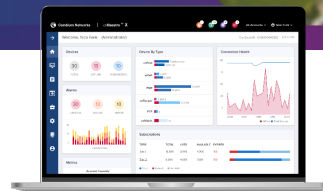


# ePMP Force L Series

## Force L Series Quick Look:

- High-performance subscriber modules for PTP and PMP fixed wireless broadband applications
- Up to 400 Mbps capacity leveraging 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, and low latency across both point-to-point (PTP) and point-to-multipoint (PMP) 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.

## Force L Series Features:

- Proven ePMP air interface including the optimized ePTP interface for low latency PTP applications
- Interoperability with ePMP 3000, 3000L, MicroPOP, 2000, and 1000 Access Points (AP)
- Multiple levels of QoS (Quality of Service) for voice (VoIP), video (IPTV), and data applications
- Security features that meet the requirements of enterprise, industrial, government, and service provider users
- 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
- Cambium Networks' 3-year hardware warranty and support
- An optional software license to convert the Force 300 CSML to an access point with maximum 12 subscriber 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
<b>Channel Width MHz</b>	5   10   20   40	5   10   20   40	20   40   80	20   40   80	20   40   80
<b>Proprietary Physical Layer</b>	2x2 MIMO/OFDM	2x2 MIMO/OFDM	2x2 MIMO/OFDM	2x2 MIMO/OFDM	2x2 MIMO/OFDM
<b>Channel Spacing</b>	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
<b>Frequency Range</b>	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.					
<b>MAC Layer (Media Access Control)</b>	Cambium Proprietary	Cambium Proprietary	Cambium Proprietary	Cambium Proprietary	Cambium Proprietary
<b>Ethernet Interface</b>	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
<b>Protocols Used</b>	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
<b>Network Management</b>	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
<b>VLAN</b>	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

Note: 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
<b>ARQ</b>	Yes	Yes	Yes	Yes	Yes
<b>Nominal Receive Sensitivity (w/FEC) @20 MHz Channel</b>	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
<b>Nominal Receive Sensitivity (w/FEC) @40 MHz Channel</b>	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
<b>Nominal Receive Sensitivity (w/FEC) @80 MHz Channel</b>	N/A	N/A	MCS0 = -85 dBm; MCS9 = -59 dBm	MCS0 = -84 dBm to MCS9 = -57 dBm	MCS0 = -84 dBm to MCS9 = -57 dBm
<b>Modulation Levels (Adaptive)</b>	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)
<b>Transmit Power Range</b>	+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)
<b>QoS (Quality of Service)</b>	3 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
<b>Surge Suppression*</b>	1 joule integrated	1 joule integrated	1 joule integrated	1 joule integrated	<b>1 joule integrated</b>
<b>Environmental</b>	IP55	IP55	IP55	IP55	IP55
<b>Temperature</b>	-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)
<b>Weight</b>	0.35 kg (0.88 lb)	1.6 kg (3.5 lb)	0.35 kg (0.88 lb)	1.6 kg (3.5 lb)	0.49 kg (1.08 lb)
<b>Wind Survival</b>	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)
<b>Dimensions</b>	235 x 77 x 58 mm (9.25 x 3.03 x 2.28 in)	470 x 260 mm (18.5 x 10.24 in)	235 x 77 x 58 mm (9.25 x 3.03 x 2.28 in)	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)
<b>Pole Diameter Range</b>	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)
<b>Power Consumption</b>	8W maximum, 5W typical	8W maximum, 5W typical	12W maximum, 9W typical	12W maximum, 9W typical	12W maximum, 9W typical
<b>Input Voltage</b>	24V; uses standard passive PoE injectors at 24 V; not compatible with 29V supplies	30V passive PoE (14–30V DC input)	30V passive PoE (14–30V DC input)	30V passive PoE (14–30V DC input)	30V Passive PoE (14–30V DC input)

\*Optional 30V Surge Suppressor available (part # C000000L065A)

Security	
<b>Encryption</b>	All models: 128-bit AES (CCMP mode)

Certifications					
	Force 130 5 GHz	Force 200L	Force 300-13L	Force 300-25L	Force 300 CSML
<b>FCC</b>	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
<b>Industry Canada</b>	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
<b>CE</b>	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

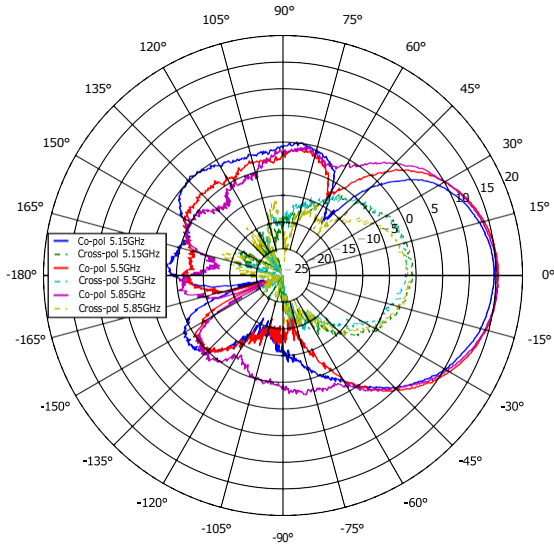


Force 300-CSML

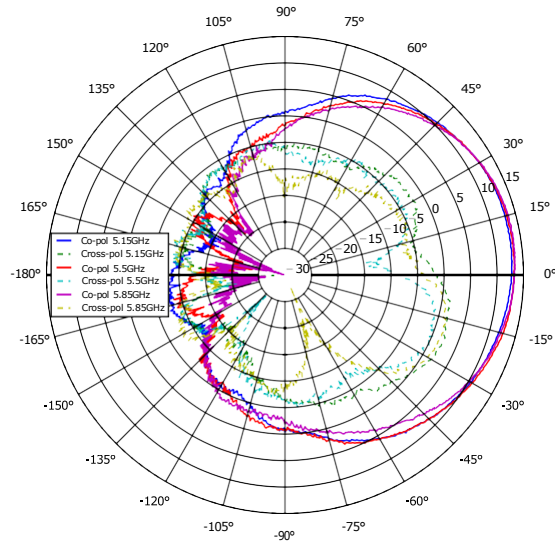
# ePMP Force L Series

## Force 130 Antenna Patterns

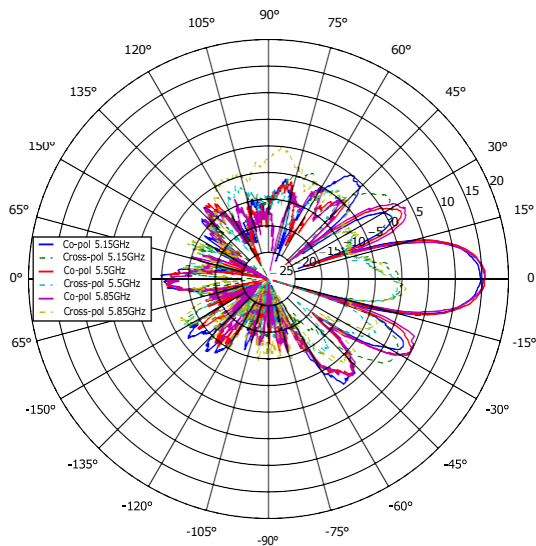
Azimuth, Horizontal



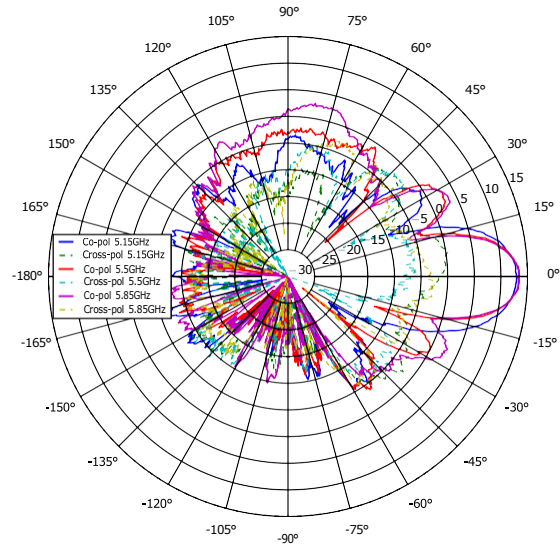
Azimuth, Vertical



Elevation, Horizontal



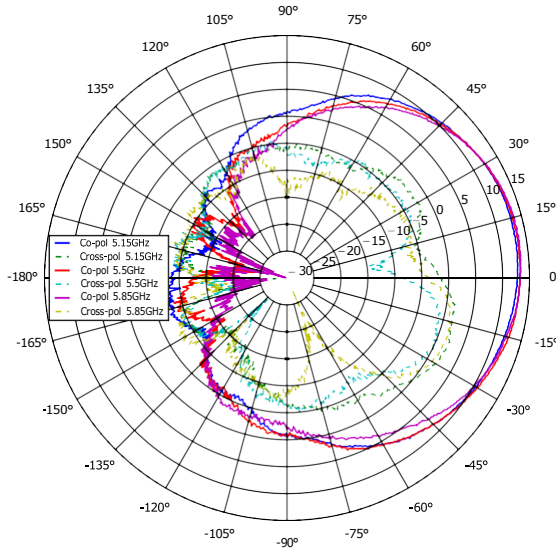
Elevation, Vertical



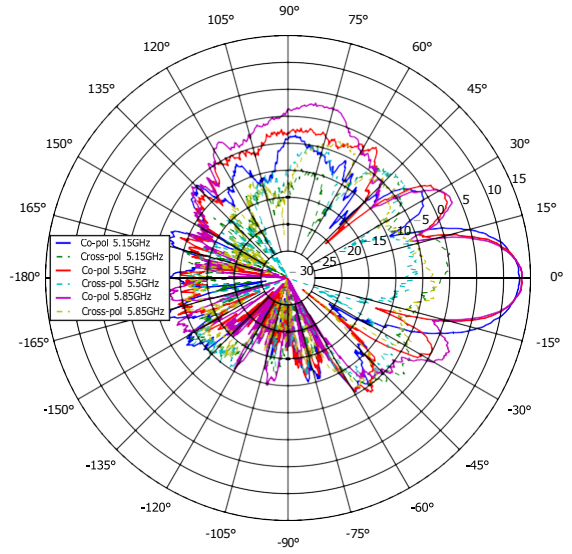
# ePMP Force L Series

## Force 300-13L Antenna Patterns

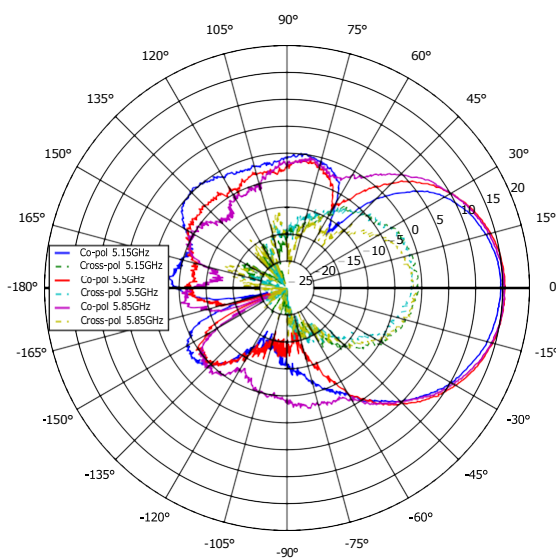
Azimuth, Horizontal



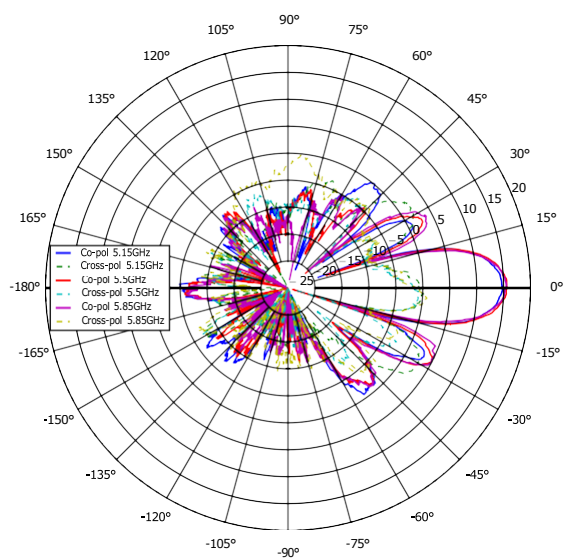
Azimuth, Vertical



Elevation, Horizontal



Elevation, Vertical



## ePMP Force L Series

5 GHz Force 130 Ordering Information		Force 300-13L Ordering Information	
SKU	Description	SKU	Description
C050900C502B	Force 130 5 GHz SM EU (EU cord)	C050910C233A	Force 300-13L SM EU (EU cord)
C050900C503B	Force 130 5 GHz SM EU (UK cord)	C050910C331A	Force 300-13L SM ROW (UK cord)
C050900C504B	Force 130 5 GHz SM ROW (No cord)	C050910C333A	Force 300-13L SM EU (UK cord)
C050900C505B	Force 130 5 GHz SM ROW (US cord)	C050910C2431A	Force 300-13L SM ROW (India cord)
C050900C506B	Force 130 5 GHz SM ROW (EU cord)	C050910C432A	Force 300-13L SM India (India cord)
C050900C507B	Force 130 5 GHz SM ROW (UK cord)	C050910C531A	Force 300-13L SM ROW (China cord)
C050900C508B	Force 130 5 GHz SM ROW (India cord)	C050910C631A	Force 300-13L SM ROW (Brazil cord)
C050900C509B	Force 130 5 GHz SM India (India cord)	C050910C731A	Force 300-13L SM ROW (Argentina cord)
C050900C510B	Force 130 5 GHz SM ROW (China cord)	C050910C831A	Force 300-13L SM ROW (ANZ cord)
C050900C511B	Force 130 5 GHz SM ROW (Brazil cord)	C050910C931A	Force 300-13L SM ROW (South Africa cord)
C050900C512B	Force 130 5 GHz SM ROW (Argentina cord)	C050910CZ31A	Force 300-13L SM ROW (No PSU)
C050900C513B	Force 130 5 GHz SM ROW (ANZ cord)		
C050900C514B	<b>Force 130 5 GHz SM ROW (South Africa cord)</b>		

5 GHz Force 200L Ordering Information	
SKU	Description
C050900M091C	ePMP 5 GHz Force 200L SM 6-Pack packaging, priced per radio (ROW) (no cord)
C050900M191C	ePMP 5 GHz Force 200L SM 6-Pack packaging, priced per radio (ROW) (US cord)
C050900M291C	ePMP 5 GHz Force 200L SM 6-Pack packaging, priced per radio (ROW) (EU cord)
C050900M293C	ePMP 5 GHz Force 200L SM 6-Pack packaging, priced per radio (EU) (EU cord)
C050900M391C	ePMP 5 GHz Force 200L SM 6-Pack packaging, priced per radio (ROW) (UK cord)
C050900M393C	ePMP 5 GHz Force 200L SM 6-Pack packaging, priced per radio (EU) (UK cord)
C050900M491C	ePMP 5 GHz Force 200L SM 6-Pack packaging, priced per radio (ROW) (India cord)
C050900M495C	ePMP 5 GHz Force 200L SM 6-Pack packaging, priced per radio (India) (India Cord)
C050900M591C	ePMP 5 GHz Force 200L SM 6-Pack packaging, priced per radio (ROW) (China cord)
C050900M691C	ePMP 5 GHz Force 200L SM 6-Pack packaging, priced per radio (ROW) (Brazil cord)
C050900M791C	ePMP 5 GHz Force 200L SM 6-Pack packaging, priced per radio (ROW) (Argentina cord)
C050900M791C	ePMP 5 GHz Force 200L SM 6-Pack packaging, priced per radio (ROW) (ANZ cord)
C050900M991C	ePMP 5 GHz Force 200L SM 6-Pack packaging, priced per radio (ROW) (South Africa cord)
C050900M294C	ePMP 5 GHz Force 200L SM 6-Pack packaging, priced per radio (Indonesia) (EU cord)



## ePMP Force L Series

### Force 300-25L Ordering Information

SKU	Description
C050910M171C	5 GHz Force 300-25L SM 6-Pack packaging, priced per radio (ROW) (US cord)
C050910M271C	5 GHz Force 300-25L SM 6-Pack packaging, priced per radio (ROW) (EU cord)
C050910M371C	5 GHz Force 300-25L SM 6-Pack packaging, priced per radio (ROW) (UK cord)
C050910M971C	5 GHz Force 300-25L SM 6-Pack packaging, priced per radio (ROW) (South Africa cord)
C050910M271C	5 GHz Force 300-25L SM 6-Pack packaging, priced per radio (ROW) (No PSU)
C050910M073C	5 GHz Force 300-25L SM 6-Pack packaging, priced per radio (EU) (no cord)
C050910M273C	5 GHz Force 300-25L SM 6-Pack packaging, priced per radio (EU) (EU cord)
C050910M373C	5 GHz Force 300-25L SM 6-Pack packaging, priced per radio (EU) (UK cord)
C050910M071C	5 GHz Force 300-25L SM 6-Pack packaging, priced per radio (ROW) (no cord)
C050910M471C	5 GHz Force 300-25L SM 6-Pack packaging, priced per radio (ROW) (India cord)
C050910M475C	5 GHz Force 300-25L SM 6-Pack packaging, priced per radio (India) (India Cord)
C050910M571C	5 GHz Force 300-25L SM 6-Pack packaging, priced per radio (ROW) (China cord)
C050910M671C	5 GHz Force 300-25L SM Bulk Packaging (ROW) (Brazil cord)
C050910M771C	5 GHz Force 300-25L SM Bulk Packaging (ROW) (Argentina cord)

### Force 300-CSML Ordering Information

SKU	Description
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)
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)

#### ABOUT CAMBIUM NETWORKS

Cambium Networks enables service providers, enterprises, industrial organizations, and governments to deliver exceptional digital experiences and device connectivity with compelling economics. Our ONE Network platform simplifies management of Cambium Networks' wired and wireless broadband and network edge technologies. Our customers can focus more resources on managing their business rather than the network. We make connectivity that just works.

[cambiumnetworks.com](http://cambiumnetworks.com)

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