

INM-KA RETURN LINK BUDGET (COMMS. HCP)

General		Unit
User terminal type	-	Test return carrier GW-GW (HCP)
Carrier designator	-	4M78G7W (TEST-R6)
Data rate (kbps)	(kbps)	6366
Coding rate	-	2/3
Modulation	-	8PSK
Occupied bandwidth	(kHz)	3981.1
Allocated bandwidth	(kHz)	4777.3
Uplink		
Beam		User-Spot (HCP)
Frequency	(GHz)	29.25
EIRP	(dBW)	59.5
Antenna tx gain	dBi	69.1
Uplink power	(dBW)	-9.6
<i>Uplink p.s.d.</i>	<i>(dBW/Hz)</i>	<i>-75.6</i>
Path loss	(dB)	213.5
Rain loss	(dB)	7.0
Mean Atmospheric loss	(dB)	1.7
Satellite G/T (EOC)	(dB/K)	11.0
Up-path C/No	(dBHz)	76.7
Up-path C/N	(dB)	10.7
Downlink		
Beam		Feeder
Frequency	(GHz)	18
<i>Max pfd per crx @ earth surface (beam peak)</i>	<i>(dBW/m2/1MHz)</i>	<i>-135.9</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>-138.9</i>
Satellite EIRP (EOC)	(dBW)	29.1
Path loss	(dB)	209.3
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)	2.6
Rx terminal Pointing loss	(dB)	0.1
Co-Channel / adj . beam interf. (dn)	(dBHz)	89.0
Down-path C/No	(dBHz)	80.8
Down-path C/N	(dB)	14.8
Total		
Mean satellite C/Imo	(dBHz)	86.1
Mean Overall C/No	(dBHz)	74.9
Total C/I (adjacent satellite interference)	(dB)	23.1
Mean Overall C/N (incl. a.s.i)	(dB)	8.7
Margin		
C/N required	(dB)	8.2

C/N margin	(dB)	0.5
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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
<i>Inm-Ka C/I up1</i>	<i>dB</i>	25.5

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 gain at 2 deg sep	dBi	21.0
Inm-Ka C/I dn1	dB	26.9
Total C/I (adjacent satellite interference)	dB	23.1