Huawei

AP7050DE

Access Point

Datasheet



Product Overview

Huawei AP7050DE is the latest-generation technology-leading wireless access point (AP). It provides secure gigabit wireless access in compliance with the 802.11ac Wave 2 standards. The AP supports 4 x 4 MIMO and four spatial streams and provides a rate of up to 2.53 Gbit/s. The AP has built-in smart antennas and supports smooth evolution from 802.11n standards to 802.11ac standards and meets the bandwidth requirements of large-bandwidth services such as High Definition (HD) video streams, multimedia, and desktop cloud services, delivering smooth and high-quality wireless services to enterprise users. With industry-leading capabilities in terms of signal coverage, access density, and operation stability, the AP provides high-quality mobile cloud access services to help customers build the optimal wireless network. As the 802.11ac Wave 2 AP that uses smart antenna technology, it is more intelligent, secure, and easier to use. The AP7050DE delivers industry-leading performance in a rugged, attractive enclosure and is ideal for indoor coverage scenarios, such as schools and large campuses.



AP7050DE

- 802.11ac Wave 2 standards compliance, MU-MIMO (4SU-4MU), delivering services simultaneously on 2.4G and 5G radios; at a rate of up to 800 Mbit/s at 2.4 GHz, 1.73 Gbit/s at 5 GHz, and 2.53 Gbit/s for the device.
- Smart antenna array technology enables targeted signal coverage for mobile terminals, reduces interferences, and improves signal quality. Additionally, it implements millisecond-level switchover as terminals move.
- Built-in Bluetooth to implement precise positioning with eSight.
- Dual Ethernet interfaces support link aggregation and traffic load balancing to ensure link reliability.
- USB interface used for external power supply and storage.
- Supports the Fat, Fit, and cloud modes and enables Huawei cloud-based management platform to manage and operate APs and services on the APs, reducing network O&M costs.

Feature Descriptions

Smart antenna array technology

The AP integrates smart antenna and implicit beamforming technologies to implement more precise user detection, suppress interference, and improve signal quality, enabling users to have a seamless, smooth wireless network experience.

High-precision Bluetooth location (location accuracy of 1 m)

The AP has built-in Bluetooth in compliance with BLE4.1 standards and can work with eSight to implement precise positioning of Bluetooth terminals.

MU-MIMO

The AP supports MU-MIMO. MU-MIMO technology allows an AP to send data to multiple 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

The 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 4 x 4 MIMO increases the 5 GHz radio rate to 1.73 Gbit/s. The throughput of the AP is four times that of traditional 802.11n APs under the similar conditions.

Cloud-based management

Huawei Cloud Managed Network (CMN) Solution consists of the cloud management platform and a full range of cloud managed network devices. The cloud management platform provides various functions including management of APs, tenants, applications, and licenses, network planning and optimization, device monitoring, network service configuration, and value-added services.

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:

- SmartRadio for air interface optimization
  - Load balancing during smart roaming: The load balancing algorithm can work during smart roaming for load balancing detection among APs on the network after STA roaming to adjust the STA load on each AP, improving network stability.
  - Intelligent DFA technology: The dynamic frequency assignment (DFA) algorithm is used to automatically detect adjacent-channel and co-channel interference, and identify any 2.4 GHz redundant radio. Through automatic inter-AP negotiation, the redundant radio is automatically switched to another mode (dual-5G AP models support 2.4G-to-5G switchover) or is disabled to reduce 2.4 GHz co-channel interference and increase the system capacity.
  - Intelligent conflict optimization technology: The dynamic enhanced distributed channel access (EDCA) and airtime scheduling algorithms are used to schedule the channel occupation time and service priority of each user. This ensures that each user is assigned relatively equal time for using channel resources and user services are scheduled in an orderly manner, improving service processing efficiency and user experience.
- Air interface performance optimization
  - In high-density scenarios where many users access the network, increased number of low-rate STAs consumes more resources on the air interface, reduces the AP capacity, and lowers user experience. Therefore, Huawei APs will check the signal strength of STAs during access and rejects 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. The terminal access control technology can increase air interface use efficiency and allow access from more users.
- 5G-prior access (Band steering)
  - 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 the user experience.

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–PPSK, 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 1600 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 (H x W x D)	53 mm x 220 mm x 220 mm
	Weight	1.30 kg
	Interface type	2 x 10/100/1000M self-adaptive Ethernet interface (RJ45) 1 x Management console port (RJ45) 1 x USB interface
	Built-in Bluetooth	BLE4.1
	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: in compliance with IEEE 802.3at
	Maximum power consumption	24 W (excluding the output power of the USB port) **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)
	Dustproof and waterproof grade	IP41
	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:2 dBi 5 GHz: 3 dBi
	Maximum number of SSIDs for each radio	≤ 16
	Maximum number of users	≤ 512 **NOTE** The actual number of users varies according to the environment.

Item		Description
Radio specifications	Maximum transmit power	2.4G: 26 dBm (combined power) 5G: 27 dBm (combined power) **NOTE** The actual transmit power depends on local laws and regulations.
	Power increment	1 dBm
	Receiver sensitivity	2.4 GHz 802.11b：–104 dBm @ 1 Mbit/s；–97 dBm@ 11 Mbit/s
		2.4 GHz 802.11g：-97 dBm @ 6 Mbit/s； -78 dBm @ 54 Mbit/s
		2.4 GHz 802.11n (HT20)：-97 dBm @ MCS0；-73 dBm @ MCS31
		2.4 GHz 802.11n(HT40)：-95 dBm @ MCS0；-71 dBm @ MCS31
		5 GHz 802.11a：–97 dBm @ 6 Mbit/s；–79 dBm@ 54 Mbit/s
		5 GHz 802.11n (HT20)：-97 dBm @ MCS0；-72 dBm @ MCS31
		5 GHz 802.11n (HT40)：-94 dBm @ MCS0；-68 dBm @ MCS31
		5 GHz 802.11ac (VTH20)：-97 dBm @ MCS0NSS1；-70 dBm @ MCS8NSS4
		5 GHz 802.11ac (VTH40)：-94 dBm @ MCS0NSS1； -64 dBm @ MCS9NSS4
		5 GHz 802.11ac (VTH80)：-90 dBm @ MCS0NSS1； -61 dBm @ MCS9NSS4
		5 GHz 802.11ac (VTH160)：-85 dBm @ MCS0NSS1； -58 dBm @ MCS9NSS2

Basic Specifications

Software specifications

Fat/Fit AP mode

Item	Description
WLAN features	Compliance with IEEE 802.11a/b/g/n/ac/ac Wave 2 Maximum rate of up to 2.53 Gbit/s Maximum ratio combining (MRC) Space time block code (STBC) Cyclic Delay Diversity (CDD)/Cyclic Shift Diversity (CSD) Beamforming MU-MIMO Low-density parity-check (LDPC) Maximum-likelihood detection (MLD) 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 80+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 WLAN channel management and channel rate adjustment Automatic channel scanning and interference avoidance Service set identifier (SSID) hiding Signal sustain technology (SST) Unscheduled automatic power save delivery (U-APSD) Control and Provisioning of Wireless Access Points (CAPWAP) in Fit AP mode Automatic login in Fit AP mode Extended Service Set (ESS) in Fit AP mode Wireless distribution system (WDS) in Fit AP mode Mesh networking in Fit AP mode Multi-user CAC Hotspot2.0 802.11k and 802.11v smart roaming 802.11r fast roaming (≤ 50 ms) WAN authentication escape. In local forwarding mode, this function retains the online state of existing STAs and allows access of new STAs when APs are disconnected from an AC, ensuring service continuity.

Item	Description
Network features	Compliance with IEEE 802.3ab Auto-negotiation of the rate and duplex mode and automatic switchover between the Media Dependent Interface (MDI) and Media Dependent Interface Crossover (MDI-X) Compliance with IEEE 802.1q SSID-based VLAN assignment VLAN trunk on uplink Ethernet ports Management channel of the AP uplink port in tagged and untagged mode DHCP client, obtaining IP addresses through DHCP Tunnel data forwarding and direct data forwarding STA isolation in the same VLAN Access control lists (ACLs) Link Layer Discovery Protocol (LLDP) Uninterrupted service forwarding upon CAPWAP channel disconnection in Fit AP mode Unified authentication on the AC in Fit AP mode AC dual-link backup in Fit AP mode Network Address Translation (NAT) in Fat AP mode IPv6 in Fit AP mode Soft Generic Routing Encapsulation (GRE) IPv6 Source Address Validation Improvements (SAVI)
QoS features	Priority mapping and packet scheduling based on a Wi-Fi Multimedia (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 (automatic bandwidth adjustment based on the user quantity and radio environment) to improve user experience Smart Application Control (SAC) in Fit AP mode 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 using a 64-bit, 128-bit, or 152-bit encryption key WPA/WPA2-PSK authentication and encryption (WPA/WPA2 personal edition) WPA/WPA2-802.1x authentication and encryption (WPA/WPA2 enterprise edition) WPA-WPA2 hybrid authentication WPA/WPA2-PPSK authentication and encryption in Fit AP mode WAPI authentication and encryption Wireless intrusion detection system (WIDS) and wireless intrusion prevention system (WIPS), including rogue device detection and countermeasure, attack detection and dynamic blacklist, and STA/AP blacklist and whitelist 802.1x authentication, MAC address authentication, and Portal authentication DHCP snooping Dynamic ARP Inspection (DAI) IP Source Guard (IPSG) 802.11w Protected Management Frames (PMFs) Application identification
Maintenance features	Unified management and maintenance on the AC in Fit AP mode Automatic login and configuration loading, and plug-and-play (PnP) in Fit AP mode WDS zero-configuration deployment in Fit AP mode Mesh network zero-configuration deployment in Fit AP mode Batch upgrade in Fit AP mode Telnet STelnet using SSH v2 SFTP using SSH v2 Local AP management through the serial interface Web local AP management through HTTP or HTTPS in Fat AP mode Real-time configuration monitoring and fast fault location using the NMS SNMP v1/v2/v3 in Fat AP mode System status alarm Network Time Protocol (NTP) in Fat AP mode
BYOD	**NOTE** The AP supports bring your own device (BYOD) only in Fit AP mode. 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.

Item	Description
Location service	**NOTE** The AP supports the locating service only in Fit AP mode. Locates tags manufactured by AeroScout or Ekahau. Locates Wi-Fi terminals. Works with eSight to locate rogue devices.
Spectrum analysis	**NOTE** The AP supports spectrum analysis only in Fit AP mode. 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 microwaves. Works with eSight to perform spectrum analysis on interference sources.

Cloud-based management mode

Item	Description
WLAN features	Compliance with IEEE 802.11a/b/g/n/ac/ac Wave 2 Maximum rate of up to 2.53 Gbit/s Maximum ratio combining (MRC) Space time block code (STBC) Beamforming Low-density parity-check (LDPC) Maximum-likelihood detection (MLD) Frame aggregation, including A-MPDU (Tx/Rx) and A-MSDU (Tx/Rx) 802.11 dynamic frequency selection (DFS) Priority mapping and packet scheduling based on a Wi-Fi Multimedia (WMM) profile to implement priority-based data processing and forwarding WLAN channel management and channel rate adjustment **NOTE** For detailed management channels, see the Country Code & Channel Compliance Table. Automatic channel scanning and interference avoidance Service set identifier (SSID) hiding Signal sustain technology (SST) Unscheduled automatic power save delivery (U-APSD) Automatic login

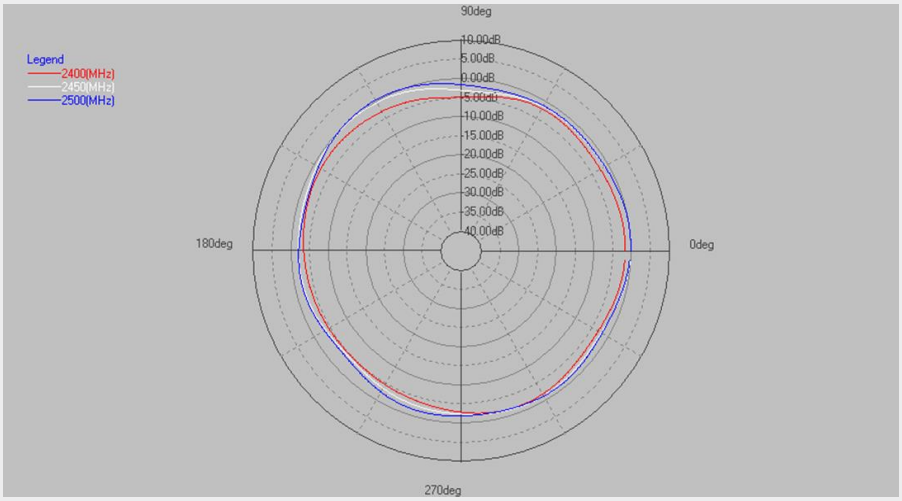
Item	Description
Network features	Compliance with IEEE 802.3ab Auto-negotiation of the rate and duplex mode and automatic switchover between the Media Dependent Interface (MDI) and Media Dependent Interface Crossover (MDI-X) Compliance with IEEE 802.1q SSID-based VLAN assignment DHCP client, obtaining IP addresses through DHCP STA isolation in the same VLAN Access control lists (ACLs) Unified authentication on the Agile Controller Network Address Translation (NAT)
QoS features	Priority mapping and packet scheduling based on a Wi-Fi Multimedia (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 Airtime scheduling
Security features	Open system authentication WEP authentication/encryption using a 64-bit, 128-bit, or 152-bit encryption key WPA/WPA2-PSK authentication and encryption (WPA/WPA2 personal edition) WPA/WPA2-802.1x authentication and encryption (WPA/WPA2 enterprise edition) WPA-WPA2 hybrid authentication WPA/WPA2-PPSK authentication and encryption 802.1x authentication, MAC address authentication, and Portal authentication DHCP snooping Dynamic ARP Inspection (DAI) IP Source Guard (IPSG)

Item	Description
Maintenance features	Unified management and maintenance on the Agile Controller Automatic login and configuration loading, and plug-and-play (PnP) Batch upgrade Telnet STelnet using SSH v2 SFTP using SSH v2 Local AP management through the serial interface Web local AP management through HTTP or HTTPS Real-time configuration monitoring and fast fault location using the NMS System status alarm Network Time Protocol (NTP)

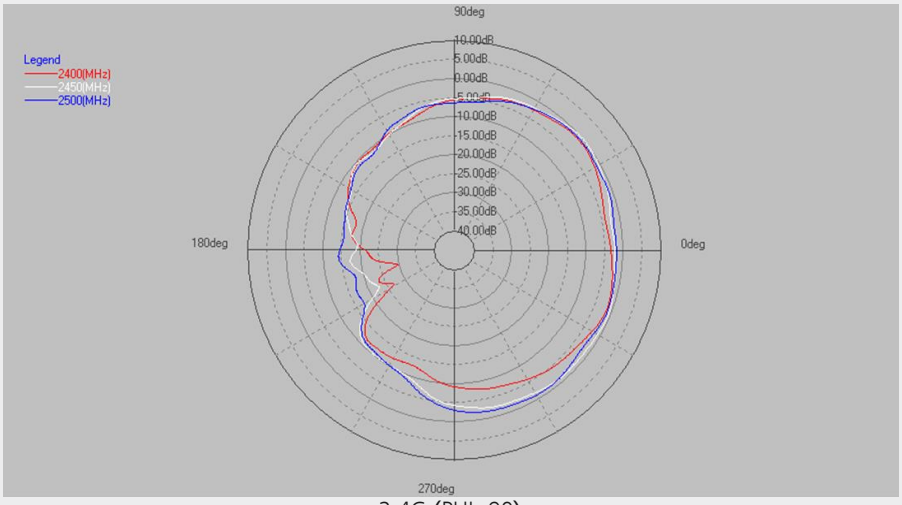
Standards compliance

Item	Description
Safety standards	UL 60950–1 CAN/CSA 22.2 No.60950-1 IEC 60950–1 EN 60950–1 GB 4943
Radio standards	ETSI EN 300 328 ETSI EN 301 893 FCC Part 15C: 15.247 FCC Part 15C: 15.407 RSS-210 AS/NZS 4268
EMC standards	EN 301 489–1 EN 301 489–17 ETSI EN 60601-1-2 FCC Part 15 ICES-003 YD/T 1312.2-2004 ITU k.20 GB 9254 GB 17625.1 AS/NZS CISPR22 EN 55022 EN 55024 CISPR 22 CISPR 24 IEC61000-4-6 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) EAP Type(s)
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

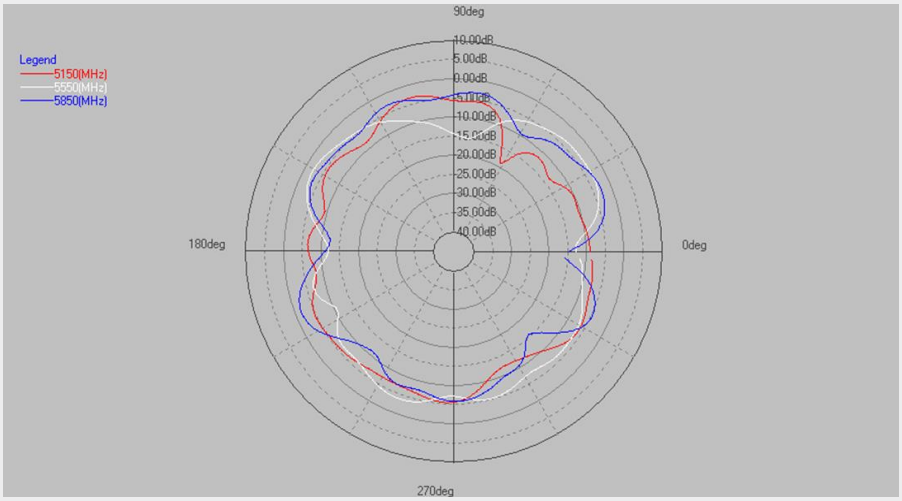
AP7050DE Antennas Pattern



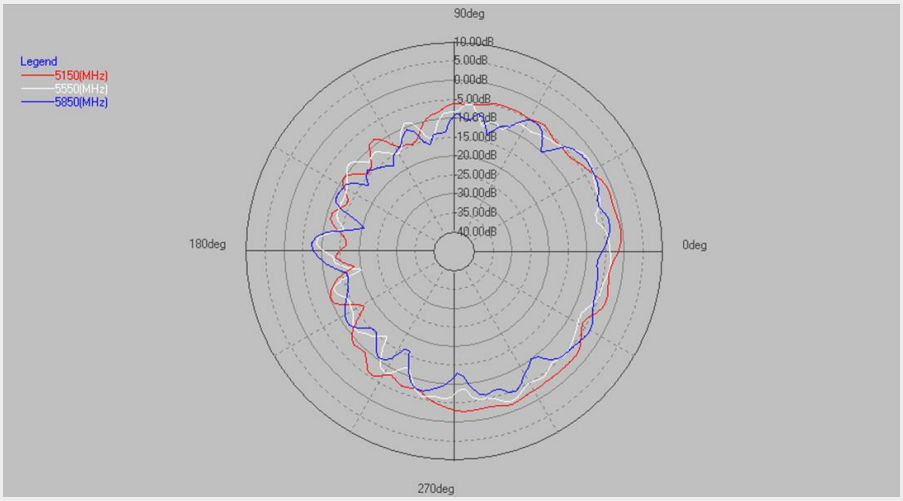
2.4G (PHI=0)



2.4G (PHI=90)



5G (PHI=0)



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 or contact your local Huawei office.

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