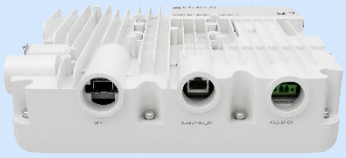
HUAWEI eKit

# Huawei eKitEngine AP772E Wireless Access Point Datasheet



## BE6450 High-Protection Dual-Band Gigabit Outdoor AP

Make SME Network Easier and Smarter

HUAWEI

# Product Overview

Huawei eKitEngine AP772E is an outdoor access point (AP) that complies with Wi-Fi 7 (802.11be) and provides a maximum of six spatial streams. The AP leverages Wi-Fi 7 innovations to significantly improve users' wireless experience. It stands out with excellent outdoor coverage performance, IP68 waterproof and dustproof ratings, and strong surge protection capability. These strengths make the AP ideal for coverage scenarios such as high-density stadiums, squares, pedestrian streets, and amusement parks.

# Product Highlights

- The AP is equipped with built-in directional antennas and can provide wireless services through dual radios: 2.4 GHz (2x2 MIMO) + 5 GHz (4x4 MIMO).
- The Ethernet ports of the AP support 6 kA surge protection. The AP supports IP68 waterproof and dustproof ratings, and an extended operating temperature range of –40°C to +70°C (–40°F to +158°F), meeting industrial-grade requirements.
- It can work in Fit, Fat, or cloud mode.

# Feature Description

## Wi-Fi 7 (802.11be) Standard

Wi-Fi 7 (802.11be) is the next-generation Wi-Fi standard, also known as IEEE 802.11be or Extremely High Throughput (EHT). It is compatible with protocols such as Wi-Fi 6 and Wi-Fi 5.

Based on Wi-Fi 6, Wi-Fi 7 introduces technologies such as 320 MHz channel width, 4096-QAM, multi-resource unit (RU), MLO, enhanced MU-MIMO, and multi-AP coordination. In this way, Wi-Fi 7 provides a higher data transmission rate and lower latency than Wi-Fi 6.

## New Features in Wi-Fi 7

### Multi-RU mechanism

- In Wi-Fi 6, each user can send or receive frames only on the RUs allocated to them, which greatly limits the flexibility of spectrum resource scheduling. To solve this problem and further improve spectral efficiency, Wi-Fi 7 defines a mechanism for allocating multiple RUs to a single user. To balance the implementation complexity and spectrum utilization, the Wi-Fi 7 standard specifications impose certain restrictions on RU combinations. That is, small RUs (containing fewer than 242 tones) can be combined only with small RUs, and large RUs (containing greater than or equal to 242 tones) can be combined only with large RUs. Small RUs and large RUs cannot be combined together.

### Higher-order 4096-QAM

- The highest order modulation supported by Wi-Fi 6 is 1024-QAM, which allows each modulation symbol to carry up to 10 bits. To further improve the rate, Wi-Fi 7 introduces 4096-QAM so that each modulation symbol can carry 12 bits. With the same coding, 4096-QAM in Wi-Fi 7 can achieve a 20% rate increase compared with 1024-QAM in Wi-Fi 6.

### Multi-link mechanism

- To efficiently utilize all available spectrum resources, the Wi-Fi 7 standard defines a multi-link aggregation technology — MLO. This technology enables a STA to simultaneously establish links with multiple radios (2.4 GHz, 5 GHz, and 6 GHz) of an AP. Using MAC layer technology, these cross-band links are aggregated into a virtual link to enable parallel communication across multiple links.

### Preamble puncturing

- Based on channel bonding technology, multiple adjacent channels can be merged into one for communication. If one of the subchannels is severely interfered with and cannot be used, its neighbors are

also unavailable. This leads to a significant decrease in overall wireless bandwidth, degrading the throughput. Preamble puncturing technology allows for skipping heavily interfered subchannels by "puncturing" through them. This enables the utilization of adjacent clear subchannels, preventing the overall wireless bandwidth decrease and thereby improving wireless performance in the case of interference.

## High-Speed Access

The AP supports 160 MHz channel width, which increases the number of available data subcarriers and expands transmission channels. In addition, the AP adopts 4096-QAM to achieve a rate of up to 0.69 Gbps on the 2.4 GHz band and 5.76 Gbps on the 5 GHz band, meaning up to 6.45 Gbps for the device.

## Directional Antenna

The AP has built-in directional antennas and works simultaneously on the 2.4 GHz and 5 GHz frequency bands to provide coverage over an optimal experience radius of 250 meters.

## Wired and Wireless Security Guarantee

To ensure data security, this AP integrates wired and wireless security functions and provides comprehensive security protection.

### Authentication and encryption for wireless access

- The AP supports WEP, WPA/WPA2-PSK, WPA3-SAE, WPA/WPA2-PPSK, and WPA/WPA2/WPA3-802.1X authentication/encryption modes to ensure the security of wireless networks. The authentication mechanism is used to authenticate user identities so that only authorized users can access network resources. The encryption mechanism is used to encrypt data transmitted over wireless links to ensure that data can only be received and parsed by authorized users.

### Authentication and encryption for wired access

- The AP access control mechanism ensures that only authorized users can access the AP. Control and provisioning of wireless access point (CAPWAP) link protection and Datagram Transport Layer Security (DTLS) encryption provide security guarantee and improve data transmission security between the AP and wireless access controller (WAC).

## Automatic Radio Calibration

Automatic radio calibration allows the AP to collect signal strength, channel, and other parameters of surrounding APs and generate an AP topology according to the collected data. Based on interference from surrounding environments and their loads, the AP automatically adjusts its transmit power and working channel to make the network operate at the optimal performance. In this way, network reliability and user experience are improved.

## High-Specification Protection

- The AP is designed with a metal shell and overall heat dissipation, allowing it to operate in an extended temperature range of –40°C to +70°C. It also features an IP68 waterproof and dustproof design, as well as 6 kA surge protection for Ethernet ports, meeting industrial-grade requirements.
- Cable connectors are secured using metal fasteners to ensure secure connections and stable device operations.

## Cloud Management

The AP supports cloud-based management. It provides various authentication functions, such as PSK and Portal authentication, without the need of a WAC or an authentication server. This greatly simplifies networking and reduces capital expenditure (CAPEX). In addition, the AP can use the Huawei SME Network cloud management platform to implement cloud-based network planning, deployment, inspection, and O&M.

## Deployment and O&M Through HUAWEI eKit App

The HUAWEI eKit App supports Wi-Fi-based deployment and barcode scanning–based deployment. After the deployment is complete, you can perform more maintenance operations on the HUAWEI eKit App.

### Wi-Fi-based deployment

- In quick deployment mode, you can connect your mobile phone to the management Wi-Fi network of an AP to deploy a network. This allows the device to automatically go online and be remotely managed on the app.

### Barcode scanning–based deployment

- Another method is to use a mobile phone to scan the AP's serial number (SN) and synchronize the device information to HUAWEI eKit platform for device onboarding management.

# Product Features

## Fit AP Mode

| Item | Description |
| --- | --- |
| WLAN features | Compliance with IEEE 802.11be and compatibility with IEEE 802.11a/b/g/n/ac/ax on both 2.4 GHz and 5 GHz frequency bands<br>Maximum ratio combining (MRC)<br>Space time block code (STBC)<br>Cyclic delay diversity (CDD)/Cyclic shift diversity (CSD)<br>Beamforming<br>MU-MIMO<br>Orthogonal frequency division multiple access (OFDMA)<br>Compliance with 4096-QAM and compatibility with 1024-QAM/256-QAM/64-QAM/16-QAM/8-QAM/QPSK/BPSK<br>Low-density parity-check (LDPC)<br>Frame aggregation, including aggregate MAC protocol data unit (A-MPDU) (Tx/Rx) and aggregate MAC service data unit (A-MSDU) (Tx/Rx)<br>802.11 dynamic frequency selection (DFS)<br>Short guard interval (GI) in 20 MHz, 40 MHz, 80 MHz, and 160 MHz modes<br>Wi-Fi Multimedia (WMM) for priority-based data processing and forwarding<br>WLAN channel management and channel rate adjustment<br>Automatic channel scanning and interference avoidance<br>NOTE<br>For details about WLAN channel management, see the *Country Codes and Channels Compliance*.<br>Service set identifier (SSID) hiding configuration for each AP, supporting Chinese SSIDs<br>Signal sustain technology (SST)<br>Unscheduled automatic power save delivery (U-APSD)<br>CAPWAP<br>Automatic AP onboarding<br>Extended service set (ESS)<br>Multi-user call admission control (CAC)<br>Advanced cellular coexistence (ACC), minimizing the impact of interference from cellular |

| Item | Description |
| --- | --- |
| | networks<br>802.11k and 802.11v smart roaming<br>802.11r fast roaming (≤ 50 ms) |
| Network features | Compliance with IEEE 802.3ab<br>Auto-negotiation of the rate and duplex mode, and automatic switchover between the Media Dependent Interface (MDI) and Media Dependent Interface Crossover (MDI-X)<br>Compatibility with IEEE 802.1Q<br>SSID-based VLAN assignment<br>VLAN trunk on uplink Ethernet ports<br>Management channel of the AP's uplink port in tagged or untagged mode<br>DHCP client, obtaining IP addresses through DHCP<br>Tunnel data forwarding and direct data forwarding<br>Mesh backhaul<br>IPv6<br>STA isolation in the same VLAN<br>IP access control list (ACL)<br>Link layer discovery protocol (LLDP)<br>Uninterrupted service forwarding upon CAPWAP tunnel disconnection<br>Unified authentication on the WAC |
| QoS features | WMM parameter management for each radio<br>Queue mapping and scheduling<br>User-based bandwidth limiting<br>Adaptive bandwidth management (automatic bandwidth adjustment based on the user quantity and radio environment) for user experience improvement<br>Airtime scheduling |
| Security features | Open system authentication<br>WEP authentication and encryption using a 64-bit, 128-bit, 152-bit, or 192-bit encryption key<br>WPA2-PSK authentication and encryption<br>WPA2-802.1X authentication and encryption<br>WPA3-SAE authentication and encryption<br>WPA3-802.1X authentication and encryption<br>WPA-WPA2/WPA2-WPA3 hybrid authentication<br>WPA2-PPSK authentication and encryption<br>802.1X authentication, MAC address authentication, Portal authentication, etc.<br>DHCP snooping<br>802.11w Protected Management Frames (PMF)<br>DTLS encryption<br>Dynamic ARP inspection (DAI)<br>IP Source Guard (IPSG) |
| Maintenance features | Unified AP management and maintenance on the WAC<br>Automatic AP onboarding, automatic configuration loading, and plug-and-play (PnP)<br>Automatic batch upgrade |

| Item | Description |
| --- | --- |
| | Telnet and STelnet using SSHv2<br>SFTP using SSHv2<br>Real-time configuration monitoring and fast fault locating using the network management system (NMS)<br>System status alarm |

## Cloud-Managed/FAT AP Mode

| Item | Description |
| --- | --- |
| WLAN features | Compliance with IEEE 802.11be and compatibility with IEEE 802.11a/b/g/n/ac/ax on both 2.4 GHz and 5 GHz frequency bands<br>MRC<br>STBC<br>CDD/CSD<br>Beamforming<br>MU-MIMO<br>OFDMA<br>Compliance with 4096-QAM and compatibility with 1024-QAM/256-QAM/64-QAM/16-QAM/8-QAM/QPSK/BPSK<br>LDPC<br>Frame aggregation, including A-MPDU (Tx/Rx) and A-MSDU (Tx/Rx)<br>802.11 DFS<br>Short GI in 20 MHz, 40 MHz, 80 MHz, and 160 MHz modes<br>Priority mapping and scheduling in compliance with WMM<br>WLAN channel management and channel rate adjustment<br>NOTE<br>For details about WLAN channel management, see the *Country Codes and Channels Compliance*.<br>Automatic channel scanning and interference avoidance<br>SSID hiding configuration for each AP, supporting Chinese SSIDs<br>U-APSD<br>Automatic AP onboarding<br>802.11k and 802.11v smart roaming<br>802.11r fast roaming (≤ 50 ms) |
| Network features | Compliance with IEEE 802.3ab<br>Auto-negotiation of the rate and duplex mode and automatic switchover between the MDI and MDI-X<br>Compatibility with IEEE 802.1Q<br>SSID-based VLAN assignment<br>DHCP client, obtaining IP addresses through DHCP<br>STA isolation in the same VLAN<br>ACL<br>Unified authentication on the cloud management platform<br>Mesh backhaul |

| Item | Description |
| --- | --- |
| | IPv6 |
| QoS features | Priority mapping and scheduling in compliance with WMM<br>WMM parameter management for each radio<br>Queue mapping and scheduling<br>User-based bandwidth limiting<br>Airtime scheduling |
| Security features | Open system authentication<br>WPA2-PSK authentication and encryption<br>WPA2-802.1X authentication and encryption<br>WPA3-SAE authentication and encryption<br>WPA3-802.1X authentication and encryption<br>WPA-WPA2/WPA2-WPA3 hybrid authentication<br>802.1X authentication, MAC address authentication, Portal authentication, etc.<br>DHCP snooping<br>DAI<br>IPSG |
| Maintenance features | Unified management and maintenance on the cloud management platform<br>Batch upgrade<br>Telnet and STelnet using SSHv2<br>SFTP using SSHv2<br>Real-time configuration monitoring and fast fault locating using the NMS<br>System status alarm<br>Network Time Protocol (NTP) |

## Product Specifications

| Item | | Description |
| --- | --- | --- |
| Technical specifications | Dimensions (H x W x D) | 77 mm x 250 mm x 220 mm |
| | Weight | 2.76 kg |
| | Port | 1 x 2.5GE (RJ45), 100M/1000M/2500M auto-sensing<br>1 x 10GE optical (SFP+), GE/2.5GE/10GE auto-sensing<br>1 x USB port<br>1 x 48 V DC power port<br>NOTE<br>The 2.5GE electrical port supports PoE input. |
| | LED indicator | Indicates the power-on, startup, running, alarm, and fault states of the system. |
| Power specifications | Power input | • DC: 48 V ± 10%<br>• PoE power supply: in compliance with IEEE 802.3bt/at/af |

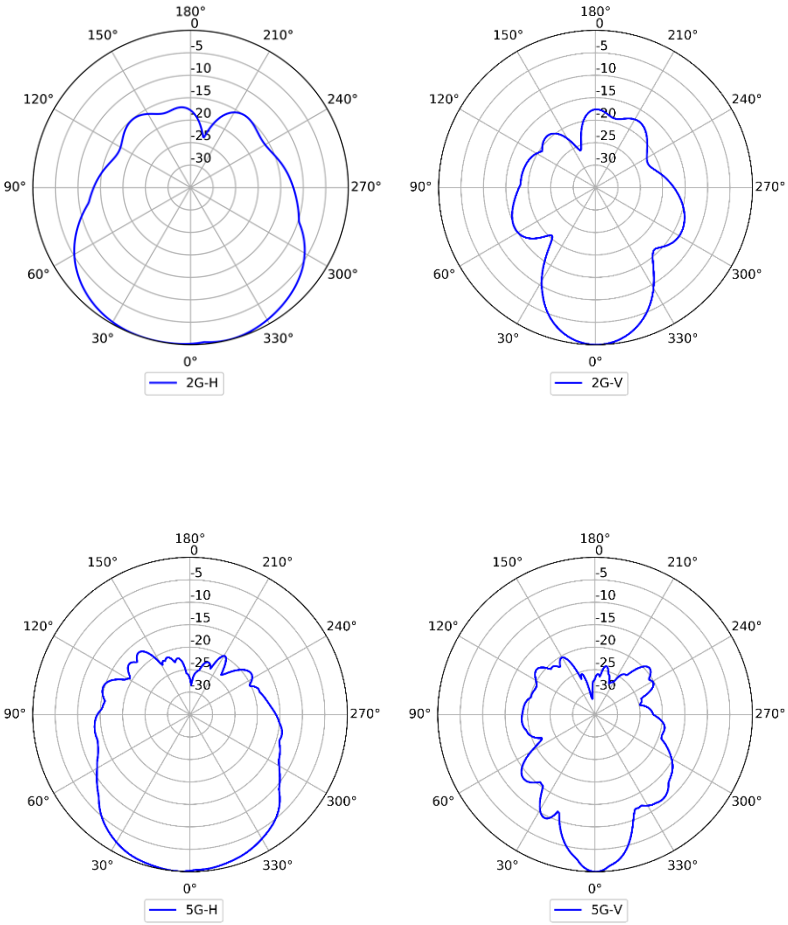
| Item | | Description |
| --- | --- | --- |
| | | NOTE<br>When working in 802.3af power supply mode, the AP is restricted in functions. For example, the USB port is unavailable. For details, see the Info-Finder. |
| | Maximum power consumption | • 20.4 W (excluding USB)<br>NOTE<br>The actual maximum power consumption depends on local laws and regulations. |
| Environmental specifications | Operating temperature | –40°C to +70°C (If the altitude is in the range of 1800 m to 5000 m, the temperature decreases by 1°C every time the altitude increases by 300 m.)<br>NOTE<br>Some part of the AP shell may have a higher temperature than the upper limit of the operating temperature range. In this case, the AP's performance will not be affected as long as the shell temperature complies with the safety standards. |
| | Storage temperature | –40°C to +85°C |
| | Operating humidity | 0% to 100% (non-condensing) |
| | IP rating | IP68 |
| | Altitude | –60 m to +5000 m |
| | Atmospheric pressure | 53 kPa to 106 kPa |
| Radio specifications | Antenna type | Built-in directional antennas<br>NOTE<br>The horizontal and vertical beamwidths of 2.4 GHz antennas are 70° and 35°, respectively. The horizontal and vertical beamwidths of 5 GHz antennas are 60° and 20°, respectively. |
| | Antenna gain | 2.4 GHz: 10 dBi<br>5 GHz: 11 dBi<br>NOTE<br>1. The preceding gains are the peak gains of a single antenna.<br>2. When all 2.4 GHz or 5 GHz antennas are combined, the equivalent antenna gain is 10 dBi for 2.4 GHz radios or 10 dBi for 5 GHz radios. |
| | Maximum quantity of SSIDs on each radio | 10 |
| | Maximum number of access STAs | 1024<br>NOTE<br>The actual number of users varies according to the environment. |
| | Maximum transmit power | 2.4 GHz: 28 dBm (combined power)<br>5 GHz: 30 dBm (combined power)<br>NOTE<br>The actual transmit power varies according to local laws and regulations. |

| Item | | Description |
|---|---|---|
| | Power adjustment increment | 1 dBm |

## Standards Compliance

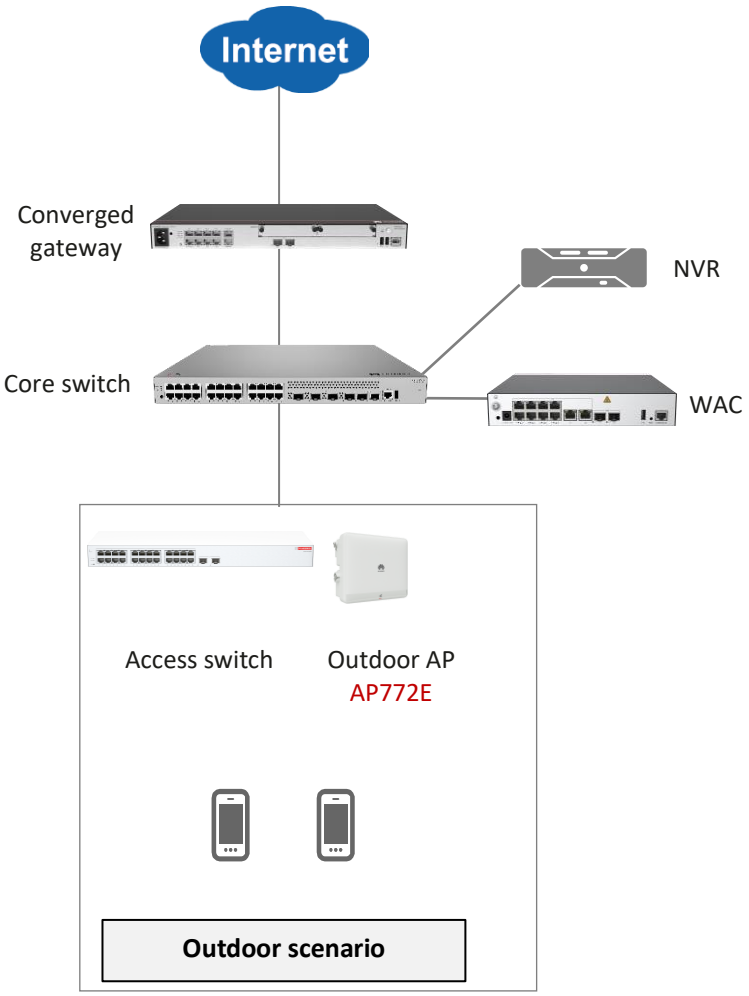
| Item | Description | | |
|---|---|---|---|
| Safety standards | | • UL 62368-1<br>• EN 62368-1<br>• IEC 62368-1<br>• CSA 62368-1 | • GB 4943.1 |
| Radio standards | • ETSI EN 300 328 | • ETSI EN 301 893 | |
| EMC standards | • EN 301 489-1<br>• EN 301 489-17<br>• EN 60601-1-2<br>• EN 55024<br>• EN 55032<br>• EN 55035 | • GB 9254<br>• GB 17625.1<br>• GB 17625.2<br>• CISPR 24<br>• CISPR 32<br>• CISPR 35 | • IEC/EN 61000-4-2<br>• IEC/EN 61000-4-3<br>• IEC/EN 61000-4-4<br>• IEC/EN 61000-4-5<br>• IEC/EN 61000-4-6<br>• ICES-003 |
| IEEE standards | • IEEE 802.11a/b/g<br>• IEEE 802.11n<br>• IEEE 802.11ac<br>• IEEE 802.11ax<br>• IEEE 802.11be | • IEEE 802.11h<br>• IEEE 802.11d<br>• IEEE 802.11e<br>• IEEE 802.11k | • IEEE 802.11v<br>• IEEE 802.11w<br>• IEEE 802.11r |
| Security standards | • 802.11i, Wi-Fi Protected Access (WPA), WPA2, WPA2-Enterprise, WPA2-PSK, WPA3, WAPI<br>• 802.1X<br>• Advanced Encryption Standards (AES), Temporal Key Integrity Protocol (TKIP), WEP, Open<br>• EAP Type(s) | | |
| EMF standards | • EN 62311 | • EN 50385 | |
| RoHS | • Directive 2002/95/EC & 2011/65/EU | • (EU) 2015/863 | |
| Reach | • Regulation 1907/2006/EC | | |
| WEEE | • Directive 2002/96/EC & 2012/19/EU | | |

# Antenna Patterns




# Typical Networking

## Outdoor scenario


Internet
Converged gateway
NVR
Core switch
WAC
Access switch
Outdoor AP
AP772E
Outdoor scenario

# More Information

For more information about Huawei eKitEngine WLAN products, visit http://ekit.huawei.com or contact Huawei's local sales office.

Alternatively, you can contact us through one of the following methods:

1. Global service hotline: http://e.huawei.com/en/service-hotline
2. Enterprise technical support website: http://support.huawei.com/enterprise/
3. Service email address for enterprise users: support_e@huawei.com



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