

PTP 78700 Fixed Wireless Backhaul

QUICK LOOK:

The PTP 78700 microwave Line of Sight (MLOS) radio offers unprecedented flexibility and spectral efficiency for Federal law enforcement and military tactical applications. MIL-SPEC ruggedized for border and battlefield, the PTP 78700 is ideal for video surveillance and land mobile radio backhaul.

- The first ultra-wideband radio to support all of 7125 MHz to 8500 MHz
- Integrated antenna and connectorized antenna models
- Interference/EW/Jam avoidance with Dynamic Spectrum Optimization (DSO)
- High-Capacity Multi-Point support (HCMP)



FLEXIBILITY

- Asymmetric and symmetric capacity on 1+0, 1+1 HSB and 2+0 links resulting in the most spectrally- efficient 7 and 8 GHz microwave performance
- Meets NTIA's new "single-channel" frequency assignments for 1+0 and 1+1 links, as well as traditional "dual-channel" assignments for 2+0 links. NTIA SPS certified

COST EFFICIENCY

- The PTP 78700 is optimized for lower installation and sustainment costs
- Sparing is simplified and minimized since one model supports all of 7125 MHz to 8500 MHz, 78700 replaces 10 conventional microwave models
- Point-and-click ready for any NTIA/ ETSI 7/8 GHz frequency assignment
- De-Risks project schedules, as radios can be procured ahead of specific radio frequency assignments (RFAs) from NTIA or ETSI regulatory agencies

APPLICATIONS

- As an ultra-wideband 7/8 GHz radio, the PTP 78700 is ideal for border, surveillance and tactical applications
- Supported point and click frequency agility from 7125-8500 MHz provides the operator a dynamic means of managing cross border interference
- Assymmetric frame support up to 9:1 allows up to 900 Mbps in a single direction; ideal for Federal Law enforcement video surveillance networks of any size
- Built to MIL-SPEC-810H standards and available in white, green, or desert tan, the PTP 78700 is ready for the most austere of environments - border, battlefield, and anywhere in between

KEY FEATURES

- Up to 1 Gbps
- FIPS 140-2 Level 2
- Ruggedized to MIL-STD-810H
- Integrated Spectrum Analyzer
- Supports SyncE and IEEE 1588-2008
- IPv6/v4 dual-stack management support

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Radio	
Model	PTP 78700
RF Bands	Wide-band operation 7.125 to 8.5 GHz (software-tunable in 500 kHz increments for full support of NTIA and ETSI 7/8 GHz bands)
Configuration	1+0, 1+1 HSB; 2+0 (require external switch)
Channel Sizes	5, 10, 15, 20, 30, 40, and 45 MHz channels. Channel sizes depend on individual country regulations
Spectral Efficiency	Up to 11.2 bps/Hz
Maximum Transmit Power	Up to 30 dBm
System Gain	Up to 176 dB with Integrated antenna
Channel Selection	By Dynamic Spectrum Optimization (DSO) or manual intervention Automatic selection on start-up and continual self-optimization to avoid interference
Modulation / Error Correction	Fast Preemptive Adaptive Modulation featuring 15 modulation / FEC coding levels ranging from BPSK to 256 QAM dual payload
MIMO Duplex Scheme	Adaptive or fixed transmit/receive duty cycles; Symmetric and up to 9:1 asymmetric capacity Split frequency and single frequency operation Optional TDD synchronization for dense collocation Time Division Duplex (TDD)
Antenna	Antenna Integrated Flat panel: 26 dBi Connectorized: operate with a selection of separately-purchased dual polarization antennas through 2 x N-type female connectors
Range	Up to 155 miles (250 km)
Security	FIPS 140-2 Level 2 validated 128/256-bit AES Encryption (optional) Over the air re-keying (optional) HTTPS and SNMPv3, User authentication and RADIUS support Identity-based user accounts Configurable password rules Event logging and management; optional logging via syslog Disaster recovery and vulnerability management FIPS-197 validated

Ethernet Bridging	
Protocol	IEEE 802.3
Latency	1-3 ms one direction
QoS	Extensive QoS supporting up to 8 Queues
Packet Classification	Layer 2 and Layer 3 IEEE 802.1p, MPLS
Packet Performance	Line rate (>850K packets per second)
Timing Transport	Synchronous Ethernet; IEEE 1588-2008 Transparent Clock
Frame Support	PTP Mode: Jumbo frame up to 9600 bytes; HCMP Mode: 2000 bytes per frame
Flexible I/O	1 x Amphenol D38999 connector with 2 x Gigabit Ethernet ports: Gigabit Port MAIN: Data + PoE power input Gigabit Port AUX: 802.3af/802.3at PoE output port 1 x SFP port: single-mode fiber, multi-mode fiber or copper Gigabit Ethernet options available

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Management

Network Management	In-band and out-of-band management (OOBM)
System Management	IPv6/IPv4 dual-stack management support Web access via browser using HTTP or HTTPS/TLS3 SNMP v1, v2c and v3, MIB-II and proprietary PTP MIB Online spectrum analyzer (no impact on payload traffic or network operation)
Installation	Built-in audio and graphical assistance for link optimization

High Capacity Multi-Point

Remote Modules Master	Up to 8 Nodes																
Channel Bandwidth	20 MHz and 40 MHz																
Spectral Efficiency in HCMP	9.3 bps/Hz Max																
Line Rate Packet per Second	850K pps																
Latency in HCMP Mode	2 to 4 ms one way (typically)																
Antenna Options	7.125–8.6 GHz 90° sector (15 dBi gain)																
Data Capacity per Remote Module in 1:1 Symmetry	<table border="1"> <thead> <tr> <th>Number of Remote Module @ 40 MHz</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> <th>7</th> <th>8</th> </tr> </thead> <tbody> <tr> <td>Mbps</td> <td>162</td> <td>106</td> <td>80</td> <td>66</td> <td>56</td> <td>46</td> <td>42</td> </tr> </tbody> </table>	Number of Remote Module @ 40 MHz	2	3	4	5	6	7	8	Mbps	162	106	80	66	56	46	42
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Mechanical Specifications

Dimensions (H x W x D)	Integrated Outdoor Unit (ODU): 401 x 4591 x 146 mm (15.7 x 18.1 x 5.7 in) Connectorized ODU: 234 x 348 x 140 mm (9.2 x 13.7 x 5.6 in)
Weight	Connectorized + Integrated ODU: 9.3 kg (20.4 lbs) including bracket Outdoor Unit (ODU): 7.1 kg (16.8 lbs) including bracket
Operating Temperature	-40°C to 60°C (-40°F to 140°F)
Environmental Rating	IP66 and IP67, MIL-STD 810H
Wind Speed Survival	322 kph (200 mph)
Power Supply	AC + DC power injector: -40°C to 60°C (-40°F to 140° F); 70W; 90-240 VAC, 50/60 Hz
Power Consumption	70W maximum (up to 100W with 802.3at device on auxiliary port)
Finish	FED-STD-595 34094 (Green) and 33446 (Tan) to MIL-DTL-53039, Type IX (CARC), RAL9002 Satin Polyester Powdercoat (White)

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Environmental and Regulatory

Protection and Safety	UL60950-1 and -22; IEC60950-1 and -22; EN60950-1 and -22; CSA-C22.2 No. 60950-1; CSA-C22 No. 60950-22-7; CB approval for Global NTIA, ETSI
Radio	NTIA, ETSI
EMC	Europe – EN 301 489-1 and -17; FCC Part 15B Class B

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.

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