Huawei

AP4050DN

Access Point

Datasheet

Product Overview

Huawei AP4050DN is new generation access point that supports 802.11ac Wave 2, 2 x 2 MIMO, and two spatial streams. It provides comprehensive service support capabilities and features high reliability, high security, simple network deployment, automatic AC discovery and configuration, and real-time management and maintenance, which meets network deployment requirements. The AP complies with 802.11n and 802.11ac protocols and can provide gigabit access for wireless users. , The AP4050DN is applicable to commercial chains, medical, warehousing, manufacturing, and logistics environments.

AP4050DN

- 802.11ac Wave 2 standards compliance, MU-MIMO (2SU-2MU), delivering services simultaneously on 2.4G and 5G radios; 400 Mbit/s at 2.4 GHz; 867 Mbit/s at 5 GHz; and 1.267 Gbit/s for the device.

Feature Descriptions

MU-MIMO

The AP supports MU-MIMO and two spatial streams. The MU-MIMO technology allows an AP to send data to two STAs at the same time (currently, most 802.11n/11ac Wave 1 APs can only send data to one STA simultaneously). The technology marks the start of the 802.11ac Wave 2 era.

GE access

Huawei AP supports the 80-MHz bandwidth mode. Frequency bandwidth increase brings extended channels and more sub-carriers for data transmission, and a 2.16 times higher rate. Support for High Quadrature Amplitude Modulation (HQAM) at 256-QAM and 2 x 2 MIMO increases the 5 GHz radio rate to 867 Mbit/s. The throughput of the AP is three times that of traditional 802.11n APs under the same conditions.

High Density Boost technology

Huawei uses the following technologies to address challenges in high-density scenarios, including access problems, data congestion, and poor roaming experience:

- Interference suppression
  - In high-density scenarios, APs are deployed densely. Huawei's Clear Channel Assessment (CCA) optimization technology reduces the possibility of air port resources shared by multiple devices, allows higher user access, and improves the throughput.
- Air port efficiency
  - In high-density scenarios where many users access the network, the increased number of low-rate STAs consumes more resources

on the air port, reduces the AP capacity, and lowers user experience. Therefore, Huawei APs will check the signal strength of STAs during access and reject access from weak-signal STAs. At the same time, the APs monitor the rate of online STAs in real time and forcibly disconnect low-rate STAs so that the STAs can reassociate with APs that have stronger signals. Terminal access control technology can increase air port use efficiency and allow access from more users.

- 5G-prior access
  - The APs support both 2.4G and 5G frequency bands. The 5G-prior access function enables an AP to steer STAs to the 5 GHz frequency band first, which reduces load and interference on the 2.4 GHz frequency band, improving user experience.
- Load balancing between APs
  - After the load balancing function is enabled, the AC distributes users evenly to APs based on user quantity and traffic volume. Traffic load is therefore balanced among APs to ensure stable AP performance.
- Smart roaming
  - Smart roaming technology is based on the 802.11k , 802.11v and 802.11r technologies and allows STAs to connect to APs with stronger signals, improving user experience and the overall performance of the wireless network.

Wired and wireless dual security guarantee

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

- Authentication and encryption for wireless access
  - The APs support WEP, WPA/WPA2–PSK, WPA/WPA2–802.1x, and WAPI authentication/encryption modes to ensure security of the wireless network. 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 the data can only be received and parsed by expected users.
- Analysis on non-Wi-Fi interference sources
  - Huawei APs can analyze the spectrum of non-Wi-Fi interference sources and identify them, including baby monitors, Bluetooth devices, digital cordless phones (at 2.4 GHz frequency band only), wireless audio transmitters (at both the 2.4 GHz and 5 GHz frequency bands), wireless game controllers, and microwave ovens. Coupled with Huawei eSight, the precise locations of the interference sources can be detected, and the spectrum of them displayed, enabling the administrator to remove the interference in a timely manner.
- Rogue device monitoring
  - Huawei APs support WIDS/WIPS, and can monitor, identify, defend, counter, and perform refined management on the rogue devices, to provide security guarantees for air interface environment and wireless data transmission.
- AP access authentication and encryption
  - The AP access control ensures validity of APs. The CAPWAP link protection and DTLS encryption provide security assurance, improving data transmission security between the AP and the AC.

Automatic radio calibration

Automatic radio calibration allows an AP to collect signal strength and channel parameters of surrounding APs and generate AP topology according to the collected data. Based on interference from authorized APs, rogue APs, and non-Wi-Fi interference sources, each 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.

Automatic application identification

Huawei APs support smart application control technology and can implement visualized control on Layer 4 to Layer 7 applications.

- Traffic identification
  - Coupled with Huawei ACs, the APs can identify over 800 common applications in various office scenarios. Based on the identification results, policy control can be implemented on user services, including priority adjustment, scheduling, blocking, and rate limiting to ensure efficient bandwidth resource use and improve quality of key services.
- Traffic statistics collection
  - Traffic statistics of each application can be collected globally, by SSID, or by user, enabling the network administrator to know application use status on the network. The network administrator or operator can implement visualized control on service applications on smart terminals to enhance security and ensure effective bandwidth control.

Basic Specifications

Hardware specifications

Item		Description
Technical specifications	Dimensions (W x D x H)	170 mm x 170 mm x 35 mm
	Weight	0.41kg
	Interface type	• 1 x 10/100/1000M self-adaptive Ethernet interface (RJ45) • Console interface（RJ45 x 1）
	LED indicator	Indicates the power-on, startup, running, alarm, and fault status of the system.
Power specifications	Power input	• 12 V DC ± 10% • PoE power supply–48 V DC: (in compliance with IEEE 802.3af/at)
	Maximum power consumption	12.1W 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)
	Dustproof and waterproof grade	IP41
	Altitude	–60 m to +5000 m
	Atmospheric pressure	53 kPa to 106 kPa

Item		Description
Radio specifications	Antenna type	Built-in antennas (horizontal beam width 360°)
	Antenna gain	5 dBi (2.4 GHz); 5 dBi (5 GHz)
	Maximum number of VAPs for each radio	16
	Maximum number of users	≤ 256
	Maximum transmit power	• 2.4 GHz: 23 dBm (combined power) • 5 GHz: 23 dBm (combined power) The actual transmit power depends on local laws and regulations.
	Power increment	1 dBm
	Receiver sensitivity	2.4 GHz 802.11b (CCK): –101 dBm @ 1 Mb/s; –93 dBm @ 11 Mb/s
		2.4 GHz 802.11g (non-HT20): –94 dBm @ 6 Mb/s; –78 dBm @ 54 Mb/s
		2.4 GHz 802.11n (HT20): –93 dBm @ MCS0; –75 dBm @ MCS7
		2.4 GHz 802.11n (HT40): –90 dBm @ MCS0; –72 dBm @ MCS15
		5 GHz 802.11a (non-HT20): –94 dBm @ 6 Mb/s; –78 dBm @ 54 Mb/s
		5 GHz 802.11n (HT20): –94 dBm @ MCS0; –75 dBm @ MCS7
		5 GHz 802.11n (HT40): –91 dBm @ MCS0; –73 dBm @ MCS15
		5 GHz 802.11ac (VHT20): –94 dBm @ MCS0NSS1; –71 dBm @ MCS8NSS2
		5 GHz 802.11ac (VHT40): –91 dBm @ MCS0NSS1; –67 dBm @ MCS9NSS2
		5 GHz 802.11ac (VHT80): –87 dBm @ MCS0NSS1; –62 dBm @ MCS9NSS2

Software specifications

Item	Description
WLAN features	• Compliance with IEEE 802.11a/b/g/n/ac/ac wave 2 • Maximum rate: 1.267 Gbit/s • Maximum Ratio Combining (MRC) • Cyclic Delay Diversity (CDD)/Cyclic Shift Diversity (CSD) • Maximum Likelihood Detection (MLD) • Data unit aggregation, including A-MPDU (Tx/Rx) and A-MSDU (Rx only) • 802.11 Dynamic Frequency Selection (DFS) • Short Guard Interval (GI) in 20 MHz, 40 MHz, and 80 MHz modes • Priority mapping and packet scheduling based on a Wi-Fi Multimedia (WMM) profile to implement priority-based data processing and forwarding • Automatic and manual rate adjustment (the rate is adjusted automatically by default) • WLAN channel management and channel rate adjustment • Automatic channel scanning and interference avoidance • Service Set Identifier (SSID) hiding, support for SSIDs in Chinese • Signal Sustain Technology (SST) • Unscheduled Automatic Power Save Delivery (U-APSD) • Control and Provisioning of Wireless Access Points (CAPWAP) in Fit AP mode and Datagram Transport Layer Security (DTLS) encryption for management and data tunnels • Automatic access in Fit AP mode • WDS in Fit AP mode • Mesh networking in Fit AP mode • Dual-MPP Mesh networking in Fit AP mode • Hotspot2.0 in Fit AP mode • 802.11k and 802.11v smart roaming in Fit AP mode • Fast roaming (≤ 50 ms)

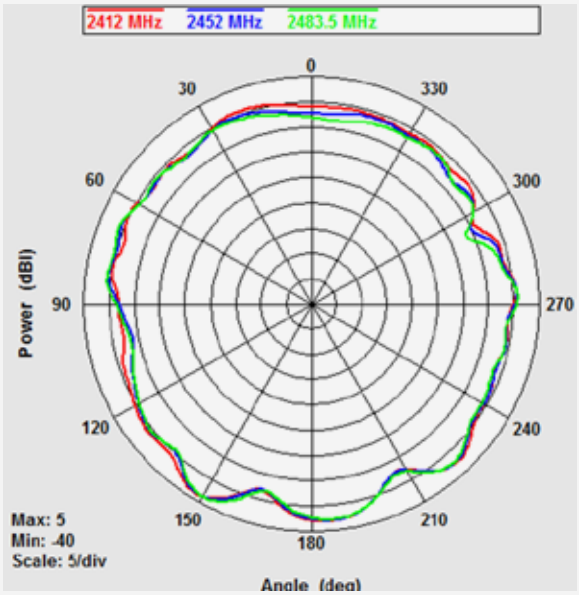
Item	Description
Network features	• Compliance with IEEE 802.3u • Auto-negotiation of the rate and duplex mode; automatic switchover between the Media Dependent Interface (MDI) and Media Dependent Interface Crossover (MDI-X) • SSID-based VLAN assignment • 4094 VLAN IDs (1 to 4094) and a maximum of 16 virtual APs (VAPs) for each radio • AP control channel in tagged and untagged mixed mode • DHCP client, obtaining IP addresses through DHCP • Tunnel forwarding and direct forwarding • STA isolation in the same VLAN • Multicast Domain Name Service (mDNS) gateway protocol: supports AirPlay and AirPrint service sharing between users of different VLANs • Access control lists (ACLs) • Link Layer Discovery Protocol (LLDP) • Service holding upon CAPWAP link disconnection in Fit AP mode • Unified authentication on the AC in Fit AP mode • AC dual-link backup in Fit AP mode • Wireless configuration synchronization • Soft Generic Routing Encapsulation (GRE) • IPv6 Portal • IPv6 Source Address Validation Improvements (SAVI) • IPv4/IPv6 ACL
QoS features	• Priority mapping and packet scheduling based on a WMM profile to implement priority-based data processing and forwarding • WMM parameter management for each radio • WMM power saving • Priority mapping for upstream packets and flow-based mapping for downstream packets • Queue mapping and scheduling • User-based bandwidth limiting • Adaptive bandwidth management (the system dynamically adjusts bandwidth based on the number of users and radio environment to improve user experience) • Airtime scheduling • Support for Microsoft Lync APIs and high voice call quality through Lync API identification and scheduling

Item	Description
Security features	• Open system authentication • WEP authentication/encryption • WPA/WPA2-PSK authentication and encryption • WPA/WPA2-802.1x authentication and encryption • WPA-WPA2 authentication • WAPI authentication and encryption • WIDS including rogue AP and STA detection, attack detection, STA/AP blacklist and whitelist • 802.1x authentication, MAC address authentication, and Portal authentication • 802.11w Protected Management Frames (PMFs)
Maintenance features	• Unified management and maintenance on the AC in Fit AP mode • Plug-and-Play (PnP) in Fit AP mode: automatic ally going online and loading configurations • WDS zero-configuration deployment in Fit AP mode • WMN zero-configuration deployment in Fit AP mode • Batch upgrade • Local AP management through the serial port or using Telnet • Real-time configuration monitoring and fast fault location using the NMS • System status alarm • STelnet using Secure Shell (SSH) v2 • Secure File Transfer Protocol (SFTP) using SSH v2
BYOD	• Identifies the device type according to the Organizationally Unique Identifier (OUI) in the MAC address. • Identifies the device type according to the User Agent (UA) information in an HTTP packet • Identifies the device type according to DHCP options. • The RADIUS server delivers packet forwarding, security, and QoS policies according to the device type carried in the RADIUS authentication and accounting packets.
Location service	• Locates tags manufactured by AeroScout or Ekahau. • Locates Wi-Fi terminals.
Spectrum analysis	• Identifies interference sources such as baby monitors, Bluetooth devices, digital cordless phones (at 2.4 GHz frequency band only), wireless audio transmitters (at both the 2.4 GHz and 5 GHz frequency bands), wireless game controllers, and microwave ovens. • Works with Huawei eSight to locate and perform spectrum analysis on interference sources.

Standards compliance

Item	Description	
Safety standards	UL 60950–1 IEC 60950–1	EN 60950–1 GB 4943
Radio standards	ETSI EN 300 328 ETSI EN 301 893	RSS-210 AS/NZS 4268
EMC standards	EN 301 489–1 EN 301 489–17 ETSI EN 60601-1-2 ICES-003 YD/T 1312.2-2004 ITU k.21 GB 9254	GB 17625.1 AS/NZS CIPSR22 EN 55022 EN 55024IEC61000-4-6 IEC61000-4-2
IEEE standards	IEEE 802.11a/b/g IEEE 802.11n IEEE 802.11ac IEEE 802.11h IEEE 802.11d IEEE 802.11e	IEEE 802.11k IEEE 802.11u IEEE 802.11v IEEE 802.11w IEEE 802.11r
Security standards	802.11i, Wi-Fi Protected Access 2 (WPA2), WPA 802.1x Advanced Encryption Standards (AES), Temporal Key Integrity Protocol (TKIP), and Extensible Authentication Protocol (EAP) types: • EAP-Transport Layer Security (TLS) • EAP-Tunneled TLS (TTLS) or Microsoft Challenge Handshake Authentication Protocol Version 2 (MSCHAPv2) • Protected EAP (PEAP) v0 or EAP-MSCHAPv2 • EAP-Flexible Authentication via Secure Tunneling (FAST) • PEAP v1 or EAP-Generic Token Card (GTC) EAP-Subscriber Identity Module (SIM)	
Environmental standards	ETSI 300 019-2-1 ETSI 300 019-2-2 ETSI 300 019-2-3	ETSI 300 019-1-1 ETSI 300 019-1-2 ETSI 300 019-1-3
EMF	CENELEC EN 62311 CENELEC EN 50385 OET65	RSS-102 FCC Part1&2 FCC KDB series
RoHS	Directive 2002/95/EC & 2011/65/EU	
Reach	Regulation 1907/2006/EC	
WEEE	Directive 2002/96/EC & 2012/19/EU	
Certifications	Wi-Fi Alliance (WFA) certified 802.11a/b/g/n/ac	

AP4050DN Antenna Pattern Plots



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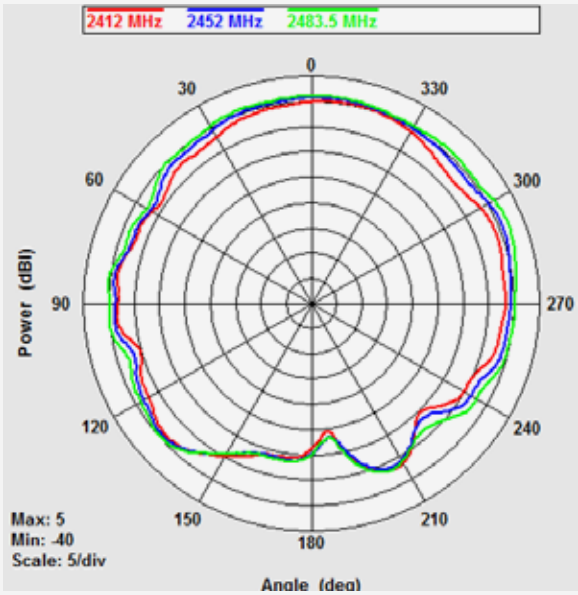

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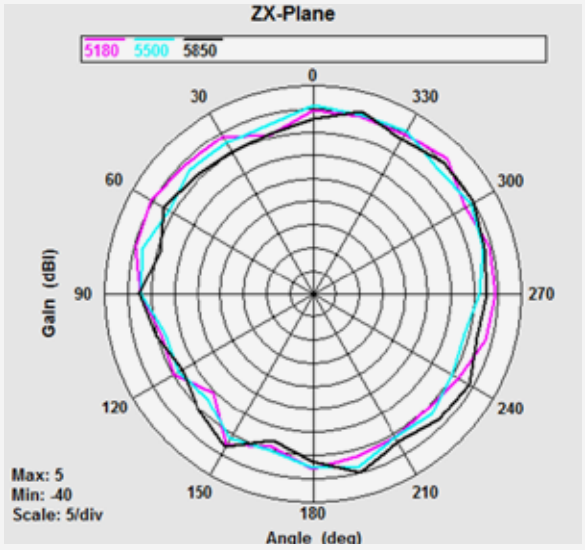

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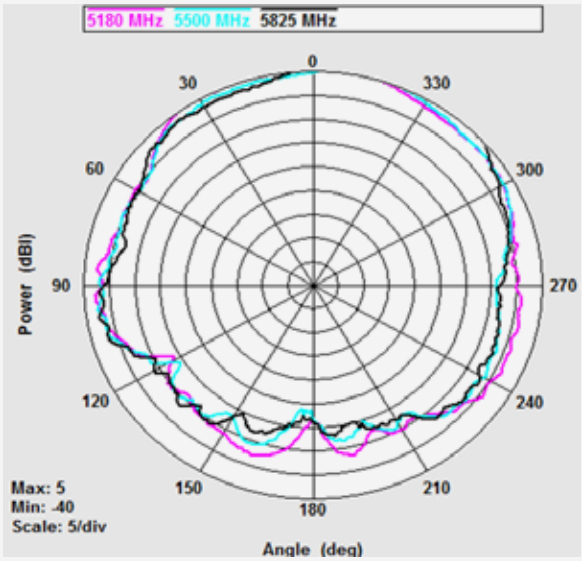

5G (PHI=90)

Professional Service and Support

Huawei WLAN planning tools deliver expert network design and optimization services using the most professional simulation platform in the industry. Backed by fifteen years of continuous investment in wireless technologies, extensive network planning and optimization experience, and rich expert resources, Huawei helps customers:

- Design, deploy, and operate a high-performance network that is reliable and secure.
- Maximize return on investment and reduce operating expenses.

More Information

For more information, please visit http://e.huawei.com/en/ or contact your local Huawei office.

Enterprise Services

Product Overview

Marketing Documentation

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