

INM-KA TEST FORWARD LINK BUDGET (SIGNALLING)

General		Unit
User terminal type	-	Test fwd signalling carrier GW-GW (EC)
Carrier designator	-	5M00G1W (TEST-F3)
Data rate (kbps)	(kbps)	48
Coding rate	-	1/2
Modulation	-	BPSK
Occupied bandwidth	(kHz)	140
Allocated bandwidth	(kHz)	5000
Uplink		
Beam		Feeder
Frequency	(GHz)	28.007
Earth Station EIRP	(dBW)	67.7
Antenna tx gain	dBi	68.7
Uplink power	(dBW)	-1.0
<i>Uplink p.s.d.</i>	<i>(dBW/Hz)</i>	<i>-52.5</i>
Path loss	(dB)	213.1
Rain loss	(dB)	4.0
Mean Atmospheric loss	(dB)	1.2
Satellite G/T (EOC)	(dB/K)	8.1
Up-path C/No	(dBHz)	86.1
Up-path C/N	(dB)	34.6
Downlink		
Beam		EC
Frequency	(GHz)	19.707
<i>Max pfd per crx @ earth surface (beam peak)</i>	<i>(dBW/m2/1MHz)</i>	<i>-129.1</i>
Beam Peak to Edge of Coverage	(dB)	3.0
<i>Max pfd per crx @ earth surface (EOC)</i>	<i>(dBW/m2/1MHz)</i>	<i>-132.1</i>
Satellite EIRP (EOC)	(dBW)	30.0
Path loss	(dB)	210.0
Rain loss	(dB)	5.6
Mean Atmospheric loss	(dB)	0.7
E/S G/T	(dB/K)	42.0
G/T degradation due to rain	(dB)	2.2
User terminal Pointing loss	(dB)	0.2
Co-Channel / adj . beam interf. (dn)	(dBHz)	150.5
Down-path C/No	(dBHz)	81.8
Down-path C/N	(dB)	30.4
Total		
Mean satellite C/Imo	(dBHz)	999.0
Mean Overall C/No	(dBHz)	80.5
Total C/I (adjacent satellite interference)	(dB)	41.9
Mean Overall C/N (incl. a.s.i)	(dB)	28.8
Margin		
C/N required	(dB)	-2.0
C/N margin	(dB)	30.8

C/I calculations

Orbital separation (interferor 1)	degree	2.0
Worst case topocentric angle (1)	degree	2.09

Uplink C/I

Interferor 1		
Max. uplink p.s.d	(dBW/Hz)	-56.0
Other's sidelobe at 2 deg. sep X-25log(t)		29.0
Tx Sidelobe gain at 2 deg sep	dBi	21.0
Inm-Ka C/I up1	dB	51.2

Downlink C/I

Interferor 1		
Max. ground PFD	(dBW/m2/MHz)	-120.5
Max. downlink EIRP s.d	(dBW/Hz)	-18.4
Inm Rx sidelobe gain at 2 deg sep	dBi	21.0
Inm-Ka C/I dn1	dB	42.5
Total C/I (adjacent satellite interference)	dB	41.9