

ECHOSTAR-6 Link Budgets

Medium Power Mode			
Link Parameters	1	2	3
	13 meter Feeder Link E/S	13 meter Feeder Link E/S	13 meter Feeder Link E/S
	Nominal Feeder Link Site	Nominal Feeder Link Site	Nominal Feeder Link Site
	to	to	to
	45 cm Receive-Only	45 cm Receive-Only	45 cm Receive-Only
Modulation Parameters:			
Information Bit Rate per Carrier (kbps)	41,200	41,200	41,200
FEC Rate	2/3	2/3	2/3
Overall Coding Overhead (%)	56.5%	56.5%	56.5%
Modulation Type (BPSK/QPSK/8PSK/16QAM)	8PSK	8PSK	8PSK
Filter Roll-off Factor ("alpha") (%)	20	20	20
Link Geometry:			
Satellite Longitude (°East)	-77.0	-77.0	-77.0
Tx E/S City Location (name)	Cheyenne	Cheyenne	Cheyenne
Tx E/S Longitude (°East)	-104.7	-104.7	-104.7
Tx E/S Latitude (°North)	41.1	41.1	41.1
Tx E/S Range to Satellite (Km)	38,209	38,209	38,209
Tx E/S Elevation to Satellite (°)	34.7	34.7	34.7
Tx E/S Altitude (m)	1876.0	1876.0	1876.0
Rx E/S City Location (name)	Miami	New York	Los Angeles
Rx E/S Longitude (°East)	-80.3	-74.0	-118.2
Rx E/S Latitude (°North)	25.9	40.8	34.0
Rx E/S Range to Satellite (km)	36,542	37,571	38,507
Rx E/S Elevation to Satellite (°)	59.5	42.8	31.2
Rx E/S Altitude (m)	1.0	15.0	33.0
Link (per carrier):			
Carrier Frequency (MHz)	17,550	17,550	17,550
HPA Power Level (to give required PFD at satellite) (W)	26.8	26.8	26.8
HPA Power in dBW (dBW)	14.3	14.3	14.3
Post-HPA Losses (dB)	2.0	2.0	2.0
Tx E/S Power to Antenna in dBW (dBW)	12.3	12.3	12.3
Tx E/S Antenna Diameter (m)	13.0	13.0	13.0
Antenna Efficiency (%)	65	65	65
Tx E/S Antenna Gain (dB)	65.7	65.7	65.7
Tx E/S EIRP (dBW)	78.0	78.0	78.0
E/S Pointing Loss (dB)	0.1	0.1	0.1
Atmospheric Loss (dB)	0.34	0.34	0.34
Availability up (%)	99.9	99.9	99.9
Rain attenuation (dB)	2.7	2.7	2.7
Free Space Loss (dB)	209.0	209.0	209.0
Satellite:			