*MOTOROLA WIRELESS BROADBAND*

# PTP 800

## Licensed Ethernet Microwave


| PTP 800 Family of Products | |
|---|---|
| **PTP 11800** | 11 GHz |
| **PTP 18800** | 18 GHz |
| **PTP 23800** | 23 GHz |
| **PTP 26800** | 26 GHz |

### High-Performance, Scalable Solutions

The Motorola Point-to-Point Licensed Ethernet Microwave solutions – PTP 800 – operate in the 11, 18, 23 and 26 GHz[1] licensed bands, at up to 368 Mbps throughput (full duplex) and with user-configured channel bandwidths from 7 to 56 MHz. With upgradeable capacity from 10 Mbps to full capacity via software key, the systems offer exceptional cost efficiency and scalability. In addition, PTP 800 bridges provide high-performance, ultra-reliable connectivity for a variety of enterprises, including corporations, Internet Service Providers (ISPs), schools, universities, hospitals, utility companies, railroads, municipalities and government agencies.

With its small footprint and split-mount architecture, which includes an outdoor unit (ODU) and a compact modem unit (CMU), the PTP 800 installs quickly and easily. For those network environments where rack space is scarce or non-existent, the CMU can be mounted on a wall or set on a table.

The One Point Wireless Suite's PTP LINKPlanner tool allows you to accurately project performance characteristics prior to purchase based on your specific radio path conditions. You can plan and optimize a single link or multiple links simultaneously, obtain configuration details to speed deployment, display a comprehensive overview of your entire wireless network via Google™ Earth and receive a complete licensed-microwave Bill-of-Materials to simplify the ordering process.

### Motorola Wireless Broadband

The PTP 800 bridges are included in Motorola's comprehensive portfolio of reliable and cost-effective wireless broadband solutions that, together with our WLAN solutions, provide and extend coverage both indoors and outdoors. The Motorola Wireless Broadband portfolio offers high-speed Point-to-Point, Point-to-Multipoint, Mesh, WiFi and WiMAX networks that support data, voice and video communications, enabling a broad range of fixed and mobile applications for public and private systems. With Motorola's innovative software solutions, customers can design, deploy and manage a broadband network, maximizing up-time and reliability while lowering installation costs.

[1] PTP 800 modules operating in additional frequencies between 6 and 38 GHz will be available in a series of subsequent product releases.

**Motorola 11, 18, 23 and 26 GHz Licensed Ethernet Microwave – PTP 800**

| Radio Technology | Remarks |
|---|---|
| RF band[2] | 11 GHz Band: 10.7 – 11.7 GHz (FCC/IC only) |
| | 18 GHz Band: 17.7 – 19.7 GHz |
| | 23 GHz Band: 21.2 – 23.6 GHz |
| | 26 GHz Band: 24.25 – 26.5 GHz (ETSI only) |
| Channel size | Configurable from 7 to 56 MHz |
| Transmit power | Maximum transmit power up to 25.5 dBm |
| Receiver sensitivity | -88.9 dBm at QPSK |
| Modulation | Fixed mode, QPSK, 8PSK, 16/32/64/128/256 QAM |
| Error correction | Low Density Parity Check (LDPC) code |
| Duplex scheme | FDD |
| Security and encryption | Optional FIPS-197 compliant 128/256-Bit AES Encryption |
| | [2] Regulatory conditions for RF bands may vary by geographic location and should be confirmed prior to system purchase. |

| Ethernet Bridging | |
|---|---|
| Protocol | IEEE 802.3 |
| | 802.1p/1Q (served by 8 queues) |
| | 802.1ad (Q-in-Q) |
| Frame size | Up to 9600 bytes |
| User data throughput | 10 to 368 Mbps at the Ethernet (full duplex) |
| Latency | To < 115 µs @ full capacity with 64 bytes |
| User traffic interface | 100 / 1000 Base T (RJ-45) – auto MDI/MDIX, 1000 Base SX option |

| Management & Installation | |
|---|---|
| Network management | Inband and out-of-band |
| Protocol | SNMP v1/v2c |
| EMS | Web GUI management, Motorola One Point Wireless Suite |
| Out-of-band interface | 10 / 100 Base T (RJ-45) |
| Installation | ODU – RSSI output assistance for link alignment |
| Connection | IF cable between outdoor unit (ODU) and compact modem unit (CMU), distance up to 1000 ft. (300 meters) |

| Physical | |
|---|---|
| Physical configuration | Split mount – Compact Modem Unit (CMU) and Outdoor Unit (ODU) |
| Dimensions | Outdoor Unit (ODU): Diameter 10.5" (26.7 cm), Depth 3.5" (8.9 cm) |
| | Compact Modem Unit (CMU): Width 7.1" (18.0 cm), Height 1.4" (3.5 cm), |
| | Depth 8.7" (22.0 cm) |
| Weight | Outdoor Unit (ODU): 10.1 lbs (4.6 kg) |
| | Compact Modem Unit (CMU): 2.4 lbs (1.1 kg) |
| Wind speed survival | Outdoor Unit (ODU): 150 mph (242 kph) |
| Power source | -48V DC (-40.5V DC to -60V DC) |
| Power consumption | 80 W (max), ODU + CMU |

| Environmental & Regulatory | |
|---|---|
| Operating temperature | Outdoor Unit: -27° F (-33° C) to +131° F (+55° C) – EN 300 019-1-4 |
| | Compact Modem Unit: -27° F (-33° C) to +131° F (+55° C) – EN 300 019-1-3 |
| Humidity | Outdoor Unit: Up to 100% |
| | Compact Modem Unit: Up to 95%, non-condensing |
| Safety | UL 60960; IEC 60950; EN 60950; CSA 22.2 No. 60950 |
| EMC | USA: FCC Part 15, Class B |
| | Europe: EN 301 489-4 |

| Radio Performance | | | | |
|---|---|---|---|---|
| **Frequency** | **11 GHz** | **18 GHz** | **23 GHz** | **26 GHz** |
| **Standard** | FCC | ETSI / FCC | ETSI / FCC | ETSI |
| **Available Date** | Oct. '09 | Oct. '09 | Oct. '09 | Oct. '09 |
| **Frequency Range (GHz)** | 10.7 ~ 11.7 FCC | 17.7 ~ 19.7 | 21.2 ~ 23.6 | 24.25 – 26.5 ETSI |
| **T/R Spacing (MHz) FCC** | 490, 500 | 1560 | 1200 | |
| **Channel Spacing (MHz) FCC** | 10, 30, 40 | 10, 20, 30, 40, 50 | 10, 20, 30, 40, 50 | |
| **T/R Spacing (MHz) ETSI** | | 1008, 1010 | 1008, 1232 | 1008 |
| **Channel Spacing (MHz) ETSI** | | 7, 13.75, 27.5, 55 | 7, 14, 28, 56 | 7, 14, 28, 56 |
| **RF Channel Selection** | Via Web GUI | | | |
| **System Configuration** | 1 + 0 | | | |
| **ATPC Range (dB)** | Transmit Power Control - Adaptive, lower power limit varies with RF band and modulation mode up to 1dBm minimum. | | | |

| Radio Throughput | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Modulation** | **Maximum Throughput – Mbps (1518 Bytes/Frame)** | | | | | | | | | | | |
| | **7 MHz** | **13.75 MHz** | **14 MHz** | **27.5 MHz** | **28 MHz** | **55 MHz** | **56 MHz** | **10 MHz** | **20 MHz** | **30 MHz** | **40 MHz** | **50 MHz** |
| **256 QAM 0.91** | | | | | | 364.9 | 368.6 | | | | | |
| **256 QAM 0.80** | | | | 166.9 | 170.4 | 343.6 | 347.1 | | 113.6 | 177.4 | 236.5 | 301.6 |
| **128 QAM** | 34.4 | 69.8 | 71.0 | 148.0 | 151.1 | 300.4 | 303.5 | 50.7 | 102.2 | 155.1 | 206.8 | 258.6 |
| **64 QAM** | 30.0 | 60.7 | 61.8 | 122.7 | 125.3 | 252.6 | 255.2 | 42.2 | 93.3 | 130.4 | 181.8 | 217.4 |
| **32 QAM** | N/A | 49.4 | 50.2 | 99.1 | 101.2 | N/A | N/A | 34.2 | 67.8 | 103.6 | 150.7 | 178.6 |
| **16 QAM** | 19.5 | 40.0 | 40.7 | 73.3 | 74.8 | 150.9 | 152.4 | 27.7 | 58.5 | 77.9 | 103.8 | 150.5 |
| **8PSK** | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 20.2 | 40.3 | 59.1 | 78.9 | 103.7 |
| **QPSK** | 9.5 | 19.4 | 19.8 | 37.0 | 37.8 | 76.3 | 77.1 | 13.3 | 28.5 | 39.4 | 52.5 | 65.7 |

| Transmit Power | | | | | | |
|---|---|---|---|---|---|---|
| **Modulation** | **Maximum Transmit Power – ETSI (dBm)** | | | **Maximum Transmit Power – FCC (dBm)** | | |
| | **Frequency (GHz)** | | | **Frequency (GHz)** | | |
| | **18** | **23** | **26** | **11** | **18** | **23** |
| **QPSK** | 25.5 | 25.0 | 25.0 | 19.0 | 23.5 | 23.0 |
| **8PSK** | N/A | N/A | N/A | 19.0 | 20.0 | 22.0 |
| **16 QAM** | 22.0 | 22.0 | 22.0 | 19.0 | 20.0 | 22.0 |
| **32 QAM** | 22.0 | 22.0 | 22.0 | 19.0 | 20.0 | 22.0 |
| **64 QAM** | 17.0 | 17.0 | 17.0 | 19.0 | 15.0 | 17.0 |
| **128 QAM** | 17.0 | 17.0 | 17.0 | 19.0 | 15.0 | 17.0 |
| **256 QAM** | 15.0 | 15.0 | 15.0 | 19.0 | 15.0 | 15.0 |

| Receive Sensitivity | | | | | |
|---|---|---|---|---|---|
| | Modulation | Frequency (GHz) | | | |
| | | 11 | 18 | 23 | 26 |
| Receive Sensitivity @ 55/56 MHz channel (dBm) | 256 QAM 0.91 | | -62.5 | -61.9 | -61.9 |
| | 256 QAM 0.80 | | -62.6 | -63.9 | -63.9 |
| | 128 QAM 0.82 | | -65.7 | -66.8 | -66.8 |
| | 64 QAM 0.82 | | -68.9 | -69.8 | -69.8 |
| | 32 QAM 0.84 | | N/A | N/A | N/A |
| | 16 QAM 0.79 | | -75.3 | -76.2 | -76.2 |
| | QPSK 0.80 | | -81.1 | -82.0 | -82.0 |
| Receive Sensitivity @ 27.5/28 MHz channel (dBm) | 256 QAM 0.80 | | -65.7 | -65.1 | -65.1 |
| | 128 QAM 0.84 | | -68.8 | -68.2 | -68.2 |
| | 64 QAM 0.82 | | -72.0 | -71.4 | -71.4 |
| | 32 QAM 0.85 | | -74.5 | -73.9 | -73.9 |
| | 16 QAM 0.79 | | -78.4 | -77.8 | -77.8 |
| | QPSK 0.80 | | -84.2 | -83.6 | -83.6 |
| Receive Sensitivity @ 13.75/14 MHz channel (dBm) | 128 QAM 0.76 | | -71.9 | -71.3 | -71.3 |
| | 64 QAM 0.82 | | -74.3 | -73.8 | -73.8 |
| | 32 QAM 0.87 | | -76.3 | N/A | N/A |
| | 16 QAM 0.88 | | -79.2 | -78.7 | -78.7 |
| | QPSK 0.86 | | -85.9 | -85.4 | -85.4 |
| Receive Sensitivity @ 7 MHz channel (dBm) | 128 QAM 0.76 | | -74.8 | -74.3 | -74.3 |
| | 64 QAM 0.82 | | -77.3 | -76.8 | -76.8 |
| | 32 QAM 0.87 | | N/A | N/A | N/A |
| | 16 QAM 0.88 | | -82.2 | -81.7 | -81.7 |
| | QPSK 0.88 | | -88.9 | -88.4 | -88.4 |

| Receive Sensitivity | | | | | |
|---|---|---|---|---|---|
| | Modulation | Frequency (GHz) | | | |
| | | 11 | 18 | 23 | 26 |
| Receive Sensitivity @ 50 MHz channel (dBm) | 256 QAM 0.83 | | -62.7 | -62.2 | |
| | 128 QAM 0.82 | | -66.3 | -65.8 | |
| | 64 QAM 0.82 | | -69.5 | -69.0 | |
| | 32 QAM 0.87 | | -71.8 | -71.3 | |
| | 16 QAM 0.91 | | -73.8 | -73.3 | |
| | 8PSK 0.84 | | -77.1 | -76.6 | |
| | QPSK 0.80 | | -81.7 | -81.2 | |
| Receive Sensitivity @ 40 MHz channel (dBm) | 256 QAM 0.80 | -64.2 | -64.2 | -63.7 | |
| | 128 QAM 0.82 | -67.3 | -67.3 | -66.8 | |
| | 64 QAM 0.88 | -69.9 | -69.9 | -69.4 | |
| | 32 QAM 0.92 | -72.0 | -72.0 | -71.5 | |
| | 16 QAM 0.79 | N/A | -76.9 | -76.4 | |
| | 8PSK 0.80 | N/A | -79.1 | -78.6 | |
| | QPSK 0.80 | N/A | -82.7 | -82.2 | |
| Receive Sensitivity @ 30 MHz channel (dBm) | 256 QAM 0.80 | -65.4 | -65.4 | -64.9 | |
| | 128 QAM 0.82 | -68.5 | -68.5 | -68.0 | |
| | 64 QAM 0.82 | -71.7 | -71.7 | -71.2 | |
| | 32 QAM 0.84 | -74.3 | -74.3 | -73.8 | |
| | 16 QAM 0.79 | N/A | -78.1 | -77.6 | |
| | 8PSK 0.80 | N/A | -80.3 | -79.8 | |
| | QPSK 0.80 | N/A | -83.9 | -83.4 | |
| Receive Sensitivity @ 20 MHz channel (dBm) | 256 QAM 0.76 | | -67.6 | -67.1 | |
| | 128 QAM 0.83 | | -69.8 | -69.3 | |
| | 64 QAM 0.94 | | -69.4 | -68.9 | |
| | 32 QAM 0.84 | | -75.8 | -75.3 | |
| | 16 QAM 0.91 | | -78.1 | -77.6 | |
| | 8PSK 0.83 | | -81.1 | -80.6 | |
| | QPSK 0.88 | | -85.1 | -84.6 | |
| Receive Sensitivity @ 10 MHz channel (dBm) | 128 QAM 0.83 | -72.5 | -72.5 | -72.0 | |
| | 64 QAM 0.82 | N/A | -75.8 | -75.3 | |
| | 32 QAM 0.87 | N/A | -77.8 | -77.3 | |
| | 16 QAM 0.88 | N/A | -80.7 | -80.2 | |
| | 8PSK 0.86 | N/A | -83.0 | -82.5 | |
| | QPSK 0.86 | N/A | -87.4 | -86.9 | |

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