

# FortiAP™ Smart Access Point Series

Cloud or FortiOS-managed Smart Access Points

The FortiAP-S Series are the first Access Points of their kind to have UTM services built in. They are equipped with extra memory and a powerful processor that enables them to perform real-time security processing on the AP, providing complete protection against all manner of WiFi and cyber-threats at the network edge. **With Fortinet's award-winning security technology, the FortiAP-S series provides the most compact solution for complete content and application security in a WiFi architecture.**



## Remote Management

Combines the low CAPEX and convenience of remote management via a central FortiGate or FortiCloud, with on site, locally applied threat protection, delivered through regular FortiGuard updates.



## Advanced Security Protection

On-board IPS, antivirus scanning, web-filtering and application control, protects all users and devices from the latest security threats.



## Built-in WiFi Security

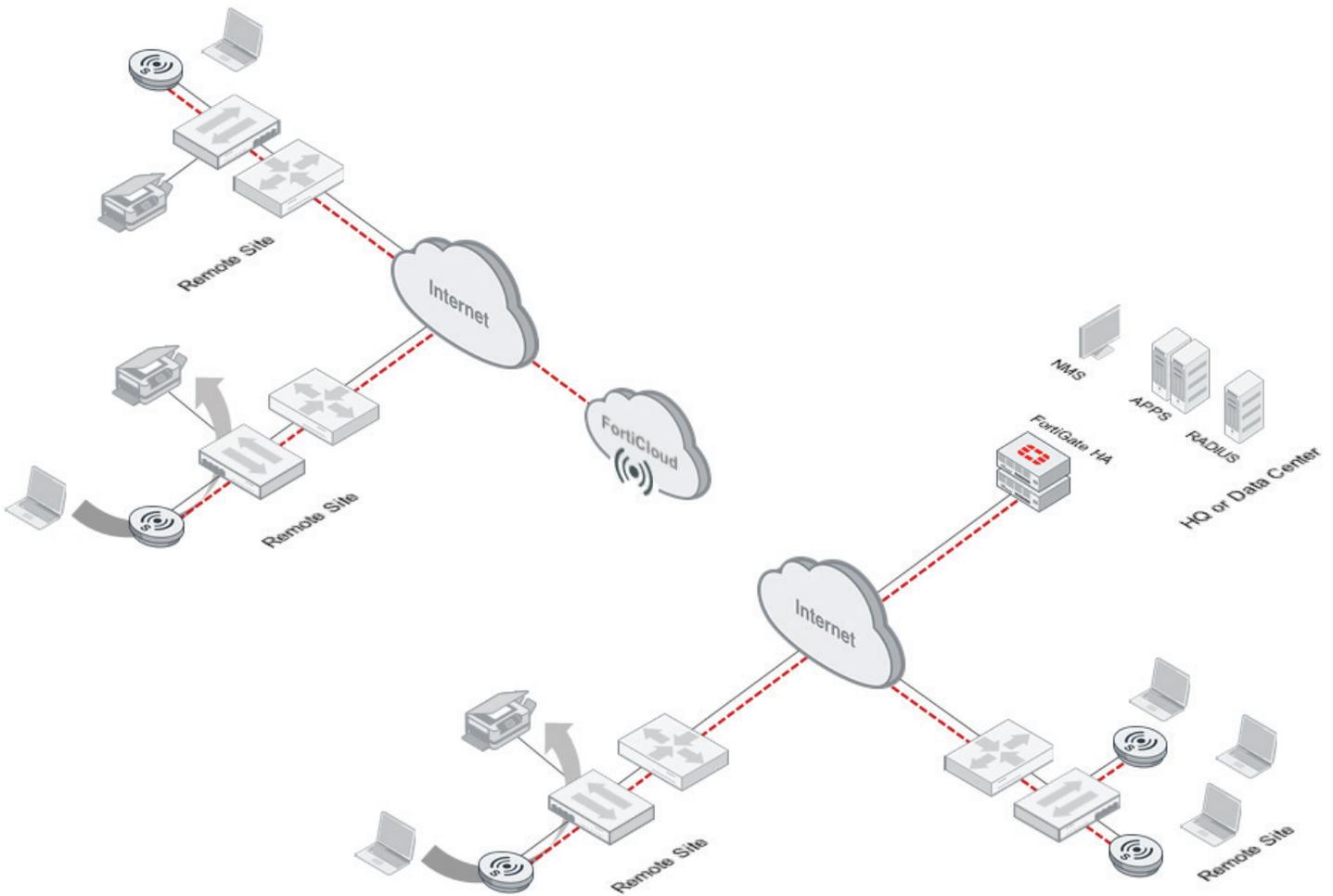
Protects the network from advanced wireless threats to satisfy PCI DSS compliance. PCI-DSS compliance reports available through FortiCloud or FortiAnalyzer.

## Product Offerings

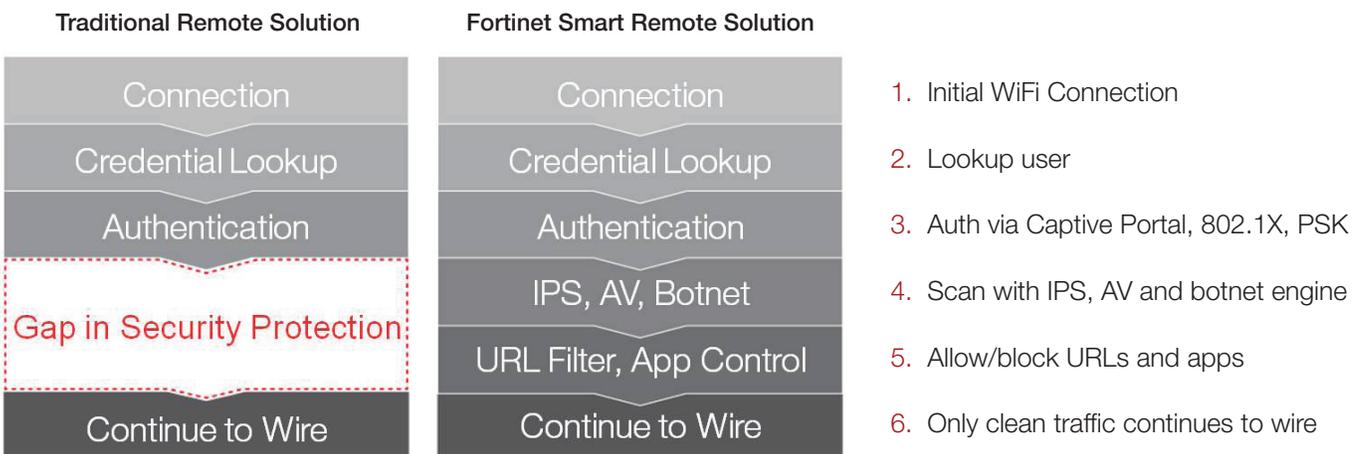
802.11ac Wave 2

|                  |                          |
|------------------|--------------------------|
| <b>FAP-S221E</b> | 2x2 APs with dual radios |
| <b>FAP-S223E</b> |                          |
| <b>FAP-S421E</b> | 4x4 APs with dual radios |

# DEPLOYMENT



Showing both Cloud-managed and FortiGate-managed FAP-S series at remote sites



Fortinet approach to secure remote-managed WiFi

## HIGHLIGHTS

### FortiAP S221E

The FAP-S221E is our medium-density 802.11ac Wave 2 access point. This enterprise class access point is ideal for medium-density environments such as office or classroom.

The S221E supports MU-MIMO giving excellent performance throughput of up to 867 Mbps and the ability to support multiple simultaneous devices.



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

 **Up to 300 + 867 Mbps**

## SPECIFICATIONS

| FORTIAP S221E                            |   |
|--|---|
| <b>Hardware</b>                          |   |
| Hardware Type                            | Indoor AP   |
| Number of Radios                         | 2 + 1 BT/BLE  |
| Number of Antennas                       | 4 Internal + 1 BT/BLE internal  |
| Antenna Type and peak Gain               | PIFA: 3 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 (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<br>Radio 2: up to 867 Mbps  |
| Bluetooth Low Energy (BT/BLE) Radio      | Bluetooth scanning and iBeacon advertisement @ 4 dBm max TX power   |
| 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 & 802.3at  |
| 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™ and WPA2™ 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)*<br>5 GHz: 22 dBm / 158 mW (2 chains combined)*  |
| Kensington Lock                          | 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, 802.1X, 802.3af, 802.3at, 802.3az |
| SSID Types Supported                     | Local-Bridge, Mesh, & Tunnel (when managed by FortiGate)  |
| Per Radio Client Capacity                | Up to 512   |
| 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 S221E                           |   |
|---|---|
| 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 (recommended)           |
| 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-115, or GPI-130          |
| Power Consumption (Maximum)             | 24 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                  | No  |
| Mean Time Between Failures              | >30 Years                                     |
| IP Rating                               | —   |
| Surge Protection Built In               | —   |
| Hit-less PoE Failover                   | No  |
| <b>Certifications</b>                   |   |
| WiFi Alliance Certified                 | Yes   |
| DFS                                     | FCC, IC, CE, Japan                            |
| <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.

## HIGHLIGHTS

### FortiAP S223E

The FAP-S223E is our medium-density 802.11ac Wave 2 access point. This enterprise class access point is ideal for medium-density environments such as office or classroom.

The S223E supports MU-MIMO giving excellent performance throughput of up to 867 Mbps and the ability to support multiple simultaneous devices.



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

 **Up to 300 + 867 Mbps**

## SPECIFICATIONS

| FORTIAP S223E                            |   |
|--|---|
| <b>Hardware</b>                          |   |
| Hardware Type                            | Indoor AP   |
| Number of Radios                         | 2 + 1 BT/BLE  |
| Number of Antennas                       | 4 External + 1 BT/BLE internal  |
| Antenna Type and peak Gain               | 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 (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<br>Radio 2: up to 867 Mbps  |
| Bluetooth Low Energy (BT/BLE) Radio      | Bluetooth scanning and iBeacon advertisement @ 4 dBm max Tx power   |
| 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 & 802.3at  |
| 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™ and WPA2™ 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)*<br>5 GHz: 22 dBm / 158 mW (2 chains combined)*  |
| Kensington Lock                          | 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, 802.1x, 802.3af, 802.3at, 802.3az |
| SSID Types Supported                     | Local-Bridge, Mesh, & Tunnel (when managed by FortiGate)  |
| Per Radio Client Capacity                | Up to 512   |
| 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 S223E                           |   |
|---|---|
| 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 (recommended)                         |
| 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                                  | 1.3 lbs (0.6 kg)  |
| Package (shipping) Weight               | 2.6 lbs (1.18 kg)   |
| Mounting Options                        | Ceiling, T-Rail, and Wall                                   |
| Included Accessories                    | 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                        |
| Power Consumption (Maximum)             | 24 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                  | No  |
| Mean Time Between Failures              | >30 Years   |
| IP Rating                               | —   |
| Surge Protection Built In               | —   |
| Hit-less PoE Failover                   | No  |
| <b>Certifications</b>                   |   |
| WiFi Alliance Certified                 | Yes   |
| DFS                                     | FCC, IC, CE, Japan  |
| <b>Warranty</b>                         |   |
| Limited Lifetime Warranty               | Yes   |

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

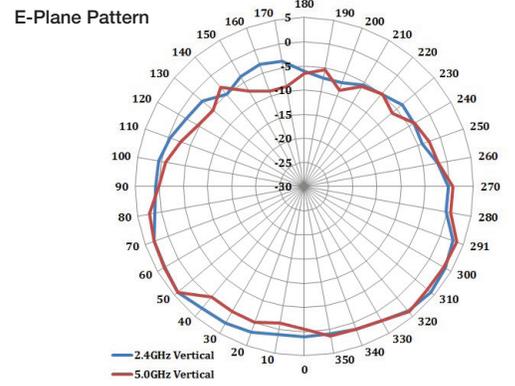
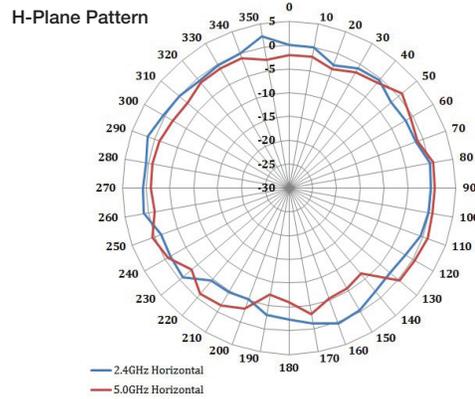
\*\* Additional filtration added to reduce interference in 2.4 GHz band from nearby cellular equipment.

## RF RX/TX PERFORMANCE TABLE

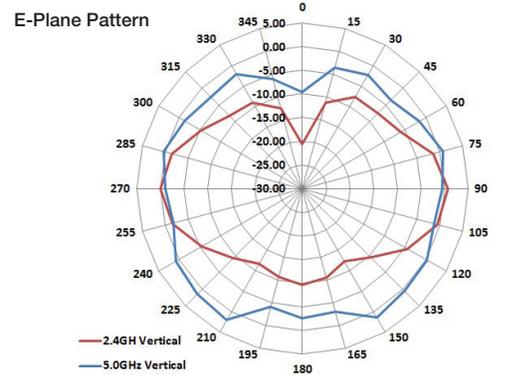
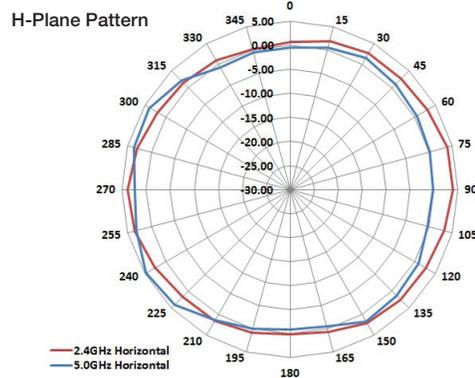
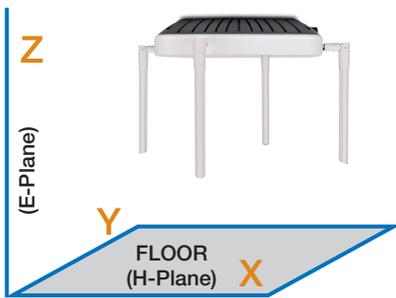
|                        | FORTIAP S221E and S223E<br>RADIO 1 |                         | RADIO 2                    |                         |
|------------------------|------------------------------------|-------------------------|----------------------------|-------------------------|
|                        | 2.4 GHz<br>Tx<br>Power (dBm)       | Rx<br>Sensitivity (dBm) | 5 GHz<br>Tx<br>Power (dBm) | Rx<br>Sensitivity (dBm) |
| <b>802.11 a/g</b>      |                                    |                         |                            |                         |
| 6 Mbps                 | 20                                 | -93                     | 19                         | -90                     |
| 9 Mbps                 | 20                                 | -91                     | 19                         | -89                     |
| 12 Mbps                | 20                                 | -90                     | 18                         | -88                     |
| 18 Mbps                | 19                                 | -88                     | 18                         | -85                     |
| 24 Mbps                | 19                                 | -84                     | 17                         | -82                     |
| 36 Mbps                | 18                                 | -83                     | 17                         | -79                     |
| 48 Mbps                | 18                                 | -76                     | 17                         | -76                     |
| 54 Mbps                | 17                                 | -75                     | 16                         | -74                     |
| <b>802.11n HT20</b>    |                                    |                         |                            |                         |
| MCS 0/8/16             | 20                                 | -90                     | 19                         | -90                     |
| MCS 1/9/17             | 20                                 | -88                     | 18                         | -87                     |
| MCS 2/10/18            | 19                                 | -85                     | 18                         | -85                     |
| MCS 3/11/19            | 19                                 | -82                     | 17                         | -82                     |
| MCS 4/12/20            | 18                                 | -79                     | 17                         | -78                     |
| MCS 5/13/21            | 18                                 | -74                     | 17                         | -73                     |
| MCS 6/14/22            | 17                                 | -72                     | 16                         | -72                     |
| MCS 7/15/23            | 16                                 | -71                     | 16                         | -70                     |
| <b>802.11n HT40</b>    |                                    |                         |                            |                         |
| MCS 0/8/16             | 19                                 | -89                     | 18                         | -88                     |
| MCS 1/9/17             | 19                                 | -86                     | 18                         | -86                     |
| MCS 2/10/18            | 18                                 | -84                     | 18                         | -84                     |
| MCS 3/11/19            | 18                                 | -81                     | 17                         | -80                     |
| MCS 4/12/20            | 17                                 | -77                     | 17                         | -77                     |
| MCS 5/13/21            | 17                                 | -73                     | 16                         | -73                     |
| MCS 6/14/22            | 16                                 | -71                     | 16                         | -71                     |
| MCS 7/15/23            | 16                                 | -69                     | 15                         | -69                     |
| <b>802.11 ac VHT20</b> |                                    |                         |                            |                         |
| MCS 0                  | 20                                 | -90                     | 19                         | -90                     |
| MCS 1                  | 20                                 | -88                     | 18                         | -87                     |
| MCS 2                  | 19                                 | -85                     | 18                         | -84                     |
| MCS 3                  | 19                                 | -82                     | 17                         | -80                     |
| MCS 4                  | 18                                 | -79                     | 17                         | -78                     |
| MCS 5                  | 18                                 | -74                     | 17                         | -73                     |
| MCS 6                  | 17                                 | -72                     | 16                         | -72                     |
| MCS 7                  | 16                                 | -71                     | 16                         | -71                     |
| MCS 8                  | 15                                 | -67                     | 16                         | -67                     |
| <b>802.11 ac VHT40</b> |                                    |                         |                            |                         |
| MCS 0                  | 19                                 | -89                     | 18                         | -88                     |
| MCS 1                  | 19                                 | -86                     | 18                         | -85                     |
| MCS 2                  | 18                                 | -84                     | 18                         | -83                     |
| MCS 3                  | 18                                 | -81                     | 17                         | -80                     |
| MCS 4                  | 17                                 | -77                     | 17                         | -77                     |
| MCS 5                  | 17                                 | -73                     | 16                         | -71                     |
| MCS 6                  | 16                                 | -71                     | 16                         | -70                     |
| MCS 7                  | 16                                 | -69                     | 15                         | -68                     |
| MCS 8                  | 15                                 | -67                     | 15                         | -66                     |
| MCS 9                  | 15                                 | -65                     | 15                         | -63                     |
| <b>802.11 ac VHT80</b> |                                    |                         |                            |                         |
| MCS 0                  |                                    |                         | 17                         | -85                     |
| MCS 1                  |                                    |                         | 17                         | -80                     |
| MCS 2                  |                                    |                         | 17                         | -78                     |
| MCS 3                  |                                    |                         | 16                         | -75                     |
| MCS 4                  |                                    |                         | 16                         | -72                     |
| MCS 5                  |                                    |                         | 16                         | -71                     |
| MCS 6                  |                                    |                         | 15                         | -67                     |
| MCS 7                  |                                    |                         | 15                         | -65                     |
| MCS 8                  |                                    |                         | 14                         | -61                     |
| MCS 9                  |                                    |                         | 14                         | -60                     |

# ANTENNA RADIATION PATTERNS

## FAP-S221E



## FAP-S223E



## HIGHLIGHTS

### FortiAP S421E

The FAP-S421E is our high-density 802.11ac Wave 2 access point. This enterprise class access point is ideal for large high-density environments such as a large office or classroom. The S421E supports MU-MiMO giving excellent performance throughput of up to 1.733 Gbps and the ability to support multiple simultaneous devices.



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

 **Up to 800 + 1,733 Mbps**

## SPECIFICATIONS

| FORTIAP S421E                            |   |
|--|---|
| <b>Hardware</b>                          |   |
| Hardware Type                            | Indoor AP   |
| Number of Radios                         | 2   |
| Number of Antennas                       | 8 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 (4x4:4 stream) 20/40 MHz (64 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 600 Mbps<br>Radio 2: up to 1,733 Mbps  |
| Bluetooth Low Energy (BT/BLE) 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 & 802.3at  |
| 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™ and WPA2™ with 802.1x or Preshared key, WEP, Web Captive Portal, MAC blacklist & whitelist   |
| Maximum Tx Power                         | 2.4 GHz: 28 dBm / 631 mW (4 chains combined)*<br>5 GHz: 26 dBm / 398 mW (4 chains combined)*  |
| Kensington Lock                          | 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, 802.1X, 802.3af, 802.3at, 802.3az |
| SSID Types Supported                     | Local-Bridge, Mesh, & Tunnel (when managed by FortiGate)  |
| Per Radio Client Capacity                | Up to 512   |
| 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 S421E                           |  |
|---|--|
| 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 (recommended)          |
| Packet Sniffer Mode                     | Yes  |
| Spectrum Analyzer                       | Yes  |
| <b>Dimensions</b>                       |  |
| Length x Width x Height                 | 8.46 x 8.46 x 2.2 inches (215 x 215 x 56 mm) |
| Weight                                  | 3.31 lbs (1.5 kg)                            |
| Package (shipping) Weight               | 5.09 lbs (2.31 kg)                           |
| Mounting Options                        | Ceiling, T-Rail, and Wall                    |
| Included Accessories                    | Mount kits for Ceiling, T-Rail, and Wall     |
| <b>Environment</b>                      |  |
| Power Supply                            | SP-FAP400-PA-XX, GPI-115, or GPI-130         |
| Power Consumption (Maximum)             | 24W  |
| 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>                   |  |
| WiFi Alliance Certified                 | Yes  |
| DFS                                     | FCC, IC, CE, Japan, Taiwan, Korea            |
| <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

| 802.11 a/g            | FORTIAP S421E RADIO 1  |                      | RADIO 2              |                      |
|-----------------------|------------------------|----------------------|----------------------|----------------------|
|                       | 2.4 GHz Tx Power (dBm) | Rx Sensitivity (dBm) | 5 GHz Tx Power (dBm) | Rx Sensitivity (dBm) |
| 6 Mbps                | 22                     | -94                  | 20                   | -91                  |
| 9 Mbps                | 22                     | -92                  | 20                   | -89                  |
| 12 Mbps               | 22                     | -89                  | 20                   | -86                  |
| 18 Mbps               | 22                     | -88                  | 20                   | -85                  |
| 24 Mbps               | 22                     | -83                  | 20                   | -80                  |
| 36 Mbps               | 22                     | -78                  | 19                   | -75                  |
| 48 Mbps               | 22                     | -77                  | 19                   | -74                  |
| 54 Mbps               | 19                     | -76                  | 18                   | -73                  |
| <b>802.11 HT20</b>    |                        |                      |                      |                      |
| MSC 0/8/16 (BPSK)     | 22                     | -91                  | 20                   | -89                  |
| MSC 1/9/17 (QPSK)     | 21                     | -89                  | 19                   | -87                  |
| MSC 2/10/18 (QPSK)    | 20                     | -86                  | 19                   | -84                  |
| MSC 3/11/19 (16-QAM)  | 19                     | -85                  | 18                   | -83                  |
| MSC 4/12/20 (16-QAM)  | 19                     | -80                  | 17                   | -78                  |
| MSC 5/13/21 (64-QAM)  | 18                     | -75                  | 17                   | -73                  |
| MSC 6/14/22 (64-QAM)  | 18                     | -74                  | 17                   | -72                  |
| MSC 7/15/23 (64-QAM)  | 18                     | -73                  | 17                   | -71                  |
| <b>802.11 HT40</b>    |                        |                      |                      |                      |
| MSC 0/8/16 (BPSK)     | 21                     | -89                  | 20                   | -86                  |
| MSC 1/9/17 (QPSK)     | 20                     | -87                  | 19                   | -84                  |
| MSC 2/10/18 (QPSK)    | 20                     | -84                  | 19                   | -81                  |
| MSC 3/11/19 (16-QAM)  | 19                     | -83                  | 18                   | -80                  |
| MSC 4/12/20 (16-QAM)  | 19                     | -78                  | 18                   | -75                  |
| MSC 5/13/21 (64-QAM)  | 18                     | -73                  | 17                   | -70                  |
| MSC 6/14/22 (64-QAM)  | 18                     | -72                  | 17                   | -69                  |
| MSC 7/15/23 (64-QAM)  | 18                     | -71                  | 17                   | -68                  |
| MSC 8/16/24 (256-QAM) |                        |                      | 14                   | -65                  |
| MSC 9/17/25 (256-QAM) |                        |                      | 14                   | -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                   | -59                  |

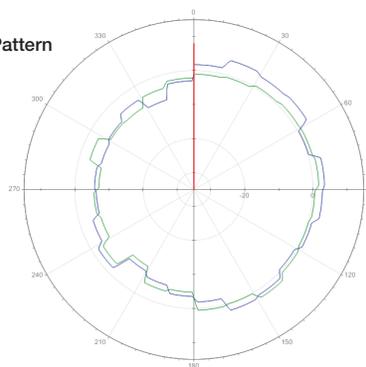
Maximum capability of the Hardware provided (Excluding antenna gain)

## ANTENNA RADIATION PATTERNS

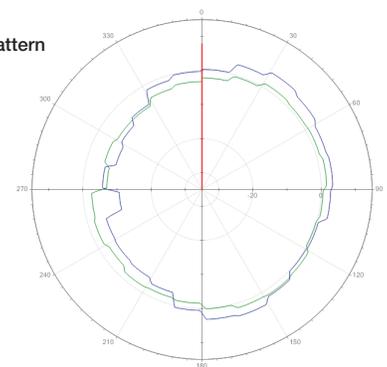
### FAP-S421E



H-Plane Pattern



E-Plane Pattern



Radio 1 – 2.4 GHz    Radio 2 – 5.5 GHz

Radio 1 – 2.4 GHz    Radio 2 – 5.5 GHz

# 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      | 65.0     |  |
| MCS 2                                    | 1            | 19.5      | 21.7     | 40.5      | 45       | 87.8      | 97.5     |  |
| MCS 3                                    | 1            | 26        | 28.9     | 54        | 60       | 117.0     | 130.0    |  |
| MCS 4                                    | 1            | 39        | 43.3     | 81        | 90       | 175.5     | 195.0    |  |
| MCS 5                                    | 1            | 52        | 57.8     | 108       | 120      | 234.0     | 260.0    |  |
| MCS 6                                    | 1            | 58.5      | 65       | 121.5     | 135      | 263.3     | 292.5    |  |
| MCS 7                                    | 1            | 65        | 72.2     | 135       | 150      | 292.5     | 325.0    |  |
| MCS 8                                    | 1            | 78.0      | 86.7     | 162.0     | 180.0    | 351.0     | 390.0    |  |
| MCS 9                                    | 1            | NA        | NA       | 180.0     | 200.0    | 390.0     | 433.3    |  |
|  |              |           |          |           |          |           |          |  |
| MCS 0                                    | 2            | 13        | 14.4     | 27        | 30       | 58.5      | 65.0     |  |
| MCS 1                                    | 2            | 26        | 28.9     | 54        | 60       | 117.0     | 130.0    |  |
| MCS 2                                    | 2            | 39        | 43.3     | 81        | 90       | 175.5     | 195.0    |  |
| MCS 3                                    | 2            | 52        | 57.8     | 108       | 120      | 234.0     | 260.0    |  |
| MCS 4                                    | 2            | 78        | 86.7     | 162       | 180      | 351.0     | 390.0    |  |
| MCS 5                                    | 2            | 104       | 115.6    | 216       | 240      | 468.0     | 520.0    |  |
| MCS 6                                    | 2            | 117       | 130      | 243       | 270      | 526.5     | 585.0    |  |
| MCS 7                                    | 2            | 130       | 144.4    | 270       | 300      | 585.0     | 650.0    |  |
| MCS 8                                    | 2            | 156.0     | 173.3    | 324.0     | 360.0    | 702.0     | 780.0    |  |
| MCS 9                                    | 2            | NA        | NA       | 360.0     | 400.0    | 780.0     | 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     | 195.0    |  |
| MCS 2                                    | 3            | 58.5      | 65       | 121.5     | 135      | 263.3     | 292.5    |  |
| MCS 3                                    | 3            | 78        | 86.7     | 162       | 180      | 351.0     | 390.0    |  |
| MCS 4                                    | 3            | 117       | 130      | 243       | 270      | 526.5     | 585.0    |  |
| MCS 5                                    | 3            | 156       | 173.3    | 324       | 360      | 702.0     | 780.0    |  |
| MCS 6                                    | 3            | 175.5     | 195      | 364.5     | 405      | NA        | NA       |  |
| MCS 7                                    | 3            | 195       | 216.7    | 405       | 450      | 877.5     | 975.0    |  |
| MCS 8                                    | 3            | 234.0     | 260.0    | 486.0     | 540.0    | 1053.0    | 1170.0   |  |
| MCS 9                                    | 3            | 260.0     | 288.9    | 540.0     | 600.0    | 1170.0    | 1300.0   |  |
|  |              |           |          |           |          |           |          |  |
| 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      |  |
| MCS8                                    | 2               | 13        | 14.4     | 27        | 30       |  |
| MCS9                                    | 2               | 26        | 28.9     | 54        | 60       |  |
| MCS10                                   | 2               | 39        | 43.3     | 81        | 90       |  |
| MCS11                                   | 2               | 52        | 57.8     | 108       | 120      |  |
| MCS12                                   | 2               | 78        | 86.7     | 162       | 180      |  |
| MCS13                                   | 2               | 104       | 115.6    | 216       | 240      |  |
| MCS14                                   | 2               | 117       | 130      | 243       | 270      |  |
| MCS15                                   | 2               | 130       | 144.4    | 270       | 300      |  |
| MCS16                                   | 3               | 19.5      | 21.7     | 40.5      | 45       |  |
| MCS17                                   | 3               | 39        | 43.3     | 81        | 90       |  |
| MCS18                                   | 3               | 58.5      | 65       | 121.5     | 135      |  |
| MCS19                                   | 3               | 78        | 86.7     | 162       | 180      |  |
| MCS20                                   | 3               | 117       | 130      | 243       | 270      |  |
| MCS21                                   | 3               | 156       | 173.3    | 324       | 360      |  |
| MCS22                                   | 3               | 175.5     | 195      | 364.5     | 405      |  |
| MCS23                                   | 3               | 195       | 216.7    | 405       | 450      |  |

## UTM PERFORMANCE SUMMARY

|   | FAP-S421E  | FAP-S22XE |
|---|------------|-----------|
| <b>Spirent Test Centre Results</b>  |            |           |
| AV HTTP 44K Throughput on 5G 80MHz Radio in Bridge mode – Downlink                  | 150 Mbps   | 55 Mbps   |
| AV HTTP 44K Throughput on 5G 80MHz Radio in Bridge mode – Uplink                    | 150 Mbps   | 55 Mbps   |
| IPS HTTP 44K Throughput on 5G 80MHz Radio in Bridge mode – Downlink                 | 220 Mbps   | 100 Mbps  |
| IPS HTTP 44K Throughput on 5G 80MHz Radio in Bridge mode – Uplink                   | 220 Mbps   | 100 Mbps  |
| Botnet HTTP 44K Throughput on 5G 80MHz Radio in Bridge mode – Downlink              | 595 Mbps   | 310 Mbps  |
| Botnet HTTP 44K Throughput on 5G 80MHz Radio in Bridge mode – Uplink                | 455 Mbps   | 170 Mbps  |
| Web Filter HTTP 44K Throughput on 5G 80MHz Radio in Bridge mode – Downlink          | 240 Mbps   | 70 Mbps   |
| Web Filter HTTP 44K Throughput on 5G 80MHz Radio in Bridge mode – Uplink            | 240 Mbps   | 70 Mbps   |
| Application Control HTTP 44K Throughput on 5G 80MHz Radio in Bridge mode – Downlink | 455 Mbps   | 300 Mbps  |
| Application Control HTTP 44K Throughput on 5G 80MHz Radio in Bridge mode – Uplink   | 440 Mbps   | 165 Mbps  |
| All UTM HTTP 44K Throughput on 5G 80MHz Radio in Bridge mode – Downlink             | 95 Mbps    | 35 Mbps   |
| All UTM HTTP 44K Throughput on 5G 80MHz Radio in Bridge mode – Uplink               | 95 Mbps    | 35 Mbps   |
| No UTM HTTP 44K Throughput on 5G 80MHz Radio in Bridge mode – Downlink              | 1,050 Mbps | 345 Mbps  |
| No UTM HTTP 44K Throughput on 5G 80MHz Radio in Bridge mode – Uplink                | 705 Mbps   | 245 Mbps  |

Specifications for other series are not available

## ORDER INFORMATION

| Product  | SKU                   | Description   |
|--|-----------------------|---|
| FortiAP S221E  | FAP-S221E             | Indoor Wireless AP — 2x GE RJ45 ports, 802.11 a/b/g/n/ac Wave 2, dual concurrent dual band (2.4 GHz/5 GHz), 2x2 MU-MIMO, ceiling/wall mount kit included, power adapter not included.                         |
|  | FC-10-PS221-311-02-DD | 8x5 FortiCare Contract  |
|  | FC-10-PS221-247-02-DD | 24x7 FortiCare Contract   |
| FortiAP S223E  | FAP-S223E             | Indoor Wireless AP — 2x GE RJ45 ports, 802.11 a/b/g/n/ac Wave 2, dual concurrent dual band (2.4 GHz/5 GHz), 2x2 MU-MIMO, external antennas, ceiling/wall mount kit included, power adapter not included.      |
|  | FC-10-PS223-311-02-DD | 8x5 FortiCare Contract  |
|  | FC-10-PS223-247-02-DD | 24x7 FortiCare Contract   |
| FortiAP S421E  | FAP-S421E             | Indoor Cloud or FortiGate Managed Wireless AP — 2x GE RJ45 ports, 802.11 a/b/g/n/ac Wave 2, dual concurrent dual band (2.4 GHz/5 GHz), 4x4 MIMO, ceiling/wall mount kit included, power adapter not included. |
|  | FC-10-PS421-905-02-12 | FortiAP-S Security and Support Bundle (24x7 FortiCare plus IPS, App Control, AV and Web Filtering)  |
|  | FC-10-PS421-311-02-DD | 8x5 FortiCare Contract  |
|  | FC-10-PS421-247-02-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-S421E.   |
|  | SP-FAP200-PA          | AC Power Adapter for FAP-S221E and FAP-S223E.   |
| FortiCloud FortiAP FAP-S Enterprise Management License | FC-10-90APS-173-02-DD | FortiAP-S Enterprise License adds/includes a subscription to FortiGuard services, Bonjour relaying, intra-SSID isolation of specific clients, 1 year log retention and FortiCare 8x5 Support.                 |

| 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.



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