RDO 通信

技术文件

XJ-4206A

无线电通讯

支持频率范围

6-42 GHz

无线电配置

1+0至4+0单/双极化，1+ 1/ 2+ 2 HSB，1+ 1/ 2+ 2 HSB-SD，2+0 XPIC，2x2+0东/西单极化/双极化

无线电功能

4+0第1层链接连接

增强型多载波ABC（最多2+0)

保护：1+1 HSB/2+2 HSB，1+1 HSB-SD *

高光谱利用率： BPSK至4 0 9 6 QAMw/ ACM

通道带宽：14~224MHzt

交叉极化干扰抑止器

2x2/4x4 LoS MIMO*

高级频率重用（AFR）*

高级空间多样性（ASD）*

带有第一层链路连接的多频带（带有XJ-8010A)

以太网

以太网接口

端口1：

-直流端口

端口2：

-RJ-45-Electric MultiRate 1/2.5/10 Gbps 流量接口/PoE 端口

端口3：

-SFP - 1/ 2 .5G业务接口和双波段端口

端口4：

-SFP-1/10GE业务接口/MIMO扩展端口（SFP+）

端口5：-SFP-1/10GE业务接口（SFP+）

端口6：

-管理/保护接口 -100 Base-T

备注： SFP和SFP+设备必须为工业级设备（-40° C至+85° C，-40° F至+185° F）。

以太网功能

MTU-9612字节

最多可提供1024个以太网服务，再加上一个预定义的管理服务

MAC地址学习与64K MAC地址

业务质量：

多种分类标准（VLAN ID、Pbits、IPv4 DSCP、IPv6 TC、MPLS EXP）

每个端口有8个CoS队列

深度缓冲（每个队列最高可配置64Mbit）

加权随机早期检测

P位标记/标记

VLAN添加/删除

MSTP、ERP（ITU-T G.8032)

Y .1731以太网OAM

Y .1731以太网带宽通知（ETHBN）

管理协议

SNMP

REST

SDN支持：

.ETCONF/YANG

同步协议

-增强型以太网设备时钟（eEEC）规范（第8262.1页）
-PTP电信边界时钟（T-BC）和时间从时钟（T-TSC）规范（G.8273.2）
-PTP电信透明时钟（T-TC）规范（G.8273.3）
-增强同步网络限制（G.8261，第9.2.1条）
-增强型PTP网络限制（G.8271.1）
-以太网同步消息通道（ESMC）（G.8264，第11条）
-时间PTP电信配置文件（全定时支持）（G.8275.1）
-精确时间协议（IEEE1588-2008第2版）

标准

MEF

运营商以太网2.0（CE 2.0）

支持的以太网标准

10/100/1000基准线-T/X（IEEE802.3）

10GBaseLR（IEEE 802 .3）

以太网vlan(IEEE802.3ac)

虚拟局域网(VLAN，IEEE 802.1Q)

服务等级(IEEE 802.1p)

供应商桥梁(QinQ-IEEE802.1ad)

链路聚合(IEEE 802.1AX)

自动MDI/ MDIX为1000基准点

RFC 1349： IPv4 TOS

RFC 2474： IPv4 DSCP

RFC 2460： IPv6流量类

保护措施

安全协议：

•HTTPS

•SNMPv3

•SSH

•SFTP

RADIUS身份验证和授权

TACACS+身份验证、授权和计费(基于会话)

标准符合性

无线电频谱效率：FCC第101部分，EN 302 217-2
电磁兼容性：EN 301 489-1、EN 301 489-4，B级（欧洲），FCC 47 CFR，第15部分，B级
浪涌：EN61000-4-5，4级（适用于PWR和ETH1/PoE端口）
安全性：EN 60950-1、IEC 60950-2、UL 60950-1、CSA-C22.2编号60950-1、EN 60950-22、UL 60950-23、CSA C22.2.60950-24
存储：欧洲电信标准化协会EN 300 019-1-1 1.2级
运输：欧洲电信标准化协会EN 300 019-1-2 2级。

技术规范

机械规格

尺寸（直接安装HW）-322mm（高），227/270mm（宽），86mm（深），6kg
12.67英寸（高）、8.93英寸/10.62英寸（宽）、3.38英寸（深）、13.2磅杆直径范围（用于远程安装）
8.89厘米-11.43厘米；3.5" - 4.5"

环境规范

-33。Cto+55C（-45℃至+60℃扩展）
-27。F到+131F（-49.F至+140.F扩展）

电源输入规范

标准输入：-48 VDC
直流输入范围：-40.5至-60 VDC

功耗规范

2+0系统：
•6-11 GHz：73W
•13-42GHz:63W

1+0系统：
•6-11 GHz：63W
•13-42GHz:55W

PoE供电机械技术规范

尺寸-134mm(H)，190mm (W)，62mm（D），1 kg

PoE供电环境技术规范

-33.C至+55.C (-45.C至+60.C扩展)

PoE供电电源输入规格

标准输入：-48或+24 VDC（可选）
直流输入范围：±（18/40.5至60）VDC（+18VDC扩展范围作为标称+24VDC支持的一部分得到支持）

PoE供电接口

支持10/100/1000Base-T的GbE数据端口
以太网供电（PoE）端口
直流电源端口 - 40V至-60V（支持两个PoE每个支持±（18-60）V的冗余直流馈电可用）

产品图片

XJ-4206A

无线电规格

容量[Mbps]

调制	14 MHz	20 MHz	25 MHz	28/30 MHz	40 MHz	50 MHz
BPSK	_	10-13	14-17	18-22	25-31	33-40
QPSK	16-20	25-30	32-40	40-48	54-67	67-82
8 QAM	26-32	39-47	50-61	59-72	83-101	105-129
16 QAM	37-46	54-66	69-84	84-102	113-139	144-176
32 QAM	50-61	72-88	92-112	111-136	150-184	181-222
64 QAM	62-76	89-109	113-139	138-168	185-227	235-287
128 QAM	76-93	108-132	137-168	166-203	225-275	275-336
256 QAM	87-106	123-150	157-192	192-234	242-296	326-399
512 QAM	96-118	134-164	174-212	204-249	265-324	354-433
1024 QAM Strong	102-125	143-175	185-226	223-272	301-368	386-472
1024 QAM Light	108-132	152-186	196-240	236-289	320-391	410-501
2048 QAM	113-138	162-198	211-258	258-315	346-423	442-541
4096 QAM	_	_	228-279	275-336	366-448	459-561

	56/60 MHz	80 MHz	112 MHz	160 MHz	
BPSK	40-49	54-66	79-97	112-137	162-198
QPSK	83-102	111-135	162-198	228-279	328-401
8 QAM	123-150	158-193	242-296	340-416	489-597
16 QAM	172-210	227-277	330-404	463-566	665-812
32 QAM	227-277	298-365	435-532	610-745	875-1069
64 QAM	279-341	366-447	535-654	776-948	1111-1358
128 QAM	338-413	433-529	647-791	905-1107	1298-1587
256 QAM	391-478	498-609	740-905	1035-1266	1484-1815
512 QAM	420-514	548-670	804-983	1171-1431	1678-2051
1024 QAM Strong	457-559	596-729	872-1066	1301-1590	1860-2274
1024 QAM Light	486-594	633-774	926-1132	1301-1590	_
2048 QAM	527-644	670-820	999-1221	1431-1749	_
4096 QAM	542-663	708-865	1034-1264	_	_

发射功率[dBm]

备注：本节列出的值是典型值。实际值可能与方向相差高达1dB。

模块	频率 (GHz)	6	7	8	10-11	13	15	18	23	26	28	32	38	42
ation		28	28	28	28	26	25	24	24	23	22	18	22	15
BPSK – QPSK		28	28	28	28	26	25	24	24	23	22	18	22	15
8 QAM		28	27	27	28	24	24	24	24	23	21	17	21	15
16 QAM		28	27	26	28	24	24	24	24	23	21	16	21	14
32 QAM		28	26	26	27	24	24	23	24	23	20	16	20	13
64 QAM		27	26	26	26	24	24	23	24	23	20	16	20	13
128 QAM		27	26	26	26	24	23	23	23	21	19	14	19	13
256 QAM		27	25	24	26	23	22	22	22	21	19	14	19	11
512 QAM		26	24	24	25	22	21	21	21	20	18	13	18	11
1024 QAM		25	23	22	24	21	21	20	20	18	18	12	18	10
2048 QAM		24	21	20	22	20	20	19	19	17	17	11		
4096 QAM														

接收电平阈值[dBm@10E-6]

14 MHz	GHz	6	7-8	10	11	13	15	18	23	24	26	28-31	32	36	38	42
BPSK		-94.0	-94.0	-93.5	-93.5	-93.5	-93.5	-93.0	-92.5	-92.5	-93.0	-93.0	-93.0	-91.5	-91.5	-90.5
QPSK		-91.0	-91.0	-90.5	-90.5	-90.5	-90.5	-90.0	-90.0	-89.5	-90.0	-90.0	-90.0	-88.5	-88.5	-87.5
8 PSK		-87.0	-87.0	-86.5	-87.0	-87.0	-86.5	-86.0	-86.0	-85.5	-86.0	-86.0	-86.0	-84.5	-84.5	-83.5
16 QAM		-84.0	-84.0	-83.5	-83.5	-83.5	-83.5	-83.0	-83.0	-82.5	-83.0	-83.0	-83.0	-81.5	-81.5	-80.5
32 QAM		-80.5	-80.5	-80.0	-80.5	-80.5	-80.0	-79.5	-79.5	-79.0	-79.5	-79.5	-79.5	-78.5	-78.5	-77.5
64 QAM		-77.5	-77.5	-77.0	-77.0	-77.0	-77.0	-76.5	-76.5	-76.0	-76.5	-76.5	-76.5	-75.0	-75.0	-74.0
128 QAM		-74.5	-74.5	-74.0	-74.0	-74.0	-74.0	-73.5	-73.0	-73.0	-73.5	-73.5	-73.5	-72.0	-72.0	-71.0
256 QAM		-71.0	-71.0	-70.5	-70.5	-70.5	-70.5	-70.0	-70.0	-69.5	-70.0	-70.0	-70.0	-68.5	-68.5	-67.5
512 QAM		-68.0	-68.0	-67.5	-68.0	-68.0	-67.5	-67.0	-67.0	-66.5	-67.0	-67.0	-67.0	-65.5	-65.5	-64.5
1024 QAM	Strong	-64.5	-64.5	-64.0	-64.5	-64.5	-64.0	-63.5	-63.5	-63.0	-63.5	-63.5	-63.5	-62.0	-62.0	-61.0
1024 QAM	Light	-63.5	-63.5	-63.0	-63.5	-63.5	-63.0	-62.5	-62.5	-62.0	-62.5	-62.5	-62.5	-61.5	-61.5	-60.5
2048 QAM		-60.5	-60.5	-60.0	-60.0	-60.0	-60.0	-59.5	-59.5	-59.0	-59.5	-59.5	-59.5	-58.0	-58.0	-57.0
	20 MHz															
BPSK		-92.4	-92.4	-91.9	-92.2	-92.0	-92.0	-91.5	-91.5	-91.0	-91.5	-91.5	-91.5	-90.0	-90.0	
QPSK		-89.5	-89.5	-89.0	-89.3	-89.5	-89.0	-88.5	-88.5	-88.0	-88.5	-88.5	-88.5	-87.0	-87.0	
8 PSK		-85.5	-85.5	-85.0	-85.3	-85.5	-85.0	-84.5	-84.5	-84.0	-84.5	-84.5	-84.5	-83.0	-83.0	
16 QAM		-82.6	-82.6	-82.1	-82.4	-82.5	-82.0	-81.5	-81.5	-81.0	-81.5	-81.5	-81.5	-80.5	-80.5	
32 QAM		-79.2	-79.2	-78.7	-79.0	-79.0	-79.0	-78.5	-78.0	-77.5	-78.0	-78.0	-78.0	-77.0	-77.0	
64 QAM		-76.0	-76.0	-75.5	-75.8	-76.0	-75.5	-75.0	-75.0	-74.5	-75.0	-75.0	-75.0	-73.5	-73.5	
128 QAM		-73.0	-73.0	-72.5	-72.8	-73.0	-72.5	-72.0	-72.0	-71.5	-72.0	-72.0	-72.0	-70.5	-70.5	
256 QAM		-69.9	-69.9	-69.4	-69.7	-69.5	-69.5	-69.0	-69.0	-68.5	-69.0	-69.0	-69.0	-67.5	-67.5	
512 QAM		-67.1	-67.1	-66.6	-66.9	-67.0	-66.5	-66.0	-66.0	-65.5	-66.0	-66.0	-66.0	-65.0	-65.0	
1024 QAM	Strong	-64.2	-64.2	-63.7	-64.0	-64.0	-64.0	-63.5	-63.0	-62.5	-63.0	-63.0	-63.0	-62.0	-62.0	
1024 QAM	Light	-63.5	-63.5	-63.0	-63.3	-63.5	-63.0	-62.5	-62.5	-62.0	-62.5	-62.5	-62.5	-61.0	-61.0	
2048 QAM		-61.0	-61.0	-60.5	-60.8	-61.0	-60.5	-60.0	-60.0	-59.5	-60.0	-60.0	-60.0	-58.5	-58.5	
	25 MHz															
BPSK		-91.4	-91.4	-90.9	-91.2	-91.0	-91.0	-90.5	-90.5	-90.0	-90.5	-90.5	-90.5	-89.0	-89.0	
QPSK		-88.4	-88.4	-87.9	-88.2	-88.0	-88.0	-87.5	-87.5	-87.0	-87.5	-87.5	-87.5	-86.0	-86.0	
8 PSK		-84.4	-84.4	-83.9	-84.2	-84.0	-84.0	-83.5	-83.5	-83.0	-83.5	-83.5	-83.5	-82.0	-82.0	
16 QAM		-81.5	-81.5	-81.0	-81.3	-81.5	-81.0	-80.5	-80.5	-80.0	-80.5	-80.5	-80.5	-79.0	-79.0	
32 QAM		-78.2	-78.2	-77.7	-78.0	-78.0	-78.0	-77.5	-77.0	-76.5	-77.0	-77.0	-77.0	-76.0	-76.0	
64 QAM		-75.1	-75.1	-74.6	-74.9	-75.0	-74.5	-74.0	-74.0	-73.5	-74.0	-74.0	-74.0	-73.0	-73.0	
128 QAM		-72.0	-72.0	-71.5	-71.8	-72.0	-71.5	-71.0	-71.0	-70.5	-71.0	-71.0	-71.0	-69.5	-69.5	
256 QAM		-68.9	-68.9	-68.4	-68.7	-68.5	-68.5	-68.0	-68.0	-67.5	-68.0	-68.0	-68.0	-66.5	-66.5	
512 QAM		-66.0	-66.0	-65.5	-65.8	-66.0	-65.5	-65.0	-65.0	-64.5	-65.0	-65.0	-65.0	-63.5	-63.5	
1024 QAM	Strong	-63.1	-63.1	-62.6	-62.9	-63.0	-62.5	-62.0	-62.0	-61.5	-62.0	-62.0	-62.0	-61.0	-61.0	
1024 QAM	Light	-62.2	-62.2	-61.7	-62.0	-62.0	-62.0	-61.5	-61.0	-60.5	-61.0	-61.0	-61.0	-60.0	-60.0	
2048 QAM		-60.1	-60.1	-59.6	-59.9	-60.0	-59.5	-59.0	-59.0	-58.5	-59.0	-59.0	-59.0	-58.0	-58.0	
4096 QAM		-56.0	-56.0	-55.5	-55.8	-56.0	-55.5	-55.0	-55.0	-54.5	-55.0					

28 MHz	Freq	6	7-8	10	11	13	15	18	23	24	26	28-31	32	36	38	42
BPSK		-90.8	-90.8	-90.3	-90.6	-90.5	-90.5	-90.0	-89.5	-89.5	-90.0	-90.0	-90.0	-88.5	-88.5	-87.5
QPSK		-87.8	-87.8	-87.3	-87.6	-87.5	-87.5	-87.0	-86.5	-86.5	-87.0	-87.0	-87.0	-85.5	-85.5	-84.5
8 PSK		-83.9	-83.9	-83.4	-83.7	-83.5	-83.5	-83.0	-83.0	-82.5	-83.0	-83.0	-83.0	-81.5	-81.5	-80.5
16 QAM		-80.9	-80.9	-80.4	-80.7	-80.5	-80.5	-80.0	-80.0	-79.5	-80.0	-80.0	-80.0	-78.5	-78.5	-77.5
32 QAM		-77.6	-77.6	-77.1	-77.4	-77.5	-77.0	-76.5	-76.5	-76.0	-76.5	-76.5	-76.5	-75.5	-75.5	-74.5
64 QAM		-74.6	-74.6	-74.1	-74.4	-74.5	-74.0	-73.5	-73.5	-73.0	-73.5	-73.5	-73.5	-72.5	-72.5	-71.5
128 QAM		-71.5	-71.5	-71.0	-71.3	-71.5	-71.0	-70.5	-70.5	-70.0	-70.5	-70.5	-70.5	-69.0	-69.0	-68.0
256 QAM		-68.4	-68.4	-67.9	-68.2	-68.0	-68.0	-67.5	-67.5	-67.0	-67.5	-67.5	-67.5	-66.0	-66.0	-65.0
512 QAM		-65.6	-65.6	-65.1	-65.4	-65.5	-65.0	-64.5	-64.5	-64.0	-64.5	-64.5	-64.5	-63.5	-63.5	-62.5
1024 QAM	Strong	-62.7	-62.7	-62.2	-62.5	-62.5	-62.5	-62.0	-61.5	-61.0	-61.5	-61.5	-61.5	-60.5	-60.5	-59.5
1024 QAM	Light	-62.0	-62.0	-61.5	-61.8	-62.0	-61.5	-61.0	-61.0	-60.5	-61.0	-61.0	-61.0	-59.5	-59.5	-58.5
2048 QAM		-59.5	-59.5	-59.0	-59.3	-59.5	-59.0	-58.5	-58.5	-58.0	-58.5	-58.5	-58.5	-57.0	-57.0	-56.0
4096 QAM		-55.5	-55.5	-55.0	-55.3	-55.5	-55.0	-54.5	-54.5	-54.0	-54.5					
	30 M Hz															
BPSK		-90.7	-90.7	-90.2	-90.5	-90.5	-90.5	-90.0	-89.5	-89.0	-89.5	-89.5	-89.5	-88.5	-88.5	
QPSK		-87.7	-87.7	-87.2	-87.5	-87.5	-87.5	-87.0	-86.5	-86.0	-86.5	-86.5	-86.5	-85.5	-85.5	
8 PSK		-83.7	-83.7	-83.2	-83.5	-83.5	-83.5	-83.0	-82.5	-82.0	-82.5	-82.5	-82.5	-81.5	-81.5	
16 QAM		-80.7	-80.7	-80.2	-80.5	-80.5	-80.5	-80.0	-79.5	-79.0	-79.5	-79.5	-79.5	-78.5	-78.5	
32 QAM		-77.4	-77.4	-76.9	-77.2	-77.0	-77.0	-76.5	-76.5	-76.0	-76.5	-76.5	-76.5	-75.0	-75.0	
64 QAM		-74.3	-74.3	-73.8	-74.1	-74.0	-74.0	-73.5	-73.0	-73.0	-73.5	-73.5	-73.5	-72.0	-72.0	
128 QAM		-71.3	-71.3	-70.8	-71.1	-71.0	-71.0	-70.5	-70.0	-70.0	-70.5	-70.5	-70.5	-69.0	-69.0	
256 QAM		-68.1	-68.1	-67.6	-67.9	-68.0	-67.5	-67.0	-67.0	-66.5	-67.0	-67.0	-67.0	-66.0	-66.0	
512 QAM		-65.8	-65.8	-65.3	-65.6	-65.5	-65.5	-65.0	-64.5	-64.5	-65.0	-65.0	-65.0	-63.5	-63.5	
1024 QAM	Strong	-62.5	-62.5	-62.0	-62.3	-62.5	-62.0	-61.5	-61.5	-61.0	-61.5	-61.5	-61.5	-60.0	-60.0	
1024 QAM	Light	-61.7	-61.7	-61.2	-61.5	-61.5	-61.5	-61.0	-60.5	-60.0	-60.5	-60.5	-60.5	-59.5	-59.5	
2048 QAM		-59.2	-59.2	-58.7	-59.0	-59.0	-59.0	-58.5	-58.0	-57.5	-58.0	-58.0	-58.0	-57.0	-57.0	
4096 QAM		-55.5	-55.5	-55.0	-55.3	-55.5	-55.0	-54.5	-54.5	-54.0	-54.5					
	40 MHz															
BPSK		-89.6	-89.6	-89.1	-89.4	-89.5	-89.0	-88.5	-88.5	-88.0	-88.5	-88.5	-88.5	-87.5	-87.5	-86.5
QPSK		-86.4	-86.4	-85.9	-86.2	-86.0	-86.0	-85.5	-85.5	-85.0	-85.5	-85.5	-85.5	-84.0	-84.0	-83.0
8 PSK		-82.4	-82.4	-81.9	-82.2	-82.0	-82.0	-81.5	-81.5	-81.0	-81.5	-81.5	-81.5	-80.0	-80.0	-79.0
16 QAM		-79.5	-79.5	-79.0	-79.3	-79.5	-79.0	-78.5	-78.5	-78.0	-78.5	-78.5	-78.5	-77.0	-77.0	-76.0
32 QAM		-76.1	-76.1	-75.6	-75.9	-76.0	-75.5	-75.0	-75.0	-74.5	-75.0	-75.0	-75.0	-74.0	-74.0	-73.0
64 QAM		-73.0	-73.0	-72.5	-72.8	-73.0	-72.5	-72.0	-72.0	-71.5	-72.0	-72.0	-72.0	-70.5	-70.5	-69.5
128 QAM		-70.0	-70.0	-69.5	-69.8	-70.0	-69.5	-69.0	-69.0	-68.5	-69.0	-69.0	-69.0	-67.5	-67.5	-66.5
256 QAM		-67.7	-67.7	-67.2	-67.5	-67.5	-67.5	-67.0	-66.5	-66.0	-66.5	-66.5	-66.5	-65.5	-65.5	-64.5
512 QAM		-64.9	-64.9	-64.4	-64.7	-64.5	-64.5	-64.0	-64.0	-63.5	-64.0	-64.0	-64.0	-62.5	-62.5	-61.5
1024 QAM	Strong	-61.4	-61.4	-60.9	-61.2	-61.0	-61.0	-60.5	-60.5	-60.0	-60.5	-60.5	-60.5	-59.0	-59.0	-58.0
1024 QAM	Light	-60.7	-60.7	-60.2	-60.5	-60.5	-60.5	-60.0	-59.5	-59.0	-59.5	-59.5	-59.5	-58.5	-58.5	-57.5
2048 QAM		-58.4	-58.4	-57.9	-58.2	-58.0	-58.0	-57.5	-57.5	-57.0	-57.5	-57.5	-57.5	-56.0	-56.0	-55.0
4096 QAM		-55.3	-55.3	-54.8	-55.1	-55.0	-55.0	-54.5	-54.0	-54.0	-54.5					

50 MHz	Freq	6	7-8	10	11	13	15	18	23	24	26	28-31	32	36	38	42
BPSK		-88.5	-88.5	-88.0	-88.3	-88.5	-88.0	-87.5	-87.5	-87.0	-87.5	-87.5	-87.5	-86.0	-86.0	
QPSK		-85.6	-85.6	-85.1	-85.4	-85.5	-85.0	-84.5	-84.5	-84.0	-84.5	-84.5	-84.5	-83.5	-83.5	
8 PSK		-81.3	-81.3	-80.8	-81.1	-81.0	-81.0	-80.5	-80.0	-80.0	-80.5	-80.5	-80.5	-79.0	-79.0	
16 QAM		-78.4	-78.4	-77.9	-78.2	-78.0	-78.0	-77.5	-77.5	-77.0	-77.5	-77.5	-77.5	-76.0	-76.0	
32 QAM		-75.4	-75.4	-74.9	-75.2	-75.0	-75.0	-74.5	-74.5	-74.0	-74.5	-74.5	-74.5	-73.0	-73.0	
64 QAM		-72.0	-72.0	-71.5	-71.8	-72.0	-71.5	-71.0	-71.0	-70.5	-71.0	-71.0	-71.0	-69.5	-69.5	
128 QAM		-69.5	-69.5	-69.0	-69.3	-69.5	-69.0	-68.5	-68.5	-68.0	-68.5	-68.5	-68.5	-67.0	-67.0	
256 QAM		-65.9	-65.9	-65.4	-65.7	-65.5	-65.5	-65.0	-65.0	-64.5	-65.0	-65.0	-65.0	-63.5	-63.5	
512 QAM		-63.4	-63.4	-62.9	-63.2	-63.0	-63.0	-62.5	-62.5	-62.0	-62.5	-62.5	-62.5	-61.0	-61.0	
1024 QAM	Strong	-60.0	-60.0	-59.5	-59.8	-60.0	-59.5	-59.0	-59.0	-58.5	-59.0	-59.0	-59.0	-57.5	-57.5	
1024 QAM	Light	-59.2	-59.2	-58.7	-59.0	-59.0	-59.0	-58.5	-58.0	-57.5	-58.0	-58.0	-58.0	-57.0	-57.0	
2048 QAM		-56.9	-56.9	-56.4	-56.7	-56.5	-56.5	-56.0	-56.0	-55.5	-56.0	-56.0	-56.0	-54.5	-54.5	
4096 QAM		-53.4	-53.4	-52.9	-53.2	-53.0	-53.0	-52.5	-52.5	-52.0	-52.5					
	56 MHz															
BPSK		-88.0	-88.0	-87.5	-87.8	-88.0	-87.5	-87.0	-87.0	-86.5	-87.0	-87.0	-87.0	-85.5	-85.5	-84.5
QPSK		-84.8	-84.8	-84.3	-84.6	-84.5	-84.5	-84.0	-83.5	-83.5	-84.0	-84.0	-84.0	-82.5	-82.5	-81.5
8 PSK		-80.7	-80.7	-80.2	-80.5	-80.5	-80.5	-80.0	-79.5	-79.0	-79.5	-79.5	-79.5	-78.5	-78.5	-77.5
16 QAM		-77.8	-77.8	-77.3	-77.6	-77.5	-77.5	-77.0	-76.5	-76.5	-77.0	-77.0	-77.0	-75.5	-75.5	-74.5
32 QAM		-74.5	-74.5	-74.0	-74.3	-74.5	-74.0	-73.5	-73.5	-73.0	-73.5	-73.5	-73.5	-72.0	-72.0	-71.0
64 QAM		-71.5	-71.5	-71.0	-71.3	-71.5	-71.0	-70.5	-70.5	-70.0	-70.5	-70.5	-70.5	-69.0	-69.0	-68.0
128 QAM		-68.6	-68.6	-68.1	-68.4	-68.5	-68.0	-67.5	-67.5	-67.0	-67.5	-67.5	-67.5	-66.5	-66.5	-65.5
256 QAM		-65.4	-65.4	-64.9	-65.2	-65.0	-65.0	-64.5	-64.5	-64.0	-64.5	-64.5	-64.5	-63.0	-63.0	-62.0
512 QAM		-62.8	-62.8	-62.3	-62.6	-62.5	-62.5	-62.0	-61.5	-61.5	-62.0	-62.0	-62.0	-60.5	-60.5	-59.5
1024 QAM	Strong	-59.5	-59.5	-59.0	-59.3	-59.5	-59.0	-58.5	-58.5	-58.0	-58.5	-58.5	-58.5	-57.0	-57.0	-56.0
1024 QAM	Light	-58.6	-58.6	-58.1	-58.4	-58.5	-58.0	-57.5	-57.5	-57.0	-57.5	-57.5	-57.5	-56.5	-56.5	-55.5
2048 QAM		-56.8	-56.8	-56.3	-56.6	-56.5	-56.5	-56.0	-55.5	-55.5	-56.0	-56.0	-56.0	-54.5	-54.5	-53.5
4096 QAM		-52.9	-52.9	-52.4	-52.7	-52.5	-52.5	-52.0	-52.0	-51.5	-52.0					
	60 MHz															
BPSK		-87.8	-87.8	-87.3	-87.6	-87.5	-87.5	-87.0	-86.5	-86.5	-87.0	-87.0	-87.0	-85.5	-85.5	
QPSK		-84.6	-84.6	-84.1	-84.4	-84.5	-84.0	-83.5	-83.5	-83.0	-83.5	-83.5	-83.5	-82.5	-82.5	
8 PSK		-80.8	-80.8	-80.3	-80.6	-80.5	-80.5	-80.0	-79.5	-79.5	-80.0	-80.0	-80.0	-78.5	-78.5	
16 QAM		-77.6	-77.6	-77.1	-77.4	-77.5	-77.0	-76.5	-76.5	-76.0	-76.5	-76.5	-76.5	-75.5	-75.5	
32 QAM		-74.3	-74.3	-73.8	-74.1	-74.0	-74.0	-73.5	-73.0	-73.0	-73.5	-73.5	-73.5	-72.0	-72.0	
64 QAM		-71.2	-71.2	-70.7	-71.0	-71.0	-71.0	-70.5	-70.0	-69.5	-70.0	-70.0	-70.0	-69.0	-69.0	
128 QAM		-68.4	-68.4	-67.9	-68.2	-68.0	-68.0	-67.5	-67.5	-67.0	-67.5	-67.5	-67.5	-66.0	-66.0	
256 QAM		-65.2	-65.2	-64.7	-65.0	-65.0	-65.0	-64.5	-64.0	-63.5	-64.0	-64.0	-64.0	-63.0	-63.0	
512 QAM		-62.7	-62.7	-62.2	-62.5	-62.5	-62.5	-62.0	-61.5	-61.0	-61.5	-61.5	-61.5	-60.5	-60.5	
1024 QAM	Strong	-59.4	-59.4	-58.9	-59.2	-59.0	-59.0	-58.5	-58.5	-58.0	-58.5	-58.5	-58.5	-57.0	-57.0	
1024 QAM	Light	-58.6	-58.6	-58.1	-58.4	-58.5	-58.0	-57.5	-57.5	-57.0	-57.5	-57.5	-57.5	-56.5	-56.5	
2048 QAM		-56.3	-56.3	-55.8	-56.1	-56.0	-56.0	-55.5	-55.0	-55.0	-55.5	-55.5	-55.5	-54.0	-54.0	
4096 QAM		-52.5	-52.5	-52.0	-52.3	-52.5	-52.0	-51.5	-51.5	-51.0	-51.5					

80 MHz	Freq	6	7-8	10	11	13	15	18	23	24	26	28-31	32	36	38	42
BPSK		-85.9	-85.9	-85.4	-85.7	-85.5	-85.5	-85.0	-85.0	-84.5	-85.0	-85.0	-85.0	-83.5	-83.5	-82.5
QPSK		-83.6	-83.6	-83.1	-83.4	-83.5	-83.0	-82.5	-82.5	-82.0	-82.5	-82.5	-82.5	-81.5	-81.5	-80.5
8 PSK		-79.9	-79.9	-79.4	-79.7	-79.5	-79.5	-79.0	-79.0	-78.5	-79.0	-79.0	-79.0	-77.5	-77.5	-76.5
16 QAM		-76.9	-76.9	-76.4	-76.7	-76.5	-76.5	-76.0	-76.0	-75.5	-76.0	-76.0	-76.0	-74.5	-74.5	-73.5
32 QAM		-73.5	-73.5	-73.0	-73.3	-73.5	-73.0	-72.5	-72.5	-72.0	-72.5	-72.5	-72.5	-71.0	-71.0	-70.0
64 QAM		-70.6	-70.6	-70.1	-70.4	-70.5	-70.0	-69.5	-69.5	-69.0	-69.5	-69.5	-69.5	-68.5	-68.5	-67.5
128 QAM		-67.6	-67.6	-67.1	-67.4	-67.5	-67.0	-66.5	-66.5	-66.0	-66.5	-66.5	-66.5	-65.5	-65.5	-64.5
256 QAM		-64.9	-64.9	-64.4	-64.7	-64.5	-64.5	-64.0	-64.0	-63.5	-64.0	-64.0	-64.0	-62.5	-62.5	-61.5
512 QAM		-62.2	-62.2	-61.7	-62.0	-62.0	-62.0	-61.5	-61.0	-60.5	-61.0	-61.0	-61.0	-60.0	-60.0	-59.0
1024 QAM	Strong	-59.0	-59.0	-58.5	-58.8	-59.0	-58.5	-58.0	-58.0	-57.5	-58.0	-58.0	-58.0	-56.5	-56.5	-55.5
1024 QAM	Light	-58.6	-58.6	-58.1	-58.4	-58.5	-58.0	-57.5	-57.5	-57.0	-57.5	-57.5	-57.5	-56.5	-56.5	-55.5
2048 QAM		-55.7	-55.7	-55.2	-55.5	-55.5	-55.5	-55.0	-54.5	-54.0	-54.5	-54.5	-54.5	-53.5	-53.5	-52.5
4096 QAM		-52.1	-52.1	-51.6	-51.9	-52.0	-51.5	-51.0	-51.0	-50.5	-51.0	-51.0	-51.0			
112 MHz																
BPSK		-84.3	-84.3	-83.8	-84.1	-84.0	-84.0	-83.5	-83.0	-83.0	-83.5	-83.5	-83.5	-82.0	-82.0	-81.0
QPSK		-81.9	-81.9	-81.4	-81.7	-81.5	-81.5	-81.0	-81.0	-80.5	-81.0	-81.0	-81.0	-79.5	-79.5	-78.5
8 PSK		-77.9	-77.9	-77.4	-77.7	-77.5	-77.5	-77.0	-77.0	-76.5	-77.0	-77.0	-77.0	-75.5	-75.5	-74.5
16 QAM		-75.0	-75.0	-74.5	-74.8	-75.0	-74.5	-74.0	-74.0	-73.5	-74.0	-74.0	-74.0	-72.5	-72.5	-71.5
32 QAM		-71.6	-71.6	-71.1	-71.4	-71.5	-71.0	-70.5	-70.5	-70.0	-70.5	-70.5	-70.5	-69.5	-69.5	-68.5
64 QAM		-68.6	-68.6	-68.1	-68.4	-68.5	-68.0	-67.5	-67.5	-67.0	-67.5	-67.5	-67.5	-66.5	-66.5	-65.5
128 QAM		-65.7	-65.7	-65.2	-65.5	-65.5	-65.5	-65.0	-64.5	-64.0	-64.5	-64.5	-64.5	-63.5	-63.5	-62.5
256 QAM		-62.7	-62.7	-62.2	-62.5	-62.5	-62.5	-62.0	-61.5	-61.0	-61.5	-61.5	-61.5	-60.5	-60.5	-59.5
512 QAM		-60.3	-60.3	-59.8	-60.1	-60.0	-60.0	-59.5	-59.0	-59.0	-59.5	-59.5	-59.5	-58.0	-58.0	-57.0
1024 QAM	Strong	-57.3	-57.3	-56.8	-57.1	-57.0	-57.0	-56.5	-56.0	-56.0	-56.5	-56.5	-56.5	-55.0	-55.0	-54.0
1024 QAM	Light	-56.6	-56.6	-56.1	-56.4	-56.5	-56.0	-55.5	-55.5	-55.0	-55.5	-55.5	-55.5	-54.5	-54.5	-53.5
2048 QAM		-54.0	-54.0	-53.5	-53.8	-54.0	-53.5	-53.0	-53.0	-52.5	-53.0	-53.0	-53.0	-51.5	-51.5	-50.5
4096 QAM		-51.3	-51.3	-50.8	-51.1	-51.0	-51.0	-50.5	-50.0	-50.0	-50.5	-50.5	-50.5			
160 MHz																
BPSK		-83.7	-83.7	-83.2	-83.5	-83.5	-83.5	-83.0	-82.5	-82.0	-82.5	-82.5	-82.5	-81.5	-81.5	-80.5
QPSK		-80.6	-80.6	-80.1	-80.4	-80.5	-80.0	-79.5	-79.5	-79.0	-79.5	-79.5	-79.5	-78.5	-78.5	-77.5
8 PSK		-76.8	-76.8	-76.3	-76.6	-76.5	-76.5	-76.0	-75.5	-75.5	-76.0	-76.0	-76.0	-74.5	-74.5	-73.5
16 QAM		-73.8	-73.8	-73.3	-73.6	-73.5	-73.5	-73.0	-72.5	-72.5	-73.0	-73.0	-73.0	-71.5	-71.5	-70.5
32 QAM		-70.2	-70.2	-69.7	-70.0	-70.0	-70.0	-69.5	-69.0	-68.5	-69.0	-69.0	-69.0	-68.0	-68.0	-67.0
64 QAM		-66.9	-66.9	-66.4	-66.7	-66.5	-66.5	-66.0	-66.0	-65.5	-66.0	-66.0	-66.0	-64.5	-64.5	-63.5
128 QAM		-64.3	-64.3	-63.8	-64.1	-64.0	-64.0	-63.5	-63.0	-63.0	-63.5	-63.5	-63.5	-62.0	-62.0	-61.0
256 QAM		-61.4	-61.4	-60.9	-61.2	-61.0	-61.0	-60.5	-60.5	-60.0	-60.5	-60.5	-60.5	-59.0	-59.0	-58.0
512 QAM		-58.4	-58.4	-57.9	-58.2	-58.0	-58.0	-57.5	-57.5	-57.0	-57.5	-57.5	-57.5	-56.0	-56.0	-55.0
1024 QAM		-55.3	-55.3	-54.8	-55.1	-55.0	-55.0	-54.5	-54.0	-54.0	-54.5	-54.5	-54.5	-53.0	-53.0	-52.0
2048 QAM		-51.8	-51.8	-51.3	-51.6	-51.5	-51.5	-51.0								

224 MHz†															Frequency (GHz)
BPSK	-82.1	-82.1	-81.6	-81.9	-82.0	-81.5	-81.0	-81.0	-80.5	-81.0	-81.0	-81.0	-80.0	-80.0	-79.0
QPSK	-79.0	-79.0	-78.5	-78.8	-79.0	-78.5	-78.0	-78.0	-77.5	-78.0	-78.0	-78.0	-76.5	-76.5	-75.5
8 PSK	-75.2	-75.2	-74.7	-75.0	-75.0	-75.0	-74.5	-74.0	-73.5	-74.0	-74.0	-74.0	-73.0	-73.0	-72.0
16 QAM	-72.2	-72.2	-71.7	-72.0	-72.0	-72.0	-71.5	-71.0	-70.5	-71.0	-71.0	-71.0	-70.0	-70.0	-69.0
32 QAM	-68.6	-68.6	-68.1	-68.4	-68.5	-68.0	-67.5	-67.5	-67.0	-67.5	-67.5	-67.5	-66.5	-66.5	-65.5
64 QAM	-65.3	-65.3	-64.8	-65.1	-65.0	-65.0	-64.5	-64.0	-64.0	-64.5	-64.5	-64.5	-63.0	-63.0	-62.0
128 QAM	-62.7	-62.7	-62.2	-62.5	-62.5	-62.5	-62.0	-61.5	-61.0	-61.5	-61.5	-61.5	-60.5	-60.5	-59.5
256 QAM	-59.7	-59.7	-59.2	-59.5	-59.5	-59.5	-59.0	-58.5	-58.0	-58.5	-58.5	-58.5	-57.5	-57.5	-56.5
512 QAM	-56.8	-56.8	-56.3	-56.6	-56.5	-56.5	-56.0	-55.5	-55.5	-56.0	-56.0	-56.0	-54.5	-54.5	-53.5
1024 QAM	-53.7	-53.7	-53.2	-53.5	-53.5	-53.5	-53.0	-52.5	-52.0	-52.5	-52.5	-52.5	-51.5	-51.5	-50.5