

# PTP 820C Licensed Microwave Radio



## All-Outdoor / Multi-Core

### Specifications

#### RADIO

Supported Frequency Range

- 6-38 GHz

Configurations

- 1+0 to 4+0, 1+1/2+2 HSB, E/W, 1+0 SD, 2+2 SD

Radio Features

- Multi-Carrier Adaptive Bandwidth Control (up to 2+0)
- Protection: 1+1/2+2 HSB
- High spectral utilization: QPSK to 2048 QAM w/ACM
- XPIC
- 2x2 / 4x4 MIMO

#### ETHERNET

Ethernet Interfaces

- Traffic Interfaces – 1 x 10/100/1000Base-T (RJ-45) and 1x1000base-X (SFP) or 10/100/1000 Base-T (electrical SFP)
- Management Interface - 1 x 10/100 Base-T (RJ-45)
- Optical SFP Types - Optical 1000Base-LX (1310 nm) or SX (850nm)  
Note: SFP devices must be of industrial grade (-40°C to +85°C)

Ethernet Features

- MTU – 9600 Bytes
- Quality of Service
  - Multiple Classification criteria (VLAN ID, p-bits, IPv4, DSCP, IPv6 TC, MPLS EXP)
  - 8 priority queues
  - Deep buffering (configurable up to 64 Mbit per queue)
  - WRED
  - Hierarchical QoS – high service granularity\*
  - P-bit marking/remarking
- 4K VLANs
- VLAN add/remove/translate
- Frame Cut Through – controlled latency and PDV for delay sensitive applications
- Header De-Duplication – Capacity boosting by eliminating inefficiency in all

layers (L2, MPLS, L3, L4, Tunneling – GTP for LTE, GRE)

- Network Resiliency - G.8032 and Multiple Spanning Tree Protocol (MSTP)\*
- Ethernet OAM – EFM (IEEE 802.3ah), CFM (IEEE 802.1ag), ITU-T Y.1731\*

#### SYNCHRONIZATION

Synchronization Distribution

- Sync Distribution over any traffic interface (GE/FE)
- Sync-E (ITU-T G.8261, G.8262)
- SSM/ESMC Support for ring/mesh applications (ITU-T G.8264)
- Sync-E Regenerator mode, providing PRC grade (ITU-T G.811) performance for smart pipe applications.

IEEE-1588

- Optimized Transport for reduced PDV
- IEEE-1588 TC

#### STANDARD

MEF

- Carrier Ethernet 2.0 (CE 2.0)\*\*

Supported Ethernet Standards

- 10/100/1000base-T/X (IEEE 802.3)
- Ethernet VLANs (IEEE 802.3ac)
- Virtual LAN (VLAN, IEEE 802.1Q)
- Class of service (IEEE 802.1p)
- Provider bridges (QinQ – IEEE 802.1ad)
- Link aggregation (IEEE 802.3ad)
- Auto MDI/MDIX for 1000baseT
- RFC 1349: IPv4 TOS
- RFC 2474: IPv4 DSCP
- RFC 2460: IPv6 Traffic Classes

Standards Compliance

- EMC: EN 301 489-1, EN 301 489-4, Class B (Europe), FCC 47 CFR, part 15, class B (US), ICES-003, Class B (Canada), TEC/EMI/TEL-001/01, Class B (India)
- Surge: EN61000-4-5, Class 4 (for PWR and ETH1/PoE ports)
- Safety: EN 60950-1, IEC 60950-1, UL 60950-1, CSA-C22.2 No.60950-1, EN 60950-22, UL 60950-22, CSAC22.2.60950-22

- Ingress Protection: IP66-compliant
- Storage: ETSI EN 300 019-1-1 Class 1.2
- Transportation: ETSI EN 300 019-1-2 Class 2.3

#### TECHNICAL SPECIFICATION

Mechanical Specifications

- Dimensions: 230mm(H), 233mm(W), 98mm(D), 6.5kg
- Pole Diameter Range (for Remote Mount Installation): 8.89 cm – 11.43 cm

Environmental Specifications

- -33°C to +55°C (-45°C to +60°C extended)

Power Input Specifications

- Standard Input: -48 VDC
- IDU DC Input range: -40 to -60 VDC

Power Consumption Specifications

- Maximum Power Consumption (2+0 Operation) 6 GHz: 65W; 7 GHz: 75W; 11 GHz: 65W; 13-15 GHz: 55W; 18-24 GHz: 48W; 26-38 GHz: 55W

PoE Injector Mechanical Specifications

- Dimensions – 134mm(H), 190mm(W), 62mm(D), 1 kg

PoE Injector Environmental Specifications

- 33°C to +55°C (-45°C to +60°C extended)

PoE Injector Power Input Specifications

- Standard Input: -48 or +24 VDC (Optional)
- DC Input range: ±(18/40.5 to 60) VDC (+18VDC extended range is supported as part of the nominal +24VDC support)

PoE Injector Interfaces

- GbE Data Port supporting 10/100/1000Base-T
- Power-Over-Ethernet (PoE) Port
- DC Power Port –40V to -60V (a PoE supporting two redundant DC feeds each supporting ±(18-60)V is available)

\* Planned for future release.

\*\* Certification pending.

# Specifications

## TRANSMIT POWER

Transmit Power (dBm)	Frequency (GHz)								
	6	7	8	10-11	13-15	18	23	26	28-38
QPSK	29	28	28	27	24	22	20	21	18
8 PSK	29	28	28	27	24	22	20	21	18
16 QAM	28	27	27	26	23	21	20	20	17
32 QAM	27	26	26	25	22	20	20	19	16
64 QAM	27	26	26	25	22	20	20	19	16
128 QAM	27	26	26	25	22	20	20	19	16
256 QAM	27	26	24	25	22	20	18	17	14
512 QAM	25	24	24	24	20	18	18	17	14
1024 QAM	25	24	24	23	20	18	17	16	13
2048 QAM	23	22	22	21	18	16	16	15	12

## RECEIVE SENSITIVITY

Modulation	Channel Spacing	Frequency (GHz)												
		6	7	8	11	13	15	18	23	26	28-31	32	36	38
QPSK	7 MHz	-93.0	-91.5	-91.0	-92.5	-92.0	-91.0	-92.0	-90.5	-90.0	-90.5	-91.5	-89.0	-88.5
8 PSK		-87.0	-85.5	-85.0	-86.5	-86.0	-85.0	-86.0	-84.5	-84.0	-84.5	-85.5	-83.0	-82.5
16 QAM		-86.5	-85.0	-84.5	-86.0	-85.5	-84.5	-85.5	-84.0	-83.5	-84.0	-85.0	-82.5	-82.0
32 QAM		-83.0	-81.5	-81.0	-82.5	-82.0	-81.0	-82.0	-80.5	-80.0	-80.5	-81.5	-79.0	-78.5
64 QAM		-80.0	-78.5	-78.0	-79.5	-79.0	-78.0	-79.0	-77.5	-77.0	-77.5	-78.5	-76.0	-75.5
128 QAM		-77.0	-75.5	-75.0	-76.5	-76.0	-75.0	-76.0	-74.5	-74.0	-74.5	-75.5	-73.0	-72.5
256 QAM		-73.5	-72.0	-71.5	-73.0	-72.5	-71.5	-72.5	-71.0	-70.5	-71.0	-72.0	-69.5	-69.0
512 QAM		-71.5	-70.0	-69.5	-71.0	-70.5	-69.5	-70.5	-69.0	-68.5	-69.0	-70.0	-67.5	-67.0
1024 QAM Strong		-68.0	-66.5	-66.0	-67.5	-67.0	-66.0	-67.0	-65.5	-65.0	-65.5	-66.5	-64.0	-63.5
1024 QAM Light		-67.5	-66.0	-65.5	-67.0	-66.5	-65.5	-66.5	-65.0	-64.5	-65.0	-66.0	-63.5	-63.0
QPSK	10 MHz	-92.0	-91.5	-91.5	-92.0	-91.0	-90.0	-91.5	-90.5	-90.0	-90.0	-89.5	-89.5	-89.5
8 PSK		-87.0	-86.5	-86.5	-87.0	-85.5	-85.0	-86.5	-85.5	-85.0	-85.0	-84.5	-84.5	-84.0
16 QAM		-86.0	-85.0	-85.0	-86.0	-84.5	-84.0	-85.0	-84.5	-84.0	-83.5	-83.5	-83.0	-83.0
32 QAM		-82.5	-81.5	-81.5	-82.0	-81.0	-80.5	-81.5	-80.5	-80.5	-80.0	-80.0	-79.5	-79.5
64 QAM		-79.0	-78.5	-78.5	-79.0	-78.0	-77.0	-78.5	-77.5	-77.0	-77.0	-76.5	-76.5	-76.5
128 QAM		-76.0	-75.0	-75.0	-76.0	-74.5	-74.0	-75.0	-74.5	-74.0	-73.5	-73.5	-73.0	-73.0
256 QAM		-73.0	-72.0	-72.0	-73.0	-71.5	-71.0	-72.0	-71.5	-71.0	-70.5	-70.5	-70.0	-70.0
512 QAM		-70.5	-69.5	-69.5	-70.0	-69.0	-68.5	-69.5	-68.5	-68.5	-68.0	-68.0	-67.5	-67.5
1024L QAM		-67.5	-66.5	-66.5	-67.0	-66.0	-65.5	-66.5	-65.5	-65.5	-65.0	-65.0	-64.5	-64.5
1024H QAM		-66.5	-66.0	-66.0	-66.5	-65.0	-64.5	-66.0	-65.0	-64.5	-64.5	-64.0	-64.0	-63.5
2048 QAM	-63.0	-62.0	-62.0	-62.5	-61.5	-61.0	-62.0	-61.0	-61.0	-60.5	-60.5	-60.0	-60.0	
QPSK	14 MHz	-90.0	-88.5	-88.0	-89.5	-89.0	-88.0	-89.0	-87.5	-87.0	-87.5	-88.5	-86.0	-85.5
8 PSK		-84.0	-82.5	-82.0	-83.5	-83.0	-82.0	-83.0	-81.5	-81.0	-81.5	-82.5	-80.0	-79.5
16 QAM		-83.0	-81.5	-81.0	-82.5	-82.0	-81.0	-82.0	-80.5	-80.0	-80.5	-81.5	-79.0	-78.5
32 QAM		-80.0	-78.5	-78.0	-79.5	-79.0	-78.0	-79.0	-77.5	-77.0	-77.5	-78.5	-76.0	-75.5
64 QAM		-77.0	-75.5	-75.0	-76.5	-76.0	-75.0	-76.0	-74.5	-74.0	-74.5	-75.5	-73.0	-72.5
128 QAM		-73.5	-72.0	-71.5	-73.0	-72.5	-71.5	-72.5	-71.0	-70.5	-71.0	-72.0	-69.5	-69.0
256 QAM		-71.0	-69.5	-69.0	-70.5	-70.0	-69.0	-70.0	-68.5	-68.0	-68.5	-69.5	-67.0	-66.5
512 QAM		-68.0	-66.5	-66.0	-67.5	-67.0	-66.0	-67.0	-65.5	-65.0	-65.5	-66.5	-64.0	-63.5
1024 QAM Strong		-65.0	-63.5	-63.0	-64.5	-64.0	-63.0	-64.0	-62.5	-62.0	-62.5	-63.5	-61.0	-60.5
1024 QAM Light		-64.5	-63.0	-62.5	-64.0	-63.5	-62.5	-63.5	-62.0	-61.5	-62.0	-63.0	-60.5	-60.0

PTP 820 All Indoor Solution SPECIFICATION SHEET

Modulation	Channel Spacing	Frequency (GHz)													
		6	7	8	11	13	15	18	23	26	28-31	32	36	38	
QPSK	20 MHz	-89.0	-88.5	-88.5	-89.0	-88.0	-87.0	-88.5	-87.5	-87.0	-87.0	-86.5	-86.5	-86.5	
8 PSK		-84.0	-83.5	-83.5	-84.0	-83.0	-82.0	-83.5	-82.5	-82.0	-82.0	-82.0	-81.5	-81.5	-81.5
16 QAM		-82.5	-82.0	-82.0	-82.5	-81.0	-80.5	-82.0	-81.0	-80.5	-80.5	-80.5	-80.0	-80.0	-79.5
32 QAM		-79.0	-78.5	-78.5	-79.0	-77.5	-77.0	-78.5	-77.5	-77.0	-77.0	-77.0	-76.5	-76.5	-76.0
64 QAM		-76.0	-75.5	-75.5	-76.0	-75.0	-74.0	-75.5	-74.5	-74.0	-74.0	-74.0	-73.5	-73.5	-73.5
128 QAM		-73.0	-72.5	-72.5	-73.0	-71.5	-71.0	-72.5	-71.5	-71.0	-71.0	-71.0	-70.5	-70.5	-70.0
256 QAM		-70.0	-69.5	-69.5	-70.0	-68.5	-68.0	-69.5	-68.5	-68.0	-68.0	-68.0	-67.5	-67.5	-67.0
512 QAM		-67.5	-66.5	-66.5	-67.5	-66.0	-65.5	-66.5	-66.0	-65.5	-65.0	-65.0	-65.0	-64.5	-64.5
1024L QAM		-64.5	-63.5	-63.5	-64.5	-63.0	-62.5	-63.5	-63.0	-62.5	-62.0	-62.0	-62.0	-61.5	-61.5
1024H QAM		-63.5	-63.0	-63.0	-63.5	-62.5	-61.5	-63.0	-62.0	-61.5	-61.5	-61.5	-61.0	-61.0	-61.0
2048 QAM		-60.0	-59.5	-59.5	-60.0	-59.0	-58.0	-59.5	-58.5	-58.0	-58.0	-58.0	-57.5	-57.5	-57.5
QPSK	25 MHz	-87.5	-86.5	-86.5	-87.0	-86.0	-85.5	-86.5	-85.5	-85.5	-85.0	-85.0	-85.0	-84.0	
8 PSK		-82.5	-82.0	-82.0	-82.5	-81.5	-80.5	-82.0	-81.0	-80.5	-80.5	-80.0	-80.0	-80.0	-79.5
16 QAM		-80.5	-80.0	-80.0	-80.5	-79.5	-78.5	-80.0	-79.0	-78.5	-78.5	-78.0	-78.0	-78.0	-77.5
32 QAM		-77.5	-77.0	-77.0	-77.5	-76.0	-75.5	-77.0	-76.0	-75.5	-75.5	-75.0	-75.0	-75.0	-74.5
64 QAM		-74.5	-74.0	-74.0	-74.5	-73.5	-72.5	-74.0	-73.0	-72.5	-72.5	-72.0	-72.0	-72.0	-71.5
128 QAM		-71.5	-71.0	-71.0	-71.5	-70.5	-69.5	-71.0	-70.0	-69.5	-69.5	-69.0	-69.0	-69.0	-68.5
256 QAM		-68.5	-67.5	-67.5	-68.5	-67.0	-66.5	-67.5	-67.0	-66.5	-66.0	-66.0	-66.0	-66.0	-65.5
512 QAM		-66.0	-65.0	-65.0	-66.0	-64.5	-64.0	-65.0	-64.5	-64.0	-63.5	-63.5	-63.5	-63.5	-63.0
1024L QAM		-63.0	-62.5	-62.5	-63.0	-61.5	-61.0	-62.5	-61.5	-61.0	-61.0	-60.5	-60.5	-60.0	-60.0
1024H QAM		-62.5	-61.5	-61.5	-62.5	-61.0	-60.5	-61.5	-61.0	-60.5	-60.0	-60.0	-60.0	-60.0	-59.5
2048 QAM		-58.5	-58.0	-58.0	-58.5	-57.0	-56.5	-58.0	-57.0	-56.5	-56.5	-56.0	-56.0	-56.0	-55.5
QPSK	28 MHz ACCP	-87.0	-85.5	-85.0	-86.5	-86.0	-85.0	-86.0	-84.5	-84.0	-84.5	-85.5	-83.0	-82.5	
8 PSK		-82.5	-81.0	-80.5	-82.0	-81.5	-80.5	-81.5	-80.0	-79.5	-80.0	-81.0	-78.5	-78.0	
16 QAM		-80.5	-79.0	-78.5	-80.0	-79.5	-78.5	-79.5	-78.0	-77.5	-78.0	-79.0	-76.5	-76.0	
32 QAM		-77.0	-75.5	-75.0	-76.5	-76.0	-75.0	-76.0	-74.5	-74.0	-74.5	-75.5	-73.0	-72.5	
64 QAM		-74.0	-72.5	-72.0	-73.5	-73.0	-72.0	-73.0	-71.5	-71.0	-71.5	-72.5	-70.0	-69.5	
128 QAM		-71.0	-69.5	-69.0	-70.5	-70.0	-69.0	-70.0	-68.5	-68.0	-68.5	-69.5	-67.0	-66.5	
256 QAM		-68.0	-66.5	-66.0	-67.5	-67.0	-66.0	-67.0	-65.5	-65.0	-65.5	-66.5	-64.0	-63.5	
512 QAM		-65.5	-64.0	-63.5	-65.0	-64.5	-63.5	-64.5	-63.0	-62.5	-63.0	-64.0	-61.5	-61.0	
1024 QAM Strong		-62.5	-61.0	-60.5	-62.0	-61.5	-60.5	-61.5	-60.0	-59.5	-60.0	-61.0	-58.5	-58.0	
1024 QAM Light		-61.5	-60.0	-59.5	-61.0	-60.5	-59.5	-60.5	-59.0	-58.5	-59.0	-60.0	-57.5	-57.0	
2048 QAM		-58.0	-56.5	-56.0	-57.5	-57.0	-56.0	-57.0	-55.5	-55.0	-55.5	-56.5	-54.0	-53.5	
QPSK	28 MHz ACAP / 30 MHz	-87.5	-85.5	-85.0	-86.5	-86.0	-85.0	-86.0	-84.5	-84.0	-84.5	-85.5	-83.0	-82.5	
8 PSK		-82.5	-80.5	-80.0	-81.5	-81.0	-80.0	-81.0	-79.5	-79.0	-79.5	-80.5	-78.0	-77.5	
16 QAM		-81.0	-79.0	-78.5	-80.0	-79.5	-78.5	-79.5	-78.0	-77.5	-78.0	-79.0	-76.5	-76.0	
32 QAM		-77.0	-75.0	-74.5	-76.0	-75.5	-74.5	-75.5	-74.0	-73.5	-74.0	-75.0	-72.5	-72.0	
64 QAM		-74.5	-72.5	-72.0	-73.5	-73.0	-72.0	-73.0	-71.5	-71.0	-71.5	-72.5	-70.0	-69.5	
128 QAM		-71.5	-69.0	-68.5	-70.5	-69.5	-68.5	-69.5	-68.0	-67.5	-68.0	-69.0	-66.5	-66.0	
256 QAM		-68.5	-66.0	-65.5	-67.5	-66.5	-65.5	-66.5	-65.0	-64.5	-65.0	-66.0	-63.5	-63.0	
512 QAM		-66.5	-64.0	-63.5	-65.5	-64.5	-63.5	-64.5	-63.0	-62.5	-63.0	-64.0	-61.5	-61.0	
1024 QAM Strong		-63.0	-61.0	-60.5	-62.0	-61.5	-60.5	-61.5	-60.0	-59.5	-60.0	-61.0	-58.5	-58.0	
1024 QAM Light		-62.0	-60.0	-59.5	-61.0	-60.5	-59.5	-60.5	-59.0	-58.5	-59.0	-60.0	-57.5	-57.0	
2048 QAM		-58.5	-56.0	-55.5	-57.5	-56.5	-55.5	-56.5	-55.0	-54.5	-55.0	-56.0	-53.5	-53.0	
QPSK	40 MHz	-85.5	-84.0	-83.5	-86.0	-84.5	-83.5	-84.5	-83.0	-82.5	-83.0	-84.0	-81.5	-81.0	
8 PSK		-80.5	-79.0	-78.5	-80.5	-79.5	-78.5	-79.5	-78.0	-77.5	-78.0	-79.0	-76.5	-76.0	
16 QAM		-79.0	-77.5	-77.0	-79.0	-78.0	-77.0	-78.0	-76.5	-76.0	-76.5	-77.5	-75.0	-74.5	
32 QAM		-75.5	-74.0	-73.5	-75.5	-74.5	-73.5	-74.5	-73.0	-72.5	-73.0	-74.0	-71.5	-71.0	
64 QAM		-72.5	-71.0	-70.5	-72.5	-71.5	-70.5	-71.5	-70.0	-69.5	-70.0	-71.0	-68.5	-68.0	
128 QAM		-69.5	-68.0	-67.5	-70.0	-68.5	-67.5	-68.5	-67.0	-66.5	-67.0	-68.0	-65.5	-65.0	

PTP 820 All Indoor Solution SPECIFICATION SHEET

Modulation	Channel Spacing	Frequency (GHz)													
		6	7	8	11	13	15	18	23	26	28-31	32	36	38	
256 QAM	40 MHz	-66.5	-65.0	-64.5	-67.5	-65.5	-64.5	-65.5	-64.0	-63.5	-64.0	-65.0	-62.5	-62.0	
512 QAM		-63.5	-62.0	-61.5	-65.0	-62.5	-61.5	-62.5	-61.0	-60.5	-61.0	-62.0	-59.5	-59.0	
1024 QAM Strong		-61.0	-59.5	-59.0	-61.5	-60.0	-59.0	-60.0	-58.5	-58.0	-58.5	-59.5	-57.0	-56.5	
1024 QAM Light		-60.0	-58.5	-58.0	-60.5	-59.0	-58.0	-59.0	-57.5	-57.0	-57.5	-58.5	-56.0	-55.5	
2048 QAM		-57.5	-56.0	-55.5	-57.5	-56.5	-55.5	-56.5	-55.0	-54.5	-55.0	-56.0	-53.5	-53.0	
QPSK	50 MHz	-85.0	-83.5	-83.0	-84.5	-84.0	-83.0	-84.0	-82.5	-82.0	-82.5	-83.5	-81.0	-80.5	
8 PSK		-79.5	-78.0	-77.5	-79.0	-78.5	-77.5	-78.5	-77.0	-76.5	-77.0	-78.0	-75.5	-75.0	
16 QAM		-78.0	-76.5	-76.0	-77.5	-77.0	-76.0	-77.0	-75.5	-75.0	-75.5	-76.5	-74.0	-73.5	
32 QAM		-74.0	-72.5	-72.0	-73.5	-73.0	-72.0	-73.0	-71.5	-71.0	-71.5	-72.5	-70.0	-69.5	
64 QAM		-71.0	-69.5	-69.0	-70.5	-70.0	-69.0	-70.0	-68.5	-68.0	-68.5	-69.5	-67.0	-66.5	
128 QAM		-68.0	-66.5	-66.0	-67.5	-67.0	-66.0	-67.0	-65.5	-65.0	-65.5	-66.5	-64.0	-63.5	
256 QAM		-65.5	-64.0	-63.5	-65.0	-64.5	-63.5	-64.5	-63.0	-62.5	-63.0	-64.0	-61.5	-61.0	
512 QAM		-63.0	-61.5	-61.0	-62.5	-62.0	-61.0	-62.0	-60.5	-60.0	-60.5	-61.5	-59.0	-58.5	
1024 QAM Strong		-59.5	-58.0	-57.5	-59.0	-58.5	-57.5	-58.5	-57.0	-56.5	-57.0	-58.0	-55.5	-55.0	
1024 QAM Light		-58.5	-57.0	-56.5	-58.0	-57.5	-56.5	-57.5	-56.0	-55.5	-56.0	-57.0	-54.5	-54.0	
2048 QAM		-56.5	-55.0	-54.5	-56.0	-55.5	-54.5	-55.5	-54.0	-53.5	-54.0	-55.0	-52.5	-52.0	
QPSK		56 MHz	-83.5	-82.0	-81.5	-83.0	-82.5	-81.5	-82.5	-81.0	-80.5	-81.0	-82.0	-79.5	-79.0
8 PSK			-79.5	-78.0	-77.5	-79.0	-78.5	-77.5	-78.5	-77.0	-76.5	-77.0	-78.0	-75.5	-75.0
16 QAM			-77.0	-75.5	-75.0	-76.5	-76.0	-75.0	-76.0	-74.5	-74.0	-74.5	-75.5	-73.0	-72.5
32 QAM			-74.0	-72.5	-72.0	-73.5	-73.0	-72.0	-73.0	-71.5	-71.0	-71.5	-72.5	-70.0	-69.5
64 QAM	-70.5		-69.0	-68.5	-70.0	-69.5	-68.5	-69.5	-68.0	-67.5	-68.0	-69.0	-66.5	-66.0	
128 QAM	-68.0		-66.5	-66.0	-67.5	-67.0	-66.0	-67.0	-65.5	-65.0	-65.5	-66.5	-64.0	-63.5	
256 QAM	-64.5		-63.0	-62.5	-64.0	-63.5	-62.5	-63.5	-62.0	-61.5	-62.0	-63.0	-60.5	-60.0	
512 QAM	-62.5		-61.0	-60.5	-62.0	-61.5	-60.5	-61.5	-60.0	-59.5	-60.0	-61.0	-58.5	-58.0	
1024 QAM Strong	-59.0		-57.5	-57.0	-58.5	-58.0	-57.0	-58.0	-56.5	-56.0	-56.5	-57.5	-55.0	-54.5	
1024 QAM Light	-58.0		-56.5	-56.0	-57.5	-57.0	-56.0	-57.0	-55.5	-55.0	-55.5	-56.5	-54.0	-53.5	
2048 QAM	-53.5		-52.0	-51.5	-53.0	-52.5	-51.5	-52.5	-51.0	-50.5	-51.0	-52.0	-49.5	-49.0	
QPSK	56 MHz ACAP / 60 MHz		-84.5	-82.5	-82.0	-83.5	-83.0	-82.0	-83.0	-81.5	-81.0	-81.5	-82.5	-80.0	-79.5
8 PSK			-80.0	-78.0	-77.5	-79.0	-78.5	-77.5	-78.5	-77.0	-76.5	-77.0	-78.0	-75.5	-75.0
16 QAM			-77.5	-75.5	-75.0	-76.5	-76.0	-75.0	-76.0	-74.5	-74.0	-74.5	-75.5	-73.0	-72.5
32 QAM			-74.0	-72.0	-71.5	-73.0	-72.5	-71.5	-72.5	-71.0	-70.5	-71.0	-72.0	-69.5	-69.0
64 QAM		-71.0	-68.5	-68.0	-69.5	-69.0	-68.0	-69.0	-67.5	-67.0	-67.5	-68.5	-66.0	-65.5	
128 QAM		-68.5	-66.0	-65.5	-67.0	-66.5	-65.5	-66.5	-65.0	-64.5	-65.0	-66.0	-63.5	-63.0	
256 QAM		-65.0	-62.5	-62.0	-63.5	-63.0	-62.0	-63.0	-61.5	-61.0	-61.5	-62.5	-60.0	-59.5	
512 QAM		-63.0	-60.5	-60.0	-61.5	-61.0	-60.0	-61.0	-59.5	-59.0	-59.5	-60.5	-58.0	-57.5	
1024 QAM Strong		-59.5	-57.0	-56.5	-58.0	-57.5	-56.5	-57.5	-56.0	-55.5	-56.0	-57.0	-54.5	-54.0	
1024 QAM Light		-58.5	-56.0	-55.5	-57.0	-56.5	-55.5	-56.5	-55.0	-54.5	-55.0	-56.0	-53.5	-53.0	
2048 QAM		-56.0	-53.5	-53.0	-54.5	-54.0	-53.0	-54.0	-52.5	-52.0	-52.5	-53.5	-51.0	-50.5	
QPSK		80 MHz	-83.0	-81.5	-81.0	-82.5	-82.0	-81.0	-82.0	-80.5	-80.0	-80.5	-81.5	-79.0	-78.5
8 PSK			-78.0	-76.5	-76.0	-77.5	-77.0	-76.0	-77.0	-75.5	-75.0	-75.5	-76.5	-74.0	-73.5
16 QAM			-76.0	-74.5	-74.0	-75.5	-75.0	-74.0	-75.0	-73.5	-73.0	-73.5	-74.5	-72.0	-71.5
32 QAM			-72.5	-71.0	-70.5	-72.0	-71.5	-70.5	-71.5	-70.0	-69.5	-70.0	-71.0	-68.5	-68.0
64 QAM	-69.5		-68.0	-67.5	-69.0	-68.5	-67.5	-68.5	-67.0	-66.5	-67.0	-68.0	-65.5	-65.0	
128 QAM	-67.0		-65.5	-65.0	-66.5	-66.0	-65.0	-66.0	-64.5	-64.0	-64.5	-65.5	-63.0	-62.5	
256 QAM	-64.0		-62.5	-62.0	-63.5	-63.0	-62.0	-63.0	-61.5	-61.0	-61.5	-62.5	-60.0	-59.5	
512 QAM	-61.0		-59.5	-59.0	-60.5	-60.0	-59.0	-60.0	-58.5	-58.0	-58.5	-59.5	-57.0	-56.5	
1024 QAM Strong	-58.5		-57.0	-56.5	-58.0	-57.5	-56.5	-57.5	-56.0	-55.5	-56.0	-57.0	-54.5	-54.0	
1024 QAM Light	-57.5		-56.0	-55.5	-57.0	-56.5	-55.5	-56.5	-55.0	-54.5	-55.0	-56.0	-53.5	-53.0	
2048 QAM	-55.5		-54.0	-53.5	-55.0	-54.5	-53.5	-54.5	-53.0	-52.5	-53.0	-54.0	-51.5	-51.0	

ETHERNET THROUGHPUT

Modulation	Channel Size	Ethernet Throughput (Mbps)			Channel Size	Ethernet Throughput (Mbps)				
		No Compression	L2 Compression	Multi-Layer Compression		No Compression	L2 Compression	Multi-Layer Compression		
QPSK	7 MHz	8	8-10	9-27	10 MHz	12	12-14	13-40		
8 PSK		13	13-14	13-40		19	19-21	20-61		
16 QAM		18	18-20	19-58		26	26-30	27-83		
32 QAM		24	24-27	25-77		34	35-39	36-111		
64 QAM		30	30-34	31-95		42	43-48	45-137		
128 QAM		36	36-41	37-114		51	51-58	53-164		
256 QAM		41	41-47	43-132		58	59-67	61-188		
512 QAM		44	44-50	46-141		64	65-73	67-206		
1024 QAM Strong		47	47-54	49-151		67	68-77	71-216		
1024 QAM Light		50	51-57	53-161		72	72-82	75-230		
QPSK	14 MHz	19	19-22	20-62	20 MHz	27	28-31	29-88		
8 PSK		29	29-33	30-93		41	41-47	43-132		
16 QAM		40	40-45	42-128		56	57-64	59-180		
32 QAM		53	53-60	55-169		74	75-85	78-238		
64 QAM		65	65-74	68-208		91	92-104	96-293		
128 QAM		78	79-89	82-251		110	111-126	116-354		
256 QAM		89	90-102	94-287		125	126-142	131-401		
512 QAM		98	99-112	103-316		136	137-156	143-438		
1024 QAM Strong		104	105-119	109-335		145	146-165	152-466		
1024 QAM Light		111	111-126	116-355		154	155-176	162-495		
2048 QAM		NA	NA	NA		164	165-187	172-528		
QPSK		25 MHz	35	35-40		37-112	28 MHz	40	40-45	42-127
8 PSK			52	53-60		55-168		59	60-68	62-191
16 QAM			71	72-81		75-229		81	82-93	85-261
32 QAM	94		95-107	99-302	107	108-122		112-344		
64 QAM	116		117-132	121-372	132	133-150		138-424		
128 QAM	139		141-159	147-448	159	160-181		166-509		
256 QAM	159		160-181	167-511	181	182-206		190-580		
512 QAM	175		177-200	184-564	199	201-227		209-640		
1024 QAM Strong	186		188-213	196-599	212	214-242		223-681		
1024 QAM Light	198		199-226	208-636	225	227-257		236-723		
2048 QAM	212	214-242	223-682	241	243-275	253-775				
QPSK	30 MHz	41	41-47	43-132	40 MHz	57	57-65	60-183		
8 PSK		61	62-70	65-197		85	86-97	89-273		
16 QAM		84	85-96	88-270		116	117-132	121-372		
32 QAM		111	111-126	116-355		152	154-174	160-490		
64 QAM		136	137-155	143-437		187	189-214	197-602		
128 QAM		164	166-188	173-528		226	228-258	238-728		
256 QAM		188	190-215	198-604		243	245-278	256-782		
512 QAM		209	211-238	220-672		267	269-304	280-833		
1024 QAM Strong		222	224-253	233-714		302	305-345	318-833		
1024 QAM Light		236	238-269	248-758		321	324-366	337-833		
2048 QAM	256	258-292	268-821	347	350-396	365-833				
QPSK	50 MHz	69	70-79	73-223	56 MHz	81	82-93	86-262		
8 PSK		108	108-123	113-346		121	122-138	127-390		
16 QAM		146	147-166	153-469		165	166-188	173-531		
32 QAM		183	185-209	193-589		217	219-248	228-699		
64 QAM		237	239-270	249-761		267	269-304	280-833		
128 QAM		276	278-315	290-833		323	325-368	339-833		
256 QAM		327	330-374	344-833		369	372-421	388-833		
512 QAM		355	358-405	373-833		401	404-457	421-833		
1024 QAM Strong		387	390-441	406-833		436	439-497	458-833		
1024 QAM Light		411	414-468	431-833		462	466-528	486-833		
2048 QAM	443	446-505	465-833	500	502	505-572				

PTP 820 All Indoor Solution SPECIFICATION SHEET

Modulation	Channel Size	Ethernet Throughput (Mbps)			Channel Size	Ethernet Throughput (Mbps)		
		No Compression	L2 Compression	Multi-Layer Compression		No Compression	L2 Compression	Multi-Layer Compression
QPSK	60 MHz	86	86-98	90-276	80 MHz	113	114-129	119-363
8 PSK		125	126-143	131-402		160	161-183	168-515
16 QAM		174	175-198	182-558		228	230-260	240-733
32 QAM		229	230-261	240-734		300	302-342	315-833
64 QAM		281	283-320	295-833		367	369-418	385-833
128 QAM		339	342-387	356-833		433	436-494	455-833
256 QAM		391	394-447	411-833		499	503-569	524-833
512 QAM		421	424-480	442-833		548	552-625	576-833
1024 QAM Strong		458	461-522	481-833		596	601-680	626-833
1024 QAM Light		486	490-555	511-833		633	638-722	665-833
2048 QAM		527	531-601	553-833		NA	NA	NA

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