



## HIGH-THROUGHPUT COMMUNICATIONS FOR MULTI-SERVICE NETWORKS

# MOTOROLA PTP 800 LICENSED ETHERNET MICROWAVE

PTP 800 solutions can efficiently and affordably transport the data, voice and video that your bandwidth-intensive applications require without having to contend with other communicators in your radio-frequency (RF) band.

### HIGH-PERFORMANCE, SCALABLE

Our Point-to-Point (PTP) 800 Licensed Ethernet Microwave solutions operate in the 6 to 38 GHz<sup>1</sup> licensed bands, at up to 368 Mbps throughput<sup>2</sup> (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. Whether your organization is a corporate enterprise, carrier, service provider, school, hospital, utility company, municipality or government agency, our PTP

800 radios will provide you with high-performance, ultra-reliable connectivity.

### EXTREME DURABILITY

PTP systems have logged more than two billion field hours. As a result, our radios are proven to withstand the rigors of outdoor use. Radios perform steadfastly in winds up to 150 miles per hour (242 kph) and temperatures from -27° to 131° F (-33° to 55° C).

### WIRELESS NETWORK SOLUTIONS

At Motorola, our unrivaled wireless network solutions include indoor WLAN, outdoor wireless mesh, point-to-multipoint and point-to-point networks as well as voice over WLAN systems, giving you the agility and seamless connectivity you need to grow your business or better protect and serve the public. Combined with powerful software for wireless network design, security and management, our solutions deliver trusted networking and anywhere access to organizations worldwide.

<sup>1</sup> PTP 800 models operating in frequencies between 6 and 38 GHz are available in a series of product releases.

<sup>2</sup> 368 Mbps maximum throughput requires a 56 MHz channel and 256 QAM which may not be available in certain regions due to regulatory restrictions.

**PRODUCT SPEC SHEET**  
PTP 800 03-00

**RADIO TECHNOLOGY**

RF band <sup>3</sup>	L6 GHz Band: 5.925 – 6.425 GHz U6 GHz Band: 6.425 – 7.100 GHz 7 GHz Band: 7.125 – 7.9 GHz 8 GHz Band: 7.725 – 8.5 GHz 11 GHz Band: 10.7 – 11.7 GHz 13 GHz Band: 12.75 – 13.25 GHz 15 GHz Band: 14.4 – 15.35 GHz 18 GHz Band: 17.7 – 19.7 GHz 23 GHz Band: 21.2 – 23.6 GHz 26 GHz Band: 24.25 – 26.5 GHz 28 GHz Band: 27.5 – 29.5 GHz 32 GHz Band: 31.8 – 33.4 GHz 38 GHz Band: 37.0 – 40.0 GHz
Channel size	Configurable from 7 to 56 MHz
Maximum Tx power <sup>4</sup>	30 dBm
Best Rx sensitivity <sup>5</sup>	-90.9 dBm
Modulation	QPSK, 8PSK, 16/32/64/128/256 QAM Fixed mode or Adaptive Coding and Modulation (ACM)
Error correction	Low Density Parity Check (LDPC) code
Duplex scheme	FDD
Security and encryption	Optional FIPS-197 compliant 128/256-Bit AES Encryption

**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 <sup>6</sup>	10 to 368 Mbps at the Ethernet (full duplex); use PTP LINKPlanner to determine actual throughput for the deployment
Latency	To < 115 µs @ full capacity with 64 bytes
User traffic interface	100 / 1000 Base T (RJ-45) – auto MDI/MDIX, 1000 Base SX and LX options

**MANAGEMENT & INSTALLATION**

Network management	Inband and out-of-band
Protocol	SNMP v1/v2c
EMS	Web GUI management, our One Point Wireless or your existing network management system
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) using the LMR600 cable; 630 ft. (190 meters) is achievable with the CNT400 IF cable available from Motorola

**PHYSICAL**

Physical configuration	Split mount – Compact Modem Unit (CMU) and Outdoor Unit (ODU)
Dimensions	ODU: Diameter 10.5" (26.7 cm), Depth 3.5" (8.9 cm)  CMU: Width 7.1" (18.0 cm), Height 1.4" (3.5 cm), Depth 8.7" (22.0 cm)
Weight	ODU: 10.1 lbs (4.6 kg)  CMU: 2.4 lbs (1.1 kg)
Wind speed survival	ODU: 150 mph (242 kph)
Power source	-48V DC (-40.5V DC to -60V DC)
Power consumption	1+0 Configuration (1-ODU + 1-CMU) 6 ~ 11 GHz: 71 Watts maximum 13 ~ 38 GHz: 62 Watts maximum  1+1 Configuration (2-ODUs + 2-CMUs) 6 ~ 11 GHz: 125 Watts maximum 13 ~ 38 GHz: 110 Watts maximum

**ENVIRONMENTAL & REGULATORY**

Operating temperature	Outdoor Unit: -27° to +131° F (-33° to +55° C) – EN 300 019-1-4  Compact Modem Unit: -27° to +131° F (-33° to +55° C) – EN 300 019-1-3
Humidity	Outdoor Unit: Up to 100%  Compact Modem Unit: Up to 95%, non-condensing
Safety	UL 60950; IEC 60950; EN 60950; CSA 22.2 No. 60950
EMC	USA: FCC Part 15, Class B  Europe: EN 301 489-1 and EN 301 489-4
Radio standard	ETSI Harmonized Standard EN 302 217-2-2  FCC Regulation Title 47, Part 101  Industry Canada Specification RSS-GEN and relevant SRSP Specifications

<sup>3</sup> Regulatory conditions for RF bands may vary by geographic location and should be confirmed prior to system purchase.

<sup>4</sup> Transmit power depends on frequency, modulation and regulations (ETSI/FCC).

<sup>5</sup> Receive sensitivity depends on frequency, channel bandwidth and modulation (-90.9 dBm is based on an 11 GHz model with 7 MHz channel bandwidth and the QPSK mode).

<sup>6</sup> User throughput depends on the configuration of channel bandwidth, modulation and capacity license key. Radios ship with factory-set 10 Mbps throughput capacity cap; additional capacity may be purchased at time of order or anytime after deployment. Full capacity is not available for all combinations of bands and regulations.

Radio Configuration														
Frequency (GHz)	L6	U6	7	8	11	13	15	18	23	26	28	32	38	
Standard	ETSI / FCC	ETSI	ETSI	ETSI	ETSI / FCC	ETSI	ETSI	ETSI / FCC	ETSI / FCC	ETSI / FCC	ETSI	ETSI	ETSI / FCC	
Frequency Range (GHz)	5.925 ~ 6.425	6.425 ~ 7.100	7.125 ~ 7.9	7.725 ~ 8.5	10.7 ~ 11.7	12.75 ~ 13.25	14.4 ~ 15.35	17.7 ~ 19.7	21.2 ~ 23.6	24.25 ~ 26.5	27.5 ~ 29.5	31.8 ~ 33.4	37.0 ~ 40.0	
FCC	T/R Spacing (MHz)	252.04			490 500			1560	1200	800			700	
	Channel Bandwidth (MHz)	10 30			10 30 40			10 20 30 40 50	10 20 30 40 50	10 20 40			10 50	
ETSI	T/R Spacing (MHz)	252.04	340	154 161 168 196 245	119 126 208 266 311.32	490 530	266	420 490 728	1008 1010	1008 1232	1008	1008	812	1260
	Channel Bandwidth (MHz)	29.65	7 14 30 40 60	7 14 28	7 14 28 29.65	40	7 14 28	7 14 28 56	7 13.75 27.5 55	7 14 28 56	7 14 28 56	7 14 28 56	7 14 28 56	7 14 28 56
RF Channel Selection	Via Web GUI													
System Configuration	1+0, 1+1 HSB and 2+0													
ATPC Range (dB)	Transmit Power Control – Adaptive, lower power limit varies with RF band down to 1dBm minimum.													

PTP 800 Family of Products	
PTP L6800	L6 GHz
PTP U6800	U6 GHz
PTP 07800	7 GHz
PTP 08800	8 GHz
PTP 11800	11 GHz
PTP 13800	13 GHz
PTP 15800	15 GHz
PTP 18800	18 GHz
PTP 23800	23 GHz
PTP 26800	26 GHz
PTP 28800	28 GHz
PTP 32800	32 GHz
PTP 38800	38 GHz

User Ethernet Data Throughput													
Modulation	Maximum Throughput – Mbps (1518 Bytes/Frame)												
	Channel Bandwidth (MHz)												
	7	13.75	14	27.5	28/ 29.65 <sup>7</sup>	55	56/60	10	20	30	40	50	
256 QAM-H	N/A	N/A	N/A	N/A	N/A	364.9	368.6	N/A	N/A	N/A	N/A	N/A	
256 QAM-L	N/A	N/A	N/A	166.9	170.4	343.6	347.1	N/A	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	84.9	130.4 / 135.5 <sup>8</sup>	181.8	217.4	
32 QAM	24.6	49.9	50.7	99.1	101.2	200.7	202.7	34.7	67.8	103.6	150.7	178.6	
16 QAM	20.0	40.6	41.3	73.3	74.8	150.9	152.4	28.2	58.5	77.9	103.8	150.5	
8PSK	14.7	29.9	30.4	55.7	56.8	114.6	115.8	20.8	40.3	59.1	78.9	103.7	
QPSK	10.1	20.0	20.3	37.0	37.8	76.3	77.1	13.9	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)				
	6, 7, 8	11	13, 15	18	23, 26	28	32	38	L6	11	18	23, 26	38
QPSK	30.0	28.0	26.0	26.0	25.0	25.0	23.0	23.0	22.0	19.0	23.0	23.0	20.0
8PSK	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	22.0	19.0	22.0	22.0	19.0
16 QAM	28.0	26.0	23.0	22.0	22.0	22.0	21.0	20.0	22.0	19.0	22.0	22.0	19.0
32 QAM	28.0	26.0	23.0	22.0	22.0	20.0	19.0	20.0	22.0	19.0	22.0	22.0	19.0
64 QAM	24.0	21.0	18.0	17.0	17.0	17.0	16.0	16.0	22.0	19.0	17.0	17.0	15.0
128 QAM	24.0	21.0	18.0	17.0	17.0	17.0	16.0	16.0	22.0	19.0	17.0	17.0	15.0
256 QAM	22.0	19.0	16.0	15.0	15.0	15.0	14.0	14.0	22.0	19.0	15.0	15.0	13.0

<sup>7</sup> For Upper 6 GHz only, 30 MHz capacity is equal to 28 MHz capacity.

<sup>8</sup> 135.5 Mbps is available in Lower 6 GHz.

Receive Sensitivity									
BER = 1e-6	Modulation	Frequency (GHz)							
		6, 7, 8	11	13, 15	18	23, 26	28	32	38
Receive Sensitivity @ 56/60 MHz channel (dBm)	256 QAM-H	N/A	N/A	-63.7	N/A	-63.2	-62.7	-62.2	-61.2
	256 QAM-L	N/A	N/A	-65.6	N/A	-65.1	-64.6	-64.1	-63.1
	128 QAM	N/A	N/A	-68.3	N/A	-67.8	-67.3	-66.8	-65.8
	64 QAM	N/A	N/A	-71.3	N/A	-70.8	-70.3	-69.8	-68.8
	32 QAM	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	16 QAM	N/A	N/A	-77.7	N/A	-77.2	-76.7	-76.2	-75.2
	8PSK	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	QPSK	N/A	N/A	-83.5	N/A	-83.0	-82.5	-82.0	-81.0
Receive Sensitivity @ 55 MHz channel (dBm)	256 QAM-H	N/A	N/A	N/A	-63.8	N/A	N/A	N/A	N/A
	256 QAM-L	N/A	N/A	N/A	-65.7	N/A	N/A	N/A	N/A
	128 QAM	N/A	N/A	N/A	-68.4	N/A	N/A	N/A	N/A
	64 QAM	N/A	N/A	N/A	-71.4	N/A	N/A	N/A	N/A
	32 QAM	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	16 QAM	N/A	N/A	N/A	-77.8	N/A	N/A	N/A	N/A
	8PSK	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	QPSK	N/A	N/A	N/A	-83.6	N/A	N/A	N/A	N/A
Receive Sensitivity @ 50 MHz channel (dBm)	256 QAM	N/A	N/A	N/A	-65.8	-65.3	N/A	N/A	-62.3
	128 QAM	N/A	N/A	N/A	-69.0	-68.5	N/A	N/A	-65.5
	64 QAM	N/A	N/A	N/A	-72.0	-71.5	N/A	N/A	-68.5
	32 QAM	N/A	N/A	N/A	-74.3	-73.8	N/A	N/A	-70.8
	16 QAM	N/A	N/A	N/A	-76.3	-75.8	N/A	N/A	-72.8
	8PSK	N/A	N/A	N/A	-79.6	-79.1	N/A	N/A	-76.1
	QPSK	N/A	N/A	N/A	-84.2	-83.7	N/A	N/A	-80.7
Receive Sensitivity @ 40 MHz channel (dBm)	256 QAM	N/A	-67.3	N/A	-67.3	-66.8	N/A	N/A	N/A
	128 QAM	-69.5	-70.0	N/A	-70.0	-69.5	N/A	N/A	N/A
	64 QAM	-71.9	-72.4	N/A	-72.4	-71.9	N/A	N/A	N/A
	32 QAM	N/A	-74.5	N/A	-74.5	-74.0	N/A	N/A	N/A
	16 QAM	N/A	N/A	N/A	-79.4	-78.9	N/A	N/A	N/A
	8PSK	N/A	N/A	N/A	-81.6	-81.1	N/A	N/A	N/A
	QPSK	N/A	N/A	N/A	-85.2	-84.7	N/A	N/A	N/A
Receive Sensitivity @ 30 MHz channel (dBm)	256 QAM	-68.0	-68.5	N/A	-68.5	-68.0	N/A	N/A	N/A
	128 QAM	-70.7	-71.2	N/A	-71.2	-70.7	N/A	N/A	N/A
	64 QAM	-73.0	-74.2	N/A	-74.2	-73.7	N/A	N/A	N/A
	32 QAM	N/A	-76.8	N/A	-76.8	-76.3	N/A	N/A	N/A
	16 QAM	N/A	N/A	N/A	-80.6	-80.1	N/A	N/A	N/A
	8PSK	N/A	N/A	N/A	-82.8	-82.3	N/A	N/A	N/A
	QPSK	N/A	N/A	N/A	-86.4	-85.9	N/A	N/A	N/A
Receive Sensitivity @ 28/29.65 <sup>9</sup> MHz channel (dBm)	256 QAM	-68.2	N/A	-68.7	N/A	-68.2	-67.7	-67.2	-66.2
	128 QAM	-70.9	N/A	-71.4	N/A	-70.9	-70.4	-69.9	-68.9
	64 QAM	-73.9	N/A	-74.4	N/A	-73.9	-73.4	-72.9	-71.9
	32 QAM	-76.4	N/A	-76.9	N/A	-76.4	-75.9	-75.4	-74.4
	16 QAM	-80.3	N/A	-80.8	N/A	-80.3	-79.8	-79.3	-78.3
	8PSK	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	QPSK	-86.1	N/A	-86.6	N/A	-86.1	-85.6	-85.1	-84.1

<sup>9</sup> For Upper 6 GHz only, 30 MHz capacity is equal to 28 MHz capacity.

Receive Sensitivity									
BER = 1e-6	Modulation	Frequency (GHz)							
		6, 7, 8	11	13, 15	18	23, 26	28	32	38
Receive Sensitivity @ 27.5 MHz channel (dBm)	256 QAM	N/A	N/A	N/A	-68.8	N/A	N/A	N/A	N/A
	128 QAM	N/A	N/A	N/A	-71.5	N/A	N/A	N/A	N/A
	64 QAM	N/A	N/A	N/A	-74.5	N/A	N/A	N/A	N/A
	32 QAM	N/A	N/A	N/A	-77.0	N/A	N/A	N/A	N/A
	16 QAM	N/A	N/A	N/A	-80.9	N/A	N/A	N/A	N/A
	8PSK	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	QPSK	N/A	N/A	N/A	-86.7	N/A	N/A	N/A	N/A
Receive Sensitivity @ 20 MHz channel (dBm)	256 QAM	N/A	N/A	N/A	-70.6	-70.1	N/A	N/A	N/A
	128 QAM	N/A	N/A	N/A	-72.6	-72.1	N/A	N/A	N/A
	64 QAM	N/A	N/A	N/A	-75.9	-75.4	N/A	N/A	N/A
	32 QAM	N/A	N/A	N/A	-78.3	-77.8	N/A	N/A	N/A
	16 QAM	-80.1	N/A	N/A	-80.6	-80.1	N/A	N/A	N/A
	8PSK	N/A	N/A	N/A	-83.6	-83.1	N/A	N/A	N/A
	QPSK	N/A	N/A	N/A	-87.6	-87.1	N/A	N/A	N/A
Receive Sensitivity @ 14 MHz channel (dBm)	128 QAM	-73.5	N/A	-74.0	N/A	-73.5	-73.0	-72.5	-71.5
	64 QAM	-75.8	N/A	-76.3	N/A	-75.8	-75.3	-74.8	-73.8
	32 QAM	-77.8	N/A	-78.3	N/A	N/A	N/A	N/A	N/A
	16 QAM	-80.7	N/A	-81.2	N/A	-80.7	-80.2	-79.7	-78.7
	8PSK	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	QPSK	-87.4	N/A	-87.9	N/A	-87.4	-86.9	-86.4	-85.4
Receive Sensitivity @ 13.75 MHz channel (dBm)	128 QAM	N/A	N/A	N/A	-74.0	N/A	N/A	N/A	N/A
	64 QAM	N/A	N/A	N/A	-76.3	N/A	N/A	N/A	N/A
	32 QAM	N/A	N/A	N/A	-78.3	N/A	N/A	N/A	N/A
	16 QAM	N/A	N/A	N/A	-81.2	N/A	N/A	N/A	N/A
	8PSK	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	QPSK	N/A	N/A	N/A	-87.9	N/A	N/A	N/A	N/A
Receive Sensitivity @ 10 MHz channel (dBm)	128 QAM	-74.1	-74.6	N/A	-74.6	-74.1	N/A	N/A	-71.1
	64 QAM	N/A	N/A	N/A	-77.8	-77.3	N/A	N/A	-74.3
	32 QAM	N/A	N/A	N/A	-79.8	-79.3	N/A	N/A	-76.3
	16 QAM	N/A	N/A	N/A	-82.7	-82.2	N/A	N/A	-79.2
	8PSK	N/A	N/A	N/A	-85.0	-84.5	N/A	N/A	-81.5
	QPSK	N/A	N/A	N/A	-89.4	-88.9	N/A	N/A	-85.9
Receive Sensitivity @ 7 MHz channel (dBm)	128 QAM	-76.5	N/A	-77.0	-77.0	-76.5	-76.0	-75.5	-74.5
	64 QAM	-78.8	N/A	-79.3	-79.3	-78.8	-78.3	-77.8	-76.8
	32 QAM	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	16 QAM	-83.7	N/A	-84.2	-84.2	-83.7	-83.2	-82.7	-81.7
	8PSK	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	QPSK	-90.4	N/A	-90.9	-90.9	-90.4	-89.9	-89.4	-88.4

**NOTE:**  
While the information presented herein is, to the best of our knowledge, true and accurate, the information provided in this document is subject to change without notice.