PTP 850E Millimeter Wave Radio

QUICK LOOK:

PTP 850E, a Millimeter wave radio capable of 512 QAM with ACM

- **Support 71-76 GHz, 81-86 GHz**
- **Support 1+0, 2+0 (XPIC), 1+1 HSB configuration**
- **Built-in frequency scanner to determine the current interference level for each channel**

Radio

71-76 GHz, 81-86 GHz
1+0, 2+0 (XPIC), 1+1 HSB

Radio Features

BPSK to 512 QAM with hitless ACMB (Adaptive Coding Modulation and Bandwidth)
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)

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Management Protocols

SNMP

REST

SDN Support: NETCONF/YANG

Synchronization

Enhanced Ethernet Equipment Clock (eEEC) 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)

Security

Secured protocols (HTTPS, SNMPV3, SSH, SFTP)

RADIUS authentication and authorization

TACACS+ authentication and authorization (session-based)

AES Encryption – AES 256

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

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

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.

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*

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Transmit Power (dBm)

Channel Size	62.5 MHz	125 MHz	250 MHz	500 MHz	750	1000 MHz	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	–	–	–	–	–	–

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Throughput Sensitivity (Mbps)

Channel Size	62.5 MHz	125 MHz	250 MHz	500	750 MHz	1000 MHz	1250	1500 MHz	1750	2000 MHz
BPSK – 1/4 channel spacing	37-48	39-51	46-60	92-120	136-176	185-239	231-299	271-351	303-392	323-419
BPSK – 1/2 channel spacing	77-99	81-104	92-120	186-241	271-351	370-480	476-616	557-722	621-804	663-859
BPSK – full channel spacing	116-150	163-211	186-241	372-482	557-722	761-985	952-1233	1114-1443	1242-1609	1326-1717
4 QAM	155-201	246-318	373-484	766-992	1115-1444	1524-1974	1905-2468	2232-2892	2487-3222	2652-3436
8 QAM	195-252	328-425	576-746	1150-1489	1673-2167	2287-2962	2859-3703	3349-4339	3733-4836	4128-5347
16 QAM	234-303	421-546	768-994	1533-1986	2232-2892	3050-3951	3813-4939	4467-5787	4979-6450	5505-7131
32 QAM	273-354	505-654	960-1244	1916-2482	2790-3614	3813-4939	4768-6176	5584-7234	6224-8062	6869-8897
64 QAM	313-405	590-764	1153-1494	2301-2980	3348-4337	4575-5927	5721-7410	6697-8675	7453-9655	8241-9882
128 QAM	–	674-873	1346-1743	2684-3476	3907-5061	5339-6916	6675-8646	7804-9882	8691-9882	9882-9940
256 QAM	–	759-983	1538-1993	3068-3975	4416-5784	6101-7904	7612-9861	–	–	–
512 QAM	–	–	1730-2242	3452-4472	–	185-239	231-299	271-351	303-392	323-419

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