication technology enables seamless and stable switching during high-speed mobility and ensures nonstop vehicle-to-ground communication over wireless links. This technology achieves seamless wireless roaming without detection, and maintains stable service performance without suspension.

## Smart City

### Parks

With Wi-Fi deployed in parks, people can enjoy high-speed mobile internet access anytime, anywhere. They can flexibly and easily enjoy Internet services, including browsing the web, watching videos, and engaging in voice and video chats with friends.

### Squares

People can access high-speed mobile Wi-Fi and instantly share photos and videos of activities on squares with their friends.

### Higher Education

#### Sports Field

You can cheer and show support for sports events on the spots field, and share moments in real time on social media. High-speed mobile Wi-Fi allows you to leave real-time memories.

## 05 Product Features

### Multiple Service Ports

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

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

### High-speed Wireless Access for Better Experience

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

#### 1024-QAM High-Speed Access

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

#### OFDMA High-Density User Access

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

#### MU-MIMO

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

#### Diverse Wi-Fi Technologies

It supports RF transmission technologies:

- Dynamic frequency selection (DFS) optimizes the use of available RF spectrum to prevent radar channel interference.

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

It supports RF channel coding technologies:

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

## Intelligent Optimization, Reliability Guarantee

### Intelligent Recognition, One-Click Network Optimization

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

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

### Flexible WDS Networking Modes

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

### Intelligent Local Forwarding

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

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

### Client Access Optimization

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

### Advanced Network Coexistence

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

### Abundant QoS Policies

The RG-AP680-IO provides abundant QoS policies. It supports bandwidth limiting based on the WLAN, AP, and STA, and provides Wi-Fi Multimedia (WMM) that defines priorities for different service data. Therefore, it implements immediate and quantitative transmission of audio and video data, and guarantees smooth application of multimedia services.

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

### Green Design and Low Power Consumption

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

### Rich IoT Platform Features

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

### Comprehensive Security Protection and Ease of Use

#### Comprehensive Wireless Security Protection

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

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

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

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

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

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

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

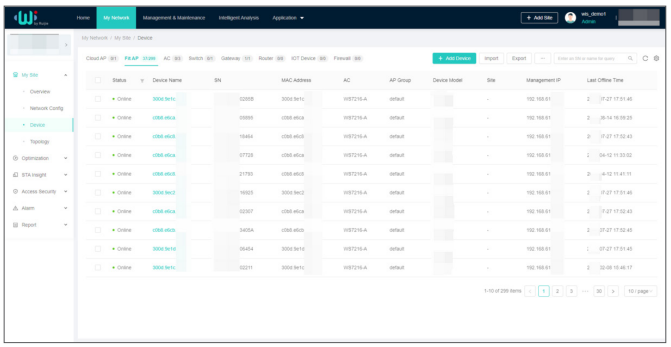
QR code-based authentication is easy for guests to access the Internet. After accessing a wireless network, guests can receive a QR code prompt. They can access the network after being authorized by the visited employee, providing better security.

## 06 Solution Scalability Capabilities

Ruijie WIS Cloud Management Network Solution (WIS for short, https://wis.ruijienetworks.com/) 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

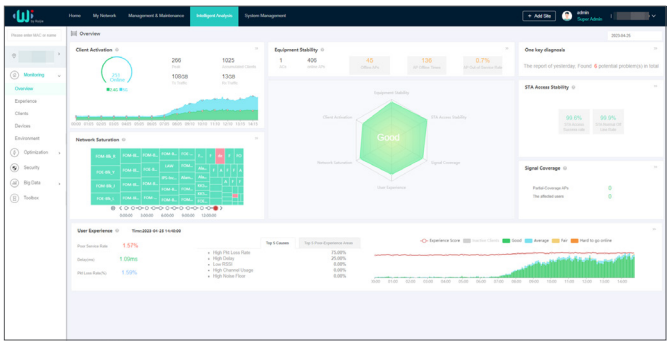
WIS supports integrated management and control of various types of devices including APs, ACs, switches, gateways, and routers. It supports remote O&M management operations such as adding or batch importing of multi-branch network devices, online status monitoring, configuration delivery, upgrade, restart,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



### Wireless Network Visualization

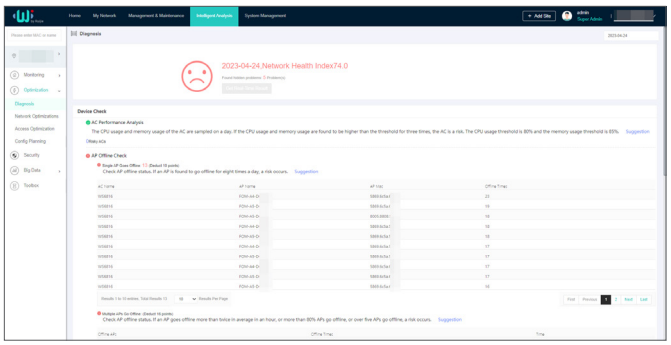
The overview function module of WIS provides a comprehensive view of the network running status from the perspective of overview, experience, users, devices, and environment. The network running information includes the following items:

- 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 Specifications

### Hardware Specifications

| Hardware Specifications | RG-AP680-IO |
|---|---|
| 802.11n | Eight spatial streams<br>• Radio 1 – 2.4 GHz: 4x4 MIMO, four spatial streams<br>• Radio 2 – 5 GHz: 4x4 MIMO, four spatial streams<br>Channels:<br>• Radio 1 – 2.4 GHz: 20 MHz and 40 MHz<br>• Radio 2 – 5 GHz: 20 MHz and 40 MHz<br>Combined peak data rate: 1.2 Gbps<br>• Radio 1 – 2.4 GHz: 6.5 Mbps to 600 Mbps (MCS0 to MCS31 )<br>• Radio 2 – 5 GHz: 6.5 Mbps to 600 Mbps (MCS0 to MCS31)<br>Radio technologies: Orthogonal Frequency-Division Multiplexing (OFDM)<br>Modulation types: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM<br>Packet aggregation:<br>• Aggregate MAC Protocol Data Unit (A-MPDU)<br>• Aggregate MAC Service Data Unit (A-MSDU)<br>Dynamic Frequency Selection (DFS)<br>Cyclic Delay/Shift Diversity (CDD/CSD)<br>Maximum Ratio Combining (MRC)<br>Space-Time Block Coding (STBC)<br>Low-Density Parity Check (LDPC)<br>Transmit beam-forming (TxBF) |

| Hardware Specifications | RG-AP680-IO |
|---|---|
| 802.11ac | Four spatial streams<br>• Radio 2 – 5 GHz: 4x4 MIMO, four spatial streams<br>Channels:<br>• Radio 2 – 5 GHz: 20 MHz, 40 MHz, 80 MHz, and 160 MHz<br>Combined peak data rate: 3.467 Gbps<br>• Radio 2 – 5 GHz: 6.5 Mbps to 3.467 Gbps (MCS0 to MCS9)<br>Radio technologies: Orthogonal Frequency-Division Multiplexing (OFDM)<br>Modulation types: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1,024-QAM<br>Packet aggregation:<br>• Aggregate MAC Protocol Data Unit (A-MPDU)<br>• Aggregate MAC Service Data Unit (A-MSDU)<br>Dynamic Frequency Selection (DFS)<br>Cyclic Delay/Shift Diversity (CDD/CSD)<br>Maximum Ratio Combining (MRC)<br>Space-Time Block Coding (STBC)<br>Low-Density Parity Check (LDPC)<br>Transmit beam-forming (TxBF) |
| 802.11ax | Eight spatial streams<br>• Radio 1 – 2.4 GHz: 4x4 uplink/downlink MU-MIMO, four spatial streams<br>• Radio 2 – 5 GHz: 4x4 uplink/downlink MU-MIMO, four spatial streams<br>Channels:<br>• Radio 1 – 2.4 GHz: 20 MHz and 40 MHz<br>• Radio 2 – 5 GHz: 20 MHz, 40 MHz, 80 MHz, and 160 MHz<br>Combined peak data rate: 5.951 Gbps:<br>• Radio 1 – 2.4 GHz: 8.6 Mbps to 1.147 Gbps (MCS0 to MCS11)<br>• Radio 2 – 5 GHz: 8.6 Mbps to 4.804 Gbps (MCS0 to MCS11)<br>Radio technologies: uplink/downlink Orthogonal Frequency-Division Multiple Access (OFDMA)<br>Modulation types: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM<br>Packet aggregation:<br>• Aggregate MAC Protocol Data Unit (A-MPDU)<br>• Aggregate MAC Service Data Unit (A-MSDU)<br>Dynamic Frequency Selection (DFS)<br>Cyclic Delay/Shift Diversity (CDD/CSD)<br>Maximum Ratio Combining (MRC)<br>Space-Time Block Coding (STBC)<br>Low-Density Parity Check (LDPC)<br>Transmit beam-forming (TxBF)<br>WPA3 |
| Antenna | Wi-Fi<br>• 2.4 GHz: four built-in omnidirectional antennas, with peak antenna gain of 6 dBi.<br>• 5 GHz: four built-in omnidirectional antennas, with peak antenna gain of 5 dBi.<br>Bluetooth<br>• One integrated vertically polarized omnidirectional antenna, with peak antenna gain of 3 dBi. |
| Port | 1 x 100/1000/2.5G/5GBase-T RJ45 Ethernet port with auto-negotiation<br>1 x 100/1000Base-T RJ45 Ethernet port with auto-negotiation<br>1 x 10GE optical port,compatibility with 1GE and 2.5GE<br>1 x RJ45 console port (serial console port)<br>1 x Bluetooth 5.1 |
| Status LED | 1 x multi-color system status LED<br>• AP power-on status<br>• Software initialization status and upgrade status<br>• Uplink service interface status<br>• Wireless user online status<br>• CAPWAP tunnel timeout<br>• Specific AP locating<br>Three single-color signal strength LEDs:<br>• Whether bridging is enabled<br>• Whether bridging is successful<br>• Wireless signal strength after successful bridging |
| Button | 1 x Reset button<br>• Press the button for shorter than 2 seconds. Then the device restarts.<br>• Press the button for longer than 5 seconds. Then the device restores to factory settings. |

| Hardware Specifications | RG-AP680-IO |
|---|---|
| Dimensions (W x D x H) | Main unit: 300 mm x 300 mm x 94 mm (11.81 in. x 11.81 in. x 3.70 in.)<br>Shipping: 470 mm x 410 mm x 170 mm (18.50 in. x 16.14 in. x 6.69 in.) |
| Weight | Main unit: 3.3 kg (7.28 lbs)<br>Mounting bracket: 1.2 kg (2.65 lbs)<br>Shipping: 6.5 kg (14.33 lbs) |
| Mounting | Wall/Pole-mounting (a mounting bracket is delivered with the main unit) |
| Input power supply | PoE input over LAN 1: The power source equipment (PSE) complies with IEEE 802.3af/at/bt standard (PoE/PoE+/PoE++). |
| Maximum power consumption | Maximum power consumption: 40 W<br>• 802.3af (PoE): 12.95 W, the AP starts up normally. Bluetooth and GPS work properly, all radios do not work, and LAN 2 fails to provide power for external devices.<br>• 802.3at (PoE+): 25 W, 2.4 GHz radio 4x4, 5 GHz radio 4x4, Bluetooth and GPS work properly, LAN 2 fails to provide power for external devices.<br>• 802.3bt (PoE++): 40 W, 2.4 GHz radio 4x4, 5 GHz radio 4x4, Bluetooth and GPS work properly, LAN 2 for PoE supply, Bluetooth and GPS work properly.<br>• Idle mode: 10 W |
| Environment | Storage temperature: –40°C to +85°C (–40°F to +185°F)<br>Storage humidity: 0% RH to 100% RH (non-condensing)<br>Storage altitude: –500 m to +5,000 m (–1640.42 ft. to +16,404.20 ft.)<br>Operating temperature: –40°C to +65°C (-40°F to +149°F)<br>Operating humidity: 0% RH to 100% RH (non-condensing)<br>Operating altitude: –500 m to +3,000 m (–1,640.42 ft. to +9,842.52 ft.)<br>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 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 | 2 GB DRAM, 256 MB flash |
| Transmit power | 2.4 GHz<br>• Maximum transmit power: 30 dBm (1,000 mW)<br>• Minimum transmit power: 10 dBm (10 mW)<br>5 GHz<br>• Maximum transmit power: 29 dBm (795 mW)<br>• Minimum transmit power: 9 dBm (7.94 mW)<br>Note:<br>• Adjusting the transmit power by percentage (recommended) and in 1dBm increments.<br>• The transmit power is limited by local regulatory requirements. For details, see *WLAN Country or Region Codes and Channel Compliance.* |
| GPS positioning | Supported |

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

| Wi-Fi Radio Frequency Performance | RG-AP680-IO | | |
|---|---|---|---|
| **Frequency Band and Protocol** | **Data Rate** | **Maximum Transmit Power per Transmit Chain** | **Maximum Receive Sensitivity per Receive Chain** |
| 2.4 GHz 802.11b | 1 Mbps | 24 dBm | –94 dBm |
| | 2 Mbps | 24 dBm | –91 dBm |
| | 5.5 Mbps | 23 dBm | –90 dBm |
| | 11 Mbps | 22 dBm | –88 dBm |
| 2.4 GHz 802.11g | 6 Mbps | 24 dBm | –89.5 dBm |
| | 24 Mbps | 23 dBm | –83 dBm |
| | 36 Mbps | 23 dBm | –79 dBm |
| | 54 Mbps | 21 dBm | –73 dBm |

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

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

## WLAN

| WLAN | RG-AP680-IO |
|---|---|
| Maximum number of associated STAs | 1,024 (up to 512 STAs per radio) |
| Practical maximum client count indication (per device) | 250 |
| Maximum number of BSSIDs | 32 (up to 16 BSSIDs per radio) |
| Maximum number of WLAN IDs | 16 |
| STA management | SSID hiding<br>Each SSID can be configured with the authentication mode, encryption mechanism, and VLAN attributes independently.<br>Remote Intelligent Perception Technology (RIPT)<br>Intelligent load balancing based on the STA quantity or traffic<br>Intelligent STA identification |
| STA limiting | SSID-based STA limiting<br>Radio-based STA limiting |
| Bandwidth limiting | STA/SSID/AP-based rate limiting |
| CAPWAP | IPv4/IPv6 CAPWAP<br>Layer 2 and Layer 3 topology between an AP and an AC<br>An AP can automatically discover the accessible AC.<br>An AP can be automatically upgraded through the AC.<br>An AP can automatically download the configuration file from the AC.<br>CAPWAP through NAT |
| 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

| Security and Authentication | RG-AP680-IO |
|---|---|
| Authentication and encryption | Remote Authentication Dial-In User Service (RADIUS)<br>PSK, UPSK and web authentication<br>QR code-based guest authentication, SMS authentication, and MAC address bypass (MAB) authentication<br>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) |
| Data frame filtering | Allowlist, static blocklist, and dynamic blocklist |
| WIDS | Wireless Intrusion Detection System(WIDS)<br>Wireless Intrusion Protection System(WIPS)<br>User isolation<br>Rogue AP detection and containment |
| Dynamic Policy | IP standard ACL, MAC extended ACL, IP extended ACL, and expert-level ACL<br>Time range-based ACL<br>ACL based on a Layer 2 interface<br>ACL based on a Layer 3 interface<br>Ingress ACL based on a wireless interface<br>Dynamic ACL assignment based on 802.1X authentication<br>CoA/DM |
| CPP | CPU Protect Policy (CPP) |
| NFPP | Network Foundation Protection Policy (NFPP) |

## Routing and Switching

| Routing and Switching | RG-AP680-IO |
|---|---|
| MAC | Static and filtered MAC addresses<br>MAC address table size: 2,048<br>Maximum number of static MAC addresses: 2,048<br>Maximum number of filtered MAC addresses: 2,048 |
| Ethernet | Jumbo frame length: 1,518 bytes<br>Full-duplex and half-duplex modes of interfaces<br>IEEE802.1p and IEEE802.1Q<br>Optical module information display, alarms about faults, and diagnosis parameter measurement (QSFP+/SFP+/SFP) |
| VLAN | Interface-based VLAN assignment<br>Maximum number of SVIs: 200<br>Maximum number of VLANs: 4,094<br>VLAN ID range: 1–4,094 |
| ARP | ARP entry aging, gratuitous ARP learning, and proxy ARP<br>Maximum number of ARP entries: 2,408<br>ARP check |
| IPv4 services | Static and DHCP-assigned IPv4 addresses<br>Maximum number of IPv4 addresses configured on each Layer 3 interface: 200<br>NAT, FTP ALG, and DNS ALG |
| IPv6 services | IPv6 addressing, Neighbor Discovery (ND), ICMPv6, IPv6 ping<br>IPv6 DHCP client<br>Maximum number of IPv6 addresses configured on each Layer 3 interface: 400 |
| IP routing | IPv4/IPv6 static route<br>Maximum number of static IPv4 routes: 1,024<br>Maximum number of static IPv6 routes: 1,000 |
| Multicast | Multicast-to-unicast conversion |
| VPN | PPPoE client<br>IPsec VPN |

## Network Management and Monitoring

| Network Management and Monitoring | RG-AP680-IO |
|---|---|
| Network management | NTP server and NTP client<br>SNTP client<br>SNMPv1/v2c/v3<br>Fault detection and alarm<br>Information statistics and logging |
| Network management platform | Web management (Eweb) |
| User access management | Telnet, SSH, SNMP and FTP management |
| Switchover among Fat, Fit, and cloud modes | When the AP works in Fit mode, it can be switched to Fat mode through an AC.<br>When the AP works in Fat mode, it can be switched to Fit mode through the console port or Telnet mode.<br>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).

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

### Cloud Management

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

### Cloud Authentication

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

## Platform Capabilities

| Platform Capabilities | RG-AP680-IO |
|---|---|
| Big data capabilities | Mainstream persistence solutions based on Hadoop, MongoDB, and MySQL, providing distributed storage capabilities<br>Spark-based big data computing capabilities<br>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<br>Granting operation permissions to administrators in different scenarios |
| System management | Account operation, authorization configuration, email configuration, configuration backup, exception alarms, and other system management functions |

Note: For details, refer to the latest hybrid cloud management solution.

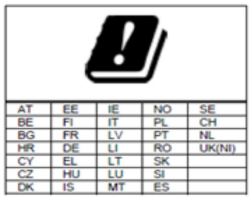
## Regulatory Compliance

| Regulatory Compliance | RG-AP680-IO |
|---|---|
| Regulatory compliance | EN 55032, EN 55035, EN 301 489-1, EN 301 489-3, EN 301 489-17, EN 300 328, EN 301 893, EN 300 440, FCC Part 15, EN 62311, EN IEC 62311, EN 50665, IEC 62368-1, EN 62368-1, IEC 60950-22, EN 18031-1, and EN 18031-2 |

*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-AP680-IO] 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.ruijie.com/.
- UK simplified DoC: Hereby, [Ruijie Networks Co., Ltd.] declares that the radio equipment type [RG-AP680-IO] 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.ruijie.com/.



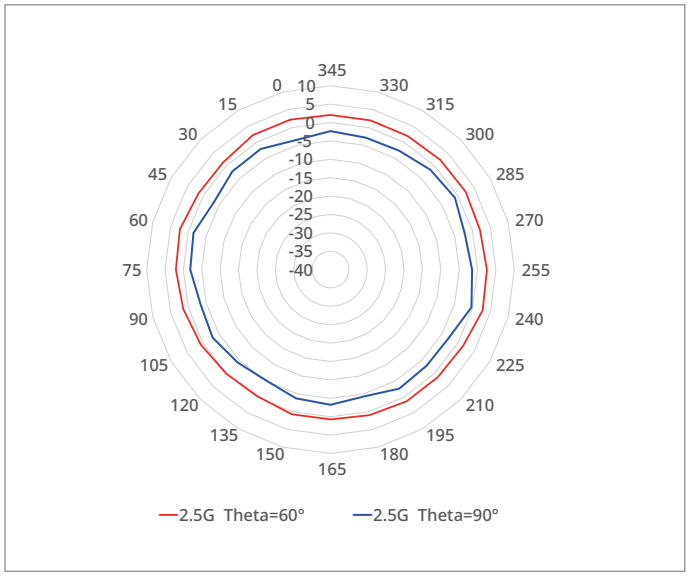


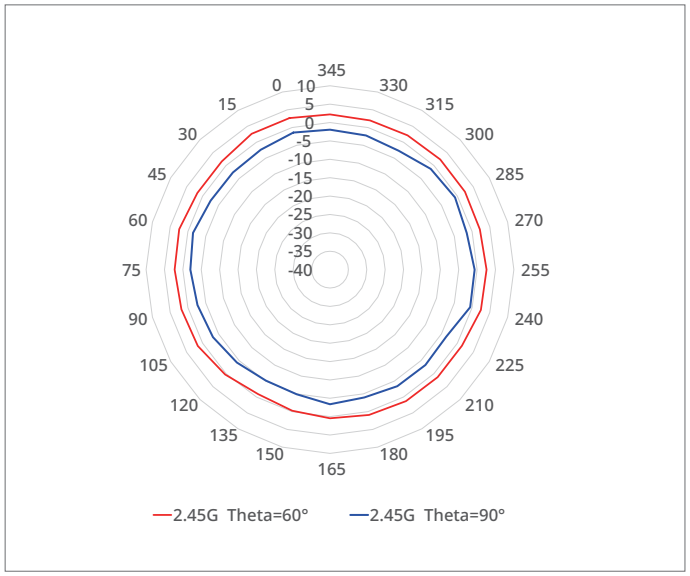
- The functions of Wireless Access Systems including Radio Local Area Networks(WAS/RLANs) within the band 5150-5350 MHz for this device are restricted to indoor use only within all European Union countries (BE/BG/CZ/DK/DE/EE/IE/EL/ES/FR/HR/IT/CY/LV/LT/LU/HU/MT/NL/AT/PL/PT/RO/SI/SK/FI/SE/TR/NO/CH/IS/LI/UK(NI)
- 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

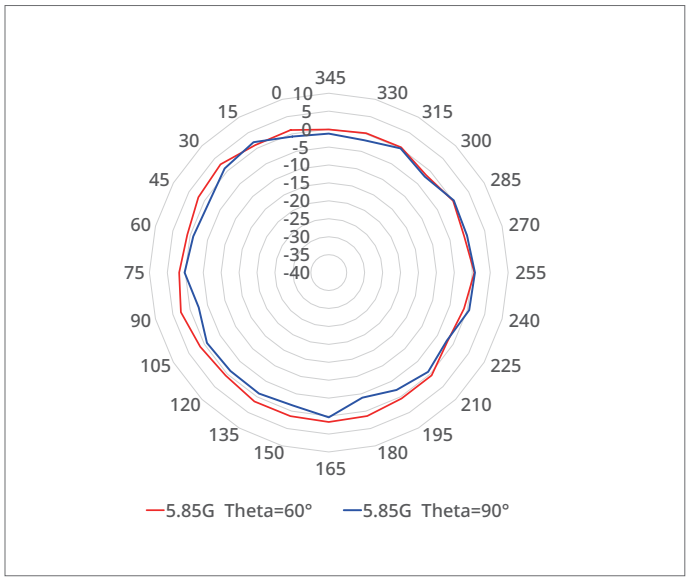
## Horizontal Planes (Top View)

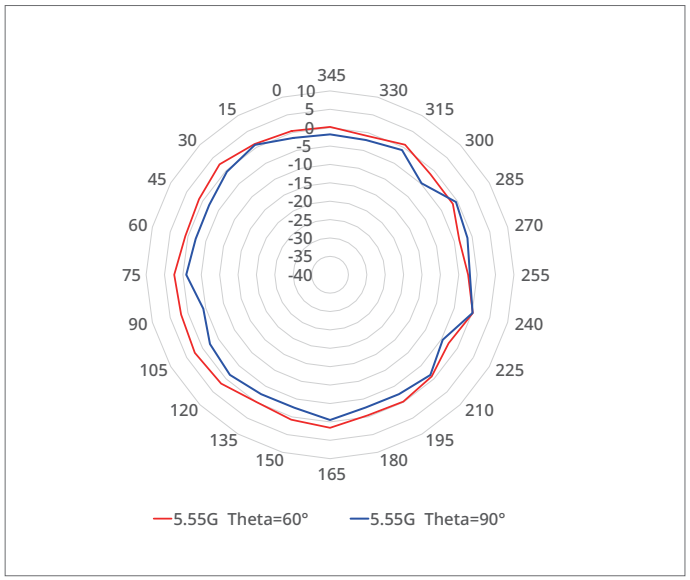
The following figures show the azimuth antenna pattern at 2.4 GHz and 5 GHz radios.




2.4 GHz (ANT1, 2, 3, 4)

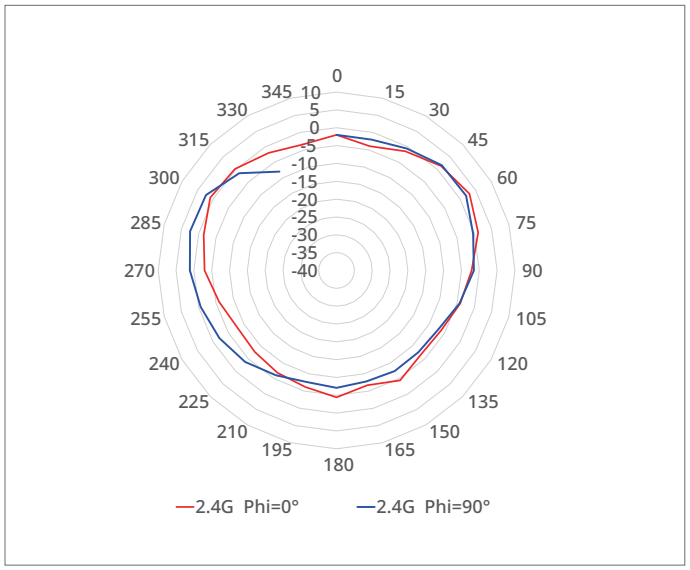


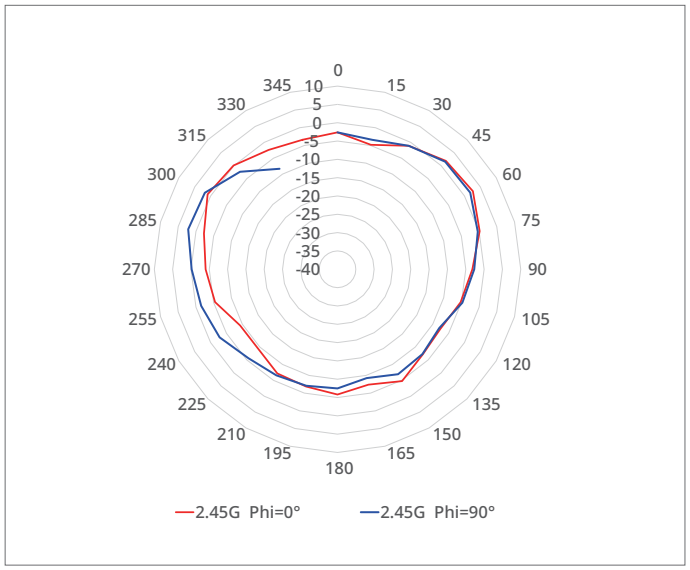




5.5 GHz (ANT1, 2, 3, 4)

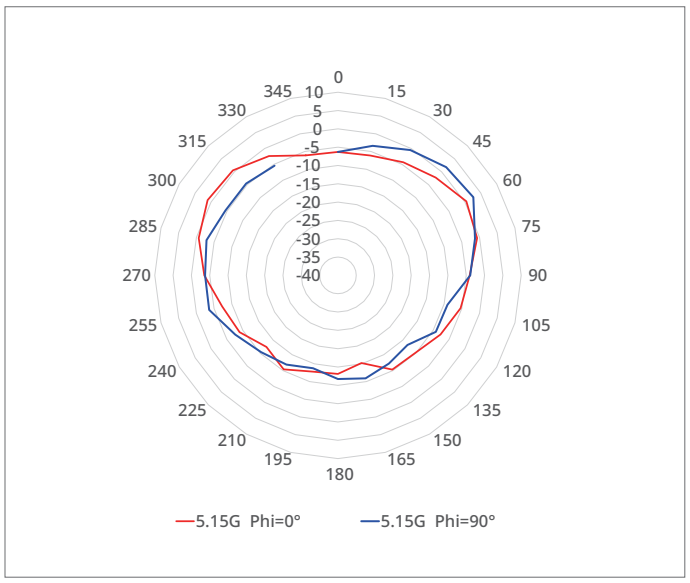
## Vertical Planes (Side View, AP Facing Down)

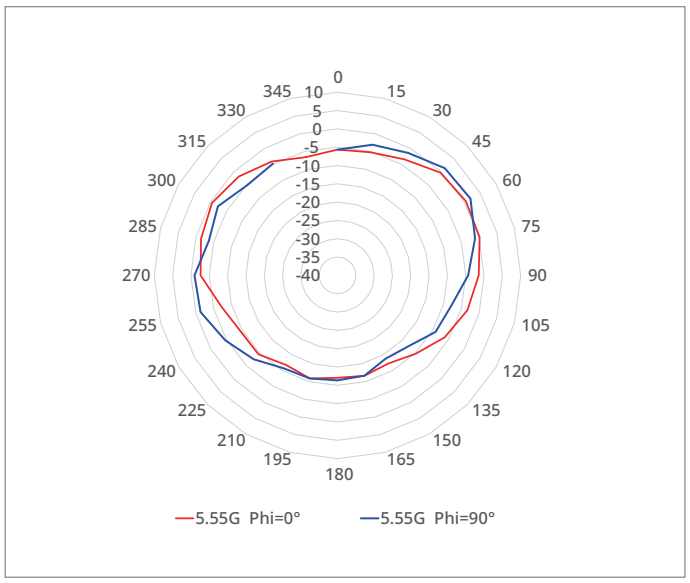
The following figures show the elevation antenna pattern at 2.4 GHz and 5 GHz radios.




2.4 GHz (ANT1, 2, 3, 4)




5.5 GHz (ANT1, 2, 3, 4)

Note: Operating frequency bands are country-specific.

# 09 Ordering Information

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

# 10 Package Contents

| Item | Quantity |
|---|---|
| RG-AP680-IO AP | 1 |
| Mounting bracket | 1 |
| Support for pole-mounted or wall-mounted installation | 1 |
| M5 x 10 machine screw | 4 |
| M6 x 16 machine screw | 2 |
| M8 x 20 machine screw | 2 |
| M6 x 40 mm expansion anchor | 4 |
| Waterproof PG connector | 2 |
| Waterproof connector for the optical fiber | 1 |
| Hose clamp | 2 |
| Dust cap for ports | 4 |
| Grounding cable | 1 |
| *Warranty Card and Hazardous Substance Table* | 1 |
| *Quick Installation Guide* | 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-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 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
- *WLAN Country or Region Codes and Channel Compliance:* 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/

**Notice**

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