

PTP 850E Millimeter Wave Radio



Specifications

RADIO

- 71-76 GHz, 81-86 GHz
- 1+0, 2+0 (XPIC), 1+1 HSB
- Multiband with PTP 820C, PTP 820C HP

Radio Features

- BPSK to 512 QAM with hitless ACM
- Adaptive Coding Modulation and Bandwidth (ACMB)
- XPIC
- Built-in frequency scanner to determine the current interference level for each channel
- Multiband with PTP 820C, PTP 820C HP, PTP 820S, or third party microwave radio
- ATPC*
- Adaptive Bandwidth Notification (EOAM)*

ETHERNET

Ethernet Interfaces

- Port 1: DC port
- Port 2: RJ45, 1 GE/Management/PoE
- Port 3: SFP cage, 1/ 2.5 GE Multiband Port
- Port 4:
 - QSFP – 4 x 1/10 GE or 1 x 40 GE traffic interface (QSFP+)
 - Option for SFP+ (1x10GE) with adaptor
- Port 5: SFP, 10 GE (SFP+)
Note: SFP+ and QSFP+ devices must be of industrial grade (-40°C to +85°C)

Ethernet Features

- MTU – 9612 Bytes
- Quality of Service
 - Multiple Classification criteria (VLAN ID, p-bits, IPv4 DSCP, IPv6 TC, MPLS EXP)
 - 8 CoS queues per port
 - Deep buffering (configurable up to 64 Mbit per queue)
 - WRED
 - P-bit marking/remarking
- 4K VLANs
- VLAN add/remove/translate
- MSTP, ERP (ITU-T G.8032)
- Y.1731 Ethernet OAM
- Y.1731 Ethernet Bandwidth Notification (ETH-BN)

MANAGEMENT

- SNMP
- REST
- SDN Support:
 - NETCONF/YANG

SYNCHRONIZATION

- Enhanced Ethernet Equipment Clock (eEEEC) Specification (G.8262.1)
- PTP Telecom Boundary Clock (T-BC) and Time Slave Clock (T-TSC) Specification (G.8273.2)
- PTP Telecom Transparent Clock (T-TC) Specification (G.8273.3)
- Enhanced SyncE Network Limits (G.8261, clause 9.2.1)
- Enhanced PTP Network Limits (G.8271.1)
- Ethernet Synchronization Messaging Channel (ESMC) (G.8264, clause 11)

- PTP Telecom Profile for Time (Full Timing Support) (G.8275.1)
- Precision Time Protocol (version 2, IEEE1588-2008)

STANDARD

MEF

- Carrier Ethernet 2.0
- #### Supported Ethernet Standards
- 10/100/1000base-T/X (IEEE 802.3)
 - Optical 10Gbase-LR (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 802.1ax)
 - 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)
- AES Encryption – AES 256

STANDARDS COMPLIANCE

- Radio Spectral Efficiency: EN 302 217-2
- Certification ordinance Article 2-1-31-5, Land Mobile Station in the 80GHz band (Japan)

- EMC: EN 301 489-1, EN 301 489-4, Class A(Europe)
FCC 47 CFR, part 15, subpart B, class A(US)
ICES-003, Class A(Canada)
TEC/SD/DD/EMC-221/05
TEC/SD/DD/EMC-221/05/OCT-16, Class A (India)
IEC 61000-4-29
- Surge: EN61000-4-5, Class 4 (for PWR and ETH1/PoE ports)
- Safety: EN 60950-1, EN 62368-1, IEC 60950-1, IEC 62368-1, UL60950-1, UL 62368-1, CAN/CSA C22.2 NO 60950-1, CAN/CSA C22.2 NO 62368-1, EN60950-22, IEC 60950-22, UL 60950-22, CAN/CSA C22.2 NO 60950-22

- Storage: ETSI EN 300 019-1-1 Class 1.2
- Transportation: ETSI EN 300 019-1-2 Class 2
- Ingress Protection: IP67

TECHNICAL SPECIFICATION

Mechanical Specifications

- Dimensions (Direct Mount): 322mm(H), 227/270mm(W), 86mm(D), 5.5kg
12.67”(H), 8.93”/10.62”(W), 3.38”(D), 12.12 lbs.
- Dimensions (43dBi integrated Antenna): 341mm(H), 270/276mm(W), 103mm(D), 7kg
13.42”(H), 10.62/10.86”(W), 4.05”(D), 15.43 lbs.

PTP 850E SPECIFICATION SHEET

- Pole Diameter Range (for Remote Mount Installation):
8.89 cm – 11.43 cm
3.5” – 4.5”

Environmental Specifications

- -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
- DC Input range: -40.5 to -60 VDC
- Power Redundancy option by using both a DC power input and a passive PoE injector simultaneously

Power Consumption Specifications

- Active: 58; Standby: 47W

*Support in future release, for availability, please check release notes

Specifications

TRANSMIT POWER (dBm)

Channel Size	62.5	125	250	500	750	1000	1250	1500	1750	2000
¼ BPSK	–	–	20	20	20	20	20	20	20	20
½ BPSK	–	20	20	20	20	20	20	20	20	20
BPSK	20	20	20	20	20	20	20	20	20	20
4 QAM	20	20	20	20	20	20	20	20	20	20
8 QAM	18	18	18	18	18	18	18	18	18	18
16 QAM	17	17	17	17	17	17	17	17	17	16
32 QAM	17	17	17	17	17	17	17	17	17	16
64 QAM	16	16	16	16	16	16	16	16	16	15
128 QAM	16	16	16	16	16	16	16	16	16	15
256 QAM	15	15	15	15	15	15	15	–	–	–
512 QAM	–	14	14	14	–	–	–	–	–	–

RECEIVE SENSITIVITY (dBm @10E-6)

Channel Size	62.5	125	250	500	750	1000	1250	1500	1750	2000
¼ BPSK	–	–	-81.8	-78.8	-76.5	-75.8	-74.0	-74.0	-73.0	-73.4
½ BPSK	–	-81.8	-78.8	-75.8	-73.5	-72.8	-71.0	-71.0	-70.0	-70.4
BPSK	-80.0	-78.8	-75.8	-72.8	-70.5	-69.8	-68.0	-68.0	-67.0	-67.4
4 QAM	-78.0	-76.7	-73.7	-70.5	-68.5	-67.6	-66.0	-65.5	-65.0	-64.9
8 QAM	-73.2	-72.1	-69.1	-65.8	-63.5	-62.8	-61.0	-60.5	-60.0	-59.9
16 QAM	-71.3	-70.3	-67.3	-64.3	-62.5	-61.2	-60.0	-59.5	-58.0	-58.6
32 QAM	-70.0	-67.8	-64.8	-60.7	-60.0	-58.6	-57.0	-56.5	-56.0	-55.5
64 QAM	-68.3	-65.5	-61.9	-57.6	-57.5	-55.7	-55.0	-53.5	-53.0	-52.4
128 QAM	-64.1	-63.0	-58.9	-54.7	-54.5	-52.6	-52.0	-50.5	-50.0	-48.0
256 QAM	-61.0	-59.5	-56.0	-50.4	-51.5	-49.8	-48.5	–	–	–
512 QAM	–	-55.4	-52.4	-49.4	–	–	–	–	–	–

THROUGHPUT CAPACITY (Mbps)

Channel Size	62.5	125	250	500	750	1000 MHz	1250	1500	1750	2000
BPSK – 1/4 channel spacing	37-48	39-51	46-60	95-123	134-175	185-239	231-299	268-351	303-392	323-419
BPSK – 1/2 channel spacing	77-99	81-104	92-120	192-248	268-351	370-480	476-616	551-721	621-804	663-859
BPSK – full channel spacing	116-150	163-211	186-241	384-498	551-721	761-985	952-1233	1101-1443	1242-1609	1326-1717
4 QAM	155-201	246-318	373-484	791-1024	1100-	1524-1974	1905-2468	2207-2891	2487-3222	2652-3436
8 QAM	195-252	328-425	576-747	1188-1539	1654-	2287-2962	2859-3703	3312-4338	3733-4836	4128-5347
16 QAM	234-303	421-546	768-995	1585-2053	2207-	3050-3951	3813-4939	4418-5787	4979-6450	5505-7131
32 QAM	273-354	505-654	960-1244	1982-2567	2759-	3813-4939	4768-6176	5523-7234	6224-8062	6869-8897
64 QAM	313-405	590-764	1154-1494	2377-3080	3311-	4575-5927	5721-7410	6623-8675	7455-9439	8243-9439
128 QAM	–	674-873	1346-1743	2774-3594	3864-	5339-6916	6675-8646	7718-9438	8693-9674	9439-9941
256 QAM	–	759-983	1538-1993	3171-4108	4416-	6101-7904	7614-9439	–	–	–
512 QAM	–	–	1731-2242	3568-4622	–	–	–	–	–	–