

## TYPICAL C-BAND LINK BUDGETS

|                                |                       | 24K0G7D | 26K7G7D | 80K0G7D | 106KG7D | 160KG7D | 640KG7D | 4M33G7D | 6M10G7W | 6M10G7W | 6M10G7W | 30M0G7W | 8M00G7D | 8M00G7D | 36M0F9F | 36M0F9F | 33M3G7D |  |
|--------------------------------|-----------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--|
| G rx sat                       | (dBi)                 | 28.8    | 28.8    | 28.8    | 28.8    | 28.8    | 28.8    | 28.8    | 28.8    | 28.8    | 28.8    | 28.8    | 28.8    | 28.8    | 28.8    | 28.8    | 28.8    |  |
| T sat                          | (K)                   | 602.6   | 602.6   | 602.6   | 602.6   | 602.6   | 602.6   | 602.6   | 602.6   | 602.6   | 602.6   | 602.6   | 602.6   | 602.6   | 602.6   | 602.6   | 602.6   |  |
| G tx sat                       | (dBi)                 | 28.7    | 28.7    | 28.7    | 28.7    | 28.7    | 28.7    | 28.7    | 28.7    | 28.7    | 28.7    | 28.7    | 28.7    | 28.7    | 28.7    | 28.7    | 28.7    |  |
| Transp BW                      | (MHz)                 | 36.0    | 36.0    | 36.0    | 36.0    | 36.0    | 36.0    | 36.0    | 36.0    | 36.0    | 36.0    | 36.0    | 36.0    | 36.0    | 36.0    | 36.0    | 36.0    |  |
| Signal BW                      | (MHz)                 | 0.024   | 0.027   | 0.080   | 0.106   | 0.160   | 0.640   | 4.330   | 6.100   | 6.100   | 6.100   | 30.000  | 8.000   | 8.000   | 36.000  | 36.000  | 33.300  |  |
| C/Nthr Clr Sky                 | (dB)                  | 5.3     | 8.3     | 7.0     | 2.8     | 2.8     | 2.8     | 6.1     | 6.4     | 6.4     | 6.4     | 9.8     | 6.1     | 6.1     | 13.0    | 13.0    | 9.8     |  |
| Service Area                   |                       |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |  |
| Uplink EOC U/L                 | (dB)                  | -4.0    | -4.0    | -4.0    | -4.0    | -4.0    | -4.0    | -4.0    | -4.0    | -4.0    | -4.0    | -4.0    | -4.0    | -4.0    | -4.0    | -4.0    | -4.0    |  |
| G 1m <sup>2</sup>              | (dBi)                 | 37.3    | 37.3    | 37.3    | 37.3    | 37.3    | 37.3    | 37.3    | 37.3    | 37.3    | 37.3    | 37.3    | 37.3    | 37.3    | 37.3    | 37.3    | 37.3    |  |
| G/T max                        | (dB/K)                | 1.0     | 1.0     | 1.0     | 1.0     | 1.0     | 1.0     | 1.0     | 1.0     | 1.0     | 1.0     | 1.0     | 1.0     | 1.0     | 1.0     | 1.0     | 1.0     |  |
| FSL                            | (dB)                  | 200.2   | 200.2   | 200.2   | 200.2   | 200.2   | 200.2   | 200.2   | 200.2   | 200.2   | 200.2   | 200.2   | 200.2   | 200.2   | 200.2   | 200.2   | 200.2   |  |
| L atmos                        | (dB)                  | 0.2     | 0.2     | 0.2     | 0.2     | 0.2     | 0.2     | 0.2     | 0.2     | 0.2     | 0.2     | 0.2     | 0.2     | 0.2     | 0.0     | 0.0     | 0.2     |  |
| Downlink EOC D/L               | (dB)                  | -4.0    | -4.0    | -4.0    | -4.0    | -4.0    | -4.0    | -4.0    | -4.0    | -4.0    | -4.0    | -4.0    | -4.0    | -4.0    | -2.0    | -2.0    | -4.0    |  |
| FSL                            | (dB)                  | 196.3   | 196.3   | 196.3   | 196.3   | 196.3   | 196.3   | 196.3   | 196.3   | 196.3   | 196.3   | 196.3   | 196.3   | 196.3   | 196.3   | 196.3   | 196.3   |  |
| L atmos                        | (dB)                  | 0.1     | 0.1     | 0.1     | 0.1     | 0.1     | 0.1     | 0.1     | 0.1     | 0.1     | 0.1     | 0.1     | 0.1     | 0.1     | 0.0     | 0.0     | 0.1     |  |
| Space Station SFD/EIRP         |                       |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |  |
| Min                            |                       | -99.5   | -99.5   | -99.5   | -99.5   | -99.5   | -99.5   | -99.5   | -99.5   | -99.5   | -99.5   | -99.5   | -99.5   | -99.5   | -99.5   | -99.5   | -99.5   |  |
| Max                            |                       | -79.5   | -79.5   | -79.5   | -79.5   | -79.5   | -79.5   | -79.5   | -79.5   | -79.5   | -79.5   | -79.5   | -79.5   | -79.5   | -79.5   | -79.5   | -79.5   |  |
| PAD wrt mid-range              | (dB)                  | -3.0    | -3.0    | -3.0    | -3.0    | -3.0    | -3.0    | -3.0    | -3.0    | -3.0    | -3.0    | -6.0    | -3.0    | -3.0    | 6.0     | 6.0     | -6.0    |  |
| SFD (@ Beam Ctr)               | (dBW/m <sup>2</sup> ) | -92.5   | -92.5   | -92.5   | -92.5   | -92.5   | -92.5   | -92.5   | -92.5   | -92.5   | -92.5   | -95.5   | -92.5   | -92.5   | -83.5   | -83.5   | -95.5   |  |
| Sat EIRP max                   | (dBW)                 | 43.0    | 43.0    | 43.0    | 43.0    | 43.0    | 43.0    | 43.0    | 43.0    | 43.0    | 43.0    | 43.0    | 43.0    | 43.0    | 43.0    | 43.0    | 43.0    |  |
| Uplink (TX Earth Station)      |                       |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |  |
| Diam                           | (m)                   | 7.0     | 7.0     | 7.0     | 8.0     | 4.5     | 7.0     | 4.5     | 7.0     | 7.0     | 7.0     | 8.0     | 8.0     | 8.0     | 8.0     | 8.0     | 10.0    |  |
| Gtx                            | (dBi)                 | 51.3    | 51.3    | 51.3    | 52.4    | 47.4    | 51.3    | 47.4    | 51.3    | 51.3    | 51.3    | 52.4    | 52.4    | 52.4    | 52.4    | 52.4    | 54.4    |  |
| EIRP ES (EOC)                  | (dBW)                 | 40.7    | 43.2    | 47.2    | 48.3    | 50.0    | 56.2    | 61.5    | 64.2    | 64.2    | 64.2    | 72.3    | 64.8    | 64.8    | 78.9    | 78.9    | 72.5    |  |
| Ptx (EOC)                      | (dBW)                 | -10.6   | -8.1    | -4.1    | -4.1    | 2.6     | 4.9     | 14.1    | 12.9    | 12.9    | 12.9    | 19.9    | 12.4    | 12.4    | 26.5    | 26.5    | 18.2    |  |
| Ptx (COB)                      | (dBW)                 | -14.6   | -12.1   | -8.1    | -8.1    | -1.4    | 0.9     | 10.1    | 8.9     | 8.9     | 8.9     | 15.9    | 8.4     | 8.4     | 22.5    | 22.5    | 14.2    |  |
| Downlink (Space Station)       |                       |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |  |
| Ptx (max COB)                  | (dBW)                 | -18.7   | -16.2   | -12.2   | -11.2   | -9.2    | -3.2    | 2.3     | 4.8     | 4.8     | 4.8     | 14.3    | 5.3     | 5.3     | 10.0    | 10.0    | 14.3    |  |
| Ptx (min EOC)                  | (dBW)                 | -21.7   | -19.2   | -15.2   | -14.2   | -12.2   | -6.2    | -0.7    | 1.8     | 1.8     | 1.8     | 14.2    | 2.3     | 2.3     | 9.9     | 9.9     | 14.2    |  |
| EIRP sat                       | (dBW)                 | 10.0    | 12.5    | 16.5    | 17.5    | 19.5    | 25.5    | 31.0    | 33.5    | 33.5    | 33.5    | 43.0    | 34.0    | 34.0    | 38.7    | 38.7    | 43.0    |  |
| RX Earth Station               |                       |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |  |
| Diameter                       | (m)                   | 4.5     | 4.5     | 4.5     | 4.5     | 4.5     | 4.5     | 4.5     | 4.5     | 7.0     | 8.0     | 4.5     | 7.0     | 10.0    | 4.5     | 7.0     | 10.0    |  |
| G rx ES                        | (dBi)                 | 43.5    | 43.5    | 43.5    | 43.5    | 43.5    | 43.5    | 43.5    | 43.5    | 47.4    | 48.5    | 43.5    | 47.4    | 50.5    | 43.5    | 47.4    | 50.5    |  |
| T ES                           | (K)                   | 80.0    | 80.0    | 80.0    | 80.0    | 80.0    | 80.0    | 80.0    | 80.0    | 80.0    | 80.0    | 80.0    | 80.0    | 80.0    | 80.0    | 80.0    | 80.0    |  |
| U/L Interference Allocations   |                       |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |  |
| (C/I)U/L X-pol, ACI, IMOD, ASI | (dB)                  | 15.0    | 17.0    | 16.3    | 16.1    | 16.3    | 16.2    | 13.4    | 14.5    | 14.5    | 14.5    | 19.9    | 13.8    | 13.8    | 27.1    | 27.1    | 19.4    |  |
| C/N Thermal Up                 | (dB)                  | 25.5    | 27.6    | 26.8    | 26.6    | 26.8    | 26.8    | 24.0    | 25.0    | 25.0    | 25.0    | 26.1    | 24.3    | 24.3    | 32.8    | 32.8    | 25.6    |  |
| (C/N) Total Up                 | (dB)                  | 14.6    | 16.7    | 15.9    | 15.7    | 15.9    | 15.9    | 13.1    | 14.1    | 14.1    | 14.1    | 19.0    | 13.4    | 13.4    | 26.0    | 26.0    | 18.5    |  |
| D/L Interference Allocations   |                       |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |  |
| (C/I)U/L X-pol, ACI, IMOD, ASI | (dB)                  | 15.6    | 17.6    | 16.8    | 16.7    | 16.8    | 16.8    | 14.0    | 15.0    | 15.7    | 15.9    | 20.6    | 15.1    | 15.4    | 18.7    | 22.5    | 22.4    |  |
| C/N Dn (COB)                   | (dB)                  | 22.6    | 24.6    | 23.8    | 23.7    | 23.8    | 23.8    | 21.0    | 22.0    | 25.7    | 26.9    | 24.7    | 25.2    | 28.0    | 19.9    | 23.8    | 30.8    |  |
| (C/N) Total Dn (COB)           | (dB)                  | 14.8    | 16.8    | 16.1    | 15.9    | 16.0    | 16.0    | 13.2    | 14.2    | 15.3    | 15.5    | 19.2    | 14.7    | 15.1    | 16.2    | 20.1    | 21.8    |  |
| C/N Dn (EOC)                   | (dB)                  | 15.6    | 17.6    | 16.8    | 16.7    | 16.8    | 16.8    | 14.0    | 15.0    | 18.7    | 19.9    | 20.6    | 18.2    | 21.0    | 17.8    | 21.7    | 26.7    |  |
| (C/N) Total Dn (EOC)           | (dB)                  | 9.8     | 11.8    | 11.1    | 10.9    | 11.0    | 11.0    | 8.2     | 9.2     | 11.1    | 11.5    | 16.1    | 10.5    | 11.4    | 14.1    | 18.0    | 20.1    |  |
| C/N total max                  | (dB)                  | 11.7    | 13.7    | 13.0    | 12.8    | 13.0    | 12.9    | 10.1    | 11.1    | 11.7    | 11.7    | 16.0    | 11.0    | 11.2    | 15.8    | 19.1    | 16.8    |  |
| C/N total min                  | (dB)                  | 8.6     | 10.6    | 9.8     | 9.6     | 9.8     | 9.8     | 7.0     | 8.0     | 9.4     | 9.6     | 14.3    | 8.7     | 9.3     | 13.9    | 17.3    | 16.2    |  |
| Link Margin                    | (dB)                  | 3.3     | 2.3     | 2.8     | 6.8     | 7.0     | 7.0     | 0.9     | 1.6     | 3.0     | 3.2     | 4.5     | 2.6     | 3.2     | 0.9     | 4.3     | 6.4     |  |

