

PTP 820E Millimeter Wave Radio



Specifications

RADIO

- 71-76 GHz, 81-86 GHz
 - 1+0, 2+0
 - Multiband with PTP 820C
- Radio Features
- BPSK to 1024 QAM w/ACM

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 on 500MHz channels
- Adaptive Bandwidth Notification (ABN), also known as EOAM

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

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)

Standards Compliance

- Radio Spectral Efficiency: EN 302 217-2-2, FCC Part 101
- 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(H), 198mm(W), 75mm(D), 3kg
- Dimensions (43dBi integrated Antenna): 280mm(H), 280mm(W), 110mm(D), 3.5kg
- 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

- Active: 43W; Standby: 35W

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 (supporting two redundant DC feeds each supporting ±(18-60)V)

Specifications

TRANSMIT POWER

Transmit Power (dBm)	Channel Size (MHz)			
	62.5	125	250	500
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

Receiver Threshold (RSL) (dBm @ BER = 10 ⁻⁶)	Channel Size (MHz)			
	62.5	125	250	500
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	-	-	-

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
BPSK	62.5 MHz	39	39-44	41-128	125 MHz	86	86-98	90-283
QPSK		89	90-102	94-295		183	184-209	192-604
8 PSK		134	135-154	141-444		272	275-312	286-901
16 QAM		183	185-210	192-606		371	374-425	390-1228
32 QAM		241	243-276	253-797		489	493-560	514-1619
64 QAM		294	296-337	309-973		601	606-688	632-1989
128 QAM		354	357-405	372-1172		724	730-829	761-2103
256 QAM		404	407-463	425-1337		824	831-944	866-2127
512 QAM		444	448-509	467-1470		908	915-1039	954-2145
1024 QAM		495	499-567	520-1638		995	1002-1138	1045-2164
BPSK	250 MHz	175	177-200	184-580	500 MHz	354	357-406	372-1172
QPSK		369	372-423	388-1222		742	748-850	780-2106
8 PSK		549	553-628	577-1816		1102	1110-1261	1158-2188
16 QAM		747	752-855	785-2109		1497	1509-1714	1573-2277
32 QAM		983	990-1125	1032-2162		1969	1985-2123	2069-2383
64 QAM		1206	1215-1380	1267-2211		2416	2435-2404	2467-2404
128 QAM		1452	1464-1662	1526-2266		-	-	-
256 QAM		1629	1642-1864	1712-2306		-	-	-