

## INM-KA RETURN LINK BUDGET (SIGNALLING )

**FADED  
A.XX-2**

**Table no.**

<b>General</b>	Unit	
User terminal type	-	Typ-100cm-1
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)	52.5
Antenna tx gain	dBi	47.9
Uplink power	(dBW)	4.6
<i>Uplink p.s.d.</i>	<i>(dBW/Hz)</i>	-62.4
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)	52.2
Up-path C/N	(dB)	-14.8
<b>Downlink</b>		
Beam		Feeder
Frequency	(GHz)	18.207
<i>Max pfd per crx @ earth surface (beam peak)</i>	<i>(dBW/m2/1MHz)</i>	-138.9
Beam Peak to Edge of Coverage	(dB)	3.0
<i>Max pfd per crx @ earth surface (EOC)</i>	<i>(dBW/m2/1MHz)</i>	-141.9
Satellite EIRP (EOC)	(dBW)	27.2
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)	79.4
Down-path C/N	(dB)	12.4
<b>Total</b>		
Mean satellite C/Imo	(dBHz)	84.1
Mean Overall C/No	(dBHz)	52.1
Total C/I (adjacent satellite interference)	(dB)	16.3
Mean Overall C/N (incl. a.s.i)	(dB)	-14.9
<b>Margin</b>		

C/N required	(dB)	-22.0
C/N margin	(dB)	7.1

### **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
Inm-Ka C/I up1	dB	16.5

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

Interferor 1		
Max. ground PFD	(dBW/m <sup>2</sup> /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	29.8
<b>Total C/I (adjacent satellite interference)</b>	<b>dB</b>	<b>16.3</b>