

Sheet1

ARISSat-1 BPSK1000 telemetry link budget

10/09/10

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Tx power, W	0.1 W	-10 dBW
Frequency, Hz	1.45E+08 Hz	2.07 m
Tx ant gain		0 dB
Tx losses		0 dB
EIRP	0.1 W	-10 dBW
Distance, m	3.30E+06 m	146.05 dB
Rx ant gain		0 dB
Rx losses		0 dB
Rx power	2.49E-16 W	-156.05 dBW
Rx temp, K	300 K	-203.83 dBW/Hz $N_0$
$P/N_0$		47.78 dB-Hz
Data rate	500 b/s	26.99 dB-bps
$E_b/N_0$		20.79 dB
Required $E_b/N_0$		6.7 dB
Margin		14.09 dB

c 299792458 m/s speed of light

k 1.38E-23 J/k Boltzmann constant