

# PTP 820E Millimeter Wave Radio



## Specifications

### RADIO

- 71-76 GHz, 81-86 GHz
- 1+0, 2+0
- Multiband with PTP 820C, PTP 820C HP, PTP 820S or third-party microwave radios

#### Radio Features

- BPSK to 1024 QAM w/ACM
- Built-in frequency scanner to determine the current interference level for each channel

### ETHERNET

#### Ethernet Interfaces

- Port 1: RJ45, 10/100/1000Base-T, PoE
- Port 2: SFP cage which support regular SFP 1Gb/s (Eth 2), or CSFP 1Gb/s (Eth2 + Eth3)
- Port 3: Two options:
  - 1x10/100/1000Base-T used for management only; OR
  - SFP cage which support regular SFP 1 Gb/s (Eth1), or SFP+ 10Gb/s (Eth1)

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 per port
  - Deep buffering (configurable up to 64 Mbit per queue)

- WRED
- 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)
- Note: not available for 500MHz channel
- Adaptive Bandwidth Notification (ABN), also known as EOAM

### MANAGEMENT PROTOCOLS

- SNMP
- REST
- SDN Support: NETCONF/YANG

### 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

#### Supported Ethernet Standards

- 10/100/1000base-T/X (IEEE 802.3)
- Optical 10Gbase-X (IEEE 802.3ae)
- Ethernet VLANs (IEEE 802.3ac)
- Virtual LAN (VLAN, IEEE 802.1Q)
- Class of service (IEEE 802.1p)
- Provider bridges (Q-in-Q – 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

#### Security

- Secured protocols (HTTPS, SNMPV3, SSH, SFTP)
- RADIUS authentication and authorization
- TACACS+ authentication and authorization (session-based)

#### Standards Compliance

- Radio Spectral Efficiency: EN 302 217-2-2
- 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: IP67

- 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 (Direct Mount): 220mm x 198mm x 75mm (8.66" x 7.8" x 2.95"), 3kg (6.6 lbs.)

- Dimensions (43dBi integrated Antenna): 280mm x 280mm x 110mm (11.02" x 11.02" x 4.33"), 3.5kg (7.7 lbs.)
- Pole Diameter Range (for Remote Mount Installation): 8.89 cm – 11.43 cm (3.5" – 4.5")

### Environmental Specifications

## PTP 820E SPECIFICATION SHEET

- -33°C to +55°C (-45°C to +60°C extended), -27°F to +131°F (-49°F to +140°F extended)

### Power Input Specifications

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

### Power Consumption Specifications

- Active: 43W; Standby: 36W

## Specifications

### CAPACITY THROUGHPUT

	Capacity (Mbps)	Capacity De-Dup	Capacity (Mbps)	Capacity De-Dup
	Channel Size			
Modulation	62.5 MHz		125 MHz	
BPSK	39-48	41-149	87-106	91-330
QPSK	90-110	95-343	185-226	194-704
8 QAM	136-166	143-518	276-337	290-1050
16 QAM	185-227	195-706	376-460	395-1431
32 QAM	244-298	256-928	496-606	521-1885
64 QAM	298-364	313-1134	609-744	640-2316
128 QAM	359-439	377-1365	734-897	770-2500
256 QAM	410-501	430-1558	835-1021	877-2500
512 QAM	450-550	473-1712	920-1125	966-2500
1024 QAM	502-613	527-1908	-	-
	250 MHz		500 MHz	
BPSK	177-217	186-675	354-433	372-1348
QPSK	374-457	393-1423	748-914	785-2500
8 QAM	556-680	584-2116	1112-1359	1168-2500
16 QAM	756-925	794-2500	1512-1849	1588-2500
32 QAM	995-1217	1045-2500	1990-2433	2090-2500
64 QAM	1222-1494	1283-2500	2443-2500	2500-2500
128 QAM	1471-1799	1545-2500	-	-
256 QAM	1650-2017	1733-2500	-	-

### TRANSMIT POWER

	Channel Size			
Transmit Power (dBm)	62.5 MHz	125 MHz	250 MHz	500 MHz
BPSK	18	18	18	15
QPSK	18	18	18	15
8 PSK	18	18	16	11
16 QAM	17	17	15	10
32 QAM	17	17	15	10
64 QAM	16	16	14	9
128 QAM	16	16	14	-
256 QAM	15	15	13	-
512 QAM	14	14	-	-
1024 QAM	13	-	-	-

### RECEIVE SENSITIVITY

	Channel Size			
Receiver Threshold (RSL) (dBm @ BER = 10 <sup>-6</sup> )	62.5 MHz	125 MHz	250 MHz	500 MHz
BPSK	-83.0	-80.0	-77.0	-74.0
QPSK	-79.5	-76.5	-73.5	-70.5
8 PSK	-75.5	-72.5	-70.0	-67.0
16 QAM	-73.0	-69.5	-67.0	-64.0
32 QAM	-69.0	-66.0	-63.0	-60.0
64 QAM	-66.0	-63.0	-60.0	-57.0
128 QAM	-63.0	-60.0	-57.0	-
256 QAM	-59.5	-57.0	-54.0	-
512 QAM	-57.0	-54.0	-	-
1024 QAM	-54.0	-	-	-