PTP 650L

PTP 650L Front

PTP 650L Rear-View

VERTICAL MARKETS AND SOLUTIONS

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

WIRELESS SERVICE PROVIDERS
- Enterprise Access
- Rural and Municipal connectivity
- Remote office connectivity
- Primary or backup connectivity

Introduction

The Cambium Networks PTP 650L is our Enterprise Access and Video Surveillance point to point solution. This platform is ideal for enterprise services such as data, VoIP, video conferencing video surveillance and backup connection services. The solution can be cost-effectively deployed and configured within hours, providing robust connectivity in various LOS/nLOS/NLOS environments including urban environments with reflective NLOS paths.

The PTP650L is available in a single model covering 4.9 GHz to 6.05 GHz, offering high spectral efficiency and reliability in the most congested environments. This variety of bands and exceptional spectrum efficiency gives enterprises and service providers flexibility to choose the most effective solution for their network

Main Differentiators

» **FLEXIBLE NON-LINE-OF-SIGHT (NLOS) SUPPORT** is delivered by sub-6GHz spectrum featuring 2x2 MIMO OFDM, Fast Adaptive Modulation (AMOD), Dynamic Spectrum Optimization (DSO) and high spectral efficiency - 10 bps/Hz. With NLOS capabilities, service providers have a significant advantage in deploying capacity in the areas where most needed.

» **SIMPLE, FAST DEPLOYMENTS** are supported by agile mounting options, a small form factor and low power consumption. PTP 650L simplifies the installation in all kinds of urban and rural environments. With built-in alignment tools and flexible management interfaces, service providers can plan, install, monitor and support their network while keeping costs low.

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

» **PREDICTABLE CAPACITY** assessment is provided by Cambium Networks' LINK Planner tool. LINKPlanner enables network designers to accurately predict the capacity and availability of each link by selecting the end points on a map. LINKPlanner is a powerful planning, deployment and support tool.

Powerful Features

The Cambium Networks PTP 650L point to point solution is designed for connecting enterprise customers to the network quickly while offering reliable throughput of **300 Mbps** in a cost-effective way.

8 levels of QoS management effectively support video and VoIP services. Flexible channel width **(5 / 10 / 15 / 20 / 30 MHz)** allows users to select the most effective channel width for the current network environment. Fast hitless adaptive modulation with up to **256-QAM** modulation rate offers the unique ability to use the PTP 650L platform for services requiring fast and reliable transmission. **HTTPS/SNMPv3** offers secure management interface for securing business sensitive data.

With **Dynamic Spectrum Optimization (DSO)**, PTP 650L systems are constantly optimizing the channel of operation to maximize performance in virtually any environment – including NLOS, high interference, and through extreme weather conditions.

Multiple PTP 650L's can be mounted on a single tower and synchronized with the Cambium GPS synchronization solutions.

Specifications

RADIO TECHNOLOGY	
RF BANDS[1]	Wide-band operation 4.9 to 6.05 GHz (allowable frequencies and bands are dictated by individual country regulations. The most common bands are listed here.) 4.940 – 4.990 GHz (Public safety) 5.15 – 5.25 GHz 5.25 – 5.35 GHz 5.470 – 5.725 GHz 5.725 – 5.850 GHz 5.825 – 6.050 GHz
CHANNEL SIZES	5 / 10 / 15 / 20 / 30 MHz channels Channel sizes depend on individual country regulations
SPECTRAL EFFICIENCY	10 bps/Hz maximum
CHANNEL SELECTION	By dynamic spectrum optimization or fixed frequency assignment; automatic selection on start-up and continual self-optimization to avoid interference
MAXIMUM TRANSMIT POWER[2]	Up to 27 dbm at BPSK; up to 23 dBm at 256 QAM
SYSTEM GAIN[2]	Integrated: up to 160 dB with 20 MHz channel and integrated 19 dBi antenna; varies with modulation mode, channel size and spectrum
RECEIVER SENSITIVITY	-98 dBm with 5 MHz channel
MODULATION / ERROR CORRECTION	Fast Preemptive Adaptive Modulation featuring 13 modulation / FEC coding levels ranging from BPSK to 256 QAM dual payload MIMO
DUPLEX SCHEME	Synchronized Time Division Duplex (TDD) and Half Duplex Frequency Division Duplex (HD-FDD); dynamic or fixed transmit/receive ratio; each TDD-synchronized link requires a Cambium TDD-SYNC synchronization unit5 to provide an accurate timing reference signal
ANTENNA	Integrated flat panel: – 19 dBi
RANGE	250 km (155 miles)
SECURITY	FIPS-197 compliant 128-bit or 256-bit AES encryption (optional) HTTPs and SNMPv3 Identity-based user accounts Configurable password rules User authentication and RADIUS support Event logging and management; optional logging via syslog
ETHERNET BRIDGING	
PROTOCOL	IEEE 802.3
USER DATA THROUGHPUT	Dynamically variable up to 300 Mbps Maximum conditions – 2x2, 30 MHz channel, 256QAM
LATENCY	1 – 3 ms one-direction latency
QoS	8 Queues
PACKET CLASSIFICATION	Layer 2 and Layer 3 IEEE 802.1p, MPLS, Ethernet priority
PACKET PERFORMANCE	Line rate (>850K packets per second)
FRAME SUPPORT	Jumbo frame up to 9600 bytes
FLEXIBLE I/O	2 x Gigabit Ethernet copper ports: Gigabit Port 1: data + PoE power input Gigabit Port 2: 802.3at PoE output port (optional) SFP port (single-mode fiber, multi-mode fiber, and copper Gigabit Ethernet options available)
T1/E1 TDM SUPPORT	8 x T1/E1 TDM module (optional Network Indoor Unit) G.823-compliant timing DC power input (compatible with AC+DC Power injector output)
T1/E1 LATENCY (ONE WAY)	1 to 3 ms typical depending on range, bandwidth, modulation mode and number of E1/T1 ports; accurate T1/E1 latency figures can be determined for any given configuration using the Cambium PTP LINKPlanner

Specifications

MANAGEMENT AND INSTALLATION	
LED INDICATORS	Power status, Ethernet link status, and activity on AC+DC Power Injector
NETWORK MANAGEMENT	In-band and out-of-band management (OOBM)
SYSTEM MANAGEMENT	IPv4/IPv6 dual-stack management support Web access via browser using HTTP or HTTPS/TLS SNMP v2c/v3, MIB-II and proprietary PTP MIB Cambium Wireless Manager, WM 4.0/SP4 or higher Online in-band spectrum analyzer (no impact on payload traffic or network operation)
INSTALLATION	Built-in audio and graphical assistance for link alignment and optimization
CONNECTION	Distance between outdoor unit and primary network connection: up to 330 feet (100 meters) using Power-over ethernet; longer distances up to 984 feet (300 meters) can be achieved using fiber interface
PHYSICAL AND ENVIRONMENTAL	
DIMENSION AND WEIGHT	Integrated outdoor unit (ODU): Width 207mm (8.2"), Height 306mm (12.0"), Depth 69mm (2.7") Weight: 2.24 kg (4.9 lbs) – ODU, 0.8 kg (1.8 lbs) - Bracket
OPERATING TEMPERATURE	-40° to +140° F (-40° to +60° C), including solar radiation
DUST/WATER INTRUSION PROTECTION	Dust and water intrusion protection IP66 and IP67
WIND SPEED SURVIVAL	200 mph (322 kph)
POWER SUPPLY	Two options: AC power injector: 32° to 104° F (0° to +40° C); 35 W; 90-240 VAC, 50/60 Hz Dimensions: Width 5.2" (132mm), Height 1.4" (36mm), depth 2" (51mm) AC + DC power injector: -40° to 140° F (-40° to +60° C); 70 W; 90-240 VAC, 50/60 Hz Dimensions: Width 9.75" (250 mm), Height 1.5" (40 mm), depth 3" (80 mm)
POWER CONSUMPTION	30 W maximum
ENVIRONMENTAL AND REGULATORY	
PROTECTION AND SAFETY	UL60950-1; IEC60950-1; EN60950-1; CSA-C22.2 no. 60950-1; CB approval for Global
RADIO	4.9 GHz: FCC Part 90y, Rss-111 5.x GHz: FCC Part 15, sub-parts 15C and 15e; RSS 210 issue 8; EN 302 502; EN 301 893 EIRE Comreg 02/71R1, UK approval to IR2007