

Table A.12-1 – Representative Link Budgets

Representative Link Budgets				
Link Parameters		Clear Sky (New York)	Faded D/L (New York)	Faded D/L (Miami)
Link Geometry:				
Tx E/S Range to Satellite (Cheyenne)	(km)	37,754	37,754	37,754
Rx E/S Range to Satellite	(km)	39,094	39,094	37,882
Uplink (per carrier):				
Carrier Frequency	(MHz)	14,250	14,250	14,250
Tx E/S Antenna Diameter	(m)	13.2	13.2	13.2
Tx E/S Power to Antenna	(dBW)	21.0	21.0	21.0
Tx E/S Antenna Gain	(dB)	63.2	63.2	63.2
Tx E/S EIRP per Carrier	(dBW)	84.2	84.2	84.2
Atmospheric and Other Losses	(dB)	0.2	0.2	0.2
Free Space Loss	(dB)	207.1	207.1	207.1
Satellite:				
Total PFD at Satellite	(dBW/m ²)	-78.5	-78.5	-78.5
Gain Attenuation	(dB)	0.0	0.0	0.0
G/T towards Tx E/S	(dB/K)	-3.5	-3.5	-3.5
Sat'd EIRP	(dBW)	53.0	53.0	53.0
EIRP towards Rx E/S	(dBW)	51.1	51.1	51.7
Downlink (per carrier):				
Carrier Frequency	(MHz)	11,950	11,950	11,950
Atmospheric and Rain Losses	(dB)	0.1	3.5	4.3
Free Space Loss	(dB)	205.8	205.8	205.6
Rx E/S Antenna Diameter	(m)	0.66	0.66	0.66
Antenna Mis-pointing Error	(dB)	0.30	0.30	0.30
Rx E/S Antenna Gain	(dB)	36.3	36.3	36.3
Rx E/S G/T	(dB/K)	15.1	11.8	11.5
System (LNA+Sky) Noise Temp.	(K)	133	282	301
Total Link:				
Noise Bandwidth	(dB-Hz)	73.2	73.2	73.2
(C/N) - Thermal Uplink	(dB)	28.9	28.9	28.9
(C/N) - Thermal Downlink	(dB)	15.3	8.7	8.5
(C/I) up - Adjacent Satellite Interference	(dB)	37.1	37.1	37.1
(C/I) dn - Adjacent Satellite Interference	(dB)	9.9	9.9	10.5
(C/I) dn - XPOL Adjacent Satellite Interference	(dB)	21.8	21.8	22.4
(C/N) - Total Actual	(dB)	8.6	6.1	6.2
(C/N) - Total Required	(dB)	6.1	6.1	6.1
Excess Margin	(dB)	2.5	0.0	0.1
Availability	(%)	N/A	99.92	99.86