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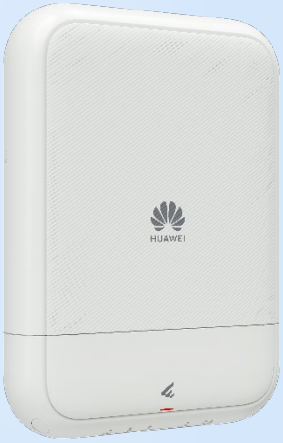
Huawei eKitEngine AP771 Wireless Access Point Datasheet



3570 Mbps Dual-Band Omnidirectional Outdoor Wi-Fi 7 AP

Make SME Network Easier and Smarter

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Product Overview

Huawei eKitEngine AP771 is an outdoor wireless access point (AP) in compliance with the Wi-Fi 7 standard (802.11be). It stands out with excellent outdoor coverage performance, IP65-rated waterproof and dustproof design, and strong surge protection capability. It also leverages Wi-Fi 7 innovations to significantly improve users' wireless experience and is ideal for signal coverage in various scenarios, such as squares, pedestrian streets, and amusement parks.

Product Highlights

- Built-in omnidirectional antennas, enabling the AP to work simultaneously on the 2.4 GHz (2x2) and 5 GHz (2x2) frequency bands, achieving a device rate of up to 3.57 Gbps (0.69 Gbps at 2.4 GHz and 2.88 Gbps at 5 GHz)
- Next-generation outdoor AP: compact (H x W x D: 270 mm x 196 mm x 51 mm) and lightweight (1.14 kg)
- 1 x 2.5GE electrical port
- 6 kA surge protection for Ethernet ports, extended operating temperature range from –30°C to +60°C, as well as IP65-rated waterproof and dustproof
- Working modes: Fit, Fat, and cloud management

Main Product Features

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). In addition, it is compatible with Wi-Fi 6/Wi-Fi 5 and other protocols.
- Developed upon Wi-Fi 6, many new features are introduced to Wi-Fi 7. These new features include 320 MHz bandwidth (not supported by this product), 4096-QAM, multi-resource unit (multi-RU), multi-link operation (MLO), enhanced MU-MIMO, and multi-AP coordination, enabling Wi-Fi 7 to deliver higher data transmission rates and lower latency.

New features of Wi-Fi 7

Multi-RU mechanism

- In Wi-Fi 6, users are restricted to transmitting or receiving frames solely within their assigned resource units (RUs), greatly limiting the flexibility of spectrum resource scheduling. To address this issue and enhance spectral efficiency, Wi-Fi 7 introduces a mechanism that allows multiple RUs to be allocated to a single user. However, to strike a balance between implementation complexity and spectrum utilization, the standard specifications impose constraints on RU combinations. Specifically, small RUs (containing fewer than 242 tones) can only be combined with other small RUs, while large RUs (containing 242 tones or more) can only be combined with other large RUs. In other words, small and large RUs cannot be combined together.

Higher-order 4096-QAM

- The maximum-order modulation supported by Wi-Fi 6 is 1024-QAM, enabling each modulation symbol to carry up to 10 bits. To further increase data rates, Wi-Fi 7 introduces 4096-QAM, thereby permitting each modulation symbol to carry 12 bits. Under the same coding scheme, 4096-QAM in Wi-Fi 7 achieves a 20% rate increase relative to 1024-QAM in Wi-Fi 6.

Multi-link mechanism

- To efficiently utilize all available spectrum resources, the Wi-Fi 7 working group defines a multi-link aggregation technology — MLO. This technology enables a station (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

- A complete channel consists of multiple adjacent frequency bands. If a frequency band is severely interfered and cannot be used, its adjacent channels cannot be used. As a result, the overall bandwidth of the wireless network is greatly reduced, and the throughput decreases. The preamble puncturing technology can skip some severely interfered frequency bands by puncturing and use the adjacent channels of the frequency bands, preventing the overall bandwidth of the wireless network from being greatly reduced and improving wireless performance in environments with interference.

High-speed access

- The AP supports 160 MHz frequency bandwidth, which increases the number of available data subcarriers and expands transmission channels. In addition, the AP adopts 4096-QAM and MIMO to achieve a rate of up to 0.69 Gbps on the 2.4 GHz band and 2.88 Gbps on the 5 GHz band, meaning up to 3.57 Gbps for the device.

Omnidirectional antenna

- The AP has built-in omnidirectional antennas and can work on both the 2.4 GHz and 5 GHz frequency bands. The AP provides the optimal experience within a coverage radius of 130 m. The AP adopts an antenna architecture featuring "Invisible pole" and hybrid dual-polarization, first in the industry. Huawei's exclusive "Invisible pole" technology can improve the backward coverage capability by more than 60%, realizing omnidirectional coverage. Furthermore, the hybrid dual-polarization technology can maximize MIMO gains, improving the two-stream rate by more than 30%.

High-specification protection

- The AP adopts the ultraviolet-proof PC material, which can withstand strong ground radiation (1090 W/m^2). Additionally, the AP is IP65-rated waterproof and dustproof, as well as can withstand a wind speed of 77 m/s. Moreover, it provides 6 kA enhanced surge protection for Ethernet ports. Furthermore, the AP can work in an extended temperature range (–30°C to +60°C).

Huawei-unique rail-mounted and latch-based installation

- The AP supports rail-mounted installation (3 min), which can be implemented with one hand while without the need for commissioning. Also, it supports latch-based installation, enabling secure installation and easy removal. Moreover, the AP can be installed on a pole with a diameter of up to 114 mm (horizontal or vertical pole).

Wired and wireless security assurance

To ensure data security, Huawei APs integrate wired and wireless security measures and provide comprehensive security protection.

Authentication and encryption for wireless STA 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 AP access

The AP access control mechanism ensures the validity of APs. The Control and Provisioning of Wireless Access Points (CAPWAP) link protection and Datagram Transport Layer Security (DTLS) encryption provide security assurance, improving data transmission security between APs and WACs.

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.

Cloud management

The AP supports cloud-based management. It provides various authentication functions, such as PSK and Portal authentication, without the need of a wireless access controller (WAC) or an authentication server. This greatly simplifies networking and reduces CAPEX. In addition, the AP can be deployed on 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

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 HUAWEI eKit App.

Wi-Fi-based deployment

Fast deployment: You can connect your mobile phone to the management Wi-Fi network of an AP and deploy network projects. In this way, devices can be automatically onboarded and remotely managed on the app.

Barcode scanning–based deployment

You can scan the SN on the device chassis and synchronize the device information to Huawei eKit to implement device onboarding.

Product Software 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 ● Maximum ratio combining (MRC) ● Space time block code (STBC) ● Cyclic delay diversity (CDD)/Cyclic shift diversity (CSD) ● Beamforming ● MU-MIMO ● Orthogonal frequency division multiple access (OFDMA) ● Compliance with 4096-QAM and compatibility with 1024-QAM/256-QAM/64-QAM/16-QAM/8-QAM/QPSK/BPSK ● Low-density parity-check (LDPC) ● Frame aggregation, including A-MPDU (Tx/Rx) and A-MSDU (Tx/Rx) ● IEEE 802.11 dynamic frequency selection (DFS) ● Short guard interval (GI) in 20 MHz, 40 MHz, 80 MHz, and 160 MHz modes ● Wi-Fi Multimedia (WMM) for priority-based data processing and forwarding ● WLAN channel management and channel rate adjustment ● Automatic channel scanning and interference avoidance

Item	Description
	NOTE For detailed management channels, see *Country Code & Channel Compliance Table*. ● Separate service set identifier (SSID) hiding configuration for each AP, supporting Chinese SSIDs ● Signal sustain technology (SST) ● Unscheduled automatic power save delivery (U-APSD) ● CAPWAP in Fit AP mode ● Automatic login in Fit AP mode ● Extended service set (ESS) in Fit AP mode ● Multi-user connection access control (CAC) ● Advanced cellular coexistence (ACC), minimizing the impact of interference from cellular networks ● IEEE 802.11k and 802.11v smart roaming ● IEEE 802.11r fast roaming (≤ 50 ms)
Network features	● Compliance with IEEE 802.3ab ● Auto-negotiation of the rate and duplex mode and automatic switching between the Media Dependent Interface (MDI) and Media Dependent Interface Crossover (MDI-X) ● Compatibility with IEEE 802.1Q ● SSID-based VLAN assignment ● VLAN trunk on uplink Ethernet ports ● Management channel of the AP's uplink port in tagged or untagged mode ● DHCP client, obtaining IP addresses through DHCP ● Tunnel data forwarding and direct data forwarding ● Mesh backhaul ● IPv6 packet forwarding ● STA isolation in the same VLAN ● IP user access control list (ACL) ● Link layer discovery protocol (LLDP) ● Uninterrupted service forwarding upon CAPWAP tunnel disconnection in Fit AP mode ● Unified authentication on the WAC in Fit AP mode
QoS features	● WMM parameter management for each radio ● Queue mapping and scheduling ● User-based bandwidth limiting ● Adaptive bandwidth management (automatic bandwidth adjustment based on the user quantity and radio environment) for user experience improvement ● Airtime scheduling
Security features	● Open system authentication ● WEP authentication and encryption using a 64-bit, 128-bit, 152-bit or 192-bit encryption key ● WPA2-PSK authentication and encryption ● WPA2-802.1X authentication and encryption ● WPA3-SAE authentication and encryption ● WPA3-802.1X authentication and encryption

Item	Description
	● WPA-WPA2/WPA2-WPA3 hybrid authentication ● WPA2-PPSK authentication and encryption in Fit AP mode ● 802.1X authentication, MAC address authentication, Portal authentication, etc. ● DHCP snooping ● IEEE 802.11w Protected Management Frames (PMF) ● DTLS encryption ● Dynamic ARP inspection (DAI) ● IP Source Guard (IPSG)
Maintenance features	● Unified AP management and maintenance on the WAC in Fit AP mode ● Automatic login, automatic configuration loading, and plug-and-play (PnP) in Fit AP mode ● Automatic batch upgrade in Fit AP mode ● Telnet and STelnet using SSHv2 ● SFTP using SSHv2 ● Real-time configuration monitoring and fast fault locating using the NMS ● System status alarm

Cloud Management/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 ● MRC ● STBC ● CDD/CSD ● Beamforming ● MU-MIMO ● OFDMA ● Compliance with 4096-QAM and compatibility with 1024-QAM/256-QAM/64-QAM/16-QAM/8-QAM/QPSK/BPSK ● LDPC ● Frame aggregation, including A-MPDU (Tx/Rx) and A-MSDU (Tx/Rx) ● IEEE 802.11 DFS ● Short GI in 20 MHz, 40 MHz, 80 MHz, and 160 MHz modes ● Priority mapping and scheduling in compliance with WMM ● WLAN channel management and channel rate adjustment **NOTE** For detailed management channels, see *Country Code & Channel Compliance Table*. ● Automatic channel scanning and interference avoidance ● SSID hiding configuration for each AP, supporting Chinese SSIDs ● U-APSD ● Automatic AP onboarding ● IEEE 802.11k and 802.11v smart roaming ● IEEE 802.11r fast roaming (≤ 50 ms)

Item	Description
Network features	● Compliance with IEEE 802.3ab ● Auto-negotiation of the rate and duplex mode and automatic switching between the MDI and MDI-X ● Compatibility with IEEE 802.1Q ● SSID-based VLAN assignment ● DHCP client, obtaining IP addresses through DHCP ● STA isolation in the same VLAN ● ACL ● Unified authentication on the cloud management platform ● Mesh backhaul ● IPv6 packet forwarding ● NAT (Fat AP Mode)
QoS features	● Priority mapping and scheduling in compliance with WMM ● WMM parameter management for each radio ● Queue mapping and scheduling ● User-based bandwidth limiting ● Airtime scheduling
Security features	● Open system authentication ● WPA2-PSK authentication and encryption ● WPA2-802.1X authentication and encryption ● WPA3-SAE authentication and encryption ● WPA3-802.1X authentication and encryption ● WPA-WPA2/WPA2-WPA3 hybrid authentication ● 802.1X authentication, MAC address authentication, Portal authentication, etc. ● DHCP snooping ● DAI ● IPSG
Maintenance features	● Unified AP management and maintenance on the cloud management platform ● Batch upgrade ● Telnet and STelnet using SSHv2 ● SFTP using SSHv2 ● Real-time configuration monitoring and fast fault locating using the NMS ● System status alarm ● Network Time Protocol (NTP) ● NETCONF Protocol

Product Specifications

Item		Description
Technical specifications	Dimensions (H x W x D)	270 mm x 196 mm x 51 mm
	Weight	1.14 kg

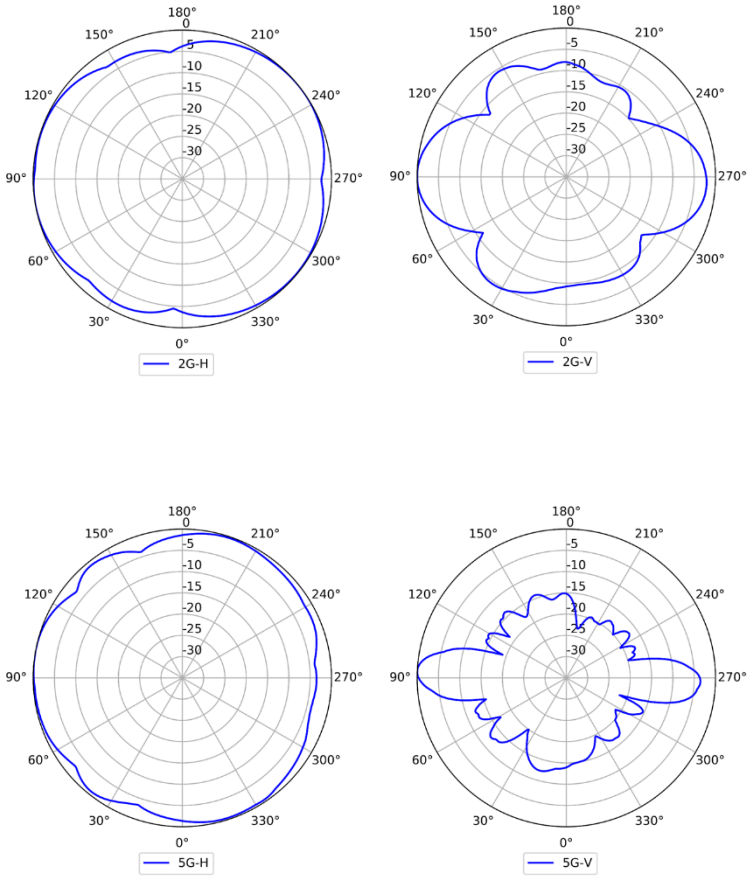
Item		Description
	Port	1 x 2.5GE (RJ45) port, 100M/1000M/2500M auto-sensing **NOTE** The 2.5GE electrical port supports PoE IN.
	LED indicator	Indicate the power-on, startup, running, alarm, and fault states of the system.
Power specifications	Power input	PoE power supply: in compliance with IEEE 802.3at/af **NOTE** When working in IEEE 802.3af power supply mode, the AP is restricted in functions. For details, see the Quick Information Check website.
	Maximum power consumption	18.8 W **NOTE** The actual maximum power consumption depends on local laws and regulations.
Environmental specifications	Operating temperature	–30°C to +60°C (From 1800 m to 5000 m, the maximum temperature of the device decreases by 1°C for every 300 m increase in altitude.) **NOTE** The temperature on part of the AP shell may be higher than its operating temperature upper limit. The AP's performance will not be affected as long as the shell temperature complies with the safety standards.
Environment specifications	Storage temperature	–40°C to +70°C
	Operating humidity	5% to 95%
	IP rating	IP65
	Altitude	–60 m to +5000 m
	Atmospheric pressure	53 kPa to 106 kPa
Radio specifications	Antenna type	Built-in omnidirectional antennas
	Antenna gain	2.4 GHz: 4 dBi 5 GHz: 7 dBi **NOTE** 1. The preceding gain is the peak gain of a single antenna. 2. Equivalent antenna gain after all 2.4 GHz or 5 GHz antennas are combined: 2 dBi for 2.4 GHz and 4 dBi for 5 GHz.
	Maximum quantity of SSIDs on each radio	10
	Maximum number of access users	≤ 256 **NOTE** The actual number of users varies according to the environment.
	Maximum transmit power	2.4 GHz: 28 dBm (combined power)

Item		Description
		5 GHz: 27 dBm (combined power) **NOTE** The actual transmit power varies according to local laws and regulations.
	Power adjustment increment	1 dBm

Standards Compliance

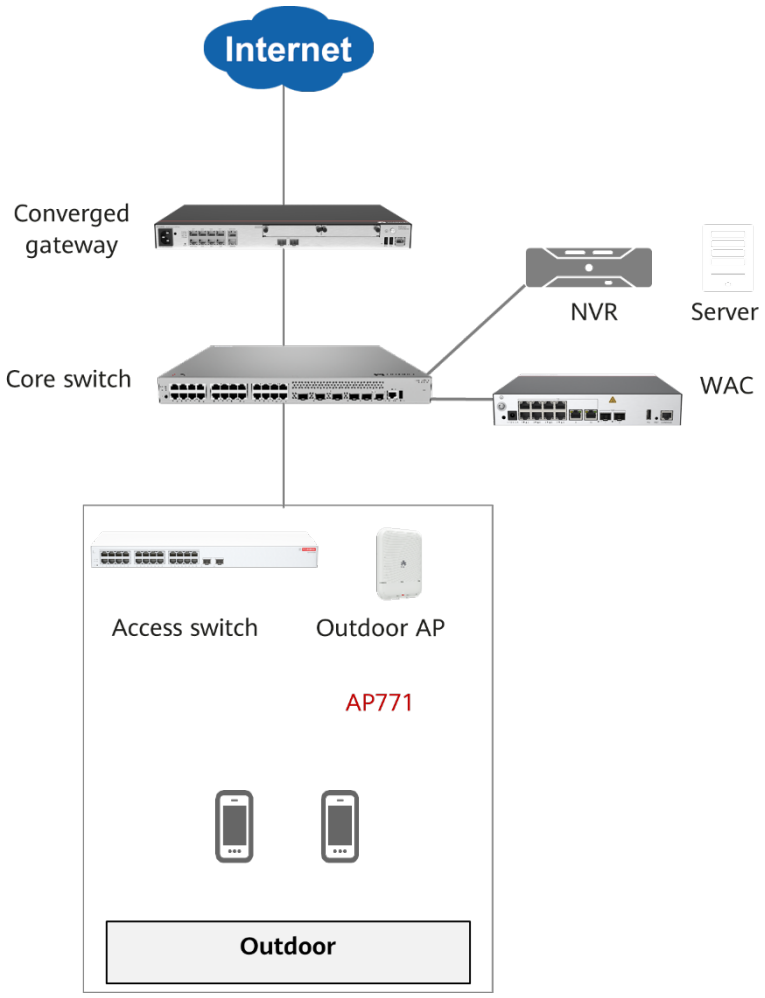
Item	Description		
Safety standards		• UL 62368-1 • EN 62368-1 • IEC 62368-1 • CSA 62368-1	• GB 4943.1
Radio standards	• ETSI EN 300 328	• ETSI EN 301 893	AS/NZS 4268
EMC standards	• EN 301 489-1 • EN 301 489-17 • EN 60601-1-2 • EN 55024 • EN 55032 • EN 55035	• GB 9254 • GB 17625.1 • GB 17625.2 • CISPR 24 • CISPR 32 • CISPR 35	• IEC/EN61000-4-2 • IEC/EN 61000-4-3 • IEC/EN 61000-4-4 • IEC/EN 61000-4-5 • IEC/EN 61000-4-6 • ICES-003
IEEE standards	• IEEE 802.11a/b/g • IEEE 802.11n • IEEE 802.11ac • IEEE 802.11ax • IEEE 802.11be	• IEEE 802.11h • IEEE 802.11d • IEEE 802.11e • IEEE 802.11k	• IEEE 802.11v • IEEE 802.11w • IEEE 802.11r
Security standards	• IEEE 802.11i, Wi-Fi Protected Access (WPA), WPA2, WPA2-Enterprise, WPA2-PSK, WPA3, WAPI • 802.1X • Advanced Encryption Standards (AES), Temporal Key Integrity Protocol (TKIP), WEP, Open • EAP Type(s)		
EMF standards	• EN 62311	• EN 50385	
RoHS standards	• Directive 2002/95/EC & 2011/65/EU • (EU) 2015/863		
Reach standards	• Regulation 1907/2006/EC		
WEEE standards	• Directive 2002/96/EC and 2012/19/EU		

Antenna Patterns



Typical Networking

Budget hotel 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. Sending an email to the customer service mailbox: support_e@huawei.com

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