

**Table A.13-1 – Link Budget for Voice-Rate Forward Link to  
Handheld User Terminal using TDMA**

<b>Representative Forward Link Budget</b>		
UT Type		Handheld Terminal
Carrier Type		TDMA
<b><u>General Parameters</u></b>	<b>Unit</b>	
E/S elevation angle	deg	28.0
Minimum user elevation angle	deg	20.0
Uplink range	km	38792
Downlink range	km	39554
Uplink frequency	GHz	29.625
Downlink frequency	GHz	2.200
Bandwidth/carrier	kHz	200.0
<b><u>Uplink</u></b>		
Uplink E/S antenna diameter	m	11.0
Uplink E/S antenna peak gain	dBi	68.1
E/S antenna pointing error	dB	0.5
Clear-sky uplink EIRP	dBW	54.0
Rain faded uplink EIRP	dBW	70.8
Free space loss	dB	213.7
Rain attenuation	dB	16.8
Satellite antenna pointing error	dB	0.3
Satellite antenna receive system noise temp.	dB-K	30.9
Effective satellite antenna G/T	dB/K	24.8
Uplink C/N <sub>0</sub>	dBHz	93.2
Uplink C/IM <sub>0</sub>	dBHz	101.2
Uplink C/I <sub>0ASI</sub>	dBHz	92.1
Uplink C/I <sub>0 Intra-system</sub>	dBHz	75.1
Aggregate uplink C/I <sub>0</sub>	dBHz	75.0
<b><u>Downlink</u></b>		
Satellite EIRP/carrier	dBW	57.3
Free space loss	dB	191.2
Atmospheric loss	dB	0.1
User terminal antenna gain	dB	0.0
User terminal system noise temperature	dB-K	27.0
User terminal G/T	dB/K	-27.0
Downlink propagation margin	dB	10.0
Downlink C/N <sub>0</sub>	dBHz	57.5
Downlink C/IM <sub>0</sub>	dBHz	79.0
Downlink C/I <sub>0 Intra-system</sub>	dBHz	65.7
Downlink C/I <sub>0 ext</sub>	dBHz	67.5
Aggregate downlink C/I <sub>0</sub>	dBHz	63.5
<b><u>End-to-End Performance</u></b>		
End-to-end C/N <sub>0</sub>	dBHz	57.5
End-to-end aggregate C/I <sub>0</sub>	dBHz	63.2
End-to-end C/IM <sub>0</sub>	dBHz	78.9
Total aggregate C/(N <sub>0</sub> +I <sub>0</sub> +IM <sub>0</sub> )	dBHz	56.5
Total aggregate C/(N+I+IM)	dB	3.4
Required C/N	dB	3.4
System Margin	dB	0.0