

Digital C-band link budgets (Table 15 of Technical Appendix)

	H_C	I_C	J_C	K_C	L_C	M_C
Parameter	Digital TV MCPC, 40 MBPS, QPSK, ¾ RS	Digital TV SCPC, 8 MBPS, QPSK ¾ RS	Digital TV MCPC, 60 MBPS, 8PSK, 2/3 RS	Digital TV, MCPC, 110 MBPS, 16QAM, 7/8 RS	56 Kbps, SCPC, QPSK, ¾ RS	1.544 Mbps, SCPC, QPSK, ¾ RS
Carrier designation	36M0G7W	6M95G1W	36M0G7W	36M0G7W	100KG1D	1M60G1D
Throughput rate, Mbps	40	8	60	110	0.056	2
Symbol rate, MHz	28.8	5.8	32.6	34.1	0.037	1
FEC rate	0.69	0.69	0.61	0.81	0.75	0.75
Uplinks:						
Transmit Power (dBW)	17.1	9.6	25.1	25.1	-3.4	11.8
Transmit Loss (dB)	0.5	0.5	0.5	0.5	0.5	0.5
Antenna diameter(m)	10	10	10	10	4.5	4.5
Antenna Gain (dBi)	54.4	54.4	54.4	54.4	47.4	47.4
Ground Station EIRP (dBW)	71	63.5	79	79	43.5	58.7
Uplink Rain Loss (dB)	1	1	1	1	1	1
Free Space Loss (dB)	200.1	200.1	200.1	200.1	200.1	200.1
Satellite G/T (dB/K)	0	0	0	0	0	0
Data Rate (dB-Hz)	76	69	77.8	80.4	47.5	61.9
Boltzmann's Constant (dBW/K-Hz)	228.6	228.6	228.6	228.6	228.6	228.6
Eb/No (dB)	22.5	22	28.7	26.1	23.5	24.3
Eb/Io (dB)	18	18	18	18	18	18
Total Eb/(No + Io) (dB) For 10-7	16.7	16.5	17.6	17.4	16.9	17.1
Downlinks:						
Satellite Carrier EIRP (dBW)	38.0	28.0	38.0	40.0	8.0	25.2
Downlink Rain Loss (dB)	0.5	0.5	0.5	0.5	0.5	0.5
Free Space Loss (dB)	196.3	196.3	196.3	196.3	196.3	196.3
Ground station antenna dia, m	3.8	6.0	10.0	10.0	6.0	6.0
Ground Station G/T (dB/K)	21.8	25.2	33.2	33.2	23.0	23.0
Eb/No (dB)	15.6	16.0	25.2	24.6	15.3	18.1
C/IM		18.0			18.0	18.0
Eb/IMo(dB)		16.6			16.2	16.2
C/I	16.0	16.0	20.0	22.0	16.0	16.0
Eb/Io(ASI)	14.6	14.6	17.3	16.9	14.2	14.2
Eb/Io (dB)	14.6	12.5	17.3	16.9	12.1	12.1
Eb/(No + Io) (dB)	12.1	10.9	16.7	16.2	10.4	11.1
Total UP/DOWN C/(N+I)(dB)	13.5	12.3	19.3	21.3	12.2	12.9
Total UP/DOWN Eb/(No+Io)(dB)	10.8	9.8	14.1	13.8	9.5	10.2
Required Eb/No(dB)	5.4	5.4	7.2	11.5	5.4	5.4
Required C/N(dB)	6.8	6.8	9.9	16.6	7.2	7.2
Margin(dB)	5.4	4.4	6.9	2.3	4.1	4.8