



**WP8331**  
**802.11ac Dual Band PoE Access Point**  
**External Specification**

**Version: V0.4**

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### Specification Revision History

<b>Version</b>	<b>Revised Date</b>	<b>Person Name</b>	<b>Content Revised</b>
0.1	2016/05/13	Flora Yu	First edit
0.2	2016/05/20	Flora Yu	Change CPU platform
0.3	2016/08/03	Flora Yu	Change BLE chip to support interface via USB Update certification requirement
0.4	2016/10/13	Flora Yu	Increasing Rx sensibility number

# 1 Product Descriptions

The WP8331 is a two radios, dual band, 802.11ac access point. It provides powerful WLAN supporting wireless speed up to 300Mbps on 2.4GHz and 867Mbps on 5GHz, one Ethernet port to connect to the backbone network, one Ethernet ports can be aggregated to connect to one computer through the network cables. Besides, the WP8331 supports 802.3at PoE PD to allow the device powered by PoE switch remotely.

To protect data during wireless transmission, the device supports WEP data encryption and WPA/WPA2 wireless security to ensure network safely.

The WP8331 is ideal for a variety of medium density enterprise and hotspot environments including SMBs, hotels, retail outlets and branch offices.

# 2 Product Specifications and Features

## 2.1 H/W Features

### 2.1.1 Specification

Key Components / Connectors / Performance	
Processor	QCA IPQ4028
Wireless Chipset	Integrated with IPQ4028 – 2.4G Integrated with IPQ4028 – 5G
BT/BLE	<a href="#">CSR8510 (optional, layout reserved via USB to SoC)</a>
GE PHY	QCA8072
SPI Flash	64Mbytes (pin-to-pin downsize) – default
<a href="#">NAND Flash</a>	<a href="#">128MB – optional/reserved</a>
DDR3	256Mbytes (pin-to-pin downsize or upsize to 1GB)
Console	Internal console port
Interfaces	
Ethernet	1x 10/100/1000 Base-TX MDI/MDIX RJ-45 port with PoE PD 802.3 at 1x 10/100/1000 Base-TX MDI/MDIX RJ-45 port  Compliant with following standards: 1. IEEE 802.3/802.3u 2. Hardware based 10/100/1000, full/half, flow control auto negotiation 3. Full duplex IEEE 802.3x flow control and half duplex back-pressure flow control

Wireless	802.11ac 2.4GHz on board 802.11ac 5GHz on board BT/BLE on board
	2 internal antennas – 2.4G antenna 2 internal antennas – 5G 1 internal antenna – BT/BLE
	IEEE 802.11b, IEEE 802.11g, IEEE 802.11n, IEEE 802.11ac compliant
	Data Rate: 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 802.11g: 54, 48, 36, 24, 18, 12, 9 & 6 Mbps 802.11b: 11, 5.5, 2 & 1 Mbps 802.11n : 20 MHz BW: 130, 117, 104, 78, 52, 39, 26, 13Mbps 40 MHz BW: 270, 243, 216, 162, 108, 81, 54, 27 Mbps 802.11ac : 20MHz BW : 173, 144, 130, 115, 86, 57, 43, 28,14 Mbps 40MHz BW : 400, 360, 300, 270, 240, 180, 120, 90, 60, 30 Mbps 80MHz BW : 867, 780, 650, 585, 520, 390, 260, 195, 130, 65 Mbps
	Modulation: 802.11g: OFDM, BPSK, QPSK, 16QAM, 64QAM 802.11b:CCK(11&5.5 Mbps), DQPSK (2Mbps), DBPSK (1Mbps), DSSS 802.11n: PSK/CCK, DBPSK, DQPSK, OFDM 802.11ac: DSSS, OFDM, MIMO-OFDM, 16QAM, 64QAM, 256QAM
	Operating Frequencies: USA – FCC                                     2412~2462MHz Canada – IC                                     2412~2462MHz Europe – ETSI                                   2412~2472MHz
	Operating Frequencies: 2400 ~ 2484.5 MHz 5150MHz ~ 5250MHz and 5725MHz ~ 5850MHz for US & Canada 5150MHz ~ 5350MHz for Europe 5470MHz ~ 5725MHz for Europe 5030MHz~5091MHz and 5150MHz ~ 5250MHz for Japan 5150MHz ~ 5350MHz for Australia 5470MHz ~ 5725MHz for Australia (except channel 120, 124 and 128) 5725Mhz ~ 5825Mhz for Australia
	Output Power: 2.4GHz band (discrete PA/LNA) 802.11n: 20 +/- 2 dBm 802.11g: 20 +/- 2 dBm 802.11b: 20 +/- 2 dBm  5GHz band (discrete PA/LNA) 802.11a : 20 +/-2 dBm 802.11n : 20 +/-2 dBm 802.11ac : 18 +/-2 dBm

	Rx sensitivity: 2.4GHz band, 802.11b@11Mbps: -91 +/- 2dBm 802.11g@54Mbps: -76 +/- 2dBm 802.11n MCS7: -73 +/- 2 dBm  5GHz band, 802.11a @6Mbps: -93+/- 2dBm 802.11a @54Mbps: -76+/- 2dBm 802.11n MCS7 : -72 +/- 2dBm 802.11ac MCS9:-64 +/- 2dBm
	BT Peak Gain: 2.6 dBi 2.4G Ant _1: Peak Gain: 4.7 dBi Ant _2: Peak Gain: 3.3 dBi 5G 5180~5240 MHz Ant _1: Peak Gain: 3.8 dBi Ant _2: Peak Gain: 5.0 dBi 5745~5825 MHz Ant _1: Peak Gain: 5.1 dBi Ant _2: Peak Gain: 5.0 dBi
	Impedance: 50 Ohm nominal
	Antenna efficiency - 2.4G: 50%
	Antenna efficiency - 5G: 60%
	Antenna efficiency - BLE: 40%
	V.S.W.R.: 2.0:1 Max
USB	Host 2.0 (optional)
Reset	1 x reset button

### 2.1.2 LED indicators

- from left to right (total 5 LEDs)



Location	LED Indicative	Color	Status	Description	
Per device	Power	Green	Solid Light	Power on	
			Light off	Power off	
	WLAN	Green (5G)	Solid Light	Connect to WLAN port	
			Blinking	WLAN activity present	
			Light off	No activity or power off	
			Amber (2.4G)	Solid Light	Connect to WLAN port
				Blinking	WLAN activity present
Light off	No activity or power off				
Per port	LAN	Green	Solid Light	Device connected to LAN port at 10/100/1000Mbps	

			Blinking	LAN Activity present
			Light off	Not Connected

## 2.2 RF performance

(*Note: The transmit power of WP8331 should be SW configurable according to countries' regulatory*)

- ❖ Max Tx power per chain @ 2.4GHz: 20dBm $\pm$ 2/Chain
- ❖ Max Tx Power per chain @ 5GHz: 20dBm $\pm$ 2/Chain

Maximum Transmit Power (per chain) $\pm$ 2 dBm		
	2.4GHz	5G
1Mbps	20dBm	-
11Mbps	20dBm	-
6Mbps	20dBm	20dBm
54Mbps	18dBm	19dBm
HT20(MCS 0/8)	20dBm	20dBm
HT20(MCS 7/15)	18dBm	19dBm
HT40(MCS 0/8)	20dBm	20dBm
HT40(MCS 7/15)	18dBm	18dBm
VHT80 MCS0		18dBm
VHT80 256QAM @ MCS 8	-	17dBm
VHT80 256QAM @ MCS 9	-	16dBm

Receive Sensitivity (per chain) $\pm$ 2 dB		
	2.4GHz	5GHz
11 g (6Mbps)	-93	-
11 g (54Mbps)	-76	-
11 a (6Mbps)	-	-93
11 a (54Mbps)	-	-76
HT20(MSC 0/8)	-92	-92
HT20(MSC 7/15)	-73	-71
HT40(MSC 0/8)	-90	-89

HT40(MSC 7/15)	-70	-68
VHT20 MCS 9	-	-65
VHT40 MCS 9	-	-64
VHT80 MCS 9	-	-60

### 2.3 S/W Features

<b>Software specification</b>		
<b>Feature Item</b>	<b>Feature</b>	<b>Detailed Description</b>
Wireless	Wireless mode	11b/g/n 11a/ac
	Operation mode	Access point mode (Support both normal station and WDS station)
	Bandwidth	20MHz 20/40MHz dynamic 20/40/80MHz dynamic
	Aggregation in 11n mode	A-MPDU
	SSID	Support 4 virtual AP
	QoS	EDCA WMM QoS-DSCP configurable via web UI
	Other parameter configurable via Web UI	Transmit power adjustable (four level: full, 1/2, 1/4, 1/8) DTIM Guard interval (short/long)
Security	Authentication	WPA/WPA2 Personal (PSK), 802.1X Authentication with RADIUS Client Enterprise (802.1x): PEAP, TTLS, TLS
	Encryption	AES, TKIP, WEP 64/128,
Management	Network setting	IPv4 static IP & DHCP client
	Statistics	Statistics of wired, wireless associated stations accessible
	SNMP v1/v2	MIBII ( <i>survey throughput, data statistics, location</i> )
	Wireless ACL in AP mode	Based on MAC address
	Firmware upgrade	via Web UI via SNMP
	System log	Syslog
	Discovery tools	LiteON Locator

For customization, like GUI / SNMP MIBs/ configuration tool or customer internal utility, will discuss with customer once project is awarded.

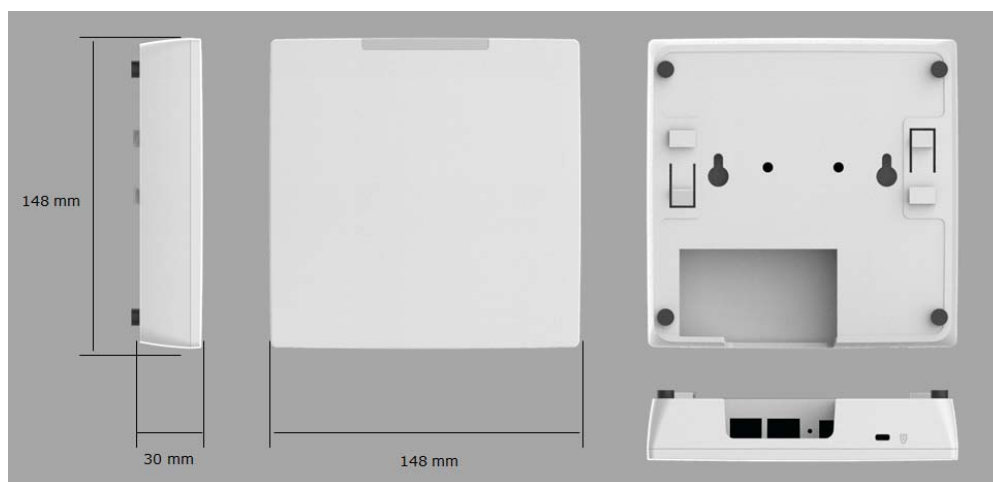
### 3 Mechanical and Environment Design

#### 3.1 Case (details refer to ME drawing separately)

##### A. ID/Tool (leverage WP8336-AB)

This ID is a small form factor within 146x146mm. The bottom ID/ME shall seamlessly (without tooling updates) support potential different styles of top cover for customers.

The ID has a Kensington lock hole on the enclosure.



##### B. I/O port (back view, ordering from right to left)



##### C. Mounting Kit

1. It needs to accommodate Mojo four mounting kits for T-bar and hard surface mount.
2. There are three T-bar width supported, 15, 24 and 38mm.
3. The hard flat surface mounting including wall and ceiling mount
  - a. standard, 2 key holes in the central part on bottom case (optional)
  - b. optional accessory, separate bracket

#### 3.2 Physical & Environment

##### 3.2.1 Power

- PoE DC 48V
- Optional external power adapter, (to be quoted separately)
  - Input: 100-240VAC, 50/60Hz
  - Output: Switching 12V DC/1.5A (for DC jack center pin 2.0mm)
- Reset Button: Reset to factory default by pushing button for 5 sec



### **3.2.2 Operation Temperature**

- Temp: 0° C to +45° C (+32° F to +113° F)
- Humidity: 5% ~ 95%R.H non-condensing

### **3.2.3 Storage Temperature**

- Temp: -4°F to 149°F (-20°C to 65°C)
- Humidity: 5% ~ 95% non-condensing

## **4 Certification Requirements**

### **STATUATORY**

- USA (Non DFS)
- USA (DFS)
- Canada (IC)
- Europe (CE)
- Japan (TELEC)
- India (WPC)
- Korea (KCC)
- Taiwan (NCC)
- China (MII-NAL)
- AUS/NZ

### **SAFETY**

- USA UL
- Canada cUL
- WW CB (IECEE)
- China CCC

### **Others**

- RoHS (self- announcement)
- WEEE (self- announcement)

**FCC Statement:**

## Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For product available in the USA/Canada market, only channel 1~11 can be operated. Selection of other channels is not possible.

This device and its antenna(s) must not be co-located with any other transmitters except in accordance with FCC multi-transmitter product procedures.

The device for operation in the band 5150–5250 MHz is only for indoor use

**IMPORTANT NOTE:**

## FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator & your body.

**IC Statement:**

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

For product available in the USA/Canada market, only channel 1~11 can be operated.

Selection of other channels is not possible.

Pour les produits disponibles aux États-Unis / Canada du marché, seul le canal 1 à 11 peuvent être exploités. Sélection d'autres canaux n'est pas possible.

This device and its antenna(s) must not be co-located with any other transmitters except in accordance with IC multi-transmitter product procedures.

Referring to the multi-transmitter policy, multiple-transmitter(s) and module(s) can be operated simultaneously without reassessment permissive change.

Cet appareil et son antenne (s) ne doit pas être co-localisés ou fonctionnement en association avec une autre antenne ou transmetteur.

The device for operation in the band 5150–5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems.

les dispositifs fonctionnant dans la bande 5150-5250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux.

The maximum antenna gain permitted for devices in the band 5725-5850 MHz shall be such that the equipment still complies with the e.i.r.p. limits specified for point-to-point and non-point-to-point operation as appropriate.

le gain maximal d'antenne permis (pour les dispositifs utilisant la bande 5725-5850 MHz) doit se conformer à la limite de p.i.r.e. spécifiée pour l'exploitation point à point et non point à point, selon le cas.

**IMPORTANT NOTE:**

IC Radiation Exposure Statement:

This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator & your body.

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.