



# PTP 820C FCC/IC 24 GHz Licensed Microwave Radio



## All-Outdoor / Multi-Core

### Specifications

#### RADIO

- 24.05 to 24.25 GHz
- 1+0 to 4+0, 1+1/2+2 HSB, E/W, 1+0 SD, 2+2 SD

#### Radio Features

- Multi-Carrier Adaptive Bandwidth Control (up to 2+0)
- Protection: 1+1/2+2 HSB
- QPSK to 2048 QAM w/ACM
- XPIC
- 2x2 / 4x4 MIMO
- Advanced Frequency Reuse (AFR)

#### ETHERNET

##### Ethernet Interfaces

- Traffic Interfaces – 1 x 10/100/1000Base-T (RJ-45) and 1x1000base-X (SFP) or 10/100/1000 Base-T (electrical SFP)
- Management Interface - 1 x 10/100 Base-T (RJ-45)
- Optical SFP Types - Optical 1000Base-LX (1310 nm) or SX (850nm)  
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
  - 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)

- Adaptive Bandwidth Notification (ABN)
- Ethernet OAM – ITU-T Y.1731 FM

#### 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)
- 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

- AES 256-bit Encryption
- Secured protocols (HTTPS, SNMPV3, SSH, SFTP)
- Radius authentication and authorization

##### Standards Compliance

- 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: IP66-compliant
- 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: 230mm(H), 233mm(W), 98mm(D), 6.5kg
- 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

- Maximum Power Consumption (2+0 Operation) 48W

##### 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
- 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)

## Specifications

### TRANSMIT POWER

Transmit Power (dBm) With 1ft antenna	QPSK	8 PSK	16 QAM	32 QAM	64 QAM	128 QAM	256 QAM	512 QAM	1024 QAM	2048 QAM
<b>Maximum Power</b>	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6
<b>Minimum Power</b>	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20

Transmit Power (dBm) With 2ft antenna	QPSK	8 PSK	16 QAM	32 QAM	64 QAM	128 QAM	256 QAM	512 QAM	1024 QAM	2048 QAM
<b>Maximum Power</b>	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
<b>Minimum Power</b>	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20

### RECEIVE SENSITIVITY

Rx Sensitivity (dBm)	QPSK	8 PSK	16 QAM	32 QAM	64 QAM	128 QAM	256 QAM	512 QAM	1024 QAM (strong FEC)	1024 QAM (light FEC)	2048 QAM
<b>20 MHz</b>	-84.0	-79.0	-77.5	-74.0	-70.5	-67.5	-65.0	-62.0	-59.0	-58.5	-55.0
<b>30 MHz</b>	-82.0	-77.0	-75.5	-72.0	-69.0	-66.0	-63.0	-61.0	-57.5	-57.0	-53.0
<b>40 MHz</b>	-81.0	-76.0	-74.0	-70.5	-68.0	-65.0	-62.5	-60.0	-56.5	-56.0	-52.5
<b>50 MHz</b>	-80.0	-75.0	-73.0	-70.0	-66.5	-64.0	-61.0	-58.5	-55.0	-54.5	-50.5
<b>60 MHz</b>	-79.0	-74.5	-72.5	-69.0	-66.0	-63.0	-60.0	-58.0	-54.4	-54.3	-50.0

### ETHERNET THROUGHPUT

Throughput (Mbps)	QPSK	8 PSK	16 QAM	32 QAM	64 QAM	128 QAM	256 QAM	512 QAM	1024 QAM (strong FEC)	1024 QAM (light FEC)	2048 QAM
<b>20 MHz</b>	27	41	56	74	91	110	125	136	145	154	164
<b>30 MHz</b>	42	61	86	113	139	168	193	206	224	238	260
<b>40 MHz</b>	57	85	116	152	187	226	243	267	302	321	347
<b>50 MHz</b>	69	108	146	183	237	276	327	355	387	411	443
<b>60 MHz</b>	86	125	174	229	281	339	391	421	458	486	527

### FCC/IC 24 GHz PTP 820C SKU list:

Part Number	Description
C240082B027A	PTP 820C Radio 24GHz,TR170,FCC,DX4,FT1,Hi,24170-24250MHz
C240082B028A	PTP 820C Radio 24GHz,TR170,FCC,DX4,FT1,Lo,24000-24080MHz
C240082B029A	PTP 820C Radio 24GHz,TR140,FCC,DX3,FT1,Hi,24220-24250MHz
C240082B030A	PTP 820C Radio 24GHz,TR140,FCC,DX3,FT1,Lo,24080-24110MHz

### APPROVED ANTENNA:

Name	Description
N260082D017A	PTP 820 1' ANT, SP,26GHz, RFU-C TYPE&Std UBR220 - Andrew
N260082D019A	PTP 820 2' ANT, SP,26GHz, RFU-C TYPE&Std UBR220 - Andrew