

# 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 multipoint support (HCMP)



### FLEXIBILITY

- Asymmetric and symmetric capacity on 1+0, 1+1 HSB, and 2+0 links resulting in the most spectrally- efficient 7 GHz 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

- Optimized for lower installation and sustainment costs
- Simplified and minimized sparing: Because 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 a wideband 7/8 GHz radio, ideal for border, surveillance, and tactical applications
- Supported point-and-click frequency agility from 7125 MHz– 8500 MHz provides the operator a dynamic means of managing cross border interference
- Asymmetric frame support of up to 9:1, allowing up to 900 Mbps in a single direction; ideal for Federal law enforcement video surveillance networks of any size
- Built to MIL-STD-810 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-810
- Integrated Spectrum Analyzer
- Supports SyncE and IEEE 1588-2008
- IPv6/v4 dual-stack management support

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### Radio

<b>Model</b>	PTP 78700
<b>RF Bands</b>	Wide-band operation 7.125 GHz to 8.5 GHz (software-tunable in 500 kHz increments for full support of NTIA and ETSI 7/8 GHz bands)
<b>Configuration</b>	1+0, 1+1 HSB; 2+0 (require external switch)
<b>Channel Sizes</b>	5, 10, 15, 20, 30, 40, and 45 MHz channels. Channel sizes depend on individual country regulations.
<b>Spectral Efficiency</b>	Up to 11.2 bps/Hz
<b>Maximum Transmit Power</b>	Up to 30 dBm
<b>System Gain</b>	Up to 176 dB with Integrated antenna
<b>Channel Selection</b>	By Dynamic Spectrum Optimization (DSO) or manual intervention Automatic selection on start-up and continual self-optimization to avoid interference
<b>Modulation / Error Correction</b>	Fast Preemptive Adaptive Modulation featuring 15 modulation / FEC coding levels ranging from BPSK to 256 QAM dual payload
<b>MIMO Duplex Scheme</b>	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 colocation Time Division Duplex (TDD)
<b>Antenna</b>	Antenna integrated flat panel: 26 dBi Connectorized: Operate with a selection of separately purchased dual-polarity antennas through 2 x N-type female connectors
<b>Range</b>	Up to 155 mi (250 km)
<b>Security</b>	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

### Ethernet Bridging

<b>Protocol</b>	IEEE 802.3
<b>Latency</b>	1-3 ms one direction
<b>QoS</b>	Extensive QoS supporting up to 8 queues
<b>Packet Classification</b>	Layer 2 and layer 3 IEEE 802.1p, MPLSity
<b>Packet Performance</b>	Line rate (>850K packets per second)
<b>Timing Transport</b>	Synchronous Ethernet; IEEE 1588-2008 transparent clock
<b>Frame Support</b>	PTP Mode: Jumbo frame up to 9600 bytes HCMP Mode: 2000 bytes per frame
<b>Flexible I/O</b>	1 x Amphenol D38999 connector with 2 x Gigabit Ethernet ports: <ul style="list-style-type: none"> <li>• Gigabit Port MAIN: Data + PoE power input</li> <li>• Gigabit Port AUX: 802.3af/802.3at PoE output port</li> </ul> 1 x SFP port: single-mode fiber, multi-mode fiber or copper Gigabit Ethernet options available

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### Management

<b>Network Management</b>	In-band and out-of-band management (OOBM)
<b>System Management</b>	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)
<b>Installation</b>	Built-in audio and graphical assistance for link optimization

### High-Capacity Multipoint

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

### Mechanical Specifications

<b>Dimensions (H x W x D)</b>	<b>Integrated Outdoor Unit (ODU):</b> 401 x 4591 x 146 mm (15.7 x 18.1 x 5.7 in) <b>Connectorized ODU:</b> 234 x 348 x 140 mm (9.2 x 13.7 x 5.6 in)
<b>Weight</b>	<b>Integrated ODU:</b> 9.3 kg (20.4 lb) including bracket <b>Connectorized ODU:</b> 7.1 kg (16.8 lb) including bracket
<b>Operating Temperature</b>	-40°C to 60°C (-40°F to 140°F)
<b>Environmental Rating</b>	IP66 and IP67, MIL-STD-810
<b>Wind Speed Survival</b>	322 kph (200 mph)
<b>Power Supply</b>	AC + DC power injector: -40°C to 60°C (-40°F to 140° F); 70W; 90-240 VAC, 50/60 Hz
<b>Power Consumption</b>	70W maximum (up to 100W with 802.3at device on auxiliary port)
<b>Finish</b>	AMS-STD-595 34094 (green) or 33446 (tan) MIL-SPEC coating, RAL9002 satin polyester powder coat (white)

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### Environmental and Regulatory

<b>Protection and Safety</b>	UL 62368-1 and UL60950-22; EN IEC 62368-1 and IEC 62368-3; EN 60529; CSA C22.2 62368-1 and CSA C22.2 60950-22; CB approval for global use
<b>Radio</b>	NTIA Redbook
<b>EMC</b>	EN 301 489-1, EN 301 489-4; FCC Part 15B Class B, ICES-003 Class B

### ABOUT CAMBIUM NETWORKS

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