# ePMP™ Force 110 PTP

Force 110 PTP Front

Force 110 PTP Side

Force 110 PTP Back

**Wireless service providers and enterprises** around the globe need affordable, reliable high performance links for their network backbone and to connect high value customers. As spectrum increasingly becomes a scarce commodity, finding the right broadband solution that optimizes the use of spectrum is critically important. These applications need a solution with low latency and superior packet processing capability in order to ensure high quality of service. The Force 110 PTP meets these stringent requirements at an affordable price.

The ePMP Force 110 PTP:

- Delivers up to 220 Mbps of real user throughput
- Achieves 2 ms of round-trip latency
- Comes equipped with a high gain (25 dBi) dish antenna for long range
- Has high processing capability for optimized throughput
- Provides a 802.3af compliant Gigabit Ethernet port
- Includes eFortify – Cambium's unique capabilities to maintain consistent performance even in high interference environments – and eCommand – a suite of tools and features that include Cambium's renowned LINKPlanner application

The Force 110 PTP is comprised of the ePMP 1000 Connectorized Synchronized Radio and the ePMP110A-525 Dish. Operating in the 5 GHz frequency spectrum, the solution brings wireless broadband connectivity to customers over longer distances and provides a superior return on investment.

The platform supports bandwidth-intensive services such as VoIP, video and data utilizing ePMP's advanced QoS mechanism, delivering high performance and exceptional reliability in difficult RF conditions.

It is the most efficient connectivity solution for reaching the under and unconnected around the world.



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# Specifications

| | |
|---|---|
| **Product** | |
| MODEL NUMBER | 5 GHz: C050900P011A/C050900B051A , B151A, B251A (ROW), C058900P112A/58900B052A (FCC), C050900P013A/C050900B053A (EU) |
| **Spectrum** | |
| CHANNEL SPACING | Configurable on 5 MHz increments |
| FREQUENCY RANGE | 5 GHz 5150 – 5970 MHz (exact frequencies as allowed by local regulations) |
| CHANNEL WIDTH | 5, 10, 20 or 40 MHz |
| **Interface** | |
| MAC (MEDIA ACCESS CONTROL) LAYER | Cambium Proprietary |
| PHYSICAL LAYER | 2x2 MIMO/OFDM |
| ETHERNET INTERFACE | 100/1000 BaseT, rate auto negotiated (802.3af compliant) |
| PROTOCOLS USED | IPv4, UDP, TCP, IP, ICMP, SNMPv2c, HTTPs, STP, SSH, IGMP Snooping |
| NETWORK MANAGEMENT | HTTPs, SNMPv2c, SSH |
| VLAN | 802.1Q with 802.1p priority |
| **Performance** | |
| ARQ | Yes |
| NOMINAL RECEIVE SENSITIVITY (W/ FEC) @ 20MHZ CHANNEL | MCS0 = -93 dBm to MCS15 = -69 dBm (per branch) |
| NOMINAL RECEIVE SENSITIVITY (W/ FEC) @ 40MHZ CHANNEL | MCS0 = -90 dBm to MCS15 = -66 dBm (per branch) |
| MODULATION LEVELS (ADAPTIVE) | MCS0 (BPSK) to MCS15 (64QAM 5/6) |
| 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 |
| TRANSMIT POWER RANGE | -17 to +30 dBm (combined, to regional EIRP limit) (1 dB interval) |
| **Physical** | |
| SURGE SUPPRESSION | 1 Joule Integrated |
| ENVIRONMENTAL | IP55 |
| TEMPERATURE | -30°C to +60°C (-22°F to +140°F) |
| WEIGHT | 4.1 kg (9 lbs) |
| WIND SURVIVAL | 145 km/hour (90 mi/hour) |
| DIMENSIONS (DIA x DEPTH) | 47 cm x 27 cm (18.5 in x 10.6 in) |
| POLE DIAMETER RANGE | 5.7cm -7.6cm (2.25in - 3in) |
| POWER CONSUMPTION | 10 W Maximum, 7.5 W Typical |
| INPUT VOLTAGE | 23 to 56 V |
| **Security** | |
| ENCRYPTION | 128-bit AES (CCMP mode) |
| **Certifications** | |
| FCCID | 5 GHz: Z8H89FT00012 |
| INDUSTRY CANADA CERT | 5 GHz: 109W-00012 |
| CE | 5 GHz: EN 302 502 v1.2.1<br>5 GHz: EN 301 893 v1.7.1 |

Notes:

C050900B051A (ROW) – consists of a ePMP Radio Module [C050900R051A/C050900P011A] (no power cord) and ePMP Dish Antenna [C050900D007B]

C050900B151A (ROW) – consists of a ePMP Radio Module [C050900R051A/C050900P011A] (US cord) and ePMP Dish Antenna [C050900D007B]

C050900B251A (ROW) – consists of a ePMP Radio Module [C050900R051A/C050900P011A] (EU cord) and ePMP Dish Antenna [C050900D007B]

C058900B052A (FCC) – consists of a ePMP Radio Module [C058900R052A/C058900P112A] and ePMP Dish Antenna [C050900D007B]

C050900B053A (EU) – consists of a ePMP Radio Module [C050900R053A/C050900P013A] and ePMP Dish Antenna [C050900D007B]



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# Specifications

| ANTENNA SPECIFICATIONS | 5 GHz SPECIFICATION |
|---|---|
| FREQUENCY RANGE | 5150 – 5970 MHz |
| ANTENNA TYPE | DISH |
| PEAK GAIN | 25 dBi |
| 3dB BEAMWIDTH-AZIMUTH | 7° |
| 3dB BEAMWIDTH-ELEVATION | 7° |
| FRONT-TO-BACK ISOLATION | >25 dB |
| CROSS POLARIZATION | >15 dB |

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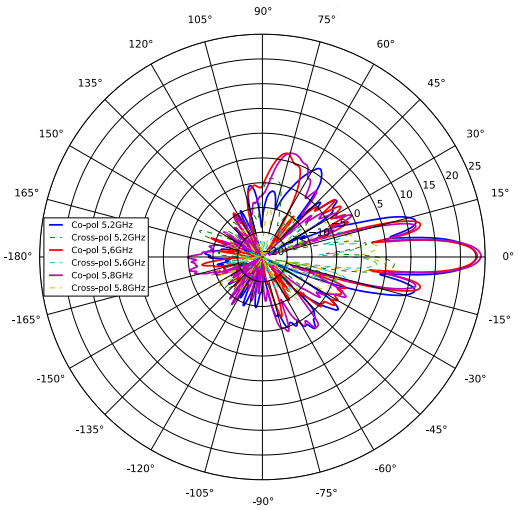
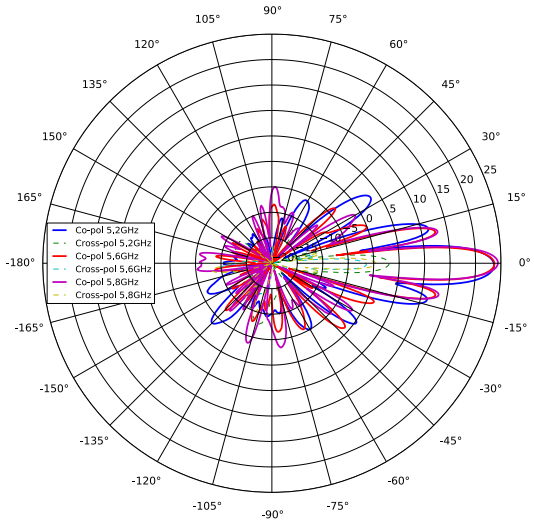
# ePMP Force 110 PTP Azimuth Patterns

# ePMP Force 110 PTP Elevation Patterns

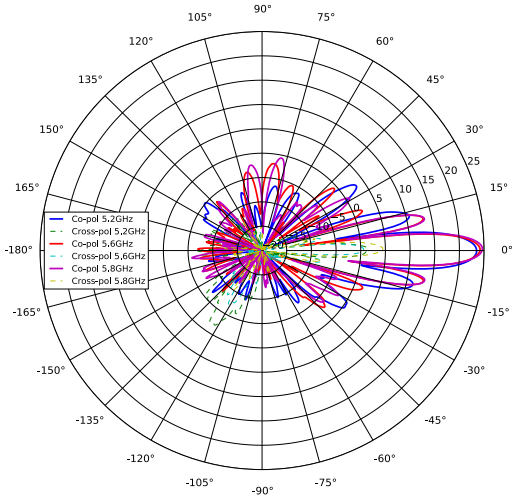
### H-POL ELEVATION GAIN (dBi) FOR ZERO AZIMUTH



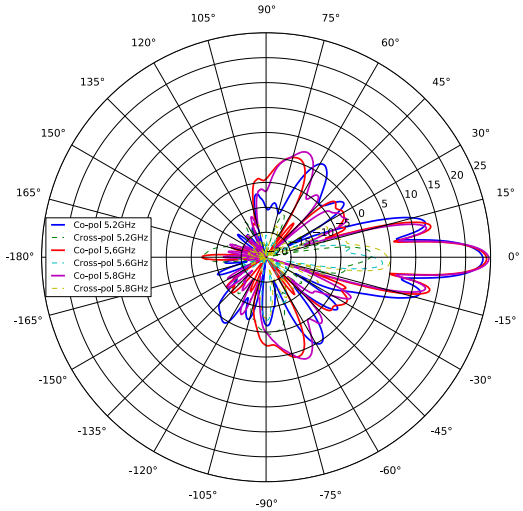

### H-POL AZIMUTH GAIN (dBi) FOR ZERO ELEVATION




### V-POL ELEVATION GAIN (dBi) FOR ZERO AZIMUTH




### V-POL AZIMUTH GAIN (dBi) FOR ZERO ELEVATION

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