

## Representative Return Link Budget

UT Type	Personal Accessory	
Carrier Type	GMR	
<b><u>General Parameters</u></b>		
Gateway elevation angle	deg	42.0
Minimum user elevation angle	deg	20.0
Uplink frequency	GHz	2.020
Downlink frequency	GHz	19.700
Bandwidth/carrier	kHz	468.75
<b><u>Uplink</u></b>		
Uplink EIRP	dBW	11.0
Free space loss	dB	190.5
Atmospheric loss	dB	0.1
Uplink propagation margin	dB	1.3
Satellite receive antenna gain (-3 dB contour)	dBi	42.3
Satellite receive system noise temperature	dB-K	27.3
Satellite receive antenna G/T	dB/K	15.0
Uplink C/N <sub>0</sub>	dBHz	62.7
Uplink C/I <sub>0</sub> Intra-system	dBHz	66.3
Uplink C/I <sub>0</sub> External Interference	dBHz	72.7
<b><u>Downlink</u></b>		
Satellite EIRP (peak)	dBW	41.9
Free space loss	dB	209.8
Atmospheric loss	dB	0.4
Rain attenuation	dB	10.0
E/S antenna gain	dB	66.5
E/S antenna pointing error	dB	0.3
Nominal system noise temperature	dB-K	23.9
Nominal E/S G/T	dB/K	42.3
System noise temperature degradation in rain	dB	3.1
Rain-degraded system noise temperature	dB-K	27.0
Rain-degraded E/S G/T	dB/K	39.2
Downlink C/No	dBHz	89.2
Downlink C/IM <sub>0</sub>	dBHz	64.1
Downlink C/I <sub>0</sub> Intra-system	dBHz	78.6
Downlink C/I <sub>0</sub> ASI	dBHz	99.1
<b><u>End-to-End Performance</u></b>		
End-to-end C/N <sub>0</sub>	dBHz	62.7
End-to-end aggregate C/I <sub>0</sub>	dBHz	65.2
End-to-end C/IM <sub>0</sub>	dBHz	64.1
Total aggregate C/(N <sub>0</sub> +I <sub>0</sub> +IM <sub>0</sub> )	dBHz	59.1
Total aggregate C/(N+I+IM)	dB	2.4
Required C/N	dB	2.4
System Margin	dB	0.0