### ARISSat-1 BPSK1000 telemetry link budget

10/09/10

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<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tx power, W</td>
<td>0.1 W</td>
</tr>
<tr>
<td>Frequency, Hz</td>
<td>1.45E+08 Hz</td>
</tr>
<tr>
<td>Tx ant gain</td>
<td>0 dB</td>
</tr>
<tr>
<td>Tx losses</td>
<td>0 dB</td>
</tr>
<tr>
<td>EIRP</td>
<td>0.1 W -10 dBW</td>
</tr>
<tr>
<td>Distance, m</td>
<td>3.30E+06 m 146.05 dB</td>
</tr>
<tr>
<td>Rx ant gain</td>
<td>0 dB</td>
</tr>
<tr>
<td>Rx losses</td>
<td>0 dB</td>
</tr>
<tr>
<td>Rx power</td>
<td>2.49E-16 W -156.05 dBW</td>
</tr>
<tr>
<td>Rx temp, K</td>
<td>300 K -203.83 dBW/Hz N₀</td>
</tr>
<tr>
<td>Data rate</td>
<td>500 b/s 26.99 dB-bps</td>
</tr>
<tr>
<td>Eb/N₀</td>
<td>47.78 dB-Hz 20.79 dB</td>
</tr>
<tr>
<td>Required Eb/N₀</td>
<td>6.7 dB</td>
</tr>
<tr>
<td>Margin</td>
<td>14.09 dB</td>
</tr>
</tbody>
</table>

- **c**: 299792458 m/s speed of light
- **k**: 1.38E-23 J/k Boltzmann constant