

# PMP 450 Access Point

## VERTICAL MARKETS AND SOLUTIONS

### WIRELESS SERVICE PROVIDERS (WISPs)

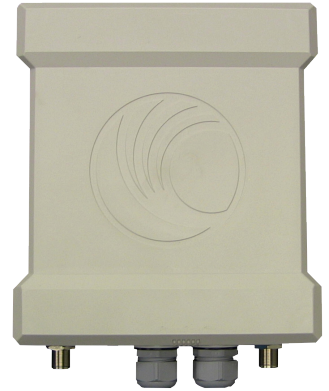
- Rural connectivity
- Municipal connectivity
- Remote office connectivity
- Primary or redundant connectivity

### GOVERNMENT PUBLIC SAFETY SECTOR

- Data Connectivity and Video Surveillance for Public Safety
- Disaster Recovery for Public Service
- Data Network for Public Works

### ENTERPRISES

- Video surveillance backhaul
- Device/site monitoring
- LAN extension
- Leased line replacement



PMP 450 Access Point

## Introduction

The Cambium Networks PMP 450 is our industry-leading wireless access network platform. Our solution is ideal for industry verticals such as WISPs (Wireless Service Providers), Enterprises and the Government Public Safety Sector. Designed for fixed outdoor applications, the PMP 450 platform is optimized for rate, reach, reliability and throughput. It features the most resilient and effective set of wireless broadband technologies in the marketplace.

Now available in most popular global bands, 2.4, 3.5, 3.65 and 5 GHz, the Cambium Networks Point-to-Multipoint (PMP) 450 Access Point (AP) delivers a consistent and exceptionally high throughput - more than 125 Mbps per sector and more than 1 Gbps per tower.

From the innovative GPS Synchronization options to interoperability with existing portfolio modules, the PMP 450 provides flexible deployment options that make it an excellent fit for high capacity, high reliability networks.

## Main Differentiators

» **MAXIMIZED SPECTRAL EFFICIENCY IN DENSE SERVICES AREAS** is enabled by our innovative GPS Sync Technology in combination with long range and high density coverage. This allows for configuration of more subscribers utilizing fewer access points, while preserving quality of service in spectrum-constrained environments. By lowering installation costs and maintenance, GPS Sync reduces operating expenses and improves growth and profitability.

» **OPTIMAL TRIPLE PLAY BACKHAUL** empowered by effective Quality of Service (QoS) management allows providers to confidently offer triple play services - VoIP (Voice over IP), video and data. Providing customers with excellent service ensures their continued loyalty and transforms them into advocates, helping WISPs and enterprises expand their business.

» **CARRIER-GRADE RELIABLE HARDWARE** by Cambium Networks is constructed from high quality industrial components; it is outdoor-rated and rigorously tested to satisfy the most difficult environmental conditions. With 40-year MTBF, our equipment standards are unsurpassed in industries requiring fixed wireless broadband.

## Powerful Features

The Cambium Networks PMP 450 platform is designed for growth. It allows service providers to efficiently and cost-effectively offer popular multi-media services that maximize their revenue - high-speed data and cloud access, video on demand, reliable fixed voice and VoIP. The PMP 450 solution provides reliable coverage across large service areas in urban, suburban, rural and remote locations.

**2x2 MIMO-OFDM** technology allows dual stream operation for most channel conditions, guaranteeing successful deployment of wireless networks in challenging environments.

**Low latency of 3 - 5 ms** effectively supports video and VoIP services. **Flexible channel width** (5, 10 and 20 MHz) allows users to select the most effective channel width for the current network environment. **256-QAM** modulation rate offers the unique ability to use the PMP 450 platform for services requiring fast and reliable transmission. **System performance** is ensured by vigorous testing with a compatible set of radios, guaranteeing predictable link budget results. Cambium Networks specifications are consistent with real life conditions.

PRODUCT												
MODEL NUMBERS	C054045A001A, C054045A002A, C054045A003A (5 GHz) C024045A001A, C024045A003A (2.4 GHz) C035045A001A, C035045A003A (3.3 – 3.6 GHz) C036045A001A, C036045A003A (3.55 – 3.8 GHz)											
SPECTRUM												
CHANNEL SPACING	CONFIGURABLE ON 2.5 MHz INCREMENTS, SELECTABLE TO 50 KHz AT 3 GHz FREQUENCY											
FREQUENCY RANGE	5470 - 5875 MHz 2400 - 2483.5 MHz						3300 – 3600 MHz 3550 – 3800 MHz					
CHANNEL WIDTH	5 MHz, 10 MHz or 20 MHz											
INTERFACE												
MAC (MEDIA ACCESS CONTROL) LAYER	CAMBIUM NETWORKS PROPRIETARY											
PHYSICAL LAYER	2x2 MIMO OFDM											
ETHERNET INTERFACE	10/100/1000BaseT, half/full duplex, rate auto negotiated (802.3 compliant)											
PROTOCOLS USED	11Pv4, UDP, TCP, IP, ICMP, Telnet, SNMP, HTTP, FTP											
NETWORK MANAGEMENT	HTTP, Telnet, FTP, SNMP v2c											
VLAN	802.1ad (DVLAN Q-inQ), 802.1Q with 802.1p priority, dynamic port VID											
PERFORMANCE												
SUBSCRIBERS PER SECTOR	UP TO 238											
ARQ	YES											
MODULATION LEVELS (ADAPTIVE)	MCS						SIGNAL TO NOISE REQUIRED (SNR, IN dB)					
	1X	QPSK – SISO				10						
	2X	QPSK – MIMO-B				10						
	4X	16QAM – MIMO-B				17						
	6X	64QAM – MIMO-B				24						
	8X	256QAM – MIMO-B				32						
RECEIVE SENSITIVITY (PER CHAIN, IN dB)	2.4GHz				3 GHz				5GHz			
	1X/2X	4X	6X	8X	1X/2X	4X	6X	8X	1X/2X	4X	6X	8X
@ 5MHZ CHANNEL	-93	87	-78	-66	-89	-83	-76	-68	-88	-82	-75	-64
@ 10MHZ CHANNEL	-89	-82	-75	-66	-87	-80	-74	-68	-86	-79	-71	-62
@ 20MHZ CHANNEL	-86	-80	-73	-66	-84	-78	-71	-64	-84	-77	-70	-60
MAXIMUM DEPLOYMENT RANGE	UP TO 40 MILES											
LATENCY	3 - 5 ms, TYPICAL											
GPS SYNCHRONIZATION	YES, VIA AUTOSYNC (CMM3, CMM4, uGPS, iGPS)											
QUALITY OF SERVICE	DIFFSERVE QoS											
LINK BUDGET												
ANTENNA BEAM WIDTH (SEE ANTENNA SPEC SHEET FOR MORE DETAIL & RPE)	5 GHz - 60° OR 90° SECTORS (DUAL POLARITY, H + V) 2.4 GHz - 60° SECTOR (DUAL SLANT) 3 GHz - 90° SECTOR (DUAL SLANT)											
TRANSMIT POWER RANGE	-30 TO +22 dBm (COMBINED, TO EIRP LIMIT BY REGION) (1 dB INTERVAL) (+23 dBm FOR 3 GHz)											
ANTENNA GAIN	5 GHz - 17 dBi H+V (SECTOR ANTENNA AVAILABLE FOR EITHER 60° OR 90°) 2.4 GHz - 17 dBi DUAL SLANT (SECTOR ANTENNA AVAILABLE FOR 60°) 3 GHz - 17 dBi DUAL SLANT (SECTOR ANTENNA AVAILABLE FOR 90°)											
MAXIMUM TRANSMIT POWER	22 dBm COMBINED (23 dBm COMBINED FOR 3 GHz)											

<b>PHYSICAL</b>	
ANTENNA CONNECTION	50 ohm, N-TYPE
SURGE SUPPRESSION	IEC 61000-4-2 (ESD) 15kV (AIR), 8kV (contact) IEC 61000-4-4 (EFT) 40A (5/50ns) IEC 61000-4-5 (LIGHTNING) 25A (8/20µS)
MEAN TIME BETWEEN FAILURE	> 40 YEARS
ENVIRONMENTAL	IP67, IP66
TEMPERATURE	-40°C TO +55°C (-40°F TO +131°F), 0-95% NON-CONDENSING
WEIGHT	2.5 kg (5.5 lbs)
WIND SURVIVAL	190 km/hour (118 mi/hour)
DIMENSIONS (HxWxD)	RADIO: 27x21x7 cm (10.6"x8.3"x2.8")
TYPICAL POWER CONSUMPTION	11 W (5 GHz AND 2.4 GHz), 12 W (3 GHz)
MAXIMUM POWER CONSUMPTION	14 W (5 GHz AND 2.4 GHz), 15 W (3 GHz)
INPUT VOLTAGE	22 TO 32 VDC
<b>SECURITY</b>	
ENCRYPTION	56-bit DES, FIPS-197 128-bit AES
<b>CERTIFICATIONS</b>	
INDUSTRY CANADA	109W-0002 (5.4, 5.8 GHz) 109W-0004 (2.4 GHz) 109W-0008 (3.5 GHz) 109W-0010 (3.65 GHz)
FCC ID	Z8H89FT0002 (5.4, 5.8 GHz) Z8H89FT0004 (2.4 GHz) Z8H89FT0010 (3.65 GHz)
CE	EN 301 893 V1.6.1 (5.4 GHz) EN 302 502 V1.2.1 (5.8 GHz) EN 302 326-2 V1.2.2 (3 GHz) EN 302 326-3 V1.3.1 (3 GHz)