

**HISPASAT-LINK BUDGET
DIGITAL SERVICES**

**REF. LINK
TRANSPONDER N°
SATELLITE**

HISPASAT-1C
Clear Sky Rain up Rain down

GENERAL DATA

Transponder bandwidth(MHz)	36
carrier type	DIGITAL
Modulation	QPSK
Information rate (Kb/s)	512
FEC	1/2
bandwidth occupied (KHz)	691.20
BER	1.00E-08
Eb/No (dB)	6.5
LINEALIZADOR (0=NO, 1=S)	1
N° of carriers	44.00
IBO total (dB)	6.00
OBO total (dB)	3.200
C/I intermodulation	30.000
Occupation factor	1.32
availability (%)	99.50
satellite longitude	-30

UPLINK

E/T Tx Name	new York
E/T Tx (degrees E) Longitude	-74.00
E/T Tx (degrees N) latitude	40.75
E/T Tx (m) Altitude	100.00
Uplink Frequency (GHz)	14.00
EIRP E/T Tx.(dBW)	57.00

E/T Tx example

HPA (W)	0.50	
HPA-antena (dB) loss	0.20	ES off axis psd (dBW/Hz)
Ant. gain (dB)	60.21	-61.6
Ant. Diameter (m)	8.7	

Polarization discrim (dB)	35.00	
Accuracy polarization(°)	0.10	
% unavailability		0.11000
Rain atten.		4.29
Atmosp. Atten. loss (dB)	0.20	
aiming error loss (dB)	0.30	
sky loss (dB)	207.21	
D.F.P. (dBW/m2)	-108.14	-112.42
saturation D.F.P.in the BEAM CENTER (dBW/m2)	-87.70	
Back-off Input (dB)	20.44	24.72
Geogr. advantage (dB)	-1.80	
G/T satellite in the BEAM CENTER (dB/K)	4.30	
C/N up (dB)	22.00	17.71
C/I cochannel up(dB)	21.89	17.60
C/(N+I without other interf. satellites up) (dB)	17.33	13.04
psd Interference from satellite 2°(dBW/Hz)	-50.00	
C/I with other interf. Satelllites 2° up (dB)	27.13	22.84
c/(N+I) with other interf. Satelllites up (dB)	16.90	12.61

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DOWNLINK

E/T Rx Name	BOGOTA		
E/T Rx (degrees E) Longitude	-74.10		
E/T Rx (degrees N) Latitude	4.60		
E/T Rx (m) Altitude	95.00		
Down Frequency (GHz)	12.00		SAT deirp (dBW/Hz)
EIRP satellite in the beam center (dBW)	48.00		-30.0
Back-off output (dB)	17.64	21.92	
Geogr. advantage (dB)	-2.00		
% unavailability			0.39000
Rain Atten.			3.20
Atmosp. Atten. loss (dB)	0.20		
aiming error loss (dB)	0.30		
sky loss (dB)	205.60		
G/T E/T Rx. (dB/K)	19.20		16.79

E/T Rx Example

Ant. Gain(dB)	42.28
antenna-receptor loss(dB)	0.20
Tina (°K)	140.00
Ta (°K)	43.00
Tsyst. (°K)	194.12
Ant. Diameter (m)	1.24

Polarization discrim.(dB)	30.00		
C/N down (dB)	11.67	7.38	6.06
C/I cochannel down(dB)	21.64	21.64	21.64
C/I channel adjacent (dB)	24.70	24.70	24.70
C/(N+I without other interf. satellites down) (dB)	11.04	7.12	5.88
deirp Interference from satellite 2°(dBW/Hz)	-30.00		
C/I with other interf. Satelllites 2° down (dB)	18.78	18.78	15.58
c/(N+I) with other interf. Satelllites up (dB)	10.36	6.83	5.43

GLOBAL RESULTS

C/(N+I without other interf. satellites TOTAL) (dB)	10.12	6.13	5.58
C/(N+I with other interf. satellites) Total (dB)	9.49	5.81	5.14
Excess margin (dB)	0.00	0.00	0.00
Eb/No available (interf nominal)(dB)	10.79	7.12	6.44
Eb/No request (dB)	6.50	6.50	6.50
Margin (nominal)(dB)	4.29	0.62	-0.06