

PTP 850E Millimeter Wave Radio



Specifications

RADIO

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

Radio Features

- BPSK to 512 QAM with hitless ACM
- Adaptive Coding Modulation and Bandwidth (ACMB)
- ATPC*
- Adaptive Bandwidth Notification (ABN)*

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
- Y.1731 Ethernet OAM
- Adaptive Bandwidth Notification (ABN), also known as EOAM

SYNCHRONIZATION

- Enhanced Ethernet Equipment Clock (eEEC) Specification (G.8262Opt 1 and Opt 2)

- PTP Telecom Boundary Clock (T-BC) and Time Slave Clock (T-TSC) Specification (G.8273.2, Class C)*
- PTP Telecom Transparent Clock (T-TC) Specification (G.8273.3, Class C)*
- Enhanced SyncE Network Limits (G.8261, clause 9.2)
- 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

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)
- AES Encryption – AES 256*

Standards Compliance

- Radio Spectral Efficiency: EN 302 217-2
- 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-221/05TEC/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
- Dimensions (43dBi integrated Antenna): 341mm(H), 270/276mm(W), 103mm(D), 7kg
- 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) -27°F to +131°F (-49°F to +140°F extended)

Power Input Specifications

- Standard Input: -48 VDC
- IDU 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

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)

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

Specifications

TRANSMIT POWER (dBm)

Channel Spacing (MHz)	250	500	1000	2000
BPSK	18	18	18	18
4 QAM	18	18	18	18
8 QAM	17	17	17	16
16 QAM	17	17	17	16
32 QAM	17	17	17	16
64 QAM	16	16	16	15
128 QAM	16	16	16	15
256 QAM	15	15	15	-
512 QAM	12	12	-	-

RECEIVE SENSITIVITY

Channel Spacing (MHz)	250	500	1000	2000
BPSK	-75.8	-72.8	-69.8	-67.4
4 QAM	-73.7	-70.5	-67.6	-64.9
8 QAM	-69.1	-65.8	-62.8	-59.9
16 QAM	-67.3	-64.3	-61.2	-58.6
32 QAM	-64.8	-60.7	-58.6	-55.5
64 QAM	-61.9	-57.6	-55.7	-52.4
128 QAM	-58.9	-54.7	-52.6	-48.0
256 QAM	-56.0	-50.4	-49.8	-
512 QAM	-52.4	-49.4	-	-

ETHERNET THROUGHPUT

Channel Spacing (MHz)	250	500	1000	2000
BPSK	198-242	396-484	775-947	1389-1698
4 QAM	396-484	792-968	1550-1895	2779-3397
8 QAM	594-726	1188-1453	2326-2843	4170-5097
16 QAM	792-968	1585-1937	3102-3792	5560-6797
32 QAM	990-1211	1981-2421	3877-4740	6951-8497
64 QAM	1189-1453	2377-2906	4653-5688	8341-9997
128 QAM	1387-1695	2773-3390	5429-6636	9997-9997
256 QAM	1585-1937	3170-3875	6204-7585	-
512 QAM	1783-2179	3566-4359	-	-