

epmp 3000

PERFORMANCE

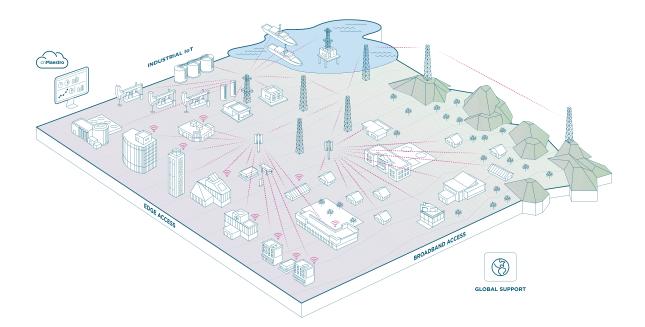
Up to 5X performance with **Gen3** Technology

Wireless Internet Service Provider Connectivity Solutions

Cambium Networks is a leading global provider of wireless broadband solutions that make it possible for operators to build sustainable businesses by connecting the under-connected and unconnected communities of the world.

Our industry-leading portfolio of reliable, scalable and secure Wi-Fi and wireless broadband point-to-point (PTP) and point-tomultipoint (PMP) platforms offer communications solutions that make it feasible and economical to unite the world and build a truly global society that leaves no one behind. At Cambium Networks, connecting people, places and things is our vision.

Design the network to meet your business needs. Extend coverage and capacity as requirements evolve.



ePMP 3000 Overview

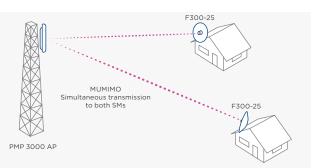
In continuing tradition of affordable performance without compromise, the ePMP3000 Access point and subscriber portfolio brings the combined feature set of ePMP1000/2000 and adds industry leading throughput with the ePMP3000. Featuring a 4X4 Access Point and sector antenna, the ePMP3000 combines self interference mitigating GPS sync solution with interference mitigation from ePMP2000 and combines it with Multi User Mimo. Supporting an auxiliary SFP port, 80MHz channel bandwidth and 256QAM modulation the ePMP3000 can provide up to 5x the performance as compared to previous generation of products.



Key Features

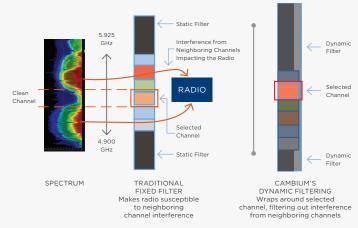
MULTI USER MIMO

Achieving higher throughput in the downlink is often solved by achieving higher modulation or wider channels. In both cases, the environment and interference prevents achieving higher modulations or operating in wider channel bandwidths. ePMP 3000 employs Multi User Mimo technology (MUMIMO) to simultaneously transmit to two subscribers in the downlink and thus doubling the throughput in the downlink.



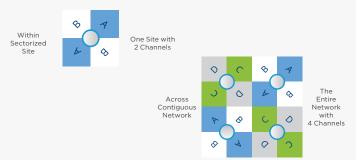
INTELLIGENT FILTERING

Noise is always a concern, and as more transmitters are deployed, will continue to be a critical factor in operation. While almost all radios have some type of filtering, many use static filters that block out only noise from outside of the radios total operating spectrum. While this provides a clear channel for operation, these systems with fixed filters still allow noise from neighboring channels to affect system performance. Cambium Networks solutions use dynamic filtering with a static filter to block noise from outside of the operating spectrum but also a dynamic filter to block out interference from adjacent channels. As the system changes to another channel, the system automatically blocks out noise from adjacent channels to improve signal quality.



FREQUENCY RE-USE

Frequency is limited. There will never be any more of it. By re-using frequencies when deployed in back-to-back configuration, a network operator can effectively use the same frequency twice to connect users. In large deployments, a network operator can connect thousands of users by re-using the same frequencies across the field service area. This technology maximizes the use of available frequency and can provide access to thousands of users in a small amount of spectrum.



This Reduces Self Interference and Enables Networks to be Co-Located

В

R

A

Α

В

B

Δ

All APs receive

at the same time

All APs transmit

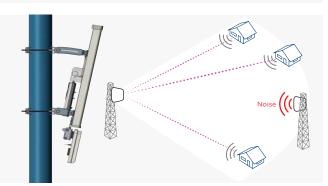
at the same time

GPS SYNCHRONIZATION

When networks become more dense, self interference becomes an issue. GPS synchronization coordinates the entire network, reduces self interference, and keeps network performance high as more subscribers are added.

SMART BEAMFORMING AND BEAM STEERING

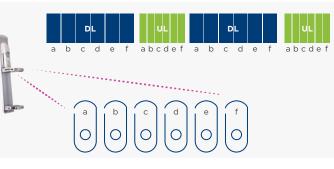
As more emitters are deployed in the service area, it is important to mitigate noise and interference in order to provide reliable high speed connectivity. The ePMP 3000 Access Point works in conjunction with the optional Beam Steering antenna to create narrow beams in the uplink to improve signal to noise ratio. Placed at the access point on a tower, the smart antenna will create tighter beams to connect with subscribers while nulling out radiation from unwanted emitters in the field.



Δ

AIR FAIRNESS

ePMP employs a sophisticated priority-based, air fairness, starvation avoidance algorithm for allocating RF resources to SMs. The allocations are based on airtime instead of throughput and so we avoid the situation where SMs in poor RF conditions take up an excessive amount of time and therefore available capacity.







e**PMP**[™] 3000 Access Point

KEY SPECIFICATIONS:

- MU-MIMO support with peak throughput of 1.2 Gbps
- 256QAM-5/6, 80 MHz support
- Supports a wide frequency range: 4910 5970 MHz
- 802.3at compliant 100/1000BaseT interface
- Frequency re-use with GPS sync, interference mitigation with beam steering antenna and dynamic filtering

PRODUCT	
Model/Part #	See table below for full set of Model and Part Numbers
SPECTRUM	
Channel Spacing	Configurable on 5 MHz increments
Frequency Range	4910 – 5980 MHz (exact frequencies as allowed by local regulations)
Channel Width	20 40 80 MHz
INTERFACE	
MAC (Media Access Control) Layer	Cambium Proprietary
Physical Layer	4X4 MUMIMO/OFDM
Ethernet Interfaced	100/1000BaseT, rate auto negotiated, 802.3at compliant & Aux SFP port
Powering Methods Supported	56 V PoE (included), standard 802.3at PoE Supply, or CMM5 with 56 V and 5 pin to 7 pin cross over cable adapter
Protocols Used	IPv4/IPV6 , UDP, TCP, IP, ICMP, SNMPv2c, HTTPs, STP, SSH, IGMP Snooping
Network Management	HTTPs, SNMPv2c, SSH
VLAN	802.1Q with 802.1p priority
PERFORMANCE	
Subscribers per Sector	Up to 120
ARQ	Yes
Nominal Receive Sensitivity (w/FEC) @20 MHz Channel	MCS 0 , -92 MCS 8 supported by Wi-Fi -68
Nominal Receive Sensitivity (w/FEC) @40 MHz Channel	MCS0, -89 MCS9, -64
Nominal Receive Sensitivity (w/FEC) @80 MHz Channel	MCS0, -86, MCS9 - 61
Modulation Levels (Adaptive)	MCS0 (BPSK) to MCS 9 (256 QAM 5/6)

PERFORMANCE	
GPS Synchronization	Yes, via Internal GPS or Cambium Sync (Internal GPS receiver also contains a patch antenna and can be used without the external puck antenna)
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, MIR/CIR support*
DSO*	Dynamic Spectrum Optimization. Ability to change channels based on interference detection on current channel
Fast DFS*	Change to alternate radar free channel with background availability check
LINK BUDGET	
Antenna	Sector Antenna (C050910D301A) Available
Transmit Power Range	0 to +32 dBm (combined, to regional EIRP limit) (2 dB interval)
PHYSICAL	
Sector Antenna Connection	4 x 50 ohm, RP (Reverse Polarity) SMA
Beamforming Antenna Connection	2 x 50 ohm, RP (Reverse Polarity) SMA, DC Coupled (powering antenna)
GPS Antenna Connection	1 x 50 ohm, RP (Reverse Polarity) SMA
Surge Suppression	1 Joule Integrated. C000000L033A - 56V Gigabit surge suppressor recommended for optimal surge protection
Environmental	IP55
Temperature	-30°C to +55°C (-22°F to +131°F)
Power Consumption	25 W Maximum ¹
Input Voltage	44 V to 59 V
Weight	0.7 kg (1.5 lbs) without brackets
Dimensions (L x W x H)	22.2 x 12.4 x 4.5 cm (8.75 x 4.9 x 1.75 in) without brackets
SECURITY	
Encryption	128 bit AES (CCMP mode)
CERTIFICATIONS	
FCCID	Z8H-89FT0024**
INDUSTRY CANADA	109W-0024**
CE	EN 301 893 V2.1.1 (5.4 GHz), EN 302 502 V2.1.1 (5.8 GHz)**

**Certifications are a place holder until official grant is given

Notes:

¹ The maximum power consumption of the Access Point is the same regardless of whether the optional Smart Beamforming Antenna is equipped or not. This is because the Beamforming Antenna draws its power during the uplink cycle when the Access Point power consumption is not at its maximum.

* Items marked with asterix are planned for a future release

TABLE OF PART AND MODEL NUMBERS

C058910A102AePMP 3000 5 GHz Access Point Radio (FCC) (US cord)C050910A104AePMP 3000 5 GHz Access Point Radio (IC) (Canada/US cord)C050910A203AePMP 3000 5 GHz Access Point Radio (EU) (EU cord)C050910A303AePMP 3000 5 GHz Access Point Radio (EU) (UK cord)C050910A001AePMP 3000 5 GHz Access Point Radio (ROW) (no cord)C050910A001AePMP 3000 5 GHz Access Point Radio (ROW) (us cord)C050910A101AePMP 3000 5 GHz Access Point Radio (ROW) (US cord)C050910A201AePMP 3000 5 GHz Access Point Radio (ROW) (US cord)C050910A201AePMP 3000 5 GHz Access Point Radio (ROW) (US cord)C050910A201AePMP 3000 5 GHz Access Point Radio (ROW) (UU cord)C050910A201AePMP 3000 5 GHz Access Point Radio (ROW) (UK cord)C050910A201AePMP 3000 5 GHz Access Point Radio (ROW) (UK cord)C050910A201AePMP 3000 5 GHz Access Point Radio (ROW) (UK cord)C050910A401AePMP 3000 5 GHz Access Point Radio (ROW) (UK cord)C050910A402AePMP 3000 5 GHz Access Point Radio (ROW) (India cord)C050910A501AePMP 3000 5 GHz Access Point Radio (ROW) (India cord)C050910A501AePMP 3000 5 GHz Access Point Radio (ROW) (China cord)C050910A501AePMP 3000 5 GHz Access Point Radio (ROW) (China cord)	
C050910A203AePMP 3000 5 GHz Access Point Radio (EU) (EU cord)C050910A303AePMP 3000 5 GHz Access Point Radio (EU) (UK cord)C050910A001AePMP 3000 5 GHz Access Point Radio (ROW) (no cord)C050910A001AePMP 3000 5 GHz Access Point Radio (ROW) (US cord)C050910A101AePMP 3000 5 GHz Access Point Radio (ROW) (US cord)C050910A201AePMP 3000 5 GHz Access Point Radio (ROW) (EU cord)C050910A201AePMP 3000 5 GHz Access Point Radio (ROW) (UK cord)C050910A301AePMP 3000 5 GHz Access Point Radio (ROW) (UK cord)C050910A401AePMP 3000 5 GHz Access Point Radio (ROW) (India cord)C050910A402AePMP 3000 5 GHz Access Point Radio (India) (India Cord)C050910A501AePMP 3000 5 GHz Access Point Radio (ROW) (China cord)	
C050910A303AePMP 3000 5 GHz Access Point Radio (EU) (UK cord)C050910A001AePMP 3000 5 GHz Access Point Radio (ROW) (no cord)C050910A101AePMP 3000 5 GHz Access Point Radio (ROW) (US cord)C050910A201AePMP 3000 5 GHz Access Point Radio (ROW) (EU cord)C050910A201AePMP 3000 5 GHz Access Point Radio (ROW) (UK cord)C050910A301AePMP 3000 5 GHz Access Point Radio (ROW) (UK cord)C050910A401AePMP 3000 5 GHz Access Point Radio (ROW) (India cord)C050910A402AePMP 3000 5 GHz Access Point Radio (India) (India Cord)C050910A501AePMP 3000 5 GHz Access Point Radio (ROW) (China cord)	
COSO910A001AePMP 3000 5 GHz Access Point Radio (ROW) (no cord)C050910A101AePMP 3000 5 GHz Access Point Radio (ROW) (US cord)C050910A201AePMP 3000 5 GHz Access Point Radio (ROW) (EU cord)C050910A201AePMP 3000 5 GHz Access Point Radio (ROW) (UK cord)C050910A301AePMP 3000 5 GHz Access Point Radio (ROW) (UK cord)C050910A401AePMP 3000 5 GHz Access Point Radio (ROW) (India cord)C050910A402AePMP 3000 5 GHz Access Point Radio (India) (India Cord)C050910A501AePMP 3000 5 GHz Access Point Radio (ROW) (China cord)	
C050910A101AePMP 3000 5 GHz Access Point Radio (ROW) (US cord)C050910A201AePMP 3000 5 GHz Access Point Radio (ROW) (EU cord)C050910A301AePMP 3000 5 GHz Access Point Radio (ROW) (UK cord)C050910A401AePMP 3000 5 GHz Access Point Radio (ROW) (India cord)C050910A402AePMP 3000 5 GHz Access Point Radio (India) (India Cord)C050910A501AePMP 3000 5 GHz Access Point Radio (ROW) (China cord)	
COSO910A201AePMP 3000 5 GHz Access Point Radio (ROW) (EU cord)C050910A301AePMP 3000 5 GHz Access Point Radio (ROW) (UK cord)C050910A401AePMP 3000 5 GHz Access Point Radio (ROW) (India cord)C050910A402AePMP 3000 5 GHz Access Point Radio (India) (India Cord)C050910A501AePMP 3000 5 GHz Access Point Radio (ROW) (China cord)	
C050910A301AePMP 3000 5 GHz Access Point Radio (ROW) (UK cord)C050910A401AePMP 3000 5 GHz Access Point Radio (ROW) (India cord)C050910A402AePMP 3000 5 GHz Access Point Radio (India) (India Cord)C050910A501AePMP 3000 5 GHz Access Point Radio (ROW) (China cord)	
C050910A401AePMP 3000 5 GHz Access Point Radio (ROW) (India cord)C050910A402AePMP 3000 5GHz Access Point Radio (India) (India Cord)C050910A501AePMP 3000 5 GHz Access Point Radio (ROW) (China cord)	
C050910A402AePMP 3000 5GHz Access Point Radio (India) (India Cord)C050910A501AePMP 3000 5 GHz Access Point Radio (ROW) (China cord)	
C050910A501A ePMP 3000 5 GHz Access Point Radio (ROW) (China cord)	
C050910A601A ePMP 3000 5 GHz Access Point Radio (ROW) (Brazil cord)	
C050910A701AePMP 3000 5 GHz Access Point Radio (ROW) (Argentina cord)	
C050910A801AePMP 3000 5 GHz Access Point Radio (ROW) (ANZ cord)	
C050910A901A ePMP 3000 5 GHz Access Point Radio (ROW) (South Africa cord)	
C050910AZ01AePMP 3000 5 GHz Access Point Radio (ROW) (No PSU)	
C050910D301A ePMP 4x4 MU-MIMO Sector Antenna (for ePMP3000AP)	



e**PMP**[™] 3000 Sector Antenna

KEY DEPLOYMENT ADVANTAGES

- **Channel Flexibility:** Consistent gain from 4.9 to 6.0 GHz allows the operator to select a channel anywhere in the band and achieve the expected performance.
- **Consistent Coverage:** Excellent null fill capabilities of the antenna allow for broad geographical coverage within a sector even near the base of the tower and the edges of the sector.
- **Designed for the Installer:** Small, compact design, integrated ePMP radio mount and GPS antenna integration.
- **Predictable Performance:** The sector antenna is integrated into Cambium Networks LINKPlanner. The 3D model shows coverage at all elevations and across the azimuth.

KEY SPECIFICATIONS:

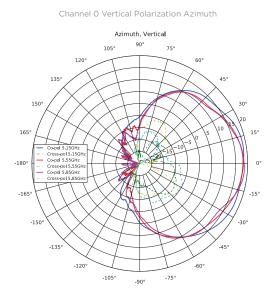
- 17 dBi gain
- 4.9 to 5.97 GHz spectrum
- 30 dBi front to back ratio
- IP 65 ruggedization

ePMP 3000 SECTOR ANTEN	INA
Model Number	C050910D301A
Frequency Range	4.9 GHz to 5.97 GHz
Gain	17 dBi
3 dB Beamwidth - Azimuth	70 degrees
3 dB Beamwidth - Elevation	6 degrees
Electrical Downtilt	-2 degrees
Polarization	2X Horizontal, 2X Vertical
Model Number	C050910D301A
Port-to-Port Isolation	> 20 dB
Front-to-Back Ratio	30 dB
Maximum Input Power	5 W
Input Impedance	50 ohms
Mounting Connectors	4 x RP SMA
Mounting Hardware	Included for mounting to mast diameters 2" to 4" (5 cm to 10 cm) -10 to +5 degree tilt Hardware included to connect ePMP access point to back of antenna body

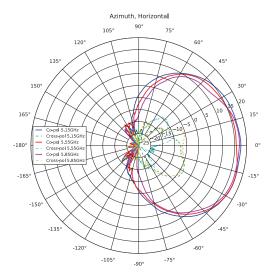
ePMP	3000	SECTOR	2 ANT	ENNA
------	------	--------	-------	------

Physical Dimensions	Antenna Body: 23.4" (H) x 9.6" (W) x 3.25" (D) (594 mm x 157 mm x 110 mm)	
Weight	Antenna Body: 8.0 lbs, 3.7 kg w/ ePMP 3000 Access Point and Mounting Brackets: 13.8 lbs. 6.3 kg	
Environmental	IP65	
Radome Material	UV Protected ABS	
Operating Temp	-40°C to 60°C (-40°F to 140°F)	

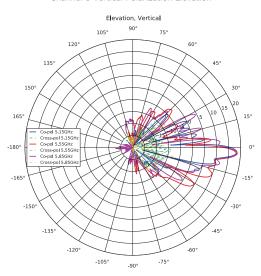
ANTENNA PATTERNS



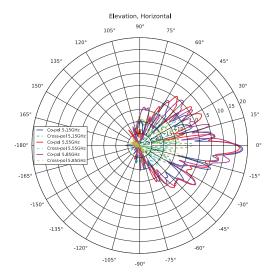
Channel 1 Vertical Polarization Azimuth



Channel O Vertical Polarization Elevation

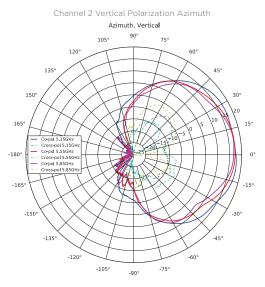


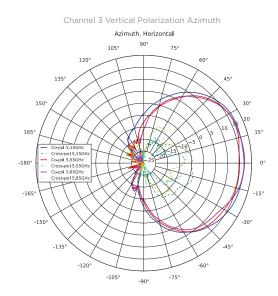


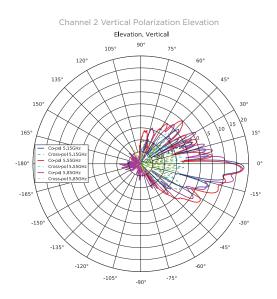


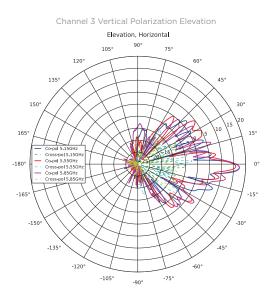
ePMP[™] 3000 Sector Antenna SPECIFICATION SHEET

ANTENNA PATTERNS











e**PMP**[™] Force 300-16

FEATURES:

- Cambium Networks' ePMP Force 300-16 is designed to operate in high interference environments and provides superior throughput of over 500 Mbps of real user data.
- The ePMP Force 300-16 supports channel size configuration from 20MHz up to 80MHz and modulates up to 256 QAM.
- The Force 300-16 supports a local Wi-Fi connection to allow easy installation, configuration, and monitoring from any Wi-Fi enabled device.
- The ePMP Force 300-16 supports real time spectrum monitoring with out degradation in throughput
- Configurable modes of operation ensure robust adaptivity to both symmetrical and asymmetrical traffic while providing high performance and round-trip latency as low as 3-5 ms.

- QoS management offers an outstanding quality for triple play services – VoIP, video, and data – and provides three levels of traffic priority.
- With a horizontal orientation mount providing a 15 degree beamwidth and 16dBi gain, the F300-16 offers a compelling, compact ubscriber or point to point solution resilient to interference.
- This platform is for the user base that wants a smaller on premises footprint while enabling high gain.
- Install is a breeze with the easy to install mount, capable of pole and wall mounting.

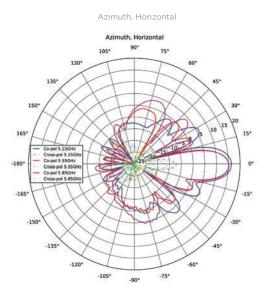
SPECTRUM		
Channel Spacing	Configurable in 5 MHz increments	
Frequency Range	Wide Band Operation 4910 - 5970 MHz (Note: Allowable frequencies and bands are dictated by individual country regulations.)	
Channel Width	20 40 80 MHz	
INTERFACE		
MAC (Media Access Control) Layer	Cambium	
Proprietary Physical Layer	2x2 MIMO/OFDM	
Ethernet Interfaced	10/100/1000 BaseT, Compatible with Cambium PoE & Standard PoE pinouts	
Protocols Used	IPv4/IPv6 (Dual Stack), UDP, TCP, ICMP, SNMPv2c, NTP, STP, IGMP, SSH	
Network Management	IPv4/IPv6, HTTPs, SNMPv2c, SSH, Cambium Networks CnMaestro™	
VLAN	802.1Q with 802.1p priority	

PERFORMANCE	
ARQ	Yes
Nominal Receive Sensitivity (w/FEC) @20 MHz Channel	MCSO = -89 dBm to MCS8 (256 QAM-3/4) = -66 dBm (per chain)
Nominal Receive Sensitivity (w/FEC) @40 MHz Channel	MCSO = -87 dBm to MCS9 (256 QAM-5/6) = -64 dBm (per chain)
Nominal Receive Sensitivity (w/FEC) @80 MHz Channel	MCSO = -84 dBm to MCS9 (256 QAM-5/6) = -59 dBm (per chain)
Modulation Levels (Adaptive)	MCS0(BPSK) to MCS9 (256 QAM-5/6)
Transmit Power Range	0 to +29 dBm (combined, to regional EIRP limit) (1 dB interval)
PHYSICAL	
Surge Suppression	1 Joule Integrated (C000000L065A - 30V Gigabit surge suppressor is recommended for optimum protection)
Environmental	IP55
Temperature	-30°C to +60°C (-22°F to +140°F)
Weight	0.50 kg (1.1 lb) (includes mounting bracket)
Wind Survival	180 km/hour (112 mi/hour)
Dimensions (Dia x Depth)	12.4 x 25.1 x 11.9 cm (4.9 x 9.9 x 4.7 in) – with mounting bracket attached
Pole Diameter Range	1 – 1.6 in (2.5 – 4.1 cm) with included clamp; up to 2.25 in (5.7 cm) with larger clamp
Power Consumption	12 Watts
Input Voltage	30 Volts
SECURITY	
Encryption	128-bit AES (CCMP mode)
CERTIFICATIONS	
FCCID	Z8H-89FT0016**
Industry Canada Cert	109W-0016**
CE	EN 301 893 V2.1.1 (5.4 GHz), EN 302 502 V2.1.1 (5.8 GHz)**
PART NUMBER	DESCRIPTION
C058910C112A	ePMP 5 GHz Force 300-16 Radio (FCC) (US cord)
C050910C114A	ePMP 5 GHz Force 300-16 Radio (IC) (Canada/US cord)
C050910C213A	ePMP 5 GHz Force 300-16 Radio (EU) (EU cord)
C050910C313A	ePMP 5 GHz Force 300-16 Radio (EU) (UK cord)
C050910C011A	ePMP 5 GHz Force 300-16 Radio (ROW) (no cord)
C050910C111A	ePMP 5 GHz Force 300-16 Radio (ROW) (US cord)
C050910C211A	ePMP 5 GHz Force 300-16 Radio (ROW) (EU cord)
C050910C311A	ePMP 5 GHz Force 300-16 Radio (ROW) (UK cord)
C050910C411A	ePMP 5 GHz Force 300-16 Radio (ROW) (India cord)
C050910C412A	ePMP 5 GHz Force 300-16 Radio (India) (India cord)
C050910C511A	ePMP 5 GHz Force 300-16 Radio (ROW) (China cord)
C050910C611A	ePMP 5 GHz Force 300-16 Radio (ROW) (Brazil cord)
C050910C711A	ePMP 5 GHz Force 300-16 Radio (ROW) (Argentina cord)
C050910C811A	ePMP 5 GHz Force 300-16 Radio (ROW) (ANZ cord)
C050910C911A	ePMP 5 GHz Force 300-16 Radio (ROW) (South Africa cord)
C050910CZ11A	ePMP 5 GHz Force 300-16 Radio (ROW) (No PSU)

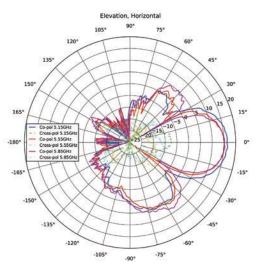
ANTENNA SPECIFICATIONS	5 GHZ SPECIFICATION
Frequency Range	4.9 – 5.970 MHz
Antenna Type	Panel
Peak Gain	16 dBi
3dB Beamwidth-Azimuth	15 degrees
3dB Beamwidth-Elevation	30 degrees

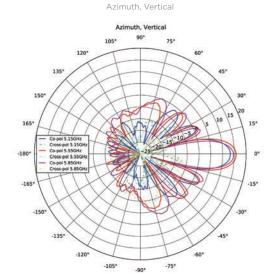
**Certifications are a place holder until official grant is given

ANTENNA PATTERNS

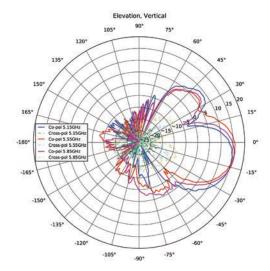


Elevation, Horizontal





Elevation, Vertical





ePMP[™] Force 300-25

FEATURES:

- Cambium Networks' ePMP Force 300-25 is designed to operate in high interference environments and provides superior throughput of over 500 Mbps of real user data.
- The ePMP Force 300-25 supports channel size configuration from 20MHz up to 80MHz and modulates up to 256 QAM.
- The Force 300-25 supports a local Wi-Fi connection to allow easy installation, configuration, and monitoring from any Wi-Fi enabled device.
- The ePMP Force 300-25 supports constant monitoring of the radio spectrum and allows for live action without bringing down the radio.

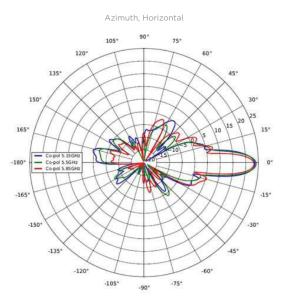
- Configurable modes of operation ensure robust adaptivity to both symmetrical and asymmetrical traffic while providing high performance and round-trip latency as low as 3-5 ms.
- QoS management offers an outstanding quality for triple play services VoIP, video, and data and provides three levels of traffic priority.
- Long deployment range is enabled by a high gain antenna combined with 27dBm of transmit power.
- This platform is for the user base that wants a smaller on premises footprint while enabling high gain.
- Install is a breeze with the easy to install mount, capable of pole and wall mounting.

SPECTRUM		
Channel Spacing	Configurable in 5 MHz increments	
Frequency Range	Wide Band Operation 4910 - 5970 MHz (Note: Allowable frequencies and bands are dictated by individual country regulations.)	
Channel Width	20 40 80 MHz	
INTERFACE		
MAC (Media Access Control) Layer	Cambium	
Proprietary Physical Layer	2x2 MIMO/OFDM	
Ethernet Interfaced	10/100/1000 BaseT, Compatible with Cambium PoE & Standard PoE pinouts	
Protocols Used	IPv4/IPv6 (Dual Stack), UDP, TCP, ICMP, SNMPv2c, NTP, STP, IGMP, SSH	
Network Management	IPv4/IPv6, HTTPs, SNMPv2c, SSH, Cambium Networks CnMaestro™	
VLAN	802.1Q with 802.1p priority	

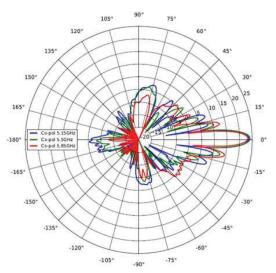
PERFORMANCE	
ARQ	Yes
Nominal Receive Sensitivity (w/FEC) @20 MHz Channel	MCS0 = -87 dBm to MCS8 (256 QAM-3/4) = -63 dBm (per chain)
Nominal Receive Sensitivity (w/FEC) @40 MHz Channel	MCS0 = -85 dBm to MCS9 (256QAM-5/6) = -59 dBm (per chain)
Nominal Receive Sensitivity (w/FEC) @80 MHz Channel	MCS0 = -82 dBm to MCS9 (256QAM-5/6) = -56 dBm (per chain)
Modulation Levels (Adaptive)	MCS0(BPSK)to MCS9 (256QAM5/6)
Transmit Power Range	0 to +27 dBm (combined, to regional EIRP limit) (1 dB interval)
PHYSICAL	
Surge Suppression	1 Joule Integrated (C000000L065A - 30V Gigabit surge suppressor is recommended for optimum protection)
Environmental	IP55
Temperature	-30°C to +60°C (-22°F to +140°F)
Weight	2.4 kg (5.3 lbs)
Wind Survival	180 km/hour (112 mi/hour)
Dimensions (Dia x Depth)	47 cm x 31 cm (18.5 in x 12.2 in)
Pole Diameter Range	6.4 cm – 7.6 cm (2.5 in – 3 in)
Power Consumption	12 Watts
Input Voltage	30 Volts
SECURITY	
Encryption	128-bit AES (CCMP mode)
CERTIFICATIONS	
FCCID	Z8H89FT0017
Industry Canada Cert	109W-0017
CE	EN 301 893 V2.1.1 (5.4 GHz), EN 302 502 V2.1.1 (5.8 GHz)
PART NUMBER	DESCRIPTION
C058910C102A	ePMP Force 300-25 5 GHz High Gain Radio (FCC) (US Cord)
C050910C104A	ePMP Force 300-25 5 GHz High Gain Radio (IC) (Canada/US Cord)
C050910C203A	ePMP Force 300-25 5 GHz High Gain Radio (EU) (EU Cord)
C050910C303A	ePMP Force 300-25 5 GHz High Gain Radio (EU) (UK Cord)
C050910C001A	ePMP Force 300-25 5 GHz High Gain Radio (RoW) (no Cord)
C050910C101A	ePMP Force 300-25 5 GHz High Gain Radio (RoW) (US Cord)
C050910C201A	ePMP Force 300-25 5 GHz High Gain Radio (RoW) (EU Cord)
C050910C301A	ePMP Force 300-25 5 GHz High Gain Radio (RoW) (UK Cord)
C050910C401A	ePMP Force 300-25 5 GHz High Gain Radio (RoW) (India Cord)
C050910C501A	ePMP Force 300-25 5 GHz High Gain Radio (RoW) (China Cord)
C050910C601A	ePMP Force 300-25 5 GHz High Gain Radio (RoW) (Brazil Cord)
C050910C701A	ePMP Force 300-25 5 GHz High Gain Radio (RoW) (Argentina Cord)
C050910C801A	ePMP Force 300-25 5 GHz High Gain Radio (RoW) (ANZ Cord)
C050910C901A	ePMP Force 300-25 5 GHz High Gain Radio (RoW) (South Africa Cord)
C050910CZ01A	ePMP Force 300-25 5 GHz High Gain Radio (RoW) (No PSU)

ANTENNA SPECIFICATIONS	5 GHZ SPECIFICATION
Frequency Range	4910 - 5970 MHz
Antenna Type	Dish
Peak Gain	25 dBi
3dB Beamwidth-Azimuth	6-10 degrees
3dB Beamwidth-Elevation	6-10 degrees
Front-To-Back Isolation	25 dB
Cross Polarization	20 dB

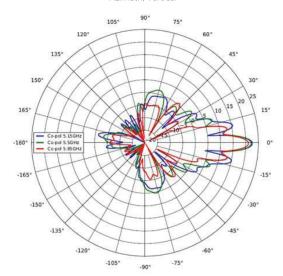
ANTENNA PATTERNS



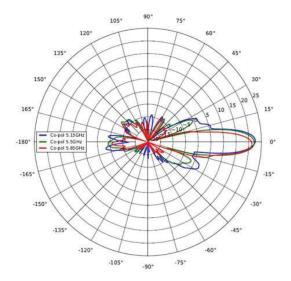








Elevation, Vertical



ABOUT CAMBIUM NETWORKS

Cambium Networks is a leading global provider of wireless connectivity solutions that strengthen connections between people, places and things. Specializing in providing an end-to-end wireless fabric of reliable, scalable, secure, cloud-managed platforms that perform under demanding conditions, Cambium Networks empowers service providers and enterprise, industrial and government network operators to build intelligent edge connectivity. Cambium Networks' commitment to continuous innovation and social responsibility in wireless access is demonstrated in the millions of radios deployed in thousands of networks that benefit communities around the world. Headquartered outside Chicago and with R&D centers in the U.S., U.K. and India, Cambium Networks sells through a range of trusted global distributors.

www.cambiumnetworks.com www.connectingtheunconnected.org

India Office

Cambium Networks Consulting Private Ltd 5th Floor, Quadrant 1, Umiya Business Bay, Tower 2,Outer Ring Road, Kadubisenahalli, Varthur Hobli Road, Bangalore East Taluk, Bangalore- 560037 +91 80 67333100

San Jose Office

2010 N. 1st Street, Suite 400 San Jose, CA 95131 USA

US Office

3800 Golf Road, Suite 360. Rolling Meadows, IL 60008 USA +1 888 863 5250

UK Office

Unit B2, Linhay Business Park, Eastern Road, Ashburton, United Kingdom, TQ13 7UP +44 1364 655500