

Command carrier link budget (C-band, uplink)

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| UPLINK FLUX DENSITY | dBW/m ² | -80 |
| ISOTROPIC APERTURE | dB-m ² | -37.6 |
| COUPLER LOSS | dB | -0.3 |
| POLARIZATION LOSS | dB | -0.1 |
| S/C ANTENNA GAIN | dB | 3 |
| SCATTERING INTERF. LOSS | dB | -1 |
| CABLE VSWR LOSS | dB | -5.2 |
| CIRCUIT LOSSES | dB | -7 |
| RECEIVED INPUT POWER | dBW | -128.2 |
| REQUIRED INPUT POWER | dBW | -138 |
| MARGIN | dB | 9.8 |

Budget for C-band Telemetry (Downlink)

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|--------------------------------|-----------|--------|
| S/C EIRP | dBW | 14.3 |
| PATH LOSS | dB | -196.9 |
| RAIN LOSS | dB | -1.1 |
| POLARIZATION LOSS | dB | -0.3 |
| GROUND STATION POINTING LOSS | dB | -0.5 |
| GROUND STATION G/T | dB/K | 31 |
| BOLTZMANN CONSTANT | dB-Hz K/W | 228.6 |
| CARRIER TO NOISE DENSITY | dB-Hz | 75.12 |
| MODULATION LOSS | dB | -4.8 |
| 1/BITRATE(4096 BPS, Telemetry) | dB-bps | -36.1 |
| IMPLEMENTATION LOSS | dB | -3 |
| RECEIVED Eb/No | dB | 31.22 |
| REQUIRED Eb/No | dB | 11.3 |
| Eb/No MARGIN | dB | 13.16 |

Budget for Ku Telemetry (Downlink)

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|--------------------------------|-----------|--------|
| S/C EIRP | dBW | 12.4 |
| PATH LOSS | dB | -205.8 |
| RAIN LOSS | dB | -7.73 |
| ATMOSPHERIC LOSS | dB | -0.4 |
| POLARIZATION LOSS | dB | -0.1 |
| GROUND STATION POINTING LOSS | dB | -0.1 |
| GROUND STATION G/T | dB/K | 38.32 |
| BOLTZMANN CONSTANT | dB-Hz K/W | 228.6 |
| CARRIER TO NOISE DENSITY | dB-Hz | 65.2 |
| MODULATION LOSS | dB | -10.6 |
| 1/BITRATE(4096 BPS, Telemetry) | dB-bps | -36.1 |
| IMPLEMENTATION LOSS | dB | -3 |
| RECEIVED Eb/No | dB | 15.48 |
| REQUIRED Eb/No | dB | 11.3 |
| Eb/No MARGIN | dB | 4.18 |