PTP 850C Licensed Microwave Radio

QUICK LOOK:

- **6, 11, 18 and 23 GHz**
- **4096 QAM, 224 MHz**
- **Up to 4 Gbps @224 MHz with XPIC**
- **Field Changeable Diplexer**
- **Multiple 10GE ports**
- **4+0 configuration with Layer 1 aggregation**
- **1+0 to 4+0, XPIC, 1+1/2+2 HSB, E/W**
- **LoS 4x4 MIMO**
- **Advanced Frequency Reuse**
- **Multi-band (E-band & MW)**



Radio

6, 11, 18 and 23 GHz

1+0 up to 4+0 Single/Dual Polarization, 1+1/2+2 HSB, 1+1/2+2 HSB-SD, 2+0 XPIC, 2x2+0 East/West Single/Dual Polarization

Radio Features

4+0 Layer 1 Link Bonding
Link Bonding with PTP 820C and PTP 820C-HP
Multiband with Layer 1 Link Bonding with PTP 850E

Protection: 1+1 HSB/2+2 HSB, 1+1 HSB-SD*

High spectral utilization: BPSK to 4096 QAM w/ACM

Channel bandwidth: 14 to 224 MHz*

XPIC

2x2/4x4 LoS MIMO*

Advanced Frequency Reuse (AFR)*

Advanced Space Diversity (ASD)*

Ethernet

Ethernet Interfaces

Port 1: DC Port

Port 2: RJ-45 - Electric Multi Rate 1/2.5/10 Gbps traffic interface/ PoE port

Port 3: SFP – 1/2.5G traffic interface and Dual band port

Port 4: SFP – 1/10GE traffic interface/MIMO extension port (SFP+)

Port 5: SFP – 1/10GE traffic interface (SFP+)

Port 6: RJ-45 – Management/Protection interface - 100 Base-T

Ethernet Features

MTU – 9612 Bytes

Up to 1024 Ethernet Services, plus one pre-defined management service

MAC address learning with 64K MAC address

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

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

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

HTTPS

SNMPv3

SSH

SFTP

RADIUS authentication and authorization

TACACS+ Authentication, Authorization, and Accounting (session-based)

AES Encryption – AES 256*

Standard

MEF

Carrier Ethernet 2.0 (CE 2.0)

Supported Ethernet Standards

10/100/1000base-T/X (IEEE 802.3)

10GBase-LR (IEEE 802.3)

Ethernet VLANs (IEEE 802.3ac)

Virtual LAN (VLAN, IEEE 802.1Q)

Class of service (IEEE 802.1p)

Provider bridges (QinQ – 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 302 217-2-2

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, CSA C22.2.60950-22

Storage: ETSI EN 300 019-1-1 Class 1.2

Transportation: ETSI EN 300 019-1-2 Class 2.

Ingress Protection: IP67

Standard

Mechanical Specifications

Dimensions (Direct Mount):

322mm(H), 227/270mm(W), 86mm(D), 6 kg

12.67”(H), 8.93”/10.62”(W), 3.38”(D), 13.2 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 Consumption Specifications

2+0 Operation: 6-11 GHz: 73W

2+0 Operation: 13-38 GHz: 63W

1+0 Operation(one carrier muted): 6-11 GHz: 63W

1+0 Operation(one carrier muted): 13-38 GHz: 55W

Both carrier muted:

6-11 GHz: 38W

13-38 GHz: 40W

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)

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Standard

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 (a PoE supporting two redundant DC feeds each supporting ±(18-60)V is available)

Capacity (Mbps)

Modulation	10 MHz	14 MHz	20 MHz	25 MHz	28/30 MHz	40 MHz
BPSK	–	–	10-13	14-17	18-22	25-31
QPSK	–	16-20	25-30	32-40	40-48	54-67
8 QAM	–	26-32	39-47	50-61	59-72	83-101
16 QAM	23-28	37-46	54-66	69-84	84-102	113-139
32 QAM	32-39	50-61	72-88	92-112	111-136	150-184
64 QAM	40-49	62-76	89-109	113-139	138-168	185-227
128 QAM	48-59	76-93	108-132	137-168	166-203	225-275
256 QAM	56-68	87-106	123-150	157-192	192-234	242-296
512 QAM	62-75	96-118	134-164	174-212	204-249	265-324
1024 QAM Strong	65-79	102-125	143-175	185-226	223-272	301-368
1024 QAM Light	69-85	108-132	152-186	196-240	236-289	320-391
2048 QAM	–	113-138	162-198	211-258	258-315	346-423
4096 QAM	–	–	–	228-279	275-336	366-448

Modulation	50 MHz	56/60 MHz	80 MHz	112 MHz	160 MHz	224 MHz
BPSK	33-40	40-49	54-66	79-97	112-137	162-198
QPSK	67-82	83-102	111-135	162-198	228-279	328-401
8 QAM	105-129	123-150	158-193	242-296	340-416	489-597
16 QAM	144-176	172-210	227-277	330-404	463-566	665-812
32 QAM	181-222	227-277	298-365	435-532	610-745	875-1069
64 QAM	235-287	279-341	366-447	535-654	776-948	1111-1358
128 QAM	275-336	338-413	433-529	647-791	905-1107	1298-1587
256 QAM	326-399	391-478	498-609	740-905	1035-1266	1484-1815
512 QAM	354-433	420-514	548-670	804-983	1171-1431	1678-2051
1024 QAM Strong	386-472	457-559	596-729	872-1066	1301-1590	1860-2274
1024 QAM Light	410-501	486-594	633-774	926-1132	1301-1590	–
2048 QAM	442-541	527-644	670-820	999-1221	1431-1749	2009-2456
4096 QAM	459-561	542-663	708-865	1034-1264	–	–

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Receive Sensitivity (dBm @10E-6)

20 MHz	6	7-8	10	11	13	15	18	23	24	26	28–31	32	36	38
BPSK	-91.9	-91.4	-91.3	-90.8	-90.8	-90.5	-91.9	-90.4	-89.3	-89.8	-89.8	-89.6	-89.6	-89.9
QPSK	-89.0	-88.5	-88.4	-87.9	-87.9	-87.6	-89.0	-87.5	-86.4	-86.9	-86.9	-86.7	-86.7	-87.0
8 PSK	-85.0	-84.5	-84.4	-83.9	-83.9	-83.6	-85.0	-83.5	-82.4	-82.9	-82.9	-82.7	-82.7	-83.0
16 QAM	-82.1	-81.6	-81.5	-81.0	-81.0	-80.7	-82.1	-80.6	-79.5	-80.0	-80.0	-79.8	-79.8	-80.1
32 QAM	-78.7	-78.2	-78.1	-77.6	-77.6	-77.3	-78.7	-77.2	-76.1	-76.6	-76.6	-76.4	-76.4	-76.7
64 QAM	-75.5	-75.0	-74.9	-74.4	-74.4	-74.1	-75.5	-74.0	-72.9	-73.4	-73.4	-73.2	-73.2	-73.5
128 QAM	-72.5	-72.0	-71.9	-71.4	-71.4	-71.1	-72.5	-71.0	-69.9	-70.4	-70.4	-70.2	-70.2	-70.5
256 QAM	-69.4	-68.9	-68.8	-68.3	-68.3	-68.0	-69.4	-67.9	-66.8	-67.3	-67.3	-67.1	-67.1	-67.4
512 QAM	-66.6	-66.1	-66.0	-65.5	-65.5	-65.2	-66.6	-65.1	-64.0	-64.5	-64.5	-64.3	-64.3	-64.6
1024 QAM Strong	-63.7	-63.2	-63.1	-62.6	-62.6	-62.3	-63.7	-62.2	-61.1	-61.6	-61.6	-61.4	-61.4	-61.7
1024 QAM Light	-63.0	-62.5	-62.4	-61.9	-61.9	-61.6	-63.0	-61.5	-60.4	-60.9	-60.9	-60.7	-60.7	-61.0

25 MHz	6	7-8	10	11	13	15	18	23	24	26	28–31	32	36	38
BPSK	-90.9	-90.4	-90.3	-89.8	-89.8	-89.5	-90.9	-89.4	-88.3	-88.8	-88.8	-88.6	-88.6	-88.9
QPSK	-87.9	-87.4	-87.3	-86.8	-86.8	-86.5	-87.9	-86.4	-85.3	-85.8	-85.8	-85.6	-85.6	-85.9
8 PSK	-83.9	-83.4	-83.3	-82.8	-82.8	-82.5	-83.9	-82.4	-81.3	-81.8	-81.8	-81.6	-81.6	-81.9
16 QAM	-81.0	-80.5	-80.4	-79.9	-79.9	-79.6	-81.0	-79.5	-78.4	-78.9	-78.9	-78.7	-78.7	-79.0
32 QAM	-77.7	-77.2	-77.1	-76.6	-76.6	-76.3	-77.7	-76.2	-75.1	-75.6	-75.6	-75.4	-75.4	-75.7
64 QAM	-74.6	-74.1	-74.0	-73.5	-73.5	-73.2	-74.6	-73.1	-72.0	-72.5	-72.5	-72.3	-72.3	-72.6
128 QAM	-71.5	-71.0	-70.9	-70.4	-70.4	-70.1	-71.5	-70.0	-68.9	-69.4	-69.4	-69.2	-69.2	-69.5
256 QAM	-68.4	-67.9	-67.8	-67.3	-67.3	-67.0	-68.4	-66.9	-65.8	-66.3	-66.3	-66.1	-66.1	-66.4
512 QAM	-65.5	-65.0	-64.9	-64.4	-64.4	-64.1	-65.5	-64.0	-62.9	-63.4	-63.4	-63.2	-63.2	-63.5
1024 QAM Strong	-62.6	-62.1	-62.0	-61.5	-61.5	-61.2	-62.6	-61.1	-60.0	-60.5	-60.5	-60.3	-60.3	-60.6
1024 QAM Light	-61.7	-61.2	-61.1	-60.6	-60.6	-60.3	-61.7	-60.2	-59.1	-59.6	-59.6	-59.4	-59.4	-59.7
2048 QAM	-59.6	-59.1	-59.0	-58.5	-58.5	-58.2	-59.6	-58.1	-57.0	-57.5	-57.5	-57.3	-57.3	-57.6
4096 QAM	-55.5	-55.0	-54.9	-54.4	-54.4	-54.1	-55.5	-54.0	-52.9	-53.4	-	-	-	-

28 MHz	6	7-8	10	11	13	15	18	23	24	26	28-31	32	36	38	42
BPSK	-90.4	-89.9	-89.8	-89.3	-89.3	-88.9	-90.3	-88.8	-87.8	-88.3	-88.3	-88.1	-88.1	-88.3	-87.3
QPSK	-87.4	-86.9	-86.8	-86.3	-86.3	-85.9	-87.3	-85.8	-84.8	-85.3	-85.3	-85.1	-85.1	-85.3	-84.3
8 PSK	-83.5	-83.0	-82.9	-82.4	-82.4	-82.0	-83.4	-81.9	-80.9	-81.4	-81.4	-81.2	-81.2	-81.4	-80.4
16 QAM	-80.5	-80.0	-79.9	-79.4	-79.4	-79.0	-80.4	-78.9	-77.9	-78.4	-78.4	-78.2	-78.2	-78.4	-77.4
32 QAM	-77.2	-76.7	-76.6	-76.1	-76.1	-75.7	-77.1	-75.6	-74.6	-75.1	-75.1	-74.9	-74.9	-75.1	-74.1
64 QAM	-74.2	-73.7	-73.6	-73.1	-73.1	-72.7	-74.1	-72.6	-71.6	-72.1	-72.1	-71.9	-71.9	-72.1	-71.1
128 QAM	-71.1	-70.6	-70.5	-70.0	-70.0	-69.6	-71.0	-69.5	-68.5	-69.0	-69.0	-68.8	-68.8	-69.0	-68.0
256 QAM	-68.0	-67.5	-67.4	-66.9	-66.9	-66.5	-67.9	-66.4	-65.4	-65.9	-65.9	-65.7	-65.7	-65.9	-64.9
512 QAM	-65.2	-64.7	-64.6	-64.1	-64.1	-63.7	-65.1	-63.6	-62.6	-63.1	-63.1	-62.9	-62.9	-63.1	-62.1
1024 QAM Strong	-62.3	-61.8	-61.7	-61.2	-61.2	-60.8	-62.2	-60.7	-59.7	-60.2	-60.2	-60.0	-60.0	-60.2	-59.2
1024 QAM Light	-61.6	-61.1	-61.0	-60.5	-60.5	-60.1	-61.5	-60.0	-59.0	-59.5	-59.5	-59.3	-59.3	-59.5	-58.5
2048 QAM	-59.1	-58.6	-58.5	-58.0	-58.0	-57.6	-59.0	-57.5	-56.5	-57.0	-57.0	-56.8	-56.8	-57.0	-56.0
4096 QAM	-55.1	-54.6	-54.5	-54.0	-54.0	-53.6	-55.0	-53.5	-52.5	-53.0	-	-	-	-	-

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Receive Sensitivity (dBm @10E-6)

30 MHz	6	7-8	10	11	13	15	18	23	24	26	28-31	32	36	38
BPSK	-90.2	-89.7	-89.6	-89.1	-89.1	-88.8	-90.2	-88.7	-87.6	-88.1	-88.1	-87.9	-87.9	-88.2
QPSK	-87.2	-86.7	-86.6	-86.1	-86.1	-85.8	-87.2	-85.7	-84.6	-85.1	-85.1	-84.9	-84.9	-85.2
8 PSK	-83.2	-82.7	-82.6	-82.1	-82.1	-81.8	-83.2	-81.7	-80.6	-81.1	-81.1	-80.9	-80.9	-81.2
16 QAM	-80.2	-79.7	-79.6	-79.1	-79.1	-78.8	-80.2	-78.7	-77.6	-78.1	-78.1	-77.9	-77.9	-78.2
32 QAM	-76.9	-76.4	-76.3	-75.8	-75.8	-75.5	-76.9	-75.4	-74.3	-74.8	-74.8	-74.6	-74.6	-74.9
64 QAM	-73.8	-73.3	-73.2	-72.7	-72.7	-72.4	-73.8	-72.3	-71.2	-71.7	-71.7	-71.5	-71.5	-71.8
128 QAM	-70.8	-70.3	-70.2	-69.7	-69.7	-69.4	-70.8	-69.3	-68.2	-68.7	-68.7	-68.5	-68.5	-68.8
256 QAM	-67.6	-67.1	-67.0	-66.5	-66.5	-66.2	-67.6	-66.1	-65.0	-65.5	-65.5	-65.3	-65.3	-65.6
512 QAM	-65.3	-64.8	-64.7	-64.2	-64.2	-63.9	-65.3	-63.8	-62.7	-63.2	-63.2	-63.0	-63.0	-63.3
1024 QAM Strong	-62.0	-61.5	-61.4	-60.9	-60.9	-60.6	-62.0	-60.5	-59.4	-59.9	-59.9	-59.7	-59.7	-60.0
1024 QAM Light	-61.2	-60.7	-60.6	-60.1	-60.1	-59.8	-61.2	-59.7	-58.6	-59.1	-59.1	-58.9	-58.9	-59.2
2048 QAM	-58.7	-58.2	-58.1	-57.6	-57.6	-57.3	-58.7	-57.2	-56.1	-56.6	-56.6	-56.4	-56.4	-56.7
4096 QAM	-55.0	-54.5	-54.4	-53.9	-53.9	-53.6	-55.0	-53.5	-52.4	-52.9	-	-	-	-

40 MHz	6	7-8	10	11	13	15	18	23	24	26	28-31	32	36	38	42
BPSK	-89.2	-88.7	-88.6	-88.1	-88.1	-87.7	-89.1	-87.6	-86.6	-87.1	-87.1	-86.9	-86.9	-87.1	-86.1
QPSK	-86.0	-85.5	-85.4	-84.9	-84.9	-84.5	-85.9	-84.4	-83.4	-83.9	-83.9	-83.7	-83.7	-83.9	-82.9
8 PSK	-82.0	-81.5	-81.4	-80.9	-80.9	-80.5	-81.9	-80.4	-79.4	-79.9	-79.9	-79.7	-79.7	-79.9	-78.9
16 QAM	-79.1	-78.6	-78.5	-78.0	-78.0	-77.6	-79.0	-77.5	-76.5	-77.0	-77.0	-76.8	-76.8	-77.0	-76.0
32 QAM	-75.7	-75.2	-75.1	-74.6	-74.6	-74.2	-75.6	-74.1	-73.1	-73.6	-73.6	-73.4	-73.4	-73.6	-72.6
64 QAM	-72.6	-72.1	-72.0	-71.5	-71.5	-71.1	-72.5	-71.0	-70.0	-70.5	-70.5	-70.3	-70.3	-70.5	-69.5
128 QAM	-69.6	-69.1	-69.0	-68.5	-68.5	-68.1	-69.5	-68.0	-67.0	-67.5	-67.5	-67.3	-67.3	-67.5	-66.5
256 QAM	-67.3	-66.8	-66.7	-66.2	-66.2	-65.8	-67.2	-65.7	-64.7	-65.2	-65.2	-65.0	-65.0	-65.2	-64.2
512 QAM	-64.5	-64.0	-63.9	-63.4	-63.4	-63.0	-64.4	-62.9	-61.9	-62.4	-62.4	-62.2	-62.2	-62.4	-61.4
1024 QAM Strong	-61.0	-60.5	-60.4	-59.9	-59.9	-59.5	-60.9	-59.4	-58.4	-58.9	-58.9	-58.7	-58.7	-58.9	-57.9
1024 QAM Light	-60.3	-59.8	-59.7	-59.2	-59.2	-58.8	-60.2	-58.7	-57.7	-58.2	-58.2	-58.0	-58.0	-58.2	-57.2
2048 QAM	-58.0	-57.5	-57.4	-56.9	-56.9	-56.5	-57.9	-56.4	-55.4	-55.9	-55.9	-55.7	-55.7	-55.9	-54.9
4096 QAM	-54.9	-54.4	-54.3	-53.8	-53.8	-53.4	-54.8	-53.3	-52.3	-52.8	-	-	-	-	-

56 MHz	6	7-8	10	11	13	15	18	23	24	26	28-31	32	36	38
BPSK	-88.1	-87.5	-87.5	-87.0	-87.0	-86.6	-88.0	-86.5	-85.4	-85.9	-86.0	-85.7	-85.7	-86.0
QPSK	-85.2	-84.6	-84.6	-84.1	-84.1	-83.7	-85.1	-83.6	-82.5	-83.0	-83.1	-82.8	-82.8	-83.1
8 PSK	-80.9	-80.3	-80.3	-79.8	-79.8	-79.4	-80.8	-79.3	-78.2	-78.7	-78.8	-78.5	-78.5	-78.8
16 QAM	-78.0	-77.4	-77.4	-76.9	-76.9	-76.5	-77.9	-76.4	-75.3	-75.8	-75.9	-75.6	-75.6	-75.9
32 QAM	-75.0	-74.4	-74.4	-73.9	-73.9	-73.5	-74.9	-73.4	-72.3	-72.8	-72.9	-72.6	-72.6	-72.9
64 QAM	-71.6	-71.0	-71.0	-70.5	-70.5	-70.1	-71.5	-70.0	-68.9	-69.4	-69.5	-69.2	-69.2	-69.5
128 QAM	-69.1	-68.5	-68.5	-68.0	-68.0	-67.6	-69.0	-67.5	-66.4	-66.9	-67.0	-66.7	-66.7	-67.0
256 QAM	-65.5	-64.9	-64.9	-64.4	-64.4	-64.0	-65.4	-63.9	-62.8	-63.3	-63.4	-63.1	-63.1	-63.4
512 QAM	-63.0	-62.4	-62.4	-61.9	-61.9	-61.5	-62.9	-61.4	-60.3	-60.8	-60.9	-60.6	-60.6	-60.9
1024 QAM Strong	-59.6	-59.0	-59.0	-58.5	-58.5	-58.1	-59.5	-58.0	-56.9	-57.4	-57.5	-57.2	-57.2	-57.5
1024 QAM Light	-58.8	-58.2	-58.2	-57.7	-57.7	-57.3	-58.7	-57.2	-56.1	-56.6	-56.7	-56.4	-56.4	-56.7
2048 QAM	-56.5	-55.9	-55.9	-55.4	-55.4	-55.0	-56.4	-54.9	-53.8	-54.3	-54.4	-54.1	-54.1	-54.4
4096 QAM	-53.0	-52.4	-52.4	-51.9	-51.9	-51.5	-52.9	-51.4	-50.3	-50.8	-	-	-	-

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-Receive Sensitivity (dBm @10E-6) - continued

60 MHz	6	7-8	10	11	13	15	18	23	24	26	28-31	32	36	38	42
BPSK	-87.3	-86.8	-86.8	-86.2	-86.3	-85.9	-87.3	-85.8	-84.7	-85.2	-85.2	-85.0	-85.0	-85.3	-
QPSK	-84.1	-83.6	-83.6	-83.0	-83.1	-82.7	-84.1	-82.6	-81.5	-82.0	-82.0	-81.8	-81.8	-82.1	-
8 PSK	-80.3	-79.8	-79.8	-79.2	-79.3	-78.9	-80.3	-78.8	-77.7	-78.2	-78.2	-78.0	-78.0	-78.3	-
16 QAM	-77.1	-76.6	-76.6	-76.0	-76.1	-75.7	-77.1	-75.6	-74.5	-75.0	-75.0	-74.8	-74.8	-75.1	-
32 QAM	-73.8	-73.3	-73.3	-72.7	-72.8	-72.4	-73.8	-72.3	-71.2	-71.7	-71.7	-71.5	-71.5	-71.8	-
64 QAM	-70.7	-70.2	-70.2	-69.6	-69.7	-69.3	-70.7	-69.2	-68.1	-68.6	-68.6	-68.4	-68.4	-68.7	-
128 QAM	-67.9	-67.4	-67.4	-66.8	-66.9	-66.5	-67.9	-66.4	-65.3	-65.8	-65.8	-65.6	-65.6	-65.9	-
256 QAM	-64.7	-64.2	-64.2	-63.6	-63.7	-63.3	-64.7	-63.2	-62.1	-62.6	-62.6	-62.4	-62.4	-62.7	-
512 QAM	-62.2	-61.7	-61.7	-61.1	-61.2	-60.8	-62.2	-60.7	-59.6	-60.1	-60.1	-59.9	-59.9	-60.2	-
1024 QAM Strong	-58.9	-58.4	-58.4	-57.8	-57.9	-57.5	-58.9	-57.4	-56.3	-56.8	-56.8	-56.6	-56.6	-56.9	-
1024 QAM Light	-58.1	-57.6	-57.6	-57.0	-57.1	-56.7	-58.1	-56.6	-55.5	-56.0	-56.0	-55.8	-55.8	-56.1	-
2048 QAM	-55.8	-55.3	-55.3	-54.7	-54.8	-54.4	-55.8	-54.3	-53.2	-53.7	-53.7	-53.5	-53.5	-53.8	-
4096 QAM	-52.0	-51.5	-51.5	-50.9	-51.0	-50.6	-52.0	-50.5	-49.4	-49.9	-	-	-	-	-

80 MHz	6	7-8	10	11	13	15	18	23	24	26	28-31	32	36	38	42
BPSK	-85.4	-84.9	-84.8	-84.3	-84.3	-84.0	-85.4	-83.8	-82.8	-83.3	-83.3	-83.1	-83.1	-83.4	-82.4
QPSK	-83.1	-82.6	-82.5	-82.0	-82.0	-81.7	-83.1	-81.5	-80.5	-81.0	-81.0	-80.8	-80.8	-81.1	-80.1
8 PSK	-79.4	-78.9	-78.8	-78.3	-78.3	-78.0	-79.4	-77.8	-76.8	-77.3	-77.3	-77.1	-77.1	-77.4	-76.4
16 QAM	-76.4	-75.9	-75.8	-75.3	-75.3	-75.0	-76.4	-74.8	-73.8	-74.3	-74.3	-74.1	-74.1	-74.4	-73.4
32 QAM	-73.0	-72.5	-72.4	-71.9	-71.9	-71.6	-73.0	-71.4	-70.4	-70.9	-70.9	-70.7	-70.7	-71.0	-70.0
64 QAM	-70.1	-69.6	-69.5	-69.0	-69.0	-68.7	-70.1	-68.5	-67.5	-68.0	-68.0	-67.8	-67.8	-68.1	-67.1
128 QAM	-67.1	-66.6	-66.5	-66.0	-66.0	-65.7	-67.1	-65.5	-64.5	-65.0	-65.0	-64.8	-64.8	-65.1	-64.1
256 QAM	-64.4	-63.9	-63.8	-63.3	-63.3	-63.0	-64.4	-62.8	-61.8	-62.3	-62.3	-62.1	-62.1	-62.4	-61.4
512 QAM	-61.7	-61.2	-61.1	-60.6	-60.6	-60.3	-61.7	-60.1	-59.1	-59.6	-59.6	-59.4	-59.4	-59.7	-58.7
1024 QAM Strong	-58.5	-58.0	-57.9	-57.4	-57.4	-57.1	-58.5	-56.9	-55.9	-56.4	-56.4	-56.2	-56.2	-56.5	-55.5
1024 QAM Light	-58.1	-57.6	-57.5	-57.0	-57.0	-56.7	-58.1	-56.5	-55.5	-56.0	-56.0	-55.8	-55.8	-56.1	-55.1
2048 QAM	-55.2	-54.7	-54.6	-54.1	-54.1	-53.8	-55.2	-53.6	-52.6	-53.1	-53.1	-52.9	-52.9	-53.2	-52.2
4096 QAM	-51.6	-51.1	-51.0	-50.5	-50.5	-50.2	-51.6	-50.0	-49.0	-49.5	-49.5	-49.3	-49.3	-	-

112 MHz	6	7-8	10	11	13	15	18	23	24	26	28-31	32	36	38	42
BPSK	-83.8	-83.3	-83.3	-82.8	-82.8	-82.4	-83.8	-82.3	-81.2	-81.7	-81.7	-81.5	-81.5	-81.8	-80.8
QPSK	-81.4	-80.9	-80.9	-80.4	-80.4	-80.0	-81.4	-79.9	-78.8	-79.3	-79.3	-79.1	-79.1	-79.4	-78.4
8 PSK	-77.4	-76.9	-76.9	-76.4	-76.4	-76.0	-77.4	-75.9	-74.8	-75.3	-75.3	-75.1	-75.1	-75.4	-74.4
16 QAM	-74.5	-74.0	-74.0	-73.5	-73.5	-73.1	-74.5	-73.0	-71.9	-72.4	-72.4	-72.2	-72.2	-72.5	-71.5
32 QAM	-71.1	-70.6	-70.6	-70.1	-70.1	-69.7	-71.1	-69.6	-68.5	-69.0	-69.0	-68.8	-68.8	-69.1	-68.1
64 QAM	-68.1	-67.6	-67.6	-67.1	-67.1	-66.7	-68.1	-66.6	-65.5	-66.0	-66.0	-65.8	-65.8	-66.1	-65.1
128 QAM	-65.2	-64.7	-64.7	-64.2	-64.2	-63.8	-65.2	-63.7	-62.6	-63.1	-63.1	-62.9	-62.9	-63.2	-62.2
256 QAM	-62.2	-61.7	-61.7	-61.2	-61.2	-60.8	-62.2	-60.7	-59.6	-60.1	-60.1	-59.9	-59.9	-60.2	-59.2
512 QAM	-59.8	-59.3	-59.3	-58.8	-58.8	-58.4	-59.8	-58.3	-57.2	-57.7	-57.7	-57.5	-57.5	-57.8	-56.8
1024 QAM Strong	-56.8	-56.3	-56.3	-55.8	-55.8	-55.4	-56.8	-55.3	-54.2	-54.7	-54.7	-54.5	-54.5	-54.8	-53.8
1024 QAM Light	-56.1	-55.6	-55.6	-55.1	-55.1	-54.7	-56.1	-54.6	-53.5	-54.0	-54.0	-53.8	-53.8	-54.1	-53.1
2048 QAM	-53.5	-53.0	-53.0	-52.5	-52.5	-52.1	-53.5	-52.0	-50.9	-51.4	-51.4	-51.2	-51.2	-51.5	-50.5
4096 QAM	-50.8	-50.3	-50.3	-49.8	-49.8	-49.4	-50.8	-	-	-	-	-	-	-	-

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Receive Sensitivity (dBm @10E-6) - continued															
160 MHz	**6**	**7-8**	**10**	**11**	**13**	**15**	**18**	**23**	**24**	**26**	**28-31**	**32**	**36**	**38**	**42**
BPSK	-	-82.7	-82.6	-82.1	-82.1	-81.8	-83.2	-81.6	-80.6	-81.1	-81.1	-80.9	-80.9	-81.2	-80.2
QPSK	-	-79.6	-79.5	-79.0	-79.0	-78.7	-80.1	-78.5	-77.5	-78.0	-78.0	-77.8	-77.8	-78.1	-77.1
8 PSK	-	-75.8	-75.7	-75.2	-75.2	-74.9	-76.3	-74.7	-73.7	-74.2	-74.2	-74.0	-74.0	-74.3	-73.3
16 QAM	-	-72.8	-72.7	-72.2	-72.2	-71.9	-73.3	-71.7	-70.7	-71.2	-71.2	-71.0	-71.0	-71.3	-70.3
32 QAM	-	-69.2	-69.1	-68.6	-68.6	-68.3	-69.7	-68.1	-67.1	-67.6	-67.6	-67.4	-67.4	-67.7	-66.7
64 QAM	-	-65.9	-65.8	-65.3	-65.3	-65.0	-66.4	-64.8	-63.8	-64.3	-64.3	-64.1	-64.1	-64.4	-63.4
128 QAM	-	-63.3	-63.2	-62.7	-62.7	-62.4	-63.8	-62.2	-61.2	-61.7	-61.7	-61.5	-61.5	-61.8	-60.8
256 QAM	-	-60.4	-60.3	-59.8	-59.8	-59.5	-60.9	-59.3	-58.3	-58.8	-58.8	-58.6	-58.6	-58.9	-57.9
512 QAM	-	-57.4	-57.3	-56.8	-56.8	-56.5	-57.9	-56.3	-55.3	-55.8	-55.8	-55.6	-55.6	-55.9	-54.9
1024 QAM	-	-54.3	-54.2	-53.7	-53.7	-53.4	-54.8	-53.2	-52.2	-52.7	-52.7	-52.5	-52.5	-52.8	-51.8
2048 QAM	-	-50.8	-50.7	-50.2	-50.2	-49.9	-51.3	-49.7	-48.7	-49.2	-49.2	-49.0	-49.0	-49.3	-48.3

224 MHz	**6**	**7-8**	**10**	**11**	**13**	**15**	**18**	**23**	**24**	**26**	**28-31**	**32**	**36**	**38**	**42**
BPSK	-	-81.1	-81.1	-80.5	-80.6	-80.2	-81.6	-80.1	-79.0	-79.5	-79.5	-79.3	-79.3	-79.6	-78.6
QPSK	-	-78.0	-78.0	-77.4	-77.5	-77.1	-78.5	-77.0	-75.9	-76.4	-76.4	-76.2	-76.2	-76.5	-75.5
8 PSK	-	-74.2	-74.2	-73.6	-73.7	-73.3	-74.7	-73.2	-72.1	-72.6	-72.6	-72.4	-72.4	-72.7	-71.7
16 QAM	-	-71.2	-71.2	-70.6	-70.7	-70.3	-71.7	-70.2	-69.1	-69.6	-69.6	-69.4	-69.4	-69.7	-68.7
32 QAM	-	-67.6	-67.6	-67.0	-67.1	-66.7	-68.1	-66.6	-65.5	-66.0	-66.0	-65.8	-65.8	-66.1	-65.1
64 QAM	-	-64.3	-64.3	-63.7	-63.8	-63.4	-64.8	-63.3	-62.2	-62.7	-62.7	-62.5	-62.5	-62.8	-61.8
128 QAM	-	-61.7	-61.7	-61.1	-61.2	-60.8	-62.2	-60.7	-59.6	-60.1	-60.1	-59.9	-59.9	-60.2	-59.2
256 QAM	-	-58.7	-58.7	-58.1	-58.2	-57.8	-59.2	-57.7	-56.6	-57.1	-57.1	-56.9	-56.9	-57.2	-56.2
512 QAM	-	-55.8	-55.8	-55.2	-55.3	-54.9	-56.3	-54.8	-53.7	-54.2	-54.2	-54.0	-54.0	-54.3	-53.3
1024 QAM	-	-52.7	-52.7	-52.1	-52.2	-51.8	-53.2	-51.7	-50.6	-51.1	-51.1	-50.9	-50.9	-51.2	-50.2
2048 QAM	-	-49.5	-49.5	-48.9	-49.0	-48.6	-50.0	-48.5	-47.4	-47.9	-47.9	-47.7	-47.7	-48.0	-47.0

ABOUT CAMBIUM NETWORKS

Cambium Networks empowers millions of people with wireless connectivity worldwide. Its wireless portfolio is used by commercial and government network operators as well as broadband service providers to connect people, places and things. With a single network architecture spanning fixed wireless and Wi-Fi, Cambium Networks enables operators to achieve maximum performance with minimal spectrum. End-to-end cloud management transforms networks into dynamic environments that evolve to meet changing needs with minimal physical human intervention. Cambium Networks empowers a growing ecosystem of partners who design and deliver gigabit wireless solutions that just work.

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