PTP 820C High Power Licensed Microwave Radio

All-Outdoor / Multi-Core

Specifications

RADIO
• 6-11 GHz
• Channel Bandwidth: 5-80 MHz
• Field Changeable Diplexers
• 1+0, 2+0 XPIC, 1+0 SD, 2 x 1+0 East-West, 2+2 SD/HSB, 2+0 SP/DP, 2 x 2+0 SP/DP, 4x4 MIMO, AFR*
• Multiband (with PTP 850E or PTP 820E)

Radio Features
• Multi-Carrier Adaptive Bandwidth Control (up to 2+0)
• Protection: 1+1/2+2 HSB
• QPSK to 2048 QAM w/ACM
• 4x4 LoS MIMO
• XPIC
• Advanced Space Diversity (ASD)
• 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
  o Multiple Classification criteria (VLAN ID, p-bits, IPv4, DSCP, IPv6 TC, MPLS EXP)
  o 8 priority queues per port
  o Deep buffering (configurable up to 64 Mbit per queue)
  o WRED
  o P-bit marking/remarking
• 4K VLANs
• VLAN add/remove
• 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)
• Y.1731 Ethernet OAM
• Y.1731 Ethernet Bandwidth Notification (ETH-BN)
• Adaptive Bandwidth Notification (ABN, also known as EOAM)

MANAGEMENT PROTOCOLS
• SNMP
• REST
• SDN Support: NETCONF/YANG

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
MEF
• Carrier Ethernet 2.0
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
• TACACS+ authentication and authorization (session-based)
• 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 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

• 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: 315mm(H), 284mm(W), 107mm(D), 12kg; 12.4”(H), 11.2”(W), 4.2”(D), 26.5 lbs. (includes diplexer or OCU unit)
• Pole Diameter Range (for Remote Mount Installation): 88.9 mm – 114.3 mm; 3.5” – 4.5”

Environmental Specifications

PTP 820C HP SPECIFICATION SHEET
• -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 to -60 VDC
• Separate DC feed

Power Consumption Specifications
• Maximum Power Consumption (Multi-Core Operation): 135W
• Maximum Power Consumption (1+0 Operation): 81W
### TRANSMIT POWER (dBm)

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Note:
Nominal TX power is subject to change until the relevant frequency band is formally released. See the frequency rollout plan. The values listed in this section are typical. Actual values may differ in either direction by up to 1dB. The Transmit Power values shown in the tables below are for the radio unit only. To determine the TX power of the complete IP-20C-HP unit, diplexer losses must also be considered.

### Diplexer Unit Typical Losses

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<td>60 MHz</td>
<td>449-548</td>
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<td>QPSK</td>
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<td>127-155</td>
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<td>176-215</td>
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<td>232-283</td>
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</tr>
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</tr>
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<td>128 QAM</td>
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<td>344-420</td>
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<td>505-618</td>
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<td>427-521</td>
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<td>555-679</td>
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<tr>
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<td>80 MHz</td>
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<td>604-738</td>
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<tr>
<td>1024 QAM Light</td>
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<td>493-602</td>
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<td>641-784</td>
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<td>534-653</td>
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<td>679-829</td>
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