

Table 7. CONUS downlink budgets for QPSK Modulation, Rate 3/4 FEC

qpsk 3/4		Atlanta	Chicago	jeles, Unite	Miami
Wanted Satellite Longitude	deg, E	-67.5	-67.5	-67.5	-67.5
Satellite station keeping (for each sat)	deg	0.05	0.05	0.05	0.05
Threshold C/N (required)	dB	4.34	4.34	4.34	4.34
Excess link margin reqd	dB	2	2	2	2
Wanted satellite EIRP	dB	57.57	55.13	52.52	58.27
Bandwidth(symbol rate)	MHz	26	26	26	26
Frequency (DL)	MHz	17550	17550	17550	17550
Link Loss	dB	209.4	209.4	209.4	209.4
RxES dia	m	0.55	0.55	0.55	0.55
RxES, D/Lambda		32.2	32.2	32.2	32.2
RxES Gain(max)	dBi	38.2	38.2	38.2	38.2
RxES Gain(with 0.5 dB pointing loss)	dBi	37.7	37.7	37.7	37.7
Noise temperature (clear weather)	K	150	150	150	150
G/T (clear weather)	dB/K	16.0	16.0	16.0	16.0
C/N(thermal)	dB	18.6	16.1	13.5	19.3
DL Rain availability (avg. year)	%	99.9	99.9	99.9	99.8
Rain attenuation	dB	7.78	5.48	4.58	7.82
Rain degradation (with Temp increase)	dB	11.1	8.4	7.3	11.1
C/I(Co- & XPOL, all ASI sources)	dB	18	18	18	18
C/N (UL, self-XPOL etc)	dB	18	18	18	18
C/(N+I)total	dB	6.8	7.0	5.7	7.4
Excess Margin	dB	2.5	2.6	1.3	3.0

Table 8. CONUS Downlink budgete for QPSK modulation, Rate 7/8 FEC

qpsk 7/8		Atlanta	Chicago	jeles, Unite	Miami
Wanted Satellite Longitude	deg, E	-67.5	-67.5	-67.5	-67.5
Satellite station keeping (for each sat)	deg	0.05	0.05	0.05	0.05
Threshold C/N (required)	dB	6.2	6.2	6.2	6.2
Excess link margin reqd	dB	2	2	2	2
Wanted satellite EIRP	dB	57.57	55.13	52.52	58.27
Bandwidth(symbol rate)	MHz	26	26	26	26
Frequency (DL)	MHz	17550	17550	17550	17550
Link Loss	dB	209.4	209.4	209.4	209.4
RxES dia	m	0.55	0.55	0.6	0.55
RxES, D/Lambda		32.175	32.175	35.1	32.175
RxES Gain(max)	dBi	38.2	38.2	39.0	38.2
RxES Gain(with 0.5 dB pointing loss)	dBi	37.7	37.7	38.5	37.7
Noise temperature (clear weather)	K	150.0	150.0	150.0	150.0
G/T (clear weather)	dB/K	16.0	16.0	16.7	16.0
C/N(thermal)	dB	18.6	16.1	14.3	19.3
DL Rain availability (avg. year)	%	99.9	99.9	99.9	99.8
Rain attenuation	dB	7.8	5.5	4.6	7.8
Rain degradation (with Temp increase)	dB	11.1	8.4	7.3	11.1
C/I(Co- & XPOL, all ASI sources)	dB	18.0	18.0	18.0	18.0

C/N (UL, self-XPOL etc)	dB	18.0	18.0	18.0	18.0
C/(N+I)total	dB	6.8	7.0	6.3	7.4
Excess Margin	dB	0.6	0.8	0.1	1.2

Table 9. CONUS Downlink budgete for 8PSK modulation, Rate 3/5 FEC

8psk		Atlanta	Chicago	Jeles, Uniter	Miami
Wanted Satellite Longitude	deg, E	-67.5	-67.5	-67.5	-67.5
Satellite station keeping (for each sat)	deg	0.05	0.05	0.05	0.05
Threshold C/N (required)	dB	6.1	6.1	6.1	6.1
Excess link margin reqd	dB	2	2	2	2
Wanted satellite EIRP	dB	57.57	55.13	52.52	58.27
Bandwidth(symbol rate)	MHz	26	26	26	26
Frequency (DL)	MHz	17550	17550	17550	17550
Link Loss	dB	209.4	209.4	209.4	209.4
RxES dia	m	0.55	0.55	0.6	0.55
RxES, D/Lambda		32.175	32.175	35.1	32.175
RxES Gain(max)	dBi	38.2	38.2	39.0	38.2
RxES Gain(with 0.5 dB pointing loss)	dBi	37.7	37.7	38.5	37.7
Noise temperature (clear weather)	K	150.0	150.0	150.0	150.0
G/T (clear weather)	dB/K	16.0	16.0	16.7	16.0
C/N(thermal)	dB	18.6	16.1	14.3	19.3
DL Rain availability (avg. year)	%	99.9	99.9	99.9	99.8
Rain attenuation	dB	7.8	5.5	4.6	7.8
Rain degradation (with Temp increase)	dB	11.1	8.4	7.3	11.1
C/I(Co- & XPOL, all ASI sources)	dB	18.0	18.0	18.0	18.0
C/N (UL, self-XPOL etc)	dB	18.0	18.0	18.0	18.0
C/(N+I)total	dB	6.8	7.0	6.3	7.4
Excess Margin	dB	0.7	0.9	0.2	1.3

Table 10. South America (Excluding Brazil) Beam downlink budgets for QPSK Modulaion, Rate 3

qpsk 3/4		Lima	Buenos Aire	Caracas	Bogota
Wanted Satellite Longitude	deg, E	-67.5	-67.5	-67.5	-67.5
Satellite station keeping (for each sat)	deg	0.05	0.05	0.05	0.05
Threshold C/N (required)	dB	4.34	4.34	4.34	4.34
Wanted satellite EIRP	dB	52.84	53.59	55.5	55.66
Bandwidth(symbol rate)	MHz	26	26	26	26
Frequency (DL)	MHz	17550	17550	17550	17550
Link Loss	dB	209.4	209.4	209.4	209.4
RxES dia	m	0.55	0.55	0.7	0.7
RxES, D/Lambda		32.2	32.2	41.0	41.0
RxES Gain(max)	dBi	38.2	38.2	40.3	40.3
RxES Gain(with 0.5 dB pointing loss)	dBi	37.7	37.7	39.8	39.8
Noise temperature (clear weather)	K	150	150	150	150
G/T (clear weather)	dB/K	16.0	16.0	18.1	18.1
C/N(thermal)	dB	13.9	14.6	18.6	18.8
DL Rain availability (avg. year)	%	99.9	99.9	99.8	99.8
Rain attenuation	dB	4.8	6.2	10.3	11.5

Rain degradation (with Temp increase)	dB	7.6	9.3	13.8	15.0
C/I(Co- & XPOL, all ASI sources)	dB	18.0	18.0	18.0	18.0
C/N (UL, self-XPOL etc)	dB	18.0	18.0	18.0	18.0
C/(N+I)total	dB	5.7	4.9	4.4	3.4
Excess Margin	dB	1.3	0.5	0.1	-0.9

Table 11 Brazil Downlink budgets for QPSK modulation Rate 3/4 FEC

qpsk 3/4		Rio	Sao Paolo	Brasilia	fortaleza
Wanted Satellite Longitude	deg, E	-67.5	-67.5	-67.5	-67.5
Satellite station keeping (for each sat)	deg	0.05	0.05	0.05	0.05
Threshold C/N (required)	dB	4.34	4.34	4.34	4.34
Wanted satellite EIRP	dB	56.77	56.96	56.76	54.99
Bandwidth(symbol rate)	MHz	26	26	26	26
Frequency (DL)	MHz	17550	17550	17550	17550
Link Loss	dB	209.4	209.4	209.4	209.4
RxES dia	m	0.55	0.55	0.55	0.85
RxES, D/Lambda		32.2	32.2	32.2	49.7
RxES Gain(max)	dBi	38.2	38.2	38.2	42.0
RxES Gain(with 0.5 dB pointing loss)	dBi	37.7	37.7	37.7	41.5
Noise temperature (clear weather)	K	150	150	150	150
G/T (clear weather)	dB/K	16.0	16.0	16.0	19.7
C/N(thermal)	dB	17.8	18.0	17.8	19.8
DL Rain availability (avg. year)	%	99.9	99.9	99.8	99.8
Rain attenuation	dB	8.33	9	8.91	11.65
Rain degradation (with Temp increase)	dB	11.7	12.4	12.3	15.2
C/I(Co- & XPOL, all ASI sources)	dB	18	18	18	18
C/N (UL, self-XPOL etc)	dB	18	18	18	18
C/(N+I)total	dB	5.6	5.1	5.0	4.2
Excess Margin	dB	1.3	0.8	0.7	-0.1

Table 12. Mexico Downlink budgets for 8PSK modulation, Rate 3/5 FEC

8psk 3/5		Mex cty	Cancun	Monterrey	Acapulco
Wanted Satellite Longitude	deg, E	-67.5	-67.5	-67.5	-67.5
Satellite station keeping (for each sat)	deg	0.05	0.05	0.05	0.05
Threshold C/N (required)	dB	6.1	6.1	6.1	6.1
Excess link margin reqd	dB	2	2	2	2
Wanted satellite EIRP	dB	58.22	56.58	56.68	56.46
Bandwidth(symbol rate)	MHz	26	26	26	26
Frequency (DL)	MHz	17550	17550	17550	17550
Link Loss	dB	209.4	209.4	209.4	209.4
RxES dia	m	0.55	0.65	0.6	0.65
RxES, D/Lambda		32.175	38.025	35.1	38.025
RxES Gain(max)	dBi	38.2	39.7	39.0	39.7
RxES Gain(with 0.5 dB pointing loss)	dBi	37.7	39.2	38.5	39.2
Noise temperature (clear weather)	K	150	150	150	150
G/T (clear weather)	dB/K	16.0	17.4	16.7	17.4
C/N(thermal)	dB	19.2	19.0	18.4	18.9

DL Rain availability (avg. year)	%	99.9	99.8	99.9	99.8
Rain attenuation	dB	5.05	8.83	7.64	8.46
Rain degradation (with Temp increase)	dB	7.9	12.2	10.9	11.8
C/I(Co- & XPOL, all ASI sources)	dB	18	18	18	18
C/N (UL, self-XPOL etc)	dB	18	18	18	18
C/(N+I)total	dB	9.8	6.2	6.8	6.5
Excess Margin	dB	3.7	0.1	0.7	0.4

New York	Denver
-67.5	-67.5
0.05	0.05
4.34	4.34
2	2
56.6	51.62
26	26
17550	17550
209.4	209.4
0.55	0.55
32.2	32.2
38.2	38.2
37.7	37.7
150	150
16.0	16.0
17.6	12.6
99.9	99.9
5.25	4.68
8.1	7.4
18	18
18	18
8.4	4.8
4.1	0.4

New York, United	Denver
-67.5	-67.5
0.05	0.05
6.2	6.2
2	2
56.6	51.62
26	26
17550	17550
209.4	209.4
0.55	0.55
32.175	32.175
38.2	38.2
37.7	37.7
150.0	150.0
16.0	16.0
17.6	12.6
99.9	99.8
5.3	3.2
8.1	5.5
18.0	18.0

18.0	18.0
8.4	6.5
2.2	0.3

ork, United	Denver
-67.5	-67.5
0.05	0.05
6.1	6.1
2	2
56.6	51.62
26	26
17550	17550
209.4	209.4
0.55	0.55
32.175	32.175
38.2	38.2
37.7	37.7
150.0	150.0
16.0	16.0
17.6	12.6
99.9	99.8
5.3	4.7
8.1	5.5
18.0	18.0
18.0	18.0
8.4	6.5
2.3	0.4

1/4 FEC

La Paz	Santiago
-67.5	-67.5
0.05	0.05
4.34	4.34
53.47	53.14
26	26
17550	17550
209.4	209.4
0.65	0.55
38.0	32.2
39.7	38.2
39.2	37.7
150	150
17.4	16.0
15.9	14.2
99.8	99.9
7.8	3.1

11.1	5.4
18.0	18.0
18.0	18.0
4.5	7.8
0.1	3.5

salvador port. Aleg

-67.5	-67.5
0.05	0.05
4.34	4.34
56.35	50.42
26	26
17550	17550
209.4	209.4
0.55	0.65
32.2	38.0
38.2	39.7
37.7	39.2
150	150
16.0	17.4
17.4	12.9
99.8	99.8
7.54	4.9
10.8	7.7
18	18
18	18
6.0	4.7
1.7	0.4

Tampico

-67.5
0.05
6.1
2
59.08
26
17550
209.4
0.55
32.175
38.2
37.7
150
16.0
20.1

99.8
8.19
11.5
18
18
7.7
1.6