

INM-KA TEST RETURN LINK BUDGET (COMMS. GP)

General		Unit
User terminal type	-	Test return carrier GW-GW (GP)
Carrier designator	-	2M45G7W (TEST-R2)
Data rate (kbps)	(kbps)	1674
Coding rate	-	1/2
Modulation	-	QPSK
Occupied bandwidth	(kHz)	2041.7
Allocated bandwidth	(kHz)	2450.1
Uplink		
Beam		User-Spot
Frequency	(GHz)	29.75
EIRP	(dBW)	52.5
Antenna tx gain	dBi	69.3
Uplink power	(dBW)	-16.8
<i>Uplink p.s.d.</i>	<i>(dBW/Hz)</i>	-79.9
Path loss	(dB)	213.6
Rain loss	(dB)	7.0
Mean Atmospheric loss	(dB)	1.7
Satellite G/T (EOC)	(dB/K)	9.6
Up-path C/No	(dBHz)	68.2
Up-path C/N	(dB)	5.1
Downlink		
Beam		Feeder
Frequency	(GHz)	18.95
<i>Max pfd per crx @ earth surface (beam peak)</i>	<i>(dBW/m2/1MHz)</i>	-139.6
Beam Peak to Edge of Coverage	(dB)	3.0
<i>Max pfd per crx @ earth surface (EOC)</i>	<i>(dBW/m2/1MHz)</i>	-142.6
Satellite EIRP (EOC)	(dBW)	22.6
Path loss	(dB)	209.7
Rain loss	(dB)	5.6
Mean Atmospheric loss	(dB)	0.7
Earth Station G/T	(dB/K)	42.0
G/T degradation due to rain	(dB)	2.4
Rx terminal Pointing loss	(dB)	0
Co-Channel / adj . beam interf. (dn)	(dBHz)	163.1
Down-path C/No	(dBHz)	74.8
Down-path C/N	(dB)	11.7
Total		
Mean satellite C/Imo	(dBHz)	79.5
Mean Overall C/No	(dBHz)	67.1
Total C/I (adjacent satellite interference)	(dB)	19.7
Mean Overall C/N (incl. a.s.i)	(dB)	3.9
Margin		
C/N required	(dB)	2.0
C/N margin	(dB)	1.9

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
Inm-Ka C/I up1	<i>dB</i>	21.9

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	23.7
Total C/I (adjacent satellite interference)	dB	19.7