



PTP 820G

Licensed

Microwave Radio



Split-Mount, Multi-Carrier Options

Specifications

RADIO

- 6-38 GHz
- 1+0, 1+1 HSB, 2+0, E/W
- 1+1 Unit redundancy (external protection)

Radio Features

- Multi-Carrier Adaptive Bandwidth Control (up to 2+0)
- Protection and diversity: HSB, SD (BBS)
- QPSK to 2048 QAM w/ACM
- 3.5 MHz to 60 MHz channel size
- XPIC

ETHERNET

Ethernet Interfaces

- Traffic Interfaces – 4 x 10/100/1000Base-T (RJ-45) and 2x1000base-X (SFP), 16 x E1/T1 (Optional MDR 69-pin)
- Management Interface - 2 x 10/100 Base-T (RJ-45)
- External Alarm Interface – 1 x DB9
- SFP Types - Optical 1000Base-LX (1310 nm) or SX (850nm)

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
- 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)
- Y.1731 Ethernet OAM
- Y.1731 Ethernet Bandwidth Notification (ETH-BN)

MANAGEMENT PROTOCOLS

SNMP
REST
SDN support: NETCONF/YANG

TDM

16 x T1/E1
Native TDM services and TDM PWE using the same hardware
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 (GE/FE)
 - Dedicated In/Out sync interface

- 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 Transparent Clock (TC)
- IEEE-1588 Boundary Clock (BC)

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 (QinQ – 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 E1 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

- 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 301 489-4, EN 301 489-1, FCC 47 CFR, Part15, Class B
- Safety: IEC 60950, EN60950-1, IEC 60950-1, UL60950-1, CSA-C22.2 No.60950-1, EN 60950-22, UL 60950-22, CSA C22.2.60950-22
- Ingress Protection: RFU-C - IP66
- 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 x 426mm x 180mm (1.73" x 16.77" x 7.08"), 2.5kg (5.5 lbs.)
- RFU-A - 46mm x 482.6 x 335mm (1.8" x 19" x 13.18"), 12kg (26.45 lbs.)
- RFU-C - 200mm x 200mm x 85mm (7.87" x 7.87" x 3.35"), 4kg (9 lbs.)

Environmental Specifications

- IDU: -5°C to +55°C (-25°C to +65°C extended), +23°F to +131°F (-13°F to +149°F extended)
- RFU-A: -5°C to +55°C (-25°C to +65°C extended), +23°F to +131°F (-13°F to +149°F extended)
- RFU-C: -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

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

Power Consumption Specifications

- IDU Eth-only with single modem: 23.5W, addition for second modem, 2.9W, additional for 16 E1/DS1, 11w
- RFU-A (1+0) – High Level: 77W; Medium Level: 53W; Low Level: 43W; Mute: 24W
- RFU-A (1+1 HSB/SD BBS) – High Level: 101W
- RFU-C: 6-26GHz; 1+0 22W; 1+1 39W; 28-38Ghz, 1+0 26W; 1+1 43W

Specifications

TRANSMIT POWER

RFU-C

Transmit Power (dBm)	Frequency (GHz)								
	6-8	11-15	18-23	26	28	31	32	36	38
QPSK	26	24	22	21	14	16	18	12	18
8 PSK	26	24	22	21	14	16	18	12	18
16 QAM	25	23	21	20	14	15	17	11	17
32 QAM	24	22	20	19	14	14	16	10	16
64 QAM	24	22	20	19	14	14	16	10	16
128 QAM	24	22	20	19	14	14	16	10	16
256 QAM	22	20	18	17	12	12	14	8	14
512 QAM	22	20	18	17	9	12	14	10	14
1024 QAM	21	19	17	16	8	11	13	9	13
2048 QAM	19	17	15	14	6	9	11	7	11

RFU-A Extended Modulation

Transmit Power (dBm)	Frequency (GHz)	
	6L & 6H	11
QPSK	33	30
8 PSK	33	30
16 QAM	33	30
32 QAM	33	30
64 QAM	33	30
128 QAM	33	29
256 QAM	32	28
512 QAM	29	26
1024 QAM	29	26
2048 QAM	27	24

RFU-A Extended Premium Modulation

Transmit Power (dBm)	Frequency (GHz)
	6L & 6H
QPSK	35
8 PSK	35
16 QAM	35
32 QAM	35
64 QAM	35
128 QAM	34
256 QAM	34
512 QAM	33
1024 QAM	32
2048 QAM	30

Note: The Transmit power is measured at the antenna port of the RFU-A Chassis

RECEIVE SENSITIVITY (RSL) (dBm @BER = 10⁻⁶)

RFU-C

Modulation	Channel Spacing	Frequency (GHz)							
		6	7-8	11-15	18	23	26	28	31-38
QPSK	3.5 MHz	-97.5	-97.0	-97.5	-96.5	-96.0	-95.0	-93.0	-94.0
16 QAM		-91.0	-90.5	-91.0	-90.0	-89.5	-88.5	-86.5	-87.5
32 QAM		-88.0	-87.5	-88.0	-87.0	-86.5	-85.5	-83.5	-84.5
64 QAM		-84.5	-84.0	-84.5	-83.5	-83.0	-82.0	-80.0	-81.0
128 QAM		-81.0	-80.5	-81.0	-80.0	-79.5	-78.5	-76.5	-77.5
256 QAM		-77.5	-77.0	-77.5	-76.5	-76.0	-75.0	-73.0	-74.0
QPSK	5 MHz	-98.0	-97.5	-98.0	-97.0	-96.5	-95.0	-93.5	-94.5
16 QAM		-91.5	-91.0	-91.5	-90.5	-90.0	-89.0	-87.0	-88.0
32 QAM		-88.0	-87.5	-88.0	-87.0	-86.5	-85.5	-83.5	-84.5
64 QAM		-84.5	-84.0	-84.5	-83.5	-83.0	-82.0	-80.0	-81.0
128 QAM		-81.0	-80.5	-81.0	-80.0	-79.5	-78.5	-76.5	-77.5
256 QAM		-78.0	-77.5	-78.0	-77.5	-76.5	-75.5	-73.5	-74.5

PTP 820G SPLIT MOUNT SOLUTION SPECIFICATION SHEET

Modulation	Channel Spacing	Frequency (GHz)							
		6	7-8	11-15	18	23	26	28	31-38
QPSK	7 MHz	-95.0	-94.5	-95.0	-94.0	-93.5	-92.5	-90.5	-91.5
8 PSK		-89.0	-88.5	-89.0	-88.0	-87.5	-86.5	-84.5	-85.5
16 QAM		-88.5	-88.0	-88.5	-87.5	-87.0	-86.0	-84.0	-85.0
32 QAM		-85.0	-84.5	-85.0	-84.0	-83.5	-82.5	-80.5	-81.5
64 QAM		-82.0	-81.5	-82.0	-81.0	-80.5	-79.5	-77.5	-78.5
128 QAM		-79.0	-78.5	-79.0	-78.0	-77.5	-76.5	-74.5	-75.5
256 QAM		-75.5	-75.0	-75.5	-74.5	-74.0	-73.0	-71.0	-72.0
512 QAM		-73.5	-73.0	-73.5	-72.5	-72.0	-71.0	-69.0	-70.0
1024 QAM (strong FEC)		-70.0	-69.5	-70.0	-69.0	-68.5	-67.5	-65.5	-66.5
1024 QAM (light FEC)		-69.5	-69.0	-69.5	-68.5	-68.0	-67.0	-65.0	-66.0
QPSK		10 MHz	-93.5	-93.0	-93.5	-92.5	-92.0	-91.0	-89.0
8 PSK	-88.5		-88.0	-88.5	-87.5	-87.0	-86.0	-84.0	-85.0
16 QAM	-87.5		-87.0	-87.5	-86.5	-86.0	-85.0	-83.0	-84.0
32 QAM	-84.0		-83.5	-84.0	-83.0	-82.5	-81.5	-79.5	-80.5
64 QAM	-80.5		-80.0	-80.5	-79.5	-79.0	-78.0	-76.0	-77.0
128 QAM	-77.5		-77.0	-77.5	-76.5	-76.0	-75.0	-73.0	-74.0
256 QAM	-74.5		-74.0	-74.5	-73.5	-73.0	-72.0	-70.0	-71.0
512 QAM	-72.0		-71.5	-72.0	-71.0	-70.5	-69.5	-67.5	-68.5
1024 QAM (strong FEC)	-69.0		-68.5	-69.0	-68.0	-67.5	-66.5	-64.5	-65.5
1024 QAM (light FEC)	-68.0		-67.5	-68.0	-67.0	-66.5	-65.5	-63.5	-64.5
QPSK	14 MHz		-92.0	-91.5	-92.0	-91.0	-90.5	-89.5	-87.5
8 PSK		-86.0	-85.5	-86.0	-85.0	-84.5	-83.5	-81.5	-82.5
16 QAM		-85.0	-84.5	-85.0	-84.0	-83.5	-82.5	-80.5	-81.5
32 QAM		-82.0	-81.5	-82.0	-81.0	-80.5	-79.5	-77.5	-78.5
64 QAM		-79.0	-78.5	-79.0	-78.0	-77.5	-76.5	-74.5	-75.5
128 QAM		-75.5	-75.0	-75.5	-74.5	-74.0	-73.0	-71.0	-72.0
256 QAM		-73.0	-72.5	-73.0	-72.0	-71.5	-70.5	-68.5	-69.5
512 QAM		-70.0	-69.5	-70.0	-69.0	-68.5	-67.5	-65.5	-66.5
1024 QAM (strong FEC)		-67.0	-66.5	-67.0	-66.0	-65.5	-64.5	-62.5	-63.5
1024 QAM (light FEC)		-66.5	-66.0	-66.5	-65.5	-65.0	-64.0	-62.0	-63.0
QPSK		20 MHz	-90.5	-90.0	-90.5	-89.5	-89.0	-88.0	-86.0
8 PSK	-85.5		-85.0	-85.5	-84.5	-84.0	-83.0	-81.0	-82.0
16 QAM	-84.0		-83.5	-84.0	-83.0	-82.5	-81.5	-79.5	-80.5
32 QAM	-80.5		-80.0	-80.5	-79.5	-79.0	-78.0	-76.0	-77.0
64 QAM	-77.5		-77.0	-77.5	-76.5	-76.0	-75.0	-73.0	-74.0
128 QAM	-74.5		-74.0	-74.5	-73.5	-73.0	-72.0	-70.0	-71.0
256 QAM	-71.5		-71.0	-71.5	-70.5	-70.0	-69.0	-67.0	-68.0
512 QAM	-69.0		-68.5	-69.0	-68.0	-67.5	-66.5	-64.5	-65.5
1024 QAM (Strong FEC)	-66.0		-65.5	-66.0	-65.0	-64.5	-63.5	-61.5	-62.5
1024 QAM (Light FEC)	-65.0		-64.5	-65.0	-64.0	-63.5	-62.5	-60.5	-61.5
2048 QAM	-61.5		-61.0	-61.5	-60.5	-60.0	-59.0	-57.0	-58.0
QPSK	25 MHz	-90.0	-89.5	-90.0	-89.0	-88.5	-87.5	-85.5	-86.5
8 PSK		-84.5	-84.0	-84.5	-83.5	-83.0	-82.0	-80.0	-81.0
16 QAM		-83.0	-82.5	-83.0	-82.0	-81.5	-80.5	-78.5	-79.5
32 QAM		-79.5	-79.0	-79.5	-78.5	-78.0	-77.0	-75.0	-76.0
64 QAM		-76.5	-76.0	-76.5	-75.5	-75.0	-74.0	-72.0	-73.0
128 QAM		-73.5	-73.0	-73.5	-72.5	-72.0	-71.0	-69.0	-70.0
256 QAM		-70.5	-70.0	-70.5	-69.5	-69.0	-68.0	-66.0	-67.0
512 QAM		-68.0	-67.5	-68.0	-67.0	-66.5	-65.5	-63.5	-64.5
1024 QAM (Strong FEC)		-65.0	-64.5	-65.0	-64.0	-63.5	-62.5	-60.5	-61.5
1024 QAM (Light FEC)		-64.5	-64.0	-64.5	-63.5	-63.0	-62.0	-60.0	-61.0
2048 QAM		-60.5	-60.0	-60.5	-59.5	-59.0	-58.0	-56.0	-57.0

PTP 820G SPLIT MOUNT SOLUTION SPECIFICATION SHEET

Modulation	Channel Spacing	Frequency (GHz)							
		6	7-8	11-15	18	23	26	28	31-38
QPSK	28 MHz	-89.0	-88.5	-89.0	-88.0	-87.5	-86.5	-84.5	-85.5
8 PSK		-84.5	-84.0	-84.5	-83.5	-83.0	-82.0	-80.0	-81.0
16 QAM		-82.5	-82.0	-82.5	-81.5	-81.0	-80.0	-78.0	-79.0
32 QAM		-79.0	-78.5	-79.0	-78.0	-77.5	-76.5	-74.5	-75.5
64 QAM		-76.0	-75.5	-76.0	-75.0	-74.5	-73.5	-71.5	-72.5
128 QAM		-72.5	-72.0	-72.5	-71.5	-71.0	-70.0	-68.0	-69.0
256 QAM		-69.5	-69.0	-69.5	-68.5	-68.0	-67.0	-65.0	-66.0
512 QAM		-67.5	-67.0	-67.5	-66.5	-66.0	-65.0	-63.0	-64.0
1024 QAM (Strong FEC)		-64.5	-64.0	-64.5	-63.5	-63.0	-62.0	-60.0	-61.0
1024 QAM (Light FEC)		-63.5	-63.0	-63.5	-62.5	-62.0	-61.0	-59.0	-60.0
2048 QAM		-60.0	-59.5	-60.0	-59.0	-58.5	-57.5	-55.5	-56.5
QPSK	30 MHz	-89.0	-88.5	-89.0	-88.0	-87.5	-86.5	-84.5	-85.5
8 PSK		-83.5	-83.0	-83.5	-82.5	-82.0	-81.0	-79.0	-80.0
16 QAM		-82.0	-81.5	-82.0	-81.0	-80.5	-79.5	-77.5	-78.5
32 QAM		-78.5	-78.0	-78.5	-77.5	-77.0	-76.0	-74.0	-75.0
64 QAM		-75.5	-75.0	-75.5	-74.5	-74.0	-73.0	-71.0	-72.0
128 QAM		-72.5	-72.0	-72.5	-71.5	-71.0	-70.0	-68.0	-69.0
256 QAM		-69.5*	-69.0	-69.5	-68.5	-68.0	-67.0	-65.0	-66.0
512 QAM		-67.5	-67.0	-67.5	-66.5	-66.0	-65.0	-63.0	-64.0
1024 QAM (strong FEC)		-64.0	-63.5	-64.0	-63.0	-62.5	-61.5	-59.5	-60.5
1024 QAM (light FEC)		-63.0	-62.5	-63.0	-62.0	-61.5	-60.5	-58.5	-59.5
2048 QAM		-59.5	-59.0	-59.5	-58.5	-58.0	-57.0	-55.0	-56.0
QPSK	40 MHz	-87.5	-87.0	-87.5	-86.5	-86.0	-85.0	-83.0	-84.0
8 PSK		-82.5	-82.0	-82.5	-81.5	-81.0	-80.0	-78.0	-79.0
16 QAM		-81.0	-80.5	-81.0	-80.0	-79.5	-78.5	-76.5	-77.5
32 QAM		-77.5	-77.0	-77.5	-76.5	-76.0	-75.0	-73.0	-74.0
64 QAM		-74.5	-74.0	-74.5	-73.5	-73.0	-72.0	-70.0	-71.0
128 QAM		-71.5	-71.0	-71.5	-70.5	-70.0	-69.0	-67.0	-68.0
256 QAM		-69.0	-68.5	-69.0	-68.0	-67.5	-66.5	-64.5	-65.5
512 QAM		-66.5	-66.0	-66.5	-65.5	-65.0	-64.0	-62.0	-63.0
1024 QAM (strong FEC)		-63.5	-63.0	-63.5	-62.5	-62.0	-61.0	-59.0	-60.0
1024 QAM (light FEC)		-62.5	-62.0	-62.5	-61.5	-61.0	-60.0	-58.0	-59.0
2048 QAM		-59.0	-58.5	-59.0	-58.0	-57.5	-56.5	-54.5	-55.5
QPSK	50 MHz	-87.0	-86.5	-87.0	-86.0	-85.5	-84.5	-82.5	-83.5
8 PSK		-81.5	-81.0	-81.5	-80.5	-80.0	-79.0	-77.0	-78.0
16 QAM		-80.0	-79.5	-80.0	-79.0	-78.5	-77.5	-75.5	-76.5
32 QAM		-76.5	-76.0	-76.5	-75.5	-75.0	-74.0	-72.0	-73.0
64 QAM		-73.0	-72.5	-73.0	-72.0	-71.5	-70.5	-68.5	-69.5
128 QAM		-71.0	-70.5	-71.0	-70.0	-69.5	-68.5	-66.5	-67.5
256 QAM		-67.5	-67.0	-67.5	-66.5	-66.0	-65.0	-63.0	-64.0
512 QAM		-65.0	-64.5	-65.0	-64.0	-63.5	-62.5	-60.5	-61.5
1024 QAM (strong FEC)		-62.0	-61.5	-62.0	-61.0	-60.5	-59.5	-57.5	-58.5
1024 QAM (light FEC)		-61.0	-60.5	-61.0	-60.0	-59.5	-58.5	-56.5	-57.5
2048 QAM		-57.5	-57.0	-57.5	-56.5	-56.0	-55.0	-53.0	-54.0
QPSK	56 MHz	-85.5	-85.0	-85.5	-84.5	-84.0	-83.0	-81.0	-82.0
8 PSK		-81.5	-81.0	-81.5	-80.5	-80.0	-79.0	-77.0	-78.0
16 QAM		-79.0	-78.5	-79.0	-78.0	-77.5	-76.5	-74.5	-75.5
32 QAM		-75.5	-75.0	-75.5	-74.5	-74.0	-73.0	-71.0	-72.0
64 QAM		-72.5	-72.0	-72.5	-71.5	-71.0	-70.0	-68.0	-69.0
128 QAM		-69.5	-69.0	-69.5	-68.5	-68.0	-67.0	-65.0	-66.0

PTP 820G SPLIT MOUNT SOLUTION SPECIFICATION SHEET

Modulation	56 MHz	Frequency (GHz)							
		6	7-8	11-15	18	23	26	28	31-38
512 QAM	56 MHz	-64.5	-64.0	-64.5	-63.5	-63.0	-62.0	-60.0	-61.0
1024 QAM (strong FEC)		-61.0	-60.5	-61.0	-60.0	-59.5	-58.5	-56.5	-57.5
1024 QAM (light FEC)		-60.0	-59.5	-60.0	-59.0	-58.5	-57.5	-55.5	-56.5
2048 QAM		-55.5	-55.0	-55.5	-54.5	-54.0	-53.0	-51.0	-52.0
QPSK	60 MHz	-86.0	-85.5	-86.0	-85.0	-84.5	-83.5	-81.5	-82.5
8 PSK		-81.5	-81.0	-81.5	-80.5	-80.0	-79.0	-77.0	-78.0
16 QAM		-79.0	-78.5	-79.0	-78.0	-77.5	-76.5	-74.5	-75.5
32 QAM		-75.5	-75.0	-75.5	-74.5	-74.0	-73.0	-71.0	-72.0
64 QAM		-72.5	-72.0	-72.5	-71.5	-71.0	-70.0	-68.0	-69.0
128 QAM		-69.5	-69.0	-69.5	-68.5	-68.0	-67.0	-65.0	-66.0
256 QAM		-66.5	-66.0	-66.5	-65.5	-65.0	-64.0	-62.0	-63.0
512 QAM		-64.5	-64.0	-64.5	-63.5	-63.0	-62.0	-60.0	-61.0
1024 QAM (strong FEC)		-61.0	-60.5	-61.0	-60.0	-59.5	-58.5	-56.5	-57.5
1024 QAM (light FEC)		-61.0	-60.5	-61.0	-60.0	-59.5	-58.5	-56.5	-57.5
2048 QAM		-57.0	-56.5	-57.0	-56.0	-55.5	-54.5	-52.5	-53.5

RFU-A

Modulation	Channel Spacing	6L & 6H GHz	11 GHz
QPSK	5 MHz	-97.0	-96.5
16 QAM		-90.5	-90.0
32 QAM		-87.0	-86.5
64 QAM		-83.5	-83.0
128 QAM		-80.0	-79.5
256 QAM		-77.0	-76.5
QPSK	10 MHz	-92.5	-92.0
8 PSK		-87.5	-87.0
16 QAM		-86.5	-86.0
32 QAM		-83.0	-82.5
64 QAM		-79.5	-79.0
128 QAM		-76.5	-76.0
256 QAM		-73.5	-73.0
512 QAM		-71.0	-70.5
1024 QAM Strong		-68.0	-67.5
1024 QAM Light		-67.0	-66.5
QPSK	20 MHz	-89.5	-89.0
8 PSK		-84.5	-84.0
16 QAM		-83.0	-82.5
32 QAM		-79.5	-79.0
64 QAM		-76.5	-76.0
128 QAM		-73.5	-73.0
256 QAM		-70.5	-70.0
512 QAM		-68.0	-67.5
1024 QAM Strong		-65.0	-64.5
1024 QAM Light		-64.0	-63.5
2048 QAM		-60.5	-60.0
QPSK	25 MHz	-89.0	-88.5
8 PSK		-83.5	-83.0
16 QAM		-82.0	-81.5
32 QAM		-78.5	-78.0
64 QAM		-75.5	-75.0

PTP 820G SPLIT MOUNT SOLUTION SPECIFICATION SHEET

Modulation		6L & 6H GHz	11 GHz
128 QAM	25 MHz	-72.5	-72.0
256 QAM		-69.5	-69.0
512 QAM		-67.0	-66.5
1024 QAM Strong		-64.0	-63.5
1024 QAM Light		-63.5	-63.0
2048 QAM		-59.5	-59.0
QPSK	30 MHz	-88.0	-87.5
8 PSK		-83.0	-82.5
16 QAM		-81.0	-80.5
32 QAM		-77.5	-77.0
64 QAM		-74.5	-74.0
128 QAM		-71.5	-71.0
256 QAM		-68.5	-68.0
512 QAM		-66.5	-66.0
1024 QAM Strong		-63.0	-62.5
1024 QAM Light		-62.5	-62.0
2048 QAM		-59.0	-58.5
QPSK		40 MHz	-86.5
8 PSK	-81.5		-81.0
16 QAM	-80.0		-79.5
32 QAM	-76.5		-76.0
64 QAM	-73.5		-73.0
128 QAM	-70.5		-70.0
256 QAM	-68.0		-67.5
512 QAM	-65.5		-65.0
1024 QAM Strong	-62.0		-62.0
1024 QAM Light	-61.5		-61.0
2048 QAM	-58.0		-57.5
QPSK	50 MHz		-86.0
8 PSK		-80.5	-80.0
16 QAM		-79.0	-78.5
32 QAM		-75.5	-75.0
64 QAM		-72.0	-71.5
128 QAM		-70.0	-69.5
256 QAM		-66.5	-66.0
512 QAM		-64.0	-63.5
1024 QAM Strong		-61.0	-60.5
1024 QAM Light		-60.0	-59.5
2048 QAM		-56.5	-56.0
QPSK		60 MHz	-85.0
8 PSK	-80.5		-80.0
16 QAM	-78.0		-77.5
32 QAM	-74.5		-74.0
64 QAM	-71.5		-71.0
128 QAM	-68.5		-68.0
256 QAM	-65.5		-65.0
512 QAM	-63.5		-63.0
1024 QAM Strong	-60.0		-59.5
1024 QAM Light	-60.0		-59.5
2048 QAM	-56.0		-55.5