

EchoStar-6 DBS Link Budget

(QPSK Medium Power Mode)

Link Parameters	Clear Sky (Bermuda)	Faded D/L (Bermuda)	Faded D/L (Puerto Plata, DOM)
Link Geometry:			
Tx E/S Range to Satellite (Mt. Jackson) (km)	37,656	37,656	37,656
Rx E/S Range to Satellite (km)	37,815	37,815	36,900
Uplink (per carrier):			
Carrier Frequency (MHz)	17,500	17,500	17,500
Tx E/S Antenna Diameter (m)	13.2	13.2	13.2
Tx E/S Power to Antenna (dBW)	10.3	10.3	10.3
Tx E/S Antenna Gain (dB)	65.7	65.7	65.7
Tx E/S EIRP per Carrier (dBW)	76.0	76.0	76.0
Atmospheric and Other Losses (dB)	0.3	0.3	0.3
Free Space Loss (dB)	208.8	208.8	208.8
Satellite:			
G/T towards Tx E/S (dB/K)	3.8	3.8	3.8
Peak EIRP (dBW)	49.8	49.8	49.8
EIRP towards Rx E/S (dBW)	48.2	48.2	46.8
Downlink (per carrier):			
Carrier Frequency (MHz)	12,500	12,500	12,500
Atmospheric and Rain Losses (dB)	0.1	5.4	4.6
Free Space Loss (dB)	205.9	205.9	205.7
Rx E/S Antenna Diameter (m)	0.51	0.51	0.51
Antenna Mis-pointing Error (dB)	0.30	0.30	0.30
Rx E/S Antenna Gain (dB)	35.1	35.1	35.1
Rx E/S G/T (dB/K)	14.3	10.1	10.3
System (LNA+Sky) Noise Temp. (K)	120	315	297
Total Link:			
Noise Bandwidth (dB-Hz)	73.2	73.2	73.2
(C/N) - Thermal Uplink (dB)	26.1	26.1	26.1
(C/N) - Thermal Downlink (dB)	11.5	2.1	1.9
(C/I) - Adjacent Satellite Interference (dB)	27.0	27.0	27.0
(C/I) - Other Link Degradations (dB)	22.9	22.9	22.9
(C/N) - Total Actual (dB)	11.0	2.0	1.9
(C/N) - Total Required (dB)	1.7	1.7	1.7
Excess Margin (dB)	9.3	0.3	0.2
Availability (%)	N/A	99.94	99.86