## Command carrier link budget (C-band, uplink)

UPLINK FLUX DENSITY ISOTROPIC APERTURE COUPLER LOSS POLARIZATION LOSS S/C ANTENNA GAIN SCATTERING INTERF. LOSS CABLE VSWR LOSS CIRCUIT LOSSES RECEIVED INPUT POWER REQUIRED INPUT POWER MARGIN	dBW/m2 dB-m2 dB dB dB dB dB dB dBW dBW	-80 -37.6 -0.3 -0.1 3 -1 -5.2 -7 -128.2 -138 9.8
Budget for C-band Telemetry (Downlink) S/C EIRP PATH LOSS RAIN LOSS POLARIZATION LOSS GROUND STATION POINTING LOSS GROUND STATION G/T BOLTZMANN CONSTANT CARRIER TO NOISE DENSITY MODULATION LOSS 1/BITRATE(4096 BPS, Telemetry) IMPLEMENTATION LOSS RECEIVED Eb/No REQUIRED Eb/No Eb/No MARGIN	dBW dB dB dB dB dB/K dB-Hz K/W dB-Hz dB dB-bps dB dB dB	14.3 -196.9 -1.1 -0.3 -0.5 31 228.6 75.12 -4.8 -36.1 -3 31.22 11.3 13.16
Budget for Ku Telemetry (Downlink) S/C EIRP PATH LOSS RAIN LOSS ATMOSPHERIC LOSS POLARIZATION LOSS GROUND STATION POINTING LOSS GROUND STATION G/T BOLTZMANN CONSTANT CARRIER TO NOISE DENSITY MODULATION LOSS 1/BITRATE(4096 BPS, Telemetry) IMPLEMENTATION LOSS RECEIVED Eb/No REQUIRED Eb/No Eb/No MARGIN	dBW dB dB dB dB dB dB dB Hz dB-Hz dB dB-bps dB dB dB	12.4 -205.8 -7.73 -0.4 -0.1 -0.1 38.32 228.6 65.2 -10.6 -36.1 -3 15.48 11.3 4.18