EWS377AP

Dual Band 802.11ax Series
Indoor Ceiling Mount Access Point

The edge 802.11ax built-in ultra speed Access Point with OFDMA and MU-MIMO technology for high-density and carrier deployment use on multiple applications.

EnGenius Wireless Management Access Point solution is designed for deploying on the versatile indoor application. To service today's requirement on varied networking environment, efficiently manages up to 512 clients (per radio) connections with increased capacity, EnGenius would like to provide the solution as flexible, robust and effective as the organization they desire.

The state-of-the-art OFDMA and MU-MIMO technology brings revolutionary connecting speed and bandwidth for diversity of multimedia applications. EWS 11ax solution engineers with powerful RF interfaces that support maximum 4x4 spatial streams with 2400 Mbps in 5GHz frequency band and 1200 Mbps in 2.4GHz frequency band.

Features

> Built-in Qualcomm Quad-core CPU with supporting powerful computing for driving and boosting performance effectively.

> Dual concurrent 802.11ax architecture and backward compatible with ac Wave 2/ac/a/b/g/n client devices.

> Support for up to 512 associated client devices per radio.

> Bi-directional (Download/Upload) OFDMA utilizes air resource for Access Points and client devices efficiency.*

> Bi-Directional (Download/Upload) MU-MIMO will reduce usage of airtime for each transmission between Access Point and client devices.*

> Advanced 1024-QAM allows Access Points to carry more packets one time could work for delivering high speed rate than the legacy 11ac Access Points.

> The advanced BSS coloring features could increase spatial reuse in pervasive environment.

> Systematic and distributed management over EnGenius ezMaster and EWS Management switch without licensing or subscription fee.

> Compliance with 802.3at or Proprietary 54V PoE Input for flexible installation over 100 meters (328 feet)

> 2.5Gbps Ethernet port to maximize connecting speed on wireless performance on EWS377AP.

Wireless Management solution is ideal for deployment in these venues:

> Airport Terminals

> Warehouse Operations

> College classrooms

> Corporate workspace

> Rail Station

> Shopping Malls

> Resort Properties

> Stadiums & Arena

> Medical Centers

> Luxury Homes & Estates

*These functions will be available on 2.0 platform.

OFDMA: A foundation from 4G LTE for High Density Connectivity

Orthogonal frequency-division multiple access (OFDMA) allows a single transmission to be split by frequency within a channel. Compared to OFDM technology, OFDMA could scale air resource to carry different types of traffic for delivering to destination at the same time, such as documents and video streams. The optimal solution will help 11ax Access Points to allocate air resource efficiency and reduce the latency between AP and client devices.

Carry varied content over DL/UL MU-MIMO with OFDMA via Beamforming

Be a prior 11ax solution, EnGenius AP is not only built in powerful RF interfaces but it also features advanced Multi-Users Multiple input Multiple output (MU-MIMO) on **both download side and upload side**, which enhances a dramatic break-through in the performance and flexible transmission between Access Points and wireless client devices.

MU-MIMO allows multiple spatial streams to be allocated to different clients simultaneously, increasing totally throughput, reduce latency, capacity of the WLAN system and increase spectral efficiency on download side. Compared to download side, MU-MIMO upload side will manage varied client devices to contest air resource within a channel under a pervasive environment. The MU-MIMO upload side coordinates with OFDMA upload side to arrange different types of traffic for using a proper bandwidth within a channel. The intelligent technology will carry multimedia content and web browsing data easily without consuming more time on round-trip between AP and client devices. The smoothly transmission will reduce collision times and enhance capacity of air resource, as well as optimize users experience.

Beamforming is a standard in 11ax which allows Access Points to focus energy of multiple antennas to transmit to a particular client device in that direction of that client. The innovative technology significantly enhances the higher signal-to-noise ratio and greater throughput of that client higher signal-to-noise ratio and greater throughput of that client.

Enhance Capacity and Efficiency

Compared to 11ac solution, 11ax solution could carry **4x symbol OFDM symbol** which can be significantly enhanced efficiency and transmitting PHY rate, as well as extend coverage on both indoor and outdoor application easily. To carry more data at the same time, modulation has been expanded from 11ac 256-QAM to **1024-QAM** which can be enhanced **25% capacity** of bit and reduce error margin during delivering data. The other breakthrough innovation of 11ax is to introduced **BSS coloring** technology for marking different colors on each data which will allows client devices to stop receiving a frame and return to sleep mode as soon as they recognize these frames are not of interest to them. The benefit of BSS coloring also reduces channel interference and channel collision of an access point, as well as improve to transmit signal easily.

Exquisite RF Management to Achieve Optimal Wireless Performance

To assist client devices to get the optimal performance under a pervasive environment, **Band Steering** automatically steers dual-band capable client devices to the appropriate channel, while prefer 5GHz or band balancing works to maintain a balanced number of clients per Access Point. Configuring multiple Access Points to serve your own devices (BYOD) in enterprise class wireless LAN environment can enable **Fast Roaming** to reduce roaming delay time and to secure seamless connection on VOIP service when mobile devices move between Access Points.
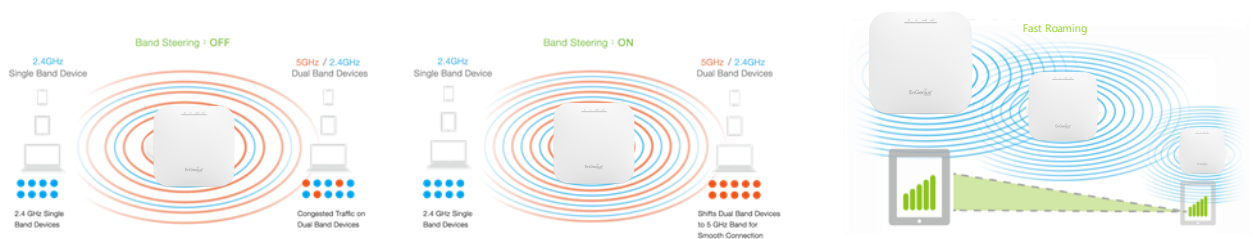
Securable Portals for different purpose

EnGenius provides **Captive Portal** to differentiate the authority of users on using Internet access. Considering the value added function, administrators offer a securable service to serve client devices including to encrypt over database of an authentication server, customized-branded splash of webpage, simplified logon service, and promoting content and using polices. Administrators can also use **Virtual LAN (VLAN)** with **Guest Network** to isolate each client for avoiding an unnecessary touch, leaking sensitive data, and enhancing Internet security and reliability.

Restrain Wireless Traffic under a Pervasive Environment

To effective manage the usage of each client devices at a LAN topology, **Traffic Shaping** controls the bottle of bandwidth to offer the limited bandwidth for an individual **SSID** or **each client** per Access Point. This constraint offers the constant bandwidth to perform specific applications like VOIP and video streaming fluently and smoothly without air congestion on each client devices.

Comprehensive Network Protection

With EWS Access Points, your network is protected from attacks at multiple level through advanced wireless encryption standards such as Wi-Fi Protected Access (WPA3 and WPA2) which uses an authentication database and IEEE 802.1X with Radius server. EnGenius also offers the advanced encryption standard (AES) to encrypt traffic between Access Points and client devices. EnGenius wireless management system offers advanced mechanism to detect and to prohibit threats over **Rogue AP detection**. Once threats or event are detected, built-in **E-mail Alerts** systems will automatically deliver an e-mail notification for administrators to trigger immediate actions on these networks threats.

Simplified Management and Configuration over ezMaster or EWS Management Switch

EWS-series managed Access Point is designed to work with EWS-series Wireless Management Switch and ezMaster management platform for scalable and flexible wireless management application.

Whether you want to manage a few or 1000+ Access Points and switches on network in different locations with different segment —or 10 to 10,000 concurrent users, the **EnGenius ezMaster platform** makes these management and configuration simplified and intuitively over centralizing bulk configuration, provision and monitoring which is the lower operating and maintenance cost from a local or remote server—or in the cloud.

With the small scope or maximum 50pcs managed requirement, **EWS management switch** can perform auto discovery to search EWS managed Access Points. WLAN administrator can easily use individual or cluster settings to fast deploy numbers of AP with desired settings, saving repetitive configuration tasks.

Via SmartSync Redundancy, if the connection to your ezMaster platform is lost, EWS management switch will automatically store syslog and statistics from the APs. Then, when the connection is re-established, all information will be re-synchronized and sent to ezMaster Management platform. Administrators will not miss any statistics and reports.
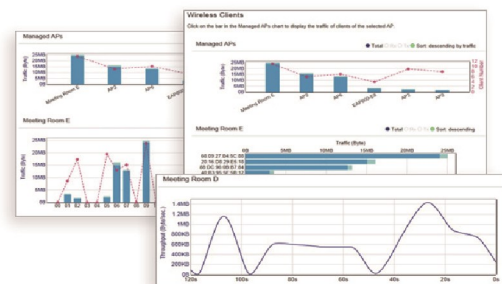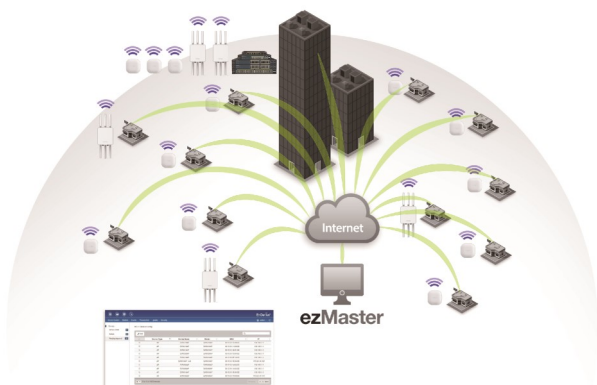
Technical Specifications Wireless Indoor Managed Access Point

Wireless Radio Specification

Access Point Type:
Indoor, dual radios concurrent,
EWS377AP: 5GHz 802.11 ax 4x4 MU-MIMO is backwards compatible with 802.11 ac/a/n mode, 2.4GHz 802.11 ax 4x4 MU-MIMO is backwards compatible with 802.11 b/g/n.

SU-MIMO:
EWS377AP: Four(4) spatial stream SU-MIMO for 2.4GHz and four(4) spatial stream SU-MIMO for 5GHz up to totally 3,548 Mbps wireless data rate to a single wireless client device under the both 2.4gHz and 5GHz radio.

MU-MIMO
EWS377AP:
Four(4) spatial streams multi-user (MU)-MIMO for up to 2400 Mbps wireless data rate to transmit to two(2) two streams MU-MIMO 11ax capable wireless client devices under 5GHz simultaneously.
Four(4) spatial streams multi-user (MU)-MIMO for up to 1148 Mbps wireless data rate to transmit to two (2) two streams MU-MIMO 11ax capable wireless client devices under 2.4GHz simultaneously.

Frequency Radio
2.4GHz: 2400MHz ~ 2835MHz
5GHz: 5150MHz~5250MHz
       5250MHz~5350MHz
       5470MHz~5725MHz
       5725MHz~5850MHz
Support radios and channels will be varied on the configured regulatory domain.

Supported Radio Technology
802.11ax: Orthogonal Frequency Division Multiple Access (OFDMA)
802.11b: Direct-sequence spread-spectrum (DSSS)
802.11ac/a/g/n: Orthogonal Frequency Division Multiple (OFDM)
802.11ax supports very high throughput (VHT) — HE 20/40/80 MHz
802.11ac supports very high throughput (VHT) — VHT 20/40/80 MHz
802.11n supports high throughput (HT) — HT 20/40 MHz
802.11n supports very high throughput under the 2.4GHz radio –VHT40 MHz (256-QAM)
802.11n/ac/ax packet aggregation: A-MPDU, A-SPDU

Supported Modulation Type
802.11b: BPSK, QPSK, CCK
802.11a/g/n: BPSK, QPSK, 16-QAM, 64-QAM
802.11ac: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM
802.11ax: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM

Transmit Power (Maximum Value)
EWS377AP 2.4GHz: 23dBm; 5GHz: 23dBm
Maximum power is limited by regulatory domain

MU-MIMO
MU-MIMO allows multiple spatial streams to be allocated to different clients simultaneously on both download and upload sides.

OFDMA
Orthogonal frequency-division multiple access (OFDMA) allows a single transmission to be split by frequency within a channel.

Tx Beamforming (TxBF)
Increasing signal reliability and transmitting distance.

High Density Connectivity
Provides connectivity for a maximum of 512 associate clients per radio .

BSS Coloring
BSS coloring marks different colors on each data which will allows client devices to stop receiving a frame and return to sleep mode as soon as they recognize these frames are not of interest to them.

Target Wake time (TWT)
The target wake time feature lets your devices to keep a radio receiver sleeping and wake it up as needed to receive periodic transmissions from an access point. The result is significant power-saving for battery-powered devices.

Supported data rates (Mbps)
EWS377AP:
802.11b: 1, 2, 5.5, 11
802.11a/g: 6, 9, 12, 18, 36, 48, 54
802.11n: 6.5 to 600 (MCS0 to MCS15)
802.11ac: 6.5 to 1733 (MCS0 to MCS9, NSS=1 to 4)
802.11ax:
2.4GHz: 9 to 1148 (MCS0 to MCS11, NSS=1 to 4)
5GHz: 18 to 2400 (MCS0 to MCS11, NSS=1 to 4)

Power

Maximum Power Consumption
EWS377AP : 17.5W

Power Source
EWS377AP : DC12V/2A or 802.3at Input

Antenna

Integrated Antenna
2.4GHz: 3.0 dBi
5GHz: 3.0 dBi

Interfaces

Networking Interface
EWS377AP: One (1) 10/100/1000/2500 BASE-T RJ-45 Ethernet Port

DC Powering Interface
One (1) DC Jack interface

LED Indicators
Display system and wireless transmission status

Reset Button
Convert Access Point to the Factory default or the Users Default

Mounting

Ceiling Mounting
Assemble a mounting bracket for drop ceiling

Wall Mounting
Mount Access Point on a flat wall via included accessories

Mechanical & Environment

Dimensions (L x W x H)
EWS377AP: 205 mm x 205 mm x 33.2 mm

Weight (Without accessories)
EWS377AP : 597g

Operating:
Temperature: 0°C~40°C (32°F~104°F)
Humidity: 0% ~ 90% typical

Storage:
Temperature: -40°C~80°C (-40°F~176°F)
Humidity: 0% ~ 90% typical

Technical Specifications Wireless Indoor Managed Access Point

Compliance Regulatory

FCC
Subpart15 B
Subpart C 15.247
Subpart E 15.407

CE
EN 300 328
EN 301 893
EN 301 489-1/-17
EN 50385
EN 55032
EN 55035

IC
RSS-247 Issue 2
RSS-247 Issue 5
ANSI C63.4
ANSI C63.10

RED 2014/53/EU

Low Voltage Directive 2014/30/EU

CB
IEC 62328-1

Technical Specifications Wireless Indoor Managed Access Point

Operating Modes

Managed Mode
Cluster setting and centralized management over ezMaster or EWS management switch

Stand Alone Mode
Independent services wireless client devices.

Access Point/Mesh Modes
* Mesh mode will be supported on August, 2019

Exquisite RF Management

Background Scanning
Regular scanning signal level of an environment to provide parameters for performing Auto Transmit power and auto channel.

Auto Transmit Power
Automatically adjust power level when EWS access points work at an environment.

Auto Channel
Automatically assign a clearly channel to perform RF transmission under a pervasive environment.

Fast Roaming (802.11k)
Collect the parameters of neighborhood Access Points to find the optimal AP.

Fast Roaming (802.11v)
Cognize the signal strength of client devices under each to steer these client devices to one of Access Points if signal level is less than the default value of AP systems.
* This function will be available in Q4, 2019.

Band Steering
Steer client devices to a proper frequency band for getting more bandwidth and speed under an Access Point.

RSSI Threshold
Kick the client which the signal (RSSI) is above the set value from the AP for reducing the interference and optimize the connecting quality.

Optimize Performance

Quality of Service
Compliance with IEEE 802.11e standard
Prioritizes voice over data for both tagged and untagged traffic
Transmit video, voice and data at the same SSID

Power Save Mode
Support U-APSD

Pre-Authentication
Compliance with 802.11i &11x

PMK Caching
Compliance with 802.11i
If wireless client devices has authenticated to an access point, it does not perform a full authentication exchange when client devices roaming between access points.

Fast Roaming (802.11r)
Use a Fast Transition key to handover between Access Points

Multicast to Unicast Conversion
Using the IGMP protocol, an access Point delivers high definition content to a large number of clients simultaneously.

Easy to Management

Multiple SSIDs
BSSID support
Support 8 SSIDs on both 2.4GHz and 5GHz bands

Captive Portal (NAT / Bridge mode)
Differentiate the authority of users on using Internet access

Guest Network (Only in Stand-alone mode)
Isolate each client for avoiding an unnecessary touch, leaking sensitive data, and enhancing Internet security and reliability.

VLAN Tag
Independent VLAN setting can be enable or disable. Any packet that enters the Device without a VLAN tag will have a VLAN tag inserted with a PVID (Ethernet Port VID)

VLAN Per SSID
Integrate VLAN ID with a SSID interface to forward packets over the defined path.

Management VLAN
Feature is enabled with specified VLAN ID, the device will only allow management access with the same specified VLAN ID from remotely location by using protocols such as telnet, SSH, snmp, syslog etc.

Traffic Shaping
Controls the bottle of bandwidth to offer the limited bandwidth for an individual **SSID** or **each client** per Access Point.

MAC Address Filtering
Filter up to 32 sets MAC addresses per SSID

E-Mail Alert
Provides a network monitoring tool for administrators to stay informed the configuration change.

Finger Printing
The value added solution collect information of client devices including name of devices, IP address, MAC address, Operating system version, transmitting and receiving data, and signal level.

Save Configuration as Users Default
Save the customized configuration as default value for different customer demands.

Wi-Fi Scheduler
Perform a regular reboot on access point at assigned schedule
Perform it to enable or disable 2.4GHz or 5GHz interface from a period time.

SNMP &MIB
v1/v2c/v3 support
MIB I/II, Private MIB
CLI supported

RADIUS Accounting
Help operators to offload 3G to Wi-Fi seamlessly

Wireless Clients list
Provide the list to display real status of wireless client devices on this Access Point.

Hotspot 2.0
This function will allow client devices to discover wireless Access Point under an environment and to automatically exchange data for getting authorization on accessing Internet when roaming between Access Points.
* The function will be available in September, 2019

Comprehensive Protection

Wireless Encryption Standard
WPA3/WPA2 AES
WPA3/WPA2 Enterprise (WPA-EAP AES)

Hide SSID in beacons

Rogue AP Detection
Enable the function to detect the fake access points in the environment.

L2 Isolation
Block the communication between the associated clients to communicate with other clients from all hosts on the same subnet.

L2 Isolation with whitelist
Users can enable this function to allow devices to be accessed by client devices when enabling L2 Isolation.

Client Isolation
Block/Isolate the communication between the associated clients under the same WLAN.

HTTPS
A secure communication protocol can be enabled to allow secure management web access over a computer network.

SSH Tunnel
A secure communication protocol can be enabled to allow secure remote shell access or command execution.

RF Performance Specification—EWS377AP

Channel	Data Rate	Transmit Power (Aggregated, dBm)	Receive Sensitivity (Aggregated, dBm)
802.11b 2.4 GHz	1 Mbps	23	-95
	11 Mbps	23	-87
802.11g 2.4 GHz	6 Mbps	23	-88
	54 Mbps	21	-73
802.11a 5 GHz	6 Mbps	23	-88
	54 Mbps	22	-73
802.11n HT20 2.4 GHz	MCS 0 / 8 / 16 /24	23	-88
	MCS 7 / 15 / 23 / 31	21	-68
802.11n HT40 2.4 GHz	MCS 0 / 8 / 16 /24	22	-85
	MCS 7 / 15 / 23 / 31	20.5	-68
802.11n HT20 5GHz	MCS 0 / 8 / 16 /24	23	-88
	MCS 7 / 15 / 23 / 31	22	-69
802.11n HT40 5GHz	MCS 0 / 8 / 16 /24	23	-84
	MCS 7 / 15 / 23 / 31	21.5	-67
802.11ac VHT20 5GHz	MCS0	23	-87
	MCS8	21	-64
802.11ac VHT40 5GHz	MCS0	23	-84
	MCS9	20	-61
802.11ac VHT80 5GHz	MCS0	23	-81
	MCS9	20	-57
802.11ax HE20 2.4GHz	MCS0	23	-88
	MCS11	16.5	-64
802.11ax HE40 2.4GHz	MCS0	23	-85
	MCS11	17.5	-64
802.11ax HE20 5GHz	MCS0	23	-87
	MCS11	18.5	-60
802.11ax HE40 5GHz	MCS0	23	-84
	MCS11	18.5	-57
802.11ax HE80 5GHz	MCS0	23	-81
	MCS11	18.5	-53

*Maximum RF performance of the hardware provided. Maximum transmit power is limited by local regulatory.
*The supported frequency bands are restricted by local regulatory requirements.
*Transmit power is configured in 1.0dBm increments.

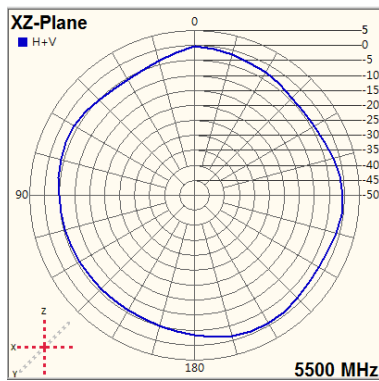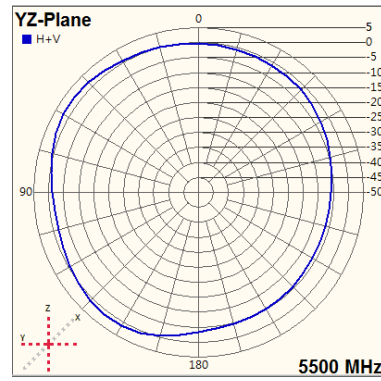## Antennas Patterns Wireless Indoor Managed Access Point

EWS377AP
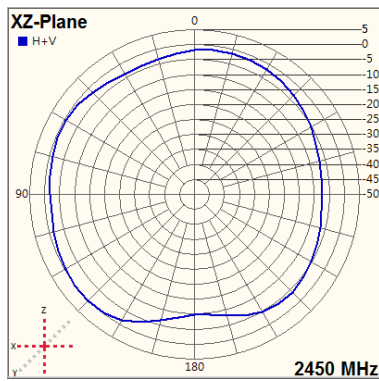
2.4GHz H-Plane	2.4GHz E-Plane
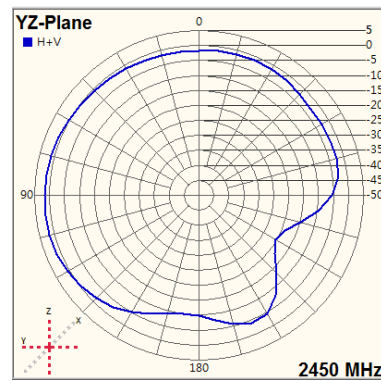
5GHz H-Plane	5GHz E-Plane

Physical Interfaces

Kensington Lock

LED Indicators

Mounting Slide

Reset Button

DC-Jack

RJ45
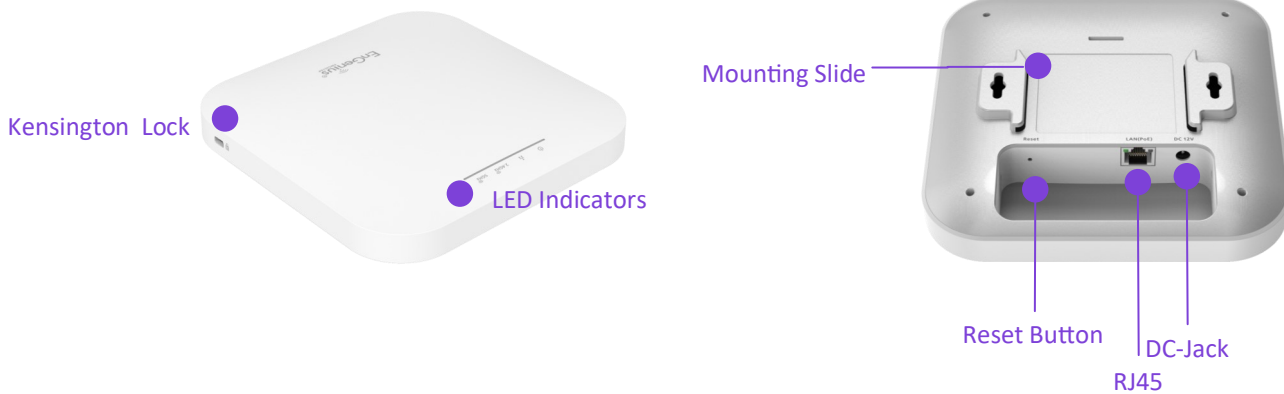
Models	EWS377AP
Standards	802.11ax and ac/a/b/g/n compliance
Frequency	2.4GHz+5GHz
Data Rates	1148Mbps + 2400 Mbps
Physical Interfaces	1 x 2.5G Eth., DC12V
Antennas	2.4GHz: 3.0dBi/chain; 5GHz: 3.0dBi/chain
Radio Chains/Streams	5/2.4GHz: 4x4/4