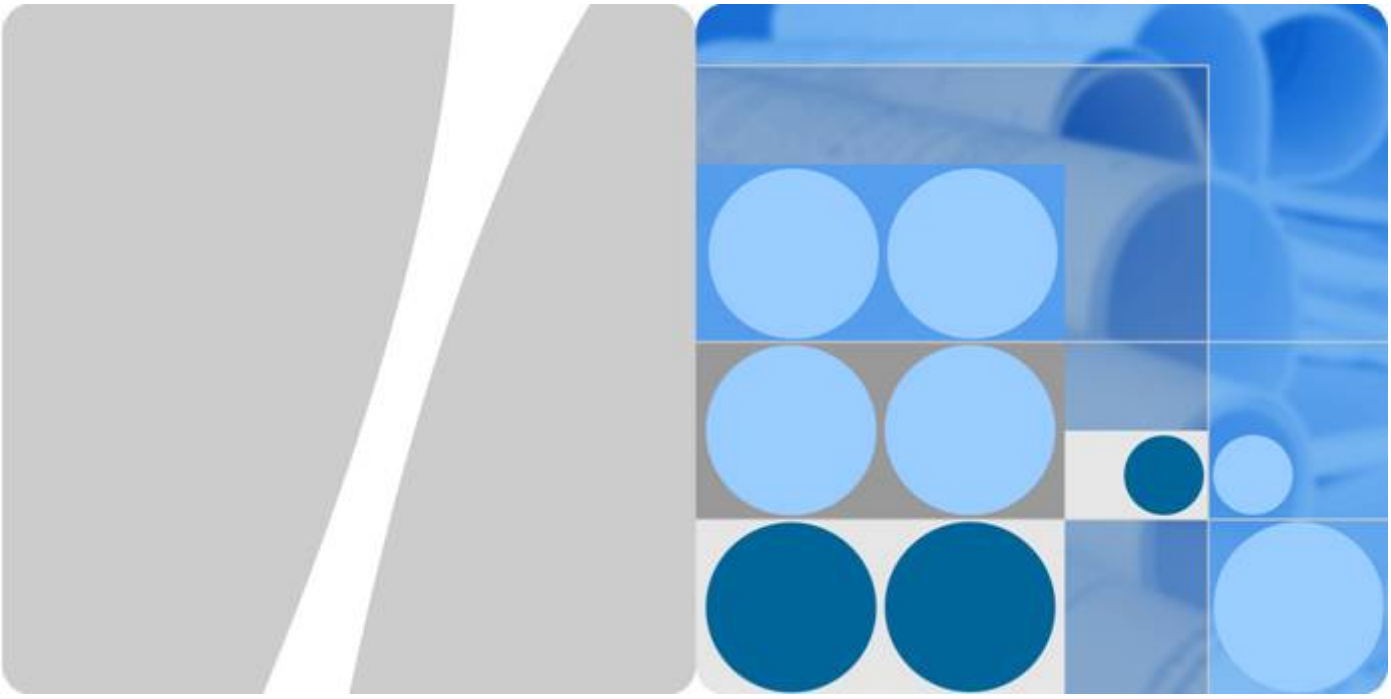

AP2030DN

Product Description

Issue 01

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HUAWEI TECHNOLOGIES CO., LTD.

About This Document

Purpose

This document describes the positioning, characteristics, hardware structure, product features, and technical specifications of the AP.

This document helps you understand the characteristics and features of the AP.

Intended Audience

This document is intended for network engineers responsible for network design and deployment. You should understand your network well, including the network topology and service requirements.

Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
 DANGER	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
 WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
 NOTICE	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.

Symbol	Description
NOTE	Calls attention to important information, best practices and tips. NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.

Change History

Changes between document issues are cumulative. The latest document issue contains all the changes made in previous issues.

Changes in Issue 01 (2015-03-10)

This is the initial commercial release.

Contents

1 Product Positioning and Characteristics

1.1 Product Positioning

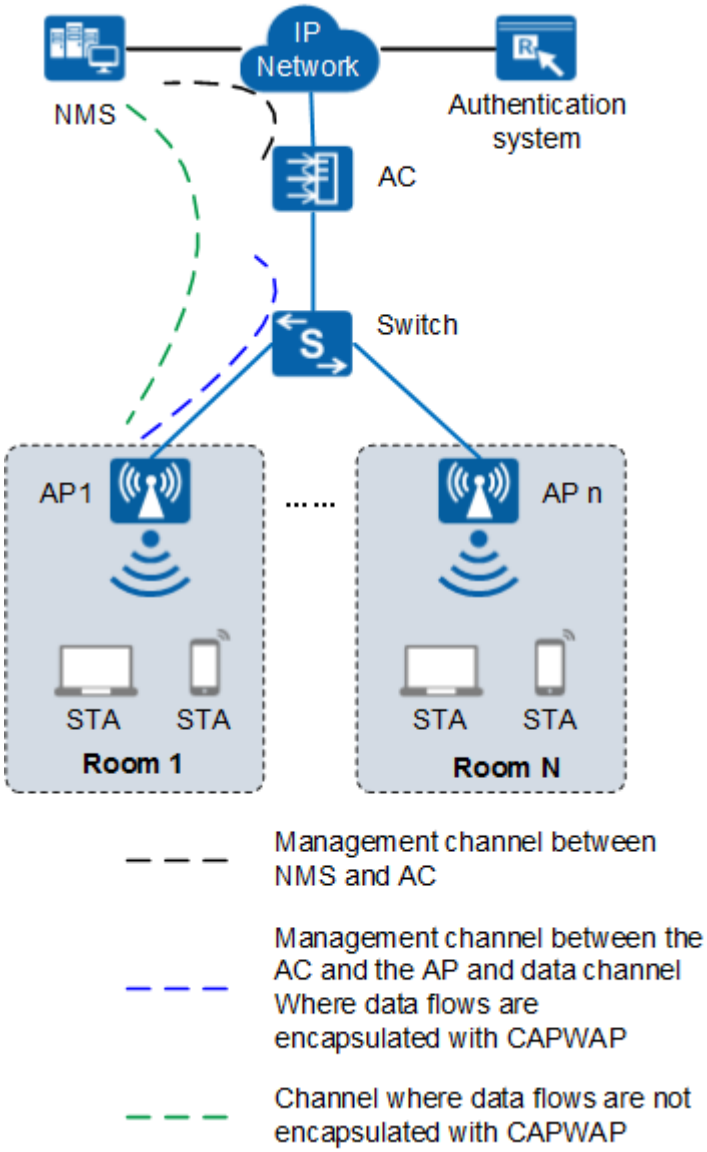
Table 1-1 Product positioning

Model	Frequency Band Supported	IEEE Standards Compliance	Positioning	Usage Scenario
AP2030DN	Dual bands supported: ● 2.4 GHz ● 5 GHz The AP provides services simultaneously on the 2.4 GHz and 5 GHz frequency bands to support more access users.	IEEE 802.11a/b/g/n/ac	Huawei AP2030DN is a wall plate access point. It uses an 86 mm x 86 mm plate design and can be easily installed in an 86-type box. The AP2030DN is beautifully designed, with built-in antennas, a hidden indicator, and a sliding panel. It provides comprehensive service support capabilities and features high security, simple network deployment, automatic AC discovery and	AP2030DN offers both wired and wireless network connections, applicable to hotels, apartments, and offices.

Model	Frequency Band Supported	IEEE Standards Compliance	Positioning	Usage Scenario
			configuration, and real-time management and maintenance. The AP2030DN can connect to wireless terminals through wireless connections or to wired terminals using wired cables. This makes it the ideal choice of customers to construct indoor distributed networks.	

The following figure shows typical AP2030DN networking.

Figure 1-1 Fit AP networking



In this networking, the AP functions as a Fit AP. The AC is responsible for user access, AP go-online, AP management, authentication, routing, security, and QoS. Huawei products that provide the AC function include the AC6605, AC6005, ACU2 (with S7700, S9700, or S12700), S5720HI, S7700 (with X series board), S9700 (with X series board), and S12700 (with X series board).

1.2 Product Characteristics

The AP2030DN has the following advantages on a WLAN.

Product Characteristics	Description
High-speed and reliable wireless access	● Compatibility with IEEE 802.11a/b/g/n/ac. ● 2 x 2 MIMO and a maximum rate of 1.16 Gbit/s ● Supports Wi-Fi Multimedia (WMM) and priority mapping on the air interface and wired interface. ● Working simultaneously on 2.4 GHz and 5 GHz frequency bands ● Supports wired link integrity check. ● Supports roaming without service interruptions. ● Supports beamforming. ● Uses the latest 802.11n chip to provide higher performance and wider coverage. ● Supports airtime scheduling which ensures fairness in channel occupation time for all users.
Comprehensive user access control capability	● Supports access control lists (ACLs) and implements user access control based on the user group policy. ● Provides fine-grained bandwidth management for each user. ● Supports user isolation policies. ● Supports uniform authentication on an AC. ● Identifies the device type according to the organizationally unique identifier (OUI) in the MAC address, user agent (UA) information in an HTTP packet, and DHCP options in Fit AP mode. ● The RADIUS server delivers packet forwarding, security, and QoS policies according to the device type carried in the RADIUS authentication and accounting packets.
High network security	● Open system authentication ● WEP authentication/encryption ● WPA/WPA2-PSK authentication and encryption ● WPA/WPA2-802.1x authentication and encryption ● 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 ● Auto shutdown of the AP's wired interface. In some cases, a loop may occur on a network connected to the AP's wired interface, for example, when the AP and the network are connected through a hub. The auto shutdown function enables the AP to automatically shut down its wired interface for protection. **NOTE** This function takes effect only when the wired network connected to the AP's wired interface does not terminate STP packets from the AP.

Product Characteristics	Description
Flexible networking and environment adaptability	● Has strong environment adaptability. The AP can automatically select the transmission rates, channels, and transmit power to adapt to various radio environments and avoid interference in real time. ● Adjusts bandwidth allocation based on the user quantity and environment to improve user experience. ● Works in Fit AP mode to identify 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, and works together with eSight to display spectrums of interference sources.
Easy device management and maintenance	● Works in Fit AP mode to support automatic going-online, configuration loading, and plug-and-play (PnP). ● Supports batch upgrade. ● Allows real-time monitoring on the network management system (NMS) to facilitate remote configuration and fast fault location. ● Supports the Link Layer Discovery Protocol (LLDP) to implement automatic link discovery and obtain the network topology.

2 Hardware Structure

2.1 AP2030DN

Appearance

Figure 2-1 shows the appearance of the device.

NOTE

The actual device appearance may be different from the following device appearance; these differences will not affect device functions.

Figure 2-1 Appearance

Port

Figure 2-2 shows ports on the device.

Figure 2-2 Ports

Each port can be described as follows:

1. ETH0~3: 10/100M port used to connect to the wired Ethernet.
2. Phone: Phone interface: connects to a POTS phone or modem device.
3. GE/PoE: 10/100/1000M port used to connect to the wired Ethernet. The port can connect to a PoE power supply to provide power for the device.
4. Phone: Phone interface: connects to a traditional PSTN.
5. Default: Reset button used to restore factory settings if you hold down the button more than 3 seconds.
6. Power input interface: 12 V DC.

LED Indicator

NOTE

The actual indicator color may vary according to temperature.

The device has indicators located inside the panel. The indicators turn on after the device is powered on.

Type	Color	Status	Description
Default status after power-on	Green	Steady on	The AP is just powered on and the software is not started yet.

Type	Color	Status	Description
Software startup status	Green	Steady on after blinking once	After the system is reset and starts uploading the software, the indicator blinks green once. Until the software is uploaded and started, the indicator remains steady green.
Running status	Green	Blinking once every 2s (0.5 Hz)	● The system is running properly, the Ethernet connection is normal, and STAs are associated with the AP. ● The system enters the Uboot CLI.
		Blinking once every 5s (0.2 Hz)	The system is running properly, the Ethernet connection is normal, and no STA is associated with the AP. The system is in low power consumption state.
Alarm	Green	Blinking once every 0.25s (4 Hz)	● The software is being upgraded. ● After the software is uploaded and started, the AP working in Fit AP mode requests to go online on the AC and maintains this state until it goes online successfully on the AC (before the CAPWAP link is established). ● The AP working in Fit AP mode fails to go online on the AC (the CAPWAP link disconnects).
Fault	Red	Steady on	A fault that affects services has occurred, such as a DRAM detection failure or system software loading failure. The fault cannot be automatically rectified and must be rectified manually.

3 Product Features

3.1 WLAN Features

WLAN features supported by the AP are as follows:

- Compliance with IEEE 802.11a/b/g/n/ac
- Maximum rate of 1.16 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)
- 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
- WLAN channel management and channel rate adjustment

  NOTE

  For details about WLAN channel management, 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)
- Control and Provisioning of Wireless Access Points (CAPWAP)
- Automatic login
- Extended Service Set (ESS)
- Multi-user CAC

3.2 Network Features

Network features supported by the AP are as follows:

- 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
- Unified authentication on the AC
- AC dual-link backup
- IPv6

3.3 QoS Features

QoS features supported by the AP are as follows:

- 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
- Airtime scheduling

3.4 Security Features

Security features supported by the AP are as follows:

- 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
- 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)

3.5 Maintenance Features

Maintenance features supported by the AP are as follows:

- Unified management and maintenance on the AC
- Automatic login and configuration loading, and plug-and-play (PnP)
- Batch upgrade
- Telnet
- STelnet using SSH v2
- Real-time configuration monitoring and fast fault location using the NMS
- System status alarm

3.6 BYOD

BYOD features supported by the AP are as follows:

- 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.

3.7 Spectrum Analysis

Spectrum analysis features supported by the AP are as follows:

- 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 display spectrums of interference sources.

4 Technical Specifications

4.1 Basic Specifications

Table 4-1 Basic specifications of the AP2030DN

Item		Description
Technical specifications	Dimensions outside the wall (H x W x D)	25 mm x 140 mm x 86 mm
	Dimensions inside the wall (H x W x D)	16.5 mm x 51.5 mm x 63.5 mm
	Weight	0.2 kg
	System memory	● 128 MB DDR2 ● 32 MB Flash
Power specifications	Power input	12 V±10% PoE power: in compliance with IEEE 802.3af/at
	Maximum power consumption	8.7 W **NOTE** The actual maximum power consumption depends on local laws and regulations.
Environment specifications	Operating temperature and altitude	-60 m to +1800 m: 0°C to +40°C 1800 m to 5000 m: Temperature decreases by 1°C every time the altitude increases 300 m.
	Storage temperature	-40°C to +70°C
	Operating humidity	5% to 95% (non-condensing)

Item		Description
	Atmospheric pressure	70 kPa to 106 kPa

4.2 Radio Specifications

Table 4-2 Radio specifications

Item	Description
Antenna type	Built-in omnidirectional antenna
Antenna gain	● 2.4 GHz: 2 dBi ● 5 GHz: 3 dBi
Maximum number of users	≤64
Maximum number of VAPs for each radio	8
Maximum transmit power	● 2.4 GHz: 21 dBm (combined power) ● 5 GHz: 20 dBm (combined power) **NOTE** The actual transmit power depends on local laws and regulations. The AP2030DN uses a 86-type box and applies only to countries and regions that support 86-type boxes.

<table>
<tr><th>Item</th><th colspan="3">Description</th></tr>
<tr><td>Maximum number of non-overlapping channels</td><td>2.4 GHz (2.412 GHz to 2.472 GHz)
802.11b/g
● 20 MHz: 3
802.11n
● 20 MHz: 3
● 40 MHz: 1</td><td>5 GHz (5.18 GHz to 5.825 GHz)
● 802.11a
– 20 MHz: 13
● 802.11n
– 20 MHz: 13
– 40 MHz: 6
● 802.11ac
– 20 MHz: 13
– 40 MHz: 6
– 80 MHz: 3</td><td>NOTE
The table uses the number of non-overlapping channels supported by China as an example. The number of non-overlapping channels varies in different countries. For details, see the Country Codes & Channels Compliance.</td></tr>
<tr><td>Channel rate</td><td colspan="3">● 802.11b: 1, 2, 5.5, and 11 Mbit/s
● 802.11a/g: 6, 9, 12, 18, 24, 36, 48, and 54 Mbit/s
● 802.11n: 6.5 to 300 Mbit/s
● 802.11ac: 6.5 to 867 Mbit/s</td></tr>
</table>

Item	Description			
Receiver sensitivity (Typical values)	2.4 GHz 802.11b (CCK) ● -101 dBm @ 1 Mbit/s ● -96 dBm @ 2 Mbit/s ● -94 dBm @ 5.5 Mbit/s ● -90 dBm @ 11 Mbit/s	2.4 GHz 802.11g (non-HT20) ● -95 dBm @ 6 Mbit/s ● -95 dBm @ 9 Mbit/s ● -94 dBm @ 12 Mbit/s ● -92 dBm @ 18 Mbit/s ● -88 dBm @ 24 Mbit/s ● -85 dBm @ 36 Mbit/s ● -81 dBm @ 48 Mbit/s ● -79 dBm @ 54 Mbit/s	2.4 GHz 802.11n (HT20) ● -95 dBm @ MCS0 ● -94 dBm @ MCS1 ● -92 dBm @ MCS2 ● -87 dBm @ MCS3 ● -84 dBm @ MCS4 ● -79 dBm @ MCS5 ● -78 dBm @ MCS6 ● -77 dBm @ MCS7 ● -93 dBm @ MCS8 ● -92 dBm @ MCS9 ● -90 dBm @ MCS10 ● -85 dBm @ MCS11 ● -82 dBm @ MCS12 ● -77 dBm @ MCS13 ● -76 dBm @ MCS14 ● -75 dBm @ MCS15	2.4 GHz 802.11n(HT40) ● -93 dBm @ MCS0 ● -91 dBm @ MCS1 ● -89 dBm @ MCS2 ● -84 dBm @ MCS3 ● -81 dBm @ MCS4 ● -77 dBm @ MCS5 ● -75 dBm @ MCS6 ● -74 dBm @ MCS7 ● -91 dBm @ MCS8 ● -89 dBm @ MCS9 ● -87 dBm @ MCS10 ● -82 dBm @ MCS11 ● -79 dBm @ MCS12 ● -75 dBm @ MCS13 ● -73 dBm @ MCS14 ● -72 dBm @ MCS15

Item	Description			
	5 GHz 802.11a (non-HT20) ● -94 dBm @ 6 Mbit/s ● -94 dBm @ 9 Mbit/s ● -93 dBm @ 12 Mbit/s ● -91 dBm @ 18 Mbit/s ● -87 dBm @ 24 Mbit/s ● -84 dBm @ 36 Mbit/s ● -79 dBm @ 48 Mbit/s ● -78 dBm @ 54 Mbit/s	5 GHz 802.11n (HT20) ● -94 dBm @ MCS0 ● -93 dBm @ MCS1 ● -90 dBm @ MCS2 ● -86 dBm @ MCS3 ● -83 dBm @ MCS4 ● -78 dBm @ MCS5 ● -77 dBm @ MCS6 ● -76 dBm @ MCS7 ● -92 dBm @ MCS8 ● -91 dBm @ MCS9 ● -88 dBm @ MCS10 ● -84 dBm @ MCS11 ● -81 dBm @ MCS12 ● -76 dBm @ MCS13 ● -75 dBm @ MCS14 ● -74 dBm @ MCS15	5 GHz 802.11n (HT40) ● -91 dBm @ MCS0 ● -90 dBm @ MCS1 ● -87 dBm @ MCS2 ● -83 dBm @ MCS3 ● -80 dBm @ MCS4 ● -76 dBm @ MCS5 ● -74 dBm @ MCS6 ● -73 dBm @ MCS7 ● -89 dBm @ MCS8 ● -88 dBm @ MCS9 ● -85 dBm @ MCS10 ● -81 dBm @ MCS11 ● -78 dBm @ MCS12 ● -74 dBm @ MCS13 ● -72 dBm @ MCS14 ● -71 dBm @ MCS15	-

Item	Description			
	5 GHz 802.11ac (VHT20) ● -95 dBm @ MCS0NSS1 ● -93 dBm @ MCS1NSS1 ● -90 dBm @ MCS2NSS1 ● -86 dBm @ MCS3NSS1 ● -83 dBm @ MCS4NSS1 ● -78 dBm @ MCS5NSS1 ● -77 dBm @ MCS6NSS1 ● -75 dBm @ MCS7NSS1 ● -71 dBm @ MCS8NSS1 ● -93 dBm @ MCS0NSS2 ● -91 dBm @ MCS1NSS2 ● -88 dBm @ MCS2NSS2 ● -84 dBm @ MCS3NSS2 ● -81 dBm @ MCS4NSS2 ● -76 dBm @ MCS5NSS2 ● -75 dBm @ MCS6NSS2 ● -73 dBm @ MCS7NSS2 ● -69 dBm @ MCS8NSS2	5 GHz 802.11ac (VHT40) ● -91 dBm @ MCS0NSS1 ● -90 dBm @ MCS1NSS1 ● -88 dBm @ MCS2NSS1 ● -83 dBm @ MCS3NSS1 ● -80 dBm @ MCS4NSS1 ● -76 dBm @ MCS5NSS1 ● -74 dBm @ MCS6NSS1 ● -72 dBm @ MCS7NSS1 ● -68 dBm @ MCS8NSS1 ● -66 dBm @ MCS9NSS1 ● -89 dBm @ MCS0NSS2 ● -88 dBm @ MCS1NSS2 ● -86 dBm @ MCS2NSS2 ● -81 dBm @ MCS3NSS2 ● -78 dBm @ MCS4NSS2 ● -74 dBm @ MCS5NSS2 ● -72 dBm @ MCS6NSS2 ● -70 dBm @ MCS7NSS2 ● -65 dBm @ MCS8NSS2 ● -63 dBm @ MCS9NSS2	5 GHz 802.11ac (VHT80) ● -88 dBm @ MCS0NSS1 ● -87 dBm @ MCS1NSS1 ● -84 dBm @ MCS2NSS1 ● -80 dBm @ MCS3NSS1 ● -77 dBm @ MCS4NSS1 ● -73 dBm @ MCS5NSS1 ● -71 dBm @ MCS6NSS1 ● -69 dBm @ MCS7NSS1 ● -65 dBm @ MCS8NSS1 ● -63 dBm @ MCS9NSS1 ● -86 dBm @ MCS0NSS2 ● -85 dBm @ MCS1NSS2 ● -82 dBm @ MCS2NSS2 ● -78 dBm @ MCS3NSS2 ● -75 dBm @ MCS4NSS2 ● -71 dBm @ MCS5NSS2 ● -69 dBm @ MCS6NSS2 ● -67 dBm @ MCS7NSS2 ● -62 dBm @ MCS8NSS2 ● -60 dBm @ MCS9NSS2	-

4.3 Standards Compliance

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
- 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

Security Standards

- 802.11i, Wi-Fi Protected Access 2 (WPA2), and WPA
- 802.1X
- Advanced Encryption Standards (AES) and 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
- ETSI 300 019-1-1
- ETSI 300 019-1-2
- ETSI 300 019-1-3

EMF

- CENELEC EN 62311
- CENELEC EN 50385
- RSS-102

RoHS

- Directive 2002/95/EC & 2011/65/EU

Reach

- Regulation 1907/2006/EC

WEEE

- Directive 2002/96/EC & 2012/19/EU