

**Table A.13-8 – Link Budget for Voice-Rate Return Link from  
Handheld User Terminal using CDMA**

<b>Representative Return Link Budget</b>		
UT Type		Handheld Terminal
Carrier Type		CDMA
<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	39554
Downlink range	km	38792
Uplink frequency	GHz	2.020
Downlink frequency	GHz	19.700
Bandwidth/carrier	kHz	1,250.0
<b><u>Uplink</u></b>		
Uplink EIRP	dBW	-1.0
Free space loss	dB	190.5
Atmospheric loss	dB	0.1
Uplink propagation margin	dB	7.5
Effective satellite antenna gain	dB <sub>i</sub>	43.0
Satellite receive system noise temperature	dB-K	26.0
Effective satellite antenna G/T	dB/K	17.0
Uplink C/N <sub>0</sub>	dBHz	46.5
Uplink C/I <sub>0</sub> Intra-system	dBHz	44.4
Uplink C/I <sub>0</sub> ext	dBHz	56.5
Aggregate uplink C/I <sub>0</sub>	dBHz	44.1
<b><u>Downlink</u></b>		
Satellite EIRP	dBW	11.9
Free space loss	dB	210.1
Atmospheric attenuation	dB	0.5
Rain attenuation	dB	8.1
E/S antenna gain	dB	64.5
E/S antenna pointing error	dB	0.3
Nominal system noise temperature	dB-K	23.9
Nominal E/S G/T	dB/K	40.3
System noise temperature degradation in rain	dB	2.6
Rain-degraded system noise temperature	dB-K	26.5
Rain-degraded E/S G/T	dB/K	37.7
Downlink C/No	dBHz	59.5
Downlink C/IM <sub>0</sub>	dBHz	62.8
Downlink C/I <sub>0</sub> Intra-system	dBHz	69.3
Downlink C/I <sub>0</sub> ASI	dBHz	67.1
Aggregate downlink C/I <sub>0</sub>	dBHz	65.1
<b><u>End-to-End Performance</u></b>		
End-to-end C/N <sub>0</sub>	dBHz	46.3
End-to-end aggregate C/I <sub>0</sub>	dBHz	44.1
End-to-end C/IM <sub>0</sub>	dBHz	62.8
Total aggregate C/(N <sub>0</sub> +I <sub>0</sub> +IM <sub>0</sub> )	dBHz	42.0
Total aggregate C/(N+I+IM)	dB	-18.9
Required C/N	dB	-18.9
System Margin	dB	0.0