

## INM-KA RETURN LINK BUDGET (SIGNALLING )

FADED

A.XX-1

Table no.

General	Unit	
User terminal type	-	Typ-60cm
Carrier designator	-	5M00G7W
Data rate (kbps)	(kbps)	9.6
Coding rate	-	1/2
Modulation	-	BPSK
Occupied bandwidth	(kHz)	5000
Allocated bandwidth	(kHz)	5000
<b>Uplink</b>		
Beam		EC
Frequency	(GHz)	29.507
User Terminal EIRP	(dBW)	49.2
Antenna tx gain	dBi	43.5
Uplink power	(dBW)	5.7
<i>Uplink p.s.d.</i>	<i>(dBW/Hz)</i>	<i>-61.3</i>
Path loss	(dB)	213.5
Rain loss	(dB)	4.0
Mean Atmospheric loss	(dB)	0.4
Satellite G/T (EOC)	(dB/K)	-11.0
Up-path C/No	(dBHz)	48.9
Up-path C/N	(dB)	-18.1
<b>Downlink</b>		
Beam		Feeder
Frequency	(GHz)	18.207
<i>Max pfd per crx @ earth surface (beam peak)</i>	<i>(dBW/m2/1MHz)</i>	<i>-142.2</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>-145.2</i>
Satellite EIRP (EOC)	(dBW)	23.9
Path loss	(dB)	209.4
Rain loss	(dB)	5.6
Mean Atmospheric loss	(dB)	0.4
Earth Station G/T	(dB/K)	42.0
G/T degradation due to rain	(dB)	2.5
Rx terminal Pointing loss	(dB)	0.1
Co-Channel / adj . beam interf. (dn)	(dBHz)	90.0
Down-path C/No	(dBHz)	76.3
Down-path C/N	(dB)	9.3
<b>Total</b>		
Mean satellite C/Imo	(dBHz)	80.8
Mean Overall C/No	(dBHz)	48.8
Total C/I (adjacent satellite interference)	(dB)	13.0
Mean Overall C/N (incl. a.s.i)	(dB)	-18.2
<b>Margin</b>		

C/N required	(dB)	-22.0
C/N margin	(dB)	3.8

### **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	13.2

#### **Downlink C/I**

Interferor 1		
Max. ground PFD	(dBW/m2/MHz)	-126.9
Max. downlink EIRP s.d	(dBW/Hz)	-24.8
Inm Rx sidelobe gain at 2 deg sep	dBi	21.0
Inm-Ka C/I dn1	dB	26.5
<b>Total C/I (adjacent satellite interference)</b>	<b>dB</b>	<b>13.0</b>