

# FortiAP™ Series

Cloud or FortiOS-managed Access Points

FortiAP™ access points are managed centrally by the integrated WLAN controller of any FortiGate® security appliance or through the free FortiCloud provisioning and management portal. With the integration of the wireless controller functionality into the market-leading FortiGate appliance, these APs are perfect for campus and branch deployments. Fortinet’s Security Fabric enables you to easily manage wired and wireless security from a Single-pane-of-glass management console and protects your network from the latest security threats.



## Unified Management

Unified management console simplifies operations, ensuring consistent and effective policy enforcement and compliance.



## Advanced Security Protection

Wireless LAN security done right, from the leader in network security. Integrated Firewall, IPS, Application Control, and Web Filtering protect the wireless LAN from the latest security threats.



## Built-in Wi-Fi Security

Protects the network from advanced wireless threats and satisfies PCI DSS compliance.

## Product Offerings

### 802.11ac Wave 1

**FAP-320C** 3x3 MIMO AP with dual radio

**FAP-321C** 3x3 MIMO AP with dual radio

### 802.11ac Wave 2

**FAP-221E** 2x2 MU-MIMO APs with dual radio  
**FAP-223E**

**FAP-222E** Outdoor, IP67 rated AP, 2x2 MU-MIMO with dual radio with a variety of external antenna options

**FAP-224E** Outdoor, IP67 rated AP, 2x2 MU-MIMO with dual radio, internal antennas

**FAP-231E** 2x2 MU-MIMO AP with three radios, internal antennas

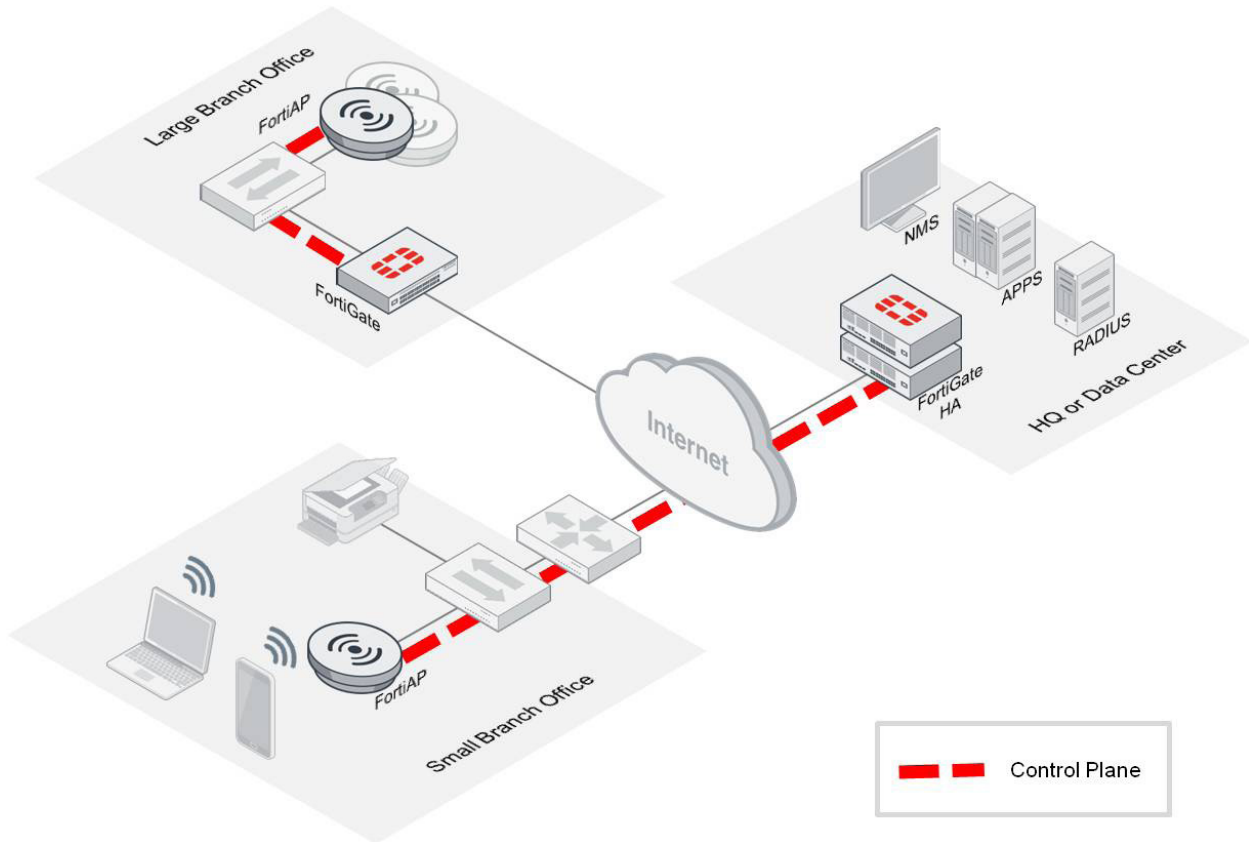
**FAP-321E** 3x3 MU-MIMO AP with dual radios, internal antennas

**FAP-421E** 4x4 MU-MIMO APs with dual radio  
**FAP-423E**

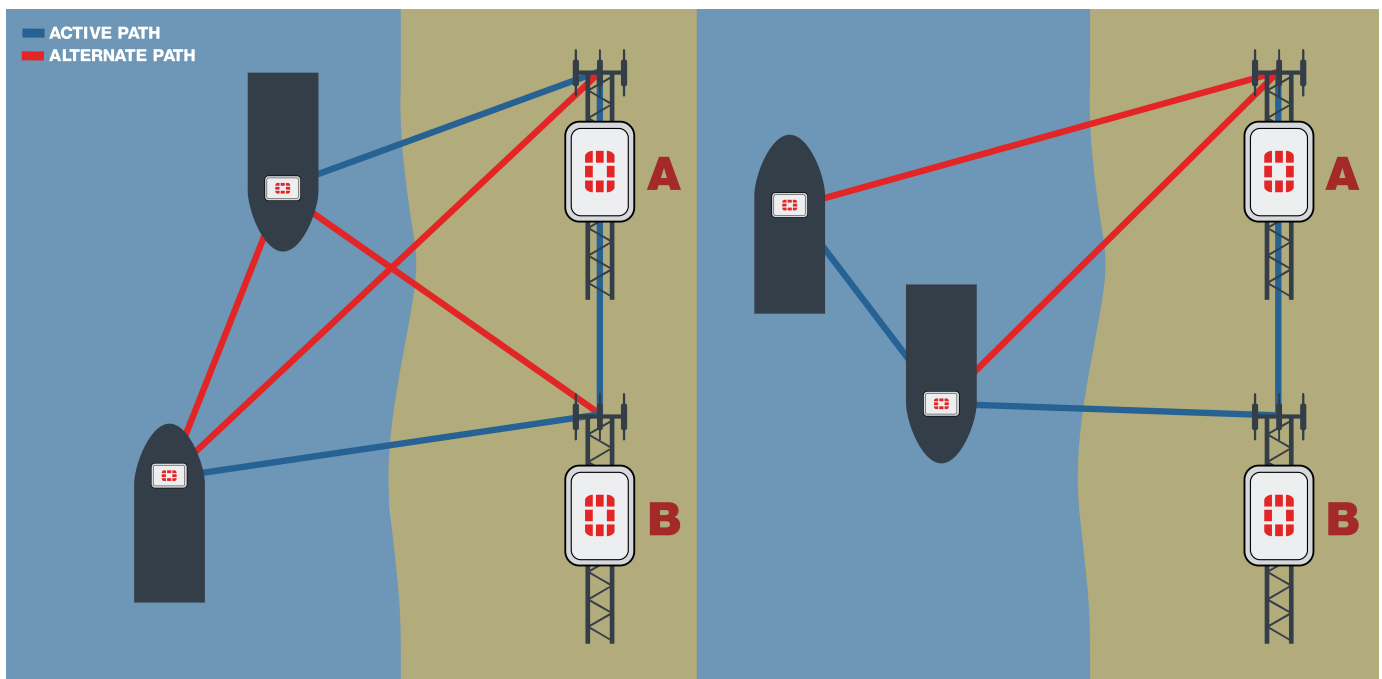
**FAP-C24JE** 2x2 Indoor wall jack AP with dual 2.4 GHz and 5 GHz radios

## Deployment

### Centralized or Local Wireless Controller



### Outdoor Point-to-Point Bridging or Multipoint Mesh Deployment



## Highlights

### FortiAP 320C

The FortiAP 320C is a dual-radio 802.11ac AP for high-density environments. Designed with dual redundant PoE Ethernet ports to provide maximum resilience, this AP is ideal for mission-critical environments such as hospitals and manufacturing facilities. The plenum-rated enclosure and extended temperature range also allow deployment in non-temperature controlled warehouses.



 **802.11ac Wave 1 | Dual Radio 2.4 and 5 GHz | 6 Internal Antennas**

 **3x3 MIMO | Up to 450 + 1,300 Mbps**

## Specifications

FORTIAP 320C	
<b>Hardware</b>	
Hardware Type	Indoor AP
Number of Radios	2
Number of Antennas	6 Internal
Antenna Type and Peak Gain	PIFA: 5 dBi for 2.4 GHz, 6 dBi for 5 GHz
Frequency Bands (GHz)*	2.400–2.4835, 5.150–5.250, 5.250–5.350, 5.470–5.725, 5.725–5.850
Radio 1 Capabilities	2.4 GHz b/g/n (3x3:3 stream) 20/40 MHz (64 QAM)
Radio 2 Capabilities	5 GHz a/n/ac (3x3:3 stream) 20/40/80 MHz (256 QAM)
Maximum Data Rate	Radio 1: Up to 450 Mbps, Radio 2: Up to 1300 Mbps
Bluetooth Low Energy (BT/BLE) Radio	—
Interfaces	2x 10/100/1000 Base-T RJ45, 1x Type A USB, 1x RJ45 Serial Port
Power over Ethernet (PoE)	Dual redundant PoE power ports with support for IEEE 802.3af
Simultaneous SSIDs	Up to 16 (14 if background scanning enabled)
EAP Type(s)	EAP-TLS, EAP-TTLS/MSCSHAPv2, EAPv0/EAP-MSCHAPv2, PEAPv1/EAP-GTC, EAP-SIM, EAP-AKA, EAP-FAST
User/Device Authentication	WPA™ and WPA2™ with 802.1x or Preshared key, WEP, Web Captive Portal, MAC blacklist & whitelist
Maximum Tx Power	2.4 GHz: 23.7 dBm / 234 mW (3 chains combined)* 5 GHz: 24.7 dBm / 295 mW (3 chains combined)*
Kensington Lock	Yes
IEEE Standards	802.11a, 802.11b, 802.11e, 802.11g, 802.11h, 802.11i, 802.11j, 802.11k, 802.11n, 802.11r, 802.11s, 802.11v, 802.11ac, 802.1X, 802.3af
SSID Types Supported	Local-Bridge, Tunnel, Mesh
Per Radio Client Capacity	Up to 128
Cellular Co-existence	No
LED Off Mode	Yes
<b>Advanced 802.11 Features</b>	
802.11ac MU-MIMO Wave 2	No
Transmit Beam Forming (TxBF)	No
Low-Density Parity Check (LDPC) Encoding	Yes
Maximum Likelihood Demodulation (MLD)	Yes

FORTIAP 320C	
Maximum Ratio Combining (MRC)	Yes
A-MPDU and A-MSDU Packet Aggregation	Yes
MIMO Power Save	Yes
Short Guard Interval	Yes
<b>Wireless Monitoring Capabilities</b>	
Rogue Scan Radio Modes	Background, Full-time
WIPS / WIDS Radio Modes	Background, Full-time
Packet Sniffer Mode	Yes
Spectrum Analyzer	Yes
<b>Dimensions</b>	
Length x Width x Height	6.5 x 6.5 x 1.4 inches (165 x 165 x 35 mm)
Weight	1.33 lbs (0.6 kg)
Package (shipping) Weight	1.79 lbs (0.81 kg)
Mounting Options	Ceiling, T-Rail, and Wall
Included Accessories	Mount kits for Ceiling, T-Rail, and Wall
<b>Environment</b>	
Power Supply	SP-FG20C-PA-XX, GPI-115, or GPI-130
Power Consumption (Maximum)	12.08 W
Humidity	5–90% non-condensing
Operating / Storage Temperature	-4–122°F (-20–50°C) / -40–158°F (-40–70°C)
Directives	Low Voltage Directive • RoHS
UL2043 Plenum Material	Yes
Mean Time Between Failures	>30 Years
IP Rating	—
Surge Protection Built In	—
Hit-less PoE Failover	No
<b>Certifications</b>	
Wi-Fi Alliance Certified	Yes
DFS	CE, Japan
<b>Warranty</b>	
Limited Lifetime Warranty	Yes

\* Frequency selection and power may be restricted to abide by regional regulatory compliance laws.

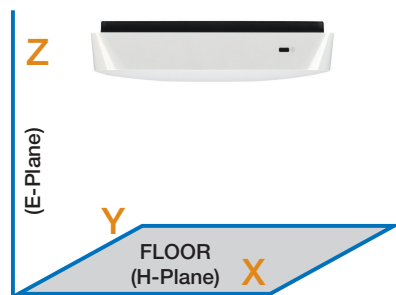
## RF Rx/Tx Performance Table

FORTIAP 320C				
	RADIO 1		RADIO 2	
	2.4 GHz Tx Power (dBm)	Rx Sensitivity (dBm)	5 GHz Tx Power (dBm)	Rx Sensitivity (dBm)
<b>802.11 a/g</b>				
6 Mbps	19	-85	21	-89
9 Mbps	19	-84	21	-88
12 Mbps	19	-83	21	-87
18 Mbps	19	-81	21	-85
24 Mbps	19	-78	20	-84
36 Mbps	16	-74	19	-83
48 Mbps	16	-70	18	-79
54 Mbps	16	-69	17	-76
<b>802.11n HT20</b>				
MCS 0/8	18	-85	20	-89
MCS 1/9	18	-83	20	-88
MCS 2/10	18	-81	20	-87
MCS 3/11	18	-78	19	-85
MCS 4/12	16	-74	19	-84
MCS 5/13	16	-70	18	-83
MCS 6/14	15	-69	17	-79
MCS 7/15	15	-68	16	-73
<b>802.11n HT40</b>				
MCS 0/8	17	-82	18	-91
MCS 1/9	17	-80	18	-85
MCS 2/10	17	-78	18	-85
MCS 3/11	17	-75	18	-80
MCS 4/12	15	-71	18	-78
MCS 5/13	15	-67	17	-76
MCS 6/14	14	-66	16	-74
MCS 7/15	14	-65	15	-71

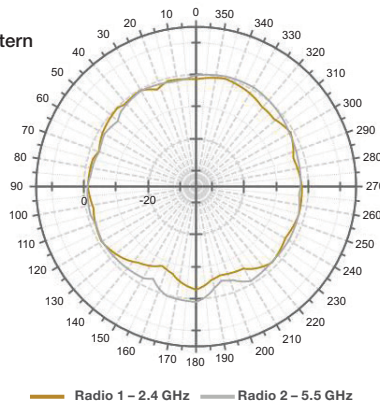
FORTIAP 320C				
	RADIO 1		RADIO 2	
	2.4 GHz Tx Power (dBm)	Rx Sensitivity (dBm)	5 GHz Tx Power (dBm)	Rx Sensitivity (dBm)
<b>802.11ac VHT20</b>				
MCS 0	—	—	20	-85
MCS 1	—	—	20	-84
MCS 2	—	—	20	-83
MCS 3	—	—	19	-82
MCS 4	—	—	19	-81
MCS 5	—	—	18	-78
MCS 6	—	—	17	-74
MCS 7	—	—	16	-70
MCS 8	—	—	15	-69
<b>802.11ac VHT40</b>				
MCS 0	—	—	18	-85
MCS 1	—	—	18	-84
MCS 2	—	—	18	-83
MCS 3	—	—	18	-82
MCS 4	—	—	18	-81
MCS 5	—	—	17	-78
MCS 6	—	—	16	-74
MCS 7	—	—	15	-70
MCS 8	—	—	14	-69
MCS 9	—	—	14	-68
<b>802.11ac VHT80</b>				
MCS 0	—	—	18	-78
MCS 1	—	—	18	-75
MCS 2	—	—	18	-73
MCS 3	—	—	18	-70
MCS 4	—	—	18	-67
MCS 5	—	—	17	-65
MCS 6	—	—	16	-62
MCS 7	—	—	15	-60
MCS 8	—	—	14	-58
MCS 9	—	—	14	-56

## Antenna Radiation Patterns

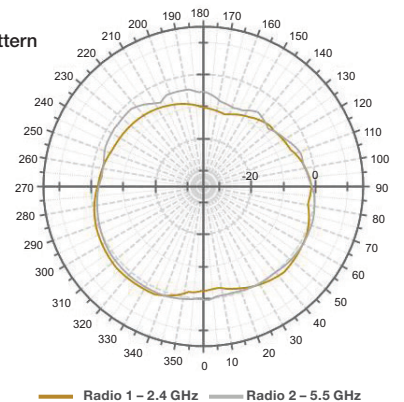
### FAP-320C



H-Plane Pattern



E-Plane Pattern



## Highlights

### FortiAP 321C

The FortiAP 321C is a dual-radio 802.11ac AP, designed for medium density indoor environments, including hotspot and guest or social Wi-Fi deployments. The smoke detector form factor is perfect where discreet installation is required, like school classrooms and retail stores.



 **802.11ac Wave 1 | Dual Radio 2.4 and 5 GHz | 6 Internal Antennas**

 **3x3 MIMO | Up to 450 + 1,300 Mbps**

## Specifications

FORTIAP 321C	
<b>Hardware</b>	
Hardware Type	Indoor AP
Number of Radios	2
Number of Antennas	6 Internal
Antenna Type and Peak Gain	PIFA: 4 dBi for 2.4 GHz, 5 dBi for 5 GHz
Frequency Bands (GHz)*	2.400–2.4835, 5.150–5.250, 5.250–5.350, 5.470–5.725, 5.725–5.850
Radio 1 Capabilities	2.4 GHz b/g/n (3x3:3 stream) 20/40 MHz (64 QAM)
Radio 2 Capabilities	5 GHz a/n/ac (3x3:3 stream) 20/40/80 MHz (256 QAM)
Maximum Data Rate	Radio 1: up to 450 Mbps Radio 2: up to 1,300 Mbps
Bluetooth Low Energy (BT/BLE) Radio	—
Interfaces	1x 10/100/1000 Base-T RJ45
Power over Ethernet (PoE)	IEEE 802.3af
Simultaneous SSIDs	Up to 16 (14 if background scanning enabled)
EAP Type(s)	EAP-TLS, EAP-TTLS/MSCSHAPv2, EAPv0/EAP-MSCHAPv2, PEAPv1/EAP-GTC, EAP-SIM, EAP-AKA, EAP-FAST
User/Device Authentication	WPA™ and WPA2™ with 802.1x or Preshared key, WEP, Web Captive Portal, MAC blacklist & whitelist
Maximum Tx Power	2.4 GHz: 24 dBm / 251 mW (3 chains combined)* 5 GHz: 25 dBm / 316 mW (3 chains combined)*
Kensington Lock	Yes
IEEE Standards	802.11a, 802.11b, 802.11e, 802.11g, 802.11h, 802.11i, 802.11j, 802.11k, 802.11n, 802.11r, 802.11v, 802.11ac, 802.1X, 802.3af
SSID Types Supported	Local-Bridge, Tunnel, Mesh
Per Radio Client Capacity	Up to 128
Cellular Co-existence	No
LED Off Mode	Yes
<b>Advanced 802.11 Features</b>	
802.11ac MU-MIMO Wave 2	No
Transmit Beam Forming (TxBF)	No
Low-Density Parity Check (LDPC) Encoding	Yes
Maximum Likelihood Demodulation (MLD)	Yes
Maximum Ratio Combining (MRC)	Yes

FORTIAP 321C	
A-MPDU and A-MSDU Packet Aggregation	Yes
MIMO Power Save	Yes
Short Guard Interval	Yes
<b>Wireless Monitoring Capabilities</b>	
Rogue Scan Radio Modes	Background, Full-time
WIPS / WIDS Radio Modes	Background, Full-time
Packet Sniffer Mode	Yes
Spectrum Analyzer	Yes
<b>Dimensions</b>	
Length x Width x Height	6.3 x 6.3 x 1.66 inches (160 x 160 x 42 mm)
Weight	0.77 lbs (0.35 kg)
Package (shipping) Weight	1.33 lbs (0.6 kg)
Mounting Options	Ceiling, T-Rail, and Wall
Included Accessories	Mount kits for Ceiling, T-Rail, and Wall
<b>Environment</b>	
Power Supply	SP-FG20C-PA-XX, GPI-115, or GPI-130
Power Consumption (Maximum)	12.6 W
Humidity	5–90% non-condensing
Operating / Storage Temperature	32–113°F (0–45°C) / -4–140°F (-20–60°C)
Directives	Low Voltage Directive • RoHS
UL2043 Plenum Material	No
Mean Time Between Failures	>30 Years
IP Rating	—
Surge Protection Built In	—
Hit-less PoE Failover	No
<b>Certifications</b>	
Wi-Fi Alliance Certified	Yes
DFS	CE, Japan
<b>Warranty</b>	
Limited Lifetime Warranty	Yes

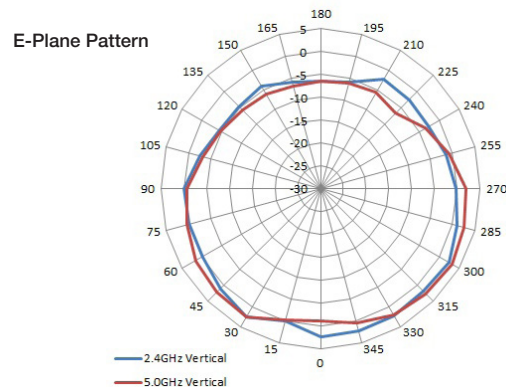
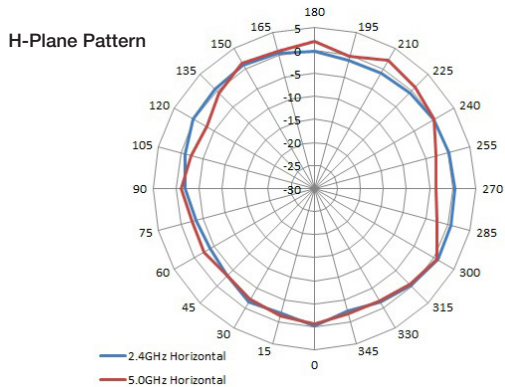
\* Frequency selection and power may be restricted to abide by regional regulatory compliance laws.

## RF Rx/Tx Performance Table

	FORTIAP 321C			
	RADIO 1		RADIO 2	
802.11 a/g	2.4 GHz Tx Power (dBm) (Total)	RX Sensitivity (dBm) (Combined)	5 GHz Tx Power (dBm) (Total)	RX Sensitivity (dBm) (Combined)
6 Mbps	24	-90	25	-93
9 Mbps	24	-90	25	-91
12 Mbps	24	-89	25	-89
18 Mbps	24	-87	25	-87
24 Mbps	24	-84	25	-84
36 Mbps	21	-80	25	-80
48 Mbps	21	-76	19	-78
54 Mbps	21	-75	19	-77
<b>802.11n HT20</b>				
MCS 0/8/16	23	-90	25	-93
MCS 1/9/17	23	-87	25	-87
MCS 2/10/18	23	-85	25	-85
MCS 3/11/19	23	-82	25	-82
MCS 4/12/20	21	-78	25	-78
MCS 5/13/21	21	-76	25	-77
MCS 6/14/22	20	-75	25	-76
MCS 7/15/23	20	-74	24	-75
<b>802.11n HT40</b>				
MCS 0/8/16	22	-87	25	-90
MCS 1/9/17	22	-84	25	-84
MCS 2/10/18	22	-82	25	-82
MCS 3/11/19	22	-79	25	-79
MCS 4/12/20	20	-75	25	-76
MCS 5/13/21	20	-73	25	-75
MCS 6/14/22	19	-72	25	-74
MCS 7/15/23	19	-71	24	-73
<b>802.11ac VHT20</b>				
MCS 0	—	—	25	-93
MCS 1	—	—	25	-87
MCS 2	—	—	25	-85
MCS 3	—	—	25	-82
MCS 4	—	—	25	-78
MCS 5	—	—	25	-77
MCS 6	—	—	25	-76
MCS 7	—	—	24	-75
MCS 8	—	—	22	-71
<b>802.11ac VHT40</b>				
MCS 0	—	—	25	-90
MCS 1	—	—	25	-84
MCS 2	—	—	25	-82
MCS 3	—	—	25	-79
MCS 4	—	—	25	-76
MCS 5	—	—	25	-75
MCS 6	—	—	25	-74
MCS 7	—	—	24	-73
MCS 8	—	—	22	-67
MCS 9	—	—	20	-65
<b>802.11ac VHT80</b>				
MCS 0	—	—	25	-88
MCS 1	—	—	25	-81
MCS 2	—	—	25	-79
MCS 3	—	—	25	-76
MCS 4	—	—	25	-72
MCS 5	—	—	25	-69
MCS 6	—	—	25	-68
MCS 7	—	—	24	-67
MCS 8	—	—	22	-65
MCS 9	—	—	20	-63

# Antenna Radiation Patterns

## FAP-321C



## Highlights

### FortiAP 221E and 223E (Gen 2\*)

The FortiAP 221E and 223E are medium-density 802.11ac Wave 2 access points. These Enterprise-class access points are ideal for medium-density environments such as office or classroom with Performance Throughput of up to 867 Mbps.



 **802.11ac Wave 2 | Dual Radio 2.4 and 5 GHz | 4 Internal/External Antennas**

 **2x2 MU-MIMO | Up to 400 + 867 Mbps**

## Specifications

	FORTIAP 221E (GEN 2)	FORTIAP 223E (GEN 2)
<b>Hardware</b>		
Hardware Type	Indoor AP	Indoor AP
Number of Radios	2 + 1 BLE	2 + 1 BLE
Number of Antennas	4 Internal + 1 Internal BLE	4 External + 1 Internal BLE
Antenna Type and Peak Gain	Patch: 4 dBi for 2.4 GHz, 5 dBi for 5 GHz	Dipole: 4 dBi for 2.4 GHz, 5 dBi for 5 GHz
Frequency Bands (GHz)**	2.400–2.4835, 5.150–5.250, 5.250–5.350, 5.470–5.725, 5.725–5.850	
Radio 1 Capabilities	2.4 GHz b/g/n (2x2:2 stream) 20/40 MHz (256 QAM)	2.4 GHz b/g/n (2x2:2 stream) 20/40 MHz (256 QAM)
Radio 2 Capabilities	5 GHz a/n/ac (2x2:2 stream) 20/40/80 MHz (256 QAM)	5 GHz a/n/ac (2x2:2 stream) 20/40/80 MHz (256 QAM)
Maximum Data Rate	Radio 1: up to 400 Mbps Radio 2: up to 867 Mbps	Radio 1: up to 400 Mbps Radio 2: up to 867 Mbps
Bluetooth Low Energy Radio	Bluetooth scanning and iBeacon advertisement @ 4 dBm max TX power	
Interfaces	1x 10/100/1000 Base-T RJ45	1x 10/100/1000 Base-T RJ45
Power over Ethernet (PoE)	IEEE 802.3af	
Simultaneous SSIDs	16 (14 if background scanning enabled)	16 (14 if background scanning enabled)
EAP Type(s)	EAP-TLS, EAP-TTLS/MSCHAPv2, EAPv0/EAP-MSCHAPv2, PEAPv1/EAP-GTC, EAP-SIM, EAP-AKA, EAP-FAST	
User/Device Authentication	WPA™, WPA2™, and WPA3™ with 802.1x or Preshared key, WEP, Web Captive Portal, MAC blacklist & whitelist	
Maximum Tx Power	2.4 GHz: 23 dBm / 200 mW (2 chains combined)** 5 GHz: 24 dBm / 251 mW (2 chains combined)**	
Kensington Lock	Yes	Yes
IEEE Standards	802.11a, 802.11b, 802.11d, 802.11e, 802.11g, 802.11h, 802.11i, 802.11j, 802.11k, 802.11n, 802.11r, 802.11v, 802.11ac, 802.11x, 802.3af, 802.3az	
SSID Types Supported	Local-Bridge, Tunnel, Mesh	Local-Bridge, Tunnel, Mesh
Per Radio Client Capacity	Up to 512	Up to 512
Cellular Co-existence	Yes	Yes
LED Off Mode	Yes	Yes
<b>Advanced 802.11 Features</b>		
802.11ac Wave 2 MU-MIMO	Yes	Yes
Transmit Beam Forming (TxBF)	Yes	Yes
Low-Density Parity Check (LDPC) Encoding	Yes	Yes
Maximum Likelihood Demodulation (MLD)	Yes	Yes
Maximum Ratio Combining (MRC)	Yes	Yes

	FORTIAP 221E (GEN 2)	FORTIAP 223E (GEN 2)
A-MPDU and A-MSDU Packet Aggregation	Yes	Yes
MIMO Power Save	Yes	Yes
Short Guard Interval	Yes	Yes
<b>Wireless Monitoring Capabilities</b>		
Rogue Scan Radio Modes	Background, Full-time	Background, Full-time
WIPS / WIDS Radio Modes	Background, Full-time	Background, Full-time
Packet Sniffer Mode	Yes	Yes
Spectrum Analyzer	Yes	Yes
<b>Dimensions</b>		
Length x Width x Height	6.3 x 6.3 x 1.85 inches (160 x 160 x 47 mm)	6.3 x 6.3 x 1.85 inches (160 x 160 x 47 mm)
Weight	1.1 lbs (0.5 kg)	1.1 lbs (0.5 kg)
Package (shipping) Weight	4.95 lbs (2.2 kg)	5.3 lbs (2.4 kg)
Mounting Options	Ceiling, T-Rail and Wall	Ceiling, T-Rail and Wall
Included Accessories	Mount kits for Ceiling, T-Rail, and Wall	Mount kits for Ceiling, T-Rail, and Wall, 4 dipole antennas
<b>Environment</b>		
Power Supply	SP-FAP200-PA-XX, GPI-115, or GPI-130	SP-FAP200-PA-XX, GPI-115, or GPI-130
Power Consumption (Max.)	12.36 W	12.36 W
Humidity	5–90% non-condensing	5–90% non-condensing
Operating / Storage Temperature	-4–113°F (-20–45°C) / -40–158°F (-40–70°C)	-4–113°F (-20–45°C) / -40–158°F (-40–70°C)
Directives	Low Voltage Directive • RoHS	Low Voltage Directive • RoHS
UL2043 Plenum Material	Yes	Yes
Mean Time Between Failures	>30 Years	>30 Years
IP Rating	—	—
Surge Protection Built In	—	—
Hit-less PoE Failover	No	No
<b>Certifications</b>		
Wi-Fi Alliance Certified	Yes	Yes
DFS	FCC, IC, CE, Japan, Taiwan, Korea	FCC, IC, CE, Japan, Taiwan, Korea
<b>Warranty</b>		
Limited Lifetime Warranty	Yes	Yes

\* Gen 2 applies to APs with Part number: P23607-0x (for 221E) and P23611-0x (for 223E).

\*\* Frequency selection and power may be restricted to abide by regional regulatory compliance laws.

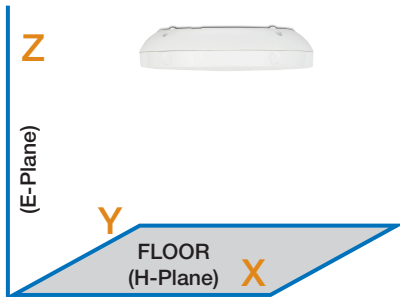


## RF Rx/Tx Performance Table

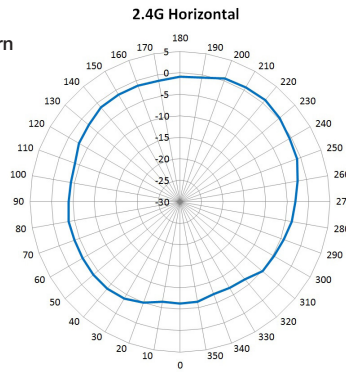
FORTIAP 221E / 223E (GEN 2)				
	RADIO 1		RADIO 2	
802.11 a/g	2.4 GHz Tx Power (dBm)	RX Sensitivity (dBm)	5 GHz Tx Power (dBm)	RX Sensitivity (dBm)
6 Mbps	20	-93	21	-91
9 Mbps	20	-91	21	-90
12 Mbps	20	-90	21	-89
18 Mbps	19	-88	21	-86
24 Mbps	19	-85	21	-83
36 Mbps	18	-82	21	-80
48 Mbps	18	-77	19	-76
54 Mbps	17	-75	19	-74
<b>802.11n HT20</b>				
MCS 0/8/16	20	-91	21	-91
MCS 1/9/17	19	-89	21	-88
MCS 2/10/18	19	-86	21	-86
MCS 3/11/19	18	-83	21	-83
MCS 4/12/20	18	-80	21	-79
MCS 5/13/21	17	-75	21	-75
MCS 6/14/22	17	-73	19	-74
MCS 7/15/23	16	-71	19	-72
<b>802.11n HT40</b>				
MCS 0/8/16	19	-89	20	-88
MCS 1/9/17	19	-86	20	-85
MCS 2/10/18	18	-84	20	-82
MCS 3/11/19	18	-81	20	-79
MCS 4/12/20	17	-77	20	-76
MCS 5/13/21	17	-73	20	-72
MCS 6/14/22	16	-71	19	-70
MCS 7/15/23	16	-69	19	-69
<b>802.11ac VHT20</b>				
MCS 0	19	-91	21	-91
MCS 1	19	-89	21	-88
MCS 2	19	-86	21	-86
MCS 3	18	-83	21	-83
MCS 4	18	-80	21	-79
MCS 5	18	-76	21	-75
MCS 6	18	-73	19	-74
MCS 7	18	-71	19	-72
MCS 8	18	-68	18	-69
<b>802.11ac VHT40</b>				
MCS 0	19	-89	20	-88
MCS 1	19	-86	20	-85
MCS 2	19	-84	20	-82
MCS 3	18	-81	20	-79
MCS 4	17	-77	20	-76
MCS 5	17	-73	20	-72
MCS 6	17	-71	19	-70
MCS 7	17	-69	19	-69
MCS 8	17	-68	18	-65
MCS 9	16	-66	17	-64
<b>802.11ac VHT80</b>				
MCS 0	—	—	19	-85
MCS 1	—	—	19	-83
MCS 2	—	—	19	-80
MCS 3	—	—	19	-77
MCS 4	—	—	19	-74
MCS 5	—	—	19	-71
MCS 6	—	—	18	-69
MCS 7	—	—	18	-68
MCS 8	—	—	17	-63
MCS 9	—	—	17	-61

# Antenna Radiation Patterns

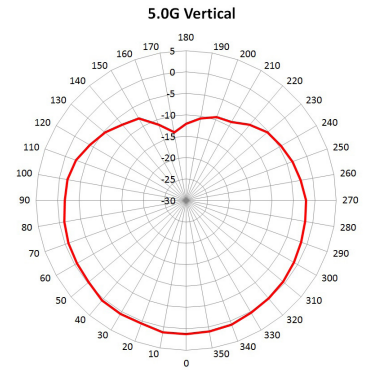
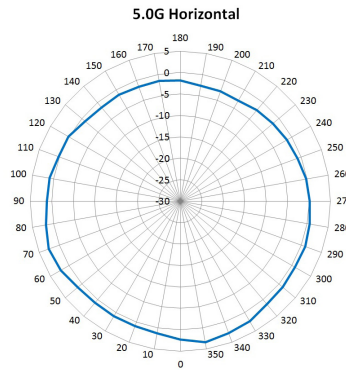
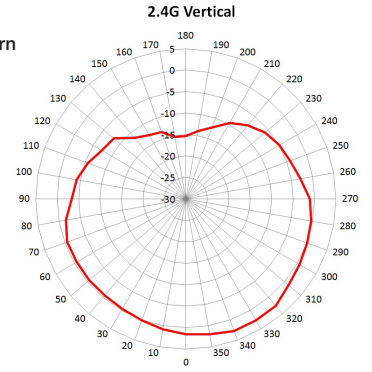
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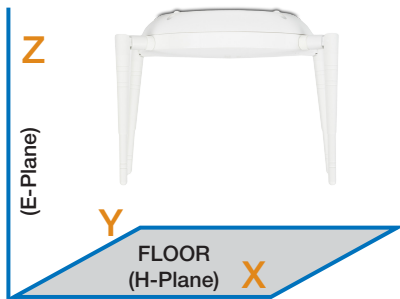
H-Plane Pattern



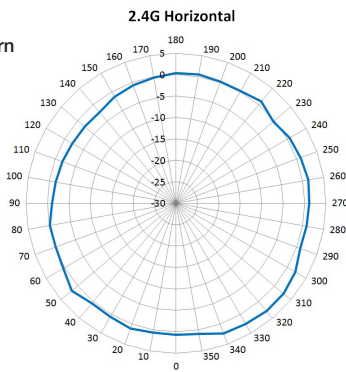
E-Plane Pattern



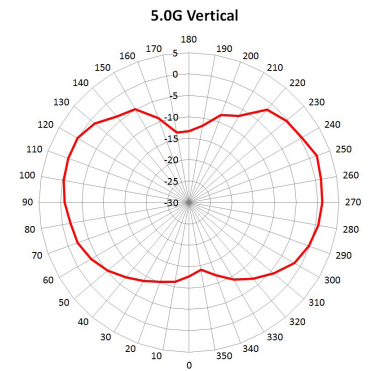
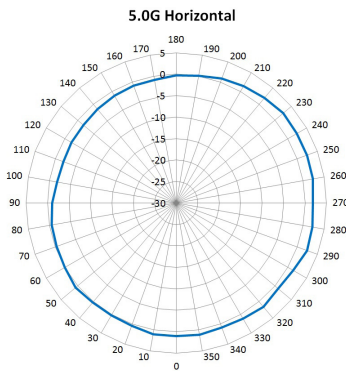
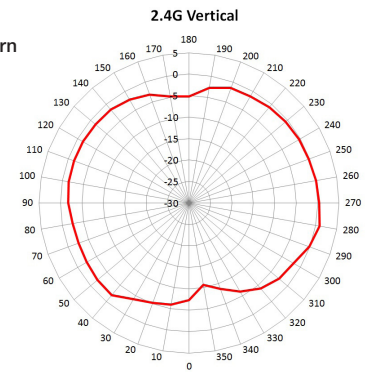
## FAP-223E (Gen 2)



H-Plane Pattern



E-Plane Pattern



# Highlights

## FortiAP 222E

The FAP-222E is a new member of our 802.11ac Wave 2 family with MU-MIMO capability and transmit beamforming capable of handling an astounding 512 clients per radio. This high-performance dual-band AP is ruggedized with an Ingress Protection IP67-rated enclosure capable of withstanding extended temperature ranges. The FAP-222E is suitable for deployment in harsh conditions. It has 4 external antennas for Wi-Fi and one Bluetooth and is suitable for mission-critical bridging or mesh deployments.



 **802.11ac Wave 2 | Dual Radio 2.4 and 5 GHz | High Gain Omni-directional Antennas**

 **2x2 MU-MIMO | Up to 400 + 866.7 Mbps**

# Specifications

FORTIAP 222E	
<b>Hardware</b>	
Hardware Type	Outdoor AP
Number of Radios	2 + 1 BLE
Number of Antennas	4 External (Type N) + 1 BLE External (RP-SMA)
Antenna Type and Peak Gain	Dipole: 5 dBi for 2.4 GHz, 7 dBi for 5 GHz
Frequency Bands (GHz)*	2.400–2.4835, 5.150–5.250, 5.250–5.350, 5.470–5.725, 5.725–5.850
Radio 1 Capabilities	2.4 GHz b/g/n (2x2:2 stream) 20/40 MHz (256 QAM)
Radio 2 Capabilities	5 GHz a/n/ac (2x2:2 stream) 20/40/80 MHz (256 QAM)
Maximum Data Rate	Radio 1: up to 400 Mbps, Radio 2: up to 867 Mbps
Bluetooth Low Energy Radio	Bluetooth scanning and iBeacon advertisement @ 4 dBm max TX power
Interfaces	1x 10/100/1000 Base-T RJ45
Power over Ethernet (PoE)	IEEE 802.3af/at
Simultaneous SSIDs	Up to 16 (14 if background scanning enabled)
EAP Type(s)	EAP-TLS, EAP-TTLS/MSCHAPv2, EAPV0/EAP-MSCHAPv2, PEAPv1/EAP-GTC, EAP-SIM, EAP-AKA, EAP-FAST
User/Device Authentication	WPA™, WPA2™, WPA3™ and with 802.1x or Preshared key, WEP, Web Captive Portal, MAC blacklist & whitelist
Maximum Tx Power	2.4 GHz: 27.2 dBm / 525 mW (2 chains combined)* 5 GHz: 29.5 dBm / 891 mW (2 chains combined)*
Kensington Lock	No
IEEE Standards	802.11a, 802.11b, 802.11d, 802.11e, 802.11g, 802.11h, 802.11i, 802.11j, 802.11k, 802.11n, 802.11r, 802.11v, 802.11ac, 802.11x, 802.3af, 802.3at, 802.3az
SSID Types Supported	Local-Bridge, Tunnel & Mesh (when managed by controller)
Per Radio Client Capacity	Up to 512
Cellular Co-existence	Yes
LED Off Mode	Yes
<b>Advanced 802.11 Features</b>	
802.11ac Wave2 MU-MIMO	Yes
Transmit Beam Forming (TxBF)	Yes
Low-Density Parity Check (LDPC) Encoding	Yes
Maximum Likelihood Demodulation (MLD)	Yes
Maximum Ratio Combining (MRC)	Yes

FORTIAP 222E	
A-MPDU and A-MSDU Packet Aggregation	Yes
MIMO Power Save	Yes
Short Guard Interval	Yes
<b>Wireless Monitoring Capabilities</b>	
Rogue Scan Radio Modes	Background, Full-time
WIPS / WIDS Radio Modes	Background, Full-time
Packet Sniffer Mode	Yes
Spectrum Analyzer	Yes
<b>Dimensions</b>	
Length x Width x Height	9.8 x 8.66 x 2 inches (249 x 220 x 53 mm)
Weight	3.40 lbs (1.54 kg)
Package (shipping) Weight	8.40 lbs (3.81 kg)
Mounting Options	Wall Mount or Pole Mount
Included Accessories	Mounting kit for Wall or Pole, Grounding cable, 4 dipole Wi-Fi antennas, 1 BLE antenna
<b>Environment</b>	
Power Supply	GPI-115, or GPI-130
Power Consumption (Maximum)	12.95 W
Humidity	5–90% non-condensing
Operating / Storage Temperature	-40–140°F (-40–60°C) / -40–158°F (-40–70°C)
Directives	Low Voltage Directive • RoHS
UL2043 Plenum Material	No
Mean Time Between Failures	>10 Years
IP Rating	IP67
Surge Protection Built In	Yes
Hit-less PoE Failover	No
<b>Certifications</b>	
Wi-Fi Alliance Certified	Yes
DFS	FCC, IC, CE, Japan, Taiwan
<b>Warranty</b>	
Limited Lifetime Warranty	No — 1 Year Limited Warranty

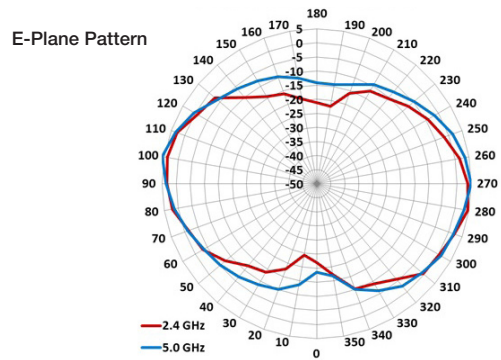
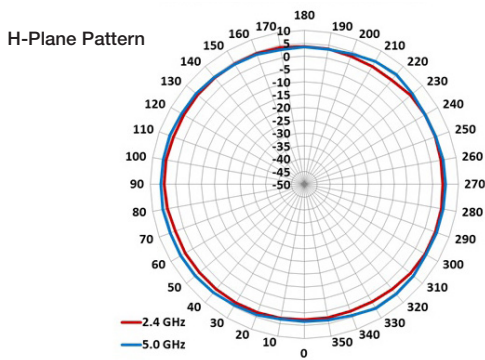
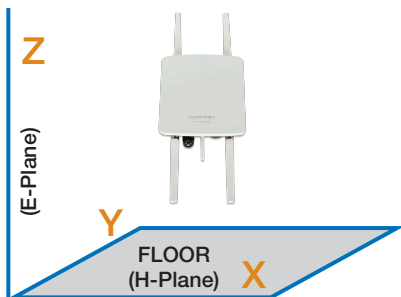
\* Frequency selection and power may be restricted to abide by regional regulatory compliance laws.

## RF Rx/Tx Performance Table

FORTIAP 222E				
	RADIO 1		RADIO 2	
802.11 a/g	2.4 GHz Tx Power (dBm) per Chain	RX Sensitivity (dBm) per Chain	5 GHz Tx Power (dBm) per Chain	RX Sensitivity (dBm) per Chain
6 Mbps	24.2	-91	26.5	-90
9 Mbps	24.2	-90	26.5	-89
12 Mbps	24.2	-88	26.5	-88
18 Mbps	24.1	-86	26.4	-85
24 Mbps	24.1	-83	26.4	-82
36 Mbps	23.5	-79	24.2	-79
48 Mbps	23.5	-75	23.3	-75
54 Mbps	23.5	-74	23.3	-73
<b>802.11n HT20</b>				
MSC 0/8/16	24.5	-91	26.5	-90
MSC 1/9/17	24.5	-88	26.5	-87
MSC 2/10/18	24.5	-86	26.5	-85
MSC 3/11/19	24.2	-82	26.4	-82
MSC 4/12/20	24.2	-78	26.4	-78
MSC 5/13/21	23.6	-75	24.2	-74
MSC 6/14/22	23.1	-74	23.2	-72
MSC 7/15/23	23.1	-73	23.2	-70
<b>802.11n HT40</b>				
MCS 0/8/16	23.8	-89	26.4	-87
MCS 1/9/17	23.8	-86	26.4	-84
MCS 2/10/18	23.8	-84	26.4	-82
MCS 3/11/19	23.8	-80	26.3	-79
MCS 4/12/20	23.8	-77	26.3	-75
MCS 5/13/21	23.2	-74	25.4	-71
MCS 6/14/22	22.6	-73	24.5	-69
MCS 7/15/23	22.6	-72	23.5	-68
<b>802.11ac VHT20</b>				
MCS 0	—	—	26.4	-90
MCS 1	—	—	26.4	-86
MCS 2	—	—	26.4	-84
MCS 3	—	—	26.3	-82
MCS 4	—	—	26.3	-80
MCS 5	—	—	25.3	-75
MCS 6	—	—	23.3	-73
MCS 7	—	—	22.5	-71
MCS 8	—	—	22.4	-68
<b>802.11ac VHT40</b>				
MCS 0	—	—	26.3	-87
MCS 1	—	—	26.3	-85
MCS 2	—	—	26.3	-83
MCS 3	—	—	26.3	-80
MCS 4	—	—	26.3	-77
MCS 5	—	—	25.3	-73
MCS 6	—	—	23.3	-72
MCS 7	—	—	22.2	-70
MCS 8	—	—	22.1	-66
MCS 9	—	—	21.9	-64
<b>802.11ac VHT80</b>				
MCS 0	—	—	25.4	-84
MCS 1	—	—	25.4	-81
MCS 2	—	—	25.4	-78
MCS 3	—	—	25.4	-74
MCS 4	—	—	25.3	-70
MCS 5	—	—	24.2	-66
MCS 6	—	—	23.6	-65
MCS 7	—	—	22.3	-64
MCS 8	—	—	22.1	-60
MCS 9	—	—	22.1	-60

# Antenna Radiation Patterns

## FAP-222E



## Highlights

### FortiAP 224E

The FAP-224E is a new member of our 802.11ac Wave 2 family with MU-MIMO capability and transmit beamforming capable of handling an astounding 512 clients per radio. This high-performance dual-band AP is ruggedized with an Ingress Protection IP67-rated enclosure capable of withstanding extended temperature ranges. The FAP-224E is suitable for deployment in harsh conditions. It has 4 internal antennas for Wi-Fi and one Bluetooth and also provides SFP cage to allow for long-distance fiber connectivity and is suitable for mission-critical bridging or mesh deployments.



 **802.11ac Wave 2 | Dual Radio 2.4 and 5 GHz | 4 Internal Antennas**

 **2x2 MU-MIMO | Up to 400 + 867 Mbps**

## Specifications

FORTIAP 224E	
<b>Hardware</b>	
Hardware Type	Outdoor AP
Number of Radios	2
Number of Antennas	4 Internal + 1 BLE Internal
Antenna Type and Peak Gain	Dipole: 6 dBi for 2.4 GHz, 8 dBi for 5 GHz
Frequency Bands (GHz)*	2.400–2.4835, 5.150–5.250, 5.250–5.350, 5.470–5.725, 5.725–5.850
Radio 1 Capabilities	2.4 GHz b/g/n (2x2:2 stream) 20/40 MHz (256 QAM)
Radio 2 Capabilities	5 GHz a/n/ac (2x2:2 stream) 20/40/80 MHz (256 QAM)
Maximum Data Rate	Radio 1: up to 400 Mbps Radio 2: up to 867 Mbps
<b>Bluetooth Low Energy Radio</b>	
Interfaces	1x 10/100/1000 Base-T RJ45, 1x 10/100/1000 Base-T RJ45 (PoE), 1x optical fiber SFP cage
Power over Ethernet (PoE)	IEEE 802.3af/at
Simultaneous SSIDs	Up to 16 (14 if background scanning enabled)
EAP Type(s)	EAP-TLS, EAP-TTLS/MSCMAPv2, EAPv0/EAP-MSCHAPv2, PEAPv1/EAP-GTC, EAP-SIM, EAP-AKA, EAP-FAST
User/Device Authentication	WPA™, WPA2™, and WPA3™ with 802.1x or Preshared key, WEP, Web Captive Portal, MAC blacklist & whitelist
Maximum Tx Power	2.4 GHz: 24 dBm / 251 mW (2 chains combined)* 5 GHz: 24 dBm / 251 mW (2 chains combined)*
Kensington Lock	No
IEEE Standards	802.11a, 802.11b, 802.11d, 802.11e, 802.11g, 802.11h, 802.11i, 802.11j, 802.11k, 802.11n, 802.11r, 802.11v, 802.11ac, 802.1X, 802.3af, 802.3at, 802.3az
SSID Types Supported	Local-Bridge, Tunnel & Mesh (when managed by controller)
Per Radio Client Capacity	Up to 512
Cellular Co-existence	No
LED Off Mode	Yes
<b>Advanced 802.11 Features</b>	
802.11ac MU-MIMO Wave 2	Yes
Transmit Beam Forming (TxBF)	Yes
Low-Density Parity Check (LDPC) Encoding	Yes
Maximum Likelihood Demodulation (MLD)	Yes
Maximum Ratio Combining (MRC)	Yes

FORTIAP 224E	
A-MPDU and A-MSDU	Yes
Packet Aggregation	
MIMO Power Save	Yes
Short Guard Interval	Yes
<b>Wireless Monitoring Capabilities</b>	
Rogue Scan Radio Modes	Background, Full-time
WIPS / WIDS Radio Modes	Background, Full-time
Packet Sniffer Mode	Yes
Spectrum Analyzer	Yes
<b>Dimensions</b>	
Length x Width x Height	8.4 x 8.4 x 2.66 inches (214 x 214 x 67.5 mm)
Weight	3.8 lbs (1.7 kg)
Package (shipping) Weight	5.82 lbs (2.64 kg)
Mounting Options	Wall Mount or Pole Mount
Included Accessories	Mounting kit for Wall or Pole, Grounding cable
<b>Environment</b>	
Power Supply	GPI-115, or GPI-130
Power Consumption (Maximum)	12.95 W
Humidity	5–90% non-condensing
Operating / Storage Temperature	-4–149°F (-20–65°C) / -4–158°F (-20–70°C)
Directives	Low Voltage Directive • RoHS
UL2043 Plenum Material	No
Mean Time Between Failures	>10 Years
IP Rating	IP67
Surge Protection Built In	Yes
Hit-less PoE Failover	No
<b>Certifications</b>	
Wi-Fi Alliance Certified	Yes
DFS	CE
<b>Warranty</b>	
Limited Lifetime Warranty	No — 1 Year Limited Warranty

\* Frequency selection and power may be restricted to abide by regional regulatory compliance laws.

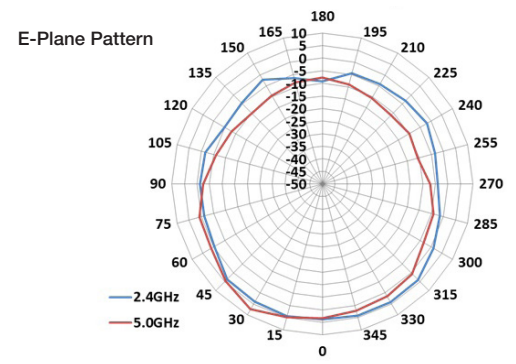
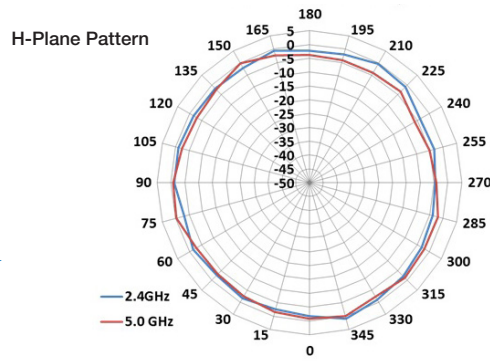
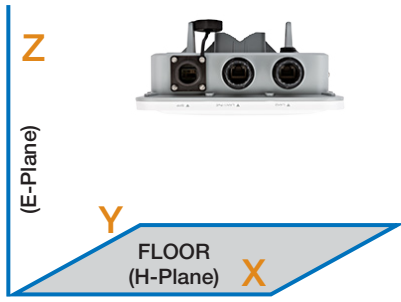
## RF Rx/Tx Performance Table

FORTIAP 224E				
	RADIO 1		RADIO 2	
802.11 a/b/g	2.4 GHz Tx Power (dBm) per Chain	RX Sensitivity (dBm) per Chain	5 GHz Tx Power (dBm) per Chain	RX Sensitivity (dBm) per Chain
1 Mbps	24	-96	—	—
6 Mbps	24	-93	24	-93
9 Mbps	24	-92	24	-91
12 Mbps	24	-90	24	-90
18 Mbps	24	-88	24	-88
24 Mbps	24	-85	24	-85
36 Mbps	23	-82	23	-82
48 Mbps	22	-78	22	-77
54 Mbps	22	-76	22	-76
<b>802.11 HT20</b>				
MCS 0 (BPSK)	24	-92	24	-91
MCS 1 (QPSK)	24	-89	24	-88
MCS 2 (QPSK)	24	-87	23	-85
MCS 3 (16-QAM)	24	-84	23	-83
MCS 4(16-QAM)	23	-81	22	-80
MCS 5 (64-QAM)	23	-76	22	-75
MCS 6 (64-QAM)	23	-74	21	-74
MCS 7 (64-QAM)	22	-73	20	-72
MCS 8 (256-QAM)	—	—	18	-68
MCS 9 (256-QAM)	—	—	—	—
<b>802.11 HT40</b>				
MCS 0 (BPSK)	23	-90	23	-89
MCS 1 (QPSK)	23	-87	22	-86
MCS 2 (QPSK)	23	-85	22	-83
MCS 3 (16-QAM)	23	-81	21	-80
MCS 4(16-QAM)	23	-78	21	-77
MCS 5 (64-QAM)	23	-74	21	-73
MCS 6 (64-QAM)	22	-73	20	-72
MCS 7 (64-QAM)	22	-71	19	-70
MCS 8 (256-QAM)	—	—	18	-66
MCS 9 (256-QAM)	—	—	17	-64
<b>802.11 HT80</b>				
MCS 0 (BPSK)	—	—	22	-86
MCS 1 (QPSK)	—	—	22	-83
MCS 2 (QPSK)	—	—	22	-81
MCS 3 (16-QAM)	—	—	21	-78
MCS 4(16-QAM)	—	—	21	-74
MCS 5 (64-QAM)	—	—	21	-70
MCS 6 (64-QAM)	—	—	20	-69
MCS 7 (64-QAM)	—	—	19	-67
MCS 8 (256-QAM)	—	—	17	-63
MCS 9 (256-QAM)	—	—	16	-60

Maximum capability of the Hardware provided (Excluding antenna gain)

# Antenna Radiation Patterns

## FAP-224E






## Highlights

### FortiAP 231E

The FortiAP 231E is a tri-radio medium-density 802.11ac Wave 2 access point. This Enterprise-class access point is ideal for environments such as offices, classrooms, or retail establishments with performance throughput of up to 867 Mbps per radio. The AP can be configured for dual 5 GHz band access while still providing coverage for devices on the 2.4 GHz band or can be configured to offer dedicated scanning with the third radio.



 **802.11ac Wave 2 | Tri Radio 5 GHz + 2.4 GHz + scanning or 5 GHz + 5 GHz + scanning or 5 GHz + 5 GHz + 2.4 GHz | 6 Antennas**

 **2x2 MIMO | Up to 867 + 867 + 400 Mbps**

## Specifications

FORTIAP 231E	
<b>Hardware</b>	
Hardware Type	Indoor AP
Number of Radios	3 + 1 BLE
Number of Antennas	6 Internal + 1 BLE internal
Antenna Type and peak Gain	PIFA: 4 dBi for 2.4 GHz, 5 dBi for 5 GHz
Frequency Bands (GHz)	2.400–2.4835, 5.150–5.250, 5.250–5.350, 5.470–5.725, 5.725–5.850
Radio 1 Capabilities	2.4 GHz or 5.0 GHz (high band) a/b/g/n/ac W2 (2x2:2 stream) 20/40/80 MHz
Radio 2 Capabilities	5.0 GHz a/n/ac W2 (2x2:2 stream) 20/40/80 MHz
Radio 3 Capabilities	2.4/5.0 GHz dual band b/g/n (2x2:2 stream) 20/40 MHz
Maximum Data Rate	Radio 1: up to 867 Mbps Radio 2: up to 867 Mbps Radio 3: up to 400 Mbps
Bluetooth Low Energy Radio	Bluetooth scanning and iBeacon advertisement @ 6 dBm max TX power
Interfaces	2x 10/100/1000 Base-T RJ45, 1x RS-232 RJ45 Serial Port
Power over Ethernet (PoE)	IEEE 802.3af or 802.3at
Simultaneous SSIDs	Up to 24 (21 if background scanning enabled)
EAP Type(s)	EAP-TLS, EAP-TTLS/MSCSHAPv2, EAPv0/EAP-MSCHAPv2, PEAPv1/EAP-GTC, EAP-SIM, EAP-AKA, EAP-FAST
User/Device Authentication	WPA™, WPA2™, and WPA3™ with 802.1x or Preshared key, WEP, Web Captive Portal, MAC blacklist & whitelist
Maximum Tx Power	2.4 GHz: 24 dBm / 251 mW (2 chains combined)* 5 GHz: 25 dBm / 316 mW (2 chains combined)*
Kensington Lock	Yes
IEEE Standards	802.11a, 802.11b, 802.11e, 802.11g, 802.11h, 802.11i, 802.11j, 802.11k, 802.11n, 802.11r, 802.11v, 802.11ac, 802.1x, 802.3af, 802.3at
SSID Types Supported	Local-Bridge, Mesh, & Tunnel
Per Radio Client Capacity	Up to 512 for Radio 1 & 2, Up to 128 for Radio 3
Cellular Co-existence**	Yes
LED Off Mode	Yes
<b>Advanced 802.11 Features</b>	
802.11ac MU-MIMO Wave 2	Yes
Transmit Beam Forming (TxBF)	Yes
Low-Density Parity Check (LDPC) Encoding	Yes
Maximum Likelihood Demodulation (MLD)	Yes

FORTIAP 231E	
Maximum Ratio Combining (MRC)	Yes
A-MPDU and A-MSDU Packet Aggregation	Yes
MIMO Power Save	Yes
Short Guard Interval	Yes
OFDMA	No
<b>Wireless Monitoring Capabilities</b>	
Rogue Scan Radio Modes	Background, Dedicated
WIPS / WIDS Radio Modes	Background, Dedicated
Packet Sniffer Mode	Yes
Spectrum Analyzer	Yes
<b>Dimensions</b>	
Length x Width x Height	7.87 x 7.87 x 1.81 inches (200 x 200 x 46 mm)
Weight	1.2 lbs (0.55 kg)
Package (shipping) Weight	2.5 lbs (1.15 kg)
Mounting Options	Ceiling, T-Rail, and Wall
Included Accessories	Mount kits for Ceiling, T-Rail, and Wall
<b>Environment</b>	
Power Supply	SP-FAP200-PA-XX, GPI-130
Power Consumption (Maximum)	17 W with 802.3at PoE, 12.9 W with 802.3af PoE - reduced TX power (13dBm per radio)
Humidity	5–93% non-condensing
Operating / Storage Temperature	32–104°F (0–40°C) / -31–158°F (-35–70°C)
Directives	Low Voltage Directive • RoHS
UL2043 Plenum Material	Yes
Mean Time Between Failures	>10 Years
IP Rating	—
Surge Protection Built In	—
Hit-less PoE Failover	No
<b>Certifications</b>	
WiFi Alliance Certified	No
DFS	FCC, CE
<b>Warranty</b>	
Limited Lifetime Warranty	Yes

\* Frequency selection and power may be restricted to abide by regional regulatory compliance laws.

\*\* Additional filtration added to reduce interference in 2.4 GHz band from nearby cellular equipment.

## RF Rx/Tx Performance Table

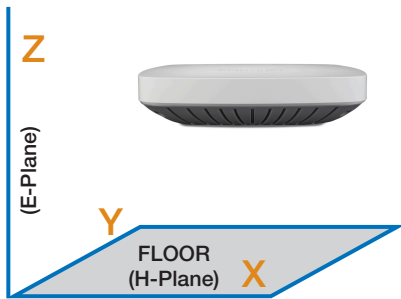
FORTIAP 231E				
802.11b	2.4 GHz Tx Power per Chain (dBm)	RX Sensitivity (dBm)	5 GHz Tx Power per Chain (dBm)	RX Sensitivity (dBm)
1	20	-98	—	—
2	20	-97	—	—
5.5	20	-94	—	—
11	20	-91	—	—
<b>802.11g/a</b>				
6	20	-96	20	-94
9	20	-94	20	-93
12	20	-93	20	-92
18	19	-91	20	-89
24	24	-87	20	-86
36	18	-84	19	-83
48	17	-79	18	-78
54	17	-78	17	-76
<b>802.11n HT20</b>				
MCS0	20	-95	19	-94
MCS1	20	-93	19	-91
MCS2	18	-90	19	-89
MCS3	18	-87	19	-86
MCS4	17	-84	19	-82
MCS5	17	-79	18	-77
MCS6	17	-77	17	-76
MCS7	16	-76	17	-74
<b>802.11n HT40</b>				
MCS0	19	-93	19	-90
MCS1	19	-90	19	-88
MCS2	19	-88	19	-86
MCS3	18	-84	19	-82
MCS4	18	-81	19	-79
MCS5	17	-76	18	-75
MCS6	17	-75	17	-73
MCS7	16	-73	17	-71
<b>802.11ac VHT20</b>				
MCS0	—	—	19	-90
MCS1	—	—	19	-87
MCS2	—	—	19	-85
MCS3	—	—	19	-82
MCS4	—	—	19	-79
MCS5	—	—	18	-73
MCS6	—	—	17	-72
MCS7	—	—	17	-73
MCS8	—	—	17	-67
<b>802.11ac VHT40</b>				
MCS0	—	—	19	-87
MCS1	—	—	19	-83
MCS2	—	—	19	-81
MCS3	—	—	19	-78
MCS4	—	—	19	-75
MCS5	—	—	18	-73
MCS6	—	—	17	-70
MCS7	—	—	17	-68
MCS8	—	—	17	-64
MCS9	—	—	16	-62

## RF Rx/Tx Performance Table

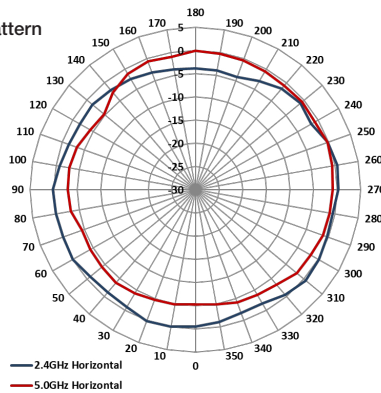
FORTIAP 231E				
802.11ac VHT80	2.4 GHz Tx Power per Chain (dBm)	RX Sensitivity (dBm)	5 GHz Tx Power per Chain (dBm)	RX Sensitivity (dBm)
MCS0	—	—	18	-84
MCS1	—	—	18	-80
MCS2	—	—	18	-78
MCS3	—	—	18	-75
MCS4	—	—	18	-72
MCS5	—	—	17	-70
MCS6	—	—	16	-67
MCS7	—	—	16	-65
MCS8	—	—	16	-61
MCS9	—	—	15	-59

## Antenna Radiation Patterns

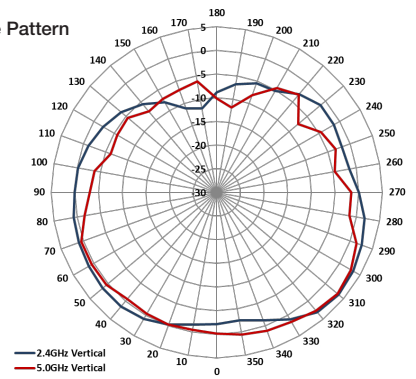
### FAP-231E



H-Plane Pattern



E-Plane Pattern



## Highlights

### FortiAP 321E

The FortiAP 321E is a dual-radio medium-density 3x3 802.11ac Wave 2 access point. This Enterprise-class access point is ideal for environments such as offices, classrooms, or retail establishments with performance throughput of up to 1,300 Mbps at 5GHz. The AP can support MU-MIMO and clients that utilize 3 streams for increased data throughput.



 **802.11ac Wave 2 | Dual Radio 5 GHz and 2.4 GHz | 6 Antennas**

 **3x3 MIMO | Up to 450 + 1,300 Mbps**

## Specifications

FORTIAP 321E	
<b>Hardware</b>	
Hardware Type	Indoor AP
Number of Radios	2 + 1 BLE
Number of Antennas	6 Internal (RP-SMA) + 1 BLE internal
Antenna Type and peak Gain	PIFA: 3 dBi for 2.4 GHz, 4 dBi for 5 GHz
Frequency Bands (GHz)	2.400–2.4835, 5.150–5.250, 5.250–5.350, 5.470–5.725, 5.725–5.850
Radio 1 Capabilities	2.4 GHz b/g/n (3x3:3 stream) 20/40 MHz
Radio 2 Capabilities	5 GHz a/n/ac (2x2:2 stream) 20/40/80 MHz
Maximum Data Rate	Radio 1: up to 450 Mbps Radio 2: up to 1,300 Mbps
Bluetooth Low Energy Radio	Bluetooth scanning and iBeacon advertisement @ 4 dBm max TX power
Interfaces	1x 10/100/1000 Base-T RJ45, 1x RS-232 RJ45 Serial Port
Power over Ethernet (PoE)	IEEE 802.3af & 802.3at
Simultaneous SSIDs	Up to 16 (14 if background scanning enabled)
EAP Type(s)	EAP-TLS, EAP-TTLS/MSCVAPv2, EAPv0/EAP-MSCVAPv2, PEAPv1/EAP-GTC, EAP-SIM, EAP-AKA, EAP-FAST
User/Device Authentication	WPA™, WPA2™, and WPA3™ with 802.1x or Pre-shared key, WEP, Web Captive Portal, MAC blacklist & whitelist
Maximum Tx Power	2.4 GHz: 27.7 dBm/588 mW (3 chains combined)* 5 GHz: 27.7 dBm / 588 mW (3 chains combined)*
Kensington Lock	Yes
IEEE Standards	802.11a, 802.11b, 802.11e, 802.11g, 802.11h, 802.11i, 802.11j, 802.11k, 802.11n, 802.11r, 802.11v, 802.11ac, 802.1X, 802.3af, 802.3at
SSID Types Supported	Local-Bridge, Mesh, & Tunnel
Per Radio Client Capacity	Up to 128 for Radio 1, Up to 512 for Radio 2
Cellular Co-existence**	Yes
LED Off Mode	Yes
<b>Advanced 802.11 Features</b>	
802.11ac MU-MIMO Wave 2	Yes
Transmit Beam Forming (TxBF)	Yes
Low-Density Parity Check (LDPC) Encoding	Yes
Maximum Likelihood Demodulation (MLD)	Yes
Maximum Ratio Combining (MRC)	Yes

FORTIAP 321E	
A-MPDU and A-MSDU	Yes
Packet Aggregation	
MIMO Power Save	Yes
Short Guard Interval	Yes
OFDMA	No
<b>Wireless Monitoring Capabilities</b>	
Rogue Scan Radio Modes	Background, Dedicated
WIPS / WIDS Radio Modes	Background, Dedicated
Packet Sniffer Mode	Yes
Spectrum Analyzer	Yes
<b>Dimensions</b>	
Length x Width x Height	7.08 x 7.08 x 1.50 inches (180 x 180 x 38 mm)
Weight	1.0 lbs (0.454 kg)
Package (shipping) Weight	1.60 lbs (0.73 kg)
Mounting Options	Ceiling, T-Rail, and Wall
Included Accessories	Mount kits for Ceiling, T-Rail, and Wall
<b>Environment</b>	
Power Supply	SP-FAP200-PA-XX, or GPI-130
Power Consumption (Maximum)	1.68 W
Humidity	10–90% non-condensing
Operating / Storage Temperature	14–113°F (-10–45°C) / -22–158°F (-30–70°C)
Directives	Low Voltage Directive • RoHS
UL2043 Plenum Material	Yes
Mean Time Between Failures	>10 Years
IP Rating	N/A
Surge Protection Built In	—
Hit-less PoE Failover	No
<b>Certifications</b>	
WiFi Alliance Certified	No
DFS	FCC, CE
<b>Warranty</b>	
Limited Lifetime Warranty	Yes

\* Frequency selection and power may be restricted to abide by regional regulatory compliance laws.

\*\* Additional filtration added to reduce interference in 2.4 GHz band from nearby cellular equipment.

## RF Rx/Tx Performance Table

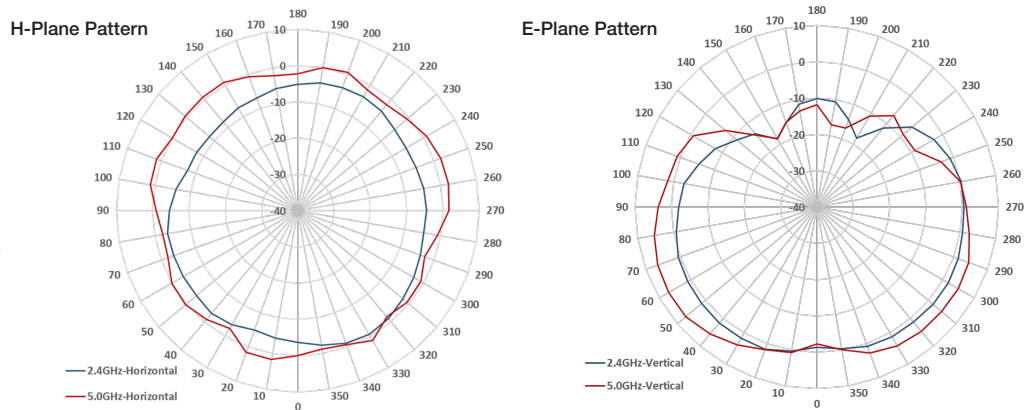
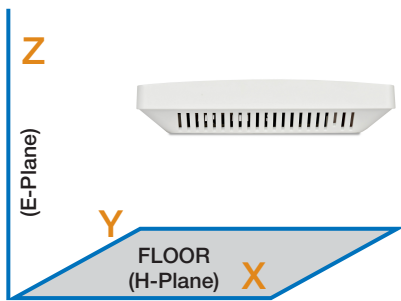
	FORTIAP 321E			
	RADIO 1		RADIO 2	
	2.4 GHz Tx Power per Chain (dBm)	RX Sensitivity (dBm)	5 GHz Tx Power per Chain (dBm)	RX Sensitivity (dBm)
<b>802.11b</b>				
1	20	-96	—	—
2	20	-95	—	—
5.5	20	-92	—	—
11	20	-89	—	—
<b>802.11g/a</b>				
6	20	-93	20	-91
9	20	-91	20	-90
12	20	-90	20	-89
18	19	-88	19	-86
24	19	-85	19	-83
36	18	-82	18	-80
48	18	-77	18	-76
54	17	-75	18	-74
<b>802.11n HT20</b>				
MCS0	20	-91	20	-91
MCS1	20	-89	20	-88
MCS2	20	-88	19	-86
MCS3	20	-83	19	-83
MCS4	19	-80	19	-79
MCS5	18	-75	18	-75
MCS6	17	-73	18	-74
MCS7	17	-71	18	-72
<b>802.11n HT40</b>				
MCS0	20	-89	19	-88
MCS1	20	-86	19	-85
MCS2	20	-84	18	-82
MCS3	20	-81	18	-79
MCS4	19	-77	18	-76
MCS5	18	-73	18	-72
MCS6	17	-71	18	-70
MCS7	17	-68	17	-69
<b>802.11ac VHT20</b>				
MCS0	—	—	20	-91
MCS1	—	—	20	-88
MCS2	—	—	19	-86
MCS3	—	—	18	-83
MCS4	—	—	18	-79
MCS5	—	—	18	-75
MCS6	—	—	18	-74
MCS7	—	—	18	-72
MCS8	—	—	18	-69
<b>802.11ac VHT40</b>				
MCS0	—	—	19	-88
MCS1	—	—	19	-85
MCS2	—	—	18	-82
MCS3	—	—	18	-79
MCS4	—	—	18	-76
MCS5	—	—	18	-72
MCS6	—	—	18	-70
MCS7	—	—	17	69
MCS8	—	—	17	-65
MCS9	—	—	17	-64

## RF Rx/Tx Performance Table

STANDARD / DATA RATE	FORTIAP 231E RADIO 1		RADIO 2	
	2.4 GHz Tx Power per Chain (dBm)	RX Sensitivity (dBm)	5 GHz Tx Power per Chain (dBm)	RX Sensitivity (dBm)
802.11ac VHT80	—	—	19	-88
MCS0	—	—	19	-88
MCS1	—	—	19	-85
MCS2	—	—	18	-82
MCS3	—	—	18	-79
MCS4	—	—	18	-76
MCS5	—	—	18	-72
MCS6	—	—	18	-70
MCS7	—	—	17	-69
MCS8	—	—	17	-65
MCS9	—	—	17	-64

## Antenna Radiation Patterns

### FAP-321E



## Highlights

### FortiAP 421E and 423E

The FortiAP 421E and 423E access points support the latest 802.11ac Wave 2 standard. Additional features include 802.11ac explicit transmit beamforming (TxBF), multi-user MIMO (MU-MIMO), and more.



 **802.11ac Wave 2 | Dual Radio 2.4 and 5 GHz | 8 Internal/External Antennas**

 **4x4 MU-MIMO | Up to 800 + 1,733 Mbps**

## Specifications

	FORTIAP 421E	FORTIAP 423E
<b>Hardware</b>		
Hardware Type	Indoor AP	Indoor AP
Number of Radios	2	2
Number of Antennas	8 Internal	8 External (RP-SMA)
Antenna Type and Peak Gain	PIFA: 4 dBi for 2.4 GHz, 5 dBi for 5 GHz	Dipole: 3 dBi for 2.4 GHz, 3 dBi for 5 GHz
Frequency Bands (GHz)*	2.400–2.4835, 5.150–5.250, 5.250–5.350, 5.470–5.725, 5.725–5.850	
Radio 1 Capabilities	2.4 GHz b/g/n (4x4:4 stream) 20/40 MHz (256 QAM)	
Radio 2 Capabilities	5 GHz a/n/ac (4x4:4 stream) 20/40/80 MHz (256 QAM)	
Maximum Data Rate	Radio 1: up to 800 Mbps Radio 2: up to 1,733 Mbps	Radio 1: up to 800 Mbps Radio 2: up to 1,733 Mbps
Bluetooth Low Energy Radio	—	—
Interfaces	2x 10/100/1000 Base-T RJ45, 1x Type A USB, 1x RS-232 RJ45 Serial Port	
Power over Ethernet (PoE)	Dual redundant PoE power ports with support for IEEE 802.3af (2x2 operation with 802.3af)	
Simultaneous SSIDs	Up to 16 (14 if background scanning enabled)	Up to 16 (14 if background scanning enabled)
EAP Type(s)	EAP-TLS, EAP-TTLS/MSCSHAPv2, EAPv0/EAP-MSCHAPv2, PEAPv1/EAP-GTC, EAP-SIM, EAP-AKA, EAP-FAST	
User/Device Authentication	WPA™, WPA2™, and WPA3™ with 802.1x or Preshared key, WEP, Web Captive Portal, MAC blacklist & whitelist	
Maximum Tx Power	2.4 GHz: 24 dBm / 251 mW (4 chains combined)* 5 GHz: 25 dBm / 316 mW (4 chains combined)*	
Kensington Lock	Yes	Yes
IEEE Standards	802.11a, 802.11b, 802.11d, 802.11e, 802.11g, 802.11h, 802.11i, 802.11j, 802.11k, 802.11n, 802.11r, 802.11v, 802.11ac, 802.11x, 802.3ad, 802.3af, 802.3at, 802.3az	
SSID Types Supported	Local-Bridge, Tunnel, Mesh	Local-Bridge, Tunnel, Mesh
Per Radio Client Capacity	Up to 512	Up to 512
Cellular Co-existence	No	No
LED Off Mode	Yes	Yes
<b>Advanced 802.11 Features</b>		
802.11ac MU-MIMO Wave 2	Yes	Yes
Transmit Beam Forming (TxBF)	Yes	Yes
Low-Density Parity Check (LDPC) Encoding	Yes	Yes
Maximum Likelihood Demodulation (MLD)	Yes	Yes

	FORTIAP 421E	FORTIAP 423E
Maximum Ratio Combining (MRC)	Yes	Yes
A-MPDU and A-MSDU Packet Aggregation	Yes	Yes
MIMO Power Save	Yes	Yes
Short Guard Interval	Yes	Yes
<b>Wireless Monitoring Capabilities</b>		
Rogue Scan Radio Modes	Background, Full-time	Background, Full-time
WIPS / WIDS Radio Modes	Background, Full-time	Background, Full-time
Packet Sniffer Mode	Yes	Yes
Spectrum Analyzer	Yes	Yes
<b>Dimensions</b>		
Length x Width x Height	8.5 x 8.5 x 2.2 inches (215 x 215 x 56 mm)	8.5 x 8.5 x 2.2 inches (215 x 215 x 56 mm)
Weight	3.53 lbs (1.6 kg)	3.57 lbs (1.62 kg)
Package (shipping) Weight	4.95 lbs (2.2 kg)	5.3 lbs (2.4 kg)
Mounting Options	Ceiling, T-Rail, and Wall	Ceiling, T-Rail, and Wall
Included Accessories	Mount kits for Ceiling, T-Rail, and Wall	Mount kits for Ceiling, T-Rail, and Wall, 8 dipole antennas
<b>Environment</b>		
Power Supply	SP-FAP400-PA-XX, GPI-115, or GPI-130	SP-FAP400-PA-XX, GPI-115, or GPI-130
Power Consumption (Max.)	23 W max power draw in 802.3at mode and 12.95 W max power draw when in 802.3af power mode (operates in 2x2 mode)	
Humidity	5–90% non-condensing	5–90% non-condensing
Operating / Storage Temperature	-4–122°F (-20–50°C) / -40–158°F (-40–70°C)	-4–122°F (-20–50°C) / -40–158°F (-40–70°C)
Directives	Low Voltage Directive • RoHS	Low Voltage Directive • RoHS
UL2043 Plenum Material	Yes	Yes
Mean Time Between Failures	>30 Years	>30 Years
IP Rating	—	—
Surge Protection Built In	—	—
Hit-less PoE Failover	Yes	Yes
<b>Certifications</b>		
Wi-Fi Alliance Certified	Yes	Yes
DFS	FCC, IC, CE, Japan, Taiwan, Korea	FCC, IC, CE, Japan, Taiwan, Korea
<b>Warranty</b>		
Limited Lifetime Warranty	Yes	Yes

\* Frequency selection and power may be restricted to abide by regional regulatory compliance laws.

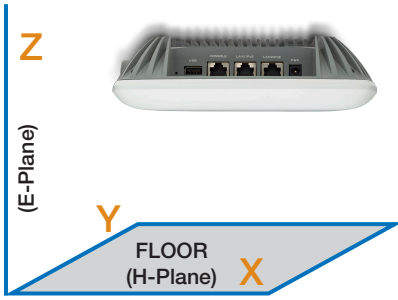
## RF Rx/Tx Performance Table

FORTIAP 421E / 423E				
	RADIO 1		RADIO 2	
802.11 a/g	2.4 GHz Tx Power per Chain (dBm)	RX Sensitivity (dBm)	5 GHz Tx Power per Chain (dBm)	RX Sensitivity (dBm)
6 Mbps	18	-93	19	-86
9 Mbps	18	-91	19	-83
12 Mbps	18	-88	19	-81
18 Mbps	18	-85	19	-78
24 Mbps	18	-80	19	-76
36 Mbps	18	-77	18	-74
48 Mbps	18	-76	18	-70
54 Mbps	18	-75	16	-66
<b>802.11 HT20</b>				
MSC 0/8/16 (BPSK)	18	-87	18	-84
MSC 1/9/17 (QPSK)	17	-84	17	-81
MSC 2/10/18 (QPSK)	17	-81	17	-79
MSC 3/11/19 (16-QAM)	16	-78	16	-76
MSC 4/12/20 (16-QAM)	16	-73	16	-72
MSC 5/13/21 (64-QAM)	15	-70	15	-68
MSC 6/14/22 (64-QAM)	15	-69	15	-67
MSC 7/15/23 (64-QAM)	15	-67	15	-66
<b>802.11 HT40</b>				
MSC 0/8/16 (BPSK)	18	-84	18	-83
MSC 1/9/17 (QPSK)	17	-80	17	-80
MSC 2/10/18 (QPSK)	17	-77	17	-78
MSC 3/11/19 (16-QAM)	16	-74	16	-75
MSC 4/12/20 (16-QAM)	16	-71	16	-73
MSC 5/13/21 (64-QAM)	15	-67	15	-72
MSC 6/14/22 (64-QAM)	15	-65	15	-70
MSC 7/15/23 (64-QAM)	15	-65	15	-69
MSC 8/16/24 (256-QAM)	—	—	15	-65
MSC 9/17/25 (256-QAM)	—	—	15	-63
<b>802.11 HT80</b>				
MSC 0 (BPSK)	—	—	18	-83
MSC 1 (QPSK)	—	—	17	-80
MSC 2 (QPSK)	—	—	17	-78
MSC 3 (16-QAM)	—	—	16	-75
MSC 4 (16-QAM)	—	—	16	-73
MSC 5 (64-QAM)	—	—	15	-72
MSC 6 (64-QAM)	—	—	15	-70
MSC 7 (64-QAM)	—	—	15	-69
MSC 8 (256-QAM)	—	—	15	-65
MSC 9 (256-QAM)	—	—	15	-63

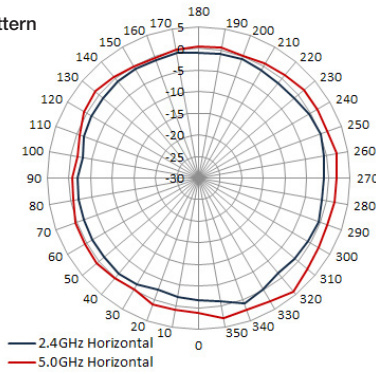


# Antenna Radiation Patterns

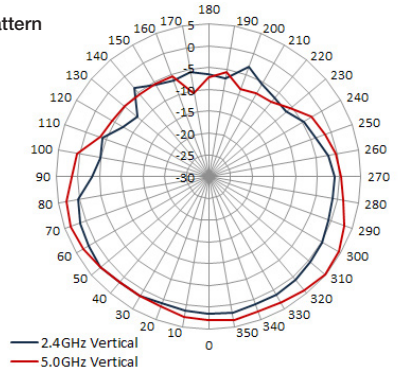
## FAP-421E



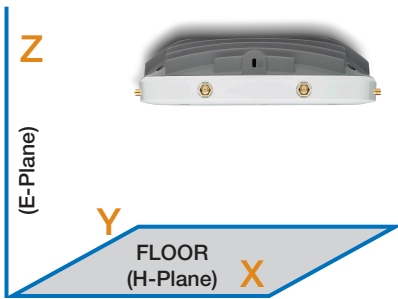
H-Plane Pattern



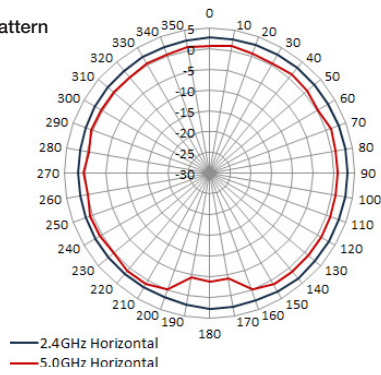
E-Plane Pattern



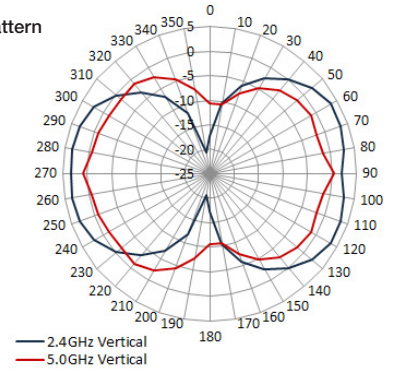
## FAP-423E



H-Plane Pattern



E-Plane Pattern



## Performance Matrix

802.11AC PERFORMANCE — DATA RATES (MBPS)								
Descriptor	Data Streams	VHT20		VHT40		VHT80		
		Normal GI	Short GI	Normal GI	Short GI	Normal GI	Short GI	
MCS 0	1	6.5	7.2	13.5	15	29.3	32.5	
MCS 1	1	13	14.4	27	30	58.5	65	
MCS 2	1	19.5	21.7	40.5	45	87.8	97.5	
MCS 3	1	26	28.9	54	60	117	130	
MCS 4	1	39	43.3	81	90	175.5	195	
MCS 5	1	52	57.8	108	120	234	260	
MCS 6	1	58.5	65	121.5	135	263.3	292.5	
MCS 7	1	65	72.2	135	150	292.5	325	
MCS 8	1	78	86.7	162	180	351	390	
MCS 9	1	NA	NA	180	200	390	433.3	
MCS 0	2	13	14.4	27	30	58.5	65	
MCS 1	2	26	28.9	54	60	117	130	
MCS 2	2	39	43.3	81	90	175.5	195	
MCS 3	2	52	57.8	108	120	234	260	
MCS 4	2	78	86.7	162	180	351	390	
MCS 5	2	104	115.6	216	240	468	520	
MCS 6	2	117	130	243	270	526.5	585	
MCS 7	2	130	144.4	270	300	585	650	
MCS 8	2	156	173.3	324	360	702	780	
MCS 9	2	NA	NA	360	400	780	866.7	
MCS 0	3	19.5	21.7	40.5	45	87.8	97.5	
MCS 1	3	39	43.3	81	90	175.5	195	
MCS 2	3	58.5	65	121.5	135	263.3	292.5	
MCS 3	3	78	86.7	162	180	351	390	
MCS 4	3	117	130	243	270	526.5	585	
MCS 5	3	156	173.3	324	360	702	780	
MCS 6	3	175.5	195	364.5	405	NA	NA	
MCS 7	3	195	216.7	405	450	877.5	975	
MCS 8	3	234	260	486	540	1053	1170	
MCS 9	3	260	288.9	540	600	1170	1300	
MCS 0	4	26	28.9	54	60	117	130	
MCS 1	4	52	57.8	108	120	234	260	
MCS 2	4	78	86.7	162	180	351	390	
MCS 3	4	104	115.6	216	240	468	520	
MCS 4	4	156	173.3	324	360	702	780	
MCS 5	4	208	231.1	432	480	936	1040	
MCS 6	4	234	260	486	540	1053	1170	
MCS 7	4	260	288.9	540	600	1170	1300	
MCS 8	4	312	346.7	648	720	1404	1560	
MCS 9	4	NA	NA	720	800	1560	1733.3	

## Performance Matrix

802.11N PERFORMANCE — DATA RATES (MBPS)						
Descriptor	Spatial Streams	HT20		HT40		
		Normal GI	Short GI	Normal GI	Short GI	
MCS 0	1	6.5	7.2	13.5	15	
MCS 1	1	13	14.4	27	30	
MCS 2	1	19.5	21.7	40.5	45	
MCS 3	1	26	28.9	54	60	
MCS 4	1	39	43.3	81	90	
MCS 5	1	52	57.8	108	120	
MCS 6	1	58.5	65	121.5	135	
MCS 7	1	65	72.2	135	150	
MCS 8	2	13	14.4	27	30	
MCS 9	2	26	28.9	54	60	
MCS10	2	39	43.3	81	90	
MCS 11	2	52	57.8	108	120	
MCS 12	2	78	86.7	162	180	
MCS 13	2	104	115.6	216	240	
MCS 14	2	117	130	243	270	
MCS 15	2	130	144.4	270	300	
MCS 16	3	19.5	21.7	40.5	45	
MCS 17	3	39	43.3	81	90	
MCS 18	3	58.5	65	121.5	135	
MCS 19	3	78	86.7	162	180	
MCS 20	3	117	130	243	270	
MCS 21	3	156	173.3	324	360	
MCS 22	3	175.5	195	364.5	405	
MCS 23	3	195	216.7	405	450	

## Highlights

### FortiAP C24JE

The FAP-C24JE is a performance/price competitive 2.4 GHz/5 GHz concurrent MU-MIMO wall plate AP with support of PoE IP phone and RJ45 pass-through. This access point can be installed in minutes, right over the existing wall plate.



 **802.11 ac Wave 2 | Dual Radio 2.4 & 5 GHz | 4 Internal Antennas**

 **Up to 300 + 867 Mbps**

## Specifications

FORTIAP C24JE	
<b>Hardware</b>	
Hardware Type	Wall Plate AP
Number of Radios	2
Number of Antennas	4 Internal
Antenna Type and Peak Gain	Chip: 1.5 dBi for 2.4 GHz, 2 dBi for 5 GHz
Frequency Bands (GHz)*	2.400–2.4835, 5.150–5.250, 5.250–5.350, 5.470–5.725, 5.725–5.850
Radio 1 Capabilities	2.4 GHz b/g/n (2x2:2 stream) 20/40 MHz (64 QAM)
Radio 2 Capabilities	5 GHz a/n/ac (2x2:2 stream) 20/40/80 MHz (256 QAM)
Maximum Data Rate	Radio 1: up to 300 Mbps, Radio 2: up to 867 Mbps
Bluetooth Low Energy Radio	—
Interfaces	6x 10/100/1000 Base-T RJ45 Ports (1x 802.3at PoE (PD), 1x 802.3af PoE (PSE), 2x Non-PoE Ports, 1x Pass-through in, 1x Pass-through out, 1x RS-232 RJ45 Serial Port)
Serial Console Port	1x RJ45 RS232
Power over Ethernet (PoE)	802.3af (max PSE output of 4W) or 802.3at (full 802.3af PSE output)
Simultaneous SSIDs	Up to 4
EAP Type(s)	EAP-TLS, EAP-TTLS/MSCSHAPv2, EAPv0/EAP-MSCHAPv2, PEAPv1/EAP-GTC, EAP-SIM, EAP-AKA, EAP-FAST
User/Device Authentication	WPA™ and WPA2™ with 802.1x or Preshared key, WEP, Web Captive Portal, MAC blacklist & whitelist
Maximum Tx Power	23 dBm / 100mW (2 chains combined)*
Kensington Lock	No
IEEE Standards	802.11a, 802.11b, 802.11d, 802.11e, 802.11g, 802.11h, 802.11i, 802.11j, 802.11k, 802.11n, 802.11r, 802.11v, 802.11ac, 802.1X, 802.3af, 802.3at, 802.3az
SSID Types Supported	Local-Bridge, Tunnel
Per Radio Client Capacity	Up to 64
Cellular Co-existence	No
LED Off Mode	Yes
<b>Advanced 802.11 Features</b>	
802.11ac MU-MIMO Wave 2	Yes
Transmit Beam Forming (TxBF)	Yes
Low-Density Parity Check (LDPC) Encoding	Yes
Maximum Likelihood Demodulation (MLD)	Yes
Maximum Ratio Combining (MRC)	Yes

FORTIAP C24JE	
A-MPDU and A-MSDU	Yes
Packet Aggregation	—
MIMO Power Save	Yes
Short Guard Interval	Yes
<b>Wireless Monitoring Capabilities</b>	
Rogue Scan Radio Modes	Background, Full-time
WIPS / WIDS Radio Modes	Background, Full-time
Packet Sniffer Mode	No
Spectrum Analyzer	No
<b>Dimensions</b>	
Length x Width x Height	6.69 x 4.04 x 1.08 inches 170 x 102.5 x 27.5 mm
Weight	1.3 lbs (0.6 kg)
Package (shipping) Weight	1.6 lbs (0.74 kg)
Mounting Options	Wall Plate
Included Accessories	Mounting kit for Wall Plate
<b>Environment</b>	
Power Supply	GPI-115, or GPI-130
Power Consumption (Maximum)	Depends on PoE connected
Humidity	5–90% non-condensing
Operating / Storage Temperature	32–104°F (0–40°C) / -4–158°F (-20–70°C)
Directives	Low Voltage Directive • RoHS
UL2043 Plenum Material	No
Mean Time Between Failures	>10 Years
IP Rating	—
Surge Protection Built In	—
Hit-less PoE Failover	No
<b>Certifications</b>	
Wi-Fi Alliance Certified	No
DFS	In Process
<b>Warranty</b>	
Limited Lifetime Warranty	Yes

\* Frequency selection and power may be restricted to abide by regional regulatory compliance laws.

## RF Rx/Tx Performance Table

FORTIAP C24JE				
802.11 a/g	Radio 1 2.4 GHz		Radio 2 5 GHz	
	Maximum TX Power per Transmit Chain (dBm)	RX Sensitivity (dBm) per Receiver Chain	Maximum TX Power per Transmit Chain (dBm)	RX Sensitivity (dBm) per Receiver Chain
6 Mbps	21	-91	21	-91
9 Mbps	20	-89	20	-89
12 Mbps	20	-87	20	-87
18 Mbps	20	-85	19	-84
24 Mbps	19	-82	19	-80
36 Mbps	19	-76	19	-76
48 Mbps	18	-75	18	-74
54 Mbps	17	-74	18	-73
<b>802.11 HT20</b>				
MSC 0/8/16 (BPSK)	20	-90	19	-91
MSC 1/9/17 (QPSK)	19	-88	18	-88
MSC 2/10/18 (QPSK)	19	-85	18	-84
MSC 3/11/19 (16-QAM)	19	-83	17	-80
MSC 4/12/20 (16-QAM)	19	-76	17	-76
MSC 5/13/21 (64-QAM)	18	-72	17	-73
MSC 6/14/22 (64-QAM)	17	-72	16	-71
MSC 7/15/23 (64-QAM)	16	-71	16	-70
<b>802.11 HT40</b>				
MSC 0/8/16 (BPSK)	20	-89	19	-87
MSC 1/9/17 (QPSK)	19	-87	18	-84
MSC 2/10/18 (QPSK)	19	-84	18	-81
MSC 3/11/19 (16-QAM)	19	-82	18	-78
MSC 4/12/20 (16-QAM)	18	-77	17	-75
MSC 5/13/21 (64-QAM)	18	-72	17	-72
MSC 6/14/22 (64-QAM)	17	-71	17	-70
MSC 7/15/23 (64-QAM)	17	-70	17	-68
MSC 8/16/24 (256-QAM)	16	-69	16	-66
MSC 9/17/25 (256-QAM)	16	-69	16	-64
<b>802.11 HT80</b>				
MSC 0 (BPSK)			19	-85
MSC 1 (QPSK)			18	-82
MSC 2 (QPSK)			18	-80
MSC 3 (16-QAM)			18	-77
MSC 4 (16-QAM)			17	-75
MSC 5 (64-QAM)			17	-74
MSC 6 (64-QAM)			17	-72
MSC 7 (64-QAM)			17	-69
MSC 8 (256-QAM)			16	-65
MSC 9 (256-QAM)			16	-61

Maximum capability of the Hardware provided (Excluding antenna gain)

## Order Information

Product	SKU	Description
FortiAP-320C	FAP-320C	Indoor Wireless AP - Dual radio (802.11 b/g/n and 802.11 a/n/ac, 3x3 MIMO), internal antennas, 2 x 10/100/1000 RJ45 port, . Ceiling/wall mount kit included.For power order: 802.3af PoE injector GPI-115 or AC adapter SP-FG20C-PA.
	FC-10-P0321-247-02-DD	24x7 FortiCare Contract
	SP-FG20C-PA	AC Power Adapter for FAP-320C
FortiAP-321C	FAP-321C	Indoor wireless AP - 1 x GE RJ45 port, dual radio (802.11 b/g/n and 802.11 a/n/ac, 3x3 MIMO), Ceiling/wall mount kit included, Power adapter not included. For Gigabit PoE injector order: GPI-115. For AC power adapter order: SP-FG20C-PA.
	FC-10-P0322-247-02-DD	24x7 Comprehensive FortiCare
	SP-FG20C-PA	AC Power Adapter for FAP-321C
FortiAP 221E	FAP-221E	Indoor Wireless AP - Dual radio (802.11 b/g/n and 802.11 a/n/ac Wave 2, 2x2 MU-MIMO), internal antennas, 1 x 10/100/1000 RJ45 port, BT / BLE. Ceiling/wall mount kit included.For power order: 802.3af PoE injector GPI-115 or AC adapter SP-FAP200-PA.
	FC-10-PE221-247-02-DD	24x7 Comprehensive FortiCare
FortiAP 223E	FAP-223E	Indoor Wireless AP - Dual radio (802.11 b/g/n and 802.11 a/n/ac Wave 2, 2x2 MU-MIMO), external antennas included, 1 x 10/100/1000 RJ45 port, BT / BLE. Ceiling/wall mount kit included.For power order: 802.3af PoE injector GPI-115 or AC adapter SP-FAP200-PA.
	FC-10-PE223-247-02-DD	24x7 Comprehensive FortiCare
FortiAP 222E	FAP-222E	Outdoor Wireless AP - Dual radio (802.11 b/g/n and 802.11 a/n/ac Wave 2, 2x2 MU-MIMO), external antennas included, 1 x 10/100/1000 RJ45 port, BT / BLE. Pole / wall mount, lightning grounding wire, and PoE injector included.
	FC-10-PE222-247-02-DD	24x7 Comprehensive FortiCare
FortiAP 224E	FAP-224E	Outdoor Wireless AP - Dual radio (802.11 b/g/n and 802.11 a/n/ac Wave 2, 2x2 MU-MIMO), internal antennas, 2 x 10/100/1000 RJ45 port, 1 SFP port, BT / BLE, IP67 rated. Pole / wall mount, lightning grounding wire included.For power order: 802.3af PoE injector GPI-115.
	FC-10-PE224-247-02-DD	24x7 Comprehensive FortiCare
FortiAP 231E	FAP-231E	Indoor Wireless AP - Tri-radio (802.11 a/b/g/n/ac Wave 2, 802.11a/n/ac Wave 2, 802.11 b/g/n, 2x2 MU-MIMO), internal antennas, 2 x 10/100/1000 RJ45 port, BT / BLE. Ceiling/wall mount kit included.For power order: 802.3at PoE injector GPI-130 or AC adapter SP-FAP200-PA.
FortiAP 321E	FAP-321E	Indoor Wireless AP - Dual radio (802.11 b/g/n and 802.11 a/n/ac Wave 2, 3x3 MIMO), internal antennas, 1 x 10/100/1000 RJ45 port, BT / BLE. Ceiling/wall mount kit included.For power order: 802.3at PoE injector GPI-130 or AC adapter SP-FAP200-PA.
FortiAP 421E	FAP-421E	Indoor Wireless AP - Dual radio (802.11 b/g/n and 802.11 a/n/ac Wave 2, 4x4 MU-MIMO), internal antennas, 2 x 10/100/1000 RJ45 port, . Ceiling/wall mount kit included.For power order: 802.3af PoE injector GPI-115 (limited features) or 802.3at PoE injector GPI-130 or AC adapter SP-FAP400-PA.
	FC-10-P421E-247-02-DD	24x7 FortiCare Contract
FortiAP 423E	FAP-423E	Indoor Wireless AP - Dual radio (802.11 b/g/n and 802.11 a/n/ac Wave 2, 4x4 MU-MIMO), external antennas included, 2 x 10/100/1000 RJ45 port, . Ceiling/wall mount kit included.For power order: 802.3af PoE injector GPI-115 (limited features) or 802.3at PoE injector GPI-130 or AC adapter SP-FAP400-PA.
	FC-10-P423E-247-02-DD	24x7 FortiCare Contract
FortiAP C24JE	FAP-C24JE	Wall Plate AP - Dual radio (802.11 b/g/n and 802.11 a/n/ac Wave 2, 2x2 MU-MIMO), internal antennas, 4 x 10/100/1000 RJ45 port (1x 802.3at PoE PD, 1x 802.3af PoE PSE, 2x Non-PoE Ports), . Wall plate mounting kit includedFor power order: 802.3af PoE injector GPI-115 (limited features) or 802.3at PoE injector GPI-130.
	FC-10-PC24E-247-02-DD	24x7 FortiCare Contract
Gigabit PoE Injector	GPI-115	1-Port Gigabit PoE Power Injector, 802.3af 15.4 W, 10/100/1000.
	GPI-130	1-Port Gigabit PoE Power Injector, 802.3at up to 30 W.
Power Adapter	SP-FAP400-PA	AC Power Adapter for FAP-421E and FAP-423E.
	SP-FAP200-PA	AC Power Adapter for FAP-221E, FAP-223E, FAP-231E, and FAP-321E.

Note: Additional external antenna options available for some models. Please see antenna datasheet for details.

REGION/COUNTRY SKU SUFFIX*								
Americas-FCC	Bangladesh	China	India	Europe ETSI	Indonesia	International	Japan	Korea
-A	-B	-C	-D	-E	-F	-I	-J	-K
Non-FFCA	Russia	Singapore	Taiwan	Ukraine	Vietnam, Thailand	World 2.4G	Egypt	
-N	-P	-S	-T	-U	-V	-W	-Y	

Note: Additional countries may apply to given suffix codes. Please work with your local supplier for the correct model in your regulatory domain.

