

## TYPICAL C-BAND LINK BUDGETS

		24K0G7D	26K7G7D	80K0G7D	106KG7D	160KG7D	640KG7D	4M33G7D	6M10G7W	6M10G7W	6M10G7W	30M0G7W	8M00G7D	8M00G7D	36M0F9F	36M0F9F	33M3G7D	
G rx sat	(dBi)	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	
T sat	(K)	602.6	602.6	602.6	602.6	602.6	602.6	602.6	602.6	602.6	602.6	602.6	602.6	602.6	602.6	602.6	602.6	
G tx sat	(dBi)	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	
Transp BW	(MHz)	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	
Signal BW	(MHz)	0.024	0.027	0.080	0.106	0.160	0.640	4.330	6.100	6.100	6.100	30.000	8.000	8.000	36.000	36.000	33.300	
C/Nthr Clr Sky	(dB)	5.3	8.3	7.0	2.8	2.8	2.8	6.1	6.4	6.4	6.4	9.8	6.1	6.1	13.0	13.0	9.8	
Service Area																		
Uplink EOC U/L	(dB)	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	
G 1m <sup>2</sup>	(dBi)	37.3	37.3	37.3	37.3	37.3	37.3	37.3	37.3	37.3	37.3	37.3	37.3	37.3	37.3	37.3	37.3	
G/T max	(dB/K)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
FSL	(dB)	200.2	200.2	200.2	200.2	200.2	200.2	200.2	200.2	200.2	200.2	200.2	200.2	200.2	200.2	200.2	200.2	
L atmos	(dB)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.2	
Downlink EOC D/L	(dB)	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-2.0	-2.0	-4.0	
FSL	(dB)	196.3	196.3	196.3	196.3	196.3	196.3	196.3	196.3	196.3	196.3	196.3	196.3	196.3	196.3	196.3	196.3	
L atmos	(dB)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	
Space Station SFD/EIRP																		
Min		-99.5	-99.5	-99.5	-99.5	-99.5	-99.5	-99.5	-99.5	-99.5	-99.5	-99.5	-99.5	-99.5	-99.5	-99.5	-99.5	
Max		-79.5	-79.5	-79.5	-79.5	-79.5	-79.5	-79.5	-79.5	-79.5	-79.5	-79.5	-79.5	-79.5	-79.5	-79.5	-79.5	
PAD wrt mid-range	(dB)	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-6.0	-3.0	-3.0	6.0	6.0	-6.0	
SFD (@ Beam Ctr)	(dBW/m <sup>2</sup> )	-92.5	-92.5	-92.5	-92.5	-92.5	-92.5	-92.5	-92.5	-92.5	-92.5	-95.5	-92.5	-92.5	-83.5	-83.5	-95.5	
Sat EIRP max	(dBW)	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	
Uplink (TX Earth Station)																		
Diam	(m)	7.0	7.0	7.0	8.0	4.5	7.0	4.5	7.0	7.0	7.0	8.0	8.0	8.0	8.0	8.0	10.0	
Gtx	(dBi)	51.3	51.3	51.3	52.4	47.4	51.3	47.4	51.3	51.3	51.3	52.4	52.4	52.4	52.4	52.4	54.4	
EIRP ES (EOC)	(dBW)	40.7	43.2	47.2	48.3	50.0	56.2	61.5	64.2	64.2	64.2	72.3	64.8	64.8	78.9	78.9	72.5	
Ptx (EOC)	(dBW)	-10.6	-8.1	-4.1	-4.1	2.6	4.9	14.1	12.9	12.9	12.9	19.9	12.4	12.4	26.5	26.5	18.2	
Ptx (COB)	(dBW)	-14.6	-12.1	-8.1	-8.1	-1.4	0.9	10.1	8.9	8.9	8.9	15.9	8.4	8.4	22.5	22.5	14.2	
Downlink (Space Station)																		
Ptx (max COB)	(dBW)	-18.7	-16.2	-12.2	-11.2	-9.2	-3.2	2.3	4.8	4.8	4.8	14.3	5.3	5.3	10.0	10.0	14.3	
Ptx (min EOC)	(dBW)	-21.7	-19.2	-15.2	-14.2	-12.2	-6.2	-0.7	1.8	1.8	1.8	14.2	2.3	2.3	9.9	9.9	14.2	
EIRP sat	(dBW)	10.0	12.5	16.5	17.5	19.5	25.5	31.0	33.5	33.5	33.5	43.0	34.0	34.0	38.7	38.7	43.0	
RX Earth Station																		
Diameter	(m)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	7.0	8.0	4.5	7.0	10.0	4.5	7.0	10.0	
G rx ES	(dBi)	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	47.4	48.5	43.5	47.4	50.5	43.5	47.4	50.5	
T ES	(K)	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	
U/L Interference Allocations																		
(C/I)U/L X-pol, ACI, IMOD, ASI	(dB)	15.0	17.0	16.3	16.1	16.3	16.2	13.4	14.5	14.5	14.5	19.9	13.8	13.8	27.1	27.1	19.4	
C/N Thermal Up	(dB)	25.5	27.6	26.8	26.6	26.8	26.8	24.0	25.0	25.0	25.0	26.1	24.3	24.3	32.8	32.8	25.6	
(C/N) Total Up	(dB)	14.6	16.7	15.9	15.7	15.9	15.9	13.1	14.1	14.1	14.1	19.0	13.4	13.4	26.0	26.0	18.5	
D/L Interference Allocations																		
(C/I)U/L X-pol, ACI, IMOD, ASI	(dB)	15.6	17.6	16.8	16.7	16.8	16.8	14.0	15.0	15.7	15.9	20.6	15.1	15.4	18.7	22.5	22.4	
C/N Dn (COB)	(dB)	22.6	24.6	23.8	23.7	23.8	23.8	21.0	22.0	25.7	26.9	24.7	25.2	28.0	19.9	23.8	30.8	
(C/N) Total Dn (COB)	(dB)	14.8	16.8	16.1	15.9	16.0	16.0	13.2	14.2	15.3	15.5	19.2	14.7	15.1	16.2	20.1	21.8	
C/N Dn (EOC)	(dB)	15.6	17.6	16.8	16.7	16.8	16.8	14.0	15.0	18.7	19.9	20.6	18.2	21.0	17.8	21.7	26.7	
(C/N) Total Dn (EOC)	(dB)	9.8	11.8	11.1	10.9	11.0	11.0	8.2	9.2	11.1	11.5	16.1	10.5	11.4	14.1	18.0	20.1	
C/N total max	(dB)	11.7	13.7	13.0	12.8	13.0	12.9	10.1	11.1	11.7	11.7	16.0	11.0	11.2	15.8	19.1	16.8	
C/N total min	(dB)	8.6	10.6	9.8	9.6	9.8	9.8	7.0	8.0	9.4	9.6	14.3	8.7	9.3	13.9	17.3	16.2	
Link Margin	(dB)	3.3	2.3	2.8	6.8	7.0	7.0	0.9	1.6	3.0	3.2	4.5	2.6	3.2	0.9	4.3	6.4	

**TYPICAL KU-BAND LINK BUDGETS**

		26K7G7D	32K0G7D	80K0G7D	160K7G7D	320K7G7D	26K7G7D	32K0G7D	80K0G7D	160K7G7D	320K7G7D	640K7G7D	1M28G7D	27M0F9F	640K7G7D	1M28G7D	1M85G7D	5M48G7D	6M10G7W	27M0F9F	6M10G7W	23M9G7D	27M0F9F	
G rx sat	(dBi)	36.1	36.1	36.1	36.1	36.1	36.1	36.1	36.1	36.1	36.1	36.1	36.1	36.1	36.1	36.1	36.1	36.1	36.1	36.1	36.1	36.1	36.1	36.1
T sat	(K)	512.9	512.9	512.9	512.9	512.9	512.9	512.9	512.9	512.9	512.9	512.9	512.9	512.9	512.9	512.9	512.9	512.9	512.9	512.9	512.9	512.9	512.9	512.9
G tx sat	(dBi)	34.7	34.7	34.7	34.7	34.7	34.7	34.7	34.7	34.7	34.7	34.7	34.7	34.7	34.7	34.7	34.7	34.7	34.7	34.7	34.7	34.7	34.7	34.7
Transp BW	(MHz)	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0
Signal BW	(MHz)	<b>0.027</b>	<b>0.032</b>	<b>0.080</b>	<b>0.160</b>	<b>0.320</b>	<b>0.027</b>	<b>0.032</b>	<b>0.080</b>	<b>0.160</b>	<b>0.320</b>	<b>0.640</b>	<b>1.280</b>	<b>27.000</b>	<b>0.640</b>	<b>1.280</b>	<b>1.850</b>	<b>5.480</b>	<b>6.100</b>	<b>27.000</b>	<b>6.100</b>	<b>23.900</b>	<b>27.000</b>	
C/Nthr Clr Sky	(dB)	8.3	5.3	7.0	2.8	2.8	8.3	5.3	7.0	2.8	2.8	2.8	2.8	13.0	2.8	2.8	5.9	6.1	6.4	13.0	6.4	9.8	13.0	
Service Area																								
Uplink EOC U/L	(dB)	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0
G 1m²	(dBi)	44.5	44.5	44.5	44.5	44.5	44.5	44.5	44.5	44.5	44.5	44.5	44.5	44.5	44.5	44.5	44.5	44.5	44.5	44.5	44.5	44.5	44.5	44.5
G/T max	(dB/K)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
FSL	(dB)	207.5	207.5	207.5	207.5	207.5	207.5	207.5	207.5	207.5	207.5	207.5	207.5	207.5	207.5	207.5	207.5	207.5	207.5	207.5	207.5	207.5	207.5	207.5
L atmos	(dB)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Downlink EOC D/L	(dB)	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0
FSL	(dB)	205.9	205.9	205.9	205.9	205.9	205.9	205.9	205.9	205.9	205.9	205.9	205.9	205.9	205.9	205.9	205.9	205.9	205.9	205.9	205.9	205.9	205.9	205.9
L atmos	(dB)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Space Station SFD/EIRP																								
Min		-106.0	-106.0	-106.0	-106.0	-106.0	-106.0	-106.0	-106.0	-106.0	-106.0	-106.0	-106.0	-106.0	-106.0	-106.0	-106.0	-106.0	-106.0	-106.0	-106.0	-106.0	-106.0	-106.0
Max		-86.0	-86.0	-86.0	-86.0	-86.0	-86.0	-86.0	-86.0	-86.0	-86.0	-86.0	-86.0	-86.0	-86.0	-86.0	-86.0	-86.0	-86.0	-86.0	-86.0	-86.0	-86.0	-86.0
PAD wrt mid-range	(dB)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
SFD (@ COB)	(dBW/m²)	-93.0	-93.0	-93.0	-93.0	-93.0	-93.0	-93.0	-93.0	-93.0	-93.0	-93.0	-93.0	-93.0	-93.0	-93.0	-93.0	-93.0	-93.0	-93.0	-93.0	-93.0	-93.0	-93.0
Sat EIRP max	(dBW)	52.5	52.5	52.5	52.5	52.5	52.5	52.5	52.5	52.5	52.5	52.5	52.5	52.5	52.5	52.5	52.5	52.5	52.5	52.5	52.5	52.5	52.5	52.5
Uplink (TX Earth Station)																								
Diam	(m)	1.2	1.2	1.2	1.2	1.2	1.8	1.8	1.8	1.8	1.8	1.8	2.4	2.4	3.7	3.7	3.7	3.7	3.7	3.7	4.5	4.5	4.5	4.5
Gtx	(dBi)	43.2	43.2	43.2	43.2	43.2	46.7	46.7	46.7	46.7	46.7	46.7	49.2	49.2	53.0	53.0	53.0	53.0	53.0	53.0	54.7	54.7	54.7	54.7
EIRP ES (EOC)	(dBW)	40.0	42.0	46.0	49.0	52.0	40.1	42.1	46.1	49.1	52.1	55.1	55.2	73.7	52.5	55.5	57.1	61.8	62.3	73.9	62.5	74.2	74.2	74.2
Ptx (EOC)	(dBW)	-3.2	-1.2	2.8	5.8	8.8	-6.6	-4.6	-0.6	2.4	5.4	8.4	6.0	24.5	-0.5	2.5	4.1	8.8	9.3	21.0	7.8	19.5	19.5	19.5
Ptx (COB)	(dBW)	-9.2	-7.2	-3.2	-0.2	2.8	-12.6	-10.6	-6.6	-3.6	-0.6	2.4	0.0	18.5	-6.5	-3.5	-1.9	2.8	3.3	15.0	1.8	13.5	13.5	13.5
Downlink (Space Station)																								
Ptx (max COB)	(dBW)	-17.2	-15.2	-11.2	-8.2	-5.2	-17.2	-15.2	-11.2	-8.2	-5.2	-2.2	-2.2	17.8	-5.2	-2.2	-0.6	4.2	4.6	17.8	4.6	17.8	17.8	17.8
Ptx (min EOC)	(dBW)	-20.2	-18.2	-14.2	-11.2	-8.2	-20.2	-18.2	-14.2	-11.2	-8.2	-5.2	-5.2	17.7	-8.2	-5.2	-3.6	1.2	1.6	17.7	1.6	17.7	17.7	17.7
EIRP sat	(dBW)	17.5	19.5	23.5	26.5	29.5	17.5	19.5	23.5	26.5	29.5	32.5	32.5	52.5	29.5	32.6	34.2	38.9	39.3	52.5	39.3	52.5	52.5	52.5
RX Earth Station																								
Diameter	(m)	5.6	4.5	4.5	4.5	5.6	2.4	2.4	2.4	2.4	5.6	2.4	5.6	2.4	2.4	2.4	3.7	3.7	3.7	2.4	4.5	4.5	4.5	4.5
G rx ES	(dBi)	55.1	53.2	53.2	53.2	55.1	47.7	47.7	47.7	47.7	55.1	47.7	55.1	47.7	47.7	47.7	51.5	51.5	51.5	47.7	53.2	53.2	53.2	53.2
T ES	(K)	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0
U/L Interference Allocations																								
(C/I)U/L X-pol, ACI, IMOD, ASI	(dB)	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5
C/N Thermal Up	(dB)	26.6	26.5	26.5	26.5	26.5	26.6	26.5	26.5	26.5	26.5	26.5	23.5	28.8	23.5	23.5	23.5	23.6	23.5	28.8	23.5	29.3	28.8	28.8
(C/N) Total Up	(dB)	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	15.7	24.1	15.7	15.7	15.7	15.7	15.7	24.1	15.7	24.7	24.1	24.1
D/L Interference Allocations																								
(C/I)D/L X-pol, ACI, IMOD, ASI	(dB)	17.1	17.0	17.0	17.0	17.1	16.7	16.7	16.7	16.7	17.1	16.7	14.1	25.3	13.7	13.7	14.0	14.0	14.0	25.3	14.0	26.9	26.4	26.4
C/N Dn (COB)	(dB)	29.0	27.2	27.3	27.3	29.0	22.2	22.1	22.2	22.1	29.0	22.2	25.9	25.9	19.2	19.2	22.7	22.7	22.7	25.9	24.3	31.5	31.0	31.0
(C/N) Total Dn (COB)	(dB)	16.8	16.6	16.6	16.6	16.8	15.7	15.6	15.6	15.6	16.8	15.6	13.8	22.6	12.6	12.6	13.4	13.4	13.4	22.6	13.7	25.6	25.1	25.1
C/N Dn (EOC)	(dB)	20.0	18.2	18.3	18.3	20.0	13.2	13.1	13.2	13.1	20.0	13.2	16.9	19.8	10.2	10.2	13.7	13.7	13.7	19.8	15.3	25.4	24.9	24.9
(C/N) Total Dn (EOC)	(dB)	12.9	12.3	12.3	12.3	12.9	9.9	9.8	9.9	9.8	12.9	9.9	9.8	17.9	6.9	6.9	8.8	8.8	8.8	17.9	9.4	22.4	21.9	21.9
C/N total max	(dB)	14.7	14.5	14.6	14.5	14.6	13.9	13.9	13.9	13.9	14.6	13.9	11.6	20.3	10.9	10.9	11.4	11.4	11.4	20.3	11.6	22.1	21.6	21.6
C/N total min	(dB)	11.9	11.4	11.4	11.4	11.8	9.3	9.3	9.3	9.3	11.8	9.3	8.8	17.0	6.3	6.3	8.0	8.0	8.0	17.0	8.5	20.4	19.9	19.9
Link Margin	(dB)	3.6	6.1	4.4	8.6	9.0	1.0	4.0	2.3	6.5	9.0	6.5	6.0	4.0	3.5	3.5	2.1	1.9	1.6	4.0	2.1	10.6	6.9	6.9