

**HISPASAT-LINK BUDGET  
DIGITAL SERVICES**

CARRIER n° 4

**REF. LINK  
TRANSPONDER N°  
SATELLITE**

AMAZONAS-2                      **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	
LINEALIZADOR (0=NO, 1=SÍ)	1	<b>BW</b>	<b>POT</b>
N° of carriers	2337.00	2337.66	17903.09
IBO total (dB)	3.00		
OBO total (dB)	2.321		
C/I intermodulation	18.063		
Occupation factor	1.32		
availability (%)	99.50		
satellite longitude	-61		

**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
<b>EIRP E/T Tx.(dBW)</b>	<b>33.50</b>

**E/T Tx example**

HPA (W)	0.11	
HPA-antena (dB) loss	0.20	ES off axis psd (dBW/Hz)
Ant. gain (dB)	43.36	-51.06
Ant. Diameter (m)	1.20	

Polarization discrim (dB)	30.00	
Accuracy polarization(°)	0.10	
% unavailability		0.22000
Rain atten.		2.27
Atmosp. Atten. loss (dB)	0.20	
aiming error loss (dB)	0.30	
sky loss (dB)	206.90	
D.F.P. (dBW/m2)	-131.53	-133.80
saturation D.F.P.in the BEAM CENTER (dBW/m2)	-86.00	
Back-off Input (dB)	45.53	47.80
Geogr. advantage (dB)	-2.00	
G/T satellite in the BEAM CENTER (dB/K)	6.70	
C/N up (dB)	18.19	15.92
C/I cochannel up(dB)	22.34	20.07
C/(N+I without other interf. satellites up) (dB)	13.31	11.05
psd Interference from satellite 2°(dBW/Hz)	-50.00	
C/I with other interf. Satellites 2° up (dB)	20.82	18.55
c/(N+I) with other interf. Satellites up (dB)	12.60	10.34
Xpolar Interference excess (dB)	3.0	

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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 (m) Altitude	100.00		
Down Frequency (GHz)	12.00		SAT deirp (dBW/Hz)
EIRP satellite in the beam center (dBW)	50.00		-36.06
Back-off output (dB)	44.85	47.12	
Geogr. advantage (dB)	-2.00		
% unavailability			0.28000
Rain Atten.			2.57
Atmosp. Atten. loss (dB)	0.20		
aiming error loss (dB)	0.30		
sky loss (dB)	205.37		
<b>G/T E/T Rx. (dB/K)</b>	<b>33.00</b>		28.66

**E/T Rx Example**

Ant. Gain(dB)	51.62
antenna-receptor loss(dB)	0.10
Tina (°K)	45.00
Ta (°K)	20.00
Tsyst. (°K)	71.15
Ant. Diameter (m)	3.63

Polarization discrim.(dB)	30.00		
C/N down (dB)	17.67	15.40	10.75
C/I cochannel down(dB)	22.52	22.52	22.52
C/I channel adjacent (dB)	24.70	24.70	24.70
C/(N+I without other interf. satellites down) (dB)	10.19	8.09	7.89
deirp Interference from satellite 2°(dBW/Hz)	-30.00		
C/I with other interf. Satellites 2° down (dB)	22.09	22.09	19.52
c/(N+I) with other interf. Satellites up (dB)	9.92	7.92	7.60
Xpolar Interference excess (dB)	2.3		

**GLOBAL RESULTS**

C/(N+I without other interf. satellites TOTAL) (dB)	8.47	6.31	6.79
C/(N+I with other interf. satellites) Total (dB)	8.05	5.95	6.41
Excess margin (dB)	0.50	0.50	0.50
Eb/No available (interf nominal)(dB)	8.34	6.25	6.70
Eb/No request (dB)	6.10	6.10	6.10
Margin (nominal)(dB)	2.24	0.15	0.60