

EchoStar 17/24 GHz Link Budget

| Link Parameters | | Clear Sky (Mexico City) | Faded D/L (Mexico City) |
|---|-----------|----------------------------|----------------------------|
| Link Geometry: | | | |
| Tx E/S Range to Satellite | (km) | 38,983 | 38,983 |
| Rx E/S Range to Satellite | (km) | 37,592 | 37,592 |
| Uplink: | | | |
| Carrier Frequency | (MHz) | 25,198 | 25,198 |
| Tx E/S Antenna Diameter | (m) | 12.0 | 12.0 |
| Max. Tx E/S Power to Antenna | (W) | 15.0 | 15.0 |
| Max. Tx E/S Power Density to Antenna | (dBW/MHz) | -7.1 | -7.1 |
| Tx E/S Antenna Gain | (dB) | 68.2 | 68.2 |
| Tx E/S EIRP per Carrier | (dBW) | 80.0 | 80.0 |
| Atmospheric and Other Losses | (dB) | 0.5 | 0.5 |
| Free Space Loss | (dB) | 212.3 | 212.3 |
| Satellite: | | | |
| G/T towards Tx E/S | (dB/K) | 17.2 | 17.2 |
| EIRP per Carrier towards Rx E/S | (dBW) | 62.8 | 62.8 |
| Downlink: | | | |
| Carrier Frequency | (MHz) | 17,748 | 17,748 |
| Atmospheric and Other Losses | (dB) | 0.2 | 5.1 |
| Free Space Loss | (dB) | 208.9 | 208.9 |
| Rx E/S Antenna Diameter | (m) | 0.45 | 0.45 |
| Rx E/S Antenna Gain | (dB) | 36.2 | 36.2 |
| Pointing Error | (dB) | 0.5 | 0.5 |
| Rx E/S G/T | (dB/K) | 13.2 | 10.4 |
| System (LNA+Sky) Noise Temperature | (K) | 200 | 387 |
| Total Link: | | | |
| Bandwidth | (dB-Hz) | 78.90 | 78.90 |
| C/N - Thermal Uplink | (dB) | 34.1 | 34.1 |
| C/N - Thermal Downlink | (dB) | 16.1 | 8.3 |
| C/I - Aggregate uplink ASI | (dB) | 36.9 | 36.9 |
| C/I - Aggregate downlink ASI | (dB) | 18.2 | 18.2 |
| C/I - Other Link Degradations | (dB) | 22.0 | 22.0 |
| C/(N+I) - Total, Actual | (dB) | 13.3 | 7.7 |
| C/(N+I) - Total, Required | (dB) | 7.5 | 7.5 |
| Excess Margin | (dB) | 5.8 | 0.2 |
| Availability | (%) | N/A | 99.96 |
| Aggregate Interference Assessment: | | | |
| (C/N) - no ASI | (dB) | 15.0 | 8.1 |
| Degradation due to aggregate ASI | (dB) | 1.7 | 0.4 |