

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.

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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				

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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)	470 x 260 mm (18.5 x 10.24 in)	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.)	291 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 - 3.0 in)	3.8 – 6.4 cm (1.5 – 2.5 in)	2.5 – 7.5 cm (1.0 - 3.0 in)	2.5 – 7.5 cm (1.0 - 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

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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

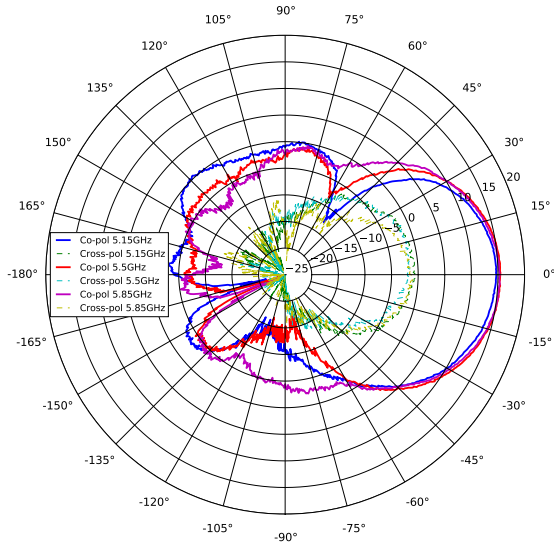


Force 300-CSML

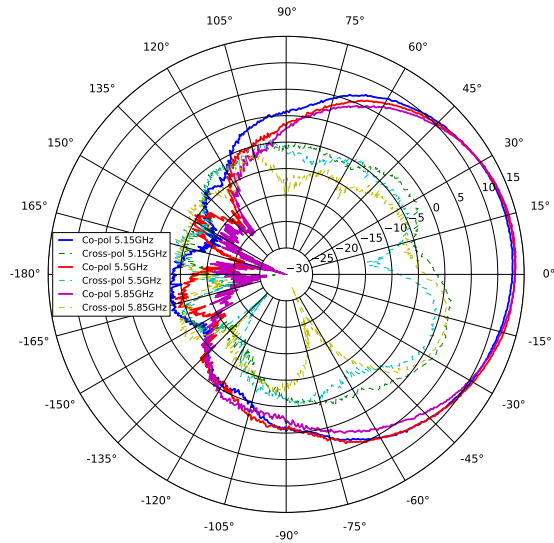
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Force 130 Antenna Patterns

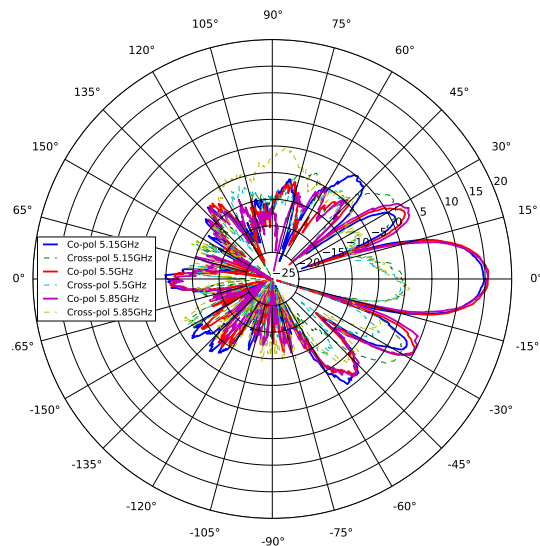
Azimuth, Horizontal



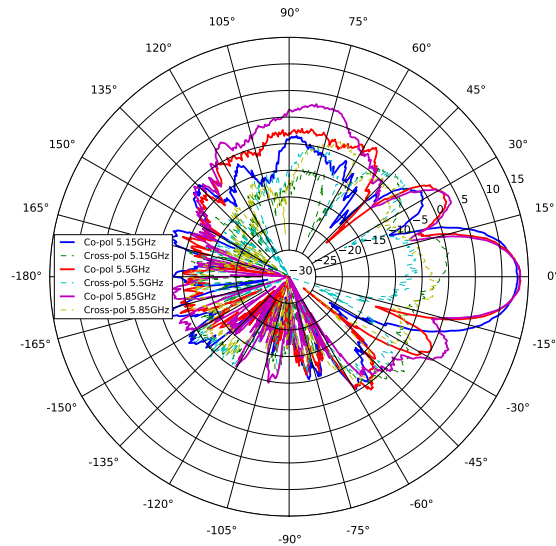
Azimuth, Vertical



Elevation, Horizontal



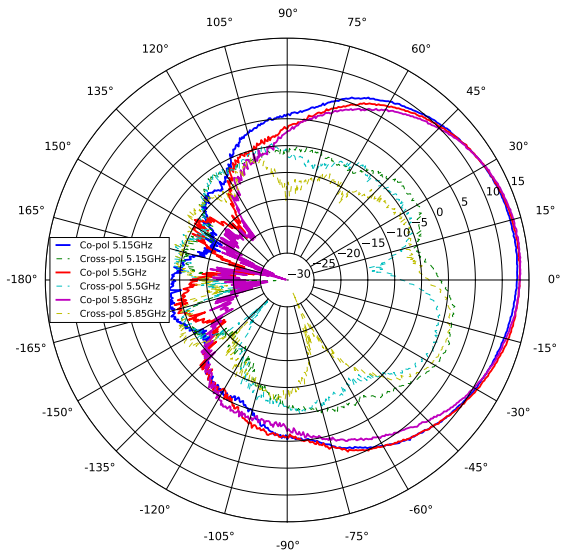
Elevation, Vertical



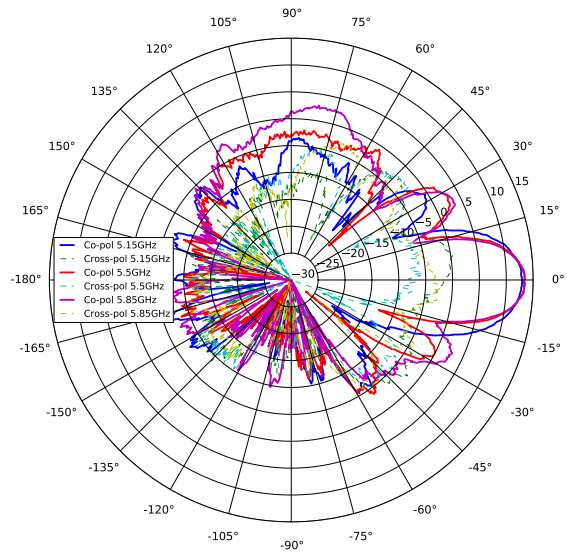
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Force 300-13L Antenna Patterns

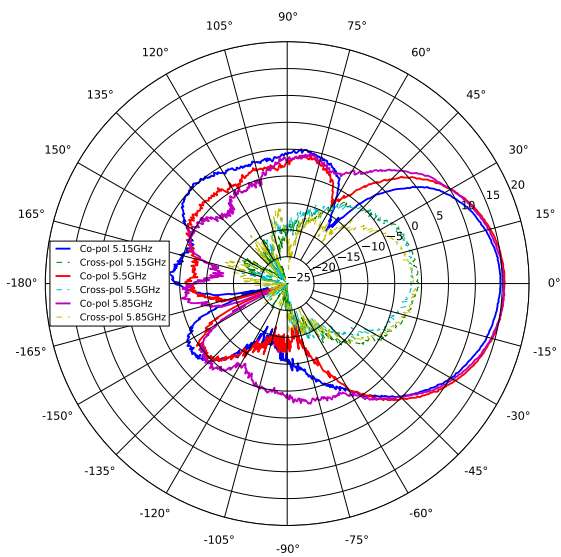
Azimuth, Horizontal



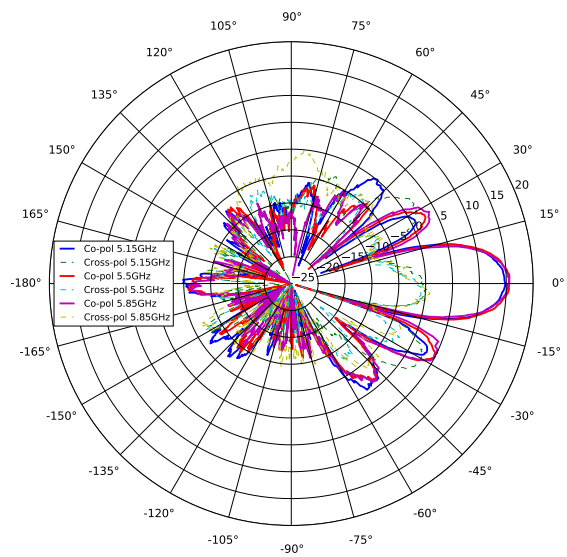
Azimuth, Vertical



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 / C050900M091B	ePMP 5 GHz Force 200L SM Bulk Packaging (ROW) (no cord)
C050900M191A / C050900M191B	ePMP 5 GHz Force 200L SM Bulk Packaging (ROW) (US cord)
C050900M291A/ C050900M291B	ePMP 5 GHz Force 200L SM Bulk Packaging (ROW) (EU cord)
C050900M293A/ C050900M293B	ePMP 5 GHz Force 200L SM Bulk Packaging (EU) (EU cord)
C050900M391A/ C050900M391B	ePMP 5 GHz Force 200L SM Bulk Packaging (ROW) (UK cord)
C050900M393A/ C050900M393B	ePMP 5 GHz Force 200L SM Bulk Packaging (EU) (UK cord)
C050900M491A/ C050900M491B	ePMP 5 GHz Force 200L SM Bulk Packaging (ROW) (India cord)
C050900M492A/ C050900M495B	ePMP 5 GHz Force 200L SM Bulk Packaging (India) (India Cord)
C050900M591A/ C050900M591B	ePMP 5 GHz Force 200L SM Bulk Packaging (ROW) (China cord)
C050900M691A/ C050900M691B	ePMP 5 GHz Force 200L SM Bulk Packaging (ROW) (Brazil cord)
C050900M791A/ C050900M791B	ePMP 5 GHz Force 200L SM Bulk Packaging (ROW) (Argentina cord)
C050900M791A/ C050900M791B	ePMP 5 GHz Force 200L SM Bulk Packaging (ROW) (ANZ cord)
C050900M991A/ C050900M991B	ePMP 5 GHz Force 200L SM Bulk Packaging (ROW) (South Africa cord)
C050900MZ91A/ C050900MZ91B	ePMP 5 GHz Force 200L SM Bulk Packaging (ROW) (No PSU)
C050900M294A/ C050900M296B	ePMP 5 GHz Force 200L SM Bulk Packaging (Indonesia) (EU cord)

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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.