

ePMP™ Force L Series

QUICK LOOK:

- **High-performance subscriber modules for point-to-point and point-to-multipoint fixed wireless broadband applications**
- **Up to 400 Mbps capacity leveraging the proven ePMP platform on 802.11ac models (200 Mbps on 802.11n models)**
- **Compatible with all ePMP Access Points, including ePMP 3000 and ePMP 3000L**
- **3-year hardware warranty**



Service providers face ever-increasing demand for capacity in a limited amount of spectrum. The **ePMP Force L Series** of subscriber modules (SM) meets this demand offering high performance, scalability, low latency across both point-to-point and point-to-multipoint deployments while providing a rapid return on investment.

The Force L Series has a variety of options tailored to the range and capacity needs of the wireless service provider:

The Force 300 L Series delivers up to 400 Mbps and is based on 802.11ac Wave 2 Technology enabling MU-MIMO performance when used with the ePMP 3000 Access Point.

Force 300-25L features a high-gain 25 dBi integrated dish.

Force 300-13L features an integrated 13 dBi panel antenna.

Force 130 L Series delivers up to 200 Mbps and is based on 802.11n technology. **Force 130** features an integrated 13 dBi antenna and **Force 200L** has an integrated 25 dBi dish antenna.



All Force L Series SMs feature the following:

- Proven ePMP air interface including the optimized ePTP interface for low latency point-to-point applications.
- Interoperability with ePMP 3000, 3000L, MicroPOP, 2000 and 1000 Access Points.
- Multiple levels of QoS (Quality of Service) for voice (VoIP), video (IPTV) and data applications.
- Security features meeting the requirements of enterprise, industrial, government and service provider users.
- Each SM comes with a Power over Ethernet (PoE) injector and pole mount hardware included.
- Management by Cambium Networks cnMaestro™ network management system for easy provisioning, monitoring and upgrades.
- Network planning with LINKPlanner and cnHeat.
- 3-year hardware warranty and support from Cambium Networks.
- An optional software license is available to convert the Force 300 CSML to an Access Point with maximum 12 subscribers modules and without GPS synchronization support.

ePMP™ Force L Series

| Spectrum | | | | | |
|---|--|--|--|--|--|
| | Force 130 5 GHz | Force 200L | Force 300-13L | Force 300-25L | Force 300-CSML |
| Channel Width MHz | 5 10 20 40 | 5 10 20 40 | 20 40 80 | 20 40 80 | 20 40 80 |
| Proprietary Physical Layer | 2x2 MIMO/OFDM | 2x2 MIMO/OFDM | 2x2 MIMO/OFDM | 2x2 MIMO/OFDM | 2x2 MIMO/OFDM |
| Channel Spacing | Configurable in 5 MHz increments | Configurable in 5 MHz increments | Configurable in 5 MHz increments | Configurable in 5 MHz increments | Configurable in 5 MHz increments |
| Frequency Range | Wide Band Operation 4910–5970 MHz | Wide Band Operation 4910–5970 MHz | Wide Band Operation 4910–6200 MHz | Wide Band Operation 4910–6200 MHz | Wide Band Operation 4910–6200 MHz |
| Note: Allowable frequencies and bands are dictated by individual country regulations. | | | | | |
| MAC Layer (Media Access Control) | Cambium Proprietary | Cambium Proprietary | Cambium Proprietary | Cambium Proprietary | Cambium Proprietary |
| Ethernet Interface | 10/100 BaseT | 10/100 BaseT | 10/100/1000 BaseT | 10/100/1000 BaseT, Compatible with Cambium PoE & Standard PoE pinouts | 10/100/1000 BaseT, |
| Protocols Used | IPv4, IPv6, UDP, TCP, IP, ICMP, SNMPv2c, HTTPs, STP, SSH | IPv4, IPv6, UDP, TCP, IP, ICMP, SNMPv2c, HTTPs, STP, SSH | IPv4, IPv6, UDP, TCP, IP, ICMP, SNMPv2c, HTTPs, STP, SSH | IPv4, IPv6, UDP, TCP, IP, ICMP, SNMPv2c, HTTPs, STP, SSH | IPv4, IPv6, UDP, TCP, IP, ICMP, SNMPv2c, HTTPs, STP, SSH |
| Network Management | IPv4/IPv6, HTTPs, SNMPv2c, SSH, Cambium Networks cnMaestro | IPv4/IPv6, HTTPs, SNMPv2c, SSH, Cambium Networks cnMaestro | IPv4/IPv6, HTTPs, SNMPv2c, SSH, Cambium Networks cnMaestro | IPv4/IPv6, HTTPs, SNMPv2c, SSH, Cambium Networks cnMaestro | IPv4/IPv6, HTTPs, SNMPv2c, SSH, Cambium Networks cnMaestro |
| VLAN | 802.1Q with 802.1p priority | 802.1Q with 802.1p priority | 802.1Q with 802.1p priority | 802.1Q with 802.1p priority | 802.1Q with 802.1p priority |

** Tx power may be lower above 6135 MHz. Refer to user guide for specific values.

| Performance | | | | | |
|--|---|---|---|--|---|
| | Force 130 5 GHz | Force 200L | Force 300-13L | Force 300-25L | Force 300-CSML |
| ARQ | Yes | Yes | Yes | Yes | Yes |
| Nominal Receive Sensitivity (w/FEC) @20 MHz Channel | MCS0 -88 dBm; MCS7 = -70 dBm | MCS0 -88 dBm; MCS7 = -70 dBm | MCS0 = -89 dBm; MCS9 = -62 dBm | MCS0 = -89 dBm; MCS9 = -62 dBm | MCS0 = -89 dBm; MCS9 = -62 dBm |
| Nominal Receive Sensitivity (w/FEC) @40 MHz Channel | MCS0 = -86 dBm; MCS7 = -68 dBm | MCS0 = -86 dBm; MCS7 = -68 dBm | MCS0 = -87 dBm; MCS9 = -61 dBm | MCS0 = -86 dBm; MCS9 = -60dBm | MCS0 = -86 dBm; MCS9 = -60dBm |
| Nominal Receive Sensitivity (w/FEC) @80 MHz Channel | n/a | n/a | MCS0 = -85 dBm; MCS9 = -59 dBm | MCS0 = -84 dBm to MCS9 = -57 dBm | MCS0 = -84 dBm to MCS9 = -57 dBm |
| Modulation Levels (Adaptive) | MCS0 (BPSK) to MCS7 (64QAM 5/6) | MCS0 (BPSK) to MCS7 (64QAM 5/6) | MCS0 (BPSK) to MCS9 (256 QAM 5/6) | MCS0 (BPSK) to MCS9 (256 QAM 5/6) | MCS0 (BPSK) to MCS9 (256 QAM 5/6) |
| Transmit Power Range | +3 to 28 dBm (combined, to regional EIRP limit) (1 dB interval) | +3 to 28 dBm (combined, to regional EIRP limit) (1 dB interval) | +3 to 27 dBm (combined, to regional EIRP limit) (1 dB interval) | +3 to +24 dBm (combined, to regional EIRP limit) (1 dB interval) | +3 to 27 dBm (combined, to regional EIRP limit) (1 dB interval) |
| QoS (Quality of Service) | Three level priority (Voice, High, Low) with packet classification by DSCP, COS, VLAN ID, IP & MAC Address, Broadcast, Multicast and Station Priority | | | | |

ePMP™ Force L Series

| Physical | | | | | |
|----------------------------|--|-------------------------------------|--|--|---|
| | Force 130 5 GHz | Force 200L | Force 300-13L | Force 300-25L | Force 300-CSML |
| Surge Suppression* | 1 Joule Integrated | 1 Joule Integrated | 1 Joule Integrated | 1 Joule Integrated | 1 Joule Integrated |
| Environmental | IP55 | IP55 | IP55 | IP55 | IP55 |
| Temperature | -30°C to 55°C (-22°F to 122°F) | -30°C to 55°C (-22°F to 122°F) | -30°C to 60°C (-22°F to 140°F) | -30°C to 60°C (-22°F to 140°F) | -30°C to 60°C (-22°F to 140°F) |
| Weight | 0.35 kg (0.88 lbs) | 1.6 kg (3.5 lbs) | 0.35 kg (0.88 lbs) | 1.6 kg (3.5 lbs) | 0.49 kg (1.08 lbs) |
| Wind Survival | 125 km/h (78 mph) | 200 km/h (124 mph) | 200 km/h (124 mph) | 200 km/h (124 mph) | 200 km/h (124 mph) |
| Dimensions | 235 x 77 x 58 mm (9.25 x 3.03 x 2.28in) | TBD | 235 x 77 x 58 mm (9.25 x 3.03 x 2.28in) | 280 x 470 x 470 mm (11.0 x 18.5 x 18.5 in.) | 29.1 x 14.5 x 8.3 cm (11.4 x 5.7 x 3.3 in) |
| Pole Diameter Range | 3.8 - 6.4 cm (1.5 - 2.5 in) | 2.5 - 7.5 cm (1.0 to 3.0 in) | 3.8 - 6.4 cm (1.5 - 2.5 in) | 2.5 - 7.5 cm (1.0 to 3.0 in) | 2.5 - 7.5 cm (1.0 to 3.0 in) |
| Power Consumption | 8 W Maximum, 5 W Typical | 8 W Maximum, 5 W Typical | 12 W Maximum, 9 W Typical | 12 W Maximum, 9 W Typical | 12 W Maximum, 9 W Typical |
| Input Voltage | 24 V; uses standard passive PoE injectors at 24 V. Not compatible with 29 V supplies | 30 V Passive PoE (14-30 V DC input) | 30 V Passive PoE (14-30 V DC input) | 30 V Passive PoE (14-30 V DC input) | 30 V Passive PoE (14-30 V DC input) |

*Optional 30 V Surge Suppressor Available: Part # C000000L065A

| Security | | | | | |
|-------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| | Force 130 5 GHz | Force 200L | Force 300-13L | Force 300-25L | Force 300-CSML |
| Encryption | 128-bit AES (CCMP mode) | 128-bit AES (CCMP mode) | 128-bit AES (CCMP mode) | 128-bit AES (CCMP mode) | 128-bit AES (CCMP mode) |

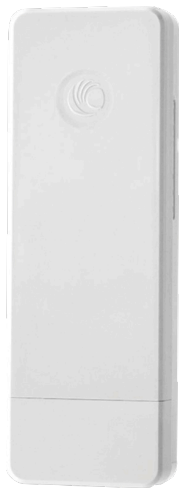
| Certifications | | | | | |
|------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| | Force 130 5 GHz | Force 200L | Force 300-13L | Force 300-25L | Force 300-CSML |
| FCC | Not Available in North America | Not Available in North America | Not Available in North America | Not Available in North America | Not Available in North America |
| Industry Canada | Not Available in North America | Not Available in North America | Not Available in North America | Not Available in North America | Not Available in North America |
| CE | DoC available on cambiumnetworks.com | DoC available on cambiumnetworks.com | DoC available on cambiumnetworks.com | DoC available on cambiumnetworks.com | DoC available on cambiumnetworks.com |

ePMP™ Force L Series

| Antenna Specifications | | | | | |
|---------------------------------|-------------------|-------------------|-------------------|------------------|--------------------------|
| | Force 130 5 GHz | Force 200L | Force 300-13L | Force 300-25L | Force 300-CSML |
| Frequency Range | 5.150 – 5.970 MHz | 4.920 – 5.950 MHz | 4.920 – 5.950 MHz | 4.920– 6.400 MHz | N/A |
| Antenna Type | Flat Panel | Integrated Dish | Flat Panel | Integrated Dish | Connectorized 2 x RP-SMA |
| Peak Gain | 14 dBi | 25 dBi | 13 dBi | 25 dBi | N/A |
| 3 dB Beamwidth Azimuth | 45° | 6° to 10° | 45° | 6° to 10° | N/A |
| 3 dB Beamwidth Elevation | 15° | 6° to 10° | 15° | 6° to 10° | N/A |
| Front-To-Back Isolation | n/a | 25 dB | n/a | 25 dB | N/A |
| Cross Polarization | n/a | 20 dB | n/a | 20 dB | N/A |



Force 130 5 GHz



Force 300-13L



Force 200L/300-25L

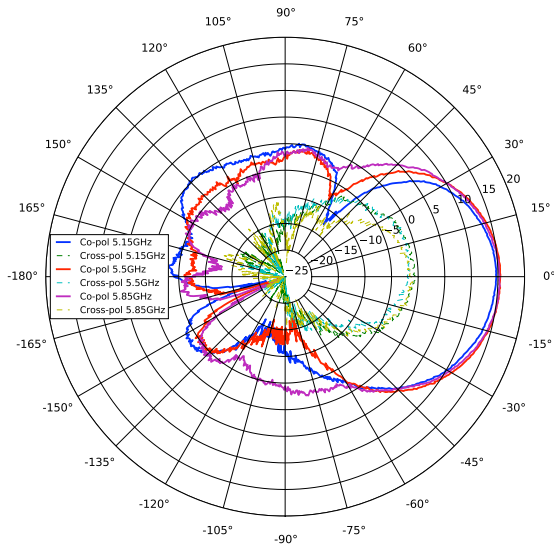


Force 300-CSML

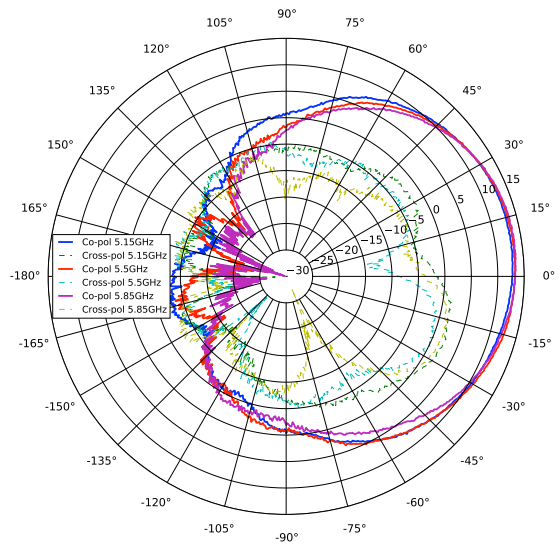
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Force 130 Antenna Patterns

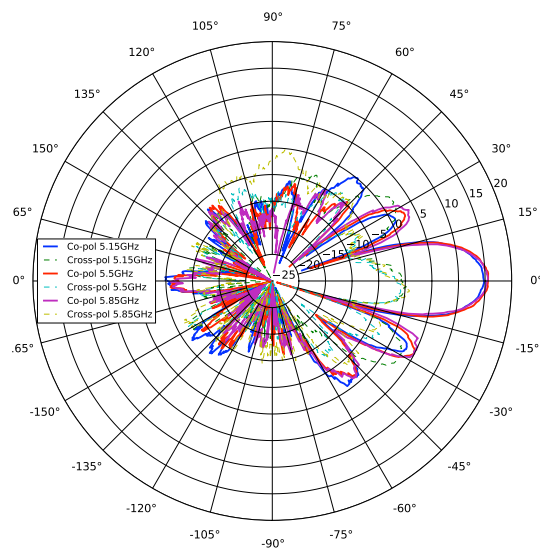
Azimuth, Horizontal



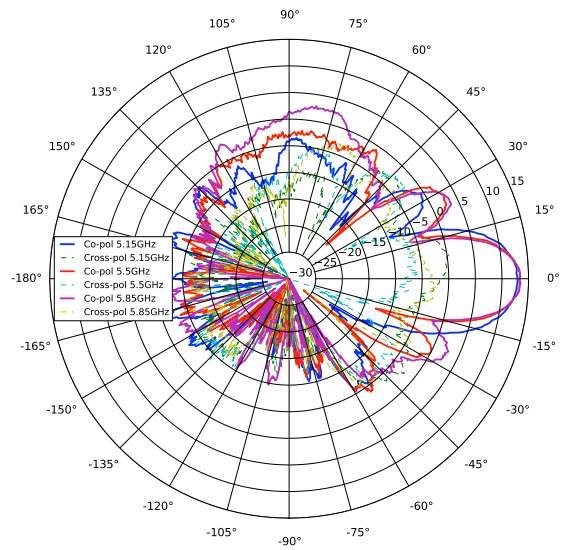
Azimuth, Vertical



Elevation, Horizontal



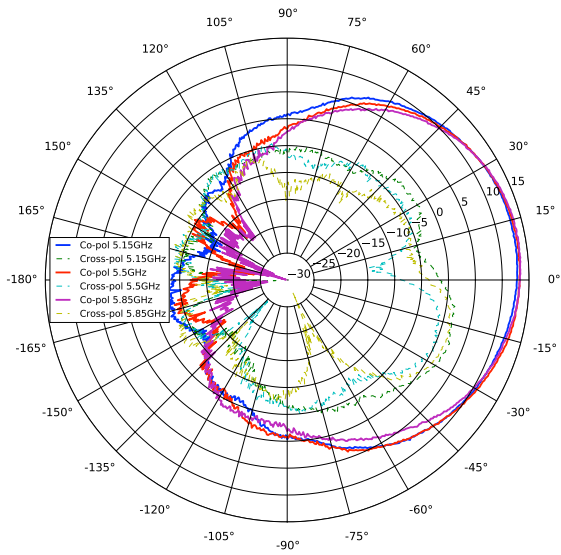
Elevation, Vertical



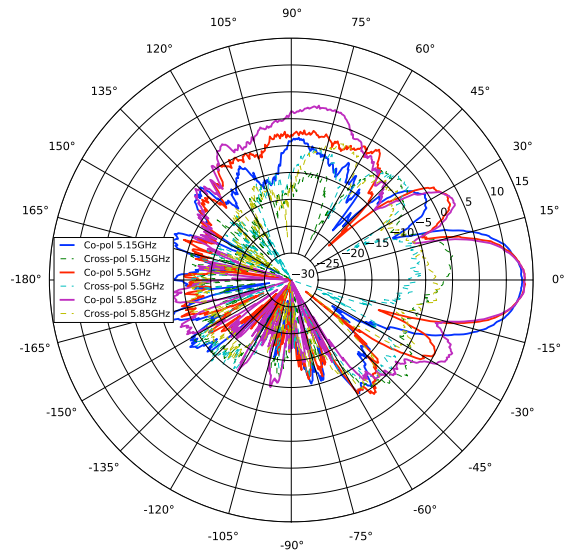
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Force 300-13L Antenna Patterns

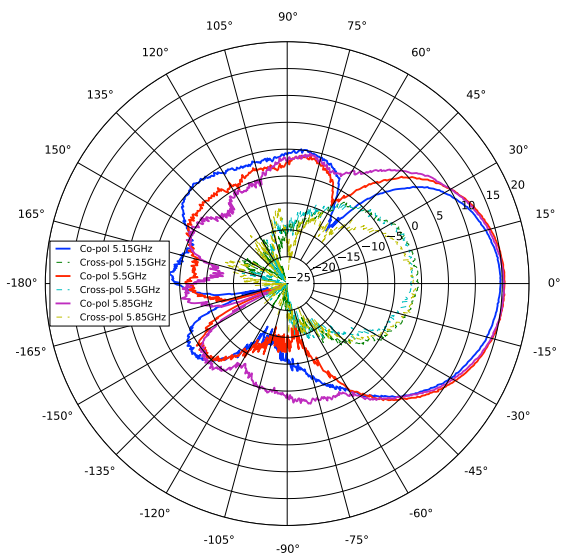
Azimuth, Horizontal



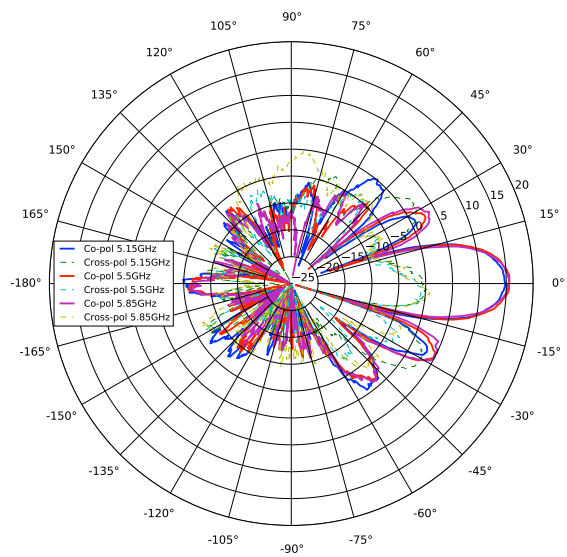
Azimuth, Vertical



Elevation, Horizontal



Elevation, Vertical



ePMP™ Force L Series

Force 130 5 GHz Ordering Information

| | |
|---------------------|--|
| C050900C502A | Force 130 5 GHz SM EU (EU cord) |
| C050900C503A | Force 130 5 GHz SM EU (UK cord) |
| C050900C504A | Force 130 5 GHz SM ROW (No cord) |
| C050900C506A | Force 130 5 GHz SM ROW (EU cord) |
| C050900C507A | Force 130 5 GHz SM ROW (UK cord) |
| C050900C508A | Force 130 5 GHz SM ROW (India cord) |
| C050900C509A | Force 130 5 GHz SM India (India cord) |
| C050900C510A | Force 130 5 GHz SM ROW (China cord) |
| C050900C511A | Force 130 5 GHz SM ROW (Brazil cord) |
| C050900C512A | Force 130 5 GHz SM ROW (Argentina cord) |
| C050900C513A | Force 130 5 GHz SM ROW (ANZ cord) |
| C050900C514A | Force 130 5 GHz SM ROW (South Africa cord) |
| C050900C515A | Force 130 5 GHz SM ROW (No PSU) |

Force 300-13L Ordering Information

| | |
|----------------------|--|
| C050910C233A | Force 300-13L SM EU (EU cord) |
| C050910C331A | Force 300-13L SM ROW (UK cord) |
| C050910C333A | Force 300-13L SM EU (UK cord) |
| C050910C2431A | Force 300-13L SM ROW (India cord) |
| C050910C432A | Force 300-13L SM India (India cord) |
| C050910C531A | Force 300-13L SM ROW (China cord) |
| C050910C631A | Force 300-13L SM ROW (Brazil cord) |
| C050910C731A | Force 300-13L SM ROW (Argentina cord) |
| C050910C831A | Force 300-13L SM ROW (ANZ cord) |
| C050910C931A | Force 300-13L SM ROW (South Africa cord) |
| C050910CZ31A | Force 300-13L SM ROW (No PSU) |

Force 200L 5 GHz Ordering Information

| | |
|---------------------|---|
| C050900M091A | ePMP 5 GHz Force 200L SM Bulk Packaging (ROW) (no cord) |
| C050900M191A | ePMP 5 GHz Force 200L SM Bulk Packaging (ROW) (US cord) |
| C050900M291A | ePMP 5 GHz Force 200L SM Bulk Packaging (ROW) (EU cord) |
| C050900M293A | ePMP 5 GHz Force 200L SM Bulk Packaging (EU) (EU cord) |
| C050900M391A | ePMP 5 GHz Force 200L SM Bulk Packaging (ROW) (UK cord) |
| C050900M393A | ePMP 5 GHz Force 200L SM Bulk Packaging (EU) (UK cord) |
| C050900M491A | ePMP 5 GHz Force 200L SM Bulk Packaging (ROW) (India cord) |
| C050900M492A | ePMP 5 GHz Force 200L SM Bulk Packaging (India) (India Cord) |
| C050900M591A | ePMP 5 GHz Force 200L SM Bulk Packaging (ROW) (China cord) |
| C050900M691A | ePMP 5 GHz Force 200L SM Bulk Packaging (ROW) (Brazil cord) |
| C050900M791A | ePMP 5 GHz Force 200L SM Bulk Packaging (ROW) (Argentina cord) |
| C050900M891A | ePMP 5 GHz Force 200L SM Bulk Packaging (ROW) (ANZ cord) |
| C050900M991A | ePMP 5 GHz Force 200L SM Bulk Packaging (ROW) (South Africa cord) |
| C050900MZ91A | ePMP 5 GHz Force 200L SM Bulk Packaging (ROW) (No PSU) |
| C050900M294A | ePMP 5 GHz Force 200L SM Bulk Packaging (Indonesia) (EU cord) |

ePMP™ Force L Series

Force 300-25L Ordering Information

C050910M171A 5 GHz Force 300-25L SM Bulk Packaging (ROW) (US cord)

C050910M271A 5 GHz Force 300-25L SM Bulk Packaging (ROW) (EU cord)

C050910M371A 5 GHz Force 300-25L SM Bulk Packaging (ROW) (UK cord)

C050910M971A 5 GHz Force 300-25L SM Bulk Packaging (ROW) (South Africa cord)

C050910MZ71A 5 GHz Force 300-25L SM Bulk Packaging (ROW) (No PSU)

C050910M273A 5 GHz Force 300-25L SM Bulk Packaging (EU) (EU cord)

C050910M373A 5 GHz Force 300-25L SM Bulk Packaging (EU) (UK cord)

C050910M071A 5 GHz Force 300-25L SM Bulk Packaging (ROW) (no cord)

C050910M471A 5 GHz Force 300-25L SM Bulk Packaging (ROW) (India cord)

C050910M472A 5 GHz Force 300-25L SM Bulk Packaging (India) (India Cord)

C050910M571A 5 GHz Force 300-25L SM Bulk Packaging (ROW) (China cord)

C050910M671A 5 GHz Force 300-25L SM Bulk Packaging (ROW) (Brazil cord)

C050910M771A 5 GHz Force 300-25L SM Bulk Packaging (ROW) (Argentina cord)

C050910M871A 5 GHz Force 300-25L SM Bulk Packaging (ROW) (ANZ cord)

C050910MZ71A 5 GHz Force 300-25L SM Bulk Packaging (ROW) (No PSU)

Force 300-CSML Ordering Information

C050910C061A ePMP 5 GHz Force 300 CSML SM (ROW) (no cord)

C050910C161A ePMP 5 GHz Force 300 CSML SM (ROW) (US cord)

C050910C261A ePMP 5 GHz Force 300 CSML SM (ROW) (EU cord)

C050910C261A ePMP 5 GHz Force 300 CSML SM (ROW) (EU cord)

C050910C263A ePMP 5 GHz Force 300 CSML SM (EU) (EU cord)

C050910C361A ePMP 5 GHz Force 300 CSML SM (ROW) (UK cord)

C050910C363A ePMP 5 GHz Force 300 CSML SM (EU) (UK cord)

C050910C461A ePMP 5 GHz Force 300 CSML SM (ROW) (India cord)

C050910C462A ePMP 5 GHz Force 300 CSML SM (India) (India Cord)

C050910C561A ePMP 5 GHz Force 300 CSML SM (ROW) (China cord)

C050910C661A ePMP 5 GHz Force 300 CSML SM (ROW) (Brazil cord)

C050910C761A ePMP 5 GHz Force 300 CSML SM (ROW) (Argentina cord)

C050910C861A ePMP 5 GHz Force 300 CSML SM Bulk Packaging (ROW) (ANZ cord)

C050910C961A ePMP 5 GHz Force 300 CSML SM (ROW) (South Africa cord)

C050910CZ61A ePMP 5 GHz Force 300 CSML SM (ROW) (No PSU)

C050900S005A License Key Force 300 CSML upgrade to AP – 12 SMs Maximum

ABOUT CAMBIUM NETWORKS

Cambium Networks empowers millions of people with wireless connectivity worldwide. Its wireless portfolio is used by commercial and government network operators as well as broadband service providers to connect people, places and things. With a single network architecture spanning fixed wireless and Wi-Fi, Cambium Networks enables operators to achieve maximum performance with minimal spectrum. End-to-end cloud management transforms networks into dynamic environments that evolve to meet changing needs with minimal physical human intervention. Cambium Networks empowers a growing ecosystem of partners who design and deliver gigabit wireless solutions that just work.