

INM-KA TEST FORWARD LINK BUDGET (COMMS. HCP)

General		Unit
User terminal type	-	Test fwd carrier GW-GW (HCP)
Carrier designator	-	50M0G7W (TEST-F2)
Data rate (kbps)	(kbps)	165900
Coding rate	-	8/9
Modulation	-	16-APSK
Occupied bandwidth	(kHz)	50000
Allocated bandwidth	(kHz)	50000
Uplink		
Beam		Feeder
Frequency	(GHz)	27.75
Earth Station EIRP	(dBW)	77.0
Antenna tx gain	dBi	68.7
Uplink power	(dBW)	8.3
<i>Uplink p.s.d.</i>	<i>(dBW/Hz)</i>	-68.7
Path loss	(dB)	213.0
Rain loss	(dB)	7.0
Mean Atmospheric loss	(dB)	1.2
Satellite G/T (EOC)	(dB/K)	8.1
Up-path C/No	(dBHz)	92.5
Up-path C/N	(dB)	15.5
Downlink		3
Beam		User-Spot (HCP)
Frequency	(GHz)	19.45
<i>Max pfd per crx @ earth surface (beam peak)</i>	<i>(dBW/m2/1MHz)</i>	-122.1
Beam Peak to Edge of Coverage	(dB)	3.0
<i>Max pfd per crx @ earth surface (EOC)</i>	<i>(dBW/m2/1MHz)</i>	-125.1
Satellite EIRP (EOC)	(dBW)	54.0
Path loss	(dB)	209.9
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)	2.3
User terminal Pointing loss	(dB)	0.2
Co-Channel / adj . beam interf. (dn)	(dBHz)	100.0
Down-path C/No	(dBHz)	99.0
Down-path C/N	(dB)	22.0
Total		
Mean satellite C/Imo	(dBHz)	999.0
Mean Overall C/No	(dBHz)	91.6
Total C/I (adjacent satellite interference)	(dB)	34.5
Mean Overall C/N (incl. a.s.i)	(dB)	14.6
Margin		

C/N required	(dB)	13.8
C/N margin	(dB)	0.8

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)	-56.5
Other's sidelobe at 2 deg. sep X-25log(t)		29.0
Tx Sidelobe gain at 2 deg sep	dBi	21.0
<i>Inm-Ka C/I up1</i>	<i>dB</i>	35.5

Downlink C/I

Interferor 1		
Max. ground PFD	(dBW/m2/MHz)	-121.1
Max. downlink EIRP s.d	(dBW/Hz)	-19.0
Inm rx sidelobe at 2 deg. sep		29.0
Inm Rx sidelobe gain at 2 deg sep	dBi	21.0
Inm-Ka C/I dn1	dB	41.4
Total C/I (adjacent satellite interference)	dB	34.5