

**Table A.13-1. Representative Spot Return Link Budget (2M70G7W)**

Link Parameters		Clear Sky	Clear Sky
		High Downlink EIRP High Rain Rate Zone	Low Downlink EIRP Low Rain Rate Zone
<b>Carrier</b>			
Data Rate	(Mbps)	3.110	3.110
Modulation		QPSK	QPSK
FEC		0.691	0.691
Bandwidth	(dB-Hz)	64.3	64.3
<b>Uplink</b>			
Uplink Frequency	(MHz)	29,872	29,872
Tx E/S Antenna Diameter	(m)	0.65	0.65
Tx E/S Power to Antenna	(dBW)	4.0	4.0
Input Power Density	(dBW/Hz)	-60.3	-60.3
Tx E/S Antenna Gain	(dB)	44.3	44.3
Tx E/S EIRP per Carrier	(dBW)	48.3	48.3
Mispointing Error	(dB)	0.3	0.3
Atmospheric Losses	(dB)	0.5	0.5
Free Space Loss	(dB)	213.7	213.7
Satellite Antenna Gain (- 3dB)	(dBi)	52.2	52.2
Satellite Antenna G/T (-3 dB)	(dB/K)	23.5	23.5
(C/I) Up - Intra-system	(dB)	23.0	23.0
<b>Downlink</b>			
Downlink Frequency	(MHz)	18,472	18,472
Downlink EIRP (-3 dB)	(dBW)	35.8	29.8
Beam Peak EIRP Density	(dBW/Hz)	-25.5	-31.5
Atmospheric Losses	(dB)	0.3	0.3
Free Space Loss	(dB)	209.5	209.5
Rx E/S Antenna Diameter	(m)	8.10	8.10
Antenna Mispointing Error	(dB)	0.50	0.50
Rx E/S Antenna Gain	(dB)	61.4	61.4
Rx E/S G/T	(dB/K)	37.7	37.7
System Noise Temp.	(K)	232	232
(C/I) Dn - Intra-system	(dB)	20.0	20.0
<b>End-to-End</b>			
(C/N) - Thermal Uplink	(dB)	21.6	21.6
(C/N) - Thermal Downlink	(dB)	27.5	21.5
(C/I) Up - ASI	(dB)	17.3	17.3
(C/I) Dn - ASI	(dB)	31.6	25.6
(C/N+I) - Total Actual	(dB)	13.7	13.0
(C/N+I) - Total Required	(dB)	5.1	5.1
System Margin	(dB)	8.6	7.9