

HISPASAT-LINK BUDGET
DIGITAL SERVICES

REF. LINK
TRANSPONDER N°
SATELLITE

AMAZONAS-1
Clear Sky

Rain
up

Rain
down

GENERAL DATA

Transponder bandwidth(MHz)	36		
carrier type	outbound		
Modulation	QPSK		
Information rate (Kb/s)	11	OVERHEAD	1
FEC	1/2	Reed Solomon	1
bandwidth occupied (KHz)	13.20		
BER	1.00E-07		
Eb/No (dB)	6.1	N° portadoras	
N° of carriers	2337.00	2337.66	3333.71
IBO total (dB)	3.00		
OBO total (dB)	2.321		
C/I intermodulation	18.063		
Occupation factor	1.32		
availability (%)	99.50		
satellite longitude	-36		

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)	39.80

E/T Tx example

HPA (W)	0.12	
HPA-antena (dB) loss	0.20	ES off axis psd (dBW/Hz)
Ant. gain (dB)	49.21	-50.61
Ant. Diameter (m)	2.44	

Polarization discrim (dB)	30.00	
Accuracy polarization(°)	0.10	
% unavailability		0.08000
Rain atten.		4.03
Atmosp. Atten. loss (dB)	0.20	
aiming error loss (dB)	0.30	
sky loss (dB)	206.90	
D.F.P. (dBW/m2)	-126.23	-130.26
saturation D.F.P.in the BEAM CENTER (dBW/m2)	-88.00	
Back-off Input (dB)	38.23	42.26
Geogr. advantage (dB)	-3.00	
G/T satellite in the BEAM CENTER (dB/K)	4.70	
C/N up (dB)	21.49	17.46
C/I cochannel up(dB)	22.34	18.31
C/(N+I) without other interf. satellites up) (dB)	16.89	12.86
psd Interference from satellite 2°(dBW/Hz)	-50.00	
C/I with other interf. Satellites 2° up (dB)	27.12	23.09
c/(N+I) with other interf. Satellites up (dB)	16.49	12.46
Xpolar Interference excess (dB)	3.0	

Clear sky

Rain
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rain
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DOWNLINK

E/T Rx Name	MIAMI		
E/T Rx (degrees E) Longitude	-80.18		
E/T Rx (degrees N) Latitude	25.77		
E/T Rx (Km) Altitude	100.00		
Down Frequency (GHz)	12.00		SAT deirp (dBW/Hz)
EIRP satellite in the beam center (dBW)	48.00		-30.76
Back-off output (dB)	37.55	41.58	
Geogr. advantage (dB)	-5.00		
% unavailability			0.42000
Rain Atten.			1.98
Atmosp. Atten. loss (dB)	0.20		
aiming error loss (dB)	0.30		
sky loss (dB)	205.37		
G/T E/T Rx. (dB/K)	26.30		22.47
E/T Rx Example			
Ant. Gain(dB)	45.08		
antenna-receptor loss(dB)	0.20		
Tina (°K)	40.00		
Ta (°K)	20.00		
Tsyst. (°K)	72.15		
Ant. Diameter (m)	1.71		

Polarization discrim.(dB)	25.00		
C/N down (dB)	13.27	9.24	7.46
C/I cochannel down(dB)	19.53	19.53	19.53
C/I channel adjacent (dB)	24.70	24.70	24.70
C/(N+I) without other interf. satellites down) (dB)	11.27	7.79	6.84
deirp Interference from satellite 2°(dBW/Hz)	-30.00		
C/I with other interf. Satellites 2° down (dB)	17.85	17.85	15.87
c/(N+I) with other interf. Satellites up (dB)	10.41	7.38	6.33
Xpolar Interference excess (dB)	2.3		

GLOBAL RESULTS

C/(N+I) without other interf. satellites TOTAL) (dB)	10.22	6.61	6.43
C/(N+I) with other interf. satellites Total (dB)	9.45	6.21	5.93
Excess margin (dB)	0.50	0.50	0.50
Eb/No available (interf nominal)(dB)	9.75	6.50	6.22
Eb/No request (dB)	6.10	6.10	6.10
Margin (nominal)(dB)	3.65	0.40	0.12