

**Digital Ku-band link budgets (Table 14 of Technical Appendix)**

Parameter	Digital TV MCPC 40 MBPS QPSK ¾ RS	Digital TV MCPC 40 MBPS QPSK ¾ RS	Digital TV SCPC QPSK ¾ RS	Digital TV SCPC QPSK ¾ RS	56Kbps QPSK ¾ RS	1.544 MBPS QPSK ¾	Digital TV MCPC 50 MBPS 8PSK 2/3 RS
Digital MOD ID	A_Ku	B_Ku	C_Ku	D_Ku	E_Ku	F_Ku	G_Ku
Carrier designation	36M0G7W	27M0G7W	6M95G1W	5M00G1W	100KG1W	1M60G1W	36M0G7W
Throughput rate, Mbps	40	32	8	6	0.0562	1.5440	50
Symbol rate, MHz	28.80	22.88	5.75	4.16	0.04	1.12	27.13
<b>Uplinks:</b>							
Transmit Power (dBW)	20.00	20.00	8.90	8.90	-5.00	8.00	20.00
Transmit Loss (dB)	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
Antenna diameter	6.10	6.10	3.70	3.70	1.80	1.80	6.10
Antenna Gain (dBi)	57.20	57.20	52.85	52.85	46.60	46.60	57.20
Ground Station EIRP (dBW)	76.20	76.20	60.75	60.75	40.60	53.60	76.20
Uplink Rain Loss (dB)	-2.00	-2.00	-2.00	-2.00	-2.00	-2.00	-2.00
Free Space Loss (dB)	-207.50	-207.50	-207.50	-207.50	-207.50	-207.50	-207.50
Satellite G/T (dB/K)	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Data Rate (dB-Hz)	76.00	75.00	69.00	67.60	47.50	61.89	76.00
Boltzmann's Constant (dBW/K-Hz)	-228.60	-228.60	-228.60	-228.60	-228.60	-228.60	-228.60
Eb/No (dB)	22.30	23.30	13.85	15.25	15.20	13.81	21.31
Eb/Io (dB)	18.00	18.00	16.00	16.00	16.00	16.00	18.00
Total Eb/(No + Io) (dB) For 10-7	16.63	16.88	11.79	12.60	12.57	11.76	16.34
<b>Downlinks:</b>							
Satellite Carrier EIRP (dBW)	48.70	48.70	35.70	34.30	18.50	28.50	48.70
Downlink Rain Loss (dB)	-3.00	-3.00	-3.00	-3.00	-3.00	-3.00	-3.00
Free Space Loss (dB)	-206.30	-206.30	-206.30	-206.30	-206.30	-206.30	-206.30
Ground station antenna dia, m	0.90	0.90	2.40	2.40	1.20	2.40	2.40
Ground Station G/T (dB/K)	17.09	17.09	25.61	25.61	19.59	25.61	25.61
Eb/No (dB)	9.09	10.09	11.61	11.61	9.89	11.53	16.62
C/IM	0.00	0.00	18.00	18.00	18.00	18.00	0.00
Eb/IModB)	0.00	0.00	16.59	16.59	16.59	16.59	0.00
C/I(dB)	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Eb/Io(ASI)	13.59	13.59	13.59	13.59	13.59	13.59	12.34
Eb/Io (dB)	13.59	13.59	11.83	11.83	11.83	11.83	12.34
Eb/(No + Io) (dB)	7.78	8.49	8.71	8.71	7.74	8.67	10.97
Total UP/DOWN Eb/(No+Io)(dB)	7.24	7.90	6.97	7.22	6.51	6.93	9.86
Required (dB)	5.40	5.40	5.40	5.40	5.40	5.40	7.20
Margin (dB)	1.84	2.50	1.57	1.82	1.11	1.53	2.66