

# EchoStar-6 DBS Link Budget

## (QPSK Medium Power Mode)

Link Parameters		Clear Sky (Bermuda)	Faded D/L (Bermuda)	Faded D/L (Puerto Plata, DOM)
<b>Link Geometry:</b>				
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
<b>Uplink (per carrier):</b>				
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
<b>Satellite:</b>				
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
<b>Downlink (per carrier):</b>				
Carrier Frequency	(MHz)	12,500	12,500	12,500
Atmospheric and Rain Losses	(dB)	0.1	5.4	4.8
Free Space Loss	(dB)	205.9	205.9	205.7
Rx E/S Antenna Diameter	(m)	0.75	0.75	0.75
Antenna Mis-pointing Error	(dB)	0.30	0.30	0.30
Rx E/S Antenna Gain	(dB)	38.4	38.4	38.4
Rx E/S G/T	(dB/K)	17.6	13.4	13.6
System (LNA+Sky) Noise Temp.	(K)	120	315	301
<b>Total Link:</b>				
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)	14.9	5.4	5.0
(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)	13.8	5.2	4.9
(C/N) - Total Required	(dB)	4.8	4.8	4.8
Excess Margin	(dB)	9.0	0.4	0.1
Availability	(%)	N/A	99.94	99.87