# PTP 450i

## Fixed Wireless Backhaul

QUICK LOOK:

**Cambium Networks industry-leading 450 platform includes the all new PMP 450i and PTP 450i radios. The 450i product platform is the most scalable industrial-grade wireless broadband solution available.**

- **Ultra-wide band radios: 5 GHz or 3 GHz**
- **Rugged metal enclosure**
- **2x2 OFDM MIMO radio capable of up to 300 Mbps per sector**

### ULTRA-WIDE BAND RADIOS

Supports the entire band, whether in 5 GHz or 3 GHz. Advanced radio design improves transmit power and increases receive sensitivity.

### RUGGED METAL ENCLOSURE

Designed to meet IP-66 and IP-67 standards to withstand harsh environments. Optional ATEX/HAZLOC certified models available for hazardous deployments.

### DYNAMIC INTERFERENCE FILTERING

Provides industryleading noise isolation for improved performance.

### UPDATED FPGA AND SOC ARCHITECTURE

Triples the processing power compared to PMP 450.

### MULTIFUNCTION AUX PORT

Allows for greater flexibility for deployment by adding a camera or other PoE directly.

### INCREASE THROUGHPUT

Now capable of up to 300 Mbps per sector in a 40 MHz channel.

# PTP 450i Fixed Wireless Backhaul

## Product

| Model Numbers | | RoW | US | EU | No Encryption | ISED |
|---|---|---|---|---|---|---|
| **5 GHz** | Connectorized | C050045B001B | C050045B003B | C050045B005B | C050045B007B | C050045B015B |
| | Integrated | C050045B002B | C050045B004B | C050045B006B | C050045B008B | C050045B016B |
| **3 GHz** | Connectorized | C030045B001A | C030045B001A | – | C030045B003A | C030045B001A |
| | Integrated | C030045B002A | C030045B002A | – | C030045B004A | C030045B002A |

## Spectrum

| | | |
|---|---|---|
| **Channel Spacing** | **3 GHz:** Customizable to 50 KHz | **5 GHz:** Configurable on 2.5 MHz increments |
| **Frequency Range** | **3 GHz:** 3300 - 3900 MHz | **5 GHz:** 4900 - 5925 MHz |
| **Channel Width** | 5 MHz, 7 MHz, 10 MHz, 15 MHz, 20 MHz, 30 MHz or 40 MHz | 5 MHz, 10 MHz, 15 MHz, 20 MHz, 30 MHz or 40 MHz |

# Specifications

## Interface

| | |
|---|---|
| **MAC (Media Access Control) Layer** | Cambium Networks proprietary |
| **Physical Layer** | 2x2 MIMO OFDM |
| **Ethernet Interface** | 100/1000BaseT, full duplex, rate auto negotiated (802.3 compliant) |
| **Protocols Used** | IPv4, IPv6, UDP, TCP/IP, ICMP, Telnet, SNMP, HTTP, FTP |
| **Network Management** | IPv4/IPv6 (dual stack), HTTP, HTTPS, Telnet, FTP, SNMPv2c and v3, Cambium Networks cnMaestro™ |
| **MTU** | 1700 bytes |
| **VLAN** | 802.1ad (DVLAN Q-inQ), 802.1Q with 802.1p priority, dynamic port VID |

## Security

| | |
|---|---|
| **Encryption** | FIPS-197 128-bit AES,<br>256-bit AES *(Requires Optional License)* |

# PTP 450i Fixed Wireless Backhaul

## Performance

| | |
|---|---|
| **ARQ** | Yes |

| Modulation Levels (Adaptive) | MCS | Signal to Noise Required (SNR, in dB) |
|---|---|---|
| 2x | QPSK | 10 |
| 4x | 16QAM | 17 |
| 6x | 64QAM | 24 |
| 8x | 256QAM | 32 |

| | |
|---|---|
| **Maximum Deployment Range** | Up to 200 kilometers (124 miles) depending on configuration |
| **Latency** | 3 - 5 ms, typical |
| **GPS Synchronization** | Yes, via Autosync (UGPS, CMM4 or CMM5) |
| **Quality of Service** | Diffserve QoS |

## Physical

| | | |
|---|---|---|
| **Antenna Connection** | | 50 ohm, N-Type (Connectorized version only) |
| **Surge Suppression (LPU fitted)** | | EN61000-4-5: 1.2us/50us, 500 V voltage waveform<br>Recommended external surge suppressor: Cambium Networks Model # C000000L033A |
| **Mean Time Between Failure** | | >40 Years |
| **Dust and Water Ingress Protection Rating** | | IP67, IP66 |
| **Temperature / Humidity** | | -40°C to +75°C (-40°F to +167°F), 0-100% condensing |
| **Weight** | Connectorized | Approx. 2.0 kg (4.5 lbs) |
| | Integrated | Approx. 2.5 kg (5.5 lbs) |
| **Wind Survival** | | 322 km/h (200 mi/h) |
| **Vibration** | | NEMA TS2 Section 2.1.9 and Section 2.2.3 |
| **Shock** | | NEMA TS2 Section 2.1.10 and Section 2.2.4 |
| **External Icing** | | NEMA 250-2003 Section 5.6 |
| **Dimensions (HxWxD)** | Connectorized | 26.0 x 13.4 x 6.4 cm (10.25” x 5.25” x 3.25”) |
| | Integrated | 31.0 x 31.0 x 6.4 cm (12” x 12” x 2.5”) |
| **Power Consumption** | | 15 W typical, 18 W max, Using Aux port PoE for another device will increase power draw |
| **Input Voltage** | | 48-59 V DC, 802.3at compliant |
| **Mounting** | | Wall or Pole mount with Cambium Networks Model # N000045L002A |

# PTP 450i Fixed Wireless Backhaul

## Link Budget

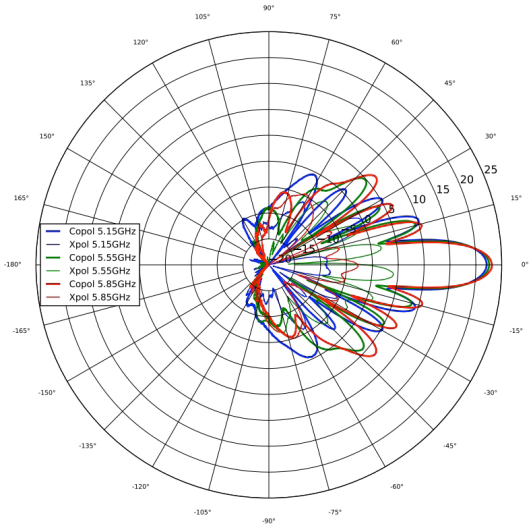
| | 3 GHz | 5 GHz |
|---|---|---|
| **Antenna Beam Width** | 17° azimuth for integrated antenna | 10° azimuth for integrated antenna |
| **Antenna Gain** | +19 dBi dual slant integrated, or external | +23 dBi H+V integrated, or external |
| **Maximum Transmit Power** | +25 dBm (MIMO, Combined H+V) | +28 dBm (MIMO, Combined H+V)<br>(may be limited by regulations) |
| **Maximum EIRP** | +43 dBm combined output<br>(may be limited by regulations) | +50 dBm combined output<br>(may be limited by regulations) |
| **VSWR** | 1.5, Reflection Coefficient 0.2, Reflected Power 4%, Return Loss 14 dB | |
| **Power Control** | ATPC (Automatic Transmit Power Control) at system level,<br>Backhaul slave implements ATPC (Future Software release) | |

## Certifications

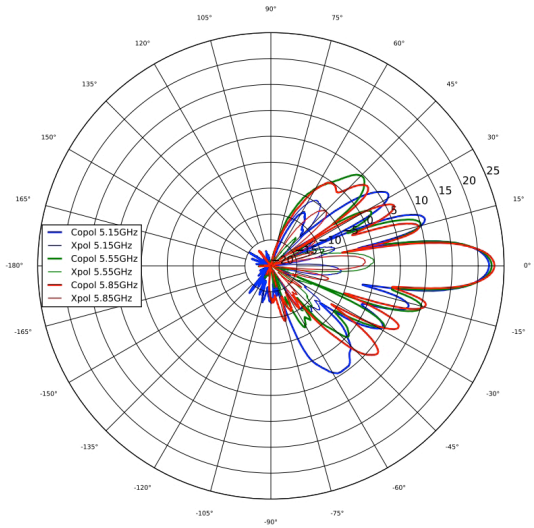
| | 3 GHz | 5 GHz |
|---|---|---|
| **ISED Canada** | 109W-0028 | 109AO-50450I |
| **FCC ID** | Z8H89FT0028 | QWP-50450I |
| **CE** | EN 302 326-2 v1.2.2 | EN 301 893 v2.1.1 |
| | | EN 302 502 v2.1.1 |

# PTP 450i Fixed Wireless Backhaul

## 5 GHz Antenna Pattern for Integrated PTP 450i

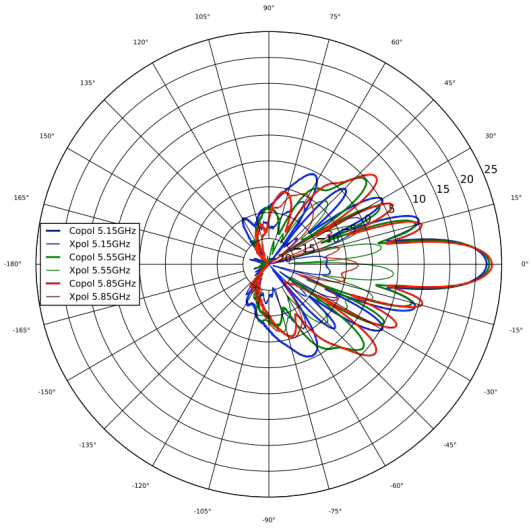



5 GHz Azimuth

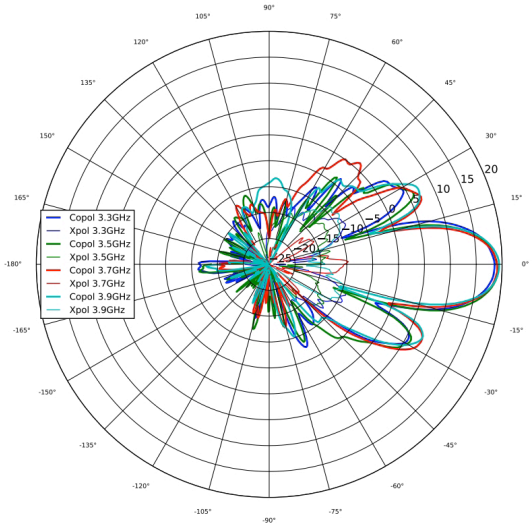



5 GHz Elevation

## 3 GHz Antenna Pattern for Integrated PTP 450i




3 GHz Azimuth




3 GHz Elevation

### 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.

**cambiumnetworks.com**

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