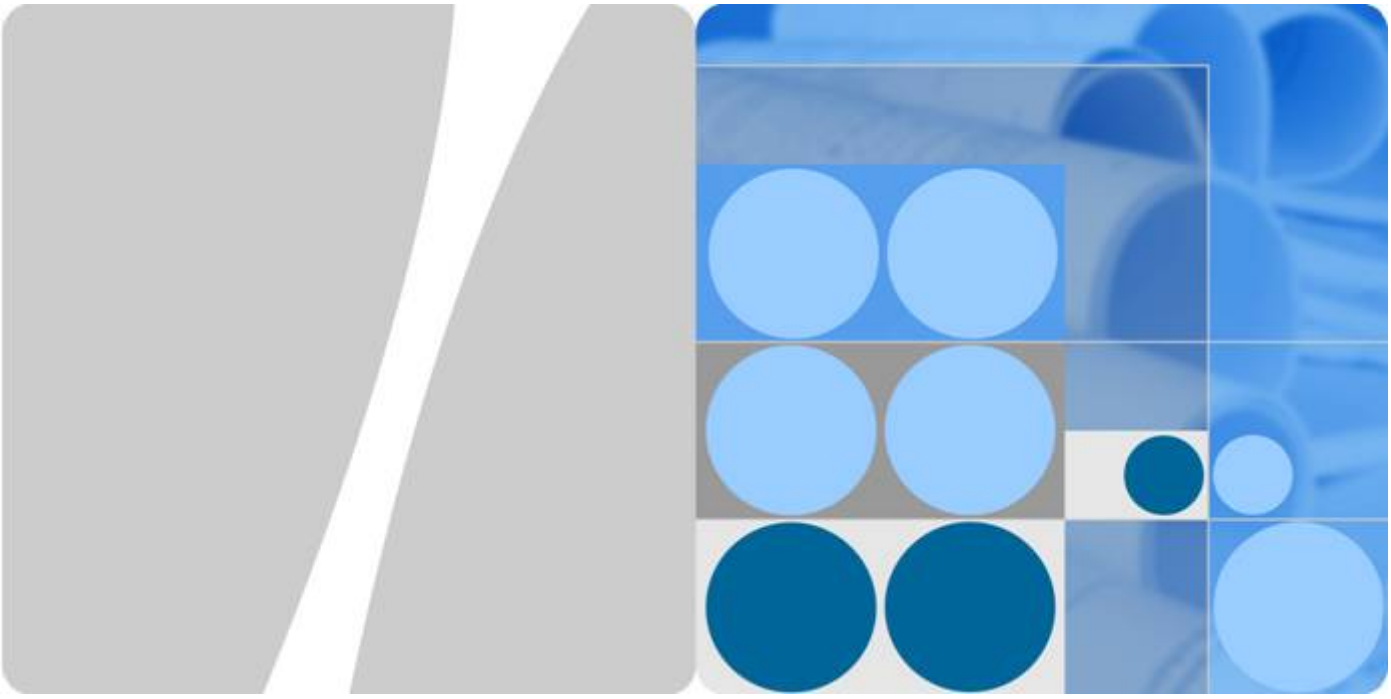

AP6510DN-AGN-US Outdoor Wireless LAN Access Point

V200R002C00

Product Description

Issue 01

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1 Product Orientation and Characteristics

Product Orientation

The AP6510DN-AGN-US is an outdoor dual-band access point (AP) that supports 2.4 GHz and 5 GHz frequency bands, and has enhanced coverage performance and protection capabilities. It supports wireless bridging, complies with IEEE 802.11a/b/g/n,connects a large number of users, and works as a Fit AP. The AP6510DN-AGN-US has the following advantages:

- High reliability
- High security
- Simple network deployment
- Automatic AC discovery and configuration
- Real-time management and maintenance

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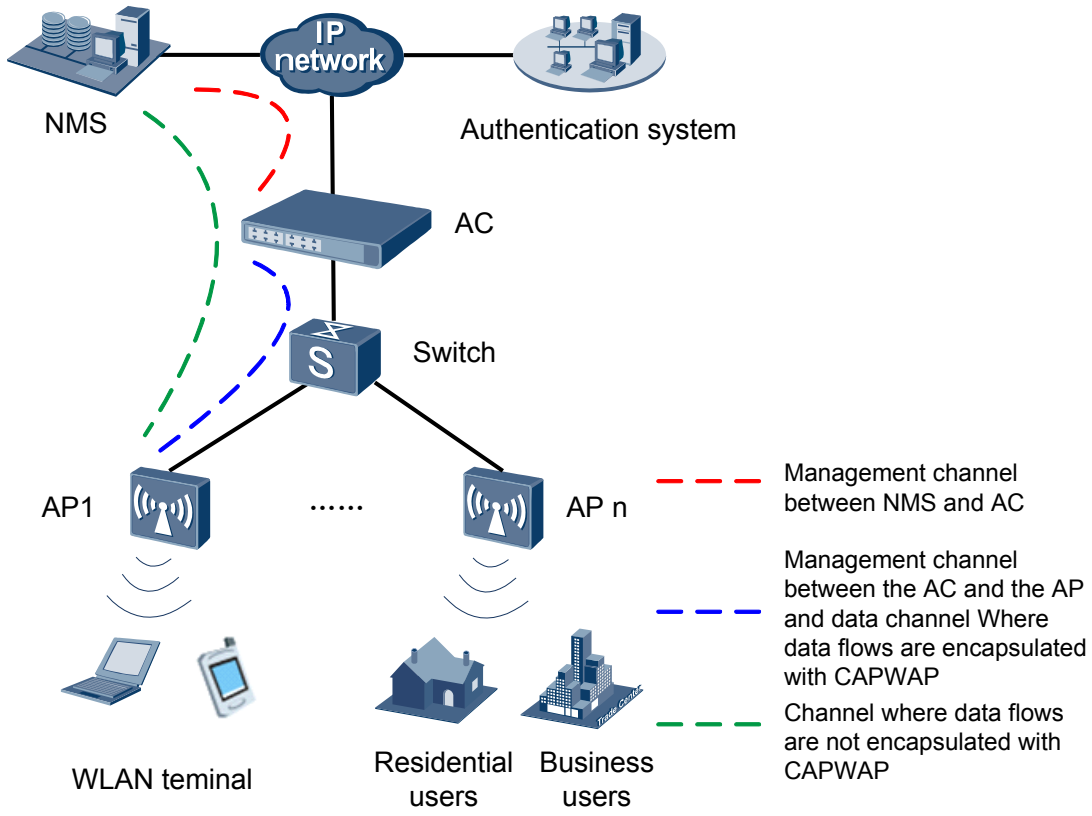
The AP6510DN-AGN-US is recommended for use in residential or commercial properties without wired resources. The AP6510DN-AGN-US APs can be deployed at both ends of a commercial street or in the building opposite to a commercial property. The APs must be equipped with external antennas to implement wireless signal coverage.

The AP6510DN-AGN-US is for use in Fit AP and bridge networking scenarios.

Figure 1-1 Fit AP networking



In this networking, the AP6510DN-AGN-US functions as a Fit AP that provides only data forwarding functions. The AC is responsible for user access, authentication, AP management, and configurations of security protocols, routing, and QoS.

Figure 1-2 WDS networking (point-to-point)

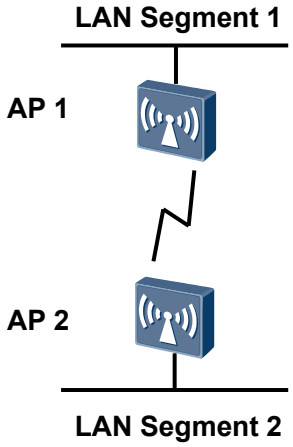
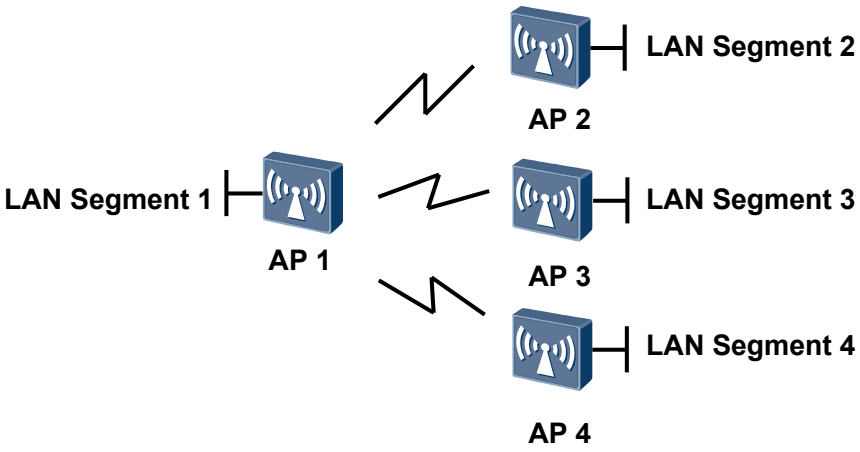


Figure 1-3 WDS networking (point-to-multipoint)



In this networking, the AP6510DN-AGN-US connects two or more independent wired or wireless LANs through wireless links to realize communication between the LANs. In a Wireless Distribution System (WDS), the AP6510DN-AGN-US supports point-to-point, point-to-multipoint networking modes. The AP implements wireless bridging and access functions using 5 GHz and 2.4 GHz frequency bands.

Product Characteristics

The AP6510DN-AGN-US has the following characteristics on the WLAN.

Product Characteristics	Description
Highly reliable wireless access	● Complies with IEEE 802.11 a/b/g/n. ● Supports2x2 MIMO, and provides a maximum rate of 300 Mbit/s for each radio. ● Uses Wi-Fi Multimedia (WMM) to implement priority scheduling based on the service type (voice, video, or data), and supports priority mapping on the air interface and wired interface. ● Supports wired link integrity check. ● Supports load balancing. ● Supports roaming without service interruptions. ● Supports AC Dual-Link Backup. ● Supports the beamforming technique. ● Uses the latest 802.11n chip to provide higher performance and wider coverage. ● Has a strong coverage capability. ● Uses a metal shell and a design that dissipates heat for high reliability.

Product Characteristics	Description
Comprehensive user access control capability	● Supports access control lists (ACLs) and user access controls based on user group policies. ● Provides per-user bandwidth management. ● Supports user isolation policies.
High security	The AP6510DN-AGN-US supports multiple authentication and encryption modes and provides various measures to enhance system security: ● Wired Equivalent Privacy (WEP) ● Wi-Fi Protected Access (WPA)/WPA2 ● WLAN Authentication and Privacy Infrastructure (WAPI) ● 802.1X ● Detection of unauthorized APs
Flexible networking and environment adaptability	● For use in Fit APscenarios. ● Automatically selects the transmission rate, channel, and transmit power to adapt to multiple radio environments and limit interference in real time. ● Adjusts bandwidth allocation based on the number of users and radio environment. ● Supports the MIMO antenna system and connects to external dual-band antennas (2.4 GHz and 5 GHz). You can adjust the antennas based on the radio environment.
Simple device management and maintenance	● Automatically discovers ACs and loads the AC (plug-and-play) configuration. ● Supports batch upgrade. ● Monitored by the NMS in real time. You can remotely configure APs and locate faults on APs using the NMS. ● Supports the Link Layer Discovery Protocol (LLDP) to implement automatic link discovery and obtain the network topology.
High reliability and protection level	● Uses efficient hardware protection measures. ● Supports wide variations in temperate from -40℃ to +60℃. ● Uses industry-standard components. ● Provides IP66 protection level. ● Has built-in 5 kA surge protection and requires no external surge protection devices. This simplifies installation and lowers costs. ● Provides 6 kA/6 kV surge protection capability on an Ethernet interface.

2 Product Structure

Appearance

Figure 2-1 shows the appearance of the AP6510DN-AGN-US.

NOTE

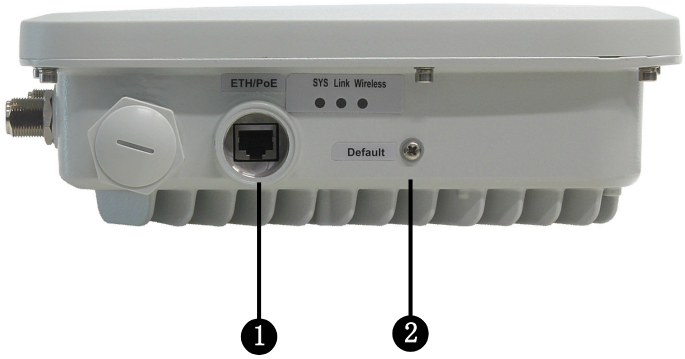
The actual device appearance may differ from the figure, but the appearance does not affect device

Figure 2-1 Appearance of the AP6510DN-AGN-US

Ports

The following figures show ports on the AP6510DN-AGN-US.

Figure 2-2 AP6510DN-AGN-US ports



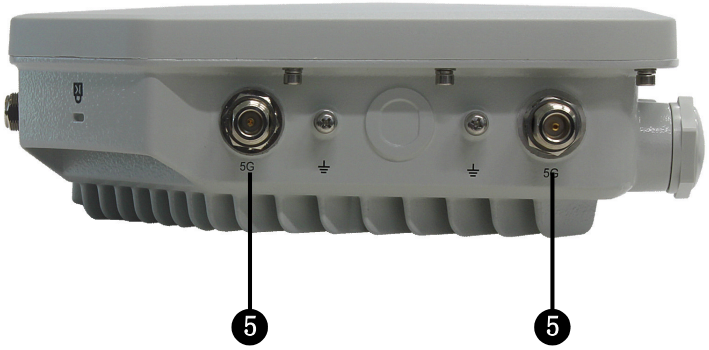
1. ETH/PoE: 10/100/1000M port, which connects to the Ethernet network. The port can connect to a PoE switch or a PoE power source to receive power.

Figure 2-3 AP6510DN-AGN-US ports

Figure 2-4 AP6510DN-AGN-US ports

2. Default: remove the screw and hold down the button from the hole to restore the factory settings.
3. Ground port: connects to a ground cable to ground an AP.
4. 2.4 GHz antenna port.

Figure 2-5 AP6510DN-AGN-US ports



5. 5 GHz antenna port.

LED Indicators

Information Type	SYS LED	Link LED	WiFi LED	Description
Startup status	Steady green	Off	Off	The device is being started.
	Blinking green	Off	Off	The system is working properly.
	Steady red	Off	Off	The system fails to load the DRAM or system software.
	Blinking (0.5 Hz)	Off	Off	The system is working properly. However, the Ethernet is not connected. Radios are disabled and no user is connected to the AP.
			Blinking green	The system is working properly, but the Ethernet is not connected. The AP has wireless users connected to the 2.4 GHz band and is transmitting data. The indicator blinks more quickly when more packets are being transmitted.
			Blinking yellow	The system is working properly, but the Ethernet is not connected. The AP has wireless users connected to the 5 GHz band and is transmitting data. The indicator blinks more quickly when more packets are being transmitted.
			Blinking green and yellow alternately	The system is working properly, but the Ethernet is not connected. The AP has wireless users connected to the 2.4 GHz and 5 GHz bands and is transmitting data.
	Blinking (0.5 Hz)	Steady or blinking green	Off	The system is working properly, the Ethernet is connected, and radios are disabled. The indicator blinks more quickly when more data is being transmitted.
			Blinking green	The system is working properly, and the Ethernet is connected. The AP has wireless users connected to the 2.4 GHz band and is transmitting data. The indicator blinks more quickly when more packets are being transmitted.

Information Type	SYS LED	Link LED	WiFi LED	Description
			Blinking yellow	The system is working properly, and the Ethernet is connected. The AP has wireless users connected to the 5 GHz band and is transmitting data. The indicator blinks more quickly when more packets are being transmitted.
			Blinking green and yellow alternately	The AP has wireless users connected to the 2.4 GHz and 5 GHz bands and is transmitting data. The indicator blinks more quickly when more packets are being transmitted.

3 Functions and Features

Functions and Features Supported by the AP6510DN-AGN-US

Table 3-1 Features

Features	Description
WLAN features	● Compliance with IEEE 802.11a/b/g/n, providing a maximum rate of 300 Mbit/s216 Mbit/s for each radio ● Maximum ratio combining (MRC) ● Maximum-likelihood detection (MLD) ● Aggregate data units, including A-MPDU (Tx/Rx) and A-MSDU (Rx only) ● 802.11 dynamic frequency selection (DFS) ● Short GI in 20 MHz and 40 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 **NOTE** For details about WLAN channel management, see the XXX. ● Automatic channel scanning (the AP6510DN-AGN-US scans channels used by other APs, measures their interference, and reports the scanning result to the AC to trigger channel adjustment) ● Service set identifier (SSID) hiding ● Signal sustain technology (SST) ● Unscheduled automatic power save delivery (U-APSD) ● Control and Provisioning of Wireless Access Points (CAPWAP) ● Automatic AC discovery

Features	Description
Network features	● Compliance with IEEE 802.3u ● Ports: Auto-negotiation of the rate and duplex mode and automatic switching between the Media Dependent Interface (MDI) and Media Dependent Interface Crossover (MDI-X) mode ● VLAN assignment based on SSIDs ● VLAN aggregation on uplink Ethernet ports ● 4093 VLAN IDs (1-4093) and 16 virtual APs (VAPs) ● Uplink ports in tagged and untagged mode ● DHCP client ● PPPoE dialup ● Centralized data forwarding and local data forwarding ● STA isolation in the same VLAN ● ACL ● LLDP ● Uninterrupted service forwarding upon CAPWAP channel disconnection in direct forwarding mode ● Uniform authentication on an AC ● Dual-AC backup
QoS features	● Priority mapping and packet scheduling based on WMM profiles to implement priority-based data processing and forwarding ● WMM parameter management for each radio frequency ● 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 allocation (the system dynamically adjusts bandwidth based on the number of users and radio environment)
Security features	● Open system authentication ● WEP authentication/encryption ● WPA/WPA2 authentication and encryption ● 802.1x authentication and encryption ● WAPI authentication and encryption

Features	Description
Maintenance features	● AP management and maintenance by the AC ● Plug-and-play: automatic AC discovery and automatic configuration loading ● Batch upgrade ● Debugging using Telnet ● Real-time configuration monitoring and fast fault location by using the NMS ● System status alarm

4 Technical Specifications

Specifications

Table 4-1 Specifications of the AP6510DN-AGN-US

Item		Description
Technical specifications	Dimensions (H x W x D)	83 mm x 255 mm x 255 mm
	Weight	2.2 kg
	System memory	● 128 MB DRAM ● 32 MB flash memory
Power specifications	Power input	● POE Power: -48V DC ● PoE function in compliance with IEEE 802.3at
	Maximum power consumption	25.5 W **NOTE** The maximum power consumption depends on local laws.
Environment parameters	Operating temperature	-40℃ to +60℃
	Storage temperature	-40℃ to +70℃
	Humidity	0% to 100% (non-condensing)
	Waterproof grade	IP66
	Altitude	–60 m to 4000 m

Antenna Parameters

Table 4-2 Antenna parameters of the AP6510DN-AGN-US

Item	Description			
Antenna type	Dual-polarization antenna or common outdoor antenna			
Maximum number of concurrent users	⩽ 128			
Maximum transmit power	27 dBm ● You can adjust the transmit power from the maximum to 15 dBm, with a step of 1 dBm. **NOTE** Actual transmit power depends on local laws and regulations.			
Maximum number of non-overlapping channels	2.4 GHz 802.11b/g ● 20MHz: 3 802.11n ● 20MHz: 3 ● 40MHz: 1		5 GHz 802.11a ● 20MHz: 21 802.11n ● 20MHz: 21 ● 440MHz: 9	
Channel rate	802.11b: 1, 2, 5.5, and 11 Mbit/s			
	802.11g: 6, 9, 12, 18, 24, 36, 48, and 54 Mbit/s			
	802.11n data rate (2.4 GHz and 5 GHz)			
	GI=800 ns		GI=400ns	
	20 MHz (Mbit/s)	40 MHz (Mbit/s)	20 MHz (Mbit/s)	40 MHz (Mbit/s)
	6.5 @ MCS0	13.5 @ MCS0	7.2 @ MCS0	15 @ MCS0
	13 @ MCS1	27 @ MCS1	14.4 MCS1	30 MCS1
	19.5 @ MCS2	40.5 @ MCS2	21.7 @ MCS2	45 @ MCS2
	26 @ MCS3	54 @ MCS3	28.9 @ MCS3	60 @ MCS3
	39 @ MCS4	81 @ MCS4	43.3 @ MCS4	90 @ MCS4
	52 @ MCS5	108 @ MCS5	57.8 @ MCS5	120 @ MCS5
	58.5 @ MCS6	121.5 @ MCS6	65 @ MCS6	135 @ MCS6
	65 @ MCS7	135 @ MCS7	72.2 @ MCS7	150 @ MCS7
	13 @ MCS8	27 @ MCS8	14.4 @ MCS8	30 @ MCS8

Item	Description			
	26 @ MCS9	54 @ MCS9	28.9 @ MCS9	60 @ MCS9
	39 @ MCS10	81 @ MCS10	43.3 @ MCS10	90 @ MCS10
	52 @ MCS11	108 @ MCS11	57.8 @ MCS11	120 @ MCS11
	78 @ MCS12	162 @ MCS12	86.7 @ MCS12	180 @ MCS12
	104 @ MCS13	216 @ MCS13	115.6 @ MCS13	240 @ MCS13
	117 @ MCS14	243 @ MCS14	130 @ MCS14	270 @ MCS14
	130 @ MCS15	270 @ MCS15	144.4 @ MCS15	300 @ MCS15
	NOTE Modulation coding scheme (MCS) index: determines the spatial flow quantity, modulation, coding rate, and data rate. Guard interval (GI): indicates the period in nanoseconds the radio listens between packets.			
Receiver sensitivity	2.4 GHz 802.11b (CCK) ● -97 dBm @ 1 Mb/s ● -92 dBm @ 2 Mb/s ● -92 dBm @ 5.5 Mb/s ● -90 dBm @ 11 Mb/s	2.4 GHz 802.11g (non-HT20) ● -92 dBm @ 6 Mb/s ● -91 dBm @ 9 Mb/s ● -90 dBm @ 12 Mb/s ● -87 dBm @ 18 Mb/s ● -83 dBm @ 24 Mb/s ● -80 dBm @ 36 Mb/s ● -76 dBm @ 48 Mb/s ● -74 dBm @ 54 Mb/s	5 GHz 802.11a (non-HT20) ● -90 dBm @ 6 Mb/s ● -89 dBm @ 9 Mb/s ● -86 dBm @ 12 Mb/s ● -84 dBm @ 18 Mb/s ● -81 dBm @ 24 Mb/s ● -77 dBm @ 36 Mb/s ● -72 dBm @ 48 Mb/s ● -71 dBm @ 54 Mb/s	

Item	Description		
	2.4 GHz 802.11n (HT20) ● -92 dBm @ MCS0/8 ● -89 dBm @ MCS1/9 ● -86 dBm @ MCS2/10 ● -82 dBm @ MCS3/11 ● -79 dBm @ MCS4/12 ● -74 dBm @ MCS5/13 ● -73 dBm @ MCS6/14 ● -71 dBm @ MCS7/15	5 GHz 802.11n (HT20) ● -84 dBm @ MCS0/8 ● -81 dBm @ MCS1/9 ● -79 dBm @ MCS2/10 ● -76 dBm @ MCS3/11 ● -72 dBm @ MCS4/12 ● -68 dBm @ MCS5/13 ● -67 dBm @ MCS6/14 ● -67 dBm @ MCS7/15	5 GHz 802.11n (HT40) ● -83 dBm @ MCS0/8 ● -80 dBm @ MCS1/9 ● -78 dBm @ MCS2/10 ● -75 dBm @ MCS3/11 ● -71 dBm @ MCS4/12 ● -67 dBm @ MCS5/13 ● -66 dBm @ MCS6/14 ● -65 dBm @ MCS7/15

Standards Compliance

- Safety standards
  - UL 60950-1
  - IEC 60950-1
  - EN 60950-1
  - EN 60950-22
  - GB 4943
- Radio standards
  - ESTI EN 300 328
  - ESTI EN 301 893
  - RSS-210
- EMC standards
  - EN 301.489–1
  - EN 301.489–17
  - ICES-003
  - YD/T 1312.2-2004
  - EN55022 (Class B)
- IEEE standards
  - IEEE 802.11a/b/g
  - IEEE 802.11n

  - IEEE 802.11h
  - IEEE 802.11d
  - IEEE 802.11e
- 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)
- Environment standards
  - ETSI 300 019-2-1
  - ETSI 300 019-2-2
  - ETSI 300 019-2-3
- EAP types
  - EAP-TLS/TTLS, PEAP, EAP-MD5, EAP-SIM
- Multimedia
  - WMM™