AP311H

Enterprise Hospitality Wi-Fi 6（802.11ax）

Access Point

AP311H is a global enterprise level Wi-Fi 6(802.11ax) hospitality AP, 2.4GHz & 5GHz dual radio four spatial streams, 2.4GHz 2*2:2 + 5GHz 2*2:2, BLE5/Zigbee(802.15.4), 1GE uplink, 4GE downlink, one pair RJ45 passthrough, 1USB. 1.775Gbps high throughput and up to 1024 users, deliver high quality, high density wireless experience.

AP311H supports a maximum concurrent data rate of 1.775Gbps (1.201Gbps in 5GHz, and 574Mbps in 2.4GHz), four spatial streams (2SS in 2.4GHz and 2SS in 5GHz), and all Wi-Fi 6 (802.11ax) features, MU-MIMO, OFDMA, BSS color, etc. Enables faster speeds, more capacity, and efficient airtime allocation for clients on both 2.4Ghz and 5Ghz Wi-Fi bands.

Featuring enhanced WLAN technology with RF Radio Dynamic Adjustment, a distributed control Wi-Fi architecture, secure network admission control with unified access, built in application intelligence and analytics, making it ideal for enterprises of all sizes demanding a simple, secure and scalable wireless solution.

AP311H has integrated support for BLE5 / Zigbee (802.15.4), making it ideal for broad scope of IoT end points and applications.

Wi-Fi 6(802.11ax) Features

Wi-Fi 6(802.11ax) allows enterprises to deliver high performance wireless LAN services with increased throughput, enabling more clients in dense environments and bringing power efficiency to Internet of Things (IoT) devices, while it remains fully backward compatible with existing 802.11 a/b/g/n/ac deployments. Some of the key features enabled on AP311H series are:

• Orthogonal frequency division multiple access (OFDMA) enables more clients to simultaneously operate in the same channel and thereby improving efficiency, latency, and throughput. OFDMA can concurrently address multiple clients in both directions downlink (DL) and uplink (UL), including full 37 OFDMA Resource Units (RUs). OFDMA is very effective in environments where there are many devices with short frames demanding lower latency.

• Multi-user multiple input, multiple output (MU-MIMO) allows more data to be transferred at once and enables an

access point to handle a larger number of concurrent clients. This capability was introduced with 802.11ac, but now with 802.11ax the multi-user performance can be concurrently delivered in both directions downlink (DL) and uplink (UL).

• 1024 quadrature amplitude modulation mode (1024-QAM) boosting peak data-rates by as much as 25 percent.

• BSS Coloring improves spatial reuse in dense environments by providing a mechanism for color coding different overlapping BSS's, allowing more simultaneous transmissions.

• Extended Range (ER) provides increased coverage in scenarios where receiving side encounters high path loss and channel delay spread, especially in outdoor environments.

• Target wake time (TWT) makes Wi-Fi 6 devices more power efficient. This capability lets client devices to sleep much longer, and wake up to less contention, extending the battery life of smart phones, IoT sensors, and other devices.

Plug-and-play deployment

The AP311H works in a fully redundant cluster architecture to provide simplified plug-and-play deployments. The access point (AP) cluster is an autonomous system that consists of a group of APs and a virtual controller, which is a selected access point for cluster management. One AP cluster supports up to 255APs.

The access point cluster architecture ensures simplified and quick deployment. Once the first AP is configured using the configuration wizard, the remaining APs in the network will come up automatically with updated configuration. This ensures that the whole network is up and functional within a few minutes.

Network Management Platform deployment

The AP311H can be managed by CSP (Cloud Service Platform) or ESP (Enterprise Service Platform). APs is managed as one or more AP Groups (a logical grouping of one or more access points). The HAN Network Management Platform embeds a visionary controller-less architecture, providing user friendly workflows for WLAN management together with integrated Authentication Manager which helps define authentication strategy and policy enforcement for Employees, Guest and BYOD devices. The network administrator can obtain a comprehensive view of applications running in the network and apply adequate control to optimize the performance of the network for business-critical applications. Management platform provides advanced options for RF Management, wIDS/wIPS for intrusion detection and prevention.

Quality of service for unified communication apps

The AP311H supports fine tune quality of service (QoS) parameters to differentiate and provide appropriate QoS for each application such as voice, video and desktop sharing. Application aware RF scanning avoids interruption of real-time applications.

Integrated guest management

The AP311H supports role-based management access to the AP cluster which includes Admin, Viewer and GuestOperator access. The GuestOperator access simplifies guest account creation and management, and therefore can be used by any non-IT person, such as a receptionist. The AP311H also supports a built-in customizable captive portal which enables customers to offer unique guest access.

RF management

Radio Dynamic Adjustment (RDA) technology automatically assigns channels and power settings, provides DFS/TPC, and ensures that access points stay clear of all radio frequency interference (RFI) sources to deliver reliable, high-performance wireless LANs.

Product specifications

Radio specification

• AP type: Indoor, dual radio, 2.4 GHz 802.11ax 2x2:2, 5 GHz 802.11ax 2x2:2

• 2.4 GHz: Two spatial stream for up to 573.5 Mb/s wireless data rate.

• 5 GHz: Two spatial stream for up to 1.201 Gb/s wireless data rate.

• Supported frequency bands (country-specific restrictions apply):

- ¬ 2.400 to 2.4835 GHz
- ¬ 5.150 to 5.250 GHz
- ¬ 5.250 to 5.350 GHz
- ¬ 5.470 to 5.725 GHz
- ¬ 5.725 to 5.850 GHz

• Available channels: Dependent on configured regulatory domain

• DFA (Dynamic Frequency Adjustment) optimizes available channels and provides proper transmission power

• Transmit beam forming (TxBF) for increased signal reliability and range

• 802.11n/ac packet aggregation:

Aggregated Mac Protocol Data Unit (A-MPDU), Aggregated Mac Service Data Unit (A-MSDU)

• Supported radio technologies:
- ¬ 802.11b: Direct-sequence spread-spectrum (DSSS)
- ¬ 802.11a/g/n/ac: Orthogonal frequency-division multiplexing (OFDM)
- ¬ 802.11ax: Orthogonal frequency-division multiple access (OFDMA)

• Supported data rates (Mbps):
- ¬ 802.11b: 1, 2, 5.5, 11
- ¬ 802.11a/g: 6, 9, 12, 18, 24,36,48,54
- ¬ 802.11n:6.5 to 300 (MCS0 to MCS15, HT20 to HT40)
- ¬ 802.11ac: 6.5 to 866.7 (MCS0 to MCS9, NSS = 1 to 2 for VHT20/40/80)
- ¬ 802.11ax(2.4GHz): 3.6 to 573.5 (MCS0 to MCS11, NSS=1 to 2, HE20 to HE40)
- ¬ 802.11ax(5GHz): 3.6 to 1,201 (MCS0 to MCS11, NSS=1 to 2, HE20 to HE80)

• Supported modulation types:
- ¬ 802.11b: BPSK, QPSK, CCK
- ¬ 802.11a/g/n/ac: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM
- ¬ 802.11n high-throughput (HT) support: HT 20/40
- ¬ 802.11ac very high throughput (VHT) support: VHT 20/40/80
- ¬ 802.11ax (HE): HE20/40/80

• 1×BLE5/Zigbee（802.15.4）module，up to 6dBm transmit power(class 1)，-93dBm RSSI. Hardware ready for Zigbee.

Interfaces

• Uplink: 1×10/100/1000BASE-T autosensing (RJ-45) port, Power over Ethernet (PoE) 802.3at/af compliant

• Downlink: 4×10/100/1000BASE-T autosensing (RJ-45) port, Eth1 support up to 802.3af PSE.

• Passive pass-through: one pair, back and bottom

• 1× USB 2.0 Type A(5V,500mA)

• Reset button: Factory reset. Press reset button for 5s, AP LEDs will quickly flash for 3s, then AP will restart and restore factory configurations.

Visual Indicators (Two LEDs)

• SYS (tri color)
- ¬ RED flashing: system abnormal, link down
- ¬ RED light: system startup
- ¬ RED and BLUE rotate flashing: OS upgrading
- ¬ BLUE light: system running, dual bands working
- ¬ GREEN flashing: no SSID created
- ¬ GREEN light: system running, single band working
- ¬ RED, BLUE and GREEN rotate flashing: system running, use for location of an AP

• PSE (single color, green)
- ¬ ON: PSE enabled
- ¬ OFF: PSE disabled, default.

Antenna

• AP311H: Built-in 2×2:2 @ 2.4GHz, 2x2:2 @ 5GHz antennas

¬ Integrated omni-directional antennas for 4SS with peak antenna gain of 3.92dBi in 2.4GHz, 4.41dBi in 5GHz.

• Integrated BLE antenna with peak gain 3.85dBi

Receive sensitivity (per chain)

	2.4 GHz	5 GHz
1 Mb/s	-97	
11 Mb/s	-89	
6 Mb/s	-92	-93
54 Mb/s	-75	-76
HT20 (MCS0/8)	-92	-92
HT20 (MCS7/15)	-74	-75
HT40 (MCS0/8)	-90	-90
HT40 (MCS7/15)	-72	-72
VHT20 (MCS0)	-92	-92
VHT20 (MCS8)	-71	-71
VHT40 (MCS0)	-90	-90
VHT40 (MCS9)	-67	-67
VHT80 (MCS0)		-87
VHT80 (MCS9)		-63
HE20 (MCS0)	-93	-93
HE20 (MCS11)	-63	-63
HE40 (MCS0)	-90	-90
HE40 (MCS11)	-61	-61
HE80 (MCS0)		-87
HE80 (MCS11)		-57

Maximum Transmit power (per chain) ± 2dBm

	2.4 GHz	5 GHz
1Mb/s	18 dBm	
11Mb/s	18 dBm	
6Mb/s	18 dBm	18 dBm
54Mb/s	16 dBm	16 dBm
HT20 (MCS0/8)	18 dBm	18 dBm
HT20 (MCS7/15)	15 dBm	14 dBm
HT40 (MCS0/8)	18 dBm	18 dBm
HT40 (MCS7/15)	15 dBm	14 dBm
VHT20 (MCS0)	18 dBm	18 dBm
VHT20 (MCS8)	14 dBm	13 dBm
VHT40 (MCS0)	18 dBm	18 dBm
VHT40 (MCS9)	14 dBm	13 dBm
VHT80(MCS0)		18 dBm
VHT80 (MCS9)		12 dBm
HE20 (MCS0)	18dBm	18 dBm
HE20 (MCS11)	13dBm	12 dBm
HE40 (MCS0)	18dBm	18 dBm
HE40 (MCS11)	13dBm	12 dBm
HE80 (MCS0)		18 dBm
HE80 (MCS11)		12 dBm

Note: Maximum capability of the hardware provided (excluding antenna gain).

Maximums transmit power is limited by local regulatory settings.

Power

• Supports direct DC power and Power over Ethernet (PoE)

• When both power sources are available,

DC power takes priority over PoE

• Maximum (worst case) power consumption:

¬ 25W (IEEE 802.3at PoE or DC)

• Direct DC source: 48V DC nominal, +/- 5%

• Power over Ethernet (PoE): IEEE 802.3at/af source

¬ 25W (input IEEE 802.3at PoE, Eth1 support up to 802.3af 12W PSE)

¬ 12.7W (input IEEE 802.3af PoE), Eth1 PSE disabled.

Mounting

• The AP ships with wall mount kits.

Environmental

• Operating temperature: 0°C to 45°C (+32°F to +113°F)

• Humidity: 5% to 95% non-condensing

• Storage and transportation Temperature: -40°C to +70°C (-40°F to +158°F)

Dimensions/weight

• Single AP excluding packing box and accessories

¬ 86mm (W) x 29mm (D) x 162.5mm (H) -3.39” (W) x 1.14” (D) x 6.40” (H) / 334g / 0.74lb

• Single AP including packing box and accessories

¬ 115 mm (W) x 54 mm (D) x 182 mm (H) -4.52” (W) x 2.13” (D) x 7.17”(H)/ 519g / 1.14lb

Reliability

MTBF: 1,321,181h (150.82 years) at +25ºC operating temperature

Capacity

• Up to 8 SSID/Radio (16 SSID/AP), hardware ready for 16 SSID per radio (32 SSID/AP)

• Support for up to 1024 associated client devices

• Up to 8k APs managed by HAN Networking Management Platform

• Up to 255 APs per Web managed (HTTP/HTTPS) cluster

Software feature

• Auto channel selection

• Auto transmit power control

• Bandwidth control per SSID

• L2 roaming

• L3 roaming with CSP

• Captive Portal

• Internal User Database

• Radius Client

• Wireless QoS

• Band steering

• Client smart load balance

• Client sticky avoidance

• User behavior tracking

• Whitelist/blacklist

• Zero-touch provisioning (ZTP) with support of third-party partner

• NTP server client

• ACL

• Wireless MESH P2P/P2MP

• Rogue AP location and containment

• Wireless Attack Detection

• System log report

• SNMP Trap Notification with CSP/ESP

• Floor plan and heat map with CSP/ESP

Note: some features are limited by local regulatory settings

Authentication & Encryption

• 802.11i, Wi-Fi Protected Access 2 (WPA2), WPA, WPA3(WPA3 - Enterprise with CNSA Option, Personal (SAE), Enhanced Open (OWE))

• 802.1X

• Portal page authentication

• Advanced Encryption Standard (AES), Temporal Key Integrity Protocol (TKIP)

IEEE standard

• IEEE 802.11a/b/g/n/ac/ax

• IEEE 802.11e WMM

• IEEE 802.11h, 802.11i, 802.11e QoS

• IEEE 802.11k Radio Resource Management

• IEEE 802.11v BSS Transition Management

• IEEE 802.11r Fast roaming

Regulatory & certification

• CB Scheme Safety, cTUVus

• CE Marked

• FCC

• EN 60601-1-1 & EN 60601-1-2

• RoHS, REACH, WEEE

• Wi-Fi Alliance (WFA) certified Wi-Fi 6

• Wi-Fi Alliance (WFA) certified Passpoint R3

• EMI and susceptibility (Class B)

• 2014/35/EU Low Voltage Directive

• 2014/30/EU EMC Directive

• 2011/65/EU RoHS Directive

• 2014/53/EU Radio Equipment Directive

• EN 55032

• EN 55035

• EN 50385

• IEC/EN 60950 and 62368

• EN 300 328

• EN 301 893

• EN 301 489-1

• EN 301 489-17

• SRRC

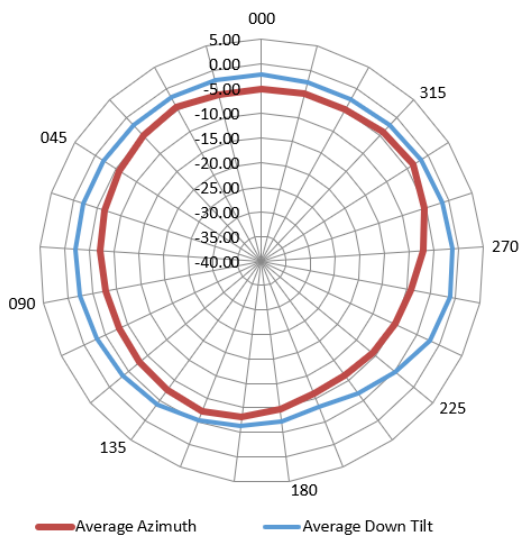
• CCC

Ordering information

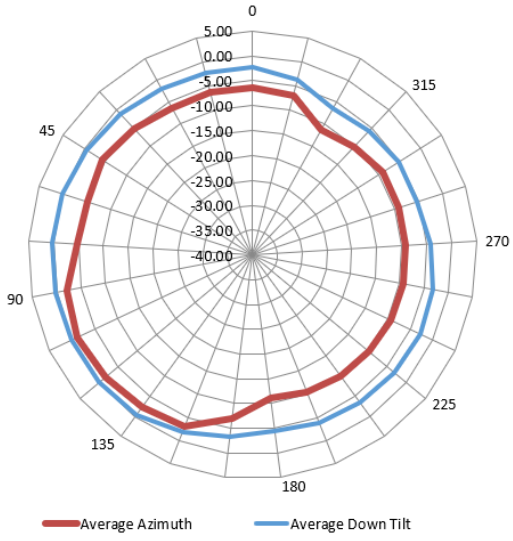
Item	Description
AP311H	Enterprise Hospitality Wi-Fi 6 (802.11ax) AP, 2.4GHz 2*2:2 + 5GHz 2*2:2, 1*BLE5, 1*GbE uplink, 4*GbE uplink, 1pair passthrough, 1*USB, 1*DC jack, built-in antennas.

Figure 1. AP311H antenna pattern plots

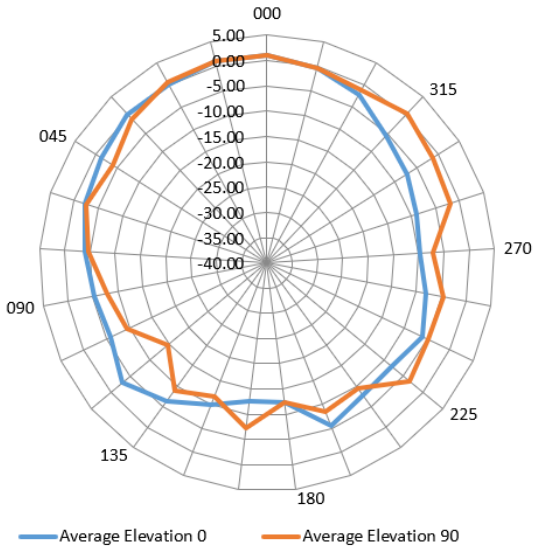
Azimuth plane (top view) **2.45GHz**



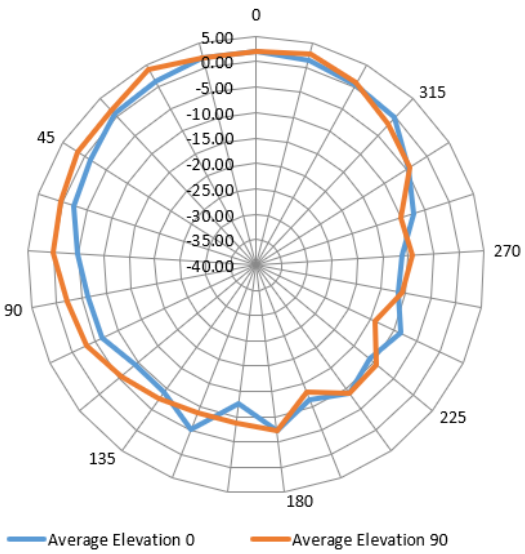
5.5GHz



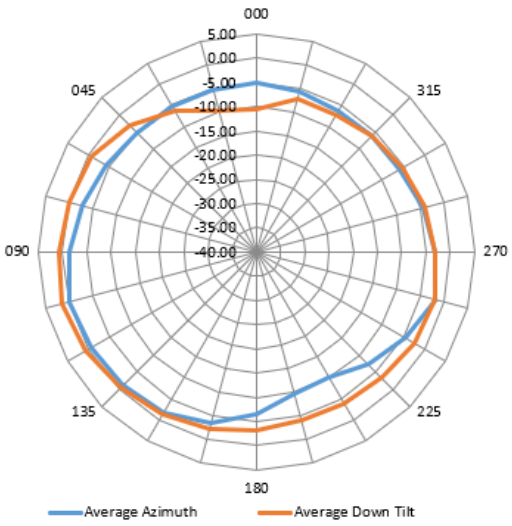
Elevation plane (side view) **2.45GHz**



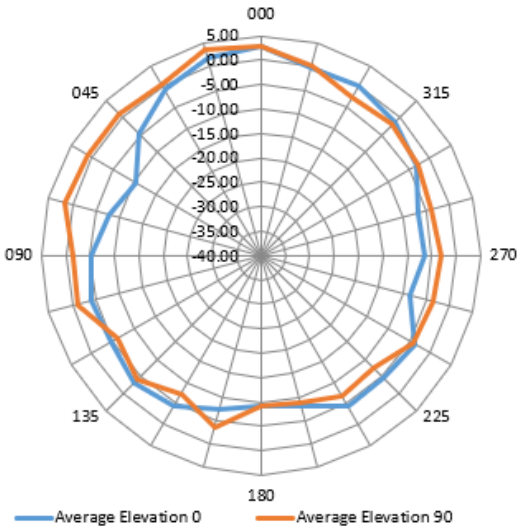
5.5GHz



BLE **Azimuth plane (top view)**



Elevation plane (side view)



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