

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	14 MHz		28 MHz	
BPSK	6-8	7-25	17-21	18-64
QPSK	17-20	17-63	38-46	39-143
8 QAM	135-165	28-100	57-70	60-218
16 QAM	-	-	79-97	83-302
32 QAM	-	-	106-129	111-401
64 QAM	-	-	131-160	137-497
128 QAM	-	-	158-193	166-600
256 QAM	-	-	180-220	189-685
512 QAM	-	-	199-244	209-758
	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)	14 MHz	28 MHz	62.5 MHz	125 MHz	250 MHz	500 MHz
BPSK	18	18	18	18	18	15
QPSK	18	18	18	18	18	15
8 PSK	18	18	18	18	16	11
16 QAM	-	17	17	17	15	10
32 QAM	-	17	17	17	15	10
64 QAM	-	16	16	16	14	9
128 QAM	-	16	16	16	14	-
256 QAM	-	15	15	15	13	-
512 QAM	-	14	14	14	-	-
1024 QAM	-	-	13	-	-	-

RECEIVE SENSITIVITY

Receiver Threshold (RSL) (dBm @ BER = 10 ⁻⁶)	Channel Size					
	14 MHz	28 MHz	62.5 MHz	125 MHz	250 MHz	500 MHz
BPSK	-90.5	-87.5	-83.0	-80.0	-77.0	-74.0
QPSK	-87.2	-84.6	-79.5	-76.5	-73.5	-70.5
8 PSK	-83.1	-80.6	-75.5	-72.5	-70.0	-67.0
16 QAM	-	-77.4	-73.0	-69.5	-67.0	-64.0
32 QAM	-	-73.9	-69.0	-66.0	-63.0	-60.0
64 QAM	-	-70.8	-66.0	-63.0	-60.0	-57.0
128 QAM	-	-67.6	-63.0	-60.0	-57.0	-
256 QAM	-	-64.6	-59.5	-57.0	-54.0	-
512 QAM	-	-62.4	-57.0	-54.0	-	-
1024 QAM	-	-	-54.0	-	-	-