

PTP 820F Licensed Microwave Radio



Split-Mount Multi-Core Aggregation Node

Specifications

RADIO

- High Capacity: RFU-S, 6-38 GHz
- High Capacity MultiCore: RFU-D, 6-38 GHz
- High Capacity High Power MultiCore: RFU-D-HP, 6-11 GHz
- High capacity E-band Radio: RFU-E, 71-76 GHz, 81-86 GHz
- 1+0, 3 x 1+0, 2 x 2+0, 2 x 2+0 + 1+0, 1+1 HSB*, 2+2 HSB*
- 2+0 MC-ABC

Radio Interface

- Two combo Radio interfaces
- An additional interface that can be configured as a radio interface or a 2.5 GbE interface*

Radio Features

- Multi-Carrier Adaptive Bandwidth Control (MC-ABC)
- High Spectral Efficiency: BPSK to 4096 QAM w/ ACM
- Channel Bandwidth:
 - 6-38GHz: up to 112 MHz
 - E-band: up to 500 MHz
- XPIC
- Field Replaceable Diplexers

ETHERNET

Ethernet Interfaces

- 4 x 1 GbE combo interface (RJ-45/SFP)
- 1 x 2.5/1 Gbps combo interface (RJ-45/SFP)*
- Management Interface - 2 x 10/100 Base-T (RJ-45)

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
- MSTP, ERP (ITU-T G.8032)

- 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)
- Ethernet OAM – ITU-T Y.1731

TDM

- 16 x E1/DS1
- XC capacity – 256 VCs
- Timing options – Loop timing, system clock, recovered clock
- 1+1 / 1:1 Path protection

SYNCHRONIZATION

Synchronization Distribution

- Sync Distribution over any traffic interface
- Sync-E (ITU-T G.8261, G.8262)
- SSM/ESMC Support for ring/mesh applications (ITU-T G.8264)

IEEE-1588

- Optimized Transport for reduced PDV
- IEEE-1588 TC*
- IEEE-1588 BC*

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

Supported TDM standards

- ITU-T G.703, G.736, G.775, G.823, G.824, G.828, ITU-T I.432, ETSI ETS 300 147, ETS 300 417

TDM Pseudowire Standards

- SAToP-RFC 4553

Security

- Secured protocols (HTTPS, SNMPV3, SSH, SFTP)
- Radius authentication and authorization

Standards Compliance

- Radio Spectral Efficiency: EN 302 217-2-2
- EMC: EN 301 489-1, EN 301 489-4, FCC 47 CFR, part 15, class B (US)
- 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
- Ingress Protection of RFU-S, RFU-D, RFU-D HP and RFU-E: IP67
- Storage: ETSI EN 300 019-1-1 Class 1.2
- Transportation: ETSI EN 300 019-1-2 Class 2.3

TECHNICAL SPECIFICATION

Mechanical Specifications

- IDU – 44mm(H), 482mm(W), 165mm(D), 2.4 kg
- RFU-D – 230mm(H), 233mm(W), 98mm(D), 6.5kg
- RFU-D-HP – 319mm(H), 286mm(W), 107mm(D), 12kg
- RFU-S – 217mm(H), 210mm(W), 85mm(D), 4kg
- RFU-E – 220mm(H), 198mm(W), 75mm(D), 3 kg

Environmental Specifications

- IDU: -5°C to +55°C (-15°C to +60°C extended);
- RFU: -33°C to +55°C (-45°C to +60°C extended)

Power Input Specifications

- IDU Standard Input: -48 VDC
- IDU DC Input range: -40 to -60 VDC
- Dual-feed power support

Power Consumption Specifications

- IDU: 48W maximum
- RFU-D: 75W
- RFU-D-HP: 130W/180W
- RFU-S: 43W
- RFU-E: 43W

*- Available in future release

Specifications

TRANSMIT POWER of RFU-D

dBm Modulation	Frequency (GHz)										
	6	7	8	11	13	15	18	23	24	26	28-38
BPSK	28	28	28	29	27	24	22	25	0	21	18
QPSK	28	28	28	29	27	24	22	25	0	21	18
8 QAM	28	28	28	29	27	24	22	25	0	21	18
16 QAM	28	27	27	29	26	24	22	25	0	20	17
32 QAM	27	27	26	29	25	24	22	24	0	19	16
64 QAM	27	26	26	27	24	24	22	22	0	19	16
128 QAM	27	26	26	26	23	24	22	21	0	19	16
256 QAM	27	26	26	25	22	22	20	18	0	17	14
512 QAM	25	25	24	25	22	22	20	18	0	17	14
1024 QAM	25	24	24	24	20	20	20	17	0	16	13
2048 QAM	23	23	22	23	19	20	18	16	0	15	12
4096 QAM	21	21	20	21	17	18	16	-	-	-	-

TRANSMIT POWER of RFU-D-HP

dBm Modulation	Frequency (GHz)			
	6	7	8	11
BPSK	38	38	37	36
QPSK	37	37	37	36
8 QAM	37	37	37	35
16 QAM	36	36	35	34
32 QAM	36	36	35	34
64 QAM	36	36	35	34
128 QAM	36	35	35	33
256 QAM	35	34	33	32
512 QAM	34	33	33	32
1024 QAM	33	32	32	31
2048 QAM	33	31	31	31
4096 QAM	31	29	29	29

TRANSMIT POWER of RFU-S

dBm Modulation	Frequency (GHz)										
	6	7	8	11	13	15	18	23	24	26	28-38
BPSK	28	28	28	28	27	24	22	25	0	21	18
QPSK	28	28	28	28	27	24	22	25	0	21	18
8 QAM	28	28	28	28	27	24	22	25	0	21	18
16 QAM	28	27	27	28	26	24	22	25	0	20	17
32 QAM	27	26	26	28	25	24	22	24	0	19	16
64 QAM	27	26	26	27	24	23	21	22	0	19	16
128 QAM	27	26	26	27	23	23	21	21	0	19	16
256 QAM	27	26	24	27	22	22	20	18	0	17	14
512 QAM	25	24	24	27	22	22	19	18	0	17	14
1024 QAM	25	24	24	25	20	20	18	17	0	16	13
2048 QAM	23	22	22	24	19	20	17	16	0	15	12
4096 QAM	21	20	20	22	17	18	16	-	-	-	-

TRANSMIT POWER of RFU-E

dBm	Channel Bandwidth (MHz)			
	62.5	125	250	500
Modulation				
BPSK	18	18	18	15
QPSK	18	18	18	15
8 QAM	18	18	16	11
16 QAM	17	17	15	10
32 QAM	17	17	15	10
64 QAM	16	16	14	9
128 QAM	16	16	14	-
256 QAM	15	15	13	-
512 QAM	14	14	-	-
1024 QAM	13	-	-	-

Note: 500MHz is planned for future release.

RECEIVE SENSITIVITY of RFU-D and RFU-S – ANSI

dBm	Channel Spacing	Frequency (GHz)															
		6	7	8	10	11	13	15	18	23	24	26	28	31	32	38	
RFU-D and RFU-S																	
BPSK	20 MHz	-91.5	-91.5	-91.5	-91.0	-92.0	-91.0	-90.0	-91.5	-90.5	-87.0	-90.0	-90.0	-90.0	-89.5	-89.0	
QPSK		-88.5	-88.5	-88.5	-88.5	-89.5	-88.0	-87.5	-88.5	-88.0	-84.0	-87.5	-87.0	-87.0	-87.0	-86.5	
8 PSK		-83.5	-83.5	-83.5	-83.0	-84.0	-83.0	-82.0	-83.5	-82.5	-79.0	-82.0	-82.0	-82.0	-81.5	-81.0	
16 QAM		-82.0	-82.0	-82.0	-81.5	-82.5	-81.5	-80.5	-82.0	-81.0	-77.5	-80.5	-80.5	-80.5	-80.0	-79.5	
32 QAM		-78.0	-78.0	-78.0	-78.0	-79.0	-77.5	-77.0	-78.0	-77.5	-73.5	-77.0	-76.5	-76.5	-76.5	-76.0	
64 QAM		-75.5	-75.5	-75.5	-75.0	-76.0	-75.0	-74.0	-75.5	-74.5	-71.0	-74.0	-74.0	-74.0	-73.5	-73.0	
128 QAM		-72.5	-72.5	-72.5	-72.0	-73.0	-71.5	-71.0	-72.5	-71.5	-68.0	-71.0	-71.0	-71.0	-70.5	-70.0	
256 QAM		-69.0	-69.0	-69.0	-69.0	-70.0	-68.5	-68.0	-69.0	-68.5	-64.5	-68.0	-67.5	-67.5	-67.5	-67.0	
512 QAM		-67.0	-67.0	-67.0	-66.5	-67.5	-66.0	-65.5	-67.0	-66.0	-62.5	-65.5	-65.5	-65.5	-65.0	-64.5	
1024 QAM Strong		-64.0	-64.0	-64.0	-64.0	-65.0	-63.5	-63.0	-64.0	-63.5	-59.5	-63.0	-62.5	-62.5	-62.5	-62.0	
1024 QAM Light		-63.0	-63.0	-63.0	-63.0	-64.0	-62.5	-62.0	-63.0	-62.5	-58.5	-62.0	-61.5	-61.5	-61.5	-61.0	
BPSK	25 MHz	-88.5	-87.5	-87.5	-87.5	-88.0	-87.0	-86.5	-87.5	-86.5	-83.0	-86.5	-86.0	-86.0	-86.0	-85.0	
QPSK		-87.5	-86.5	-86.5	-86.5	-87.0	-86.0	-85.5	-86.5	-85.5	-82.0	-85.5	-85.0	-85.0	-85.0	-84.0	
8 PSK		-82.5	-82.0	-82.0	-81.5	-82.5	-81.5	-80.5	-82.0	-81.0	-77.5	-80.5	-80.5	-80.5	-80.0	-79.5	
16 QAM		-80.5	-80.0	-80.0	-79.5	-80.5	-79.5	-78.5	-80.0	-79.0	-75.5	-78.5	-78.5	-78.5	-78.0	-77.5	
32 QAM		-77.5	-77.0	-77.0	-76.5	-77.5	-76.0	-75.5	-77.0	-76.0	-72.5	-75.5	-75.5	-75.5	-75.0	-74.5	
64 QAM		-74.5	-74.0	-74.0	-73.5	-74.5	-73.5	-72.5	-74.0	-73.0	-69.5	-72.5	-72.5	-72.5	-72.0	-71.5	
128 QAM		-71.5	-71.0	-71.0	-70.5	-71.5	-70.5	-69.5	-71.0	-70.0	-66.5	-69.5	-69.5	-69.5	-69.0	-68.5	
256 QAM		-68.5	-67.5	-67.5	-67.5	-68.5	-67.0	-66.5	-67.5	-67.0	-63.0	-66.5	-66.0	-66.0	-66.0	-65.5	
512 QAM		-66.0	-65.0	-65.0	-65.0	-66.0	-64.5	-64.0	-65.0	-64.5	-60.5	-64.0	-63.5	-63.5	-63.5	-63.0	
1024 QAM Strong		-63.0	-62.5	-62.5	-62.0	-63.0	-61.5	-61.0	-62.5	-61.5	-58.0	-61.0	-61.0	-61.0	-60.5	-60.0	
1024 QAM Light		-62.5	-61.5	-61.5	-61.5	-62.5	-61.0	-60.5	-61.5	-61.0	-57.0	-60.5	-60.0	-60.0	-60.0	-59.5	
2048 QAM	-58.5	-58.0	-58.0	-57.5	-58.5	-57.0	-56.5	-58.0	-57.0	-53.5	-56.5	-56.5	-56.5	-56.0	-55.5		
4096 QAM	-55.5	-55.0	-55.0	-54.5	-55.5	-54.0	-53.5	-55.0	-54.0	-50.5	-53.5	-53.5	-53.5	-53.0	-52.5		
BPSK	30 MHz	-88.5	-88.0	-88.0	-87.5	-88.5	-87.0	-86.5	-88.0	-87.0	-83.5	-86.5	-86.5	-86.5	-86.5	-86.0	
QPSK		-87.5	-87.0	-87.0	-86.5	-87.5	-86.0	-85.5	-87.0	-86.0	-82.5	-85.5	-85.5	-85.5	-85.5	-85.0	
8 PSK		-82.5	-81.5	-81.5	-81.5	-82.5	-81.0	-80.5	-81.5	-81.0	-77.0	-80.5	-80.0	-80.0	-80.0	-79.5	
16 QAM		-81.0	-80.0	-80.0	-80.0	-80.5	-79.5	-79.0	-80.0	-79.0	-75.5	-79.0	-78.5	-78.5	-78.5	-78.0	
32 QAM		-77.0	-76.5	-76.5	-76.0	-77.0	-76.0	-75.0	-76.5	-75.5	-72.0	-75.0	-75.0	-75.0	-75.0	-74.5	
64 QAM		-74.5	-73.5	-73.5	-73.5	-74.0	-73.0	-72.5	-73.5	-72.5	-69.0	-72.5	-72.0	-72.0	-72.0	-71.5	
128 QAM		-71.0	-70.5	-70.5	-70.0	-71.0	-70.0	-69.0	-70.5	-69.5	-66.0	-69.0	-69.0	-69.0	-69.0	-68.5	
256 QAM		-68.0	-67.5	-67.5	-67.0	-68.0	-67.0	-66.0	-67.5	-66.5	-63.0	-66.0	-66.0	-66.0	-66.0	-65.5	
512 QAM		-66.0	-65.5	-65.5	-65.0	-66.0	-64.5	-64.0	-65.5	-64.5	-61.0	-64.0	-64.0	-64.0	-64.0	-63.5	
1024 QAM Strong		-63.0	-62.0	-62.0	-62.0	-62.5	-61.5	-61.0	-62.0	-61.0	-57.5	-61.0	-60.5	-60.5	-60.5	-60.0	
1024 QAM Light		-62.0	-61.0	-61.0	-61.0	-62.0	-60.5	-60.0	-61.0	-60.5	-56.5	-60.0	-59.5	-59.5	-59.5	-59.0	
2048 QAM	-58.0	-57.5	-57.5	-57.0	-58.0	-56.5	-56.0	-57.5	-56.5	-53.0	-56.0	-56.0	-56.0	-56.0	-55.5		
4096 QAM	-55.0	-54.5	-54.5	-54.0	-55.0	-53.5	-53.0	-54.5	-53.5	-50.0	-53.0	-53.0	-53.0	-53.0	-52.5		
RFU-D and RFU-S	Channel Spacing	6	7	8	10	11	13	15	18	23	24	26	28	31	32	38	

PTP 820F SPECIFICATION SHEET

RFU-D and RFU-S	Channel Spacing	6	7	8	10	11	13	15	18	23	24	26	28	31	32	38
BPSK	40 MHz	-87.0	-86.5	-86.5	-86.0	-87.0	-86.0	-85.0	-86.5	-85.5	-82.0	-85.0	-85.0	-85.0	-85.0	-84.5
QPSK		-86.0	-85.5	-85.5	-85.0	-86.0	-85.0	-84.0	-85.5	-84.5	-81.0	-84.0	-84.0	-84.0	-84.0	-83.5
8 PSK		-81.0	-80.5	-80.5	-80.0	-81.0	-79.5	-79.0	-80.5	-79.5	-76.0	-79.0	-79.0	-79.0	-79.0	-78.5
16 QAM		-79.5	-79.0	-79.0	-78.5	-79.5	-78.0	-77.5	-79.0	-78.0	-74.5	-77.5	-77.5	-77.5	-77.5	-77.0
32 QAM		-76.0	-75.0	-75.0	-75.0	-75.5	-74.5	-74.0	-75.0	-74.0	-70.5	-74.0	-73.5	-73.5	-73.5	-73.0
64 QAM		-73.0	-72.0	-72.0	-72.0	-73.0	-71.5	-71.0	-72.0	-71.5	-67.5	-71.0	-70.5	-70.5	-70.5	-70.0
128 QAM		-70.0	-69.0	-69.0	-69.0	-70.0	-68.5	-68.0	-69.0	-68.5	-64.5	-68.0	-67.5	-67.5	-67.5	-67.0
256 QAM		-67.0	-66.0	-66.0	-66.0	-66.5	-65.5	-65.0	-66.0	-65.0	-61.5	-65.0	-64.5	-64.5	-64.5	-64.0
512 QAM		-64.0	-63.5	-63.5	-63.0	-64.0	-62.5	-62.0	-63.5	-62.5	-59.0	-62.0	-62.0	-62.0	-62.0	-61.5
1024 QAM Strong		-61.5	-61.0	-61.0	-60.5	-61.5	-60.0	-59.5	-61.0	-60.0	-56.5	-59.5	-59.5	-59.5	-59.5	-59.0
1024 QAM Light		-60.5	-60.0	-60.0	-59.5	-60.5	-59.5	-58.5	-60.0	-59.0	-55.5	-58.5	-58.5	-58.5	-58.5	-58.0
2048 QAM		-58.0	-57.0	-57.0	-57.0	-58.0	-56.5	-56.0	-57.0	-56.5	-52.5	-56.0	-55.5	-55.5	-55.5	-55.0
4096 QAM		-55.0	-54.0	-54.0	-54.0	-55.0	-53.5	-53.0	-54.0	-53.5	-49.5	-53.0	-52.5	-52.5	-52.5	-52.0
BPSK	50 MHz	-86.5	-85.5	-85.5	-85.5	-86.0	-85.0	-84.5	-85.5	-84.5	-81.0	-84.5	-84.0	-84.0	-84.0	-83.5
QPSK		-85.5	-84.5	-84.5	-84.5	-85.0	-84.0	-83.5	-84.5	-83.5	-80.0	-83.5	-83.0	-83.0	-83.0	-82.5
8 PSK		-80.0	-79.5	-79.5	-79.0	-80.0	-79.0	-78.0	-79.5	-78.5	-75.0	-78.0	-78.0	-78.0	-78.0	-77.5
16 QAM		-78.5	-77.5	-77.5	-77.5	-78.0	-77.0	-76.5	-77.5	-76.5	-73.0	-76.5	-76.0	-76.0	-76.0	-75.5
32 QAM		-74.5	-74.0	-74.0	-73.5	-74.5	-73.5	-72.5	-74.0	-73.0	-69.5	-72.5	-72.5	-72.5	-72.5	-72v
64 QAM		-71.5	-70.5	-70.5	-70.5	-71.5	-70.0	-69.5	-70.5	-70.0	-66.0	-69.5	-69.0	-69.0	-69.0	-68.5
128 QAM		-68.5	-68.0	-68.0	-67.5	-68.5	-67.5	-66.5	-68.0	-67.0	-63.5	-66.5	-66.5	-66.5	-66.5	-66.0
256 QAM		-66.0	-65.0	-65.0	-65.0	-66.0	-64.5	-64.0	-65.0	-64.5	-60.5	-64.0	-63.5	-63.5	-63.5	-63.0
512 QAM		-63.5	-63.0	-63.0	-62.5	-63.5	-62.0	-61.5	-63.0	-62.0	-58.5	-61.5	-61.5	-61.5	-61.5	-61.0
1024 QAM Strong		-60.0	-59.5	-59.5	-59.0	-60.0	-58.5	-58.0	-59.5	-58.5	-55.0	-58.0	-58.0	-58.0	-58.0	-57.5
1024 QAM Light		-59.0	-58.0	-58.0	-58.0	-59.0	-57.5	-57.0	-58.0	-57.5	-53.5	-57.0	-56.5	-56.5	-56.5	-56.0
2048 QAM		-57.0	-56.0	-56.0	-56.0	-56.5	-55.5	-55.0	-56.0	-55.0	-51.5	-55.0	-54.5	-54.5	-54.5	-54.0
4096 QAM		-54.0	-53.0	-53.0	-53.0	-53.5	-52.5	-52.0	-53.0	-52.0	-48.5	-52.0	-51.5	-51.5	-51.5	-51.0
BPSK	60 MHz	-86.0	-85.0	-85.0	-84.5	-85.5	-84.0	-83.5	-85.0	-84.0	-83.5	-83.5	-83.5	-83.5	-83.0	-82.5
QPSK		-85.0	-84.0	-84.0	-83.5	-84.5	-83.0	-82.5	-84.0	-83.0	-82.5	-82.5	-82.5	-82.5	-82.0	-81.5
8 PSK		-80.5	-79.0	-79.0	-79.0	-79.5	-78.5	-78.0	-79.0	-78.0	-77.5	-78.0	-77.5	-77.5	-77.5	-77.0
16 QAM		-78.0	-77.0	-77.0	-76.5	-77.5	-76.0	-75.5	-77.0	-76.0	-75.5	-75.5	-75.5	-75.5	-75.0	-74.5
32 QAM		-74.5	-73.0	-73.0	-73.0	-73.5	-72.5	-72.0	-73.0	-72.0	-71.5	-72.0	-71.5	-71.5	-71.5	-71.0
64 QAM		-71.5	-70.0	-70.0	-69.5	-70.5	-69.5	-68.5	-70.0	-69.0	-68.5	-68.5	-68.5	-68.5	-68.0	-68.0
128 QAM		-69.0	-67.0	-67.0	-67.0	-67.5	-66.5	-66.0	-67.0	-66.0	-65.5	-66.0	-65.5	-65.5	-65.5	-65.0
256 QAM		-65.5	-64.0	-64.0	-63.5	-64.5	-63.5	-62.5	-64.0	-63.0	-62.5	-62.5	-62.5	-62.5	-62.0	-62.0
512 QAM		-63.5	-62.0	-62.0	-61.5	-62.5	-61.5	-60.5	-62.0	-61.0	-60.5	-60.5	-60.5	-60.5	-60.0	-60.0
1024 QAM Strong		-60.0	-58.5	-58.5	-58.0	-59.0	-58.0	-57.0	-58.5	-57.5	-57.0	-57.0	-57.0	-57.0	-56.5	-56.5
1024 QAM Light		-59.0	-57.5	-57.5	-57.0	-58.0	-57.0	-56.0	-57.5	-56.5	-56.0	-56.0	-56.0	-56.0	-55.5	-55.5
2048 QAM		-56.5	-54.5	-54.5	-54.5	-55.0	-54.0	-53.5	-54.5	-53.5	-53.0	-53.5	-53.0	-53.0	-53.0	-52.5
4096 QAM		-53.5	-51.5	-51.5	-51.5	-52.0	-51.0	-50.5	-51.5	-50.5	-50.0	-50.5	-50.0	-50.0	-50.0	-49.5
BPSK	80 MHz	-85.0	-85.0	-85.0	-84.5	-85.5	-84.5	-83.5	-85.0	-84.0	-83.5	-83.5	-83.5	-83.5	-83.0	-83.5
QPSK		-82.5	-82.5	-82.5	-82.5	-83.0	-82.0	-81.5	-82.5	-81.5	-81.0	-81.5	-81.0	-81.0	-81.0	-81.0
8 PSK		-79.0	-79.0	-79.0	-78.5	-79.5	-78.5	-77.5	-79.0	-78.0	-77.5	-77.5	-77.5	-77.5	-77.0	-77.5
16 QAM		-76.0	-76.0	-76.0	-75.5	-76.5	-75.0	-74.5	-76.0	-75.0	-74.5	-74.5	-74.5	-74.5	-74.0	-74.0
32 QAM		-72.5	-72.5	-72.5	-72.0	-73.0	-71.5	-71.0	-72.5	-71.5	-71.0	-71.0	-71.0	-71.0	-70.5	-70.5
64 QAM		-69.0	-69.0	-69.0	-69.0	-70.0	-68.5	-68.0	-69.0	-68.5	-68.0	-68.0	-67.5	-67.5	-67.5	-67.5
128 QAM		-66.5	-66.5	-66.5	-66.0	-67.0	-66.0	-65.0	-66.5	-65.5	-65.0	-65.0	-65.0	-65.0	-64.5	-65.0
256 QAM		-63.5	-63.5	-63.5	-63.0	-64.0	-63.0	-62.0	-63.5	-62.5	-62.0	-62.0	-62.0	-62.0	-61.5	-62.0
512 QAM		-61.0	-61.0	-61.0	-61.0	-62.0	-60.5	-60.0	-61.0	-60.5	-60.0	-60.0	-59.5	-59.5	-59.5	-59.5
1024 QAM Strong		-58.0	-58.0	-58.0	-57.5	-58.5	-57.5	-56.5	-58.0	-57.0	-56.5	-56.5	-56.5	-56.5	-56.0	-56.5
1024 QAM Light		-57.0	-57.0	-57.0	-57.0	-58.0	-56.5	-56.0	-57.0	-56.5	-56.0	-56.0	-55.5	-55.5	-55.5	-55.5
2048 QAM		-54.5	-54.5	-54.5	-54.5	-55.5	-54.0	-53.5	-54.5	-54.0	-53.5	-53.5	-53.0	-53.0	-53.0	-53.0

RECEIVE SENSITIVITY of RFU-D-HP – ANSI

dBm	RFU-D-HP	Channel Spacing	Frequency (GHz)				Channel Spacing	Frequency (GHz)			
			6	7	8	11		6	7	8	11
		20 MHz	-92.5	-92.5	-92.5	-92.5	50 MHz	-86.5	-85.5	-85.5	-86.0
	BPSK		-90.0	-90.0	-90.0	-90.0		-85.5	-84.5	-84.5	-85.0
	QPSK		-84.5	-84.5	-84.5	-84.5		-80.0	-79.5	-79.5	-80.0
	8 PSK		-83.5	-83.5	-83.5	-83.5		-78.5	-77.5	-77.5	-78.0
	16 QAM		-79.5	-79.5	-79.5	-79.5		-74.5	-74.0	-74.0	-74.5
	32 QAM		-76.5	-76.5	-76.5	-76.5		-71.5	-70.5	-70.5	-71.5
	64 QAM		-73.5	-73.5	-73.5	-73.5		-68.5	-68.0	-68.0	-68.5
	128 QAM		-70.5	-70.5	-70.5	-70.5		-66.0	-65.0	-65.0	-66.0
	256 QAM		-68.0	-68.0	-68.0	-68.0		-63.5	-63.0	-63.0	-63.5
	512 QAM		-65.5	-65.5	-65.5	-65.5		-60.0	-59.5	-59.5	-60.0
	1024 QAM		-	-	-	-		-57.0	-56.0	-56.0	-56.5
	2048 QAM		-	-	-	-		-54.0	-53.0	-53.0	-53.5
	4096 QAM										
		25 MHz	-88.5	-87.5	-87.5	-88.0	60 MHz	-85.5	-84.5	-84.5	-85.0
	BPSK		-87.5	-86.5	-86.5	-87.0		-84.5	-83.5	-83.5	-84.0
	QPSK		-82.5	-82.0	-82.0	-82.5		-79.0	-78.5	-78.5	-79.0
	8 PSK		-80.5	-80.0	-80.0	-80.5		-77.5	-76.5	-76.5	-77.0
	16 QAM		-77.5	-77.0	-77.0	-77.5		-73.5	-73.0	-73.0	-73.5
	32 QAM		-74.5	-74.0	-74.0	-74.5		-70.5	-69.5	-69.5	-70.5
	64 QAM		-71.5	-71.0	-71.0	-71.5		-67.5	-67.0	-67.0	-67.5
	128 QAM		-68.5	-67.5	-67.5	-68.5		-65.0	-64.0	-64.0	-65.0
	256 QAM		-66.0	-65.0	-65.0	-66.0		-62.5	-62.0	-62.0	-62.5
	512 QAM		-63.0	-62.5	-62.5	-63.0		-59.0	-58.5	-58.5	-59.0
	1024 QAM		-58.5	-58.0	-58.0	-58.5		-56.0	-55.0	-55.0	-55.5
	2048 QAM		-55.5	-55.0	-55.0	-55.5		-53.0	-52.0	-52.0	-52.5
	4096 QAM										
		30 MHz	-88.5	-88.0	-88.0	-88.5	80 MHz	-86.0	-86.0	-86.0	-86.0
	BPSK		-87.5	-87.0	-87.0	-87.5		-84.0	-84.0	-84.0	-84.0
	QPSK		-82.5	-81.5	-81.5	-82.5		-80.0	-80.0	-80.0	-80.0
	8 PSK		-81.0	-80.0	-80.0	-80.5		-77.0	-77.0	-77.0	-77.0
	16 QAM		-77.0	-76.5	-76.5	-77.0		-73.5	-73.5	-73.5	-73.5
	32 QAM		-74.5	-73.5	-73.5	-74.0		-70.5	-70.5	-70.5	-70.5
	64 QAM		-71.0	-70.5	-70.5	-71.0		-67.5	-67.5	-67.5	-67.5
	128 QAM		-68.0	-67.5	-67.5	-68.0		-64.5	-64.5	-64.5	-64.5
	256 QAM		-66.0	-65.5	-65.5	-66.0		-62.5	-62.5	-62.5	-62.5
	512 QAM		-63.0	-62.0	-62.0	-62.5		-59.5	-59.5	-59.5	-59.5
	1024 QAM		-58.0	-57.5	-57.5	-58.0		-56.0	-56.0	-56.0	-56.0
	2048 QAM		-55.0	-54.5	-54.5	-55.0		n/a	n/a	n/a	n/a
	4096 QAM										
		40 MHz	-86.5	-85.5	-85.5	-86.0					
	BPSK		-85.5	-84.5	-84.5	-85.0					
	QPSK		-80.0	-79.5	-79.5	-80.0					
	8 PSK		-78.5	-77.5	-77.5	-78.0					
	16 QAM		-74.5	-74.0	-74.0	-74.5					
	32 QAM		-71.5	-70.5	-70.5	-71.5					
	64 QAM		-68.5	-68.0	-68.0	-68.5					
	128 QAM		-66.0	-65.0	-65.0	-66.0					
	256 QAM		-63.5	-63.0	-63.0	-63.5					
	512 QAM		-60.0	-59.5	-59.5	-60.0					
	1024 QAM		-57.0	-56.0	-56.0	-56.5					
	2048 QAM		-54.0	-53.0	-53.0	-53.5					
	4096 QAM										

RECEIVE SENSITIVITY of RFU-D and RFU-S – ETSI

dBm	Channel Spacing	Frequency (GHz)														
		6	7	8	10	11	13	15	18	23	24	26	28	31	32	38
BPSK	14 MHz	-91.5	-91.0	-91.0	-90.5	-91.5	-90.5	-89.5	-91.0	-90.0	-89.5	-89.5	-89.5	-89.0	-89.0	-89.0
QPSK		-90.5	-90.0	-90.0	-89.5	-90.5	-89.5	-88.5	-90.0	-89.0	-88.5	-88.5	-88.5	-88.5	-88.0	-88.0
8 PSK		-84.5	-84.0	-84.0	-83.5	-85.5	-83.5	-82.5	-84.0	-83.0	-82.5	-82.5	-82.5	-82.5	-82.0	-82.0
16 QAM		-83.5	-83.0	-83.0	-82.5	-83.5	-82.5	-81.5	-83.0	-82.0	-81.5	-81.5	-81.5	-81.5	-81.0	-81.0
32 QAM		-80.5	-79.5	-79.5	-79.5	-80.5	-79.0	-78.5	-79.5	-79.0	-78.5	-78.5	-78.0	-78.0	-78.0	-77.5
64 QAM		-77.5	-76.5	-76.5	-76.5	-77.0	-76.0	-75.5	-76.5	-76.0	-75.5	-75.5	-75.0	-75.0	-75.0	-74.5
128 QAM		-74.0	-73.5	-73.5	-73.0	-74.0	-73.0	-72.0	-73.5	-72.5	-72.0	-72.0	-72.0	-72.0	-71.5	-71.5
256 QAM		-71.5	-70.5	-70.5	-70.5	-71.0	-70.0	-69.5	-70.5	-69.5	-69.0	-69.5	-69.0	-69.0	-69.0	-68.5
512 QAM		-68.5	-68.0	-68.0	-67.5	-68.5	-67.5	-66.5	-68.0	-67.0	-66.5	-66.5	-66.5	-66.5	-66.0	-66.0
1024 QAM Strong		-65.5	-65.0	-65.0	-64.5	-65.5	-64.5	-63.5	-65.0	-64.0	-63.5	-63.5	-63.5	-63.5	-63.0	-63.0
1024 QAM Light		-65.0	-64.0	-64.0	-64.0	-64.5	-63.5	-63.0	-64.0	-63.5	-63.0	-63.0	-62.5	-62.5	-62.5	-62.0
BPSK	28 MHz	-88.5	-88.0	-88.0	-87.5	-88.5	-87.5	-86.5	-88.0	-87.0	-86.5	-86.5	-86.5	-86.0	-86.0	
QPSK		-87.5	-87.0	-87.0	-86.5	-87.5	-86.5	-85.5	-87.0	-86.0	-85.5	-85.5	-85.5	-85.5	-85.0	-85.0
8 PSK		-83.0	-82.5	-82.5	-82.0	-83.0	-82.0	-81.0	-82.5	-81.5	-81.0	-81.0	-81.0	-81.0	-80.5	-80.5
16 QAM		-81.0	-80.5	-80.5	-80.0	-81.0	-79.5	-79.0	-80.5	-79.5	-79.0	-79.0	-79.0	-79.0	-78.5	-78.0
32 QAM		-77.5	-77.0	-77.0	-76.5	-77.5	-76.0	-75.5	-77.0	-76.0	-75.5	-75.5	-75.5	-75.5	-75.0	-74.5
64 QAM		-74.5	-74.0	-74.0	-73.5	-74.5	-73.0	-72.5	-74.0	-73.0	-72.5	-72.5	-72.5	-72.5	-72.0	-71.5
128 QAM		-71.5	-70.5	-70.5	-70.5	-71.0	-70.0	-69.5	-70.5	-69.5	-69.0	-69.5	-69.0	-69.0	-69.0	-68.5
256 QAM		-68.5	-67.5	-67.5	-67.5	-68.0	-67.0	-66.5	-67.5	-66.5	-66.0	-66.5	-66.0	-66.0	-66.0	-65.5
512 QAM		-66.0	-65.0	-65.0	-65.0	-66.0	-64.5	-64.0	-65.0	-64.5	-64.0	-64.0	-63.5	-63.5	-63.5	-63.0
1024 QAM Strong		-63.0	-62.5	-62.5	-62.0	-63.0	-61.5	-61.0	-62.5	-61.5	-61.0	-61.0	-61.0	-61.0	-60.5	-60.0
1024 QAM Light		-62.0	-61.5	-61.5	-61.0	-62.0	-60.5	-60.0	-61.5	-60.5	-60.0	-60.0	-60.0	-60.0	-59.5	-59.0
2048 QAM	-58.5	-58.0	-58.0	-57.5	-58.5	-57.0	-56.5	-58.0	-57.0	-56.5	-56.5	-56.5	-56.5	-56.0	-55.5	
4096 QAM	-55.5	-55.0	-55.0	-54.5	-55.5	-54.0	-53.5	-55.0	-54.0	-53.5	-53.5	-53.5	-53.5	-53.0	-52.5	
BPSK	40 MHz	-87.0	-86.5	-86.5	-86.0	-87.0	-86.0	-85.0	-86.5	-85.5	-85.0	-85.0	-85.0	-84.5	-84.5	
QPSK		-86.0	-85.5	-85.5	-85.0	-86.0	-85.0	-84.0	-85.5	-84.5	-84.0	-84.0	-84.0	-84.0	-83.5	-83.5
8 PSK		-81.0	-80.5	-80.5	-80.0	-81.0	-79.5	-79.0	-80.5	-79.5	-79.0	-79.0	-79.0	-79.0	-78.5	-78.0
16 QAM		-79.5	-79.0	-79.0	-78.5	-79.5	-78.0	-77.5	-79.0	-78.0	-77.5	-77.5	-77.5	-77.5	-77.0	-76.5
32 QAM		-76.0	-75.0	-75.0	-75.0	-75.5	-74.5	-74.0	-75.0	-74.0	-73.5	-74.0	-73.5	-73.5	-73.5	-73.0
64 QAM		-73.0	-72.0	-72.0	-72.0	-73.0	-71.5	-71.0	-72.0	-71.5	-71.0	-71.0	-70.5	-70.5	-70.5	-70.0
128 QAM		-70.0	-69.0	-69.0	-69.0	-70.0	-68.5	-68.0	-69.0	-68.5	-68.0	-68.0	-67.5	-67.5	-67.5	-67.0
256 QAM		-67.0	-66.0	-66.0	-66.0	-66.5	-65.5	-65.0	-66.0	-65.0	-64.5	-65.0	-64.5	-64.5	-64.5	-64.0
512 QAM		-64.0	-63.5	-63.5	-63.0	-64.0	-62.5	-62.0	-63.5	-62.5	-62.0	-62.0	-62.0	-62.0	-61.5	-61.0
1024 QAM Strong		-61.5	-61.0	-61.0	-60.5	-61.5	-60.0	-59.5	-61.0	-60.0	-59.5	-59.5	-59.5	-59.5	-59.0	-58.5
1024 QAM Light		-60.5	-60.0	-60.0	-59.5	-60.5	-59.5	-58.5	-60.0	-59.0	-58.5	-58.5	-58.5	-58.5	-58.0	-58.0
2048 QAM	-58.0	-57.0	-57.0	-57.0	-58.0	-56.5	-56.0	-57.0	-56.5	-56.0	-56.0	-55.5	-55.5	-55.5	-55.0	
4096 QAM	-55.0	-54.0	-54.0	-54.0	-55.0	-53.5	-53.0	-54.0	-53.5	-53.0	-53.0	-52.5	-52.5	-52.5	-52.0	
BPSK	56 MHz	-85.5	-85.0	-85.0	-84.5	-85.5	-84.0	-83.5	-85.0	-84.0	-83.5	-83.5	-83.5	-83.0	-82.5	
QPSK		-84.5	-84.0	-84.0	-83.5	-84.5	-83.0	-82.5	-84.0	-83.0	-82.5	-82.5	-82.5	-82.5	-82.0	-81.5
8 PSK		-80.0	-79.0	-79.0	-79.0	-79.5	-78.5	-78.0	-79.0	-78.0	-77.5	-78.0	-77.5	-77.5	-77.5	-77.0
16 QAM		-77.5	-77.0	-77.0	-76.5	-77.5	-76.0	-75.5	-77.0	-76.0	-75.5	-75.5	-75.5	-75.5	-75.0	-74.5
32 QAM		-74.0	-73.0	-73.0	-73.0	-73.5	-72.5	-72.0	-73.0	-72.0	-71.5	-72.0	-71.5	-71.5	-71.5	-71.0
64 QAM		-70.5	-70.0	-70.0	-69.5	-70.5	-69.5	-68.5	-70.0	-69.0	-68.5	-68.5	-68.5	-68.5	-68.0	-68.0
128 QAM		-68.0	-67.0	-67.0	-67.0	-67.5	-66.5	-66.0	-67.0	-66.0	-65.5	-66.0	-65.5	-65.5	-65.5	-65.0
256 QAM		-64.5	-64.0	-64.0	-63.5	-64.5	-63.5	-62.5	-64.0	-63.0	-62.5	-62.5	-62.5	-62.5	-62.0	-62.0
512 QAM		-62.5	-62.0	-62.0	-61.5	-62.5	-61.5	-60.5	-62.0	-61.0	-60.5	-60.5	-60.5	-60.5	-60.0	-60.0
1024 QAM Strong		-59.0	-58.5	-58.5	-58.0	-59.0	-58.0	-57.0	-58.5	-57.5	-57.0	-57.0	-57.0	-57.0	-56.5	-56.5
1024 QAM Light		-58.0	-57.5	-57.5	-57.0	-58.0	-57.0	-56.0	-57.5	-56.5	-56.0	-56.0	-56.0	-56.0	-55.5	-55.5
2048 QAM	-55.5	-54.5	-54.5	-54.5	-55.0	-54.0	-53.5	-54.5	-53.5	-53.0	-53.5	-53.0	-53.0	-53.0	-52.5	
4096 QAM	-52.5	-51.5	-51.5	-51.5	-52.0	-51.0	-50.5	-51.5	-50.5	-50.0	-50.5	-50.0	-50.0	-50.0	-49.5	

RFU-D and RFU-S	Channel Spacing	6	7	8	10	11	13	15	18	23	24	26	28	31	32	38
BPSK	80 MHz	-85.0	-85.0	-85.0	-84.5	-85.5	-84.5	-83.5	-85.0	-84.0	-83.5	-83.5	-83.5	-83.5	-83.0	-83.5
QPSK		-82.5	-82.5	-82.5	-82.5	-83.0	-82.0	-81.5	-82.5	-81.5	-81.0	-81.5	-81.0	-81.0	-81.0	-81.0
8 PSK		-79.0	-79.0	-79.0	-78.5	-79.5	-78.5	-77.5	-79.0	-78.0	-77.5	-77.5	-77.5	-77.5	-77.0	-77.5
16 QAM		-76.0	-76.0	-76.0	-75.5	-76.5	-75.0	-74.5	-76.0	-75.0	-74.5	-74.5	-74.5	-74.5	-74.0	-74.0
32 QAM		-72.5	-72.5	-72.5	-72.0	-73.0	-71.5	-71.0	-72.5	-71.5	-71.0	-71.0	-71.0	-71.0	-70.5	-70.5
64 QAM		-69.0	-69.0	-69.0	-69.0	-70.0	-68.5	-68.0	-69.0	-68.5	-68.0	-68.0	-68.0	-67.5	-67.5	-67.5
128 QAM		-66.5	-66.5	-66.5	-66.0	-67.0	-66.0	-65.0	-66.5	-65.5	-65.0	-65.0	-65.0	-65.0	-64.5	-65.0
256 QAM		-63.5	-63.5	-63.5	-63.0	-64.0	-63.0	-62.0	-63.5	-62.5	-62.0	-62.0	-62.0	-62.0	-61.5	-62.0
512 QAM		-61.0	-61.0	-61.0	-61.0	-62.0	-60.5	-60.0	-61.0	-60.5	-60.0	-60.0	-60.0	-59.5	-59.5	-59.5
1024 QAM Strong		-58.0	-58.0	-58.0	-57.5	-58.5	-57.5	-56.5	-58.0	-57.0	-56.5	-56.5	-56.5	-56.5	-56.0	-56.5
1024 QAM Light		-57.0	-57.0	-57.0	-57.0	-58.0	-56.5	-56.0	-57.0	-56.5	-56.0	-56.0	-55.5	-55.5	-55.5	-55.5
2048 QAM		-54.5	-54.5	-54.5	-54.5	-55.5	-54.0	-53.5	-54.5	-54.0	-53.5	-53.5	-53.0	-53.0	-53.0	-53.0
BPSK	112 MHz	-82.0	-81.5	-81.5	-81.0	-82.0	-80.5	-80.0	-81.5	-80.5	-80.0	-80.0	-80.0	-80.0	-79.5	-79.0
QPSK		-81.0	-80.5	-80.5	-80.0	-81.0	-79.5	-79.0	-80.5	-79.5	-79.0	-79.0	-79.0	-79.0	-78.5	-78.0
8 PSK		-76.5	-75.5	-75.5	-75.5	-76.0	-75.0	-74.5	-75.5	-74.5	-74.0	-74.5	-74.0	-74.0	-74.0	-73.5
16 QAM		-74.0	-73.5	-73.5	-73.0	-74.0	-72.5	-72.0	-73.5	-72.5	-72.0	-72.0	-72.0	-72.0	-71.5	-71.0
32 QAM		-70.5	-69.5	-69.5	-69.5	-70.0	-69.0	-68.5	-69.5	-68.5	-68.0	-68.5	-68.0	-68.0	-68.0	-67.5
64 QAM		-67.0	-66.5	-66.5	-66.0	-67.0	-66.0	-65.0	-66.5	-65.5	-65.0	-65.0	-65.0	-65.0	-64.5	-64.5
128 QAM		-64.5	-63.5	-63.5	-63.5	-64.0	-63.0	-62.5	-63.5	-62.5	-62.0	-62.5	-62.0	-62.0	-62.0	-61.5
256 QAM		-61.0	-60.5	-60.5	-60.0	-61.0	-60.0	-59.0	-60.5	-59.5	-59.0	-59.0	-59.0	-59.0	-58.5	-58.5
512 QAM		-59.0	-58.5	-58.5	-58.0	-59.0	-58.0	-57.0	-58.5	-57.5	-57.0	-57.0	-57.0	-57.0	-56.5	-56.5
1024 QAM Strong		-55.5	-55.0	-55.0	-54.5	-55.5	-54.5	-53.5	-55.0	-54.0	-53.5	-53.5	-53.5	-53.5	-53.0	-53.0
1024 QAM Light		-54.5	-54.0	-54.0	-53.5	-54.5	-53.5	-52.5	-54.0	-53.0	-52.5	-52.5	-52.5	-52.5	-52.0	-52.0
2048 QAM		-52.0	-51.0	-51.0	-51.0	-51.5	-50.5	-50.0	-51.0	-50.0	-49.5	-5.0	-49.5	-49.5	-49.5	-49.0

RECEIVE SENSITIVITY of RFU-D-HP – ETSI

dBm	RFU-D-HP	Channel Spacing	Frequency (GHz)				Channel Spacing	Frequency (GHz)					
			6	7	8	11		6	7	8	11		
-86.0	BPSK	28 MHz	80 MHz	-92.0	-91.5	-91.5	-91.5	80 MHz	-86.0	-86.0	-86.0	-86.0	
				QPSK	-90.0	-89.5	-89.5		-89.5	-84.0	-84.0	-84.0	-84.0
				8 PSK	-85.5	-85.0	-85.0		-85.0	-80.0	-80.0	-80.0	-80.0
				16 QAM	-83.5	-83.0	-83.0		-83.0	-77.0	-77.0	-77.0	-77.0
				32 QAM	-80.0	-79.5	-79.5		-79.5	-73.5	-73.5	-73.5	-73.5
				64 QAM	-77.0	-76.5	-76.5		-76.5	-70.5	-70.5	-70.5	-70.5
				128 QAM	-74.0	-73.5	-73.5		-73.5	-67.5	-67.5	-67.5	-67.5
				256 QAM	-71.0	-70.5	-70.5		-70.5	-64.5	-64.5	-64.5	-64.5
				512 QAM	-68.5	-68.0	-68.0		-68.0	-62.5	-62.5	-62.5	-62.5
				1024 QAM Strong	-65.5	-65.0	-65.0		-65.0	-59.5	-59.5	-59.5	-59.5
				1024 QAM Light	-64.5	-64.0	-64.0		-64.0	-58.5	-58.5	-58.5	-58.5
				2048 QAM	-61.0	-60.5	-60.5		-60.5	-56.0	-56.0	-56.0	-56.0
				4096 QAM	-59.0	-58.5	-58.5		-58.5	n/a	n/a	n/a	n/a
				-82.0	BPSK	40 MHz	112 MHz		-90.5	-90.0	-90.0	-90.0	112 MHz
QPSK	-88.5	-88.0	-88.0					-88.0	-80.5	-80.0	-80.0	-80.0	
8 PSK	-83.5	-83.0	-83.0					-83.0	-76.5	-76.0	-76.0	-76.0	
16 QAM	-82.0	-81.5	-81.5					-81.5	-74.0	-73.5	-73.5	-73.5	
32 QAM	-78.5	-78.0	-78.0					-78.0	-71.0	-70.5	-70.5	-70.5	
64 QAM	-75.5	-75.0	-75.0					-75.0	-67.5	-67.0	-67.0	-67.0	
128 QAM	-72.5	-72.0	-72.0					-72.0	-65.0	-64.5	-64.5	-64.5	
256 QAM	-69.5	-69.0	-69.0					-69.0	-61.5	-61.0	-61.0	-61.0	
512 QAM	-66.5	-66.0	-66.0					-66.0	-59.5	-59.0	-59.0	-59.0	
1024 QAM Strong	-64.0	-63.5	-63.5					-63.5	-56.0	-55.5	-55.5	-55.5	
1024 QAM Light	-63.0	-62.5	-62.5					-62.5	-55.0	-54.5	-54.5	-54.5	
2048 QAM	-60.5	-60.0	-60.0					-60.0	-50.5	-50.0	-50.0	-50.0	
4096 QAM	-58.5	-58.0	-58.0					-58.0	n/a	n/a	n/a	n/a	

RFU-D-HP	Channel Spacing	6	7	8	11
BPSK	56 MHz	-88.5	-88.0	-88.0	-88.0
QPSK		-86.5	-86.0	-86.0	-86.0
8 PSK		-82.5	-82.0	-82.0	-82.0
16 QAM		-80.0	-79.5	-79.5	-79.5
32 QAM		-77.0	-76.5	-76.5	-76.5
64 QAM		-73.5	-73.0	-73.0	-73.0
128 QAM		-71.0	-70.5	-70.5	-70.5
256 QAM		-67.5	-67.0	-67.0	-67.0
512 QAM		-65.5	-65.0	-65.0	-65.0
1024 QAM Strong		-62.0	-61.5	-61.5	-61.5
1024 QAM Light		-61.0	-60.5	-60.5	-60.5
2048 QAM		-56.5	-56.0	-56.0	-56.0
4096 QAM		-54.5	-54.0	-54.0	-54.0

RECEIVE SENSITIVITY – RFU-E

Receiver Threshold (RSL) (dBm @ BER = 10 ⁻⁶)	Channel Size (MHz)			
	62.5	125	250	500
BPSK	-83.0	-80.0	-77.0	-74.0
QPSK	-79.5	-76.5	-73.5	-70.5
8 PSK	-75.5	-72.5	-70.0	-67.0
16 QAM	-73.0	-69.5	-67.0	-64.0
32 QAM	-69.0	-66.0	-63.0	-60.0
64 QAM	-66.0	-63.0	-60.0	-57.0
128 QAM	-63.0	-60.0	-57.0	-
256 QAM	-59.5	-57.0	-54.0	-
512 QAM	-57.0	-54.0	-	-
1024 QAM	-54.0	-	-	-

Note: 500 MHz is planned for future release.

ETHERNET THROUGHPUT for RFU-S, RFU-D and RFU-D-HP

Mbps	Ethernet Throughput (Mbps)			Ethernet Throughput (Mbps)				
Modulation	Channel Size	No Compression	L2 Compression	Multi-Layer Compression	Channel Size	No Compression	L2 Compression	Multi-Layer Compression
BPSK	14 MHz	9	9-10	10-29	25 MHz	17	17-19	18-54
QPSK		19	19-22	20-62		35	35-40	37-112
8 PSK		29	29-33	30-93		52	53-60	55-168
16 QAM		40	40-45	42-128		71	72-81	75-229
32 QAM		53	53-60	55-169		94	95-107	99-302
64 QAM		65	65-74	68-208		116	117-132	121-372
128 QAM		78	79-89	82-251		139	141-159	147-448
256 QAM		89	90-102	94-287		159	160-181	167-511
512 QAM		98	99-112	103-316		175	177-200	184-564
1024 QAM Strong		104	105-119	109-335		186	188-213	196-599
1024 QAM Light		111	111-126	116-355		198	199-226	208-636
2048 QAM		115	116-131	121-370		212	214-242	223-682
4096 QAM		n/a	n/a	n/a		230	232-262	241-739

PTP 820F SPECIFICATION SHEET

Modulation	Channel Size	No Compression	L2 Compression	Multi-Layer Compression	Channel Size	No Compression	L2 Compression	Multi-Layer Compression
BPSK	20 MHz	13	13-15	14-42	30 MHz	20	21-23	22-66
QPSK		27	28-31	29-88		42	42-48	44-135
8 PSK		41	41-47	43-132		61	62-70	64-197
16 QAM		56	57-64	59-180		86	87-98	90-277
32 QAM		74	75-85	78-238		113	114-129	119-364
64 QAM		91	92-104	96-293		140	141-159	147-449
128 QAM		110	111-126	116-354		168	169-192	176-540
256 QAM		125	126-142	131-401		193	195-220	203-621
512 QAM		136	137-156	143-438		206	208-235	216-662
1024 QAM Strong		145	146-165	152-466		225	226-256	236-722
1024 QAM Light		154	155-176	162-495		238	240-271	250-764
2048 QAM		164	165-187	172-528		260	262-296	273-834
4096 QAM		180	181-205	189-578		276	279-315	290-888
BPSK	28 MHz	19	19-22	20-62	50 MHz	36	36-41	37-114
QPSK		40	40-45	42-128		69	70-79	73-223
8 PSK		59	60-68	62-191		108	108-123	113-346
16 QAM		81	82-93	85-261		146	147-166	153-469
32 QAM		107	108-122	112-344		183	185-209	193-589
64 QAM		132	133-150	138-424		237	239-270	249-761
128 QAM		159	160-181	167-510		276	278-315	290-888
256 QAM		181	182-206	190-580		327	330-374	344-1052
512 QAM		199	201-227	209-640		355	358-405	373-1142
1024 QAM Strong		212	214-242	223-681		387	390-441	406-1242
1024 QAM Light		225	227-257	236-723		411	414-468	431-1320
2048 QAM		241	243-275	253-775		443	446-505	465-1423
4096 QAM		261	263-298	274-839		459	463-524	482-1476
BPSK	40 MHz	28	28-32	29-90	60 MHz	42	43-48	44-136
QPSK		57	57-65	60-183		86	86-98	90-276
8 PSK		85	86-97	89-273		125	126-143	131-402
16 QAM		116	117-132	121-372		174	175-198	182-558
32 QAM		152	154-174	160-490		229	230-261	240-734
64 QAM		187	189-214	197-602		281	283-320	295-902
128 QAM		226	228-258	238-728		339	342-387	356-1090
256 QAM		243	245-278	256-782		391	394-447	411-1258
512 QAM		267	269-304	280-857		421	424-480	442-1353
1024 QAM Strong		302	305-345	318-972		458	461-522	481-1471
1024 QAM Light		321	324-366	337-1032		486	490-555	511-1563
2048 QAM		347	350-396	365-1116		527	531-601	553-1693
4096 QAM		364	367-415	382-1170		542	547-619	570-1743

PTP 820F SPECIFICATION SHEET

Modulation	Channel Size	No Compression	L2 Compression	Multi-Layer Compression	Channel Size	No Compression	L2 Compression	Multi-Layer Compression
BPSK	56 MHz	40	40-46	42-129	112 MHz	81	82-93	86-262
QPSK		81	82-93	86-262		164	165-187	172-527
8 PSK		121	122-138	127-390		244	246-278	256-784
16 QAM		165	166-188	173-531		331	334-378	348-1065
32 QAM		217	219-248	228-698		436	439-497	458-1401
64 QAM		267	269-305	280-858		535	539-610	562-1669
128 QAM		323	325-368	339-1037		646	651-737	679-1695
256 QAM		369	372-421	388-1186		739	745-843	776-1716
512 QAM		401	404-457	421-1288		802	809-915	843-1730
1024 QAM Strong		436	439-497	458-1400		870	877-993	914-1745
1024 QAM Light		462	466-528	486-1486		924	931-1054	970-1758
2048 QAM		487	491-555	511-1565		997	1004-1137	1047-1774
4096 QAM		510	514-582	536-1639		n/a	n/a	n/a
BPSK		80 MHz	56	56-64		59-180	112 MHz	81
QPSK	113		114-129	119-363	164	165-187		172-527
8 PSK	160		161-183	168-515	244	246-278		256-784
16 QAM	228		230-260	240-733	331	334-378		348-1065
32 QAM	300		302-342	315-963	436	439-497		458-1401
64 QAM	367		369-418	385-1178	535	539-610		562-1669
128 QAM	433		436-494	455-1392	646	651-737		679-1695
256 QAM	499		503-569	524-1603	739	745-843		776-1716
512 QAM	548		552-625	576-1672	802	809-915		843-1730
1024 QAM Strong	596		601-680	626-1683	870	877-993		914-1745
1024 QAM Light	633		638-722	665-1692	924	931-1054		970-1758
2048 QAM	670		675-764	703-1699	997	1004-1137		1047-1774
4096 QAM	n/a		n/a	n/a	n/a	n/a		n/a

ETHERNET THROUGHPUT for RFU-E

Modulation	Channel Size	Ethernet Throughput (Mbps)			Channel Size	Ethernet Throughput (Mbps)		
		No Compression	L2 Compression	Multi-Layer Compression		No Compression	L2 Compression	Multi-Layer Compression
BPSK	62.5 MHz	42	42-62	44-160	125 MHz	9	90-132	94-341
QPSK		93	94-138	98-355		188	189-278	197-715
8 PSK		139	140-205	146-528		279	281-412	293-1062
16 QAM		188	190-278	198-716		379	382-560	398-1443
32 QAM		247	249-365	259-939		499	502-737	524-1898
64 QAM		301	303-445	316-1145		612	617-904	643-2329
128 QAM		362	365-535	380-1377		737	742-1089	774-2500
256 QAM		412	416-609	433-1569		838	845-1239	880-2500
512 QAM		453	457-670	476-1724		923	930-1364	969-2500
1024 QAM		505	508-746	530-1920		-	-	-

PTP 820F SPECIFICATION SHEET

Modulation	Channel Size	No Compression	L2 Compression	Multi-Layer Compression	Channel Size	No Compression	L2 Compression	Multi-Layer Compression
BPSK	250 MHz	180	182-267	189-687	500 MHz	362	-	-
QPSK		377	380-557	396-1435		755	-	-
8 PSK		559	563-826	587-2128		1119	-	-
16 QAM		759	765-1122	797-2500		1520	-	-
32 QAM		998	1006-1475	1048-2500		1998	-	-
64 QAM		1225	1234-1810	1286-2500		2451	-	-
128 QAM		1474	1486-2179	1548-2500		-	-	-
256 QAM		1653	1666-2443	1736-2500		-	-	-