

# FREQUENCY CHARTS

## CATV CHANNELS, North America

Chan.	EIA Chan.	Standard		Incremental		Harmonic	
		Video	Audio	Video	Audio	Video	Audio
T7	none	7.0000	11.5000	NA	NA	NA	NA
T8	none	13.0000	17.5000	NA	NA	NA	NA
T9	none	19.0000	23.5000	NA	NA	NA	NA
T10	none	25.0000	29.5000	NA	NA	NA	NA
T11	none	31.0000	35.5000	NA	NA	NA	NA
T12	none	37.0000	41.5000	NA	NA	NA	NA
T13	none	43.0000	47.5000	NA	NA	NA	NA
T14	none	49.0000	53.5000	NA	NA	NA	NA
2	02	55.2500	59.7500	55.2625	59.7625	54.0027	58.5027
3	03	61.2500	65.7500	61.2625	65.7625	60.0030	64.5030
4	04	67.2500	71.7500	67.2625	71.7625	66.0033	70.5030
A8	01	NA	NA	73.2625	77.7625	72.0036	76.5036
5	05	77.2500	81.7500	79.2625	83.7625	78.0039	82.5039
6	06	83.2500	87.7500	85.2625	89.7625	84.0042	88.5042
A5	95	91.2500	95.7500	91.2625	95.7625	90.0045	94.5045
A4	96	97.2500	101.7500	97.2625	101.7625	96.0048	100.5048
A3	97	103.2500	107.7500	103.2625	107.7625	102.0051	106.5051
A2	98*	109.2750	113.7750	109.2750	113.7750	Cannot lock to comb	
A1	99*	115.2750	119.7750	115.2750	119.7750	ref: refer to FCC regs	
A	14*	121.2625	125.7625	121.2625	125.7625	120.0060	124.5060
B	15*	127.2625	131.7625	127.2625	131.7625	126.0063	130.5063
C	16*	133.2625	137.7625	133.2625	137.7625	132.0066	136.5066
D	17	139.2500	143.7500	139.2625	143.7625	138.0069	142.5069

\* Means aeronautical channels visual carrier frequency tolerance  $\pm$  5KHz

## CATV CHANNELS, North America

Chan.	EIA Chan.	Standard		Incremental		Harmonic	
		Video	Audio	Video	Audio	Video	Audio
E	18	145.2500	149.7500	145.2625	149.7625	144.0072	148.5072
F	19	151.2500	155.7500	151.2625	155.7625	150.0075	154.5075
G	20	157.2500	161.7500	157.2625	161.7625	156.0078	160.5078
H	21	163.2500	167.7500	163.2625	167.7625	162.0081	166.5081
I	22	169.2500	173.7500	169.2625	173.7625	168.0084	172.5084
7	07	175.2500	179.7500	175.2625	179.7625	174.0087	178.5087
8	08	181.2500	185.7500	181.2625	185.7625	180.0090	184.5090
9	09	187.2500	191.7500	187.2625	191.7625	186.0093	190.5093
10	10	193.2500	197.7500	193.2625	197.7625	192.0096	196.5096
11	11	199.2500	203.7500	199.2625	203.7625	198.0099	202.5099
12	12	205.2500	209.7500	205.2625	209.762	204.0102	208.5102
13	13	211.2500	215.7500	211.2625	215.7625	210.0105	214.5105
J	23	217.2500	221.7500	217.2625	221.7625	216.0108	220.5108
K	24*	223.2500	227.7500	223.2625	227.7625	222.0111	226.5111
L	25*	229.2625	233.7625	229.2625	233.7625	228.0114	232.5114
M	26*	235.2625	239.7625	235.2625	239.7625	234.0117	238.5117
N	27*	241.2625	245.7625	241.2625	245.7625	240.0120	244.5120
O	28*	247.2625	251.7625	247.2625	251.7625	246.0123	250.5123
P	29*	253.2625	257.7625	253.2625	257.7625	252.0126	256.5126
Q	30*	259.2625	263.7625	259.2625	263.7625	258.0129	262.5129
R	31*	265.2625	269.7625	265.2625	269.7625	264.0132	268.5132
S	32*	271.2625	275.7625	271.2625	275.7625	270.0135	274.5135
T	33*	277.2625	281.7625	277.2625	281.7625	276.0138	280.5138
U	34*	283.2625	287.7625	283.2625	287.7625	282.0141	286.5141

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## CATV CHANNELS, North America

Chan.	EIA Chan.	Standard		Incremental		Harmonic	
		Video	Audio	Video	Audio	Video	Audio
V	35*	289.2625	293.7625	289.2625	293.7625	288.0144	292.5144
W	36*	295.2625	299.7625	295.2625	299.7625	294.0147	298.5147
AA	37*	301.2625	305.7625	301.2625	305.7625	300.0150	304.5150
BB	38*	307.2625	311.7625	307.2625	311.7625	306.0153	310.5153
CC	39*	313.2625	317.7625	313.2625	317.7625	312.0156	316.5156
DD	40*	319.2625	323.7625	319.2625	323.7625	318.0159	322.5159
EE	41*	325.2625	329.7625	325.2625	329.7625	324.0162	328.5162
FF	42*	331.2750	335.7750	331.2750	335.7750	330.0165	334.5165
GG	43*	337.2625	341.7625	337.2625	341.7625	336.0168	340.5168
HH	44*	343.2625	347.7625	343.2625	347.7625	342.0168	346.5168
II	45*	349.2625	353.7625	349.2625	353.7625	348.0168	352.5168
JJ	46*	355.2625	359.7625	355.2625	359.7625	354.0168	358.5168
KK	47*	361.2625	365.7625	361.2625	365.7625	360.0168	364.5168
LL	48*	367.2625	371.7625	367.2625	371.7625	366.0168	370.5168
MM	49*	373.2625	377.7625	373.2625	377.7625	372.0168	376.5168
NN	50*	379.2625	383.7625	379.2625	383.7625	378.0168	382.5168
OO	51*	385.2625	389.7625	385.2625	389.7625	384.0168	388.5168
PP	52*	391.2625	395.7625	391.2625	395.7625	390.0168	394.5168
QQ	53*	397.2625	401.7625	397.2625	401.7625	396.0168	400.5168
RR	54	403.2500	407.7500	403.2625	407.7625	402.0201	406.5201
SS	55	409.2500	413.7500	409.2625	413.7625	408.0204	412.5204
TT	56	415.2500	419.7500	415.2625	419.7625	414.0207	418.5207
UU	57	421.2500	425.7500	421.2625	425.7625	420.0210	424.5210
VV	58	427.2500	431.7500	427.2625	431.7625	426.0213	430.5213

\* Means aeronautical channels visual carrier frequency tolerance  $\pm$  5KHz

## CATV CHANNELS, North America

Chan.	EIA Chan.	Standard		Incremental		Harmonic	
		Video	Audio	Video	Audio	Video	Audio
WW	59	433.2500	437.7500	433.2625	437.7625	432.0216	436.5216
XX	60	439.2500	443.7500	439.2625	443.7625	438.0219	442.5219
YY	61	445.2500	449.7500	445.2625	449.7625	444.0222	448.5222
ZZ	62	451.2500	455.7500	451.2625	455.7625	450.0225	454.5225
AAA	63	457.2500	461.7500	457.2625	461.7625	456.0228	460.5228
BBB	64	463.2500	467.7500	463.2625	467.7625	462.0231	466.5231
CCC	65	469.2500	473.7500	469.2625	473.7625	468.0234	472.5234
DDD	66	475.2500	479.7500	475.2625	479.7625	474.0237	478.5237
EEE	67	481.2500	485.7500	481.2625	485.7625	480.0240	484.5240
FFF	68	487.2500	491.7500	487.2625	491.7625	486.0243	490.5243
GGG	69	493.2500	497.7500	493.2625	497.7625	492.0246	496.5246
HHH	70	499.2500	503.7500	499.2625	503.7625	498.0249	502.5249
III	71	505.2500	509.7500	505.2625	509.7625	504.0252	508.5252
JJJ	72	511.2500	515.7500	511.2625	515.7625	510.0255	514.5255
KKK	73	517.2500	521.7500	517.2625	521.7625	516.0258	520.5258
LLL	74	523.2500	527.7500	523.2625	527.7625	522.0261	526.5261
MMM	75	529.2500	533.7500	529.2625	533.7625	528.0264	532.5264
NNN	76	535.2500	539.7500	535.2625	539.7625	534.0267	538.5267
OOO	77	541.2500	545.7500	541.2625	545.7625	540.0270	544.5270
PPP	78	547.2500	551.7500	547.2625	551.7625	546.0273	550.5273
-	79	553.2500	557.7500	553.2625	557.7625	552.0276	556.5276
-	80	559.2500	563.7500	559.2625	563.7625	558.0279	562.5279
-	81	565.2500	569.7500	565.2625	569.7625	564.0282	568.5282
-	82	571.2500	575.7500	571.2625	575.7625	570.0285	574.5285

## CATV CHANNELS, North America

Chan.	EIA Chan.	Standard		Incremental		Harmonic	
		Video	Audio	Video	Audio	Video	Audio
-	83	577.2500	581.7500	577.2625	581.7625	576.0288	580.5288
-	84	583.2500	587.7500	583.2625	587.7625	582.0291	586.5291
-	85	589.2500	593.7500	589.2625	593.7625	588.0294	592.5294
-	86	595.2500	599.7500	595.2625	599.7625	594.0297	598.5297
-	87	601.2500	605.7500	601.2625	605.7625	600.0300	604.5300
-	88	607.2500	611.7500	607.2625	611.7625	606.0303	610.5303
-	89	613.2500	617.7500	613.2625	617.7625	612.0306	616.5306
-	90	619.2500	623.7500	619.2625	623.7625	618.0309	622.5309
-	91	625.2500	629.7500	625.2625	629.7625	624.0312	628.5312
-	92	631.2500	635.7500	631.2625	635.7625	630.0315	634.5315
-	93	637.2500	641.7500	637.2625	641.7625	636.0318	640.5318
-	94	643.2500	647.7500	643.2625	647.7625	642.0321	646.5321
-	100	649.2500	653.7500	649.2625	653.7625	648.0324	652.5324
-	101	655.2500	659.7500	655.2625	659.7625	654.0327	658.5327
-	102	661.2500	665.7500	661.2625	665.7625	660.0330	664.5330
-	103	667.2500	671.7500	667.2625	671.7625	666.0333	670.5333
-	104	673.2500	677.7500	673.2625	677.7625	672.0336	676.5336
-	105	679.2500	683.7500	679.2625	683.7625	678.0339	682.5339
-	106	685.2500	689.7500	685.2625	689.7625	684.0342	688.5342
-	107	691.2500	695.7500	691.2625	695.7625	690.0345	694.5345
-	108	697.2500	701.7500	697.2625	701.7625	696.0348	700.5348
-	109	703.2500	707.7500	703.2625	707.7625	702.0351	706.5351
-	110	709.2500	713.7500	709.2625	713.7625	708.0354	712.5354
-	111	715.2500	719.7500	715.2625	719.7625	714.0357	718.5357
-	112	721.2500	725.7500	721.2625	725.7625	720.0360	724.5360

## CATV CHANNELS, North America

Chan.	EIA Chan.	Standard		Incremental		Harmonic	
		Video	Audio	Video	Audio	Video	Audio
-	113	727.2500	731.7500	727.2625	731.7625	726.0363	730.5363
-	114	733.2500	737.7500	733.2625	737.7625	732.0366	736.5366
-	115	739.2500	743.7500	739.2625	743.7625	738.0369	742.5369
-	116	745.2500	749.7500	745.2625	749.7625	744.0372	748.5372
-	117	751.2500	755.7500	751.2625	755.7625	750.0375	754.5375
-	118	757.2500	761.7500	757.2625	761.7625	756.0378	760.5378
-	119	763.2500	767.7500	763.2625	767.7625	762.0381	766.5381
-	120	769.2500	773.7500	769.2625	773.7625	768.0384	772.5384
-	121	775.2500	779.7500	775.2625	779.7625	774.0387	778.5387
-	122	781.2500	785.7500	781.2625	785.7625	780.0390	784.5390
-	123	787.2500	791.7500	787.2625	791.7625	786.0393	790.5393
-	124	793.2500	797.7500	793.2625	797.7625	792.0396	796.5396
-	125	799.2500	803.7500	799.2625	803.7625	798.0399	802.5399
-	126	805.2500	809.7500	805.2625	809.7625	804.0402	808.5402
-	127	811.2500	815.7500	811.2625	815.7625	810.0405	814.5405
-	128	817.2500	821.7500	817.2625	821.7625	816.0408	820.5408
-	129	823.2500	827.7500	823.2625	827.7625	822.0411	826.5411
-	130	829.2500	833.7500	829.2625	833.7625	828.0414	832.5414
-	131	835.2500	839.7500	835.2625	839.7625	834.0417	838.5417
-	132	841.2500	845.7500	841.2625	845.7625	840.0420	844.5420
-	133	847.2500	851.7500	847.2625	851.7625	846.0423	850.5423
-	134	853.2500	857.7500	853.2625	857.7625	852.0426	856.5426
-	135	859.2500	863.7500	859.2625	863.7625	858.0429	862.5429
-	136	865.2500	869.7500	865.2625	869.7625	864.0432	868.5432

## CATV CHANNELS, North America

Chan.	EIA Chan.	Standard		Incremental		Harmonic	
		Video	Audio	Video	Audio	Video	Audio
-	137	871.2500	875.7500	871.2625	875.7625	870.0435	874.5435
-	138	877.2500	881.7500	877.2625	881.7625	876.0438	880.5438
-	139	883.2500	887.7500	883.2625	887.7625	882.0441	886.5441
-	140	889.2500	893.7500	889.2625	893.7625	888.0444	892.5444
-	141	895.2500	899.7500	895.2625	899.7625	894.0447	898.5447
-	142	901.2500	905.7500	901.2625	905.7625	900.0450	904.5450
-	143	907.2500	911.7500	907.2625	911.7625	906.0453	910.5453
-	144	913.2500	917.7500	913.2625	917.7625	912.0456	916.5456
-	145	919.2500	923.7500	919.2625	923.7625	918.0459	922.5459
-	146	925.2500	929.7500	925.2625	929.7625	924.0462	928.5462
-	147	931.2500	935.7500	931.2625	935.7625	930.0465	934.5465
-	148	937.2500	941.7500	937.2625	941.7625	936.0468	940.5468
-	149	943.2500	947.7500	943.2625	947.7625	942.0471	946.5471
-	150	949.2500	953.7500	949.2625	953.7625	948.0474	952.5474
-	151	955.2500	959.7500	955.2625	959.7625	954.0477	958.5477
-	152	961.2500	965.7500	961.2625	965.7625	960.0480	964.5480
-	153	967.2500	971.7500	967.2625	971.7625	966.0483	970.5483
-	154	973.2500	977.7500	973.2625	977.7625	972.0486	976.5486
-	155	979.2500	983.7500	979.2625	983.7625	978.0489	982.5489
-	156	985.2500	989.7500	985.2625	989.7625	984.0492	988.5492
-	157	991.2500	995.7500	991.2625	995.7625	990.0495	994.5495
-	158	997.2500	1001.7500	997.2625	1001.7625	996.0498	1000.5498

# CATV CHANNELS, United Kingdom (PAL; CCIR standard I)

Channel width: 8MHz					
Video	Audio	Video	Audio	Video	Audio
8.0	14.0	296.0	302.0	584.0	590.0
16.0	22.0	304.0	310.0	592.0	598.0
24.0	30.0	312.0	318.0	600.0	606.0
32.0	38.0	320.0	326.0	608.0	614.0
40.0	46.0	328.0	334.0	616.0	622.0
48.0	54.0	336.0	342.0	624.0	630.0
56.0	62.0	344.0	350.0	632.0	638.0
64.0	70.0	352.0	358.0	640.0	646.0
72.0	78.0	360.0	366.0	648.0	654.0
80.0	86.0	368.0	374.0	656.0	662.0
88.0	94.0	376.0	382.0	664.0	670.0
96.0	102.0	384.0	390.0	672.0	678.0
104.0	110.0	392.0	398.0	680.0	686.0
112.0	118.0	400.0	406.0	688.0	694.0
120.0	126.0	408.0	414.0	696.0	702.0
128.0	134.0	416.0	422.0	704.0	710.0
136.0	142.0	424.0	430.0	712.0	718.0
144.0	150.0	432.0	438.0	720.0	726.0
152.0	158.0	440.0	446.0	728.0	734.0
160.0	166.0	448.0	454.0	736.0	742.0
168.0	174.0	456.0	462.0	744.0	750.0
176.0	182.0	464.0	470.0	752.0	758.0
184.0	190.0	472.0	478.0	760.0	766.0
192.0	198.0	480.0	486.0	768.0	774.0
200.0	206.0	488.0	494.0	776.0	782.0
208.0	214.0	496.0	502.0	784.0	790.0
216.0	222.0	504.0	510.0	792.0	798.0
224.0	230.0	512.0	518.0	800.0	806.0
232.0	238.0	520.0	526.0	808.0	814.0
240.0	246.0	528.0	534.0	816.0	822.0
248.0	254.0	536.0	542.0	824.0	830.0
256.0	262.0	544.0	550.0	832.0	838.0
264.0	270.0	552.0	558.0	840.0	846.0
272.0	278.0	560.0	566.0	848.0	854.0
280.0	286.0	568.0	574.0	856.0	862.0
288.0	294.0	576.0	582.0	864.0	870.0

Color: 4.43361875 MHz

Nicam Aurals Plus 552 KHz

## OFF-AIR CHANNELS, North America (CCIR standard M; NTSC)

CHAN	BW (MHZ)	VIDEO	CHROMA	AUDIO
<b>Lo VHF</b>				
2	54-60	55.25	58.83	59.75
3	60-66	61.25	64.83	65.75
4	66-72	67.25	70.83	71.75
5	76-82	77.25	80.83	81.75
6	82-88	83.25	86.83	87.75
<b>Hi VHF</b>				
7	174-180	175.25	178.83	179.75
8	180-186	181.25	184.83	185.75
9	186-192	187.25	190.83	191.75
10	192-198	193.25	196.83	197.75
11	198-204	199.25	202.83	203.75
12	204-210	205.25	208.83	209.75
13	210-216	211.25	214.83	215.75
<b>UHF</b>				
14	470-476	471.25	474.83	475.75
15	476-482	477.25	480.83	481.75
16	482-488	483.25	486.83	487.75
17	488-494	489.25	492.83	493.75
18	494-500	495.25	498.83	499.75
19	500-506	501.25	504.83	505.75
20	506-512	507.25	510.83	511.75
21	512-518	513.25	516.83	517.75
22	518-524	519.25	522.83	523.75
23	524-530	525.25	528.83	529.75
24	530-536	531.25	534.83	535.75
25	536-542	537.25	540.83	541.75
26	542-548	543.25	546.83	547.75
27	548-554	549.25	552.83	553.75
28	554-560	555.25	558.83	559.75
29	560-566	561.25	564.83	565.75
30	566-572	567.25	570.83	571.75
31	572-578	573.25	576.83	577.75
32	578-584	579.25	582.83	583.75
33	584-590	585.25	588.83	589.75
34	590-596	591.25	594.83	595.75
35	596-602	597.25	600.83	601.75
36	602-608	603.25	606.83	607.75
37	608-614	609.25	612.83	613.75
38	614-620	615.25	618.83	619.75

## OFF-AIR CHANNELS • North America

CHAN	BW (MHZ)	VIDEO	CHROMA	AUDIO
UHF				
39	620-626	621.25	624.83	625.75
40	626-632	627.25	630.83	631.75
41	632-638	633.25	636.83	637.75
42	638-644	639.25	642.83	643.75
43	644-650	645.25	648.83	649.75
44	650-656	651.25	654.83	655.75
45	656-662	657.25	660.83	661.75
46	662-668	663.25	666.83	667.75
47	668-674	669.25	672.83	673.75
48	674-680	675.25	678.83	679.75
49	680-686	681.25	684.83	685.75
50	686-692	687.25	690.83	691.75
51	692-698	693.25	696.83	697.75
52	698-704	699.25	702.83	703.75
53	704-710	705.25	708.83	709.75
54	710-716	711.25	714.83	715.75
55	716-722	717.25	720.83	721.75
56	722-728	723.25	726.83	727.75
57	728-734	729.25	732.83	733.75
58	734-740	735.25	738.83	739.75
59	740-746	741.25	744.83	745.75
60	746-752	747.25	750.83	751.75
61	752-758	753.25	756.83	757.75
62	758-764	759.25	762.83	763.75
63	764-770	765.25	768.83	769.75
64	770-776	771.25	774.83	775.75
65	776-782	777.25	780.83	781.75
66	782-788	783.25	786.83	787.75
67	788-794	789.25	792.83	793.75
68	794-800	795.25	798.83	799.75
69	800-806	801.25	804.83	805.75
70	806-812	807.25	810.83	811.75
71	812-818	813.25	816.83	817.75
72	818-824	819.25	822.83	823.75
73	824-830	825.25	828.83	829.75
74	830-836	831.25	834.83	835.75
75	836-842	837.25	840.83	841.75
76	842-848	843.25	846.83	847.75
77	848-854	849.25	852.83	853.75
78	854-860	855.25	858.83	859.75
79	860-866	861.25	864.83	865.75
80	866-872	867.25	870.83	871.75
81	872-878	873.25	876.83	877.75
82	878-884	879.25	882.83	883.75
83	884-890	885.25	888.83	889.75

# OFF-AIR CHANNELS • CCIR STANDARDS G,H,I,K, & L

CHANNEL		BW (MHz)	VIDEO	AUDIO		
Europe	China			G, H	I	K, L
<b>UHF band IV</b>						
21	13	470-478	471.25	476.75	477.25	477.25
22	14	478-486	479.25	484.75	485.75	485.25
23	15	486-494	487.25	492.75	493.75	493.25
24	16	494-502	495.25	500.75	501.75	501.25
25	17	502-510	503.25	508.75	509.75	509.25
26	18	510-518	511.25	516.75	517.75	517.25
27	19	518-526	519.25	524.75	525.75	525.25
28	20	526-534	527.25	532.75	533.75	533.25
29	21	534-542	535.25	540.75	541.75	541.25
30	22	542-550	543.25	548.75	549.75	549.25
31	23	550-558	551.25	556.75	557.75	557.25
32	24	558-566	559.25	564.75	565.75	565.25
33		566-574	567.25	572.75	573.75	573.25
34		574-582	575.25	580.75	581.75	581.25
35	Not defined	582-590	583.25	588.75	589.75	589.25
36		590-598	591.25	596.75	597.75	597.25
37		598-606	599.25	604.75	605.75	605.25
<b>UHF band V</b>						
38	25	606-614	607.25	612.75	613.25	613.25
39	26	614-622	615.25	620.75	621.75	621.25
40	27	622-630	623.25	628.75	629.75	629.25
41	28	630-638	631.25	636.75	637.75	637.25
42	29	638-646	639.25	644.75	645.75	645.25
43	30	646-654	647.25	652.75	653.75	653.25
44	31	654-662	655.25	660.75	661.75	661.25
45	32	662-670	663.25	668.75	669.75	669.25
46	33	670-678	671.25	676.75	677.75	677.25
47	34	678-686	679.25	684.75	685.75	685.25
48	35	686-694	687.25	692.75	693.75	693.25
49	36	694-702	695.25	700.75	701.75	701.25
50	37	702-710	703.25	708.75	709.75	709.25
51	38	710-718	711.25	716.75	717.75	717.25
52	39	718-726	719.25	724.75	725.75	725.25
53	40	726-734	727.25	732.75	733.75	733.25
54	41	734-742	735.25	740.75	741.75	741.25
55	42	742-750	743.25	748.75	749.75	749.25
56	43	750-758	751.25	756.75	757.75	757.25
57	44	758-766	759.25	764.75	765.75	765.25
58	45	766-774	767.25	772.75	773.75	773.25
59	46	774-782	775.25	780.75	781.75	781.25
60	47	782-790	783.25	788.75	789.75	789.25
61	48	790-798	791.25	796.75	797.75	797.25
62	49	798-806	799.25	804.75	805.75	805.25
63	50	806-814	807.25	812.75	813.75	813.25

## OFF-AIR CHANNELS • CCIR STANDARDS G,H,I,K, & L

CHANNEL		BW (MHz)	VIDEO	AUDIO		
Europe	P.R. China			G, H	I	K, L
UHF band V						
64	51	814-822	815.25	820.75	821.25	821.75
65	52	822-830	823.25	828.75	829.25	829.75
66	53	830-838	831.25	836.75	837.25	837.75
67	54	838-846	839.25	844.75	845.25	845.75
68	55	846-854	847.25	852.75	853.25	853.75
69	56	854-862	855.25	860.75	861.25	861.75
	57	862-870	863.25			869.75
	58	870-878	871.25			877.75
Not defined	59	878-886	879.25			885.75
	60	886-894	887.25			893.75
	61	894-902	895.25			901.75
	62	902-910	903.25			909.75

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## CCIR STANDARDS B

CHAN.	BW (MHz)	VIDEO	CHROMA	AUDIO
UHF band IV				
28	526-533	527.25	531.68	532.75
29	533-540	534.25	538.68	539.75
30	540-547	541.25	545.68	546.75
31	547-554	548.25	552.68	553.75
32	554-561	555.25	559.68	560.75
33	561-568	562.25	566.68	567.75
34	568-575	569.25	573.68	574.75
35	575-582	576.25	580.68	581.75
UHF band V				
36	582-589	583.25	587.68	588.75
37	589-596	590.25	594.68	595.75
38	596-603	597.25	601.68	602.75
-----Other channels with 7 MHz spacing-----				
67	799-806	800.25	804.68	805.75
68	806-813	807.25	811.68	812.75
69	813-820	814.25	818.68	819.75

Color Subcarriers: K 4.406 MHz;

L 4.250 MHz;

B, G, A, I 4.434 MHz

## FM Broadcast Channel Frequencies (MHz)

Channel	Frequency	Channel	Frequency	Channel	Frequency
1	88.1	35	94.9	69	101.7
2	88.3	36	95.1	70	101.9
3	88.5	37	95.3	71	102.1
4	88.7	38	95.5	72	102.3
5	88.9	39	95.7	73	102.5
6	89.1	40	95.9	74	102.7
7	89.3	41	96.1	75	102.9
8	89.5	42	96.3	76	103.1
9	89.7	43	96.5	77	103.3
10	89.9	44	96.7	78	103.5
11	90.1	45	96.9	79	103.7
12	90.3	46	97.1	80	103.9
13	90.5	47	97.3	81	104.1
14	90.7	48	97.5	82	104.3
15	90.9	49	97.7	83	104.5
16	91.1	50	97.9	84	104.7
17	91.3	51	98.1	85	104.9
18	91.5	52	98.3	86	105.1
19	91.7	53	98.5	87	105.3
20	91.9	54	98.7	88	105.5
21	92.1	55	98.9	89	105.7
22	92.3	56	99.1	90	105.9
23	92.5	57	99.3	91	106.1
24	92.7	58	99.5	92	106.3
25	92.9	59	99.7	93	106.5
26	93.1	60	99.9	94	106.7
27	93.3	61	100.1	95	106.9
28	93.5	62	100.3	96	107.1
29	93.7	63	100.5	97	107.3
30	93.9	64	100.7	98	107.5
31	94.1	65	100.9	99	107.7
32	94.3	66	101.1	100	107.9
33	94.5	67	101.3		
34	94.7	68	101.5		

## INTERNATIONAL CHANNEL STANDARDS

Country	Color System	Broadcast Standard		Channel Frequencies
		VHF	UHF	
Argentina	PAL	N	N	Amer
Australia	PAL	B	G	Australian
Austria	PAL	B	G	West Euro
Bahamas	NTSC	M		Amer
Belgium	PAL	B	H	West Euro
Bermuda	NTSC	M		Amer
Bolivia	NTSC	M	M	Amer
Brazil	PAL	M	M	Amer
Canada	NTSC	M	M	Amer
Chile	NTSC	M		Amer
China	PAL	D		Chinese
China, Rep of	NTSC	M		Amer
Colombia	NTSC	M	M	Amer
Costa Rica	NTSC	M		Amer
Denmark	PAL	B	G	West Euro
Ecuador	NTSC	M		Amer
Egypt	SECAM	B		West Euro
Finland	PAL	B	G	West Euro
France	SECAM	L	L	French
Germany	SECAM/PAL	B	G	West Euro
Greece	SECAM	B	G	West Euro
Hong Kong	PAL		I	West Euro
Hungary	SECAM	D	K	East Euro
Hungary	SECAM	D	K	East Euro
India	PAL	B		West Euro
Indonesia	PAL	B		West Euro
Iran	SECAM	B	G	West Euro
Iraq	SECAM	B		West Euro
Ireland	PAL	A	I	Irish

## INTERNATIONAL CHANNEL STANDARDS

Country	Color System	Broadcast Standard		Channel Frequencies
		VHF	UHF	
Israel	PAL	B	G	West Euro
Italy	PAL	B	G	Italian
Japan	W	M	M	JPN
Jordan	PAL	B	G	West Euro
Korea S.	NTSC	M	M	Amer
Malaysia	PAL	B	G	West Euro
Mexico	NTSC	M	M	Amer
Morocco	SECAM	B		Morocco
Netherlands	PAL	B	G	West Euro
New Zealand	PAL	B	G	NZ
Norway	PAL	B	G	West Euro
Panama	NTSC	M	M	Amer
Peru	NTSC	M	M	Amer
Philippines	NTSC	M		Amer
Poland	SECAM	D	K	East Euro
Portugal	PAL	B	G	West Euro
Romania	SECAM	D	K	East Euro
Russia	SECAM	D	K	East Euro
Singapore	PAL	B	G	West Euro
Spain	PAL	B	G	West Euro
Sweden	PAL	B	G	West Euro
Switzerland	PAL	B	G	West Euro
United Kingdom	PAL	I	I	West Euro
Uruguay	PAL	N		Amer
USA	NTSC	M	M	Amer
Venezuela	NTSC	M		Amer

# CCIR TELEVISION TRANSMISSION CHARACTERISTICS

## FOR OFF- AIR CHANNELS

SYSTEM	LINES Freq. (Hz)	FIELD Freq. (MHz)	LINE Width (MHz)	CHAN. B/W (MHz)	VIDEO Spacing (MHz)	VID/SND Sideb (MHz)	VEST MOD	VISUAL MOD	AURAL
B/G	625	50	15,625	7/8	5	+ 5.5	0.75	NEG	FM
C	625	50	15,625	7	5	+ 5.5	0.75	POS	AM
D/K	625	50	15,625	8	6	+6.5	0.75	NEG	FM
H	625	50	15,625	8	5	+ 5.5	1.25	NEG	FM
I	625	50	15,625	8	5.5	+ 6.0	1.25	NEG	FM
K1	625	50	15,625	8	6	+ 6.5	1.25	NEG	FM
L	525	50	15,625	8	6	+/- 6.5	1.25	POS	AM
M	525	60	15,734	6	4.2	+ 4.5	0.75	NEG	FM
N	625	50	15,625	6	4.2	+ 4.5	0.75	NEG	FM

CCIR: *Comité Consultatif International Radiocommunications*

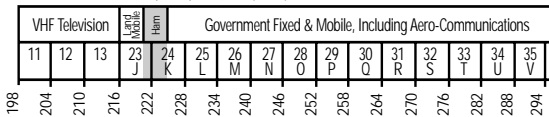
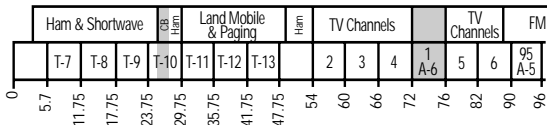
NTSC: *National Television Systems Committee*  
*"Never Twice the Same Color"*

PAL: *Phase Alternating Lines*  
*"Pay for Additional Luxury"*

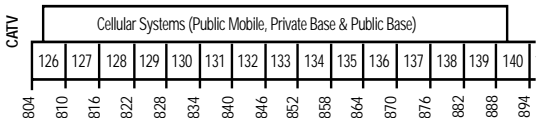
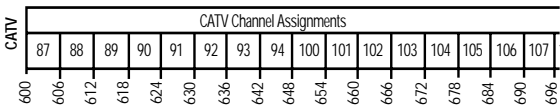
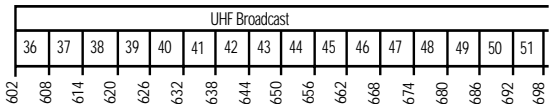
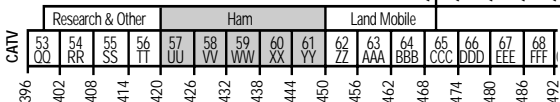
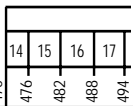
SECAM: *Sequential Color with Memory (Sequentiel Couleur Avec Memoire)*  
*"System Essentially Contrary to the American Method"*

OIRT: *Organisation Internationale Radiodiffusion - Television*

# FREQUENCY SPECTRUM



 Trouble Areas



# FREQUENCY SPECTRUM

	FM		Aircraft Radio, Voice & Aeronavigation				Space Research	Ham	Land Mobile		Govt. Fixed Mobile		VHF Television				
	96 A-4	97 A-3	98 A-2	99 A-1	14 A	15 B	16 C	17 D	18 E	19 F	20 G	21 H	22 I	7	8	9	10
96	102	108	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198

	Harbor Navigation & Coast Guard						Government Fixed & Mobile										
	36 V	37 AA	38 BB	39 CC	40 DD	41 EE	42 FF	43 GG	44 HH	45 II	46 JJ	47 KK	48 LL	49 MM	50 NN	51 OO	52 PP
	300	306	312	318	324	330	336	342	348	354	360	366	372	378	384	390	396

## UHF Broadcast

18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
500	506	512	518	524	530	536	542	548	554	560	566	572	578	584	590	596	602

## CATV Channel Assignments

69 GGG	70 HHH	71 III	72 JJJ	73 KKK	74 LLL	75 MMM	76 NNN	77 OOO	78 PPP	79 QQQ	80 RRR	81 SSS	82 TTT	83 UUU	84 VVV	85 WWW	86 XXX
498	504	510	516	522	528	534	540	546	552	558	564	570	576	582	588	594	600

## UHF Broadcast

52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69
704	710	716	722	728	734	740	746	752	758	764	770	776	782	788	794	800	806

## CATV Channel Assignments

108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
702	708	714	720	726	732	738	744	750	756	762	768	774	780	786	792	798	804

## Radiolocation & Experimental PCS

## Paging System

## Land Mobile Non-common Carrier

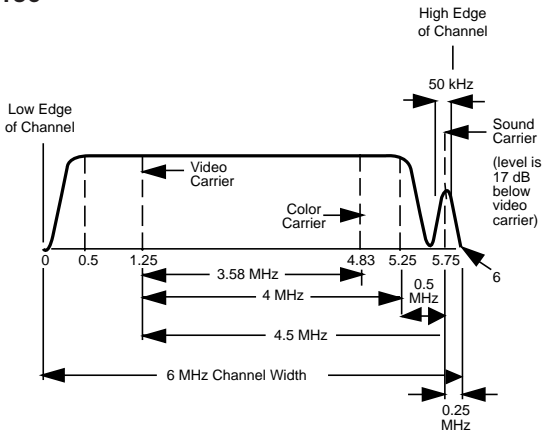
## Private Fixed

## Aircraft Radionavigation

141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158
900	906	912	918	924	930	936	942	948	954	960	966	972	978	984	990	996	1002

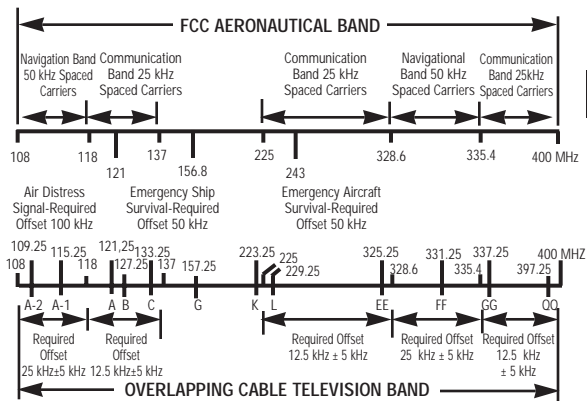
# CABLE TV CHANNEL FORMAT

## NTSC



# FCC AERONAUTICAL BAND FREQUENCIES

Used for Communication and Navigation



# North American Satellite Frequency/Transponder Conversion Table

Panamat Brazilsat A1 C-Band 144° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1A (H)	1	5945	3720
1B (V)	2	5965	3740
2A (H)	3	5985	3760
2B (V)	4	6005	3780
3A (H)	5	6025	3800
3B (V)	6	6045	3820
4A (H)	7	6065	3840
4B (V)	8	6085	3860
5A (H)	9	6105	3880
5B (V)	10	6125	3900
6A (H)	11	6145	3920
6B (V)	12	6165	3940
7A (H)	13	6185	3960
7B (V)	14	6205	3980
8A (H)	15	6225	4000
8B (V)	16	6245	4020
9A (H)	17	6265	4040
9B (V)	18	6285	4060
10A (H)	19	6305	4080
10B (V)	20	6325	4100
11A (H)	21	6345	4120
11B (V)	22	6365	4140
12A (H)	23	6385	4160
12B(V)	24	6405	4180

Alascom Aurora 2/GE Satcom C5 C-Band 139° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1(V)	1	5945	3720
2 (H)	2	5965	3740
3 (V)	3	5985	3760
4 (H)	4	6005	3780
5 (V)	5	6025	3800
6 (H)	6	6045	3820
7 (V)	7	6065	3840
8 (H)	8	6085	3860
9 (V)	9	6105	3880
10 (H)	10	6125	3900
11 (V)	11	6145	3920
12 (H)	12	6165	3940
13 (V)	13	6185	3960
14 (H)	14	6205	3980
15 (V)	15	6225	4000
16 (H)	16	6245	4020
17 (V)	17	6265	4040
18 (H)	18	6285	4060
19 (V)	19	6305	4080
20 (H)	20	6325	4100
21 (V)	21	6345	4120
22 (H)	22	6365	4140
23 (V)	23	6385	4160
24 (H)	24	6405	4180

Downlink polarization for each transponder denoted in parenthesis.

# North American Satellite Frequency/Transponder Conversion Table

GE Satcom C1 C-Band 137° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1(H)	1	5945	3720
2(V)	2	5965	3740
3(H)	3	5985	3760
4(V)	4	6005	3780
5(H)	5	6025	3800
6(V)	6	6045	3820
7(H)	7	6065	3840
8(V)	8	6085	3860
9(H)	9	6105	3880
10(V)	10	6125	3900
11(H)	11	6145	3920
12(V)	12	6165	3940
13(H)	13	6185	3960
14(V)	14	6205	3980
15(H)	15	6225	4000
16(V)	16	6245	4020
17(H)	17	6265	4040
18(V)	18	6285	4060
19(H)	19	6305	4080
20(V)	20	6325	4100
21(H)	21	6345	4120
22(V)	22	6365	4140
23(H)	23	6385	4160
24(V)	24	6405	4180

GE Satcom C4 C-Band 135° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1(V)	1	5945	3720
2(H)	2	5965	3740
3(V)	3	5985	3760
4(H)	4	6005	3780
5(V)	5	6025	3800
6(H)	6	6045	3820
7(V)	7	6065	3840
8(H)	8	6085	3860
9(V)	9	6105	3880
10(H)	10	6125	3900
11(V)	11	6145	3920
12(H)	12	6165	3940
13(V)	13	6185	3960
14(H)	14	6205	3980
15(V)	15	6225	4000
16(H)	16	6245	4020
17(V)	17	6265	4040
18(H)	18	6285	4060
19(V)	19	6305	4080
20(H)	20	6325	4100
21(V)	21	6345	4120
22(H)	22	6365	4140
23(V)	23	6385	4160
24(H)	24	6405	4180

Downlink polarization for each transponder denoted in parenthesis.

# North American Satellite Frequency/Transponder Conversion Table

Panamsat Galaxy IR C-Band 133° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1(H)	1	5945	3720
2(V)	2	5965	3740
3(H)	3	5985	3760
4(V)	4	6005	3780
5(H)	5	6025	3800
6(V)	6	6045	3820
7(H)	7	6065	3840
8(V)	8	6085	3860
9(H)	9	6105	3880
10(V)	10	6125	3900
11(H)	11	6145	3920
12(V)	12	6165	3940
13(H)	13	6185	3960
14(V)	14	6205	3980
15(H)	15	6225	4000
16(V)	16	6245	4020
17(H)	17	6265	4040
18(V)	18	6285	4060
19(H)	19	6305	4080
20(V)	20	6325	4100
21(H)	21	6345	4120
22(V)	22	6365	4140
23(H)	23	6385	4160
24(V)	24	6405	4180

GE Satcom C3 C-Band 131° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1(V)	1	5945	3720
2(H)	2	5965	3740
3(V)	3	5985	3760
4(H)	4	6005	3780
5(V)	5	6025	3800
6(H)	6	6045	3820
7(V)	7	6065	3840
8(H)	8	6085	3860
9(V)	9	6105	3880
10(H)	10	6125	3900
11(V)	11	6145	3920
12(H)	12	6165	3940
13(V)	13	6185	3960
14(H)	14	6205	3980
15(V)	15	6225	4000
16(H)	16	6245	4020
17(V)	17	6265	4040
18(H)	18	6285	4060
19(V)	19	6305	4080
20(H)	20	6325	4100
21(V)	21	6345	4120
22(H)	22	6365	4140
23(V)	23	6385	4160
24(H)	24	6405	4180

Downlink polarization for each transponder denoted in parenthesis.

# North American Satellite Frequency/Transponder Conversion Table

Loral Skynet Telstar 7 C-Band 129° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1(H)	1	5945	3720
2(V)	2	5965	3740
3(H)	3	5985	3760
4(V)	4	6005	3780
5(H)	5	6025	3800
6(V)	6	6045	3820
7(H)	7	6065	3840
8(V)	8	6085	3860
9(H)	9	6105	3880
10(V)	10	6125	3900
11(H)	11	6145	3920
12(V)	12	6165	3940
13(H)	13	6185	3960
14(V)	14	6205	3980
15(H)	15	6225	4000
16(V)	16	6245	4020
17(H)	17	6265	4040
18(V)	18	6285	4060
19(H)	19	6305	4080
20(V)	20	6325	4100
21(H)	21	6345	4120
22(V)	22	6365	4140
23(H)	23	6385	4160
24(V)	24	6405	4180

Loral Skynet Telstar 7 Ku-Band 129° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1(V)	1	14020	11720
2(H)	2	14040	11740
3(V)	3	14060	11760
4(H)	4	14080	11780
5(V)	5	14100	11800
6(H)	6	14120	11820
7(V)	7	14140	11840
8(H)	8	14160	11860
9(V)	9	14180	11880
10(H)	10	14200	11900
11(V)	11	14220	11920
12(H)	12	14240	11940
13(V)	13	14260	11960
14(H)	14	14280	11980
15(V)	15	14300	12000
16(H)	16	14320	12020
17(V)	17	14340	12040
18(H)	18	14360	12060
19(V)	19	14380	12080
20(H)	20	14400	12100
21(V)	21	14420	12120
22(H)	22	14440	12140
23(V)	23	14460	12160
24(H)	24	14480	12180

Downlink polarization for each transponder denoted in parenthesis.

# North American Satellite Frequency/Transponder Conversion Table

Panamsat Galaxy 9 C-Band 127° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1(V)	1	5945	3720
2(H)	2	5965	3740
3(V)	3	5985	3760
4(H)	4	6005	3780
5(V)	5	6025	3800
6(H)	6	6045	3820
7(V)	7	6065	3840
8(H)	8	6085	3860
9(V)	9	6105	3880
10(H)	10	6125	3900
11(V)	11	6145	3920
12(H)	12	6165	3940
13(V)	13	6185	3960
14(H)	14	6205	3980
15(V)	15	6225	4000
16(H)	16	6245	4020
17(V)	17	6265	4040
18(H)	18	6285	4060
19(V)	19	6305	4080
20(H)	20	6325	4100
21(V)	21	6345	4120
22(H)	22	6365	4140
23(V)	23	6385	4160
24(H)	24	6405	4180

Panamsat Galaxy 5 C-Band 125° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1(H)	1	5945	3720
2(V)	2	5965	3740
3(H)	3	5985	3760
4(V)	4	6005	3780
5(H)	5	6025	3800
6(V)	6	6045	3820
7(H)	7	6065	3840
8(V)	8	6085	3860
9(H)	9	6105	3880
10(V)	10	6125	3900
11(H)	11	6145	3920
12(V)	12	6165	3940
13(H)	13	6185	3960
14(V)	14	6205	3980
15(H)	15	6225	4000
16(V)	16	6245	4020
17(H)	17	6265	4040
18(V)	18	6285	4060
19(H)	19	6305	4080
20(V)	20	6325	4100
21(H)	21	6345	4120
22(V)	22	6365	4140
23(H)	23	6385	4160
24(V)	24	6405	4180

Downlink polarization for each transponder denoted in parenthesis.

# North American Satellite Frequency/Transponder Conversion Table

Panamsat Galaxy 10R Ku-Band 123° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1 (V)	1	14020	11720
2 (H)	2	14040	11740
3 (V)	3	14060	11760
4 (H)	4	14080	11780
5 (V)	5	14100	11800
6 (H)	6	14120	11820
7 (V)	7	14140	11840
8 (H)	8	14160	11860
9 (V)	9	14180	11880
10 (H)	10	14200	11900
11 (V)	11	14220	11920
12 (H)	12	14240	11940
13 (V)	13	14260	11960
14 (H)	14	14280	11980
15 (V)	15	14300	12000
16 (H)	16	14320	12020
17 (V)	17	14340	12040
18 (H)	18	14360	12060
19 (V)	19	14380	12080
20 (H)	20	14400	12100
21 (V)	21	14420	12120
22 (H)	22	14440	12140
23 (V)	23	14460	12160
24 (H)	24	14480	12180

Panamsat Galaxy 10R C-Band 123° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1(V)	1	5945	3720
2 (H)	2	5965	3740
3 (V)	3	5985	3760
4 (H)	4	6005	3780
5 (V)	5	6025	3800
6 (H)	6	6045	3820
7 (V)	7	6065	3840
8 (H)	8	6085	3860
9 (V)	9	6105	3880
10 (H)	10	6125	3900
11 (V)	11	6145	3920
12 (H)	12	6165	3940
13 (V)	13	6185	3960
14 (H)	14	6205	3980
15 (V)	15	6225	4000
16 (H)	16	6245	4020
17 (V)	17	6265	4040
18 (H)	18	6285	4060
19 (V)	19	6305	4080
20 (H)	20	6325	4100
21 (V)	21	6345	4120
22 (H)	22	6365	4140
23 (V)	23	6385	4160
24 (H)	24	6405	4180

# North American Satellite Frequency/Transponder Conversion Table

Loral Skynet Morelos 2 C-Band 120° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1W/L (H)	1	5945	3720
1N (V)	2	5965	3740
1W/U (H)	3	5985	3760
2N (V)	4	6005	3780
2W/L (H)	5	6025	3800
3N (V)	6	6045	3820
2W/U (H)	7	6065	3840
4N (V)	8	6085	3860
3W/L (H)	9	6105	3880
5N (V)	10	6125	3900
3W/U (H)	11	6145	3920
6N (V)	12	6165	3940
4W/L (H)	13	6185	3960
7N (V)	14	6205	3980
4W/U (H)	15	6225	4000
8N (V)	16	6245	4020
5W/L (H)	17	6265	4040
9N (V)	18	6285	4060
5W/U (H)	19	6305	4080
10N (V)	20	6325	4100
6W/L (H)	21	6345	4120
11N (V)	22	6365	4140
6W/U (H)	23	6385	4160
12N (V)	24	6405	4180

Loral Skynet Morelos 2 Ku-Band 120° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1K (H)	1	14064	11764
2K (H)	2	14188	11888
3K (H)	3	14312	12012
4K (H)	4	14436	12136

# North American Satellite Frequency/Transponder Conversion Table

SatMex SatMex 5 C-Band 116.8° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1(V)	1	5945	3720
2(H)	2	5965	3740
3(V)	3	5985	3760
4(H)	4	6005	3780
5(V)	5	6025	3800
6(H)	6	6045	3820
7(V)	7	6065	3840
8(H)	8	6085	3860
9(V)	9	6105	3880
10(H)	10	6125	3900
11(V)	11	6145	3920
12(H)	12	6165	3940
13(V)	13	6185	3960
14(H)	14	6205	3980
15(V)	15	6225	4000
16(H)	16	6245	4020
17(V)	17	6265	4040
18(H)	18	6285	4060
19(V)	19	6305	4080
20(H)	20	6325	4100
21(V)	21	6345	4120
22(H)	22	6365	4140
23(V)	23	6385	4160
24(H)	24	6405	4180

SatMex SatMex 5 Ku-Band 116.8° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1K(H)	1	14020	11720
2K(V)	2	14040	11740
3K(H)	3	14060	11760
4K(V)	4	14080	11780
5K(H)	5	14100	11800
6K(V)	6	14120	11820
7K(H)	7	14140	11840
8K(V)	8	14160	11860
9K(H)	9	14180	11880
10K(V)	10	14200	11900
11K(H)	11	14220	11920
12K(V)	12	14240	11940
13K(H)	13	14260	11960
14K(V)	14	14280	11980
15K(H)	15	14300	12000
16K(V)	16	14320	12020
17K(H)	17	14340	12040
18K(V)	18	14360	12060
19K(H)	19	14380	12080
20K(V)	20	14400	12100
21K(H)	21	14420	12120
22K(V)	22	14440	12140
23K(H)	23	14460	12160
24K(V)	24	14480	12180

# North American Satellite Frequency/Transponder Conversion Table

SatMex Solidaridad F2 C-Band 113° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1N (V)	1	5945	3720
1W/L (H)	2	5965	3740
2N (V)	3	5985	3760
1W/U (H)	4	6005	3780
3N (V)	5	6025	3800
2W/L (H)	6	6045	3820
4N (V)	7	6065	3840
2W/U (H)	8	6085	3860
5N (V)	9	6105	3880
3W/L (H)	10	6125	3900
6N (V)	11	6145	3920
3W/U (H)	12	6165	3940
7N (V)	13	6185	3960
4W/L (H)	14	6205	3980
8N (V)	15	6225	4000
4W/U (H)	16	6245	4020
9N (V)	17	6265	4040
5W/L (H)	18	6285	4060
10N (V)	19	6305	4080
5W/U (H)	20	6325	4100
11N (V)	21	6345	4120
6W/L (H)	22	6365	4140
12N (V)	23	6385	4160
6W/U (H)	24	6405	4180

SatMex Solidaridad F2 Ku-Band 113° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1K (H)	1	14030	11730
2K (H)	2	14091	11791
3K (H)	3	14152	11852
4K (H)	4	14213	11913
5K (H)	5	14274	11974
6K (H)	6	14335	12035
7K (H)	7	14396	12096
8K (H)	8	14457	12157
9K (V)	9	14043	11743
10K (V)	10	14104	11804
11K (V)	11	14165	11865
12K (V)	12	14226	11926
13K (V)	13	14287	11987
14K (V)	14	14348	12048
15K (V)	15	14409	12109
16K (V)	16	14470	12170

Downlink polarization for each transponder denoted in parenthesis.

# North American Satellite Frequency/Transponder Conversion Table

Telesat Anik E1 C-Band 111.1° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1A (H)	1	5945	3720
1B (V)	2	5965	3740
2A (H)	3	5985	3760
2B (V)	4	6005	3780
3A (H)	5	6025	3800
3B (V)	6	6045	3820
4A (H)	7	6065	3840
4B (V)	8	6085	3860
5A (H)	9	6105	3880
5B (V)	10	6125	3900
6A (H)	11	6145	3940
6B (V)	12	6165	3940
7A (H)	13	6185	3960
7B (V)	14	6205	3980
8A (H)	15	6225	4000
8B (V)	16	6245	4020
9A (H)	17	6265	4040
9B (V)	18	6285	4060
10A (H)	19	6305	4080
10B (V)	20	6325	4100
11A (H)	21	6345	4120
11B (V)	22	6365	4140
12A (H)	23	6385	4160
12B(V)	24	6405	4180

Telesat Anik E1 Ku-Band 111.1° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
T1(N) (V)	1	14017	11717
T2(N) (V)	2	14043	11743
T3(N) (V)	3	14078	11778
T4(N) (V)	4	14104	11804
T5(N) (V)	5	14139	11839
T6(N) (V)	6	14165	11865
T9(N) (V)	9	14261	11961
T10(N) (V)	10	14287	11987
T17(N) (H)	17	14030	11730
T18(N) (H)	18	14056	11756
T19(N) (H)	19	14091	11791
T20(N) (H)	20	14117	11817
T27(N) (H)	27	14335	12035
T28(N) (H)	28	14361	12061

Downlink polarization for each transponder denoted in parenthesis.

# North American Satellite Frequency/Transponder Conversion Table

SatMex Solidaridad F1 C-Band 109.2° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1N (V)	1	5945	3720
1W/L (H)	2	5965	3740
2N (V)	3	5985	3720
1W/U (H)	4	6005	3780
3N (V)	5	6025	3800
2W/L (H)	6	6045	3820
4N (V)	7	6065	3840
2W/U (H)	8	6085	3860
5N (V)	9	6105	3880
3W/L (H)	10	6125	3900
6N (V)	11	6145	3920
3W/U (H)	12	6165	3940
7N (V)	13	6185	3960
4W/L (H)	14	6205	3980
8N (V)	15	6225	4000
4W/U (H)	16	6245	4020
9N (V)	17	6265	4040
5W/L (H)	18	6285	4060
10N (V)	19	6305	4080
5W/U (H)	20	6325	4100
11N (V)	21	6345	4120
6W/L (H)	22	6365	4140
12N (V)	23	6385	4160
6W/U (H)	24	6405	4180

SatMex Solidaridad F1 Ku-Band 109.2° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1K (H)	1	14030	11730
2K (H)	2	14091	11791
3K (H)	3	14152	11852
4K (H)	4	14213	11913
5K (H)	5	14274	11974
6K (H)	6	14335	12035
7K (H)	7	14396	12096
8K (H)	8	14457	12157
9K (V)	9	14043	11743
10K (V)	10	14104	11804
11K (V)	11	14165	11865
12K (V)	12	14226	11926
13K (V)	13	14287	11987
14K (V)	14	14348	12048
15K (V)	15	14409	12109
16K (V)	16	14470	12170

Downlink polarization for each transponder denoted in parenthesis.

# North American Satellite Frequency/Transponder Conversion Table

Telesat Anik E2 C-Band 107.3° West Longitude			
Transponder D/L Polarity	Channel	U/L Freq.	D/L Freq/
1A (H)	1	5945	3720
1B (V)	2	5965	3740
2A (H)	3	5985	3760
2B (V)	4	6005	3780
3A (H)	5	6025	3800
3B (V)	6	6045	3820
4A (H)	7	6065	3840
4B (V)	8	6085	3860
5A (H)	9	6105	3880
5B (V)	10	6125	3900
6A (H)	11	6145	3940
6B (V)	12	6165	3940
7A (H)	13	6185	3960
7B (V)	14	6205	3980
8A (H)	15	6225	4000
8B (V)	16	6245	4020
9A (H)	17	6265	4040
9B (V)	18	6285	4060
10A (H)	19	6305	4080
10B (V)	20	6325	4100
11A (H)	21	6345	4120
11B (V)	22	6365	4140
12A (H)	23	6385	4160
12B(V)	24	6405	4180

Downlink polarization for each transponder denoted in parenthesis.

Telesat Anik E2 Ku-Band 107.3° West Longitude			
Transponder D/L Polarity	Channel	U/L Freq.	D/L Freq/
T1(N) (V)	1	14017	11717
T2(N) (V)	2	14043	11743
T3(N) (V)	3	14078	11778
T4(N) (V)	4	14104	11804
T5(N) (V)	5	14139	11839
T6(N) (V)	6	14165	11865
T7(N) (V)	7	14200	11900
T8(N) (V)	8	14226	11926
T9(W) (V)	9	14261	11961
T10(W) (V)	10	14287	11987
T11(W) (V)	11	14322	12022
T12(W) (V)	12	14348	12048
T13(W) (V)	13	14383	12083
T14(W) (V)	14	14409	12109
T15(W) (V)	15	14444	12144
T16(W) (V)	16	14470	12170
T17(N) (H)	17	14030	11730
T18(N) (H)	18	14056	11756
T19(N) (H)	19	14091	11791
T20(N) (H)	20	14117	11817
T21(E) (H)	21	14152	11852
T22(E) (H)	22	14178	11878
T23(E) (H)	23	14213	11913
T24(E) (H)	24	14239	11939
T25(E) (H)	25	14274	11974
T26(E) (H)	26	14300	12000
T27(E) (H)	27	14335	12035
T28(E) (H)	28	14361	12061
T29(E) (H)	29	14396	12096
T30(E) (V)	30	14422	12122
T31(E) (H)	31	14457	12157
32(E) (H)	32	14483	12183

# North American Satellite Frequency/Transponder Conversion Table

GE GE-1 C-Band 103° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1(H)	1	5945	3720
2(V)	2	5965	3740
3(H)	3	5985	3760
4(V)	4	6005	3780
5(H)	5	6025	3800
6(V)	6	6045	3820
7(H)	7	6065	3840
8(V)	8	6085	3860
9(H)	9	6105	3880
10(V)	10	6125	3900
11(H)	11	6145	3920
12(V)	12	6165	3940
13(H)	13	6185	3960
14(V)	14	6205	3980
15(H)	15	6225	4000
16(V)	16	6245	4020
17(H)	17	6265	4040
18(V)	18	6285	4060
19(H)	19	6305	4080
20(V)	20	6325	4100
21(H)	21	6345	4120
22(V)	22	6365	4140
23(H)	23	6385	4160
24(V)	24	6405	4180

GE GE-1 Ku-Band 103° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1K(H)	1	14020	11720
2K(V)	2	14040	11740
3K(H)	3	14060	11760
4K(V)	4	14080	11780
5K(H)	5	14100	11800
6K(V)	6	14120	11820
7K(H)	7	14140	11840
8K(V)	8	14160	11860
9K(H)	9	14180	11880
10K(V)	10	14200	11900
11K(H)	11	14220	11920
12K(V)	12	14240	11940
13K(H)	13	14260	11960
14K(V)	14	14280	11980
15K(H)	15	14300	12000
16K(V)	16	14320	12020
17K(H)	17	14340	12040
18K(V)	18	14360	12060
19K(H)	19	14380	12080
20K(V)	20	14400	12100
21K(H)	21	14420	12120
22K(V)	22	14440	12140
23K(H)	23	14460	12160
24K(V)	24	14480	12180

Downlink polarization for each transponder denoted in parenthesis.

# North American Satellite Frequency/Transponder Conversion Table

GE Gtar 4 Ku-Band 105° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1(H)	1	14030	11730
2(H)	2	14091	11791
3(H)	3	14152	11852
4(H)	4	14213	11913
5(H)	5	14274	11974
6(H)	6	14335	12035
7(H)	7	14396	12096
8(H)	8	14457	12157
9(V)	9	14044	11744
10(V)	10	14105	11805
11(V)	11	14166	11866
12(V)	12	14227	11927
13(V)	13	14228	11988
14(V)	14	14349	12049
15(V)	15	14410	12110
16(V)	16	14471	12171

GE 4 Ku-Band 101° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
19(H)	19	14040	11740
20(H)	20	14120	11820
21(H)	21	14200	11900
22(H)	22	14280	11980
23(H)	23	14360	12060
24(H)	24	14440	12140

GE 4 C-Band 101° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1(V)	1	5945	3720
2(V)	3	5985	3760
3(V)	5	6025	3800
4(V)	7	6065	3840
5(V)	9	6105	3880
6(V)	11	6145	3920
7(H)	2	5965	3740
8(H)	4	6005	3780
9(H)	6	6045	3820
10(H)	8	6085	3860
11(H)	10	6125	3900
12(H)	12	6165	3940
13L(V)	13	6185	3960
13U(V)	15	6225	4000
14L(V)	17	6265	4040
14U(V)	19	6305	4080
15L(V)	21	6345	4120
15U(V)	23	6385	4160
16L(H)	14	6205	3980
16U(H)	16	6245	4020
17L(H)	18	6285	4060
17U(H)	20	6325	4100
18L(H)	22	6365	4140
18U(H)	24	6405	4180

Downlink polarization for each transponder denoted in parenthesis.

# North American Satellite Frequency/Transponder Conversion Table

Panamsat Galaxy 4R C-Band 99° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1 (H)	1	5945	3720
2 (V)	2	5965	3740
3 (H)	3	5985	3760
4 (V)	4	6005	3780
5 (H)	5	6025	3800
6 (V)	6	6045	3820
7 (H)	7	6065	3840
8 (V)	8	6085	3860
9 (H)	9	6105	3880
10 (V)	10	6125	3900
11 (H)	11	6145	3920
12 (V)	12	6165	3940
13 (H)	13	6185	3960
14 (V)	14	6205	3980
15 (H)	15	6225	4000
16 (V)	16	6245	4020
17 (H)	17	6265	4040
18 (V)	18	6285	4060
19 (H)	19	6305	4080
20 (V)	20	6325	4100
21 (H)	21	6345	4120
22 (V)	22	6365	4140
23 (H)	23	6385	4160
24 (V)	24	6405	4180

Panamsat Galaxy 4R Ku-Band 99° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1 (H)	1	14020	11720
2 (V)	2	14040	11740
3 (H)	3	14060	11760
4 (V)	4	14080	11780
5 (H)	5	14100	11800
6 (V)	6	14120	11820
7 (H)	7	14140	11840
8 (V)	8	14160	11860
9 (H)	9	14180	11880
10 (V)	10	14200	11900
11 (H)	11	14220	11920
12 (V)	12	14240	11940
13 (H)	13	14260	11960
14 (V)	14	14280	11980
15 (H)	15	14300	12000
16 (V)	16	14320	12020
17 (H)	17	14340	12040
18 (V)	18	14360	12060
19 (H)	19	14380	12080
20 (V)	20	14400	12100
21 (H)	21	14420	12120
22 (V)	22	14440	12140
23 (H)	23	14460	12160
24 (V)	24	14480	12180

Downlink polarization for each transponder denoted in parenthesis.

# North American Satellite Frequency/Transponder Conversion Table

Loral Skynet Telstar 5 C-Band 97° West Longitude			
Transponder D/L Polarity	Channel	U/L Freq.	D/L Freq
1 (V)	1	5945	3720
2 (H)	2	5965	3740
3 (V)	3	5985	3760
4 (H)	4	6005	3780
5 (V)	5	6025	3800
6 (H)	6	6045	3820
7 (V)	7	6065	3840
8 (H)	8	6085	3860
9 (V)	9	6105	3880
10 (H)	10	6125	3900
11 (V)	11	6145	3920
12 (H)	12	6165	3940
13 (V)	13	6185	3960
14 (H)	14	6205	3980
15 (V)	15	6225	4000
16 (H)	16	6245	4020
17 (V)	17	6265	4040
18 (H)	18	6285	4060
19 (V)	19	6305	4080
20 (H)	20	6325	4100
21 (V)	21	6345	4120
22 (H)	22	6365	4140
23 (V)	23	6385	4160
24 (H)	24	6405	4180

Loral Skynet Telstar 5 Ku-Band 97° West Longitude			
Transponder D/L Polarity	Channel	U/L Freq.	D/L Freq/
1 (V)	1	14028.5	11728.5
2 (H)	2	14035.0	11735.0
3 (V)	3	14089.5	11789.5
4 (H)	4	14096.0	11796.0
5 (V)	5	14136.0	11836.0
6 (H)	6	14142.5	11842.5
7 (V)	7	14167.0	11867.0
8 (H)	8	14173.5	11873.5
9 (V)	9	14201.0	11901.0
10 (H)	10	14204.5	11904.5
11 (V)	11	14229.0	11929.0
12 (H)	12	14236.0	11936.0
13 (V)	13	14258.0	11958.0
14 (H)	14	14266.5	11966.5
15 (V)	15	14291.0	11991.0
16 (H)	16	14297.5	11997.5
17 (V)	17	14322.0	12022.0
18 (H)	18	14328.5	12028.5
19 (V)	19	14353.0	12053.0
20 (H)	20	14362.0	12062.0
21 (V)	21	14384.0	12084.0
22 (H)	22	14390.5	12090.5
23 (V)	23	14415.0	12115.0
24 (H)	24	14423.0	12123.0
25 (V)	25	14444.0	12144.0
26 (H)	26	14452.5	12152.5
27 (V)	27	14477.0	12177.0
28 (H)	28	14483.5	12183.5

Downlink polarization for each transponder denoted in parenthesis.

# North American Satellite Frequency/Transponder Conversion Table

Panamsat Galaxy 3R C-Band 95° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq/
1 (H)	1	5945	3720
2 (V)	2	5965	3740
3 (H)	3	5985	3760
4 (V)	4	6005	3780
5 (H)	5	6025	3800
6 (V)	6	6045	3820
7 (H)	7	6065	3840
8 (V)	8	6085	3860
9 (H)	9	6105	3880
10 (V)	10	6125	3900
11 (H)	11	6145	3920
12 (V)	12	6165	3940
13 (H)	13	6185	3960
14 (V)	14	6205	3980
15 (H)	15	6225	4000
16 (V)	16	6245	4020
17 (H)	17	6265	4040
18 (V)	18	6285	4060
19 (H)	19	6305	4080
20 (V)	20	6325	4100
21 (H)	21	6345	4120
22 (V)	22	6365	4140
23 (H)	23	6385	4160
24 (V)	24	6405	4180

Panamsat Galaxy 3R Ku-Band 95° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1 (H)	1	14020	11720
2 (V)	2	14050	11750
3 (H)	3	14050	11750
4 (H)	4	14080	11780
5 (V)	5	14110	11810
6 (H)	6	14110	11810
7 (H)	7	14140	11840
8 (V)	8	14170	11870
9 (H)	9	14170	11870
10 (H)	10	14200	11900
11 (V)	11	14230	11930
12 (H)	12	14230	11930
13 (H)	13	14260	11960
14 (V)	14	14290	11990
15 (H)	15	14290	11990
16 (H)	16	14320	12020
17 (V)	17	14350	12050
18 (H)	18	14350	12050
19 (H)	19	14380	12080
20 (V)	20	14410	12110
21 (H)	21	14410	12110
22 (H)	22	14440	12140
23 (V)	23	14470	12170
24 (H)	24	14470	12170

Downlink polarization for each transponder denoted in parenthesis.

# North American Satellite Frequency/Transponder Conversion Table

Loral Skynet Telstar 6 C-Band 93° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1 (V)	1	5945	3720
2 (H)	2	5965	3740
3 (V)	3	5985	3760
4 (H)	4	6005	3780
5 (V)	5	6025	3800
6 (H)	6	6045	3820
7 (V)	7	6065	3840
8 (H)	8	6085	3860
9 (V)	9	6105	3880
10 (H)	10	6125	3900
11 (V)	11	6145	3920
12 (H)	12	6165	3940
13 (V)	13	6185	3960
14 (H)	14	6205	3980
15 (V)	15	6225	4000
16 (H)	16	6245	4020
17 (V)	17	6265	4040
18 (H)	18	6285	4060
19 (V)	19	6305	4080
20 (H)	20	6325	4100
21 (V)	21	6345	4120
22 (H)	22	6365	4140
23 (V)	23	6385	4160
24 (H)	24	6405	4180

Loral Skynet Telstar 6 Ku-Band 93° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1 (V)	1	14028.5	11728.5
2 (H)	2	14035.0	11735.0
3 (V)	3	14089.5	11789.5
4 (H)	4	14096.0	11796.0
5 (V)	5	14136.0	11836.0
6 (H)	6	14142.5	11842.5
7 (V)	7	14167.0	11867.0
8 (H)	8	14173.5	11873.5
9 (V)	9	14198.0	11898.0
10 (H)	10	14204.5	11904.5
11 (V)	11	14229.0	11929.0
12 (H)	12	14235.0	11935.0
13 (V)	13	14260.0	11960.0
14 (H)	14	14266.5	11966.5
15 (V)	15	14291.0	11991.0
16 (H)	16	14297.5	11997.5
17 (V)	17	14322.0	12022.0
18 (H)	18	14328.5	12028.5
19 (V)	19	14353.0	12053.0
20 (H)	20	14359.5	12059.5
21 (V)	21	14384.0	12084.0
22 (H)	22	14390.5	12090.5
23 (V)	23	14415.0	12115.0
24 (H)	24	14421.5	12121.5
25 (V)	25	14446.0	12146.0
26 (H)	26	14452.5	12152.5
27 (V)	27	14477.0	12177.0
28 (H)	28	14483.5	12183.5

Downlink polarization for each transponder denoted in parenthesis.

# North American Satellite Frequency/Transponder Conversion Table

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Panamsat Galaxy 11 Ku-Band 91° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1 (H)	1	14020	11720
2 (V)	2	14040	11740
3 (H)	3	14060	11760
4 (V)	4	14080	11780
5 (H)	5	14100	11800
6 (V)	6	14120	11820
7 (H)	7	14140	11840
8 (V)	8	14160	11860
9 (H)	9	14180	11880
10 (V)	10	14200	11900
11 (H)	11	14220	11920
12 (V)	12	14240	11940
13 (H)	13	14260	11960
14 (V)	14	14280	11980
15 (H)	15	14300	12000
16 (V)	16	14320	12020
17 (H)	17	14340	12040
18 (V)	18	14360	12060
19 (H)	19	14380	12080
20 (V)	20	14400	12100
21 (H)	21	14420	12120
22 (V)	22	14440	12140
23 (H)	23	14460	12160
24 (V)	24	14480	12180
25 (H)	25	14014	10964
26 (V)	26	14026	10976
27 (H)	27	14044	10994
28 (V)	28	14056	11006
29 (H)	29	14074	11024
30 (V)	30	14086	11036
31 (H)	31	14104	11054
32 (V)	32	14116	11066
33 (H)	33	14134	11084
34 (V)	34	14146	11096
35 (H)	35	14164	11114
36 (V)	36	14176	11126

Panamsat Galaxy 11 Ku-Band 91° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
37 (H)	37	14194	11144
38 (V)	38	14206	11156
39 (H)	39	14224	11174
40 (V)	40	14236	11186

Panamsat Galaxy 11 C-Band 91° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1 (H)	1	5945	3720
2 (V)	2	5965	3740
3 (H)	3	5985	3760
4 (V)	4	6005	3780
5 (H)	5	6025	3800
6 (V)	6	6045	3820
7 (H)	7	6065	3840
8 (V)	8	6085	3860
9 (H)	9	6105	3880
10 (V)	10	6125	3900
11 (H)	11	6145	3920
12 (V)	12	6165	3940
13 (H)	13	6185	3960
14 (V)	14	6205	3980
15 (H)	15	6225	4000
16 (V)	16	6245	4020
17 (H)	17	6265	4040
18 (V)	18	6285	4060
19 (H)	19	6305	4080
20 (V)	20	6325	4100
21 (H)	21	6345	4120
22 (V)	22	6365	4140
23 (H)	23	6385	4160
24 (V)	24	6405	4180

# North American Satellite Frequency/Transponder Conversion Table

Panamsat Galaxy 7 C-Band 91° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1 (H)	1	5945	3720
2 (V)	2	5965	3740
3 (H)	3	5985	3760
4 (V)	4	6005	3780
5 (H)	5	6025	3800
6 (V)	6	6045	3820
7 (H)	7	6065	3840
8 (V)	8	6085	3860
9 (H)	9	6105	3880
10 (V)	10	6125	3900
11 (H)	11	6145	3920
12 (V)	12	6165	3940
13 (H)	13	6185	3960
14 (V)	14	6205	3980
15 (H)	15	6225	4000
16 (V)	16	6245	4020
17 (H)	17	6265	4040
18 (V)	18	6285	4060
19 (H)	19	6305	4080
20 (V)	20	6325	4100
21 (H)	21	6345	4120
22 (V)	22	6365	4140
23 (H)	23	6385	4160
24 (V)	24	6405	4180

Panamsat Galaxy 7 Ku-Band 91° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1 (V)	1	14020	11720
3 (V)	3	14050	11750
4 (V)	4	14080	11780
5 (H)	5	14110	11810
6 (V)	6	14110	11810
7 (V)	7	14140	11840
8 (H)	8	14170	11870
9 (V)	9	14170	11870
10 (V)	10	14200	11900
11 (H)	11	14230	11930
12 (V)	12	14230	11930
13 (V)	13	14260	11960
14L (H)	54	14276	11976
14U (H)	64	14305	12005
15 (V)	15	14291	11991
16 (V)	16	14320	12020
17L (H)	57	14335	12035
17U (H)	67	14365	12065
18 (V)	18	14350	12050
19 (V)	19	14380	12080
20 (H)	20	14410	12110
21 (V)	21	14410	12110
22 (V)	22	14440	12140
24 (V)	24	14470	12170

# North American Satellite Frequency/Transponder Conversion Table

Loral-Skynet Telstar 4 C-Band 89° West Longitude			
Transponder	D/L		
Polarity	Channel	U/L Freq.	D/L Freq
1 (V)	1	5945	3720
2 (H)	2	5965	3740
3 (V)	3	5985	3760
4 (H)	4	6005	3780
5 (V)	5	6025	3800
6 (H)	6	6045	3820
7 (V)	7	6065	3840
8 (H)	8	6085	3860
9 (V)	9	6105	3880
10 (H)	10	6125	3900
11 (V)	11	6145	3920
12 (H)	12	6165	3940
13 (V)	13	6185	3960
14 (H)	14	6205	3980
15 (V)	15	6225	4000
16 (H)	16	6245	4020
17 (V)	17	6265	4040
18 (H)	18	6285	4060
19 (V)	19	6305	4080
20 (H)	20	6325	4100
21 (V)	21	6345	4120
22 (H)	22	6365	4140
23 (V)	23	6385	4160
24 (H)	24	6405	4180

Loral-Skynet Telstar 4 Ku-Band 89° West Longitude			
Transponder	D/L		
Polarity	Channel	U/L Freq.	D/L Freq/
1 (V)	1	14030	11730
2 (H)	2	14043	11743
3 (V)	3	14090	11790
4 (H)	4	14103	11803
5 (V)	5	14150	11850
6 (H)	6	14163	11863
7 (V)	7	14210	11910
8 (H)	8	14223	11923
9A (V)	9L	14256	11956
9B (V)	9U	14286	11986
10 (H)	10	14284	11984
11 (V)	11	14333	12033
12 (H)	12	14346	12046
13A (V)	13L	14380	12080
13 (V)	13	14395	12095
13B (V)	13U	14410	12110
14 (H)	14	14408	12108
15A (V)	15L	14442	12142
15B (V)	15U	14472	12172
16A (H)	16L	14455	12155
16B (H)	16U	14485	12185

Downlink polarization for each transponder denoted in parenthesis.

# North American Satellite Frequency/Transponder Conversion Table

GE GE-3 C-Band 87° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq/
1 (H)	1	5945	3720
2 (V)	2	5965	3740
3 (H)	3	5985	3760
4 (V)	4	6005	3780
5 (H)	5	6025	3800
6 (V)	6	6045	3820
7 (H)	7	6065	3840
8 (V)	8	6085	3860
9 (H)	9	6105	3880
10 (V)	10	6125	3900
11 (H)	11	6145	3920
12 (V)	12	6165	3940
13 (H)	13	6185	3960
14 (V)	14	6205	3980
15 (H)	15	6225	4000
16 (V)	16	6245	4020
17 (H)	17	6265	4040
18 (V)	18	6285	4060
19 (H)	19	6305	4080
20 (V)	20	6325	4100
21 (H)	21	6345	4120
22 (V)	22	6365	4140
23 (H)	23	6385	4160
24 (V)	24	6405	4180

GE GE-3 Ku-Band 87° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1 (H)	1	14020	11720
2 (V)	2	14040	11740
3 (H)	3	14060	11760
4 (V)	4	14080	11780
5 (H)	5	14100	11800
6 (V)	6	14120	11820
7 (H)	7	14140	11840
8 (V)	8	14160	11860
9 (H)	9	14180	11880
10 (V)	10	14200	11900
11 (H)	11	14220	11920
12 (V)	12	14240	11940
13 (H)	13	14260	11960
14 (V)	14	14280	11980
15 (H)	15	14300	12000
16 (V)	16	14320	12020
17 (H)	17	14340	12040
18 (V)	18	14360	12060
19 (H)	19	14380	12080
20 (V)	20	14400	12100
21 (H)	21	14420	12120
22 (V)	22	14440	12140
23 (H)	23	14460	12160
24 (V)	24	14480	12180

Downlink polarization for each transponder denoted in parenthesis.

# North American Satellite Frequency/Transponder Conversion Table

GE GE-2 C-Band 85° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1 (V)	1	5945	3720
2 (H)	2	5965	3740
3 (V)	3	5985	3760
4 (H)	4	6005	3780
5 (V)	5	6025	3800
6 (H)	6	6045	3820
7 (V)	7	6065	3840
8 (H)	8	6085	3860
9 (V)	9	6105	3880
10 (H)	10	6125	3900
11 (V)	11	6145	3920
12 (H)	12	6165	3940
13 (V)	13	6185	3960
14 (H)	14	6205	3980
15 (V)	15	6225	4000
16 (H)	16	6245	4020
17 (V)	17	6265	4040
18 (H)	18	6285	4060
19 (V)	19	6305	4080
20 (H)	20	6325	4100
21 (V)	21	6345	4120
22 (H)	22	6365	4140
23 (V)	23	6385	4160
24 (H)	24	6405	4180

GE K2 Ku-Band 81° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1 (H)	1	14029.0	11729.0
2 (V)	2	14058.5	11758.5
3 (H)	3	14088.0	11788.0
4 (V)	4	14117.5	11817.5
5 (H)	5	14147.0	11847.0
6 (V)	6	14176.5	11876.5
7 (H)	7	14206.0	11906.0
8 (V)	8	14235.5	11935.5
9 (H)	9	14265.0	11965.0
10 (V)	10	14294.5	11994.5
11 (H)	11	14324.0	12024.0
12 (V)	12	14353.5	12053.5
13 (H)	13	14383.0	12083.0
14 (V)	14	14412.5	12112.5
15 (H)	15	14442.0	12142.0
16 (V)	16	14471.5	12171.5

Downlink polarization for each transponder denoted in parenthesis.

# North American Satellite Frequency/Transponder Conversion Table

GE Spacenet 4 Ku-Band 81° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
19 (H)	19	14040	11740
20 (H)	20	14120	11820
21 (H)	21	14200	11900
22 (H)	22	14280	11980
23 (H)	23	14360	12060
24 (H)	24	14440	12140

GE Spacenet 4 C-Band 81° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1 (V)	1	5945	3720
1 (V)	3	5985	3760
3 (V)	5	6025	3800
4 (V)	7	6065	3840
5 (V)	9	6105	3880
6 (V)	11	6145	3920
7 (H)	2	5965	3740
8 (H)	4	6005	3780
9 (H)	6	6045	3820
10 (H)	8	6085	3860
11 (H)	10	6125	3900
12 (H)	12	6165	3940
13L (V)	13	6185	3960
13U (V)	15	6225	4000
14L (V)	17	6265	4040
14U (V)	19	6305	4080
15L (H)	21	6345	4120
15U (V)	23	6385	4160
16L (H)	14	6205	3980
16U (H)	16	6425	4020
17L (H)	18	6245	4060
17U (H)	20	6325	4100
18L (H)	22	6365	4140
18U (H)	24	6405	4180

# North American Satellite Frequency/Transponder Conversion Table

GE GE-5 Ku-Band 79° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1 (V)	1	14030	11730
2 (H)	2	14043	11743
3 (V)	3	14091	11791
4 (H)	4	14104	11804
5 (V)	5	14152	11852
6 (H)	6	14165	11865
7 (V)	7	14213	11913
8 (H)	8	14226	11926
9 (V)	9	14274	11974
10 (H)	10	14287	11987
11 (V)	11	14335	12035
12 (H)	12	14348	12048
13 (V)	13	14396	12096
14 (H)	14	14409	12109
15 (V)	15	14457	12157
16L (H)	16	14455	12155
16U (H)	16	14495	12195

Panamsat SBS 4 Ku-Band 77° West Longitude			
Transponder			
D/L Polarity	Channel	U/L Freq.	D/L Freq
1 (H)	1	14025	11725
1* (H)	1	14030	11730
2 (H)	2	14074	11774
2* (H)	2	14080	11780
3 (H)	3	14123	11823
4 (H)	4	14172	11872
5 (H)	5	14221	11921
6 (H)	6	14270	11970
7 (H)	7	14319	12019
8 (H)	8	14368	12068
9 (H)	9	14417	12117
10 (H)	10	14466	12166

# North American Satellite Frequency/Transponder Conversion Table

Panamsat Galaxy 6 74° West Longitude			
Transponder D/L Polarity	Channel	U/L Freq.	D/L Freq
1(H)	1	5945	3720
2(V)	2	5965	3740
3(H)	3	5985	3760
4(V)	4	6005	3780
5(H)	5	6025	3800
6(V)	6	6045	3820
7(H)	7	6065	3840
8(V)	8	6085	3860
9(H)	9	6105	3880
10(V)	10	6125	3900
11(H)	11	6145	3920
12(V)	12	6165	3940
13(H)	13	6185	3960
14(V)	14	6205	3980
15(H)	15	6225	4000
16(V)	16	6245	4020
17(H)	17	6265	4040
18(V)	18	6285	4060
19(H)	19	6305	4080
20(V)	20	6325	4100
21(H)	21	6345	4120
22(V)	22	6365	4140
23(H)	23	6385	4160
24(V)	24	6405	4180

\* Frequency when using uplink less than  
3.5 meter.

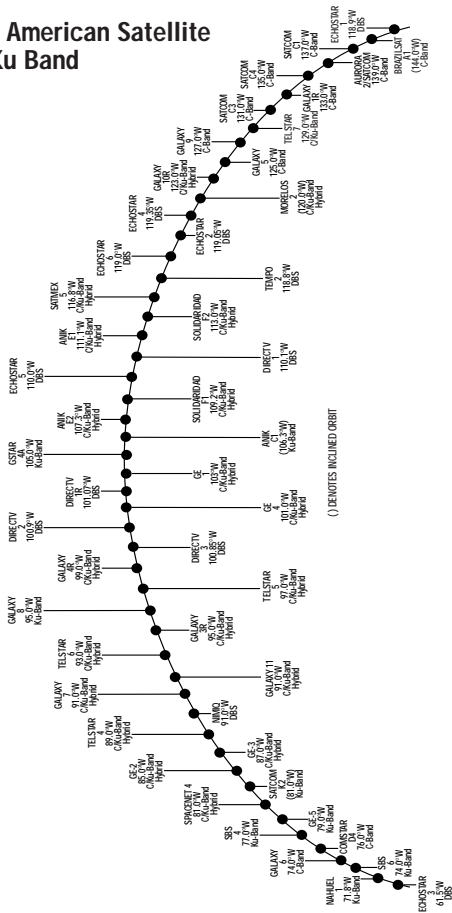
# North American Satellite Frequency/Transponder Conversion Table

Panamsat SBS 6 Ku-Band 74° West Longitude			
Transponder	D/L		
Polarity	Channel	U/L Freq.	D/L Freq
1 (H)	1	14025	11725
2 (V)	2	14049	11749
3 (H)	3	14074	11774
3L (H)	3	14062	11762
4L (V)	34	14086	11786
4 (V)	4	14098	11798
4U (V)	44	14110	11810
5 (H)	5	14123	11823
6L (V)	36	14135	11835
6 (V)	6	14147	11847
6U (V)	46	14159	11859
7 (H)	7	14172	11872
8L (V)	38	14184	11884
8 (V)	8	14200	11900
8U (V)	48	14208	11908
9 (H)	9	14221	11921
10 (V)	10	14245	11945
11 (H)	11	14270	11970
12 (V)	12	14294	11994
13L (H)	13A	14307	12007
13U (H)	13B	14331	12031
14L (V)	54	14331	12031
14 (V)	14	14343	12043
14U (V)	64	14355	12055
15 (H)	15	14368	12068
16L (V)	56	14380	12080
16 (V)	16	14392	12092
16U (V)	66	14404	12104
17 (H)	17	14420	12120
18L (V)	58	14429	12129
18 (V)	18	14441	12141
18U (V)	68	14453	12153
19L (H)	59	14454	12154
19 (H)	19	14466	12166
19U (H)	69	14478	12178

NahuelSAT Nahuel 1 71.8° West Longitude			
Transponder	D/L		
Polarity	Channel	U/L Freq.	D/L Freq
1 (V)	1	14030	11730
2 (H)	2	14043	11743
3 (V)	3	14091	11791
4 (H)	4	14104	11804
5 (V)	5	14152	11852
6 (H)	6	14165	11865
7 (V)	7	14213	11913
8 (H)	8	14226	11926
9 (V)	9	14274	11974
9L (V)	9	14259	11959
10 (H)	10	14287	11987
11 (V)	11	14335	12035
12 (H)	12	14348	12048
13 (V)	13	14396	12096
14 (H)	14	14409	12109
15 (V)	15	14457	12157
16 (H)	16	14470	12170
17 (V)	17	13777	11488.67
19 (V)	19	13838	11549.67
21 (v)	21	13899	11610.67
23 (V)	23	13958.67	11670.34

Downlink polarization for each transponder denoted in parenthesis.

# North American Satellite C & Ku Band



# DISH Network Video/Audio Programming Services

Echostar 1 = 148° DBS-Ku  
Echostar 2 = 119.05° DBS-Ku  
Echostar 3 = 61.5° DBS-Ku

Echostar 4 = 119.35° DBS-Ku  
Echostar 5 = 110.0° DBS-Ku  
Echostar 6 = 119.0° DBS-Ku

## DISH Network Video/Audio Programming Services:

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100	DISH NET NEWS	166	COUNTRY MUSIC TELEVISION
102	USA NETWORK	168	THE NASHVILLE NETWORK
104	COMEDY CENTRAL	169	NOGGIN
106	NICK AT NITE'S TV LAND	170	NICKELODEON/NICK AT NITE (EAST)
108	LIFETIME	171	NICKELODEON/NICK AT NITE (WEST)
110	TV FOOD NETWORK	172	DISNEY CHANNEL (EAST)
112	HOME & GARDEN NETWORK	173	DISNEY CHANNEL (WEST)
114	E! ENTERTAINMENT TELEVISION	174	TOON DISNEY
116	GAME SHOW NETWORK	176	THE CARTOON NETWORK
117	DISCOVERY PEOPLE	178	THE LEARNING CHANNEL
118	ARTS & ENTERTAINMENT	180	THE FAMILY CHANNEL
120	THE HISTORY CHANNEL	181	PAX TV
122	THE SCI-FI CHANNEL	182	DISCOVERY CHANNEL
124	BLACK ENTERTAINMENT TV	184	ANIMAL PLANET
129	BRAVO	191	ZDTV
130	AMERICAN MOVIE CLASSICS	200	CABLE NEWS NETWORK
131	ROMANCE CLASSICS/INDEPENDENT FILM CHANNEL	202	HEADLINE NEWS
132	TURNER CLASSIC MOVIES	204	COURT TV
135	BBC America	205	FOX NEWS CHANNEL
137	FX	206	CNN FINANCIAL/CNN INTERNATIONAL
138	TURNER NETWORK TELEVISION	207	BLOOMBERG INFORMATION TV
140	ESPN	208	CNBC
142	ESPNEWS	209	MSNBC
143	ESPN CLASSIC	210	C-SPAN
144	ESPN2	212	C-SPAN2
145	ESPN ALTERNATE	213	NASA CHANNEL
146	ESPN ALTERNATE	214	THE WEATHER CHANNEL
153	OUTDOOR CHANNEL	216	AMERICA'S VOICE
160	MTV: MUSIC TELEVISION	220	THE TRAVEL CHANNEL
161	M2: MUSIC TELEVISION	222	HOME SHOPPING NETWORK
162	VH1 MUSIC FIRST	224	SHOP AT HOME NETWORK
		226	QVC

# DISH Network Video/Audio Programming Services

## DISH Network Video/Audio Programming Services:

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228	VALUE VISION	321	SHOWTIME 3 EAST
230	TBS	322	SHOWTIME EXTREME
232	KTLA	323	SHOWTIME BEYOND
234	WPIX	327	THE MOVIE CHANNEL EAST
235	KWGN	328	THE MOVIE CHANNEL WEST
236	WSBK	332	SUNDANCE CHANNEL
238	WWOR	333	FLIX
239	WGN	340	ENCORE EAST
241	NBC EAST	342	ENCORE WESTERNS
242	NBC WEST	350	STARZ EAST
243	CBS EAST	351	STARZ THEATER
244	CBS WEST	401	THE GOLF CHANNEL
245	ABC EAST	405	TV GAMES NETWORK
246	ABC WEST	412	MADISON SQUARE GARDEN
247	FOX EAST	413	FOX SPORTS NEW YORK
248	FOX WEST	414	FOX SPORTS ROCKY MOUNTAIN
249	PBS	415	FOX SPORTS ARIZONA
260	TRINITY BROADCASTING NETWORK	416	FOX SPORTS SOUTHWEST
261	EWTV	417	FOX SPORTS WEST
262	ANGEL ONE	418	FOX SPORTS MIDWEST
270	UNIVISION	419	FOX SPORTS BAY AREA
272	GALAVISION	420	FOX SPORTS SOUTH
300	HBO EAST	421	FOX SPORTS CHICAGO
301	HBO PLUS EAST	422	SUNSHINE
302	HBO SIGNATURE EAST	423	SPORTSCHANNEL FLORIDA
303	HBO WEST	424	HOME TEAM SPORTS
304	HBO PLUS WEST	425	FOX SPORTS OHIO
305	HBO FAMILY	426	FOX SPORTS NORTHWEST
310	CINEMAX EAST	427	FOX SPORTS CINCINNATI
311	CINEMAX WEST	428	FOX SPORTS PITTSBURGH
312	MOREMAX	430	FOX SPORTS DETROIT
318	SHOWTIME EAST	432	EMPIRE
319	SHOWTIME WEST	434	NEW ENGLAND SPORTS NETWORK
320	SHOWTIME 2 EAST	435	FOX SPORTS NEW ENGLAND

# DISH Network Video/Audio Programming Services

## DISH Network Video/Audio Programming Services:

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436	MIDWEST SPORTS CHANNEL	525	DISH-ON-DEMAND
451	ALTERNATE 1	531	DISH-ON-DEMAND
452	ALTERNATE 2	532	DISH-ON-DEMAND
453	ALTERNATE 3	533	DISH-ON-DEMAND
495	TeN	534	DISH-ON-DEMAND
496	EXTASY	535	DISH-ON-DEMAND
497	PLAYBOY	581	TRACKPOWER
498	PLAYBOY EN ESPANOL	582	TRACKPOWER
499	PLEASURE	585	THE RACING NETWORK
500	DISH-ON-DEMAND PROMOS	586	THE RACING NETWORK
501	DISH-ON-DEMAND PROMOS	587	THE RACING NETWORK
502	DISH-ON-DEMAND	588	THE RACING NETWORK
503	DISH-ON-DEMAND	592	NTV
504	DISH-ON-DEMAND	593	NTV PLUS
505	DISH-ON-DEMAND	596	GLOBO (Portuguese)
506	DISH-ON-DEMAND	600	RAI
507	DISH-ON-DEMAND	602	MEGAcosmos
508	DISH-ON-DEMAND	603	ERT Sat
509	DISH-ON-DEMAND	604	ANTENNA TV
510	DISH-ON-DEMAND	606	TV5
511	DISH-ON-DEMAND	608	TV POLONIA
512	DISH-ON-DEMAND	610	ZEE TV
513	DISH-ON-DEMAND	611	ZEE TV
514	DISH-ON-DEMAND	612	TV ASIA
515	DISH-ON-DEMAND	613	TV ASIA
516	DISH-ON-DEMAND	615	RTPI
517	DISH-ON-DEMAND	617	ZEE GOLD
518	DISH-ON-DEMAND	620	TELEMUNDO
519	DISH-ON-DEMAND	621	DISCOVERY EN ESPANOL
520	DISH-ON-DEMAND	622	GEMS
521	DISH-ON-DEMAND	625	TV CHILE
522	DISH-ON-DEMAND	626	CBS TELENOTICIAS
523	DISH-ON-DEMAND	627	SUR
524	DISH-ON-DEMAND	628	FOX SPORTS WORLD ESPANOL

# DISH Network Video/Audio Programming Services

## DISH Network Video/Audio Programming Services:

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629	HTV	710	WTAE - ABC Pittsburgh
630	MTV-S	711	WSB - ABC Atlanta
631	CINE LATINO	712	WLS - ABC Chicago
632	GRAN CANAL LATINO	713	WFAA - ABC Dallas
633	CD - LATINO POP	715	WFAA - ABC Dallas
634	CD - VIVA MARIACHI	716	KGO - ABC San Francisco
635	CD - FIESTA MEXICANA	717	KNXV - ABC Phoenix
636	CD - LATINO STYLES	718	KMGH - ABC Denver
637	CD - MIAMI MIX	719	KTVX - ABC Salt Lake City
638	CD - TEJANO	720	KOMO - ABC Seattle
639	TV JAPAN	721	KSTP - ABC Minneapolis
650	ART	723	WXYZ - ABC Detroit
651	ART MOVIES	725	WUSA - CBS Washington, D.C.
652	LBC	726	WBBM - CBS Chicago
653	ALJAZEERA	727	WBZ - CBS Boston
654	CHANNEL KOREA	728	WBZ - CBS Boston
655	RADIO MARIA SPANISH	729	WUSA - CBS Washington, D.C.
658	RADIO MARIA ITALY (Italian)	730	WCBS - CBS New York City
660	RADIO FRANCE INTERNATIONALE	731	WGNX - CBS Atlanta
662	POLSKIE RADIO PROGRAM 1	732	WFOR - CBS Miami
663	POLSKIE RADIO PROGRAM 3	733	KDKA - CBS Pittsburgh
664	RADIO MARIA POLAND (Polish)	734	WFOR - CBS Miami
668	AL ZIKR	735	KDKA - CBS Pittsburgh
669	ART MUSIC	736	WGNX - CBS Atlanta
700	WJLA - ABC Washington, D.C.	737	WBBM - CBS Chicago
701	WLS - ABC Chicago	738	KTVT - CBS Dallas
702	WCVB - ABC Boston	740	KTVT - CBS Dallas
703	WCVB - ABC Boston	741	KPIX - CBS San Francisco
704	WJLA - ABC Washington, D.C.	742	KPHO - CBS Phoenix
705	WABC - ABC New York City	743	KCNC - CBS Denver
706	WSB - ABC Atlanta	744	KUTV - CBS Salt Lake City
707	WPLG - ABC Miami	745	KIRO - CBS Seattle
708	WTAE - ABC Pittsburgh	746	WCCO - CBS Minneapolis
709	WPLG - ABC Miami	748	WWJ - CBS Detroit

# DISH Network Video/Audio Programming Services

## DISH Network Video/Audio Programming Services:

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750	WRC - NBC Washington, D.C.	787	WFLD - FOX Chicago
751	WMAQ - NBC Chicago	788	KDFW - FOX Dallas
752	WHDH - NBC Boston	790	KDFW - FOX Dallas
753	WHDH - NBC Boston	791	KTVU - FOX San Francisco
754	WRC - NBC Washington, D.C.	792	KSAZ - FOX Phoenix
755	WNBC - NBC New York City	793	KDVR - FOX Denver
756	WXIA - NBC Atlanta	794	KSTU - FOX Salt Lake City
757	WTVJ - NBC Miami	795	KCPQ - FOX Seattle
758	WPXI - NBC Pittsburgh	796	WFTC - FOX Minneapolis
759	WTVJ - NBC Miami	798	WJBK - FOX Detroit
760	WPXI - NBC Pittsburgh	815	KJZZ - UPN Salt Lake City
761	WXIA - NBC Atlanta	830	WGBH - PBS Boston
762	WMAQ - NBC Chicago	835	WGBH - PBS Boston
763	KXAS - NBC Dallas	870	WPVI - ABC Philadelphia
765	KXAS - NBC Dallas	871	WKRN - ABC Nashville
766	KRON - NBC San Francisco	872	KTRK - ABC Houston
767	KPNX - NBC Phoenix	874	KMBC - ABC Kansas City
768	KUSA - NBC Denver	877	KYW - CBS Philadelphia
769	KSL - NBC Salt Lake City	878	WTVF - CBS Nashville
770	KING - NBC Seattle	879	KHOU - CBS Houston
771	KARE - NBC Minneapolis	881	KCTV-CBS Kansas City
773	WDIV - NBC Detroit	884	WCAU - NBC Philadelphia
775	WTTG - FOX Washington, D.C.	885	WSMV - NBC Nashville
776	WFLD - FOX Chicago	886	KPRC - NBC Houston
777	WFXT - FOX Boston	888	KSHB - NBC Kansas City
778	WFXT - FOX Boston	891	WTFX - FOX Philadelphia
779	WTTG - FOX Washington, D.C.	892	WZTV - FOX Nashville
780	WNYW - FOX New York City	893	KRIV - FOX Houston
781	WAGA - FOX Atlanta	895	WDAF - FOX Kansas City
782	WSVN - FOX Miami	950	NEW COUNTRY
783	WPGH - FOX Pittsburgh	951	COUNTRY CLASSICS
784	WSVN - FOX Miami	952	COUNTRY CURRENTS
785	WPGH - FOX Pittsburgh	953	JUKEBOX GOLD
786	WAGA - FOX Atlanta	954	70S SONGBOOK

# DISH Network Video/Audio Programming Services

## DISH Network Video/Audio Programming Services:

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955	ADULT FAVORITES	9411	NORTHERN ARIZONA UNIVERSITY
956	ADULT CONTEMPORARY	9412	UNIVERSITY OF CALIFORNIA
957	ADULT ALTERNATIVE	9413	DELLL
958	HOT HITS	9414	MAYERSON ACADEMY
959	CLASSIC ROCK	9415	FREE SPEECH TV
960	MODERN ROCK ALTERNATIVE	9416	GOOD SAMARITAN NETWORK
961	POWER ROCK		
962	NON-STOP HIP HOP		
963	URBAN BEAT		
964	LATIN STYLES		
965	FIESTA MEXICANA		
966	EUROSTYLE		
967	JAZZ TRADITIONS		
968	CONTEMPORARY JAZZ FLAVORS		
969	ACOUSTIC CROSSROADS		
970	CONTEMPORARY INSTRUMENTALS		
971	CONCERT CLASSICS		
972	LIGHT CLASSICAL		
973	EASY INSTRUMENTALS		
974	BIG BAND ERA		
975	CONTEMPORARY CHRISTIAN		
976	KIDTUNES		
977	NEW AGE		
978	BLUES		
979	REGGAE		
988	SHOWROOM PROMOTIONS		
990	LDS RADIO NETWORK		
9400	RESEARCH TV		
9401	HITN		
9402	PBS YOU		
9403	BYU		
9410	LINKMEDIA		

# DIRECTV Video/Audio Programming Services

DIRECTV 1R = 101.07°W  
 DIRECTV 2 = 100.9°W  
 DIRECTV 3 = 100.85°W

DIRECTV 1 = 110.1°W  
 DIRECTV 6 = 118.8°W

## DIRECTV Video/Audio Programming Services:

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100-199	DIRECT TICKET Pay-Per-View Movies & Events	273	Bravo
200	DIRECTV BIG EVENTS	278	Discovery Health Channel
201	Customer Service Update	280	The Learning Channel (TLC)
202	CNN	282	Animal Planet
203	Court TV	290	Disney Channel (East)
204	Headline News	291	Disney Channel (West)
205	CNN/Sports Illustrated	292	Toon Disney
206	ESPN	296	Cartoon Network
207	ESPNEWS	299	Nickelodeon/Nick at Nite (East)
208	ESPN2	300	Nickelodeon/Nick at Nite (West)
212	DIRECTV This Month ON SPORTS	301	TV Land
220	DIRECTV Sports Schedule	307	WGN Superstation
229	Home & Garden Television (HGTV)	309	Game Show Network
231	Food Network	311	Fox Family Channel
233	Travel Channel	313	Discovery People
236	E! Entertainment Television	315	TRIO
240	Home Shopping Network (HSN)	317	QVC
242	USA Network	325	The Nashville Network (TNN)
244	SCI FI Channel	327	Country Music Television (CMT)
245	TNT	329	Black Entertainment Television (BET)
247	TBS Superstation	331	MTV
248	FX	333	MTV2
249	Comedy Central	335	VH1
252	Lifetime	339	MuchMusic
254	American Movie Classics (AMC)	350	C-SPAN
256	Turner Classic Movies (TCM)	351	C-SPAN2
258	fX: Movies from Fox	353	Bloomberg Television
260	Romance Classics	354	ZDTV
264	BBC America	355	CNBC
265	A&E Network	356	MSNBC
269	The History Channel	358	CNNfn/CNN International
		360	Fox News Channel

# DIRECTV Video/Audio Programming Services

## DIRECTV Video/Audio Programming Services:

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362	The Weather Channel	530	Encore Mystery
364	All News Channel	531	Encore True Stories
366	Newsweek International	532	Encore Action
368	The Health Network	533	Encore WAM!
370	ValueVision	537	SHOWTIME East
372	Trinity Broadcasting Network (TBN)	538	SHOWTIME Two
380	CBS East*	539	SHOWTIME Three
381	CBS West*	540	SHOWTIME West
382	NBC East*	542	SHOWTIME Extreme
383	NBC West*	544	The Movie Channel East
384	PBS*	545	The Movie Channel West
386	ABC East*	547	FLIX
387	ABC West*	549	Sundance Channel
388	FOX East*	550	Independent Film Channel (IFC)
402	Univision	593	DIRECT TICKET® Pay Per View Previews
404	Galavision	594	DIRECTV BIG EVENTS
500	DIRECTV Platinum Presents	595	PLAYBOY TV
501	HBO	600	DIRECTV Platinum Presents
502	HBO Plus	601	DIRECTV This Month ON SPORTS
503	HBO Signature	603	DIRECTV Sports Schedule
504	HBO West	605	The Golf Channel
505	HBO Plus West	606	ESPN Classic
507	HBO Family	607	Speedvision
508	HBO Family West	608	Outdoor Life Network
512	Cinemax East	613	FOX Sports World
513	Cinemax MoreMAX	620	FOX Sports New England
514	Cinemax West	621	Madison Square Garden (MSG)
520	STARZ! East	623	New England Sports Network (NESN)
521	STARZ! West	624	FOX Sports New York
522	STARZ! Theater East	626	Empire Sports Network
523	STARZ! Theater West	628	FOX Sports Pittsburgh
526	Encore East	629	Home Team Sports (HTS)
527	Encore West	630	FOX Sports South
528	Encore Love Stories	632	Sunshine Network
529	Encore Westerns	634	SPORTSCHANNEL Florida

# DIRECTV Video/Audio Programming Services

## DIRECTV Video/Audio Programming Services:

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- |         |                                    |     |                                     |
|---------|------------------------------------|-----|-------------------------------------|
| 636     | FOX Sports Detroit                 | 816 | Music Choice Metal                  |
| 637     | FOX Sports Ohio                    | 817 | Music Choice Alternative Rock       |
| 638     | FOX Sports Cincinnati              | 818 | Music Choice Progressive            |
| 639     | FOX Sports Chicago                 | 819 | Music Choice Classic Rock           |
| 641     | Midwest Sports Channel (MSC)       | 821 | Music Choice Soft Rock              |
| 643     | FOX Sports Southwest               | 822 | Music Choice Hit List               |
| 645     | FOX Sports Rocky Mountain          | 823 | Music Choice '80s                   |
| 647     | FOX Sports Midwest                 | 824 | Music Choice '70s                   |
| 649     | FOX Sports Arizona                 | 825 | Music Choice Solid Gold Oldies      |
| 651     | FOX Sports Northwest               | 828 | Music Choice Today's Country        |
| 652     | FOX Sports West                    | 829 | Music Choice Classic Country        |
| 653     | FOX Sports West 2                  | 830 | Music Choice Big Band               |
| 654     | FOX Sports Bay Area                | 831 | Music Choice Singers & Standards    |
| 699     | DIRECTV Sports Schedule            | 833 | Music Choice Easy Listening         |
| 700     | DIRECTV This Month ON SPORTS       | 834 | Music Choice Classical Masterpieces |
| 701     | NFL SUNDAY TICKET EXTRA            | 836 | Music Choice Classical Light        |
| 703     | NFL SUNDAY SNAP                    | 838 | Music Choice Atmospheres            |
| 704-717 | NFL SUNDAY TICKET™                 | 839 | Music Choice Jazz Light             |
| 723-733 | NBA LEAGUE PASS                    | 840 | Music Choice Jazz                   |
| 723-727 | WNBA SEASON PASS                   | 841 | Music Choice Blues                  |
| 740-750 | NHL® CENTER ICE®                   | 842 | Music Choice Gospel                 |
| 753     | DIRECTV Sports Schedule            | 843 | Music Choice Contemporary Christian |
| 754-768 | MLB EXTRA INNINGS™                 |     |                                     |
| 770-779 | ESPN GamePlan                      |     |                                     |
| 780-793 | ESPN FULL COURT                    |     |                                     |
| 794-799 | MLS/ESPN SHOOTOUT™                 |     |                                     |
| 802     | Music Choice Showcase I            |     |                                     |
| 804     | Music Choice New Releases          |     |                                     |
| 805     | Music Choice American Originals    |     |                                     |
| 806     | Music Choice Sounds of the Seasons |     |                                     |
| 808     | Music Choice World Beat            |     |                                     |
| 811     | Music Choice R&B Hits              |     |                                     |
| 812     | Music Choice Dance                 |     |                                     |
| 813     | Music Choice Channel X             |     |                                     |
| 814     | Music Choice Rap                   |     |                                     |

# Bell ExpressVu Video/Audio Programming Services

Nimiq 91°West Longitude

## Bell ExpressVu Programming Services:

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100	SOCIETE RADIO CANADA (CBFT) MONTREAL	137	SUPER ECRAN - MONTREAL
101	SOCIETE RADIO CANADA (CBUFT) VANCOUVER	150	BELL EXPRESSVU FRENCH PAY PER VIEW PREVIEWS
102	RESEAU D'INFORMATION MONTREAL	151	BELL EXPRESSVU FRENCH PAY PER VIEW
103	TELEVISION QUATRE SAISONS (CFJP) - MON.	152	BELL EXPRESSVU FRENCH PAY PER VIEW
104	CFTM - MONTREAL	153	BELL EXPRESSVU FRENCH PAY PER VIEW
105	CFTM - MONTREAL	154	BELL EXPRESSVU FRENCH PAY PER VIEW
107	LE CHANNEL NOUVELLES (NUVLE) MONTREAL	155	BELL EXPRESSVU FRENCH PAY PER VIEW
108	RESEAU DE SPORT - MONTREAL	156	BELL EXPRESSVU FRENCH PAY PER VIEW
109	MUSIQUE PLUS - MONTREAL	157	BELL EXPRESSVU FRENCH PAY PER VIEW
110	MUSIMAX - MONTREAL	158	BELL EXPRESSVU FRENCH PAY PER VIEW
111	TELETOON FRENCH - EDMONTON	159	BELL EXPRESSVU FRENCH PAY PER VIEW
112	TELETOON FRENCH WEST - EDMONTON	169	BELL EXPRESSVU FRENCH ADULT PAY PER VIEW
113	CANAL FAMILLE - MONTREAL	171	CANAL INDIGO - MONTREAL
114	CANAL D - MONTREAL	172	CANAL INDIGO - MONTREAL
115	CANAL SAVOIR - MONTREAL	195	XPRS CHANNEL
116	TELEQUEBEC - MONTREAL	196	XPRS CHANNEL
117	TELEVISION FRANCAIS ONTARIO TORONTO	197	XPRS CHANNEL
118	TV5 - LE TELEVISION INTERNATIONALE -MONT.	198	XPRS CHANNEL
119	CANAL VIE - MONTREAL	199	THE XPRS CHANNEL
125	L'ASSEMBLEE NATIONALE DU QUEBEC - QUE.	200	CBC HALIFAX (CBHT)
126	CABLE PUBLIC AFFAIRS CHANNEL (FRENCH)	201	CTV ST. JOHN'S - (CJON)
130	METEO MEDIA - MONTREAL	202	ATV - ST. JOHN - CTV - (CJCH)
135	SUPER ECRAN - MONTREAL	203	ATLANTIC SATELLITE NETWORK HALIFAX
136	SUPER ECRAN - MONTREAL		

# Bell ExpressVu Video/Audio Programming Services

## Bell ExpressVu Programming Services:

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206	CTV - OTTAWA	334	L.A. SUPERSTATION
208	CTV - MONTREAL	390	JOCKEY CLUB - PAY PER VIEW
210	CBC TORONTO - (CBLT)	391	JOCKEY CLUB - PAY PER VIEW
212	CTV - CFTO - TORONTO	400	THE SPORTS NETWORK - TORONTO
213	CIII - GLOBAL TORONTO	402	REGIONAL FEEDS
214	CITY TV - TORONTO	403	EXPRESSVU NHL CHANNEL
215	ONTV - HAMILTON	405	CTV SPORTSNET ONTARIO
216	THE NEW VR - BARRIE	406	CTV SPORTSNET EAST
218	CFMT - TORONTO	407	CTV SPORTSNET PACIFIC
221	ITV - EDMONTON - (CITV)	408	CTV SPORTSNETWEST
222	THE A-CHANNEL - EDMONTON	411	NHL CHANNEL - PAY PER VIEW
223	CTV - EDMONTON	412	NHL CHANNEL - PAY PER VIEW
224	CBRT - CALGARY	413	NHL CHANNEL - PAY PER VIEW
227	CICT - CALGARY 7	414	NHL CHANNEL - PAY PER VIEW
231	CBC - WINNIPEG	415	NHL CHANNEL - PAY PER VIEW
232	GLOBAL - WINNIPEG	416	NHL CHANNEL - PAY PER VIEW
233	CTV- WINNIPEG	417	NHL CHANNEL - PAY PER VIEW
240	CBC - VANCOUVER- CBUT)	418	NHL CHANNEL - PAY PER VIEW
241	CTV VANCOUVER - (CHAN)	419	NHL CHANNEL - PAY PER VIEW
242	GLOBAL - VANCOUVER	420	NHL CHANNEL - PAY PER VIEW
243	VTV - VANCOUVER - (CIVT)	430	HEADLINE SPORTS - HLS - TORONTO
300	WHDH - BOSTON	431	SPEEDVISION - STANFORD, CA
301	WCVB - BOSTON	432	THE GOLF CHANNEL - ORLANDO, FLOR
302	WBZ - BOSTON	433	THE OUTDOOR LIFE NETWORK
303	WFXT - BOSTON		OLN - TORONTO
320	CHICAGO SUPERSTATION	434	THE DISCOVERY CHANNEL - TORONTO
321	BOSTON SUPERSTATION (MPN)	435	THE HISTORY CHANNEL - TORONTO
322	NEW YORK SUPERSTATION (WB11)	436	THE LEARNING CHANNEL -
323	ATLANTA SUPERSTATION (TBS)		WASHINGTON, DC
330	KING - SEATTLE	437	COURT NETWORK - NEW YORK
331	KOMO - SEATTLE	438	VISION - TORONTO
332	KIRO- SEATTLE	439	CROSSROADS TV SYSTEM (CTS)
333	KCPQ - SEATTLE		BURL, ONT.

# Bell ExpressVu Video/Audio Programming Services

## Bell ExpressVu Programming Services:

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440	CANADIAN LEARNING TELEVISION TORONTO	462	WOMEN'S TELEVISION NETWORK WINNIPEG
441	ABORIGINALS PEOPLES TV NET WINNIPEG	470	MUCH MUSIC - TORONTO
442	WGBH - BOSTON	471	MUCH MORE MUSIC - TORONTO
443	KCTS - SEATTLE	472	COUNTRY MUSIC TELEVISION CALGARY
444	TELEVISION ONTARIO - (CICA) TORONTO	473	BET - WASHINGTON, DC
445	KNOWLEDGE NETWORK - VANCOUVER	479	GAMESHOW - BURBANK, CA
446	SCN - SASKATCHEWAN	480	YOUTH TELEVISION - TORONTO
447	ACCESS - EDMONTON	481	YOUTH TELEVISION - TORONTO
448	GLOBAL AFFILIATE - PRIME TORONTO	482	THE FAMILY CHANNEL - EDMONTON
449	GLOBAL AFFILIATE - PRIME	483	THE FAMILY CHANNEL - EDMONTON
450	ARTS AND ENTERTAINMENT NEW YORK	484	TREEHOUSE TV - TORONTO
451	BRAVO! - TORONTO	486	TELETOON - EDMONTON
452	SHOWCASE TELEVISION TORONTO	487	TELETOON - EDMONTON
453	SHOWCASE TELEVISION TORONTO	490	CHILDREN'S PAY PER VIEW
454	THE SPACE NETWORK - TORONTO	491	CHILDREN'S PAY PER VIEW
455	THE COMEDY NETWORK TORONTO	492	CHILDREN'S PAY PER VIEW
456	THE COMEDY NETWORK - WEST	500	CABLE NEWS NETWORK - ATLANTA, GEORGIA
457	THE NASHVILLE NETWORK - NASHVILLE	501	BBC WORLD NEWS - ENGLAND
458	THE LIFE NETWORK - TORONTO	502	HEADLINE NATIONAL NEWS - ATLANTA
459	THE HOME AND GARDEN NETWORK TORONTO	503	CABLE PULSE 24 - TORONTO
460	THE HEALTH NETWORK - LOS ANGELES	504	CABLE NAT. BROADCASTING CORP. NEW JERSEY
461	THE FOOD NETWORK - NEW YORK	505	CTV NEWS NET - TORONTO
		506	REPORT ON BUSINESS TV - HAMILTON
		507	STAR NETWORK - TORONTO
		510	CABLE PUBLIC AFFAIRS - TORONTO
		511	CBC NEWSWORLD - TORONTO
		512	THE WEATHER NETWORK - TORONTO
		513	THE SHOPPING CHANNEL - TORONTO

# Bell ExpressVu Video/Audio Programming Services

## Bell ExpressVu Programming Services:

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600	THE SUPERCHANNEL - EDMONTON	710	BELL EXPRESSVU
601	THE SUPERCHANNEL - EDMONTON		PAY PER VIEW - TORONTO
602	THE SUPERCHANNEL - EDMONTON	711	BELL EXPRESSVU
603	MOVIE MAX - EDMONTON		PAY PER VIEW - TORONTO
604	MOVIE MAX2 - EDMONTON	712	BELL EXPRESSVU
605	MOVIE PIX - TORONTO		PAY PER VIEW - TORONTO
610	THE MOVIE NETWORK - TORONTO	713	BELL EXPRESSVU
611	THE MOVIE NETWORK - TORONTO		PAY PER VIEW - TORONTO
612	THE MOVIE NETWORK - TORONTO	714	BELL EXPRESSVU
613	THE MOVIE NETWORK - TORONTO		PAY PER VIEW - TORONTO
614	THE MOVIE NETWORK - TORONTO	715	BELL EXPRESSVU
667	VENUS INFORMATION CHANNEL		PAY PER VIEW - TORONTO
668	PLAYBOY - BEVERLY HILLS	716	BELL EXPRESSVU
669	BELL EXPRESSVU ADULT		PAY PER VIEW - TORONTO
	PAY PER VIEW PREVIEWS	717	BELL EXPRESSVU
700	BELL EXPRESSVU		PAY PER VIEW - TORONTO
	PAY PER VIEW PREVIEWS	718	BELL EXPRESSVU
701	BELL EXPRESSVU		PAY PER VIEW - TORONTO
	PAY PER VIEW - TORONTO	719	BELL EXPRESSVU
702	BELL EXPRESSVU		PAY PER VIEW - TORONTO
	PAY PER VIEW - TORONTO	720	BELL EXPRESSVU
703	BELL EXPRESSVU		PAY PER VIEW - TORONTO
	PAY PER VIEW - TORONTO	751	BELL EXPRESSVU
704	BELL EXPRESSVU		ADULT PAY PER VIEW
	PAY PER VIEW - TORONTO	752	BELL EXPRESSVU
705	BELL EXPRESSVU		ADULT PAY PER VIEW
	PAY PER VIEW - TORONTO	753	BELL EXPRESSVU
706	BELL EXPRESSVU		ADULT PAY PER VIEW
	PAY PER VIEW - TORONTO	754	BELL EXPRESSVU
707	BELL EXPRESSVU		ADULT PAY PER VIEW
	PAY PER VIEW - TORONTO	760	VIEWER'S CHOICE
708	BELL EXPRESSVU		PREVIEWS - TORONTO
	PAY PER VIEW - TORONTO	761	VIEWER'S CHOICE - TORONTO
709	BELL EXPRESSVU	762	VIEWER'S CHOICE - TORONTO
	PAY PER VIEW - TORONTO		

# Bell ExpressVu Video/Audio Programming Services

## Bell ExpressVu Programming Services:

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763	VIEWER'S CHOICE - TORONTO	923	GALAXIE ENVIRONMENT / ENVIRONNEMENT
764	VIEWER'S CHOICE - TORONTO	924	GALAXIE POP CLASSICS / CLASSIQUES POPULAIRES
851	FAIRCHILD - TORONTO	925	GALAXIE ALL BAROQUE / BAROQUE
852	FAIRCHILD WEST	926	GALAXIE CLASSIC MASTERS / GRANDS CLASSIQUES
853	TELATINO NETWORK- TORONTO	927	GALAXIE CHAMBER MUSIC / MUSIQUE DE CHAMBRE
854	SOUTH ASIAN NETWORK - NEWMARKET	928	GALAXIE THE 80'S
855	DEUTSCHE WELLE - GERMANY	929	GALAXIE KIDS STUFF
890	TDTV	930	GALAXIE MOUSSES MUSIQUE
892	BUSINESS TV	960	CBC RADIO ONE
901	GALAXIE ROCK	961	RADIO-CANADA (RADIO AM) FRANCAIS
902	GALAXIE NEW ROCK	962	CBC RADIO TWO
903	GALAXIE ADULT ALTERNATIVE	963	RADIO-CANADA (CHAINE CULTURELLE FM)
904	GALAXIE POP ADULT	964	THE FAN 590 - ALL SPORTS RADIO - TORONTO
905	GALAXIE AMBIENT LOUNGE	965	DEUTSCHE WELLE RADIO 1
906	GALAXIE RHYTHM MACHINE	966	DEUTSCHE WELLE RADIO 2
907	GALAXIE HIT LIST	967	NEWSWORLD VOICE PRINT DATA PROGRAMMING
908	GALAXIE NEW COUNTRY	968	Q107 - TORONTO
909	GALAXIE COUNTRY CLASSICS	969	CKAC AM - MONTREAL
910	GALAXIE FRANCO COUNTRY	970	CJRT FM - TORONTO
911	GALAXIE FRANCO ROCK	971	CLASSICAL 96 FM - TORONTO
912	GALAXIE FRANCO ROMANCE	972	WAHSA FM
913	GALAXIE FRANCO SUCCES	973	CJAD AM - MONTREAL
914	GALAXIE NOSTALGIE	974	WRN FM
915	GALAXIE BIG BAND SWING	975	COUNTRY FM 105 - CALGARY
916	GALAXIE JAZZ MASTERS / GEANTS DE JAZZ	976	POWER FM 97.5 - WINNIPEG
917	GALAXIE JAZZ NOW / JAZZ ACTUEL	977	NEW ROCK EDGE 102 - TORONTO
918	GALAXIE BLUES TIME	980	RADIO IGA (FOR BUSINESS ONLY)
919	GALAXIE FOLK ROOTS		
920	GALAXIE GLOBAL VILLAGE / MUSIQUES DE MONDE		
921	GALAXIE ROCKANDROLL		
922	GALAXIE SMOOTH AWAY / EVASION		

# WSNet Video/Audio Programming Services

T6 = 93°West Longitude

## WSNet Programming Services:

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### WSNet 1 (Transponder 15 vert. 1241 L-band)

200 ESPN  
202 ESPN ALTERNATE  
223 TBS  
225 USA EAST  
227 DISCOVERY EAST  
229 A&E  
240 CNN  
301 Nickelodeon East

### WSNet 2 (Transponder 27 vert. 1427 L-band)

232 E! EAST  
234 COURT TV  
247 WEATHER  
260 OXYGEN  
263 FOOD  
280 AMC  
300 ODYSSEY  
302 Toon  
350 CMTV

### WSNet 3 (Transponder 18 horz. 1278.5 L-band)

221 FX EAST  
243 MSNBC  
244 CNBC  
245 CNN FN  
262 DIY  
315 HSN  
345 VH1 EAST  
355 BET

# WSNet Video/Audio Programming Services

T6 = 93°West Longitude

## WSNet Programming Services:

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### WSNet 4 (Transponder 10 horz. 1154.5 L-band)

222 TNT EAST  
224 WGN  
226 LIFETIME EAST  
228 TLC EAST  
241 HEADLINE NEWS  
249 C-SPAN  
250 C-SPAN2  
307 ANIMAL PLANET  
308 TRAVEL  
340 MTV EAST

### WSNet 5 (Transponder 8 horz. 1123.5 L-band)

220 TNN EAST  
233 GALAVISION EAST  
317 TV LAND  
319 BOOMERANG  
322 DISNEY EAST  
480 RUSSIAN NETWORK

# TV STATIONS

## LEGEND

AB	Indicates ABC
CB	Indicates CBS
NB	Indicates NBC
FO	Indicates Fox
UP	Indicates UPN
WB	Indicates WBN
HS	Indicates HSN
TB	Indicates TBN
UN	Indicates Univision
TE	Indicates Telemundo
PB	Indicates PBS
ED	Indicates Educational
IN	Indicates Independent
*	DATA Pending
▼	Indicates Channel Number Column
▲	Indicates HDTV Channel Number Column
⊕	Indicates Frequency Allocation Position 0 ±10 KHz

## ALABAMA

	▼	▲	⊕	
Anniston WJSU-TV	40	58	AB -	
Bessemer WDBB	17	18	FO 0	
Birmingham				
WBRC-TV	6	50	FO -	
W81Q	10	53	PB -	
WVTM-TV	13	52	NB -	
WTTO	21	28	IN -	
WBMG	42	30	CB +	
WABM	68	36	UP +	
Demopolis	WIQ	41	19	PB 0
Dothan	WTVY	4	36	CB 0
	WDHN	18	21	AB 0
Dozier	WDIQ	2	59	PB -

Florence	WOWL-TV	15	14	NB	0				KDMD	33	32	HS	0
	WYLE	2	20	WB		Bethel	KYUK-TV	4	3	PB	0		
	WFIQ	36	22	PB	-	Dillingham	*	2	9	*	0		
Gadsden	WNAL-TV	44	45	CB	+	Fairbanks	KATN	2	18	AB,			
	WTJP	60	26	IN	0					NB,			
Huntsville	WHNT-TV	19	59	CB	0				KFXF	7	22	FO	+
	WHIQ	25	24	PB	+		KUAC-TV	9	24	PB	+		
	WAAY-TV	31	32	AB	+				KTVF	11	26	CB,	
	WZDX	54	49	FO	0							NB	+
Huntsville-Decatur							*	13	28	*	+		
	WAFF	48	41	NB	-	Juneau	KTOO-TV	3	6	PB	0		
Louisville	WGIO	43	42	PB	+		KJUD	8	11	AB,			
Mobile	WKRQ-TV	5	27	CB	+					NB	0		
	WALA-TV	10	9	FO	+	Ketchikan	KNEB	4	13	CB,			
	WPMI	15	26	NB	+		*	9	8	*	0		
	WMPV-TV	21	20	TB	+	North Pole	KJNP-TV	4	20	TB	+		
	WEIQ	42	18	PB	0	Sitka	KTNL	13	2	CB	0		
Montgomery	WSFA	12	57	NB	0								
	WCOV-TV	20	16	FO	0	<b>ARIZONA</b>	▼	▲	⊕				
	WAIQ	26	14	PB	+	Flagstaff	KNAZ-TV	2	22	NB	0		
	WHOA-TV	32	51	AB	0		KTFL	4	18	*	+		
	WMCV-TV	45	46	IN	-		KCFG	9	28	*	0		
Mount Cheaha State Park							KWBF	13	27	WB	0		
	WCIQ	7	56	PB	-	Green Valley	KXGR	46	47	*	0		
Opelika-Auburn						Kingman	KMOH-TV	6	19	WB	-		
	WSWS	66	31	WB	0	Lake Havasu City							
Ozark	WDFX-TV	34	33	FO	-		KMCC	34	35	*	+		
Selma	WAKA	8	55	CB	-	Mesa	KPNX	12	36	NB	-		
Troy	WRJM-TV	67	48	*	0	Phoenix	KTVK	3	24	IN	+		
Tuscaloosa	WCFT-TV	33	34	AB	0		KPHO-TV	5	17	CB	-		
Tuskegee	*	22	24	*	-		KAET	8	29	PB	+		
<b>ALASKA</b>	▼	▲	⊕				KSAZ-TV	10	23	FO	-		
Anchorage	KTUU-TV	2	18	NB	-		KNXV-TV	15	14	AB	-		
	KTBY	4	20	FO	-		KPAZ-TV	21	20	TB	0		
	KYES	5	22	UP,			KTVW-TV	33	34	UN	0		
				WB	0		KUTP	45	26	UP	0		
	KAKM	7	24	PB	-		KASW	61	49	FO,			
	*	9	26	*	-					WB	0		
	KTVA	11	28	CB	-	Prescott	KUSK	7	25	IN	0		
	KIMO	13	30	AB	-	Sierra Vista	KWBA	58	44	*	0		

# TV STATIONS

Tolleson	KAJW	51	52	*	0	Bakersfield	KGET	17	25	NB	0	Merced	KNSO	51	38	WB	0
Tucson	KVOA	4	31	NB	-		KERO-TV	23	10	AB	-	Modesto	KUVS	19	18	UN	-
	KUAT-TV	6	30	PB	+		KBAK-TV	29	33	CB	0	Monterey	KION	46	32	CB	-
	KGUN	9	35	AB	-		KUZZ-TV	45	55	UP	+	Novato	KWOK	68	17	*	0
	KMSB-TV	11	25	FO	0	Barstow	KHIZ	64	44	IN	0	Oakland	KTVU	2	56	FO	+
	KOLD-TV	13	32	CB	-	Calipatria	KAJB	54	50	*	0	Ontario	KHSC	46	47	HS	0
	KTTU-TV	18	19	UP	-	Ceres	KBSV	23	15	ED	0	Oxnard	KADY	63	24	UP	+
	KUAS-TV	27	28	PB	-	Chico	KHSL-TV	12	43	CB	-	Palm Springs	KMIR	36	46	NB	-
	KHRR	40	41	TE	0		KCPM	24	36	NB	+		KESQ	42	52	AB	0
Yuma	KYMA	11	41	NB	-	Clovis	KGMC	43	44	WB	0	Paradise	KCVU	30	20	UP	0
	KSWT	13	16	CB, TE	+	Concord	KTNC-TV	42	63	IN	0	Porterville	KKAG	61	48	IN	0
						Corona	KVEA	52	39	TE	0	Rancho Palos Verdes					
<b>ARKANSAS</b>		▼	▲		⊕	Cotati	KRCB	22	23	PB	-		KMCC	44	51	*	+
Arkadelphia	KETG	9	46	PB	+	El Centro	KVYE	7	22	UN	+	Redding	KRCR-TV	7	14	IN	0
El Dorado	KTVE	10	27	*	-		KECY-TV	9	48	FO	+		KIXE-TV	9	18	PB	0
Fayetteville	KAFT	13	45	PB	-	Eureka	KIEM-TV	3	16	NB	-	Riverside	KRCA	62	69	IN	0
	KHOG-TV	29	15	AB	+		KVIQ-TV	6	17	CB	-	Sacramento	KCRA	3	35	NB	0
Fort Smith	KFSM-TV	5	18	CB	-		KEET	13	11	PB	+		KVIE	6	53	PB	0
	KPOM-TV	24	17	NB	+		KBVU	29	28	FO	0		KXTV	10	61	AB	0
	KHBS	40	21	AB	-	Fort Bragg	KFWU	8	15	AB	-		KCMY	29	48	HS	-
Hot Springs	KVTH	26	14	IN	0	Fresno	KVPT	18	40	PB	+		KPWB	31	21	UP	-
Jonesboro	KAIT-TV	8	58	AB	-		KSEE	24	16	NB	0		KTXL	40	55	FO	-
	KTEJ	19	20	PB	-		KFSN-TV	30	9	AB	+	Salinas	KSBW	8	43	NB	+
	KTVJ	48	49	*	+		KJEO	47	14	CB	0		KCBA	35	13	FO	-
Little Rock	KETS	2	47	PB	-		KAIL	53	7	UP	0		KSMS	67	31	UN	-
	KARK-TV	4	32	NB	0	Hanford	KFTV	21	20	UN	0	San Bernardino	KSCI	18	61	IN	-
	KATV	7	22	AB	-	Huntington Beach							KVCR	24	26	PB	-
	KTHV	11	12	CB	+		KOCE	50	48	PB	-		KZKI	30	38	IN	0
	KLRT	16	33	FO	-	Los Angeles	KCBS	2	60	CB	0	San Diego	KFMB	8	55	CB	0
	KVUT	42	43	*	0		KNBC	4	36	NB	0		KGTV	10	25	AB	0
Mountain View							KTLA	5	68	WB	0		KPBS	15	30	PB	0
	KEMV	6	35	PB	-		KABC	7	8	AB	0		KNSD	39	40	NB	0
Newark	KLEP	17	26	ED	0		KCAL	9	43	IN	0		KUSI	51	18	UP	0
Pine Bluff	KVTN	25	24	IN	-		KTTV	11	65	FO	0		KSWB	69	19	WB	0
	KASN	38	39	UP	-		KCOP	13	66	UP	0	San Francisco	KRON	4	57	NB	-
Rogers	KFAA	51	50	NB	-		KWHY	22	42	IN	0		KPIX	5	28	CB	+
Springdale	KSBN-TV	57	39	IN	0		KCET	28	59	PB	0		KGO	7	24	AB	-
<b>CALIFORNIA</b>		▼	▲		⊕		KMEX	34	35	UN	0		KOED	9	34	PB	+
Anaheim	KDOC-TV	56	32	IN	-		KLCS	58	41	PB	-		KDTV	14	29	UN	0
Arcata	KAEF	23	22	AB	0		*	68	36	*	-		KOFY	20	19	WB	-

# TV STATIONS

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	KTSF	26 27	IN -		KRDO	13 24	AB 0		WEDY	65 39	PB 0	
	KMTP	32 33	PB +		KXRM	21 22	FO, UP 0		New London	WTWS	26 34	IN +
	KCNS	38 39	IN 0						Norwich	WEDN	53 45	PB 0
	KBHK	44 45	UP -	Denver	KWGN	2 34	WB 0		Waterbury	WTXX	20 12	UP 0
Sanger	KMSG	59 36	TE 0		KCNC	4 35	CB -		<b>DELAWARE</b>			▼ ▲ Ⓞ
San Jose	KNTV	11 12	AB +		KRMA	6 18	PB -		Seaford	WDPB	64 44	PB 0
	KICU	36 52	IN 0		KMGH	7 17	AB 0		Wilmington	WHYY	12 55	PB 0
	KSTS	48 49	TE -		KUSA	9 16	NB -			WTGI	61 31	IN 0
	KTEH	54 50	PB 0		KTVD	20 19	UP 0		<b>DISTRICT OF COLUMBIA</b>			▼ ▲ Ⓞ
	KLXV	65 41	IN 0		KDVR	31 32	FO 0		Washington	WRC	4 48	NB -
San Luis Obispo	KSBY	6 15	NB +		KRMT	41 40	ED 0			WTTG	5 6	FO -
	KTAS	33 34	0		KCEC	50 51	IN 0			WJLA	7 39	AB +
San Mateo	KCSM	60 59	PB 0	Durango	KREZ	6 17	CB +			WUSA	9 34	CB 0
Santa Ana	KTBN	40 53	TB 0	Fort Collins	KFCT	22 21	FO -			WDCA	20 35	UP +
Santa Barbara	KEYT	3 27	AB -	Glenwood Springs						WETA	26 27	PB -
	*	38 22	* 0		KREG	3 23	CB -			WHMM	32 33	PB +
Santa Maria	KCOY	12 19	CB +	Grand Junction						WBDC	50 51	WB 0
Santa Rosa	KFTY	50 54	IN -		KFOQ	4 15	* +		<b>FLORIDA</b>			▼ ▲ Ⓞ
Stockton	KOVR	13 25	CB +		KREX	5 2	CB -		Boca Raton			
	KQCA	58 46	UP 0		KJCT	8 7	AB -			WPPB-TV	63 44	* 0
	KFTL	64 62	HS 0		KKCO	11 14	NB +		Bradenton	WFCT	66 42	IN 0
Twenty-nine Palms					KRMJ	18 16	PB +		Cape Coral	WFTX	36 35	FO 0
	KVMD	31 23	* 0	Longmont	KDEN	25 26	* 0		Clearwater	WCLF	22 21	IN 0
Tijuana-San Diego				Montrose	KREY	10 13	CB +		Clermont	WKCF	18 17	WB -
	XETV	6	FO	Pueblo	KOAA	5 27	NB 0		Cocoa	WTGL	52 51	IN 0
	XEWT	12	IN		KTSC	8 29	PB 0			W8CC	68 30	ED 0
Vallejo-Fairfield				Steamboat Springs					Daytona Beach			
	KPST-TV	66 30	HS 0		KSBS	24 10	IN +			WESH	2 11	NB -
Ventura	KSTV	57 49	WB +	Sterling	KTVS	3 23	CB 0			WNTO	26 49	IN 0
Visalia	KMPH	26 28	FO	<b>CONNECTICUT</b>			▼ ▲ Ⓞ		Fort Lauderdale			
	KNXT	49 50	ED	Bridgport	WHAI	43 42	IN -			WSCV	51 52	TE 0
Watsonville	KCAH	25 58	ED +		WEDW	49 52	PB -		Fort Myers	WINK	11 53	CB +
<b>COLORADO</b>				Hartford	WFSB	3 11	CB +			WBBH	20 15	NB +
Boulder	KTVJ	14 15	HS 0		WHCT-TV	18 46	IN -			WGCH	30 31	PB 0
Broomfield	KBDI	12 36	PB 0		WEDH	24 32	PB 0		Fort Pierce	WTCE	21 38	ED -
Castle Rock	KWHD	53 47	IN 0		WTIC	61 5	FO +			WTVX	34 50	UP, WB 0
Colorado Springs				New Britain	WVIT	30 35	NB +		Fort Walton Beach			
	KKTV	11 10	CB 0	New Haven	WTNH	8 10	AB +			WFGX	35 25	IN 0
					WBNE	59 6	WB +					

# TV STATIONS

	WPAN	53	40	IN	0		WFTV	9	39	AB	0	Athens	WGTV	8	22	PB	0
	WAWD	58	49	*	0		WMFE	24	23	PB	-		WNGM	34	48	IN	0
Gainesville	WUFT	5	36	PB	-		WZWY	27	14	*		Atlanta	WSB	2	39	AB	0
	WCJB	20	16	AB	0		WOFL	35	22	FO	+		WAGA	5	27	FO	-
High Springs	WGFL	53	28	*	+		WRBW	65	41	UP	0		WXIA	11	10	NB	+
Hollywood	WYHS	69	47	HS	0	Palm Beach	WFCG	61	49	IN	0		WTBS	17	20	IN	-
Inverness	*	64	34	*	0	Panama City	WJHG	7	41	NB	+		WPBA	30	21	PB	0
Jacksonville	WJXT	4	42	CB	+		WMBB	13	19	AB	0		WATL	36	25	WB	0
	WJCT	7	38	PB	0		WPGX	28	29	FO	-		WGNX	46	19	CB	-
	WTLV	12	13	NB	+		WFSG	56	38	PB	0		WATC	57	38	ED	+
	WJKS	17	34	AB	0	Panama City Beach	WPCT	46	47	IN	0	Augusta	WUPA	69	43	UP	0
	WAWS	30	32	FO	+		WEAR	3	17	AB			WJBF	6	42	AB	+
	WTEV	47	19	UP	-	Pensacola	WSRE	23	31	PB	0		WRDW	12	31	CB	-
	WJEB	59	44	ED	0		WHBR	33	34	IN	+		WAGT	26	30	NB	0
Key West	WWFD	8	12	IN	0		WJTC	44	45	UP	0	Bainbridge	WFXG	54	51	FO	-
	WEYS	22	3	IN	+		WTSP	10	24	CB	-	Baxley	WTLH	49	50	FO	0
Lakeland	WWWB	32	19	WB	0	St. Petersburg	WTTA	38	57	IN	0	Brunswick	WUBI	34	35	UP	+
Lake Worth	WHBI	67	46	*	0		WTOG	44	59	UP	+	Chatsworth	WBSG	21	24	WB	0
Leesburg	WACX	55	40	IN	0	Sarasota	WWSB	40	52	AB	0	Cochran	WCLP	18	33	PB	-
Live Oak	WFXU	57	48	*	-	Tallahassee	WFSU	11	32	PB	-	Columbus	WDCO	29	7	PB	+
Melbourne	WBSF	43	20	HS	+		WTXL	27	22	AB	+		WRBL	3	15	CB	0
	WIRB	56	48	IN	0		WTWC	40	2	NB	+		WTVM	9	47	AB	+
Miami	WPBT	2	19	PB	0	Tampa	WEDU	3	54	PB	0		WJSP	28	23	PB	0
	WFOR	4	22	CB	0		WFLA	8	7	NB	-	Cordele	WLTZ	38	35	NB	+
	WTVJ	6	30	NB	0		WTVT	13	12	FO	-	Dalton	WXTX	54	49	FO	+
	WSVN	7	8	FO	-		WUSF	16	34	PB	0	Dawson	WSST	55	51	IN	+
	WPLG	10	9	AB	+		WFTS	28	29	AB	0	Macon	WELF	23	16	TB	0
	WLRN	17	18	PB	-		WBHS	50	47	HS	0		WACS	25	26	PB	0
	WLTV	23	24	UN	-	Tequesta	WPBF	25	16	AB	0		WMAZ	13	45	CB	+
	WBFS	33	32	UP	0	Tice	WRXY	49	33	IN	0		WGXA	24	16	FO	+
	WCTD	35	21	IN	0	Venice	WBSV-TV	62	25	IN	0		WMGT	41	40	NB	+
	WDZL	39	20	WB	0	West Palm Beach							WGNM	64	50	UP	-
	WHFT	45	46	TB	+		WPTV	5	55	*	0	Monroe	WHSG	63	44	TB	0
Naples	WZVN	26	43	AB	-		WPEC	12	13	CB	0	Pelham	WABW-TV	14	2	PB	-
	WTVK	46	45	UP	0		WFLX	29	28	FO	+	Perry	WPGA	58	32	AB	+
New Smyrna Beach	WCEU	15	33	PB	+		WXEL	42	27	PB	+	Rome	WTLK	14	51	IN	+
Ocala	WOGX	51	31	FO	-	<b>GEORGIA</b>	▼ ▲ ⊕					Savannah	WSAV	3	39	NB	+
Orange Park	WJXX	25	10	AB	-	Albany	WALB	10	17	NB	0		WVAN	9	46	PB	-
Orlando	WCPX	6	58	CB	-		WFXL	31	30	FO	-		WTOC	11	15	CB	0
													WJCL	22	23	AB	0

# TV STATIONS

Thomasville	WCTV	6	52	*	0	<b>IDAHO</b>	▼	▲	⊕	East St. Louis						
Toccoa	WNEG	32	24	IN	-	Boise	KBCI	2	25	CB	0	WHSL	46	47	* 0	
Valdosta	WGVP	44	43	UP	-		KAID	4	21	PB	+	Freeport	WIFR	23	41	CB 0
Waycross	WXGA	8	18	PB	+		KTVB	7	26	NB	0	Harrisburg	WSIL	3	34	AB 0
Wrens	WCES	20	36	PB	-	Caldwell	KNIN	9	10	UP	-	Jacksonville	WSEC	14	15	PB 0
<b>HAWAII</b>	▼	▲	⊕			Coeur d'Alene	KCDT	26	56	PB	+	Joliet	WGBO	66	53	UN +
Hilo	KHBC	2	22	NB	0	Filer	KBGH	19	18	ED	-	LaSalle	WWTO	35	10	TB 0
	*	4	19	*	0	Idaho Falls	KIDK	3	36	CB	0	Macomb	WMEC	22	21	PB +
	KGMD	9	8	CB	0		KIFI	8	9	AB	+	Marion	WTCT	27	17	IN 0
	KHAW	11	21	FO	0	Lewiston	KLEW	3	32	CB	-	Moline	WQAD	8	38	AB 0
	KHVO	13	18	AB	0	Moscow	KUID	12	33	PB	-		WQPT	24	23	PB -
	KWHH	14	23	WB	+	Nampa	KIVI	6	22	AB	0	Mount Vernon				
	*	32	31	*	+		KTRV	12	27	FO	+		WCEE	13	21	IN +
	*	38	39	*	+	Pocatello	KPVI	6	23	NB	-	Olney	WUSI	16	19	PB -
Honolulu	KHON	2	22	FO	+		KISU	10	17	PB	0	Peoria	WHOI	19	40	AB 0
	KITV	4	40	AB	-	Twin Falls	KMTT	11	16	CB	0		WEEK	25	57	NB +
	KFVE	5	23	IN	0		KIPT	13	24	PB	-		WMBD	31	30	CB +
	KGMB	9	8	CB	-		KXTF	35	34	AB,			WTVP	47	46	PB -
	KHET	11	18	PB	+					FO	0		WAOE	59	39	* +
	KHNL	13	35	NB	-	<b>ILLINOIS</b>	▼	▲	⊕			Quincy	WGEM	10	54	NB -
	KWHE	14	31	IN	0	Aurora	WEHS	60	59	HS	0		WTJR	16	32	TB +
	KIKU	20	19	IN	0	Blomington-Normal							WQEC	27	34	PB +
	KAAB	26	27	IN	0		WYZZ	43	28	FO	0	Rock Island	WHBF	4	58	CB +
	KBFD	32	33	IN	0	Carbondale	WSIU	8	40	PB	0	Rockford	WREX	13	54	NB 0
	KAIE	38	39	*	0	Champaign	WCIA	3	48	CB	+		WTVO	17	16	AB -
	KWBN	44	43	ED			WICD	15	41	NB	-		WQRF	39	42	FO 0
Kailua-Kona	KLEI	6	25	IN	0	Charleston	WEIU	51	50	PB	+	Springfield	WICS	20	42	NB +
Kaneohe	KAPA	66	41	*	0	Chicago	WBBM	2	3	CB	-		WCFN	49	53	CB -
Lihue	*	8	12	*	-		WMAQ	5	29	NB	0		WRSP	55	44	FO +
	*	21	7	*	-		WLS	7	52	AB	0	Urbana	WILL	12	33	PB -
	*	27	28	*	-		WGN	9	19	WB	+		WCCU	27	26	FO 0
	*	67	45	*	0		WTTW	11	47	PB	0	<b>INDIANA</b>	▼	▲	⊕	
Wailuku	KGMV	3	24	CB	0		WYCC	20	21	PB	0	Angola	WINM	63	12	TB 0
	KAIL	7	36	FO	0		WCIU	26	27	IN	0	Bloomington	WTTV	4	53	IN 0
	KMEB	10	30	PB	0		WFLD	32	31	FO	0		WTIU	30	14	PB -
	KMAU	12	29	AB	0		WCFC	38	43	IN	-		WCLJ	42	56	TB +
	KOGG	15	16	NB	0		WSNS	44	45	TE	0		WIIB	63	27	IN +
	KWHM	21	20	WB	0	Decatur	WAND	17	18	AB	0	Elkhart	WSJV	28	58	FO +
		27	28	*	0		WFHL	23	22	IN	-	Evansville	WTVW	7	28	FO 0
		33	34	*	0							WNIN	9	54	PB +	

# TV STATIONS

	WFIE	14 58 NB	-	Davenport	KWQC	6 56 NB	+	Salina	KAAS	18 17 FO	+
	WEHT	25 59 AB	-		KLJB	18 49 FO	+	Topeka	KTWU	11 23 PB	0
	WEVV	44 45 CB	0		KOCT	36 34 PB	+		WIBW	13 44 CB	+
Fort Wayne	WANE	15 4 CB	+	Des Moines	KCCI	8 31 CB	-		KSNT	27 26 NB	0
	WPTA	21 24 AB	+		KNID	11 50 PB	+		KTKA	49 48 AB	0
	WKJG	33 19 NB	-		WHO	13 19 NB	-	Wichita	KSNW	3 45 NB	-
	WFWA	39 40 PB	-		KDSM	17 16 FO,			KAKE	10 21 AB	-
	WFFT	55 36 FO	0			UP	+		KSAS	24 25 FO	-
Gary	WPWR	50 51 UP			*	63 26 *	-		KWCV	33 34 *	0
	WYIN	56 56 PB	+	Dubuque	KFXB	40 43 AB	0	<b>KENTUCKY</b>	▼ ▲ ☼		
Hammond	WJYS	62 36 IN	+	Fort Dodge	KTIN	21 25 PB	0	Ashland	WKAS	25 26 PB	-
Indianapolis	WRTV	6 25 AB	0	Iowa City	KIIN	12 45 PB	+		WTSF	61 45 IN	+
	WISH	8 9 CB	-		KWKB	20 25 *	-	Beattyville	WLJC	65 7 TB	0
	WTHR	13 46 NB	-	Mason City	KIMT	3 42 CB	+	Bowling Green	WBKO	13 33 AB	0
	WFYI	20 21 PB	-		KYIN	24 18 PB	+		WKYU	24 18 PB	-
	WHMB	40 26 IN	0	Ottumwa	KYOU	15 14 FO	+		WKNT	40 16 FO	+
	WXIN	59 45 FO	-	Red Oak	KHIN	36 35 PB	0		WKGB	53 48 PB	-
	WTBU	69 44 ED	0	Sioux City	KTIV	4 41 NB	-				
Kokomo	WTTK	29 54 IN	-		KCAU	9 30 AB	0	Campbellsville	WGRB	34 19 FO	-
Lafayette	WLFI	18 11 CB	0		KMEG	14 39 CB	0		WCVN	54 24 PB	+
Marion	WNDY	23 32 WB	0		KSIN	27 28 PB	-	Covington	WCVN	54 24 PB	+
Muncie	WIPB	49 52 PB	0		KPTH	44 49 *	0	Danville	WDKY	56 4 FO,	
Richmond	WKOI	43 30 TB	+	Waterloo	KWWL	7 55 NB	+			UP	0
Salem	WFTE	58 57 UP	+		KRIN	32 35 PB	-	Elizabethtown	WKZT	23 43 PB	+
South Bend	WNDU	16 42 NB	0	<b>KANSAS</b>	▼ ▲ ☼			Harlan	WAGV	44 51 *	-
	WSBT	22 30 CB	0	Colby	KLBY	4 15 AB	0	Hazard	WKHA	35 16 PB	+
	WNIT	34 35 PB	-	Ensign	KBSD	6 5 CB	+		WYMT	57 12 CB	-
	WHME	46 48 IN	0	Fort Scott	*	20 40 *	+	Lexington	WLEX	18 20 NB	+
Terre Haute	WTWO	2 36 NB	+	Garden City	KSNG	11 17 NB	+		WKYT	27 59 CB	-
	WTHI	10 24 CB	0		KUPK	13 18 AB	-		WTVQ	36 40 AB	0
	WBAK	38 39 FO	0	Goodland	KBSL	10 14 CB	0		WKLE	46 42 PB	0
Vincennes	WVUT	22 52 PB	-	Great Bend	KSNC	2 22 NB	0	Louisville	WAVE	3 47 NB	-
<b>IOWA</b>	▼ ▲ ☼			Hays	KBSH	7 20 CB	-		WHAS	11 55 AB	+
Ames	WOI	5 59 AB	0		KOOD	9 16 PB	0		WKPC	15 17 PB	0
Burlington	KJMH	26 41 FO	-	Hutchinson	KPTS	8 29 PB	0		WBNA	21 8 WB	-
Cedar Rapids	KGAN	2 51 CB	0		KWCH	12 19 CB	0		WLKY	32 26 CB	-
	KCRG	9 52 AB	-		*	36 35 *	+		WDRB	41 49 FB	+
	KFXA	28 27 FO	+	Lakin	KSWK	3 23 PB	0		WKMJ	68 38 PB	+
	KTVC	48 47 IN	-	Lawrence	KMCI	38 39 IN	0	Madisonville	WLCN	19 20 IN	-
Council Bluffs	KBIN	32 33 PB	0	Pittsburg	KOAM	7 30 CB	+		WKMA	35 42 PB	-

# TV STATIONS

Morehead	WKMR	38	15	PB	+	Shreveport	KTBS	3	28	AB	-	WWPB	31	44	PB	0		
	WAOM	67	21	*	-		KSLA	12	17	CB	0	WJAL	68	16	WB	+		
Murray	WKMU	21	36	PB	+		KLTS	24	23	PB	-	Oakland	WGPT	36	54	PB	+	
Newport	WXIX-TV	19	29	*	+		KMSS	33	34	FO	0	Salisbury	WBOC	16	21	CB	+	
Owensboro	WKOH	31	29	PB	-		KSHV	45	44	UP,			WCPB	28	56	PB	-	
Owenton	WKON	52	44	PB	+					WB	+		WMDT	47	53	AB,		
Paducah	WPSD	6	32	NB	+	Slidell	WUPL	54	24	UP	+					NB	0	
	WKPD	29	41	PB	0	West Monroe	KARD	14	36	FO	-	<b>MASSACHUSETTS</b>						
	WDKA	49	50	UP	0		KMCT	39	38	IN	+	Adams	WCDC	19	36	AB	0	
Pikeville	WKPI	22	24	PB	-	<b>MAINE</b>					Boston	WGBH	2	19	PB	+		
Somerset	WKSO	29	14	PB	+	Augusta	WCBB	10	17	PB	-		WBZ	4	30	CB	+	
<b>LOUISIANA</b>		▼	▲		⊕	Bangor	WLZB	2	25	NB	-		WCVB	5	20	AB	-	
Alexandria	KALB	5	35	NB	0		WABI	5	19	CB	+		WHDH	7	42	NB	+	
	KLPA	25	26	PB	+		WVII	7	14	AB	-		WFXT	25	31	FO	+	
	KLAX	31	32	AB	+	Biddeford	WMEA	26	45	PB	-		WSBK	38	39	UP	0	
Baton Rouge	WBRZ	2	42	AB	0	Calais	WMED	13	15	PB	-		WGBX	44	43	PB	0	
	WAFB	9	46	CB	-	Lewiston	WPME	35	39	*	-		WABU	68	32	IN	+	
	WLPB	27	22	PB	+	Orono	WMEB	12	22	PB	-	Cambridge	WLVI	56	41	WB	0	
	WVLA	33	34	NB	-	Portland	WCSH	6	44	NB	-	Lawrence	WMFP	62	18	IN	0	
	WGMB	44	45	FO	+		WGME	13	38	CB	+	Marlborough	WHSB	66	23	HS	0	
Columbia	KAQY	11	57	*	+		WPXT	51	4	FO	+	New Bedford	*	6	49	*	+	
Lafayette	KATC	3	28	AB	+	Poland Spring							WLWC	28	22	*	-	
	KLFY	10	56	CB	0		WMTW	8	16	AB	-	Norwell	WHRC	46	52	IN	+	
	KADN	15	16	FO	0	Presque Isle						Springfield	WWLP	22	33	NB	0	
	KLPB	24	23	PB	0		WAGM	82	16	CB,			WGGB	40	55	AB	0	
Lake Charles	KPLC	7	53	NB	-					NB,			WGBY	57	58	PB	+	
	KLTL	18	20	PB	-		WMEM	10	20	PB	+	Vineyard Haven		WZBU	58	40	IN	+
	KVHP	29	30	FO	-	<b>MARYLAND</b>					Worcester	WUNI	27	29	UN	0		
Monroe	KNOE	8	55	CB	+	Annapolis	WMPT	22	42	PB	+		WYDN	48	47	*	+	
	KLTM	13	19	PB	-	Baltimore	WMAR	2	52	AB	+	<b>MICHIGAN</b>						
New Orleans	WWL	4	30	CB	+		WBAL	11	59	NB	-	Alpena	WCML	6	57	PB	0	
	WDSU	6	43	NB	0		WJZ	13	38	CB	+		WBKB	11	13	CB	0	
	WVUE	8	29	FO	0		WHSW	24	41	HB	+	Ann Arbor	WBSX	31	33	HS	+	
	WYES	12	11	PB	0		WBFF	45	46	FO	0	Bad Axe	WUCX	35	15	PB	0	
	WHNO	20	14	IN	-		WNUV	54	40	WB	0	Battle Creek	WOTV	41	20	AB	+	
	WGNO	26	15	AB	0		WMPB	67	29	PB	-		WILV	43	44	IN	-	
	WLAE	32	31	PB	+													
	WNOL	38	39	WB	+	Fredrick	WFPT	62	28	PB	0	Bay City	WNEM	5	22	CB	-	
	WCCL	49	50	HS	0	Hagerstown	WHAG	25	55	NB	-	Cadillac	WWTW	9	40	CB	0	

# TV STATIONS

	WCMV	27	58	PB	0	Saginaw	WEYI	25	30	NB	-	Rochester	KTTC	10	36	NB	0
	WGKI	33	47	FO,			WAQP	49	48	TB	-		KXLT	47	46	IN	-
				UP	0	Sault Ste. Marie						St. Cloud	KXLI	41	40	IN	0
Clumet	WBKP	5	18	AB	-		WGTO	8	56	AB	0	Thief River Falls					
Cheboygan	WTOM	4	14	NB	+		WWUP	10	49	CB	+	Walker	KBRR	10	57	FO	0
Detroit	WJBK	2	58	FO	+	Traverse City						Worthington	KSMN	20	15	PB	0
	WDIV	4	45	NB	0		WPBN	7	50	NB	+	<b>MISSISSIPPI</b>					
	WXYZ	7	41	AB	-		WGTU	29	31	AB	-						
	WDWB	20	21	WB	+	University Center											
	WKBD	50	14	UP	-		WUCM	19	18	PB	+	Biloxi	WLOX	13	36	AB	+
	WTVS	56	43	PB	0	Vanderbilt	WGKU	45	59	FO	0		WMAH	19	35	PB	+
	WWJ	62	44	CB	0	<b>MINNESOTA</b>						Booneville	WMAE	12	55	PB	-
East Lansing	WKAR	23	55	PB	-	Alexandria	WCCO	7	24	CB	0	Bude	WMAU	17	18	PB	+
Escanaba	WJMN	3	48	CB	+		KSAX	42	14	AB	0	Columbus	WCBI	4	35	CB	-
Flint	WJRT	12	36	AB	-	Appleton	KWCM	10	31	PB	-	Greenville	WXVT	15	17	CB	-
	WFUM	28	52	PB	-	Austin	KAAL	6	33	AB,		Greenwood					
	WSMH	66	16	FO	-					FO	-		WABG-TV	6	54	AB	+
Grand Rapids	WOOD	8	7	NB	+		KSMQ	15	20	PB	-		WMAO-TV	23	26	PB	+
	WZZM	13	39	AB	+	Bemidji	KAWF	9	18	PB	0	Gulfport	WXXV	25	48	FO	-
	WXMI	17	19	FO	0	Brainerd	KAWB	22	28	PB	0	Hattiesburg	WHLT	22	23	CB	0
	WGVU	35	11	PB	+	Duluth	KDLH	3	33	CB	0	Holly Springs	WBUY	40	41	TB	0
Iron Mountain							WDSE	8	38	PB	0	Jackson	WLBT	3	51	NB	0
	WDHS	8	22	IN	-		WDIO	10	43	AB,			WJTV	12	52	CB	+
Jackson	*	18	34	*	+					FO	+		WAPT	16	21	AB	0
Kalamazoo	WWMT	3	2	CB	-		KNLD	21	17	IN	+		WMPN	29	20	PB	+
	WGVK	52	5	PB	+	Hibbing	WIRT	13	36	AB,		Laurel	WDAM	7	28	NB	0
	WLLA	64	45	IN	0					FO	-	Meridian	WTOK	11	49	AB	-
Lansing	WLNS	6	59	CB	-	Mankato	KEYC	12	38	CB	0		WMAW	14	47	PB	0
	WSYM	47	38	FO	+	Minneapolis-St. Paul						WMDN	24	25	CB	-	
	WLAJ	53	51	AB	-		KTCA	2	34	PB	-		WGBC	30	31	NB	-
Manistee	WCMW	21	17	PB	0		WCCO	4	32	CB	+	Mississippi State					
Marquette	WLUC	6	35	NB	-		KSTP	5	50	AB	-		WMAB	2	38	PB	+
	WNMU	13	33	PB	0		KMSP	9	26	UP	+	Natchez	WNTZ	48	49	FO	+
Mount Clemens							KARE	11	35	NB	-	Oxford	WMAV	18	36	PB	0
	WADL	38	39	IN	+		KTCI	17	16	PB	0	Tupelo-Columbus					
Mount Pleasant							KLGT	23	22	WB	+		WTVA	9	57	NB	-
	WCMU	14	56	PB	0		WFTC	29	21	FO	+		WLOV	27	16	FO	0
Muskegon	WTLJ	54	24	TB	+		KVBM	45	44	HS	0	<b>MISSOURI</b>					
Onandaga	WILX-TV	10	57	*	-	Redwood Falls											
							KRWF	43	27	AB	0	Cape Girardeau					



# TV STATIONS

NEW JERSEY			▼ ▲	⊕																	
						Roswell	KOBR	8	38	NB	0			WNBC	4	28	NB	0			
Atlantic City	WWAC	53	46	IN	+		KBIM-TV	10	41	CB	-			WNYW	5	44	FO	+			
	WACI	62	49	*	+		KRPV	27	28	IN	-			WABC-TV	7	45	AB	0			
Burlington	WGTW	48	27	*	-	Santa Fe	KASA-TV	2	27	FO	+			WPIX	11	33	WB	+			
Camden	WNJS	23	22	PB	+		KCHF	11	10	IN	-			WNYE-TV	25	24	PB	0			
Montclair	WNJN	50	51	PB	+		KAUO	19	29	*	-			WPXN-TV	31	30	IN	-			
New Brunswick						Silver City	KOVT	10	12	AB	+		North Pole	WPTZ	5	14	*	0			
	WNJB	58	18	PB	0	<b>NEW YORK</b>							Norwood	WNPI-TV	18	23	PB	0			
Newark	WNET	13	61	PB	-	Albany	WTEN	10	26	AB	-			Plattsburg	WCFE-TV	57	38	PB	0		
	WNJU	47	36	TE	+		WNYT	13	15	NB	0			Poughkeepsie							
	WHSE-TV	68	53	HS	0		WXXA-TV	23	4	FO					WTBY	54	27	TB	+		
Newton	WMBC-TV	63	8	IN	0		WMHQ	45	43	PB	0		Riverhead	WLNY	55	57	IN	+			
Patterson	WXTV	41	40	UN	-	Amsterdam	WOCB	55	50	IN	0		Rochester								
Secaucus						Batavia	WAQF	51	53	*	-			WROC-TV	8	45	CB	0			
	WWOR-TV	9	38	UP	+	Bath		*	14	20	*	-		WHEC-TV	10	58	NB	0			
Trenton	WNJT	52	43	PB	-	Binghamton								WOKR	13	59	AB	-			
Vineland	WHSP-TV	65	66	HS	-		WBNG-TV	12	7	CB	-			WXXI-TV	21	16	PB	0			
West Milford							WMGC-TV	34	4	AB	0			WUHF	31	28	FO,				
	WFME-TV	66	29	ED	0		WICZ-TV	40	8	FO	-										
Wildwood							WSKG	46	42	PB	+		Schenectady	WRGB	6	39	CB	0			
	WMGM-TV	40	36	NB	0	Buffalo	WGRZ-TV	2	33	NB	0			WMHT	17	34	PB	+			
<b>NEW MEXICO</b>							WIVB-TV	4	39	CB	0		Smithtown								
Albuquerque							WKBW-TV	7	38	AB	+			WHSI-TV	67	23	HS	0			
	KOB-TV	4	26	NB	+		WNED-TV	17	43	PB	0		Springville	WNGS	67	46	IN	+			
	KNME-TV	5	25	PB	+		WNEQ-TV	23	32	PB	0		Syracuse								
	KOAT-TV	7	21	AB	+		WUTV	29	14	FO,				WSTM-TV	3	54	NB	-			
	KRQE	13	16	CB	+					UP	-			WTVH	5	47	CB	-			
	KNAT	23	22	TB	-		WNYO-TV	49	34	IN	-			WIXT	9	17	AB	-			
	KAZO	32	17	ED	+	Carthage-Watertown								WCNY-TV	24	25	PB	+			
	KLUZ-TV	41	42	UN	+		WWNY-TV	7	35	CB,				WNYS-TV	43	44	UP	+			
	KASY-TV	50	51	UP	0					NB	-			WSYT	68	19	FO	-			
Carlsbad	KOCT	6	19	AB	-	Coming	WYDC	48	50	UP,			Utica	WKTV	2	29	NB	-			
Clovis	KVIH-TV	12	20	AB	-					WB	+			WJTR	20	30	AB	+			
Farmington	KOFT	3	29	*	0	Elmira	WETM-TV	18	2	NB	+			WFXV	33	27	FO	0			
	KOBF	12	15	NB	+		WENY-TV	36	55	AB	-		Watertown								
Hobbs	KHFT	29	17	UP	+	Garden City	WLIW	21	22	PB	-			WNPE-TV	16	41	PB	0			
Las Cruces						Jamestown	WNYB	26	27	TB	+			WWTI	50	21	AB	+			
	KRWG-TV	22	23	PB	-	Kingston	WRNN-TV	62	21	IN	+										
	KZIA	48	28	UP	+	New York	WCBS-TV	2	56	CB	0		<b>NORTH CAROLINA</b>								
Portales	KENW	3	32	PB	+								Asheville	WLOS	13	56	*	-			

# TV STATIONS

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	WHNS	21 57	* +	New Bern	WCTI	12 48	AB +		KMCY	14 15	AB -
	WUNF-TV	33 25	PB 0	Raleigh-Durham				Pembina	KNRR	12 15	FO 0
	WASV-TV	62 45	UP,		WRAL-TV	5 53	CB 0	Valley City	KXJB-TV	4 38	CB -
			WB 0		WLFL	22 57	FO 0	Willston	KWSE	4 51	PB 0
Belmont	WJZY	46 47	UP +		WRAZ	50 49	WB +		KUMV-TV	8 52	NB -
Burlington	WAAP	16 14	IN 0	Roanoke Rapids					KXMD-TV	11 14	CB -
Chapel Hill				WUNP-TV	36 39	PB -		<b>OHIO</b>		<b>▼ ▲ ↻</b>	
	WUNC-TV	4 59	PB +	Rocky Mount				Akron	WAKC-TV	23 59	IN +
Charlotte	WBTV	3 23	CB 0	WRMY	47 15	IN -			WEAO	49 32	PB +
	WSOC-TV	9 34	AB +	Washington					WBNX-TV	55 30	WB -
	WCCB	18 21	FO 0	WITN-TV	7 32	NB 0		Alliance	WNEO	45 46	PB +
	WCNC-TV	36 22	NB 0	Wilmington	WWAY	3 46	AB -	Athens	WOUB-TV	20 27	PB 0
	WTVI	42 24	PB +	WECT	6 54	NB 0		Bowing Green			
Columbia	WUND-TV	2 20	PB 0	WSFX-TV	26 30	FO -			WBGU-TV	27 56	PB +
Concord	WUNG-TV	58 44	PB 0	WUNJ-TV	39 29	PB -		Cambridge			
Durham-Raleigh				Wilson	WRAY-TV	30 42	IN -		WOUK-TV	44 35	PB -
	WTVD	11 52	AB +	Winston-Salem				Canton	WDLI	17 39	TB -
	WRDC	28 27	UP +	WXII	12 31	* 0			WOAC	67 47	IN 0
Fayetteville	WKFT	40 38	IN +	WUNL-TV	26 43	PB +		Chillicothe	WWHO	53 46	UP 0
	WFAY	62 36	FO 0	WXLV-TV	45 29	AB 0		Cincinnati	WLWT	5 35	NB -
Goldsboro	WNCN	17 55	NB -	<b>NORTH DAKOTA</b>	<b>▼ ▲ ↻</b>				WCPO-TV	9 10	AB 0
Greensboro				Bismarck	KBME	3 22	PB 0		WKRC-TV	12 31	CB 0
	WFMY-TV	2 51	CB -		KFYR-TV	5 31	NB 0		WCET	48 34	PB -
	WUPN-TV	48 33	UP -		KXMB-TV	12 23	CB -		WSTR	64 33	UP -
	WLXI-TV	61 32	TB 0		KBMY	17 16	AB -	Cleveland	WKYC	3 2	NB 0
Greenville	WNCT-TV	9 10	CB -	Devils Lake					WEWS	5 15	AB +
	WYDO	14 21	FO 0	WDAZ-TV	8 59	AB +			WJW	8 31	FO 0
	WUNK-TV	25 23	PB 0	Dickinson	KXMA-TV	2 19	CB +		WVIZ	25 26	PB +
Hickory	WHKY-TV	14 40	IN -	KOCD-TV	7 18	NB 0			WQHS	61 34	HS 0
High Point				KDSE	9 20	PB 0		Columbus	WCMH	4 14	NB -
	WGHP-TV	8 35	* -	Ellendale	KJRE	19 20	PB -		WSYX	6 13	AB +
Jacksonville				Fargo	WDAY-TV	6 21	AB 0		WBNS	10 11	CB +
	WUNM-TV	19 44	PB 0		KVLY-TV	11 58	NB +		WTTE	28 36	FO,
	WFXZ-TV	35 34	* 0		KFME	13 39	PB 0			UP -	
Kannapolis	WAXN	64 50	IN -		KVRR	15 19	FO -		WOSU	34 38	PB 0
Lexington	WBFX	20 19	WB,	Grand Forks	KGFE	2 56	PB 0	Dayton	WDTN	2 50	AB 0
			FO 0	Jamestown	KJRR	7 14	FO -		WHIO	7 41	CB +
Linville	WUNE-TV	17 54	PB 0	Minot	KSRE	6 57	PB +		WPTD	16 58	PB +
Lumberton	WUNU	31 25	PB 0		KMOT	10 58	NB -		WKEF	22 51	NB +
Morehead City	WFXI	8 24	FO +		KXMC-TV	13 45	CB -		WRGT	45 39	FO,

# TV STATIONS

Lima	WLIO	35 20	NB -		KTBO	14 15	TB -		KOIN	6 40	CB +
	WTLW	44 57	IN +		KOKH	25 24	FO -		KGW	8 46	NB -
Lorain	WUAB	43 28	UP 0		KOCB	34 33	CB -		KOPB	10 27	PB 0
Mansfield	WMFD	68 12	IN -		KTLC	43 40	PB +		KPTV	12 30	UP 0
Newark	WSFJ	51 24	IN 0		KSBI	52 51	IN 0		KNMT	24 45	TB +
Oxford	WPTO	14 28	PB +	Okmulgee	KMNZ	62 50	IN +	Roseburg	KPIC	4 19	CB +
Portsmouth	WHCP	30 17	* 0	Shawnee	KGLB	44 28	* -		KROZ	36 18	WB 0
	WPBO	42 43	PB -	Tulsa	KAQS	30 29	* 0		KMTX	46 45	NB +
Sandusky	WGGN	52 42	TB 0		KJRH	2 56	NB +	Salem	KBSP	22 20	HS 0
Shaker Heights					KOTV	6 55	CB +		KWBP	32 33	WB 0
	WOIO	19 10	CB 0		KTUL	8 58	AB -	<b>PENNSYLVANIA</b>			▼ ▲ ⊕
Springfield	WTJC	26 18	HS +		KOED	11 38	PB -	Allentown	WLVT	39 62	PB 0
Steubenville	WTOV	9 57	NB +		KOKI	23 22	FO 0		WFMZ	69 46	IN 0
Toledo	WTOL	11 17	CB -		KTFO	41 42	UP +	Altoona	WTAJ	10 32	CB -
	WTVG	13 19	AB 0		KWHB	47 48	IN 0		WATM	23 24	AB -
	WNWO	24 49	NB -	<b>OREGON</b>	KWMJ	53 49	IN 0		WKBS	47 46	IN 0
	WGTE	30 29	PB +			▼ ▲ ⊕		Bethlehem	WBPH	60 59	IN -
	WUPW	36 46	FO -	Bend	KOAB	3 11	PB +	Clearfield	WPSX	3 15	PB +
	WLMB	40 5	* 0		KTVZ	21 18	NB +	Erie	WICU	12 52	NB 0
Youngstown	WFMJ	21 20	NB -	Coos Bay	KCBY	11 21	CB 0		WJET	24 58	AB 0
	WKBN	27 41	CB 0		KMTZ	23 22	NB +		WSEE	35 16	CB +
	WYTV	33 36	AB, 0 FO	Corvallis	KOAC	7 39	PB -		WQLN	54 50	PB +
Zanesville	WHIZ	18 40	NB -	Eugene	KEZI	9 14	AB +		WFXP	66 22	FO +
<b>OKLAHOMA</b>		▼ ▲ ⊕			KVAL	13 25	CB 0	Greensburg	WPCB	40 50	IN +
Ada-Ardmore	KTEN	10 26	AB, NB, FO +		KMTR	16 17	NB +	Harrisburg	WHP	21 4	CB +
					KEPB	28 29	PB -		WHTM	27 57	AB -
Bartlesville	KDOR	17 14	TB +		KLSR-TV	34 26	UP 0		WITF	33 36	PB +
Cheyenne	KWET	12 8	PB +	Klamath Falls	KOTI	2 40	NB -	Hazleton	WWLF	56 9	FO 0
Claremore	KRSC	35 36	ED 0		KFTS	22 33	PB +	Jeanette	WNPA	19 30	WB +
Enid	KAFU	20 18	* -	La Grande	KDKF	31 29	AB 0	Johnstown	WJAC	6 34	NB 0
Eufaula	KOET	3 31	PB 0	Medford	KTVR	13 5	PB +		WWCP	8 29	FO -
Lawton	KSWO	7 23	AB +		KOBI	5 15	NB 0	Lancaster	WGAL	8 58	NB -
Oklahoma City					KSYS	8 42	PB +		WLYH	15 23	CB +
	KFOR	4 27	NB -		KTVL	10 35	CB +	Philadelphia	KYW	3 26	CB 0
	KOCO	5 16	AB 0		KDRV	12 38	AB +		WPVI	6 64	AB -
	KWTV	9 39	CB -		KMVU	26 27	FO, UP 0		WCAU	10 67	NB 0
	KETA	13 32	PB +	Pendleton	KAUP	11 4	* -		WPHL	17 54	WB -
				Portland	KATU	2 43	AB 0		WTFX	29 42	FO 0
									WYBE	35 34	PB -

# TV STATIONS

	WPSG	57	32	UP	0		WRLK	35	32	PB	+		KSFY	13	29	AB	+
Pittsburgh	KDKA	2	25	CB	-		WACH	57	48	FO	-		KTTW	17	7	FO	-
	WTAE	4	51	AB	+	Conway	WHMC	23	58	PB	+		KCSD	23	24	PB	0
	WPXI	11	48	NB	0	Florence	WBTW	13	56	CB	+		KAUN	36	48	*	-
	WQED	13	38	PB	-		WPDE	15	16	AB	-			*	46	47	* 0
	WQEX	16	26	PB	0		WWMB	21	20	UP	0	Vermillion	KUSD	2	34	PB	+
	WPTT	22	42	WB	0		WJPM	33	45	PB	+	<b>TENNESSEE</b>		▼	▲	⊕	
	WPGH	53	43	FO	+	Greenville	WYFF	4	59	NB	-	Chattanooga	WRCB	3	55	NB	+
Reading	WTVE	51	25	HS	0		WGGS	16	52	IN	+		WTVC	9	35	AB	0
Red Lion	WGCB	49	30	IN	+		WNTV	29	9	PB	0		WDEF	12	47	CB	+
Scranton	WNEP	16	49	AB	-	Greenwood	WNEH	38	18	PB	0		WTCI	45	29	PB	0
	WYOU	22	13	CB	-	Hardeeville	WTGS	28	27	FO	-		WDSI	61	40	FO	-
	WOLF	38	31	FO	+	Myrtle Beach	WFXB	43	18	FO	+	Cleveland	WFLI	53	42	UP	0
	WWIA	44	41	PB	-	Rockhill	WNSC	30	15	PB	+	Cookeville	WCTE	22	52	PB	0
	WSWB-TV	64	32	*	0		WFVT	55	39	WB	-		WKZX	28	36	WB	+
Wilkes-Barre	WBRE	28	11	NB	0	Spartanburg	WSPA	7	53	CB	+	Crossville	WBXX-TV	20	50	WB	+
Williamsport	WILF	53	29	FO	-		WRET	49	43	PB	0	Greenville	WEMT	39	38	FO	-
York	WPMT	43	47	FO	0	Sumter	WRJA	27	28	PB	-	Hendersonville					
<b>RHODE ISLAND</b>		▼	▲		⊕		WQHB	63	38	*	-	Jackson	WPGD	50	51	IN	0
Block Island						<b>SOUTH DAKOTA</b>		▼	▲		⊕		WBBJ	7	43	AB	+
	WOST-TV	69	17	*	0	Aberdeen	KABY	9	28	AB	-		WMTU	16	39	UP	+
Providence	WJAR	10	51	NB	+		KDSD	16	17	PB	-	Jellico	WPMC	54	23	IN	-
	WPRI	12	13	CB	+	Brookings	KESD	8	18	PB	0	Johnson City	WJHL	11	58	CB	-
	WSBE	36	21	PB	0	Eagle Butte	KPSD	13	24	PB	0	Kingsport	WKPT	19	27	AB	0
	WNAC	64	54	FO	+	Florence	KDLO	3	25	CB	-	Knoxville	WATE	6	26	AB	0
<b>SOUTH CAROLINA</b>		▼	▲		⊕	Huron	KTTM	12	22	FO	+	WVLT-TV	8	30	CB	0	
Allendale	WEBA	14	33	PB	0	Lead	KIVV	5	26	FO	-		WBIR	10	31	NB	+
Anderson	WFBC	40	14	WB	0		KHSD	11	27	AB	+		WKOP	15	17	PB	-
Beaufort	WJWJ	16	44	PB	-	Lowry	KQSD	11	15	PB	-		WTNZ	43	34	FO	+
Charleston	WCBD	2	59	NB	+	Martin	KZSD	8	20	PB	-	Lebanon	WJFB	66	44	IN	0
	WCIV	4	53	AB	0	Mitchell	KDLT	5	26	NB	+	Lexington	WLJT	11	47	PB	0
	WCSC	5	52	CB	+	Pierre	KPRY	4	19	AB	0	Memphis	WREG	3	28	CB	-
	WITV	7	49	PB	-		KTSD	10	21	PB	+		WMC	5	52	NB	+
	WTAT	24	40	FO	0	Rapid City	KOTA	3	22	AB	+		WKNO	10	29	PB	+
	WMMP	36	35	UP	+		KEVN	7	18	FO	+		WHBQ	13	53	FO	+
Columbia	WIS	10	41	NB	-		KBHE	9	23	PB	0		WPTY	24	25	AB	0
	WLTX	19	17	CB	+		KCLO	15	16	CB	-		WLMT	30	31	UP	0
	WOLO	25	8	AB	-	Reliance	KPLO	6	14	CB	-		WFBI	50	51	HS	+
						Sioux Falls	KELO	11	32	CB	0	Murfreesboro	WHTN	39	38	IN	+

# TV STATIONS

Nashville	WKRN	2	27	AB	-	Conroe	KTFH	49	5	IN		KMBH	60	38	PB	0	
	WSMV	4	10	NB	+		KHIM	55	42	* +	Houston	KPRC-TV	2	35	NB	-	
	WTVF	5	56	CB	0	Corpus Christi						KUHT	8	53	PB	0	
	WDCN	8	46	PB	+		KIII-TV	3	47	AB	-	KHOU-TV	11	31	CB	+	
	WZTV	17	15	FO	+		KRIS-TV	6	50	NB	0	KTRK-TV	13	32	AB	-	
	WUXP	30	21	UP	+		KZTV	10	18	CB	-	KETH	14	24	ED	0	
	WNAB	58	23	WB	+		KEDT-TV	16	22	PB	0	KTXH	20	19	UP	0	
Sneedville	WSJK	2	41	PB	+		KORO	28	27	UN	-	KRIV	26	27	FO	0	
<b>TEXAS</b>		▼ ▲			⊕	Dallas	KDFW-TV	4	35	FO	+	KHTV	39	38	WB	-	
Abilene	KRBC-TV	9	29	NB	+		WFAA-TV	8	9	AB	0	KZJL	61	44	IN	0	
	KTAB-TV	32	24	CB	+		KERA-TV	13	14	PB	+	Irving	KHSX-TV	49	48	HS	0
Alvin	KHSH-TV	67	36	HS	-		KDFI-TV	27	36	IN	-	Jacksonville					
Amarillo	KACV-TV	2	21	PB	+		KDAF	33	32	WB	+		KETK-TV	56	22	NB	0
	KAMR-TV	4	19	NB	0		KXTX-TV	39	40	IN	0	Juarez-El Paso					
	KVII-TV	7	24	AB	0		KDTX-TV	58	45	TB	0		XEPM-TV	2		IN	
	KFDA-TV	10	9	CB	0	Decatur	KMPX	29	30	IN	0		XEJ-TV	5		IN	
	KCIT	14	15	FO	+	Del Rio	KTRG	10	28	* 0		XHIJ-TV	44		TE		
						Denton	KDTN	2	31	PB	0	Katy	KNWS-TV	51	52	IN	+
Arlington	KINZ	68	42	IN	0	Eagle Pass	KVAW	16	18	TE	+	Kerrville	KRRT	35	17	WB	+
Austin	KTBC-TV	7	56	FO	+	El Paso	KDBC-TV	4	16	CB	0	Killeen	KAKW	62	23	UP	
	KLRU	18	22	PB	+		KVIA-TV	7	17	AB	0					WB	0
	KVUE-TV	24	33	AB	0		KTSM-TV	9	18	NB	0	Lake Dallas	KLDT	55	43	* 0	
	KXAN-TV	36	21	NB	0		KCOS	13	29	PB	0	Laredo	KGNS-TV	8	15	NB	
	KEYE-TV	42	43	CB	-		KFOX-TV	14	15	FO	0					AB	0
	KNVA	54	49	WB	0		KINT-TV	26	25	UN	+		KVTV	13	14	AB	0
Baytown	KVVV	57	41	IN	+		KSCE	38	39	ED	-		KLDO-TV	27	19	TE	-
Beaumont	KFDM-TV	6	21	CB	-		KJLF-TV	65	51	WB	0	Llano	KXAM-TV	14	27	NB	-
	KBMT	12	50	AB	-	Fort Worth	KXAS-TV	5	41	NB	+	Longview	KFXK	51	52	FO	
	KITU	34	33	ED	-		KTVT	11	19	CB	-					UP	-
Belton	KNCT	46	47	PB	-		KTXA	21	18	UP	-	Lubbock	KTXT-TV	5	39	PB	-
Big Spring							KFWD	52	51	TE	-		KCBD-TV	11	44	NB	0
	KWAB-TV	4	33	NB	-	Fredericksburg						KLBK-TV	13	40	CB	-	
Blanco	*	52	45	* +				*	2	38	* +		KPTB	16	25	IN	+
Brownsville	KVEO	23	24	NB	0	Galveston	KLTJ	22	23	ED	0		KAMC	28	27	AB	0
Bryan	KBTX-TV	3	59	CB	0		KTMD	48	47	TE	-		KJTV	34	35	FO	-
	KAMU-TV	15	12	* -		Garland	KUVN	23	24	UN	0	Lufkin	KTRE	9	43	AB	0
	KYLE	28	29	FO	0	Greenville	KTAQ	47	46	IN	+	McAllen	KNVO	48	30	UN	0
College Station						Harlingen	KGBT-TV	4	31	CB	+	Midland	KMID	2	26	AB	-
	KAMU-TV	15	12	PB			KLUJ	44	34	ED	0	Nacogdoches					
												KLSB-TV	19	18	NB	-	



# TV STATIONS

	KTNW	31	30	PB	0	Martinsburg	WSHE	60	12	IN	+		WCGV	24	25	UP	+	
Seattle	KOMO-TV	4	38	A	0	Morgantown	WNPB	24	33	PB	-		WVCY	30	22	IN	0	
	KING	5	48	NB	+	Oak Hill	WOAY	4	50	AB	0		WMVT	36	35	PB	0	
	KIRO	7	39	CB	0	Parkersburg	WTAP	15	49	NB	-		WDJT	58	46	CB	0	
	KCTS	9	41	PB	0	Weston	WDTV	5	58	CB	0	Park Falls	WLEF	36	47	PB	-	
	KTTZ	22	25	WB	+	Wheeling	WTRF	7	56	CB	0	Racine	WJJA	49	48	HS	+	
	KHCV	45	44	*	+	<b>WISCONSIN</b>			▼	▲	⊕	Rhineland	WJFW	12	16	NB	+	
Spokane	KREM	2	57	CB	-	Appleton	WACY	32	59	UP	+	Superior	KSNB-TV	6	19	*	+	
	KXLY	4	54	AB	-	Chippewa Falls						Suring	WSCO	14	21	IN	-	
	KHQ	6	55	NB	-		WEUX	48	49	FO	0	Wausau	WSAW	7	40	CB	-	
	KSPS	7	39	PB	+	Eagle River	WYOW	34	17	AB	0		WAOW	9	29	AB	0	
	KSKN	22	38	HS	0	Eau Claire	WEAU	13	39	NB	+		WHRM	20	24	PB	+	
	KAYU	28	29	FO	+		WQOW	18	15	AB	0	<b>WYOMING</b>			▼	▲	⊕	
				UP	-	Fond Du Lac						Casper	KTWO	2	17	NB,	WB	
Tacoma	KSTW	11	36	UP	+		WMMF-TV	68	44	*	0							
	KCPQ	13	18	FO	-	Green Bay	WBAY	2	23	AB	+		KGWC	14	15	CB	-	
	KTBW	20	14	TB	0		WFRV	5	56	CB	+		KFNB	20	18	AB,	FO	
	KBTC	28	26	PB	0		WLUK	11	51	FO	+	Cheyenne	KGWN	5	30	CB,	AB	
	KWDK	56	42	*	0		WGBA	26	41	NB	+							
Vancouver	KPDX	49	48	FO	-		WPNE	38	42	PB	0		KLWY	27	28	FO	-	
Wenatchee	KCWT	27	56	*	0	Janesville	WJNW	57	32	*	+		KKTU	33	11	NB,	WB	
Yakima	KNDO	23	16	NB	+	Kenosha	WHKE	55	40	IN	-							
	KIMA	29	52	CB	+	La Crosse	WKBT	8	53	CB	+	Jackson	KJWY	2	14	NB	0	
	KAPP	35	34	AB	0		WXOW	19	14	AB	+	Lander-Riverton						
	KYVE	47	21	PB	0		WLAX	25	17	FO	0		KCWC	4	8	PB	0	
<b>WEST VIRGINIA</b>			▼	▲	⊕		WHLA	31	30	PB	0		KGWL	5	7	CB	0	
Bluefield	WVVA	6	46	NB	-	Madison	WISC	3	50	CB	0	Rawlins	KFNR	11	9	AB	-	
	WLFB	40	14	*	-		WMTV	15	19	NB	0	Riverton	KFNE	10	16	AB	+	
Charleston	WCHS	8	55	AB	+		WHA	21	20	PB	-	Rock Springs	KGWR	13	19	CB	0	
	WVAH	11	19	FO,	UP		WKOW	27	26	AB	-	Sheridan	KSGW	12	21	AB	+	
				UP	+		WMSN	47	11	FO	+							
	WKRP-TV	29	39	*	0	Manitowoc		*	16	19	*	+						
Clarksburg	WBOY	12	52	NB	+	Mayville	WWRS-TV	52	43	*	0							
	WLYJ	46	28	IN	-	Menomonie	WHWC	28	27	PB	-							
Grandview	WSWP	9	53	PB	-	Millwaukee	WTMJ	4	28	NB	-							
Huntington	WSAZ	3	23	NB	+		WITI	6	33	FO	0							
	WOWK	13	54	CB	+		WMVS	10	8	PB	+							
	WPBY	33	34	PB	+		WISN	12	34	AB	0							
Lewisburg	WVSX	59	48	FO	-		WVTU	18	61	WB	-							

## OHM'S LAW & JOULE'S LAW

Ohm's Law

$$V = IR$$

V = voltage in volts

I = current in amperes

R = resistance in ohms

Joule's Law

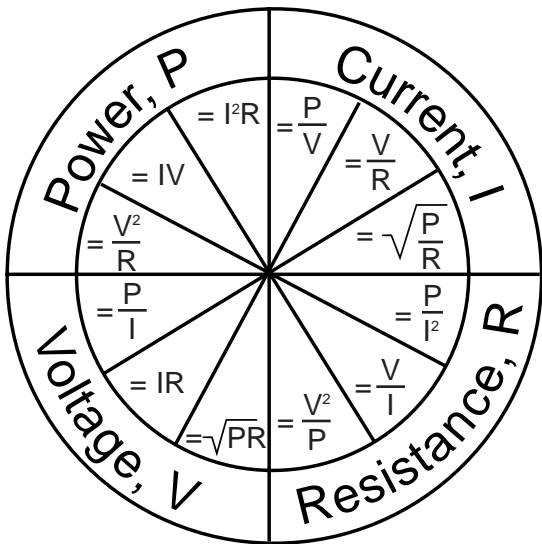
$$P = IV$$

P = power in watts

I = current in amperes

V = voltage in volts

### Equations Summary of Ohm's & Joule's Laws



## TABLE OF CONVERSIONS

The following table lists the conversions between voltage and power measurements for the range of signal levels commonly encountered in Broadband networks. The equations described on the first three pages of section 2 were used in the compilation of this table.

mV	dBmV	db $\mu$ V	dBm	mV	dBmV	db $\mu$ V	dBm
0.0010	-60	0	-108.75	0.0447	-27	33	-75.75
0.0011	-59	1	-107.75	0.0501	-26	34	-74.75
0.0013	-58	2	-106.75	0.0562	-25	35	-73.75
0.0014	-57	3	-105.75	0.0631	-24	36	-72.75
0.0016	-56	4	-104.75	0.0708	-23	37	-71.75
0.0018	-55	5	-103.75	0.0794	-22	38	-70.75
0.0020	-54	6	-102.75	0.0891	-21	39	-69.75
0.0022	-53	7	-101.75	0.1000	-20	40	-68.75
0.0025	-52	8	-100.75	0.1122	-19	41	-67.75
0.0028	-51	9	-99.75	0.1259	-18	42	-66.75
0.0032	-50	10	-98.75	0.1413	-17	43	-65.75
0.0035	-49	11	-97.75	0.1585	-16	44	-64.75
0.0040	-48	12	-96.75	0.1778	-15	45	-63.75
0.0045	-47	13	-95.75	0.1995	-14	46	-62.75
0.0050	-46	14	-94.75	0.2239	-13	47	-61.75
0.0056	-45	15	-93.75	0.2512	-12	48	-60.75
0.0063	-44	16	-92.75	0.2818	-11	49	-59.75
0.0071	-43	17	-91.75	0.3162	-10	50	-58.75
0.0079	-42	18	-90.75	0.3548	-9	51	-57.75
0.0089	-41	19	-89.75	0.3981	-8	52	-56.75
0.0100	-40	20	-88.75	0.4467	-7	53	-55.75
0.0112	-39	21	-87.75	0.5012	-6	54	-54.75
0.0126	-38	22	-86.75	0.5623	-5	55	-53.75
0.0141	-37	23	-85.75	0.6310	-4	56	-52.75
0.0158	-36	24	-84.75	0.7079	-3	57	-51.75
0.0178	-35	25	-83.75	0.7943	-2	58	-50.75
0.0200	-34	26	-82.75	0.8913	-1	59	-49.75
0.0224	-33	27	-81.75	1.0000	0	60	-48.75
0.0251	-32	28	-80.75	1.1220	1	61	-47.75
0.0282	-31	29	-79.75	1.2589	2	62	-46.75
0.0316	-30	30	-78.75	1.4125	3	63	-45.75
0.0355	-29	31	-77.75	1.5849	4	64	-44.75
0.0398	-28	32	-76.75	1.7783	5	65	-43.75

## TABLE OF CONVERSIONS

mV	dBmV	db $\mu$ V	dBm
1.9953	6	66	-42.75
2.2387	7	67	-41.75
2.5119	8	68	-40.75
2.8184	9	69	-39.75
3.1623	10	70	-38.75
3.5481	11	71	-37.75
3.9811	12	72	-36.75
4.4668	13	73	-35.75
5.0119	14	74	-34.75
5.6234	15	75	-33.75
6.3096	16	76	-32.75
7.0795	17	77	-31.75
7.9433	18	78	-30.75
8.9125	19	79	-29.75
10.0000	20	80	-28.75
11.2202	21	81	-27.75
12.5893	22	82	-26.75
14.1254	23	83	-25.75
15.8489	24	84	-24.75
17.7828	25	85	-23.75
19.9526	26	86	-22.75
22.3872	27	87	-21.75
25.1189	28	88	-20.75
28.1838	29	89	-19.75
31.6228	30	90	-18.75
35.4813	31	91	-17.75
39.8107	32	92	-16.75
44.6684	33	93	-15.75
50.1187	34	94	-14.75
56.2341	35	95	-13.75
63.0957	36	96	-12.75
70.7946	37	97	-11.75
79.4328	38	98	-10.75
89.1251	39	99	-9.75
100.0000	40	100	-8.75
112.2018	41	101	-7.75
125.8925	42	102	-6.75
141.2538	43	103	-5.75

mV	dBmV	db $\mu$ V	dBm
158.4893	44	104	-4.75
177.8279	45	105	-3.75
199.5262	46	106	-2.75
223.8721	47	107	-1.75
251.1886	48	108	-0.75
273.8420	48.75	108.75	0
281.8383	49	109	0.25
316.2278	50	110	1.25
354.8134	51	111	2.25
398.1072	52	112	3.25
446.6836	53	113	4.25
501.1872	54	114	5.25
562.3413	55	115	6.25
630.9573	56	116	7.25
707.9458	57	117	8.25
794.3282	58	118	9.25
891.2509	59	119	10.25
1000.0000	60	120	11.25
1122.0185	61	121	12.25
1258.9254	62	122	13.25
1412.5375	63	123	14.25
1584.8932	64	124	15.25
1778.2794	65	125	16.25
1995.2623	66	126	17.25
2238.7211	67	127	18.25
2511.8864	68	128	19.25
2818.3829	69	129	20.25
3162.2777	70	130	21.25
3548.1339	71	131	22.25
3981.0717	72	132	23.25
4466.8359	73	133	24.25
5011.8723	74	134	25.25
5623.4133	75	135	26.25
6309.5734	76	136	27.25
7079.4578	77	137	28.25
7943.2823	78	138	29.25
8912.5094	79	139	30.25
10000.0000	80	140	31.25

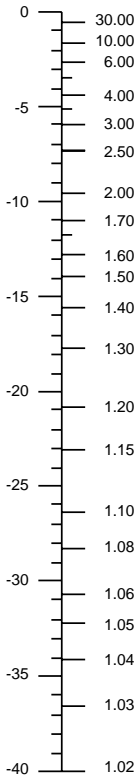
## RETURN LOSS, REFLECTION COEFFICIENT, AND VOLTAGE STANDING WAVE RATIO (VSWR)

Return Loss (dB)	Loss Reflection Coefficient (%)	Reflection Coefficient (%)	VSWR	Return Loss (dB)	Reflection Coefficient (%)	VSWR
0.0	4.3	100.00		20.0	10.00	1.222
0.5	2.2	94.41	34.753	20.5	9.44	1.208
1.0	1.26	89.13	17.391	21.0	8.91	1.196
1.5	.74	84.14	11.610	21.5	8.41	1.184
2.0	.45	79.43	8.724	22.0	7.94	1.173
2.5	.28	74.99	6.997	22.5	7.50	1.162
3.0	.17	70.79	5.848	23.0	7.08	1.152
3.5	.11	66.83	5.030	23.5	6.68	1.143
4.0	.07	63.10	4.419	24.0	6.31	1.135
4.5	.04	59.57	3.946	24.5	5.96	1.127
5.0		56.23	3.570	25.0	5.62	1.119
5.5		53.09	3.263	25.5	5.31	1.112
6.0		50.12	3.010	26.0	5.01	1.106
6.5		47.32	2.796	26.5	4.73	1.099
7.0		44.67	2.615	27.0	4.47	1.094
7.5		42.17	2.458	27.5	4.22	1.088
8.0		39.81	2.323	28.0	3.98	1.083
8.5		37.58	2.204	28.5	3.76	1.078
9.0		35.48	2.100	29.0	3.55	1.074
9.5		33.50	2.007	29.5	3.35	1.069
10.0		31.62	1.925	30.0	3.16	1.065
10.5		29.85	1.851	30.5	2.99	1.062
11.0		28.18	1.785	31.0	2.82	1.058
11.5		26.61	1.725	31.5	2.66	1.055
12.0		25.12	1.671	32.0	2.51	1.052
12.5		23.71	1.622	32.5	2.37	1.049
13.0		22.39	1.577	33.0	2.24	1.046
13.5		21.13	1.536	33.5	2.11	1.043
14.0		19.95	1.499	34.0	2.00	1.041
14.5		18.84	1.464	34.5	1.88	1.038
15.0		17.78	1.433	35.0	1.78	1.036
15.5		16.79	1.404	35.5	1.68	1.034
16.0		15.85	1.377	36.0	1.58	1.032
16.5		14.96	1.352	36.5	1.50	1.030
17.0		14.13	1.329	37.0	1.41	1.029
17.5		13.34	1.308	37.5	1.33	1.027
18.0		12.59	1.288	38.0	1.26	1.025
18.5		11.89	1.270	38.5	1.19	1.024
19.0		11.22	1.253	39.0	1.12	1.023
19.5		10.59	1.237	39.5	1.06	1.021

# RETURN LOSS RATIO

(RLR)

RLR (dB)      VSWR



$$RLR (dB) = -20 \cdot \log_{10} \left( \frac{SWR - 1}{(SWR + 1)} \right)$$

$$RLR (dB) = -20 \cdot \log_{10} \left( \frac{\% \text{ Reflection}}{100} \right)$$

$$RLR (dB) = -20 \cdot \log_{10} \frac{Z_{75} + Z_x}{Z_{75} - Z_x} \text{ (see note)}$$

$$\% \text{ Reflection} = \frac{(SWR - 1)}{(SWR + 1)} \cdot 100$$

$$\text{Loss (Reflection)} = 10 \cdot \log \frac{(VSWR + 1)^2}{4(VSWR)}$$

The column marked Loss (Reflection), on page 6.5, indicates the insertion loss that is attributable to the amount of signal reflected at the device input.

$$SWR = \frac{E_{\max}}{E_{\min}}$$

$$SWR = \frac{10^{\frac{RL}{20}} + 1}{10^{\frac{RL}{20}} - 1}$$

Note: In a 75-Ohm transmission line.

# CONVERSION FACTORS

## SIGNAL LEVELS

0 dBm	=	+ 48.75 dBmV /75 ohms
0 dBW	=	+ 78.75 dBmV /75 ohms
0 dBmV	=	60 dB $\mu$ V

## PREFIXES

milli (m)	=	1/1,000
micro ( $\mu$ )	=	1/1,000,000
nano (n)	=	1/1,000,000,000
pica (p)	=	1/1,000,000,000,000
kilo (k)	=	1,000
mega (M)	=	1,000,000
giga (G)	=	1,000,000,000

## ENERGY / HEAT

12,000 BTU	=	One Ton
1 Watt / hour	=	3.415 Btu
1 horsepower	=	746 Watts
1 atmosphere	=	14.6 pounds per square inch
°Fahrenheit	=	$(9/5 \times ^\circ\text{C}) + 32$
°CELSIUS	=	$5/9 \times (^\circ\text{F} - 32)$

## CONVERSION FACTORS

### VOLUME

1 cubic yard	=	27 cubic feet
1 cubic inch	=	16.38716 cubic centimeters
1 cubic meter	=	1.307943 cubic yards
1 US gallon	=	3.7853 liters
1 US gallon	=	128 fluid ounces
1 US gallon	=	0.8327 Imperial Gallons
1 liter	=	61.025 cubic inches
1 liter	=	1000 cubic centimeters

## 6

### WEIGHT

## 7

1 pound	=	16 ounces
1 pound	=	453.592 grams
1 kilogram	=	2.20462 pounds
1 kilogram	=	1000 grams
1 ton	=	2000 pounds
1 ton	=	907.185 kilograms
1 metric ton	=	2205 pounds

## CONVERSION FACTORS

### LINEAR

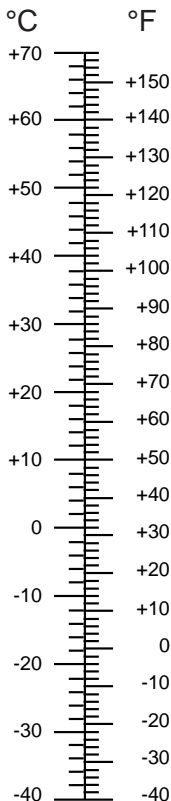
1 mile	=	5280 feet
1 mile	=	1.60935 kilometers
1 kilometer	=	3280.83 feet
1 kilometer	=	0.621 miles
1 kilometer	=	1000 meters
1 meter	=	39.37 inches
1 meter	=	3.281 feet
1 meter	=	100 centimeters
1 centimeter	=	10 millimeters
1 centimeter	=	0.394 inches
1 millimeter	=	1000 microns
1 micron	=	1000 nanometers
1 foot	=	30.48 centimeters
1 inch	=	25.4 millimeters
1 inch	=	1000 mils
1 mil	=	25.4 microns
1 micron	=	0.3937 mil
1 yard	=	36 inches

# CONVERSION FACTORS

## Degrees, Fahrenheit to Celsius

F	0	-1	-2	-3	-4	-5	-6	-7	-8	9
-40	-40.0	-40.6	-41.1	-41.7	-42.2	-42.8	-43.3	-43.9	-44.4	-45.0
-30	-34.4	-35.0	-35.6	-36.1	-36.7	-37.2	-37.8	-38.3	-38.9	-39.4
-20	-28.9	-29.4	-30.0	-30.6	-31.1	-31.7	-32.2	-32.8	-33.3	-33.9
-10	-23.3	-23.9	-24.4	-25.0	-25.6	-26.1	-26.7	-27.2	-27.8	-28.3
0	-17.8	-18.3	-18.9	-19.4	-20.0	-20.6	-21.1	-21.7	-22.2	-22.8
+	0	1	2	3	4	5	6	7	8	9
0	-17.8	-17.2	-16.7	-16.1	-15.6	-15.0	-14.4	-13.9	-13.3	-12.8
10	-12.2	-11.7	-11.1	-10.6	-10.0	-9.4	-8.9	-8.3	-7.8	-7.2
20	-6.7	-6.1	-5.6	-5.0	-4.4	-3.9	-3.3	-2.8	-2.2	-1.7
30	-1.1	-0.6	0.0	0.6	1.1	1.7	2.2	2.8	3.3	3.9
40	4.4	5.0	5.6	6.1	6.7	7.2	7.8	8.3	8.9	9.4
50	10.0	10.6	11.1	11.7	12.2	12.8	13.3	13.9	14.4	15.0
60	15.6	16.1	16.7	17.2	17.8	18.3	18.9	19.4	20.0	20.6
70	21.1	21.7	22.2	22.8	23.3	23.9	24.4	25.0	25.6	26.1
80	26.7	27.2	27.8	28.3	28.9	29.4	30.0	30.6	31.1	31.7
90	32.2	32.8	33.3	33.9	34.4	35.0	35.6	36.1	36.7	37.2
100	37.8	38.3	38.9	39.4	40.0	40.6	41.1	41.7	42.2	42.8
110	43.3	43.9	44.4	45.0	45.6	46.1	46.7	47.2	47.8	48.3
120	48.9	49.4	50.0	50.6	51.1	51.7	52.2	52.8	53.3	53.9
130	54.4	55.0	55.6	56.1	56.7	57.2	57.8	58.3	58.9	59.4
140	60.0	60.6	61.1	61.7	62.2	62.8	63.3	63.9	64.4	65.0
150	65.6	66.1	66.7	67.2	67.8	68.3	68.9	69.4	70.0	70.6
160	71.1	71.7	72.2	72.8	73.3	73.9	74.4	75.0	75.6	76.1
170	76.7	77.2	77.8	78.3	78.9	79.4	80.0	80.6	81.1	81.7

# TEMPERATURE CONVERSION NOMOGRAPH



FAHRENHEIT, °F

$$^{\circ}\text{F} = \left(^{\circ}\text{C} \times \frac{9}{5}\right) + 32$$

CELSIUS, °C

$$^{\circ}\text{C} = \frac{5}{9} (^{\circ}\text{F} - 32)$$

KELVIN, °K

$$^{\circ}\text{K} = ^{\circ}\text{C} + 273$$

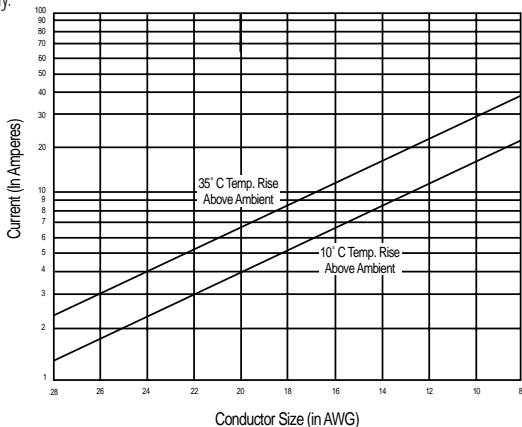
## WIRE GAUGE DATA (AWG)

AWG	Diameter mils, d	Area, circular mils, d <sup>2</sup>	Ohms per 1000 ft. at 20°C, or 68° F	Weight per 1000 ft. (lbs.)
0000	460.00	211,600	0.04901	640.5
000	409.64	167,805	0.06180	508.0
00	364.80	133,079	0.07793	402.8
0	324.86	105,534	0.09827	319.5
1	289.30	83,694	0.1239	253.3
2	257.63	66,373	0.1563	200.9
3	229.42	52,634	0.1970	159.3
4	204.31	41,743	0.2485	126.4
5	181.94	33,102	0.3133	100.2
6	162.02	26,250	0.3951	79.46
7	144.28	20,817	0.4982	63.02
8	129.49	16,768	0.6282	49.98
9	114.43	13,094	0.7921	39.63
10	101.89	10,382	0.9989	31.43
11	90.742	8,234.1	1.260	24.93
12	80.808	6,529.9	1.588	19.77
13	71.961	5,178.4	2.003	15.68
14	64.084	4,106.8	2.525	12.42
15	57.068	3,256.8	3.184	9.858
16	50.820	2,582.7	4.016	7.818
17	45.257	2,048.2	5.064	6.200
18	40.303	1,624.3	6.385	4.917
19	35.890	1,288.1	8.051	3.899
20	31.961	1,021.5	10.15	3.092
21	28.465	810.10	12.80	2.452
22	25.347	642.47	16.14	1.945
23	22.571	509.45	20.36	1.542
24	20.100	404.01	25.67	1.223
25	17.900	320.41	32.37	0.9699
26	15.940	254.08	40.81	0.7692
27	14.195	201.50	51.47	0.6100
28	12.641	159.79	64.90	0.4837
29	11.257	126.72	81.83	0.3836
30	10.025	100.50	103.2	0.3042
31	8.928	79.71	130.1	0.2413
32	7.950	63.20	164.1	0.1913
33	7.080	50.13	206.9	0.1517
34	6.305	39.75	260.9	0.1203
35	5.615	31.53	329.0	0.0954
36	5.000	25.00	414.8	0.0757
37	4.453	19.83	523.1	0.0600
38	3.965	15.72	659.6	0.0476
39	3.531	12.47	831.8	0.0377
40	3.145	9.89	1049	0.0299

## CURRENT RATINGS FOR ELECTRONIC CABLES

The maximum continuous current rating for an electronic cable is limited by conductor size, number of conductors contained within the cable, maximum temperature rating of the cable, and environmental conditions such as ambient temperature and air flow. To use the current capacity chart, first determine conductor size, temperature rating, and number of conductors from the applicable product description for the cable of interest.

Next, find the current value on the chart for the proper temperature rating and conductor size. To calculate the maximum current rating/conductor, multiply the chart value by the appropriate conductor factor. The chart assumes cable is surrounded by still air at an ambient temperature of 25° C. Current values are in RMS Amperes and are valid for copper conductors only.



No. of Conductors**	Factors
1	1.6
2 - 3	1.0
4 - 5	.8
6 - 15	.7
16 - 30	.5

\*\*Do not count shields unless used as a conductor

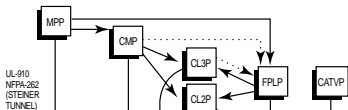
**NOTE:** Current ratings are intended as general guidelines for low power electronic communications and control applications. Current ratings for power applications generally are set by regulatory agencies such as UL, CSA, NEC, and others.

# CABLE SUBSTITUTION CHART (PER NEC\*)

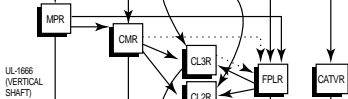
Fire Resistant Level 4 (Highest) Test Requirements

NEC ARTICLES 800 725 760 820

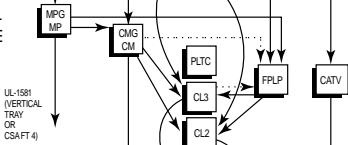
PLENUM 4



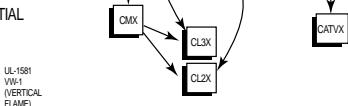
RISER 3



GENERAL PURPOSE 2



RESIDENTIAL 1 (LOWEST)



Type MP = Multipurpose Cables

Type CM = Communications Cables

Type CL2, CL3 = Class 2 and Class 3 Remote Control, Signaling and Power Limited Cables

Type FPL = Power-Limited Fire Alarm Cables

Type CATV = Community Antenna Television and Radio Distribution Cables

Type OFN = Non-conductive Optical Fiber Cables

Type OFC = Conductive Optical Fiber Cables

Type PLTC = Power-Limited Tray Cables

Type CMG = A CM Which Passes CSA FT4

Type MPG = A MP Which Passes CSA FT4

Type OFNG = A OFN Which Passes CSA FT4

Type OFCG = A OFC Which Passes CSA FT4

.....> Under certain conditions these cables can be substituted [NEC 760-51 (A), (B), & (G).]

————> Cables indicated can be substituted.

\*National Electrical Code and NEC are registered trademarks of the National Fire Protection Association, Inc., Quincy, MA.