

Huawei AirEngine 5776-57 Access Point Datasheet

Product Overview

Huawei AirEngine 5776-57 is a next-generation indoor access point (AP) in compliance with Wi-Fi 7 (802.11be). It supports 4 spatial streams and flexible radio switching, achieving a device rate of up to 7.20 Gbps. The AP is empowered by brand-new Wi-Fi 7 technologies and is equipped with built-in smart antennas to enable always-on Wi-Fi signals for users, significantly enhancing users' wireless network experience. These strengths make the AirEngine 5776-57 ideal for densely populated scenarios such as mobile offices, and hospital.



AirEngine 5776-57

• Provides services simultaneously on both the 2.4 GHz (2x2) and 5 GHz (2x2), or 2.4 GHz (2x2) and 6 GHz (2x2), or 5 GHz (2x2) and 6 GHz (2x2) frequency bands, and 7.20 Gbps for the device.

Mode	MIMO	Peak Data Rate
Mode1	2.4GHz(2x2) +5GHz(2x2)	2.13 Gbps
Mode2	2.4GHz(2x2) +6GHz(2x2)	6.45 Gbps
Mode3	5GHz(2x2) +6GHz(2x2)	7.20 Gbps

- Built-in smart antennas that automatically adjust the coverage direction and signal strength based on the intelligent switchover algorithm. Such capability enables the AP to flexibly adapt to the application environment changes, providing accurate and stable coverage as STAs move.
- Supports Bluetooth serial port-based O&M through built-in Bluetooth and CloudCampus APP.
- Supports Fit AP, Fat AP and cloud-managed AP modes, easily managing the AP and their services on Huawei cloud management platform and reducing network O&M costs.

Feature Descriptions

Wi-Fi 7 (802.11be) standard

Wi-Fi 7 (802.11be) is the Wi-Fi standard, also known as IEEE 802.11be or extremely high throughput (EHT). Based on Wi-Fi 6, Wi-Fi 7 introduces technologies such as 320 MHz bandwidth, 4096-quadrature amplitude modulation (QAM), multi-resource unit (MRU), multi-link operation (MLO), enhanced multi-user multiple-input multiple-output (MU-MIMO). Drawing on these cutting-edge technologies, Wi-Fi 7 delivers a higher data transmission rate and lower latency than Wi-Fi 6.

New Features in Wi-Fi 7

Wi-Fi 7 aims to increase the WLAN throughput and provide low-latency access assurance. To achieve this goal, the Wi-Fi 7 standard defines modifications to both the physical layer (PHY) and MAC layer. Compared with Wi-Fi 6, Wi-Fi 7 brings the following technical innovations:

Multi-RU

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 resolve this problem and further improve spectrum efficiency, Wi-Fi 7 defines a mechanism for allocating multiple RUs to a single user. To balance the implementation complexity and spectrum utilization, the standard specifications impose certain restrictions on RU combination. 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 can 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 industry is in urgent need to introduce new spectrum management, coordination, and transmission mechanisms on the 2.4 GHz, 5 GHz, and 6 GHz frequency bands. The TGbe defines multi-link aggregation technologies, including the MAC architecture of enhanced multi-link aggregation, multi-link channel access, and multi-link transmission.

There are two modes as for MLO:

- High-concurrency mode, multiple links send different data to improve bandwidth.
- High-reliability mode, multiple links send the same data, improving reliability.

Wi-Fi CSI Sensing

Wi-Fi CSI sensing is a cutting-edge technology for implementing sensing by using channel state information (Channel State Information, CSI) generated during radio signal propagation. Based on the Wi-Fi 7 standard, Huawei innovatively introduces Wi-Fi CSI to sense the presence of personnel, so that Wi-Fi signals can be sensed wherever they are. Compared with cameras, it protects user privacy and applies to scenarios such as energy saving, health care, and smart security.

Leader AP

The leader AP integrates some WLAN AC functions and can be used to manage Fit APs in small- and medium-sized enterprises and stores, implementing WLAN AC-free access not requiring licenses and saving customer investment.

Basic Specifications

Fit AP mode

Item	Description
WLAN features	Compliance with IEEE 802.11be and compatibility with IEEE 802.11a/b/g/n/ac/ax
	Maximum ratio combining (MRC)
	Space time block code (STBC)
	Cyclic Delay Diversity (CDD)/Cyclic Shift Diversity (CSD)
	Beamforming
	Multi-user multiple-input multiple-output (MU-MIMO)
	Orthogonal frequency division multiple access (OFDMA)
	Preamble puncturing
	BSS Color
	TxBF
	TWT
	Compliance with 4096-quadrature amplitude modulation (QAM) and compatibility with 1024-QAM, 256-QAM, 64-QAM, 16-QAM, 8-QAM, quadrature phase shift keying (QPSK), and binary phase shift keying (BPSK)
	Low-density parity-check (LDPC)
	Frame aggregation, including A-MPDU (Tx/Rx) and A-MSDU (Tx/Rx)
	802.11 dynamic frequency selection (DFS)
	Short guard interval (GI) in 20 MHz, 40 MHz, 80 MHz, 160 MHz and 320 MHz modes
	Wi-Fi multimedia (WMM) for priority-based data processing and forwarding

Item	Description
	NOTE For detailed management channels, see the Country Codes & Channels Compliance. Automatic channel scanning and interference avoidance Service set identifier (SSID) hiding configuration for each AP, supporting Chinese SSIDs Signal sustain technology (SST) Unscheduled automatic power save delivery (U-APSD) Multi-user call admission control (CAC) Advanced cellular coexistence (ACC), minimizing the impact of interference from cellular networks 802.11k and 802.11v smart roaming 802.11r fast roaming (≤ 50 ms) Spectrum analysis Terminal location
Network features	Compliance with IEEE 802.3ab Auto-negotiation of the rate and duplex mode, and automatic switchover between Media Dependent Interface (MDI) and Media Dependent Interface Crossover (MDI-X) Compatibility with IEEE 802.1Q SSID-based VLAN assignment Eth-Trunk function Management channel of the AP's uplink port in tagged and untagged modes DHCP client, obtaining IP addresses through DHCP Tunnel data forwarding and direct data forwarding STA isolation in the same VLAN IPv4/IPv6 access control list (ACL) Link Layer Discovery Protocol (LLDP) Service holding when CAPWAP link disconnection in direct data forwarding mode Unified authentication on the AC AC dual-link backup Telemetry, quickly collecting AP status and application experience parameters MESH HotSpot2.0 IPv6 SAVI
QoS features	WMM power save Priority mapping for upstream packets and flow-based mapping for downstream packets Queue mapping and scheduling User-based bandwidth limiting Adaptive bandwidth management (automatic bandwidth adjustment based on the user quantity and radio environment) to improve user experience Application identification and QoS classification to improve voice quality for popular applications, such as Zoom, QQ, and WeChat Airtime scheduling Air interface HQoS scheduling Intelligent multimedia scheduling VIP bandwidth reservation VIP FastPass, per-packet power control

Item	Description		
Security features	Open system authentication		
	WPA2-PSK authentication and encryption (WPA2-Personal)		
	WPA2-802.1X authentication and encryption (WPA2-Enterprise)		
	WPA3-SAE authentication and encryption (WPA3-Personal)		
	WPA3-802.1X authentication and encryption (WPA3-Enterprise)		
	WPA-WPA2 hybrid authentication		
	WPA2-WPA3 hybrid authentication		
	WPA/WPA2/WPA2-PPSK authentication and encryption		
	WPA/WPA2/WPA2-DPSK authentication and encryption		
	WAPI authentication and encryption		
	Wireless intrusion detection system (WIDS) and wireless intrusion prevention system (WIPS), including rogue device detection and containment, attack detection and dynamic blacklist, and STA/AP blacklist and whitelist		
	802.1X authentication, MAC address authentication, and Portal authentication		
	DHCP snooping		
	802.11w Protected Management Frames (PMF)		
	CAPWAP DTLS data encryption and decryption		
	URL filtering		
	MACsec@ Uplink Ethernet port		
	Secure boot		
EAP types	EAP-TLS, EAP-TTLS, EAP-PEAP, EAP-CHAP, EAP-SIM, EAP-AKA, EAP-GTC, EAP-FAST, EAP-PEAP, EAP-MD5, EAP-MSCHAPv2, PEAPv0, PEAPv1		
Maintenance features	Unified AP management and maintenance on the AC		
	Automatic AP onboarding, automatic configuration loading, and plug-and-play (PnP)		
	Automatic batch upgrade		
	STelnet using SSHv2		
	SFTP using SSHv2		
	Remote wireless O&M through the Bluetooth serial port		
	System status alarm		
	Unified AP management on WebMaster		
Sensing	Wi-Fi CSI Sensing		

Fat AP mode

Item	Description
WLAN features	Compliance with IEEE 802.11be and compatibility with IEEE 802.11a/b/g/n/ac/ax
	Maximum ratio combining (MRC)
	Space time block code (STBC)
	Cyclic Delay Diversity (CDD)/Cyclic Shift Diversity (CSD)
	Beamforming
	Multi-user multiple-input multiple-output (MU-MIMO)
	Orthogonal frequency division multiple access (OFDMA)
	Preamble puncturing
	BSS Color

Item	Description	
	TxBF	
	TWT	
	Compliance with 4096-quadrature amplitude modulation (QAM) and compatibility with 1024-QAM, 256-QAM, 64-QAM, 16-QAM, 8-QAM, quadrature phase shift keying (QPSK), and binary phase shift keying (BPSK)	
	Low-density parity-check (LDPC)	
	Frame aggregation, including A-MPDU (Tx/Rx) and A-MSDU (Tx/Rx)	
	802.11 dynamic frequency selection (DFS)	
	Short guard interval (GI) in 20 MHz, 40 MHz, 80 MHz, 160 MHz and 320 MHz modes	
	Wi-Fi multimedia (WMM) for priority-based data processing and forwarding	
	WLAN channel management and channel rate adjustment	
	NOTE	
	For detailed management channels, see the Country Codes & Channels Compliance.	
	Automatic channel scanning and interference avoidance	
	Service set identifier (SSID) hiding configuration for each AP, supporting Chinese SSIDs	
	Signal sustain technology (SST)	
	Unscheduled automatic power save delivery (U-APSD)	
	Advanced cellular coexistence (ACC), minimizing the impact of interference from cellular networks	
	802.11k and 802.11v smart roaming	
	802.11r fast roaming (≤ 50 ms)	
Network features	Compliance with IEEE 802.3ab	
	Auto-negotiation of the rate and duplex mode, and automatic switchover between Media Dependent Interface (MDI) and Media Dependent Interface Crossover (MDI-X)	
	Compatibility with IEEE 802.1Q	
	SSID-based VLAN assignment	
	DHCP client, obtaining IP addresses through DHCP	
	Tunnel data forwarding and direct data forwarding	
	STA isolation in the same VLAN	
	IPv4 access control list (ACL)	
	Link Layer Discovery Protocol (LLDP)	
	Leader AP	
	NAT	
QoS features	WMM power save	
	Priority mapping for upstream packets and flow-based mapping for downstream packets	
	Queue mapping and scheduling	
	User-based bandwidth limiting	
	Airtime scheduling	
	Intelligent multimedia scheduling	
Security features	Open system authentication	
	WPA2-PSK authentication and encryption (WPA2-Personal)	
	WPA3-SAE authentication and encryption (WPA3-Personal)	
	WPA-WPA2 hybrid authentication	
	WPA2-WPA3 hybrid authentication	
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	MAC address authentication, and Portal authentication	

Item	Description
	802.11w Protected Management Frames (PMF) Secure boot
EAP types	EAP-TLS, EAP-PEAP, EAP-CHAP, EAP-SIM, EAP-AKA, EAP-GTC, EAP-FAST, EAP-PEAP, EAP-MD5, EAP-MSCHAPv2, PEAPv0, PEAPv1
Maintenance features	STelnet using SSHv2 SFTP using SSHv2 Remote wireless O&M through the Bluetooth serial port System status alarm

Cloud-Managed AP mode

Item	Description
WLAN features	Compliance with IEEE 802.11be and compatibility with IEEE 802.11a/b/g/n/ac/ax
	Maximum ratio combining (MRC)
	Space time block code (STBC)
	Cyclic Delay Diversity (CDD)/Cyclic Shift Diversity (CSD)
	Beamforming
	Multi-user multiple-input multiple-output (MU-MIMO)
	Orthogonal frequency division multiple access (OFDMA)
	Preamble puncturing
	BSS Color
	TxBF
	TWT
	Compliance with 4096-quadrature amplitude modulation (QAM) and compatibility with 1024-QAM, 256-QAM, 64-QAM, 16-QAM, 8-QAM, quadrature phase shift keying (QPSK), and binary phase shift keying (BPSK)
	Low-density parity-check (LDPC)
	Frame aggregation, including A-MPDU (Tx/Rx) and A-MSDU (Tx/Rx)
	802.11 dynamic frequency selection (DFS)
	Short guard interval (GI) in 20 MHz, 40 MHz, 80 MHz, 160 MHz and 320 MHz modes
	Wi-Fi multimedia (WMM) for priority-based data processing and forwarding
	WLAN channel management and channel rate adjustment
	NOTE
	For detailed management channels, see the Country Codes & Channels Compliance.
	Automatic channel scanning and interference avoidance
	Service set identifier (SSID) hiding configuration for each AP, supporting Chinese SSIDs
	Signal sustain technology (SST)
	Unscheduled automatic power save delivery (U-APSD)
	Automatic AP Online by NCE-Campus
	Multi-user call admission control (CAC)
	Advanced cellular coexistence (ACC), minimizing the impact of interference from cellular networks
	802.11k and 802.11v smart roaming
	802.11r fast roaming (≤ 50 ms)
	Spectrum analysis
	Terminal location

Item	Description
Network features	Compliance with IEEE 802.3ab Auto-negotiation of the rate and duplex mode, and automatic switchover between Media Dependent Interface (MDI) and Media Dependent Interface Crossover (MDI-X) Compatibility with IEEE 802.1Q SSID-based VLAN assignment DHCP client, obtaining IP addresses through DHCP STA isolation in the same VLAN IPv4/IPv6 access control list (ACL) Link Layer Discovery Protocol (LLDP) Service holdover when the link to NCE-Campus is disconnected Unified authentication on the cloud management platform Network address translation (NAT) Telemetry, quickly collecting AP status and application experience parameters MESH Tunnel-AC IPv6 SAVI HotSpot2.0
QoS features	WMM power save Priority mapping for upstream packets and flow-based mapping for downstream packets Queue mapping and scheduling User-based bandwidth limiting Adaptive bandwidth management (automatic bandwidth adjustment based on the user quantity and radio environment) to improve user experience Application identification and QoS classification to improve voice quality for popular applications, such as Zoom, QQ, and WeChat Airtime scheduling Air interface HQoS scheduling Intelligent multimedia scheduling VIP bandwidth reservation VIP FastPass, per-packet power control
Security features	Open system authentication WPA2-PSK authentication and encryption (WPA2-Personal) WPA2-802.1X authentication and encryption (WPA2-Enterprise) WPA3-SAE authentication and encryption (WPA3-Personal) WPA3-802.1X authentication and encryption (WPA3-Enterprise) WPA-WPA2 hybrid authentication WPA2-WPA3 hybrid authentication WPAWPA2/WPA2-PPSK authentication and encryption WPA/WPA2/WPA2-DPSK authentication and encryption 802.1X authentication, MAC address authentication, and Portal authentication Wireless intrusion detection system (WIDS) and wireless intrusion prevention system (WIPS), including rogue device detection and containment, attack detection and dynamic blacklist, and STA/AP blacklist and whitelist DHCP snooping 802.11w Protected Management Frames (PMF)

Item	Description	
	CAPWAP DTLS data encryption and decryption	
	URL filtering MACsec@ Uplink Ethernet port	
	Secure boot	
EAP types	EAP-TLS, EAP-TTLS, EAP-PEAP, EAP-CHAP, EAP-SIM, EAP-AKA, EAP-GTC, EAP-FAST, EAP-PEAP, EAP-MD5, EAP-MSCHAPv2, PEAPv0, PEAPv1	
Maintenance features	Unified AP management and maintenance on the cloud management platform	
	Automatic AP onboarding, automatic configuration loading, and PnP	
	Batch upgrade	
	STelnet using SSHv2	
	SFTP using SSHv2	
	Remote wireless O&M through the Bluetooth serial port	
	Real-time user configuration monitoring and fast fault locating using the NMS	
	System status alarm	
	Network Time Protocol (NTP)	
Sensing	Wi-Fi CSI Sensing	

Technical Specifications

Item		Description
Technical	Dimensions (Diameter × Height)	Ф220 mm x 45 mm
specifications	Weight	0.75 kg
	Port type	1 x 100M/1GE/2.5GE/5GE (RJ-45) 1 x 10M/100M/1GE (RJ-45) 1 x USB port NOTE The 5GE (RJ-45) supports PoE input.
	Bluetooth	BLE 5.2
	ЮТ	Built-in multi-protocol IoT interfaces, flexibly supporting BLE, ZigBee, HomeKit, and Thread* USB port extension external IoT (Supports protocols such as ZigBee, RFID, and UWB) NOTE Features marked with asterisks (*) can be implemented through software upgrade.
	LED indicator	Indicates the power-on, startup, running, alarm, and fault states of the system.
Power specifications	Power input	DC: 12 V ± 10% PoE power supply: in compliance with 802.3at/af NOTE When 802.3af power is supplied, the AP will operate with restrictions, for example the USB port is unavailable, and the details refer to the Info-Finder.

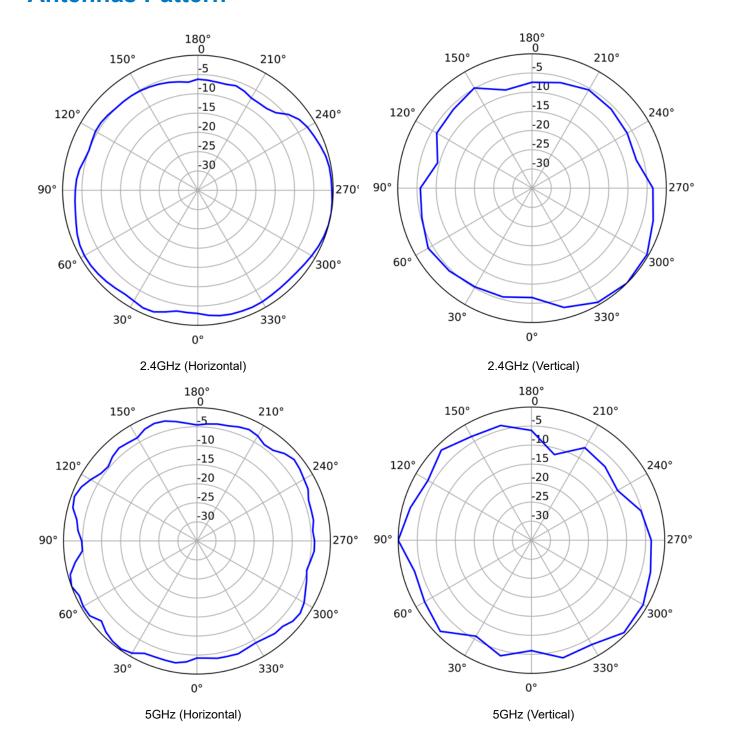
Item		Description
	Maximum power consumption	16.0 W (excluding USB) NOTE The actual maximum power consumption depends on local laws and regulations.
Environmental specifications	Operating temperature	-10°C to +50°C
	Storage temperature	-40°C to +70°C
	Operating humidity	5% to 95% (non-condensing)
	Altitude	-60 m to +5000 m
	Atmospheric pressure	53 kPa to 106 kPa
Radio specifications	Antenna type	Built-in smart antennas
	Antenna gain	 2.4 GHz:4 dBi 5 GHz: 5 dBi 6 GHz: 5 dBi NOTE The preceding gains are the peak gains of a single antenna.
	Maximum number of SSIDs for each radio	16
	Maximum number of users	1200 (600/Radios) NOTE The actual number of users varies according to the application environment.
	Maximum transmit power	 Mode1: 2.4 GHz: 23 dBm 5 GHz: 23 dBm Mode2: 2.4 GHz: 23 dBm 6 GHz: 26 dBm Mode3: 5 GHz: 23 dBm 6 GHz: 26 dBm Mode3: 10 GHz: 26 dBm MOTE Above are the combined power powers. The actual transmit power depends on local laws and regulations.
	Frequency bands	 2.400 to 2.4835 GHz ISM 5.150 to 5.250 GHz U-NII-1 5.250 to 5.350 GHz U-NII-2A 5.470 to 5.725 GHz U-NII-2C 5.725 to 5.850 GHz U-NII-3/ISM 5.925 to 6.425 GHz U-NII-5 6.425 to 6.525 GHz U-NII-6 6.525 to 6.875 GHz U-NII-7 6.875 to 7.125 GHz U-NII-8

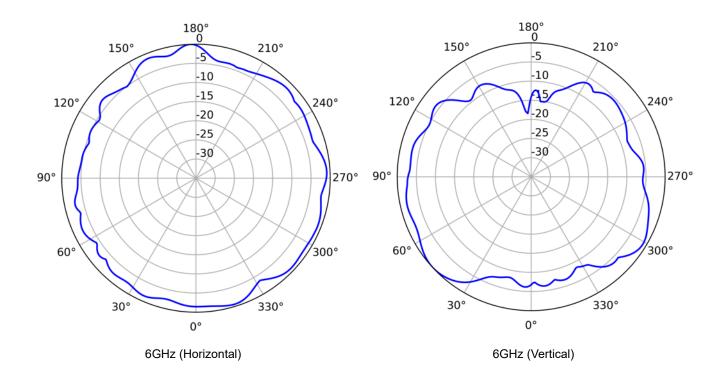
Item		Description	
		NOTE	
		The available bands and channels are dependent on the configured regulatory domain (country).	

Standards Compliance

Item	Description			
Safety standards	• EN 62368-1	• IEC 62368-1		
Radio standards	• ETSI EN 300 328	• ETSI EN 301 893	• AN/NZS 4268	
EMC standards	 EN 301 489-1 EN 301 489-17 EN 60601-1-2 EN 55032 EN 55035 	 GB 9254 GB 17625.2 AS/NZS CISPR32 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	 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	• 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			

Antennas Pattern





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