

INM-KA FORWARD LINK BUDGET (SIGNALLING)

General	Unit	
User terminal type	-	Typ-100cm-1
Carrier designator	-	5M00G1W
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
User terminal G/T	(dB/K)	18.4
G/T degradation due to rain	(dB)	1.7
User terminal Pointing loss	(dB)	0.2
Co-Channel / adj . beam interf. (dn)	(dBHz)	150.5
Down-path C/No	(dBHz)	58.8
Down-path C/N	(dB)	7.3
Total		
Mean satellite C/Imo	(dBHz)	999.0
Mean Overall C/No	(dBHz)	58.8
Total C/I (adjacent satellite interference)	(dB)	20.4
Mean Overall C/N (incl. a.s.i)	(dB)	7.1
Margin		
C/N required	(dB)	-2.0
C/N margin	(dB)	9.1

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 $X-25\log(t)$		29.0
Tx Sidelobe gain at 2 deg sep	dBi	21.0
<i>Inm-Ka C/I up1</i>	<i>dB</i>	<i>51.2</i>

Downlink C/I

Interferor 1

Max. ground PFD	(dBW/m ² /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	20.4
Total C/I (adjacent satellite interference)	dB	20.4