

# LINK BUDGETS

|                                                   |            |             |             |            |            |            |
|---------------------------------------------------|------------|-------------|-------------|------------|------------|------------|
| <b>UPLINK BEAM INFORMATION</b>                    |            |             |             |            |            |            |
| Uplink Beam Name                                  | KHUL       | KHUL        | KHUL        | KHUL       | KHUL       | KHUL       |
| Uplink Frequency (GHz)                            | 14.0-14.5  | 14.0-14.5   | 14.0-14.5   | 14.0-14.5  | 14.0-14.5  | 14.0-14.5  |
| Uplink Beam Polarization                          | Horizontal | Horizontal  | Horizontal  | Horizontal | Horizontal | Horizontal |
| Uplink Relative Contour Level (dB)                | -6.3       | -6.3        | -6.3        | -6.3       | -6.3       | -6.3       |
| Uplink Contour G/T (dB/K)                         | 0.0        | 0.0         | 0.0         | 0.0        | 0.0        | 0.0        |
| Uplink Contour SFD (dBW/m2)                       | -78.5      | -78.5       | -80.5       | -80.5      | -80.5      | -80.5      |
| <b>DOWNLINK BEAM INFORMATION</b>                  |            |             |             |            |            |            |
| Downlink Beam Name                                | KVDL       | KVDL        | KVDL        | KVDL       | KVDL       | KVDL       |
| Downlink Frequency (GHz)                          | 11.7-12.2  | 11.7-12.2   | 11.7-12.2   | 11.7-12.2  | 11.7-12.2  | 11.7-12.2  |
| Downlink Beam Polarization                        | Vertical   | Vertical    | Vertical    | Vertical   | Vertical   | Vertical   |
| Downlink Relative Contour Level (dB)              | -6.4       | -6.4        | -6.4        | -6.4       | -6.4       | -6.4       |
| Downlink Contour EIRP (dBW)                       | 43.3       | 43.3        | 43.3        | 43.3       | 43.3       | 43.3       |
| <b>ADJACENT SATELLITE 1</b>                       |            |             |             |            |            |            |
| Satellite 1 Orbital Location                      | 53.6W      | 53.6W       | 53.6W       | 53.6W      | 53.6W      | 53.6W      |
| Uplink Power Density (dBW/Hz)                     | -45.0      | -45.0       | -45.0       | -45.0      | -45.0      | -45.0      |
| Beam Peak Downlink EIRP Density (dBW/Hz)          | -20.0      | -20.0       | -20.0       | -20.0      | -20.0      | -20.0      |
| Downlink EIRP Density at ES (dBW/Hz)              | -26.4      | -26.4       | -26.4       | -26.4      | -26.4      | -26.4      |
| <b>ADJACENT SATELLITE 2</b>                       |            |             |             |            |            |            |
| Satellite 1 Orbital Location                      | 57.6W      | 57.6W       | 57.6W       | 57.6W      | 57.6W      | 57.6W      |
| Uplink Power Density (dBW/Hz)                     | -45.0      | -45.0       | -45.0       | -45.0      | -45.0      | -45.0      |
| Beam Peak Downlink EIRP Density (dBW/Hz)          | -20.0      | -20.0       | -20.0       | -20.0      | -20.0      | -20.0      |
| Downlink EIRP Density at ES (dBW/Hz)              | -26.4      | -26.4       | -26.4       | -26.4      | -26.4      | -26.4      |
| <b>CARRIER INFORMATION</b>                        |            |             |             |            |            |            |
| Carrier ID                                        | 36M0F3F    | 36M0G7W     | 8M25G7W     | 1M43G7W    | 717KG7W    | 111KG7W    |
| Carrier Modulation                                | TV/FM      | QPSK        | QPSK        | BPSK       | BPSK       | QPSK       |
| Peak to Peak Bandwidth of EDS (MHz)               | 4          | N/A         | N/A         | N/A        | N/A        | N/A        |
| Information Rate(kbps)                            | N/A        | 36860       | 8448        | 512        | 256        | 128        |
| Code Rate                                         | N/A        | 3/4x188/204 | 3/4x188/204 | 1/2        | 1/2        | 3/4        |
| Occupied Bandwidth(kHz)                           | 32400      | 26664.7     | 6111.3      | 1024.0     | 512.0      | 85.3       |
| Allocated Bandwidth(kHz)                          | 36000      | 35997.5     | 8250.5      | 1434.0     | 717.0      | 111.0      |
| Minimum C/N, Clear Sky (dB)                       | 16.4       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| Minimum C/N, Rain (dB)                            | 16.4       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| <b>UPLINK EARTH STATION</b>                       |            |             |             |            |            |            |
| Earth Station Diameter (meters)                   | 6.5        | 6.5         | 4.0         | 4.0        | 4.0        | 2.4        |
| Earth Station Gain (dBi)                          | 57.4       | 57.4        | 53.1        | 53.1       | 53.1       | 48.7       |
| Earth Station Elevation Angle                     | 10.1       | 10.1        | 10.1        | 10.1       | 10.1       | 10.1       |
| Rain Rate (mm/yr)                                 | 394        | 394         | 394         | 394        | 394        | 394        |
| <b>DOWNLINK EARTH STATION</b>                     |            |             |             |            |            |            |
| Earth Station Diameter (meters)                   | 6.5        | 2.4         | 4.0         | 1.8        | 1.8        | 4.0        |
| Earth Station Gain (dBi)                          | 55.6       | 47.0        | 51.4        | 44.5       | 44.5       | 51.4       |
| Earth Station G/T (dB/K)                          | 34.0       | 25.0        | 29.0        | 23.3       | 23.3       | 29.0       |
| Earth Station Elevation Angle                     | 10.0       | 10.0        | 10.0        | 10.0       | 10.0       | 10.0       |
| Rain Rate (mm/yr)                                 | 214        | 214         | 214         | 214        | 214        | 214        |
| <b>LINK FADE TYPE</b>                             |            |             |             |            |            |            |
|                                                   | Clear Sky  | Clear Sky   | Clear Sky   | Clear Sky  | Clear Sky  | Clear Sky  |
| <b>UPLINK PERFORMANCE</b>                         |            |             |             |            |            |            |
| Uplink Earth Station EIRP (dBW)                   | 80.9       | 79.7        | 67.5        | 59.1       | 56.2       | 48.0       |
| Uplink Path Loss, Clear Sky (dB)                  | -208.1     | -208.1      | -208.1      | -208.1     | -208.1     | -208.1     |
| Satellite G/T(dB/K)                               | 0.0        | 0.0         | 0.0         | 0.0        | 0.0        | 0.0        |
| Boltzman Constant(dBW/K-Hz)                       | 228.6      | 228.6       | 228.6       | 228.6      | 228.6      | 228.6      |
| Carrier Noise Bandwidth (MHz)                     | 32.4       | 26.7        | 6.1         | 1.0        | 0.5        | 0.1        |
| Uplink C/N(dB)                                    | 26.3       | 25.9        | 20.1        | 19.5       | 19.6       | 19.2       |
| <b>DOWNLINK PERFORMANCE</b>                       |            |             |             |            |            |            |
| Downlink EIRP per Carrier (dBW)                   | 42.5       | 41.9        | 32.3        | 23.8       | 20.8       | 12.6       |
| Downlink Path Loss, Clear Sky (dB)                | -206.5     | -206.5      | -206.5      | -206.5     | -206.5     | -206.5     |
| Downlink Earth Station G/T (dB/K)                 | 34.0       | 25.0        | 29.0        | 23.3       | 23.3       | 29.0       |
| Boltzman Constant(dBW/K-Hz)                       | 228.6      | 228.6       | 228.6       | 228.6      | 228.6      | 228.6      |
| Carrier Noise Bandwidth (MHz)                     | 32.4       | 26.7        | 6.1         | 1.0        | 0.5        | 0.1        |
| Transponder Correction Factor                     | 0.0        | 0.3         | 0.0         | 0.0        | 0.0        | 0.0        |
| Downlink C / N(dB)                                | 23.5       | 15.0        | 15.5        | 9.1        | 9.1        | 14.4       |
| <b>COMPOSITE LINK PERFORMANCE</b>                 |            |             |             |            |            |            |
| Uplink Earth Station HPA Intermodulation C/N (dB) | 35.7       | 35.4        | 29.6        | 29.0       | 29.0       | 28.6       |
| C/N Uplink (dB)                                   | 26.3       | 25.9        | 20.1        | 19.5       | 19.6       | 19.2       |
| Uplink Interference C/I (dB)                      | 48.1       | 38.7        | 31.7        | 38.4       | 31.0       | 31.5       |
| Uplink Adjacent Satellite C/I (dB)                | 26.7       | 26.4        | 20.6        | 20.0       | 20.1       | 19.7       |
| Intermodulation C/IM (dB)                         | 124.9      | 200.0       | 21.0        | 18.6       | 18.2       | 17.7       |
| Downlink C/N (dB)                                 | 23.5       | 15.0        | 15.5        | 9.1        | 9.1        | 14.4       |
| Downlink Interference C/I (dB)                    | 46.9       | 35.4        | 29.2        | 23.4       | 22.1       | 21.6       |
| Downlink Adjacent Satellite C/I (dB)              | 18.7       | 10.2        | 11.5        | 3.7        | 3.7        | 10.3       |
| Subtotal C/N (dB)                                 | 16.5       | 8.8         | 9.0         | 2.3        | 2.3        | 7.5        |
| Margin - Other Losses (dB)                        | 0          | 1.5         | 1.5         | 1.5        | 1.5        | 1.5        |
| Total C/N (dB)                                    | 16.5       | 7.3         | 7.5         | 0.8        | 0.8        | 6.0        |
| Minimum Required C/N (dB)                         | 16.4       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| Number of Carriers                                | 1          | 1           | 4           | 25         | 50         | 324        |
| <b>CARRIER DENSITY LEVELS</b>                     |            |             |             |            |            |            |
| Uplink Power Density (dBW/Hz)                     | -42.5      | -52.0       | -53.5       | -54.1      | -54.0      | -50.0      |
| Downlink EIRP Density At Beam Peak (dBW/Hz)       | -17.1      | -26.0       | -29.2       | -29.9      | -29.9      | -30.3      |

| UPLINK BEAM INFORMATION                           |            |             |             |            |            |            |
|---------------------------------------------------|------------|-------------|-------------|------------|------------|------------|
| Uplink Beam Name                                  | EHUL       | EHUL        | EHUL        | EHUL       | EHUL       | EHUL       |
| Uplink Frequency (GHz)                            | 13.75-14.0 | 13.75-14.0  | 13.75-14.0  | 13.75-14.0 | 13.75-14.0 | 13.75-14.0 |
| Uplink Beam Polarization                          | Horizontal | Horizontal  | Horizontal  | Horizontal | Horizontal | Horizontal |
| Uplink Relative Contour Level (dB)                | -6.0       | -6.0        | -6.0        | -6.0       | -6.0       | -6.0       |
| Uplink Contour G/T (dB/K)                         | -0.8       | -0.8        | -0.8        | -0.8       | -0.8       | -0.8       |
| Uplink Contour SFD (dBW/m2)                       | -82.3      | -83.3       | -80.3       | -80.3      | -80.3      | -80.3      |
| DOWNLINK BEAM INFORMATION                         |            |             |             |            |            |            |
| Downlink Beam Name                                | EVDL       | EVDL        | EVDL        | EVDL       | EVDL       | EVDL       |
| Downlink Frequency (GHz)                          | 10.95-11.2 | 10.95-11.2  | 10.95-11.2  | 10.95-11.2 | 10.95-11.2 | 10.95-11.2 |
| Downlink Beam Polarization                        | Vertical   | Vertical    | Vertical    | Vertical   | Vertical   | Vertical   |
| Downlink Relative Contour Level (dB)              | -6.0       | -6.0        | -6.0        | -6.0       | -6.0       | -6.0       |
| Downlink Contour EIRP (dBW)                       | 45.2       | 45.2        | 45.2        | 45.2       | 45.2       | 45.2       |
| ADJACENT SATELLITE 1                              |            |             |             |            |            |            |
| Satellite 1 Orbital Location                      | 53.6W      | 53.6W       | 53.6W       | 53.6W      | 53.6W      | 53.6W      |
| Uplink Power Density (dBW/Hz)                     | -45.0      | -45.0       | -45.0       | -45.0      | -45.0      | -45.0      |
| Beam Peak Downlink EIRP Density (dBW/Hz)          | -20.0      | -20.0       | -20.0       | -20.0      | -20.0      | -20.0      |
| Downlink EIRP Density at ES (dBW/Hz)              | -26.0      | -26.0       | -26.0       | -26.0      | -26.0      | -26.0      |
| ADJACENT SATELLITE 2                              |            |             |             |            |            |            |
| Satellite 1 Orbital Location                      | 57.6W      | 57.6W       | 57.6W       | 57.6W      | 57.6W      | 57.6W      |
| Uplink Power Density (dBW/Hz)                     | -45.0      | -45.0       | -45.0       | -45.0      | -45.0      | -45.0      |
| Beam Peak Downlink EIRP Density (dBW/Hz)          | -20.0      | -20.0       | -20.0       | -20.0      | -20.0      | -20.0      |
| Downlink EIRP Density at ES (dBW/Hz)              | -26.0      | -26.0       | -26.0       | -26.0      | -26.0      | -26.0      |
| CARRIER INFORMATION                               |            |             |             |            |            |            |
| Carrier ID                                        | 25M0F3F    | 27M0G7W     | 8M25G7W     | 1M43G7W    | 717KG7W    | 111KG7W    |
| Carrier Modulation                                | TV/FM      | QPSK        | QPSK        | BPSK       | BPSK       | QPSK       |
| Peak to Peak Bandwidth of EDS (MHz)               | 4          | N/A         | N/A         | N/A        | N/A        | N/A        |
| Information Rate(kbps)                            | N/A        | 27650       | 8448        | 512        | 256        | 128        |
| Code Rate                                         | N/A        | 3/4x188/204 | 3/4x188/204 | 1/2        | 1/2        | 3/4        |
| Occupied Bandwidth(kHz)                           | 20700      | 20002.1     | 6111.3      | 1024.0     | 512.0      | 85.3       |
| Allocated Bandwidth(kHz)                          | 25000      | 27003       | 8250.5      | 1434.0     | 717.0      | 111.0      |
| Minimum C/N, Clear Sky (dB)                       | 14.2       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| Minimum C/N, Rain (dB)                            | 14.2       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| UPLINK EARTH STATION                              |            |             |             |            |            |            |
| Earth Station Diameter (meters)                   | 4.0        | 2.4         | 4.0         | 2.4        | 2.4        | 4.0        |
| Earth Station Gain (dBi)                          | 53.1       | 48.7        | 53.1        | 48.7       | 48.7       | 53.1       |
| Earth Station Elevation Angle                     | 10.1       | 10.1        | 10.1        | 10.1       | 10.1       | 10.1       |
| Rain Rate (mm/yr)                                 | 3479       | 3479        | 3479        | 3479       | 3479       | 3479       |
| DOWNLINK EARTH STATION                            |            |             |             |            |            |            |
| Earth Station Diameter (meters)                   | 6.5        | 2.4         | 2.4         | 1.8        | 1.8        | 2.4        |
| Earth Station Gain (dBi)                          | 55.6       | 47.0        | 47.0        | 44.5       | 44.5       | 47.0       |
| Earth Station G/T (dB/K)                          | 34.0       | 25.0        | 25.0        | 23.3       | 23.3       | 25.0       |
| Earth Station Elevation Angle                     | 10.2       | 10.2        | 10.2        | 10.2       | 10.2       | 10.2       |
| Rain Rate (mm/yr)                                 | 2098       | 2098        | 2098        | 2098       | 2098       | 2098       |
| LINK FADE TYPE                                    |            |             |             |            |            |            |
|                                                   | Clear Sky  | Clear Sky   | Clear Sky   | Clear Sky  | Clear Sky  | Clear Sky  |
| UPLINK PERFORMANCE                                |            |             |             |            |            |            |
| Uplink Earth Station EIRP (dBW)                   | 72.3       | 71.2        | 68.8        | 57.0       | 53.9       | 49.2       |
| Uplink Path Loss, Clear Sky (dB)                  | -208.3     | -208.3      | -208.3      | -208.3     | -208.3     | -208.3     |
| Satellite G/T(dB/K)                               | -0.8       | -0.8        | -0.8        | -0.8       | -0.8       | -0.8       |
| Boltzman Constant(dBW/K-Hz)                       | 228.6      | 228.6       | 228.6       | 228.6      | 228.6      | 228.6      |
| Carrier Noise Bandwidth (MHz)                     | 20.7       | 20.0        | 6.1         | 1.0        | 0.5        | 0.1        |
| Uplink C/N(dB)                                    | 18.6       | 17.7        | 20.4        | 16.4       | 16.3       | 19.4       |
| DOWNLINK PERFORMANCE                              |            |             |             |            |            |            |
| Downlink EIRP per Carrier (dBW)                   | 50.0       | 40.8        | 35.4        | 23.4       | 20.3       | 15.6       |
| Downlink Path Loss, Clear Sky (dB)                | -206.0     | -206.0      | -206.0      | -206.0     | -206.0     | -206.0     |
| Downlink Earth Station G/T (dB/K)                 | 34.0       | 25.0        | 25.0        | 23.3       | 23.3       | 25.0       |
| Boltzman Constant(dBW/K-Hz)                       | 228.6      | 228.6       | 228.6       | 228.6      | 228.6      | 228.6      |
| Carrier Noise Bandwidth (MHz)                     | 20.7       | 20.0        | 6.1         | 1.0        | 0.5        | 0.1        |
| Transponder Correction Factor                     | 0.0        | 0.6         | 0.0         | 0.0        | 0.0        | 0.0        |
| Downlink C / N(dB)                                | 33.4       | 16.0        | 15.1        | 9.2        | 9.1        | 13.9       |
| COMPOSITE LINK PERFORMANCE                        |            |             |             |            |            |            |
| Uplink Earth Station HPA Intermodulation C/N (dB) | 34.3       | 33.3        | 36.1        | 32.1       | 32.0       | 35.1       |
| C/N Uplink (dB)                                   | 18.6       | 17.7        | 20.4        | 16.4       | 16.3       | 19.4       |
| Uplink Interference C/I (dB)                      | 32.6       | 30.9        | 200.0       | 200.0      | 96.4       | 85.5       |
| Uplink Adjacent Satellite C/I (dB)                | 20.1       | 19.2        | 22.0        | 17.9       | 17.8       | 20.9       |
| Intermodulation C/IM (dB)                         | 126.8      | 200.0       | 25.7        | 19.2       | 18.7       | 21.7       |
| Downlink C/N (dB)                                 | 33.4       | 16.0        | 15.1        | 9.2        | 9.1        | 13.9       |
| Downlink Interference C/I (dB)                    | 42.4       | 30.6        | 31.7        | 19.6       | 21.8       | 24.7       |
| Downlink Adjacent Satellite C/I (dB)              | 19.8       | 11.2        | 10.9        | 4.0        | 3.9        | 9.6        |
|                                                   |            |             |             |            |            |            |
| Subtotal C/N (dB)                                 | 14.6       | 8.8         | 8.8         | 2.4        | 2.3        | 7.4        |
| Margin - Other Losses (dB)                        | 0          | 1.5         | 1.5         | 1.5        | 1.5        | 1.5        |
| Total C/N (dB)                                    | 14.6       | 7.3         | 7.3         | 0.9        | 0.8        | 5.9        |
| Minimum Required C/N (dB)                         | 14.2       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| Number of Carriers                                | 1          | 1           | 3           | 19         | 38         | 243        |
| CARRIER DENSITY LEVELS                            |            |             |             |            |            |            |
| Uplink Power Density (dBW/Hz)                     | -46.8      | -50.5       | -52.2       | -51.8      | -51.9      | -53.2      |
| Downlink EIRP Density At Beam Peak (dBW/Hz)       | -10.0      | -26.2       | -26.5       | -30.7      | -30.8      | -27.7      |

|                                                   |            |             |             |            |            |            |
|---------------------------------------------------|------------|-------------|-------------|------------|------------|------------|
| <b>UPLINK BEAM INFORMATION</b>                    |            |             |             |            |            |            |
| Uplink Beam Name                                  | KVUL       | KVUL        | KVUL        | KVUL       | KVUL       | KVUL       |
| Uplink Frequency (GHz)                            | 14.0-14.5  | 14.0-14.5   | 14.0-14.5   | 14.0-14.5  | 14.0-14.5  | 14.0-14.5  |
| Uplink Beam Polarization                          | Vertical   | Vertical    | Vertical    | Vertical   | Vertical   | Vertical   |
| Uplink Relative Contour Level (dB)                | -6.3       | -6.3        | -6.3        | -6.3       | -6.3       | -6.3       |
| Uplink Contour G/T (dB/K)                         | -1.5       | -1.5        | -1.5        | -1.5       | -1.5       | -1.5       |
| Uplink Contour SFD (dBW/m2)                       | -79.0      | -81.0       | -81.0       | -81.0      | -81.0      | -81.0      |
| <b>DOWNLINK BEAM INFORMATION</b>                  |            |             |             |            |            |            |
| Downlink Beam Name                                | KHDL       | KHDL        | KHDL        | KHDL       | KHDL       | KHDL       |
| Downlink Frequency (GHz)                          | 11.7-12.2  | 11.7-12.2   | 11.7-12.2   | 11.7-12.2  | 11.7-12.2  | 11.7-12.2  |
| Downlink Beam Polarization                        | Horizontal | Horizontal  | Horizontal  | Horizontal | Horizontal | Horizontal |
| Downlink Relative Contour Level (dB)              | -6.2       | -6.2        | -6.2        | -6.2       | -6.2       | -6.2       |
| Downlink Contour EIRP (dBW)                       | 43.5       | 43.5        | 43.5        | 43.5       | 43.5       | 43.5       |
| <b>ADJACENT SATELLITE 1</b>                       |            |             |             |            |            |            |
| Satellite 1 Orbital Location                      | 53.6W      | 53.6W       | 53.6W       | 53.6W      | 53.6W      | 53.6W      |
| Uplink Power Density (dBW/Hz)                     | -45.0      | -45.0       | -45.0       | -45.0      | -45.0      | -45.0      |
| Beam Peak Downlink EIRP Density (dBW/Hz)          | -20.0      | -20.0       | -20.0       | -20.0      | -20.0      | -20.0      |
| Downlink EIRP Density at ES (dBW/Hz)              | -26.2      | -26.2       | -26.2       | -26.2      | -26.2      | -26.2      |
| <b>ADJACENT SATELLITE 2</b>                       |            |             |             |            |            |            |
| Satellite 1 Orbital Location                      | 57.6W      | 57.6W       | 57.6W       | 57.6W      | 57.6W      | 57.6W      |
| Uplink Power Density (dBW/Hz)                     | -45.0      | -45.0       | -45.0       | -45.0      | -45.0      | -45.0      |
| Beam Peak Downlink EIRP Density (dBW/Hz)          | -20.0      | -20.0       | -20.0       | -20.0      | -20.0      | -20.0      |
| Downlink EIRP Density at ES (dBW/Hz)              | -26.2      | -26.2       | -26.2       | -26.2      | -26.2      | -26.2      |
| <b>CARRIER INFORMATION</b>                        |            |             |             |            |            |            |
| Carrier ID                                        | 36M0F3F    | 36M0G7W     | 8M25G7W     | 1M43G7W    | 717KG7W    | 111KG7W    |
| Carrier Modulation                                | TV/FM      | QPSK        | QPSK        | BPSK       | BPSK       | QPSK       |
| Peak to Peak Bandwidth of EDS (MHz)               | 4          | N/A         | N/A         | N/A        | N/A        | N/A        |
| Information Rate(kbps)                            | N/A        | 36860       | 8448        | 512        | 256        | 128        |
| Code Rate                                         | N/A        | 3/4x188/204 | 3/4x188/204 | 1/2        | 1/2        | 3/4        |
| Occupied Bandwidth(kHz)                           | 32400      | 26664.7     | 6111.3      | 1024.0     | 512.0      | 85.3       |
| Allocated Bandwidth(kHz)                          | 36000      | 35997.5     | 8250.5      | 1434.0     | 717.0      | 111.0      |
| Minimum C/N, Clear Sky (dB)                       | 16.4       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| Minimum C/N, Rain (dB)                            | 16.4       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| <b>UPLINK EARTH STATION</b>                       |            |             |             |            |            |            |
| Earth Station Diameter (meters)                   | 6.5        | 4.0         | 4.0         | 4.0        | 4.0        | 4.0        |
| Earth Station Gain (dBi)                          | 57.4       | 53.1        | 53.1        | 53.1       | 53.1       | 53.1       |
| Earth Station Elevation Angle                     | 10.0       | 10.0        | 10.0        | 10.0       | 10.0       | 10.0       |
| Rain Rate (mm/yr)                                 | 285        | 285         | 285         | 285        | 285        | 285        |
| <b>DOWNLINK EARTH STATION</b>                     |            |             |             |            |            |            |
| Earth Station Diameter (meters)                   | 6.5        | 2.4         | 4.0         | 1.8        | 1.8        | 4.0        |
| Earth Station Gain (dBi)                          | 55.6       | 47          | 51.4        | 44.5       | 44.5       | 51.4       |
| Earth Station G/T (dB/K)                          | 34.0       | 25.0        | 29.0        | 23.3       | 23.3       | 29.0       |
| Earth Station Elevation Angle                     | 10.0       | 10.0        | 10.0        | 10.0       | 10.0       | 10.0       |
| Rain Rate (mm/yr)                                 | 320        | 320         | 320         | 320        | 320        | 320        |
| <b>LINK FADE TYPE</b>                             | Clear Sky  | Clear Sky   | Clear Sky   | Clear Sky  | Clear Sky  | Clear Sky  |
| <b>UPLINK PERFORMANCE</b>                         |            |             |             |            |            |            |
| Uplink Earth Station EIRP (dBW)                   | 80.5       | 77.2        | 66.9        | 58.3       | 55.4       | 47.4       |
| Uplink Path Loss, Clear Sky (dB)                  | -208.1     | -208.1      | -208.1      | -208.1     | -208.1     | -208.1     |
| Satellite G/T(dB/K)                               | -1.5       | -1.5        | -1.5        | -1.5       | -1.5       | -1.5       |
| Boltzman Constant(dBW/K-Hz)                       | 228.6      | 228.6       | 228.6       | 228.6      | 228.6      | 228.6      |
| Carrier Noise Bandwidth (MHz)                     | 32.4       | 26.7        | 6.1         | 1.0        | 0.5        | 0.1        |
| Uplink C/N(dB)                                    | 24.4       | 21.9        | 18.0        | 17.2       | 17.3       | 17.1       |
| <b>DOWNLINK PERFORMANCE</b>                       |            |             |             |            |            |            |
| Downlink EIRP per Carrier (dBW)                   | 42.8       | 42.1        | 32.5        | 23.8       | 20.8       | 12.8       |
| Downlink Path Loss, Clear Sky (dB)                | -206.5     | -206.5      | -206.5      | -206.5     | -206.5     | -206.5     |
| Downlink Earth Station G/T (dB/K)                 | 34.0       | 25.0        | 29.0        | 23.3       | 23.3       | 29.0       |
| Boltzman Constant(dBW/K-Hz)                       | 228.6      | 228.6       | 228.6       | 228.6      | 228.6      | 228.6      |
| Carrier Noise Bandwidth (MHz)                     | 32.4       | 26.7        | 6.1         | 1.0        | 0.5        | 0.1        |
| Transponder Correction Factor                     | 0.0        | 0.3         | 0.0         | 0.0        | 0.0        | 0.0        |
| Downlink C / N(dB)                                | 23.8       | 15.2        | 15.7        | 9.1        | 9.1        | 14.6       |
| <b>COMPOSITE LINK PERFORMANCE</b>                 |            |             |             |            |            |            |
| Uplink Earth Station HPA Intermodulation C/N (dB) | 33.9       | 31.4        | 27.5        | 26.8       | 26.8       | 26.6       |
| C/N Uplink (dB)                                   | 24.4       | 21.9        | 18.0        | 17.2       | 17.3       | 17.1       |
| Uplink Interference C/I (dB)                      | 43.1       | 29.3        | 200.0       | 200.0      | 200.0      | 200.0      |
| Uplink Adjacent Satellite C/I (dB)                | 26.4       | 23.9        | 20.0        | 19.2       | 19.3       | 19.1       |
| Intermodulation C/IM (dB)                         | 124.9      | 200.0       | 21.1        | 18.5       | 18.2       | 17.9       |
| Downlink C/N (dB)                                 | 23.8       | 15.2        | 15.7        | 9.1        | 9.1        | 14.6       |
| Downlink Interference C/I (dB)                    | 44.9       | 33.2        | 36.0        | 23.7       | 23.8       | 22.5       |
| Downlink Adjacent Satellite C/I (dB)              | 19.0       | 10.5        | 11.7        | 3.8        | 3.8        | 10.6       |
| Subtotal C/N (dB)                                 | 16.4       | 8.8         | 8.9         | 2.3        | 2.3        | 7.6        |
| Margin - Other Losses (dB)                        | 0          | 1.5         | 1.5         | 1.5        | 1.5        | 1.5        |
| Total C/N (dB)                                    | 16.4       | 7.3         | 7.4         | 0.8        | 0.8        | 6.1        |
| Minimum Required C/N (dB)                         | 16.4       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| Number of Carriers                                | 1          | 1           | 4           | 25         | 50         | 324        |
| <b>CARRIER DENSITY LEVELS</b>                     |            |             |             |            |            |            |
| Uplink Power Density (dBW/Hz)                     | -42.9      | -50.2       | -54.1       | -54.9      | -54.8      | -55.0      |
| Downlink EIRP Density At Beam Peak (dBW/Hz)       | -17.0      | -26.0       | -29.2       | -30.1      | -30.1      | -30.3      |

|                                                   |            |             |             |            |            |            |
|---------------------------------------------------|------------|-------------|-------------|------------|------------|------------|
| <b>UPLINK BEAM INFORMATION</b>                    |            |             |             |            |            |            |
| Uplink Beam Name                                  | EVUL       | EVUL        | EVUL        | EVUL       | EVUL       | EVUL       |
| Uplink Frequency (GHz)                            | 13.75-14.0 | 13.75-14.0  | 13.75-14.0  | 13.75-14.0 | 13.75-14.0 | 13.75-14.0 |
| Uplink Beam Polarization                          | Vertical   | Vertical    | Vertical    | Vertical   | Vertical   | Vertical   |
| Uplink Relative Contour Level (dB)                | -4.4       | -4.4        | -4.4        | -4.4       | -4.4       | -4.4       |
| Uplink Contour G/T (dB/K)                         | 0.8        | 0.8         | 0.8         | 0.8        | 0.8        | 0.8        |
| Uplink Contour SFD (dBW/m2)                       | -74.8      | -84.8       | -79.8       | -79.8      | -79.8      | -79.8      |
| <b>DOWNLINK BEAM INFORMATION</b>                  |            |             |             |            |            |            |
| Downlink Beam Name                                | EHDL       | EHDL        | EHDL        | EHDL       | EHDL       | EHDL       |
| Downlink Frequency (GHz)                          | 10.95-11.2 | 10.95-11.2  | 10.95-11.2  | 10.95-11.2 | 10.95-11.2 | 10.95-11.2 |
| Downlink Beam Polarization                        | Horizontal | Horizontal  | Horizontal  | Horizontal | Horizontal | Horizontal |
| Downlink Relative Contour Level (dB)              | -6.1       | -6.1        | -6.1        | -6.1       | -6.1       | -6.1       |
| Downlink Contour EIRP (dBW)                       | 44.8       | 44.8        | 44.8        | 44.8       | 44.8       | 44.8       |
| <b>ADJACENT SATELLITE 1</b>                       |            |             |             |            |            |            |
| Satellite 1 Orbital Location                      | 53.6W      | 53.6W       | 53.6W       | 53.6W      | 53.6W      | 53.6W      |
| Uplink Power Density (dBW/Hz)                     | -45.0      | -45.0       | -45.0       | -45.0      | -45.0      | -45.0      |
| Beam Peak Downlink EIRP Density (dBW/Hz)          | -20.0      | -20.0       | -20.0       | -20.0      | -20.0      | -20.0      |
| Downlink EIRP Density at ES (dBW/Hz)              | -26.1      | -26.1       | -26.1       | -26.1      | -26.1      | -26.1      |
| <b>ADJACENT SATELLITE 2</b>                       |            |             |             |            |            |            |
| Satellite 1 Orbital Location                      | 57.6W      | 57.6W       | 57.6W       | 57.6W      | 57.6W      | 57.6W      |
| Uplink Power Density (dBW/Hz)                     | -45.0      | -45.0       | -45.0       | -45.0      | -45.0      | -45.0      |
| Beam Peak Downlink EIRP Density (dBW/Hz)          | -20.0      | -20.0       | -20.0       | -20.0      | -20.0      | -20.0      |
| Downlink EIRP Density at ES (dBW/Hz)              | -26.1      | -26.1       | -26.1       | -26.1      | -26.1      | -26.1      |
| <b>CARRIER INFORMATION</b>                        |            |             |             |            |            |            |
| Carrier ID                                        | 25M0F3F    | 27M0G7W     | 8M25G7W     | 1M43G7W    | 717KG7W    | 111KG7W    |
| Carrier Modulation                                | TV/FM      | QPSK        | QPSK        | BPSK       | BPSK       | QPSK       |
| Peak to Peak Bandwidth of EDS (MHz)               | 4          | N/A         | N/A         | N/A        | N/A        | N/A        |
| Information Rate(kbps)                            | N/A        | 27650       | 8448        | 512        | 256        | 128        |
| Code Rate                                         | N/A        | 3/4x188/204 | 3/4x188/204 | 1/2        | 1/2        | 3/4        |
| Occupied Bandwidth(kHz)                           | 20700      | 20002.1     | 6111.3      | 1024.0     | 512.0      | 85.3       |
| Allocated Bandwidth(kHz)                          | 25000      | 27003       | 8250.5      | 1434.0     | 717.0      | 111.0      |
| Minimum C/N, Clear Sky (dB)                       | 14.2       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| Minimum C/N, Rain (dB)                            | 14.2       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| <b>UPLINK EARTH STATION</b>                       |            |             |             |            |            |            |
| Earth Station Diameter (meters)                   | 6.5        | 2.4         | 4.0         | 2.4        | 2.4        | 4.0        |
| Earth Station Gain (dBi)                          | 57.4       | 48.7        | 53.1        | 48.7       | 48.7       | 53.1       |
| Earth Station Elevation Angle                     | 21.4       | 21.4        | 21.4        | 21.4       | 21.4       | 21.4       |
| Rain Rate (mm/yr)                                 | 771        | 771         | 771         | 771        | 771        | 771        |
| <b>DOWNLINK EARTH STATION</b>                     |            |             |             |            |            |            |
| Earth Station Diameter (meters)                   | 4.0        | 2.4         | 2.4         | 1.8        | 1.8        | 2.4        |
| Earth Station Gain (dBi)                          | 51.4       | 47.0        | 47.0        | 44.5       | 44.5       | 47.0       |
| Earth Station G/T (dB/K)                          | 29.0       | 25.0        | 25.0        | 23.3       | 23.3       | 25.0       |
| Earth Station Elevation Angle                     | 10.2       | 10.2        | 10.2        | 10.2       | 10.2       | 10.2       |
| Rain Rate (mm/yr)                                 | 3131       | 3131        | 3131        | 3131       | 3131       | 3131       |
| <b>LINK FADE TYPE</b>                             | Clear Sky  | Clear Sky   | Clear Sky   | Clear Sky  | Clear Sky  | Clear Sky  |
| <b>UPLINK PERFORMANCE</b>                         |            |             |             |            |            |            |
| Uplink Earth Station EIRP (dBW)                   | 79.8       | 69.3        | 68.6        | 56.8       | 53.8       | 49.1       |
| Uplink Path Loss, Clear Sky (dB)                  | -207.6     | -207.6      | -207.6      | -207.6     | -207.6     | -207.6     |
| Satellite G/T(dB/K)                               | 0.8        | 0.8         | 0.8         | 0.8        | 0.8        | 0.8        |
| Boltzman Constant(dBW/K-Hz)                       | 228.6      | 228.6       | 228.6       | 228.6      | 228.6      | 228.6      |
| Carrier Noise Bandwidth (MHz)                     | 20.7       | 20.0        | 6.1         | 1.0        | 0.5        | 0.1        |
| Uplink C/N(dB)                                    | 28.4       | 18.1        | 22.5        | 18.5       | 18.5       | 21.6       |
| <b>DOWNLINK PERFORMANCE</b>                       |            |             |             |            |            |            |
| Downlink EIRP per Carrier (dBW)                   | 41.2       | 40.8        | 35.0        | 22.9       | 19.9       | 15.2       |
| Downlink Path Loss, Clear Sky (dB)                | -206.0     | -206.0      | -206.0      | -206.0     | -206.0     | -206.0     |
| Downlink Earth Station G/T (dB/K)                 | 29.0       | 25.0        | 25.0        | 23.3       | 23.3       | 25.0       |
| Boltzman Constant(dBW/K-Hz)                       | 228.6      | 228.6       | 228.6       | 228.6      | 228.6      | 228.6      |
| Carrier Noise Bandwidth (MHz)                     | 20.7       | 20.0        | 6.1         | 1.0        | 0.5        | 0.1        |
| Transponder Correction Factor                     | 0.0        | 0.6         | 0.0         | 0.0        | 0.0        | 0.0        |
| Downlink C / N(dB)                                | 19.6       | 16.0        | 14.7        | 8.7        | 8.7        | 13.5       |
| <b>COMPOSITE LINK PERFORMANCE</b>                 |            |             |             |            |            |            |
| Uplink Earth Station HPA Intermodulation C/N (dB) | 45.7       | 35.3        | 39.8        | 35.7       | 35.7       | 38.8       |
| C/N Uplink (dB)                                   | 28.4       | 18.1        | 22.5        | 18.5       | 18.5       | 21.6       |
| Uplink Interference C/I (dB)                      | 55.2       | 33.5        | 33.1        | 37.0       | 32.6       | 46.2       |
| Uplink Adjacent Satellite C/I (dB)                | 27.6       | 17.3        | 21.8        | 17.6       | 17.7       | 20.8       |
| Intermodulation C/IM (dB)                         | 126.8      | 200.0       | 25.8        | 19.1       | 18.8       | 21.8       |
| Downlink C/N (dB)                                 | 19.6       | 16.0        | 14.7        | 8.7        | 8.7        | 13.5       |
| Downlink Interference C/I (dB)                    | 44.8       | 32.9        | 29.4        | 20.2       | 20.6       | 24.7       |
| Downlink Adjacent Satellite C/I (dB)              | 16.2       | 11.5        | 10.9        | 4.0        | 4.0        | 9.6        |
| Subtotal C/N (dB)                                 | 14.2       | 8.8         | 8.8         | 2.3        | 2.3        | 7.5        |
| Margin - Other Losses (dB)                        | 0          | 1.5         | 1.5         | 1.5        | 1.5        | 1.5        |
| Total C/N (dB)                                    | 14.2       | 7.3         | 7.3         | 0.8        | 0.8        | 6.0        |
| Minimum Required C/N (dB)                         | 14.2       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| Number of Carriers                                | 1          | 1           | 3           | 19         | 38         | 243        |
| <b>CARRIER DENSITY LEVELS</b>                     |            |             |             |            |            |            |
| Uplink Power Density (dBW/Hz)                     | -43.6      | -52.4       | -52.4       | -52.0      | -52.0      | -53.3      |
| Downlink EIRP Density At Beam Peak (dBW/Hz)       | -18.7      | -26.1       | -26.8       | -31.1      | -31.1      | -28.0      |

|                                                   |            |             |             |            |            |            |
|---------------------------------------------------|------------|-------------|-------------|------------|------------|------------|
| <b>UPLINK BEAM INFORMATION</b>                    |            |             |             |            |            |            |
| Uplink Beam Name                                  | EHUL       | EHUL        | EHUL        | EHUL       | EHUL       | EHUL       |
| Uplink Frequency (GHz)                            | 13.75-14.0 | 13.75-14.0  | 13.75-14.0  | 13.75-14.0 | 13.75-14.0 | 13.75-14.0 |
| Uplink Beam Polarization                          | Horizontal | Horizontal  | Horizontal  | Horizontal | Horizontal | Horizontal |
| Uplink Relative Contour Level (dB)                | -6.0       | -6.0        | -6.0        | -6.0       | -6.0       | -6.0       |
| Uplink Contour G/T (dB/K)                         | -0.8       | -0.8        | -0.8        | -0.8       | -0.8       | -0.8       |
| Uplink Contour SFD (dBW/m2)                       | -81.3      | -82.3       | -78.3       | -78.3      | -78.3      | -78.3      |
| <b>DOWNLINK BEAM INFORMATION</b>                  |            |             |             |            |            |            |
| Downlink Beam Name                                | BVDL       | BVDL        | BVDL        | BVDL       | BVDL       | BVDL       |
| Downlink Frequency (GHz)                          | 10.95-11.2 | 10.95-11.2  | 10.95-11.2  | 10.95-11.2 | 10.95-11.2 | 10.95-11.2 |
| Downlink Beam Polarization                        | Vertical   | Vertical    | Vertical    | Vertical   | Vertical   | Vertical   |
| Downlink Relative Contour Level (dB)              | -6.0       | -6.0        | -6.0        | -6.0       | -6.0       | -6.0       |
| Downlink Contour EIRP (dBW)                       | 45.9       | 45.9        | 45.9        | 45.9       | 45.9       | 45.9       |
| <b>ADJACENT SATELLITE 1</b>                       |            |             |             |            |            |            |
| Satellite 1 Orbital Location                      | 53.6W      | 53.6W       | 53.6W       | 53.6W      | 53.6W      | 53.6W      |
| Uplink Power Density (dBW/Hz)                     | -45.0      | -45.0       | -45.0       | -45.0      | -45.0      | -45.0      |
| Beam Peak Downlink EIRP Density (dBW/Hz)          | -20.0      | -20.0       | -20.0       | -20.0      | -20.0      | -20.0      |
| Downlink EIRP Density at ES (dBW/Hz)              | -26.0      | -26.0       | -26.0       | -26.0      | -26.0      | -26.0      |
| <b>ADJACENT SATELLITE 2</b>                       |            |             |             |            |            |            |
| Satellite 1 Orbital Location                      | 57.6W      | 57.6W       | 57.6W       | 57.6W      | 57.6W      | 57.6W      |
| Uplink Power Density (dBW/Hz)                     | -45.0      | -45.0       | -45.0       | -45.0      | -45.0      | -45.0      |
| Beam Peak Downlink EIRP Density (dBW/Hz)          | -20.0      | -20.0       | -20.0       | -20.0      | -20.0      | -20.0      |
| Downlink EIRP Density at ES (dBW/Hz)              | -26.0      | -26.0       | -26.0       | -26.0      | -26.0      | -26.0      |
| <b>CARRIER INFORMATION</b>                        |            |             |             |            |            |            |
| Carrier ID                                        | 25M0F3F    | 27M0G7W     | 8M25G7W     | 1M43G7W    | 717KG7W    | 111KG7W    |
| Carrier Modulation                                | TV/FM      | QPSK        | QPSK        | BPSK       | BPSK       | QPSK       |
| Peak to Peak Bandwidth of EDS (MHz)               | 4          | N/A         | N/A         | N/A        | N/A        | N/A        |
| Information Rate(kbps)                            | N/A        | 27650       | 8448        | 512        | 256        | 128        |
| Code Rate                                         | N/A        | 3/4x188/204 | 3/4x188/204 | 1/2        | 1/2        | 3/4        |
| Occupied Bandwidth(kHz)                           | 20700      | 20002.1     | 6111.3      | 1024.0     | 512.0      | 85.3       |
| Allocated Bandwidth(kHz)                          | 25000      | 27003       | 8250.5      | 1434.0     | 717.0      | 111.0      |
| Minimum C/N, Clear Sky (dB)                       | 14.2       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| Minimum C/N, Rain (dB)                            | 14.2       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| <b>UPLINK EARTH STATION</b>                       |            |             |             |            |            |            |
| Earth Station Diameter (meters)                   | 4.0        | 2.4         | 4.0         | 4.0        | 4.0        | 4.0        |
| Earth Station Gain (dBi)                          | 53.1       | 48.7        | 53.1        | 53.1       | 53.1       | 53.1       |
| Earth Station Elevation Angle                     | 10.1       | 10.1        | 10.1        | 10.1       | 10.1       | 10.1       |
| Rain Rate (mm/yr)                                 | 3479       | 3479        | 3479        | 3479       | 3479       | 3479       |
| <b>DOWNLINK EARTH STATION</b>                     |            |             |             |            |            |            |
| Earth Station Diameter (meters)                   | 6.5        | 2.4         | 2.4         | 1.2        | 1.8        | 2.4        |
| Earth Station Gain (dBi)                          | 55.6       | 47.0        | 47.0        | 40.9       | 44.5       | 47.0       |
| Earth Station G/T (dB/K)                          | 34.0       | 25.0        | 25.0        | 19.8       | 23.3       | 25.0       |
| Earth Station Elevation Angle                     | 45.2       | 45.2        | 45.2        | 45.2       | 45.2       | 45.2       |
| Rain Rate (mm/yr)                                 | 851        | 851         | 851         | 851        | 851        | 851        |
| <b>LINK FADE TYPE</b>                             |            |             |             |            |            |            |
|                                                   | Clear Sky  | Clear Sky   | Clear Sky   | Clear Sky  | Clear Sky  | Clear Sky  |
| <b>UPLINK PERFORMANCE</b>                         |            |             |             |            |            |            |
| Uplink Earth Station EIRP (dBW)                   | 72.3       | 71.3        | 70.3        | 62.5       | 59.2       | 50.7       |
| Uplink Path Loss, Clear Sky (dB)                  | -208.3     | -208.3      | -208.3      | -208.3     | -208.3     | -208.3     |
| Satellite G/T(dB/K)                               | -0.8       | -0.8        | -0.8        | -0.8       | -0.8       | -0.8       |
| Boltzman Constant(dBW/K-Hz)                       | 228.6      | 228.6       | 228.6       | 228.6      | 228.6      | 228.6      |
| Carrier Noise Bandwidth (MHz)                     | 20.7       | 20.0        | 6.1         | 1.0        | 0.5        | 0.1        |
| Uplink C/N(dB)                                    | 18.6       | 17.8        | 21.9        | 21.9       | 21.6       | 20.9       |
| <b>DOWNLINK PERFORMANCE</b>                       |            |             |             |            |            |            |
| Downlink EIRP per Carrier (dBW)                   | 41.1       | 41.0        | 35.6        | 27.6       | 24.3       | 15.8       |
| Downlink Path Loss, Clear Sky (dB)                | -204.9     | -204.9      | -204.9      | -204.9     | -204.9     | -204.9     |
| Downlink Earth Station G/T (dB/K)                 | 34.0       | 25.0        | 25.0        | 19.8       | 23.3       | 25.0       |
| Boltzman Constant(dBW/K-Hz)                       | 228.6      | 228.6       | 228.6       | 228.6      | 228.6      | 228.6      |
| Carrier Noise Bandwidth (MHz)                     | 20.7       | 20.0        | 6.1         | 1.0        | 0.5        | 0.1        |
| Transponder Correction Factor                     | 0.0        | 0.7         | 0.0         | 0.0        | 0.0        | 0.0        |
| Downlink C / N(dB)                                | 25.6       | 17.4        | 16.4        | 11.0       | 14.2       | 15.2       |
| <b>COMPOSITE LINK PERFORMANCE</b>                 |            |             |             |            |            |            |
| Uplink Earth Station HPA Intermodulation C/N (dB) | 34.3       | 33.5        | 37.6        | 37.6       | 37.3       | 36.6       |
| C/N Uplink (dB)                                   | 18.6       | 17.8        | 21.9        | 21.9       | 21.6       | 20.9       |
| Uplink Interference C/I (dB)                      | 34.2       | 27.3        | 31.3        | 32.1       | 105.9      | 91.2       |
| Uplink Adjacent Satellite C/I (dB)                | 20.2       | 19.3        | 23.4        | 23.4       | 23.1       | 22.4       |
| Intermodulation C/IM (dB)                         | 126.8      | 200.0       | 21.8        | 20.5       | 20.0       | 19.2       |
| Downlink C/N (dB)                                 | 25.6       | 17.4        | 16.4        | 11.0       | 14.2       | 15.2       |
| Downlink Interference C/I (dB)                    | 42.9       | 31.7        | 33.7        | 24.2       | 23.9       | 22.1       |
| Downlink Adjacent Satellite C/I (dB)              | 19.4       | 10.9        | 10.6        | 3.1        | 2.9        | 9.3        |
| Subtotal C/N (dB)                                 | 14.2       | 8.8         | 8.9         | 2.3        | 2.4        | 7.4        |
| Margin - Other Losses (dB)                        | 0          | 1.5         | 1.5         | 1.5        | 1.5        | 1.5        |
| Total C/N (dB)                                    | 14.2       | 7.3         | 7.4         | 0.8        | 0.9        | 5.9        |
| Minimum Required C/N (dB)                         | 14.2       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| Number of Carriers                                | 1          | 1           | 3           | 19         | 38         | 243        |
| <b>CARRIER DENSITY LEVELS</b>                     |            |             |             |            |            |            |
| Uplink Power Density (dBW/Hz)                     | -46.8      | -50.4       | -50.7       | -50.7      | -51.0      | -51.7      |
| Downlink EIRP Density At Beam Peak (dBW/Hz)       | -18.9      | -26.0       | -26.3       | -26.5      | -26.8      | -27.5      |

|                                                   |            |             |             |            |            |            |
|---------------------------------------------------|------------|-------------|-------------|------------|------------|------------|
| <b>UPLINK BEAM INFORMATION</b>                    |            |             |             |            |            |            |
| Uplink Beam Name                                  | EVUL       | EVUL        | EVUL        | EVUL       | EVUL       | EVUL       |
| Uplink Frequency (GHz)                            | 13.75-14.0 | 13.75-14.0  | 13.75-14.0  | 13.75-14.0 | 13.75-14.0 | 13.75-14.0 |
| Uplink Beam Polarization                          | Vertical   | Vertical    | Vertical    | Vertical   | Vertical   | Vertical   |
| Uplink Relative Contour Level (dB)                | -4.4       | -4.4        | -4.4        | -4.4       | -4.4       | -4.4       |
| Uplink Contour G/T (dB/K)                         | 0.8        | 0.8         | 0.8         | 0.8        | 0.8        | 0.8        |
| Uplink Contour SFD (dBW/m2)                       | -74.8      | -83.8       | -79.8       | -79.8      | -79.8      | -79.8      |
| <b>DOWNLINK BEAM INFORMATION</b>                  |            |             |             |            |            |            |
| Downlink Beam Name                                | BHDL       | BHDL        | BHDL        | BHDL       | BHDL       | BHDL       |
| Downlink Frequency (GHz)                          | 10.95-11.2 | 10.95-11.2  | 10.95-11.2  | 10.95-11.2 | 10.95-11.2 | 10.95-11.2 |
| Downlink Beam Polarization                        | Horizontal | Horizontal  | Horizontal  | Horizontal | Horizontal | Horizontal |
| Downlink Relative Contour Level (dB)              | -5.7       | -5.7        | -5.7        | -5.7       | -5.7       | -5.7       |
| Downlink Contour EIRP (dBW)                       | 47.0       | 47.0        | 47.0        | 47.0       | 47.0       | 47.0       |
| <b>ADJACENT SATELLITE 1</b>                       |            |             |             |            |            |            |
| Satellite 1 Orbital Location                      | 53.6W      | 53.6W       | 53.6W       | 53.6W      | 53.6W      | 53.6W      |
| Uplink Power Density (dBW/Hz)                     | -45.0      | -45.0       | -45.0       | -45.0      | -45.0      | -45.0      |
| Beam Peak Downlink EIRP Density (dBW/Hz)          | -20.0      | -20.0       | -20.0       | -20.0      | -20.0      | -20.0      |
| Downlink EIRP Density at ES (dBW/Hz)              | -25.7      | -25.7       | -25.7       | -25.7      | -25.7      | -25.7      |
| <b>ADJACENT SATELLITE 2</b>                       |            |             |             |            |            |            |
| Satellite 1 Orbital Location                      | 57.6W      | 57.6W       | 57.6W       | 57.6W      | 57.6W      | 57.6W      |
| Uplink Power Density (dBW/Hz)                     | -45.0      | -45.0       | -45.0       | -45.0      | -45.0      | -45.0      |
| Beam Peak Downlink EIRP Density (dBW/Hz)          | -20.0      | -20.0       | -20.0       | -20.0      | -20.0      | -20.0      |
| Downlink EIRP Density at ES (dBW/Hz)              | -25.7      | -25.7       | -25.7       | -25.7      | -25.7      | -25.7      |
| <b>CARRIER INFORMATION</b>                        |            |             |             |            |            |            |
| Carrier ID                                        | 25M0F3F    | 27M0G7W     | 8M25G7W     | 1M43G7W    | 717KG7W    | 111KG7W    |
| Carrier Modulation                                | TV/FM      | QPSK        | QPSK        | BPSK       | BPSK       | QPSK       |
| Peak to Peak Bandwidth of EDS (MHz)               | 4          | N/A         | N/A         | N/A        | N/A        | N/A        |
| Information Rate(kbps)                            | N/A        | 27650       | 8448        | 512        | 256        | 128        |
| Code Rate                                         | N/A        | 3/4x188/204 | 3/4x188/204 | 1/2        | 1/2        | 3/4        |
| Occupied Bandwidth(kHz)                           | 20700      | 20002.1     | 6111.3      | 1024.0     | 512.0      | 85.3       |
| Allocated Bandwidth(kHz)                          | 25000      | 27003       | 8250.5      | 1434.0     | 717.0      | 111.0      |
| Minimum C/N, Clear Sky (dB)                       | 14.2       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| Minimum C/N, Rain (dB)                            | 14.2       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| <b>UPLINK EARTH STATION</b>                       |            |             |             |            |            |            |
| Earth Station Diameter (meters)                   | 6.5        | 1.8         | 2.4         | 2.4        | 1.8        | 2.4        |
| Earth Station Gain (dBi)                          | 57.4       | 46.2        | 48.7        | 48.7       | 46.2       | 48.7       |
| Earth Station Elevation Angle                     | 21.4       | 21.4        | 21.4        | 21.4       | 21.4       | 21.4       |
| Rain Rate (mm/yr)                                 | 771        | 771         | 771         | 771        | 771        | 771        |
| <b>DOWNLINK EARTH STATION</b>                     |            |             |             |            |            |            |
| Earth Station Diameter (meters)                   | 4.0        | 2.4         | 2.4         | 1.2        | 1.2        | 2.4        |
| Earth Station Gain (dBi)                          | 51.4       | 47.0        | 47.0        | 40.9       | 40.9       | 47.0       |
| Earth Station G/T (dB/K)                          | 29.0       | 25.0        | 25.0        | 19.8       | 19.8       | 25.0       |
| Earth Station Elevation Angle                     | 43.5       | 43.5        | 43.5        | 43.5       | 43.5       | 43.5       |
| Rain Rate (mm/yr)                                 | 976        | 976         | 976         | 976        | 976        | 976        |
| <b>LINK FADE TYPE</b>                             | Clear Sky  | Clear Sky   | Clear Sky   | Clear Sky  | Clear Sky  | Clear Sky  |
| <b>UPLINK PERFORMANCE</b>                         |            |             |             |            |            |            |
| Uplink Earth Station EIRP (dBW)                   | 78.2       | 69.0        | 64.4        | 55.9       | 53.0       | 44.8       |
| Uplink Path Loss, Clear Sky (dB)                  | -207.6     | -207.6      | -207.6      | -207.6     | -207.6     | -207.6     |
| Satellite G/T(dB/K)                               | 0.8        | 0.8         | 0.8         | 0.8        | 0.8        | 0.8        |
| Boltzman Constant(dBW/K-Hz)                       | 228.6      | 228.6       | 228.6       | 228.6      | 228.6      | 228.6      |
| Carrier Noise Bandwidth (MHz)                     | 20.7       | 20.0        | 6.1         | 1.0        | 0.5        | 0.1        |
| Uplink C/N(dB)                                    | 26.8       | 17.8        | 18.3        | 17.6       | 17.7       | 17.3       |
| <b>DOWNLINK PERFORMANCE</b>                       |            |             |             |            |            |            |
| Downlink EIRP per Carrier (dBW)                   | 41.5       | 41.3        | 36.2        | 27.5       | 24.6       | 16.4       |
| Downlink Path Loss, Clear Sky (dB)                | -204.9     | -204.9      | -204.9      | -204.9     | -204.9     | -204.9     |
| Downlink Earth Station G/T (dB/K)                 | 29.0       | 25.0        | 25.0        | 19.8       | 19.8       | 25.0       |
| Boltzman Constant(dBW/K-Hz)                       | 228.6      | 228.6       | 228.6       | 228.6      | 228.6      | 228.6      |
| Carrier Noise Bandwidth (MHz)                     | 20.7       | 20.0        | 6.1         | 1.0        | 0.5        | 0.1        |
| Transponder Correction Factor                     | 0.0        | 0.7         | 0.0         | 0.0        | 0.0        | 0.0        |
| Downlink C / N(dB)                                | 21.0       | 17.7        | 17.1        | 10.9       | 11.0       | 15.8       |
| <b>COMPOSITE LINK PERFORMANCE</b>                 |            |             |             |            |            |            |
| Uplink Earth Station HPA Intermodulation C/N (dB) | 44.1       | 35.0        | 35.6        | 34.9       | 35.0       | 34.6       |
| C/N Uplink (dB)                                   | 26.8       | 17.8        | 18.3        | 17.6       | 17.7       | 17.3       |
| Uplink Interference C/I (dB)                      | 53.5       | 34.2        | 27.3        | 32.1       | 26.4       | 36.5       |
| Uplink Adjacent Satellite C/I (dB)                | 26.1       | 17.0        | 17.6        | 16.8       | 16.9       | 16.5       |
| Intermodulation C/IM (dB)                         | 126.8      | 200.0       | 22.1        | 19.9       | 19.8       | 19.3       |
| Downlink C/N (dB)                                 | 21.0       | 17.7        | 17.1        | 10.9       | 11.0       | 15.8       |
| Downlink Interference C/I (dB)                    | 44.7       | 32.3        | 29.4        | 23.1       | 22.0       | 22.2       |
| Downlink Adjacent Satellite C/I (dB)              | 16.0       | 11.5        | 11.5        | 3.4        | 3.5        | 10.3       |
| Subtotal C/N (dB)                                 | 14.3       | 9.0         | 8.8         | 2.3        | 2.4        | 7.5        |
| Margin - Other Losses (dB)                        | 0          | 1.5         | 1.5         | 1.5        | 1.5        | 1.5        |
| Total C/N (dB)                                    | 14.3       | 7.5         | 7.3         | 0.8        | 0.9        | 6.0        |
| Minimum Required C/N (dB)                         | 14.2       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| Number of Carriers                                | 1          | 1           | 3           | 19         | 38         | 243        |
| <b>CARRIER DENSITY LEVELS</b>                     |            |             |             |            |            |            |
| Uplink Power Density (dBW/Hz)                     | -45.2      | -50.2       | -52.2       | -52.9      | -50.3      | -53.2      |
| Downlink EIRP Density At Beam Peak (dBW/Hz)       | -18.8      | -26.0       | -25.9       | -26.9      | -26.8      | -27.2      |

|                                                   |            |             |             |            |            |            |
|---------------------------------------------------|------------|-------------|-------------|------------|------------|------------|
| <b>UPLINK BEAM INFORMATION</b>                    |            |             |             |            |            |            |
| Uplink Beam Name                                  | BHUL       | BHUL        | BHUL        | BHUL       | BHUL       | BHUL       |
| Uplink Frequency (GHz)                            | 14.0-14.25 | 14.0-14.25  | 14.0-14.25  | 14.0-14.25 | 14.0-14.25 | 14.0-14.25 |
| Uplink Beam Polarization                          | Horizontal | Horizontal  | Horizontal  | Horizontal | Horizontal | Horizontal |
| Uplink Relative Contour Level (dB)                | -5.7       | -5.7        | -5.7        | -5.7       | -5.7       | -5.7       |
| Uplink Contour G/T (dB/K)                         | 0.0        | 0.0         | 0.0         | 0.0        | 0.0        | 0.0        |
| Uplink Contour SFD (dBW/m2)                       | -80.6      | -81.6       | -80.6       | -80.6      | -80.6      | -80.6      |
| <b>DOWNLINK BEAM INFORMATION</b>                  |            |             |             |            |            |            |
| Downlink Beam Name                                | BVDL       | BVDL        | BVDL        | BVDL       | BVDL       | BVDL       |
| Downlink Frequency (GHz)                          | 10.95-11.2 | 10.95-11.2  | 10.95-11.2  | 10.95-11.2 | 10.95-11.2 | 10.95-11.2 |
| Downlink Beam Polarization                        | Vertical   | Vertical    | Vertical    | Vertical   | Vertical   | Vertical   |
| Downlink Relative Contour Level (dB)              | -6.0       | -6.0        | -6.0        | -6.0       | -6.0       | -6.0       |
| Downlink Contour EIRP (dBW)                       | 45.9       | 45.9        | 45.9        | 45.9       | 45.9       | 45.9       |
| <b>ADJACENT SATELLITE 1</b>                       |            |             |             |            |            |            |
| Satellite 1 Orbital Location                      | 53.6W      | 53.6W       | 53.6W       | 53.6W      | 53.6W      | 53.6W      |
| Uplink Power Density (dBW/Hz)                     | -45.0      | -45.0       | -45.0       | -45.0      | -45.0      | -45.0      |
| Beam Peak Downlink EIRP Density (dBW/Hz)          | -20.0      | -20.0       | -20.0       | -20.0      | -20.0      | -20.0      |
| Downlink EIRP Density at ES (dBW/Hz)              | -26.0      | -26.0       | -26.0       | -26.0      | -26.0      | -26.0      |
| <b>ADJACENT SATELLITE 2</b>                       |            |             |             |            |            |            |
| Satellite 1 Orbital Location                      | 57.6W      | 57.6W       | 57.6W       | 57.6W      | 57.6W      | 57.6W      |
| Uplink Power Density (dBW/Hz)                     | -45.0      | -45.0       | -45.0       | -45.0      | -45.0      | -45.0      |
| Beam Peak Downlink EIRP Density (dBW/Hz)          | -20.0      | -20.0       | -20.0       | -20.0      | -20.0      | -20.0      |
| Downlink EIRP Density at ES (dBW/Hz)              | -26.0      | -26.0       | -26.0       | -26.0      | -26.0      | -26.0      |
| <b>CARRIER INFORMATION</b>                        |            |             |             |            |            |            |
| Carrier ID                                        | 25M0F3F    | 27M0G7W     | 8M25G7W     | 1M43G7W    | 717KG7W    | 111KG7W    |
| Carrier Modulation                                | TV/FM      | QPSK        | QPSK        | BPSK       | BPSK       | QPSK       |
| Peak to Peak Bandwidth of EDS (MHz)               | 4          | N/A         | N/A         | N/A        | N/A        | N/A        |
| Information Rate(kbps)                            | N/A        | 27650       | 8448        | 512        | 256        | 128        |
| Code Rate                                         | N/A        | 3/4x188/204 | 3/4x188/204 | 1/2        | 1/2        | 3/4        |
| Occupied Bandwidth(kHz)                           | 20700      | 20002.1     | 6111.3      | 1024.0     | 512.0      | 85.3       |
| Allocated Bandwidth(kHz)                          | 25000      | 27003       | 8250.5      | 1434.0     | 717.0      | 111.0      |
| Minimum C/N, Clear Sky (dB)                       | 14.2       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| Minimum C/N, Rain (dB)                            | 14.2       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| <b>UPLINK EARTH STATION</b>                       |            |             |             |            |            |            |
| Earth Station Diameter (meters)                   | 4.0        | 2.4         | 4.0         | 4.0        | 4.0        | 2.4        |
| Earth Station Gain (dBi)                          | 53.1       | 48.7        | 53.1        | 53.1       | 53.1       | 48.7       |
| Earth Station Elevation Angle                     | 44.1       | 44.1        | 44.1        | 44.1       | 44.1       | 44.1       |
| Rain Rate (mm/yr)                                 | 758        | 758         | 758         | 758        | 758        | 758        |
| <b>DOWNLINK EARTH STATION</b>                     |            |             |             |            |            |            |
| Earth Station Diameter (meters)                   | 6.5        | 2.4         | 2.4         | 1.2        | 1.2        | 2.4        |
| Earth Station Gain (dBi)                          | 55.6       | 47.0        | 47.0        | 40.9       | 40.9       | 47.0       |
| Earth Station G/T (dB/K)                          | 34.0       | 25.0        | 25.0        | 19.8       | 19.8       | 25.0       |
| Earth Station Elevation Angle                     | 45.2       | 45.2        | 45.2        | 45.2       | 45.2       | 45.2       |
| Rain Rate (mm/yr)                                 | 851        | 851         | 851         | 851        | 851        | 851        |
| <b>LINK FADE TYPE</b>                             |            |             |             |            |            |            |
|                                                   | Clear Sky  | Clear Sky   | Clear Sky   | Clear Sky  | Clear Sky  | Clear Sky  |
| <b>UPLINK PERFORMANCE</b>                         |            |             |             |            |            |            |
| Uplink Earth Station EIRP (dBW)                   | 71.4       | 70.5        | 66.9        | 58.9       | 55.9       | 47.4       |
| Uplink Path Loss, Clear Sky (dB)                  | -207.1     | -207.1      | -207.1      | -207.1     | -207.1     | -207.1     |
| Satellite G/T(dB/K)                               | 0.0        | 0.0         | 0.0         | 0.0        | 0.0        | 0.0        |
| Boltzman Constant(dBW/K-Hz)                       | 228.6      | 228.6       | 228.6       | 228.6      | 228.6      | 228.6      |
| Carrier Noise Bandwidth (MHz)                     | 20.7       | 20.0        | 6.1         | 1.0        | 0.5        | 0.1        |
| Uplink C/N(dB)                                    | 19.7       | 19.0        | 20.5        | 20.3       | 20.3       | 19.6       |
| <b>DOWNLINK PERFORMANCE</b>                       |            |             |             |            |            |            |
| Downlink EIRP per Carrier (dBW)                   | 41.0       | 41.0        | 35.9        | 27.7       | 24.7       | 16.2       |
| Downlink Path Loss, Clear Sky (dB)                | -204.9     | -204.9      | -204.9      | -204.9     | -204.9     | -204.9     |
| Downlink Earth Station G/T (dB/K)                 | 34.0       | 25.0        | 25.0        | 19.8       | 19.8       | 25.0       |
| Boltzman Constant(dBW/K-Hz)                       | 228.6      | 228.6       | 228.6       | 228.6      | 228.6      | 228.6      |
| Carrier Noise Bandwidth (MHz)                     | 20.7       | 20.0        | 6.1         | 1.0        | 0.5        | 0.1        |
| Transponder Correction Factor                     | 0.0        | 0.6         | 0.0         | 0.0        | 0.0        | 0.0        |
| Downlink C / N(dB)                                | 25.5       | 17.3        | 16.7        | 11.1       | 11.1       | 15.6       |
| <b>COMPOSITE LINK PERFORMANCE</b>                 |            |             |             |            |            |            |
| Uplink Earth Station HPA Intermodulation C/N (dB) | 32.9       | 32.2        | 33.7        | 33.5       | 33.5       | 32.8       |
| C/N Uplink (dB)                                   | 19.7       | 19.0        | 20.5        | 20.3       | 20.3       | 19.6       |
| Uplink Interference C/I (dB)                      | 43.1       | 31.6        | 200.0       | 200.0      | 102.7      | 88.1       |
| Uplink Adjacent Satellite C/I (dB)                | 19.2       | 18.5        | 20.0        | 19.8       | 19.8       | 19.1       |
| Intermodulation C/IM (dB)                         | 126.8      | 200.0       | 21.5        | 20.0       | 19.8       | 19.0       |
| Downlink C/N (dB)                                 | 25.5       | 17.3        | 16.7        | 11.1       | 11.1       | 15.6       |
| Downlink Interference C/I (dB)                    | 43.3       | 31.0        | 29.4        | 23.1       | 24.0       | 22.1       |
| Downlink Adjacent Satellite C/I (dB)              | 19.2       | 10.8        | 10.8        | 3.2        | 3.2        | 9.6        |
| Subtotal C/N (dB)                                 | 14.3       | 8.9         | 8.8         | 2.3        | 2.3        | 7.5        |
| Margin - Other Losses (dB)                        | 0          | 1.5         | 1.5         | 1.5        | 1.5        | 1.5        |
| Total C/N (dB)                                    | 14.3       | 7.4         | 7.3         | 0.8        | 0.8        | 6.0        |
| Minimum Required C/N (dB)                         | 14.2       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| Number of Carriers                                | 1          | 1           | 3           | 19         | 38         | 243        |
| <b>CARRIER DENSITY LEVELS</b>                     |            |             |             |            |            |            |
| Uplink Power Density (dBW/Hz)                     | -47.7      | -51.2       | -54.1       | -54.3      | -54.3      | -50.6      |
| Downlink EIRP Density At Beam Peak (dBW/Hz)       | -19.0      | -26.0       | -26.0       | -26.4      | -26.4      | -27.1      |

|                                                   |            |             |             |            |            |            |
|---------------------------------------------------|------------|-------------|-------------|------------|------------|------------|
| <b>UPLINK BEAM INFORMATION</b>                    |            |             |             |            |            |            |
| Uplink Beam Name                                  | BVUL       | BVUL        | BVUL        | BVUL       | BVUL       | BVUL       |
| Uplink Frequency (GHz)                            | 14.0-14.25 | 14.0-14.25  | 14.0-14.25  | 14.0-14.25 | 14.0-14.25 | 14.0-14.25 |
| Uplink Beam Polarization                          | Vertical   | Vertical    | Vertical    | Vertical   | Vertical   | Vertical   |
| Uplink Relative Contour Level (dB)                | -6.0       | -6.0        | -6.0        | -6.0       | -6.0       | -6.0       |
| Uplink Contour G/T (dB/K)                         | 0.3        | 0.3         | 0.3         | 0.3        | 0.3        | 0.3        |
| Uplink Contour SFD (dBW/m2)                       | -80.9      | -80.9       | -79.9       | -79.9      | -79.9      | -79.9      |
| <b>DOWNLINK BEAM INFORMATION</b>                  |            |             |             |            |            |            |
| Downlink Beam Name                                | BHDL       | BHDL        | BHDL        | BHDL       | BHDL       | BHDL       |
| Downlink Frequency (GHz)                          | 10.95-11.2 | 10.95-11.2  | 10.95-11.2  | 10.95-11.2 | 10.95-11.2 | 10.95-11.2 |
| Downlink Beam Polarization                        | Horizontal | Horizontal  | Horizontal  | Horizontal | Horizontal | Horizontal |
| Downlink Relative Contour Level (dB)              | -5.8       | -5.8        | -5.8        | -5.8       | -5.8       | -5.8       |
| Downlink Contour EIRP (dBW)                       | 46.9       | 46.9        | 46.9        | 46.9       | 46.9       | 46.9       |
| <b>ADJACENT SATELLITE 1</b>                       |            |             |             |            |            |            |
| Satellite 1 Orbital Location                      | 53.6W      | 53.6W       | 53.6W       | 53.6W      | 53.6W      | 53.6W      |
| Uplink Power Density (dBW/Hz)                     | -45.0      | -45.0       | -45.0       | -45.0      | -45.0      | -45.0      |
| Beam Peak Downlink EIRP Density (dBW/Hz)          | -20.0      | -20.0       | -20.0       | -20.0      | -20.0      | -20.0      |
| Downlink EIRP Density at ES (dBW/Hz)              | -25.8      | -25.8       | -25.8       | -25.8      | -25.8      | -25.8      |
| <b>ADJACENT SATELLITE 2</b>                       |            |             |             |            |            |            |
| Satellite 1 Orbital Location                      | 57.6W      | 57.6W       | 57.6W       | 57.6W      | 57.6W      | 57.6W      |
| Uplink Power Density (dBW/Hz)                     | -45.0      | -45.0       | -45.0       | -45.0      | -45.0      | -45.0      |
| Beam Peak Downlink EIRP Density (dBW/Hz)          | -20.0      | -20.0       | -20.0       | -20.0      | -20.0      | -20.0      |
| Downlink EIRP Density at ES (dBW/Hz)              | -25.8      | -25.8       | -25.8       | -25.8      | -25.8      | -25.8      |
| <b>CARRIER INFORMATION</b>                        |            |             |             |            |            |            |
| Carrier ID                                        | 25M0F3F    | 27M0G7W     | 8M25G7W     | 1M43G7W    | 717KG7W    | 111KG7W    |
| Carrier Modulation                                | TV/FM      | QPSK        | QPSK        | BPSK       | BPSK       | QPSK       |
| Peak to Peak Bandwidth of EDS (MHz)               | 4          | N/A         | N/A         | N/A        | N/A        | N/A        |
| Information Rate(kbps)                            | N/A        | 27650       | 8448        | 512        | 256        | 128        |
| Code Rate                                         | N/A        | 3/4x188/204 | 3/4x188/204 | 1/2        | 1/2        | 3/4        |
| Occupied Bandwidth(kHz)                           | 20700      | 20002.1     | 6111.3      | 1024.0     | 512.0      | 85.3       |
| Allocated Bandwidth(kHz)                          | 25000      | 27003       | 8250.5      | 1434.0     | 717.0      | 111.0      |
| Minimum C/N, Clear Sky (dB)                       | 14.2       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| Minimum C/N, Rain (dB)                            | 14.2       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| <b>UPLINK EARTH STATION</b>                       |            |             |             |            |            |            |
| Earth Station Diameter (meters)                   | 2.4        | 2.4         | 4.0         | 2.4        | 2.4        | 2.4        |
| Earth Station Gain (dBi)                          | 48.7       | 48.7        | 53.1        | 48.7       | 48.7       | 48.7       |
| Earth Station Elevation Angle                     | 46.5       | 46.5        | 46.5        | 46.4       | 46.5       | 46.5       |
| Rain Rate (mm/yr)                                 | 1007       | 1007        | 1007        | 1090       | 1007       | 1007       |
| <b>DOWNLINK EARTH STATION</b>                     |            |             |             |            |            |            |
| Earth Station Diameter (meters)                   | 6.5        | 2.4         | 2.4         | 1.2        | 1.2        | 2.4        |
| Earth Station Gain (dBi)                          | 55.6       | 47.0        | 47.0        | 40.9       | 40.9       | 47.0       |
| Earth Station G/T (dB/K)                          | 34.0       | 25.0        | 25.0        | 19.8       | 19.8       | 25.0       |
| Earth Station Elevation Angle                     | 43.5       | 43.5        | 43.5        | 43.5       | 43.5       | 43.5       |
| Rain Rate (mm/yr)                                 | 976        | 976         | 976         | 976        | 976        | 976        |
| <b>LINK FADE TYPE</b>                             |            |             |             |            |            |            |
|                                                   | Clear Sky  | Clear Sky   | Clear Sky   | Clear Sky  | Clear Sky  | Clear Sky  |
| <b>UPLINK PERFORMANCE</b>                         |            |             |             |            |            |            |
| Uplink Earth Station EIRP (dBW)                   | 71.7       | 70.4        | 66.7        | 58.8       | 55.7       | 47.1       |
| Uplink Path Loss, Clear Sky (dB)                  | -207.1     | -207.1      | -207.1      | -207.1     | -207.1     | -207.1     |
| Satellite G/T(dB/K)                               | 0.3        | 0.3         | 0.3         | 0.3        | 0.3        | 0.3        |
| Boltzman Constant(dBW/K-Hz)                       | 228.6      | 228.6       | 228.6       | 228.6      | 228.6      | 228.6      |
| Carrier Noise Bandwidth (MHz)                     | 20.7       | 20.0        | 6.1         | 1.0        | 0.5        | 0.1        |
| Uplink C/N(dB)                                    | 20.3       | 19.2        | 20.6        | 20.5       | 20.4       | 19.6       |
| <b>DOWNLINK PERFORMANCE</b>                       |            |             |             |            |            |            |
| Downlink EIRP per Carrier (dBW)                   | 40.5       | 41.1        | 36.0        | 27.8       | 24.8       | 16.2       |
| Downlink Path Loss, Clear Sky (dB)                | -205.0     | -205.0      | -205.0      | -205.0     | -205.0     | -205.0     |
| Downlink Earth Station G/T (dB/K)                 | 34.0       | 25.0        | 25.0        | 19.8       | 19.8       | 25.0       |
| Boltzman Constant(dBW/K-Hz)                       | 228.6      | 228.6       | 228.6       | 228.6      | 228.6      | 228.6      |
| Carrier Noise Bandwidth (MHz)                     | 20.7       | 20.0        | 6.1         | 1.0        | 0.5        | 0.1        |
| Transponder Correction Factor                     | 0.0        | 0.8         | 0.0         | 0.0        | 0.0        | 0.0        |
| Downlink C / N(dB)                                | 24.9       | 17.5        | 16.8        | 11.0       | 11.1       | 15.5       |
| <b>COMPOSITE LINK PERFORMANCE</b>                 |            |             |             |            |            |            |
| Uplink Earth Station HPA Intermodulation C/N (dB) | 33.6       | 32.5        | 34.0        | 33.6       | 33.7       | 32.9       |
| C/N Uplink (dB)                                   | 20.3       | 19.2        | 20.6        | 20.5       | 20.4       | 19.6       |
| Uplink Interference C/I (dB)                      | 45.2       | 33.7        | 30.4        | 35.7       | 30.0       | 39.7       |
| Uplink Adjacent Satellite C/I (dB)                | 19.5       | 18.4        | 19.9        | 19.6       | 19.6       | 18.8       |
| Intermodulation C/IM (dB)                         | 126.8      | 200.0       | 22.7        | 21.1       | 21.0       | 20.1       |
| Downlink C/N (dB)                                 | 24.9       | 17.5        | 16.8        | 11.0       | 11.1       | 15.5       |
| Downlink Interference C/I (dB)                    | 43.8       | 33.2        | 28.9        | 23.4       | 22.2       | 21.9       |
| Downlink Adjacent Satellite C/I (dB)              | 18.6       | 10.7        | 10.7        | 3.1        | 3.2        | 9.4        |
| Subtotal C/N (dB)                                 | 14.3       | 8.8         | 8.8         | 2.2        | 2.3        | 7.4        |
| Margin - Other Losses (dB)                        | 0          | 1.5         | 1.5         | 1.5        | 1.5        | 1.5        |
| Total C/N (dB)                                    | 14.3       | 7.3         | 7.3         | 0.7        | 0.8        | 5.9        |
| Minimum Required C/N (dB)                         | 14.2       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| Number of Carriers                                | 1          | 1           | 3           | 19         | 38         | 243        |
| <b>CARRIER DENSITY LEVELS</b>                     |            |             |             |            |            |            |
| Uplink Power Density (dBW/Hz)                     | -43.0      | -51.3       | -54.3       | -50.0      | -50.1      | -50.9      |
| Downlink EIRP Density At Beam Peak (dBW/Hz)       | -19.7      | -26.1       | -26.0       | -26.6      | -26.5      | -27.3      |

|                                                   |            |             |             |            |            |            |
|---------------------------------------------------|------------|-------------|-------------|------------|------------|------------|
| <b>UPLINK BEAM INFORMATION</b>                    |            |             |             |            |            |            |
| Uplink Beam Name                                  | BHUL       | BHUL        | BHUL        | BHUL       | BHUL       | BHUL       |
| Uplink Frequency (GHz)                            | 14.0-14.25 | 14.0-14.25  | 14.0-14.25  | 14.0-14.25 | 14.0-14.25 | 14.0-14.25 |
| Uplink Beam Polarization                          | Horizontal | Horizontal  | Horizontal  | Horizontal | Horizontal | Horizontal |
| Uplink Relative Contour Level (dB)                | -5.7       | -5.7        | -5.7        | -5.7       | -5.7       | -5.7       |
| Uplink Contour G/T (dB/K)                         | 0.0        | 0.0         | 0.0         | 0.0        | 0.0        | 0.0        |
| Uplink Contour SFD (dBW/m2)                       | -81.6      | -82.6       | -80.6       | -80.6      | -80.6      | -80.6      |
| <b>DOWNLINK BEAM INFORMATION</b>                  |            |             |             |            |            |            |
| Downlink Beam Name                                | EVDL       | EVDL        | EVDL        | EVDL       | EVDL       | EVDL       |
| Downlink Frequency (GHz)                          | 10.95-11.2 | 10.95-11.2  | 10.95-11.2  | 10.95-11.2 | 10.95-11.2 | 10.95-11.2 |
| Downlink Beam Polarization                        | Vertical   | Vertical    | Vertical    | Vertical   | Vertical   | Vertical   |
| Downlink Relative Contour Level (dB)              | -6.0       | -6.0        | -6.0        | -6.0       | -6.0       | -6.0       |
| Downlink Contour EIRP (dBW)                       | 45.2       | 45.2        | 45.2        | 45.2       | 45.2       | 45.2       |
| <b>ADJACENT SATELLITE 1</b>                       |            |             |             |            |            |            |
| Satellite 1 Orbital Location                      | 53.6W      | 53.6W       | 53.6W       | 53.6W      | 53.6W      | 53.6W      |
| Uplink Power Density (dBW/Hz)                     | -45.0      | -45.0       | -45.0       | -45.0      | -45.0      | -45.0      |
| Beam Peak Downlink EIRP Density (dBW/Hz)          | -20.0      | -20.0       | -20.0       | -20.0      | -20.0      | -20.0      |
| Downlink EIRP Density at ES (dBW/Hz)              | -26.0      | -26.0       | -26.0       | -26.0      | -26.0      | -26.0      |
| <b>ADJACENT SATELLITE 2</b>                       |            |             |             |            |            |            |
| Satellite 1 Orbital Location                      | 57.6W      | 57.6W       | 57.6W       | 57.6W      | 57.6W      | 57.6W      |
| Uplink Power Density (dBW/Hz)                     | -45.0      | -45.0       | -45.0       | -45.0      | -45.0      | -45.0      |
| Beam Peak Downlink EIRP Density (dBW/Hz)          | -20.0      | -20.0       | -20.0       | -20.0      | -20.0      | -20.0      |
| Downlink EIRP Density at ES (dBW/Hz)              | -26.0      | -26.0       | -26.0       | -26.0      | -26.0      | -26.0      |
| <b>CARRIER INFORMATION</b>                        |            |             |             |            |            |            |
| Carrier ID                                        | 25M0F3F    | 27M0G7W     | 8M25G7W     | 1M43G7W    | 717KG7W    | 111KG7W    |
| Carrier Modulation                                | TV/FM      | QPSK        | QPSK        | BPSK       | BPSK       | QPSK       |
| Peak to Peak Bandwidth of EDS (MHz)               | 4          | N/A         | N/A         | N/A        | N/A        | N/A        |
| Information Rate(kbps)                            | N/A        | 27650       | 8448        | 512        | 256        | 128        |
| Code Rate                                         | N/A        | 3/4x188/204 | 3/4x188/204 | 1/2        | 1/2        | 3/4        |
| Occupied Bandwidth(kHz)                           | 20700      | 20002.1     | 6111.3      | 1024.0     | 512.0      | 85.3       |
| Allocated Bandwidth(kHz)                          | 25000      | 27003       | 8250.5      | 1434.0     | 717.0      | 111.0      |
| Minimum C/N, Clear Sky (dB)                       | 14.2       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| Minimum C/N, Rain (dB)                            | 14.2       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| <b>UPLINK EARTH STATION</b>                       |            |             |             |            |            |            |
| Earth Station Diameter (meters)                   | 4.0        | 2.4         | 4.0         | 1.8        | 1.8        | 2.4        |
| Earth Station Gain (dBi)                          | 53.1       | 48.7        | 53.1        | 46.2       | 46.2       | 48.7       |
| Earth Station Elevation Angle                     | 44.1       | 44.1        | 44.1        | 44.1       | 44.1       | 44.1       |
| Rain Rate (mm/yr)                                 | 758        | 758         | 758         | 758        | 758        | 758        |
| <b>DOWNLINK EARTH STATION</b>                     |            |             |             |            |            |            |
| Earth Station Diameter (meters)                   | 6.5        | 2.4         | 2.4         | 1.8        | 1.8        | 2.4        |
| Earth Station Gain (dBi)                          | 55.6       | 47.0        | 47.0        | 44.5       | 44.5       | 47.0       |
| Earth Station G/T (dB/K)                          | 34.0       | 25.0        | 25.0        | 23.3       | 23.3       | 25.0       |
| Earth Station Elevation Angle                     | 10.2       | 10.2        | 10.2        | 10.2       | 10.2       | 10.2       |
| Rain Rate (mm/yr)                                 | 2098       | 2098        | 2098        | 2098       | 2098       | 2098       |
| <b>LINK FADE TYPE</b>                             | Clear Sky  | Clear Sky   | Clear Sky   | Clear Sky  | Clear Sky  | Clear Sky  |
| <b>UPLINK PERFORMANCE</b>                         |            |             |             |            |            |            |
| Uplink Earth Station EIRP (dBW)                   | 71.3       | 70.5        | 67.2        | 55.4       | 52.4       | 47.7       |
| Uplink Path Loss, Clear Sky (dB)                  | -207.0     | -207.0      | -207.0      | -207.0     | -207.0     | -207.0     |
| Satellite G/T(dB/K)                               | 0.0        | 0.0         | 0.0         | 0.0        | 0.0        | 0.0        |
| Boltzman Constant(dBW/K-Hz)                       | 228.6      | 228.6       | 228.6       | 228.6      | 228.6      | 228.6      |
| Carrier Noise Bandwidth (MHz)                     | 20.7       | 20.0        | 6.1         | 1.0        | 0.5        | 0.1        |
| Uplink C/N(dB)                                    | 19.7       | 19.1        | 20.9        | 16.9       | 16.9       | 20.0       |
| <b>DOWNLINK PERFORMANCE</b>                       |            |             |             |            |            |            |
| Downlink EIRP per Carrier (dBW)                   | 40.7       | 40.8        | 35.4        | 23.4       | 20.4       | 15.7       |
| Downlink Path Loss, Clear Sky (dB)                | -206.0     | -206.0      | -206.0      | -206.0     | -206.0     | -206.0     |
| Downlink Earth Station G/T (dB/K)                 | 34.0       | 25.0        | 25.0        | 23.3       | 23.3       | 25.0       |
| Boltzman Constant(dBW/K-Hz)                       | 228.6      | 228.6       | 228.6       | 228.6      | 228.6      | 228.6      |
| Carrier Noise Bandwidth (MHz)                     | 20.7       | 20.0        | 6.1         | 1.0        | 0.5        | 0.1        |
| Transponder Correction Factor                     | 0.0        | 0.6         | 0.0         | 0.0        | 0.0        | 0.0        |
| Downlink C / N(dB)                                | 24.1       | 16.0        | 15.1        | 9.2        | 9.2        | 14.0       |
| <b>COMPOSITE LINK PERFORMANCE</b>                 |            |             |             |            |            |            |
| Uplink Earth Station HPA Intermodulation C/N (dB) | 32.8       | 32.2        | 34.0        | 29.9       | 30.0       | 33.1       |
| C/N Uplink (dB)                                   | 19.7       | 19.1        | 20.9        | 16.9       | 16.9       | 20.0       |
| Uplink Interference C/I (dB)                      | 43.0       | 32.5        | 200.0       | 200.0      | 97.1       | 86.3       |
| Uplink Adjacent Satellite C/I (dB)                | 19.1       | 18.5        | 20.3        | 16.2       | 16.3       | 19.4       |
| Intermodulation C/IM (dB)                         | 126.8      | 200.0       | 25.7        | 19.1       | 18.7       | 21.7       |
| Downlink C/N (dB)                                 | 24.1       | 16.0        | 15.1        | 9.2        | 9.2        | 14.0       |
| Downlink Interference C/I (dB)                    | 42.3       | 31.6        | 39.4        | 20.7       | 21.9       | 24.7       |
| Downlink Adjacent Satellite C/I (dB)              | 19.6       | 11.2        | 10.9        | 4.0        | 4.0        | 9.7        |
| Subtotal C/N (dB)                                 | 14.2       | 8.9         | 8.8         | 2.3        | 2.3        | 7.5        |
| Margin - Other Losses (dB)                        | 0          | 1.5         | 1.5         | 1.5        | 1.5        | 1.5        |
| Total C/N (dB)                                    | 14.2       | 7.4         | 7.3         | 0.8        | 0.8        | 6.0        |
| Minimum Required C/N (dB)                         | 14.2       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| Number of Carriers                                | 1          | 1           | 3           | 19         | 38         | 243        |
| <b>CARRIER DENSITY LEVELS</b>                     |            |             |             |            |            |            |
| Uplink Power Density (dBW/Hz)                     | -47.8      | -51.2       | -53.8       | -50.9      | -50.9      | -50.3      |
| Downlink EIRP Density At Beam Peak (dBW/Hz)       | -19.3      | -26.2       | -26.5       | -30.7      | -30.7      | -27.6      |

|                                                   |            |             |             |            |            |            |
|---------------------------------------------------|------------|-------------|-------------|------------|------------|------------|
| <b>UPLINK BEAM INFORMATION</b>                    |            |             |             |            |            |            |
| Uplink Beam Name                                  | BVUL       | BVUL        | BVUL        | BVUL       | BVUL       | BVUL       |
| Uplink Frequency (GHz)                            | 14.0-14.25 | 14.0-14.25  | 14.0-14.25  | 14.0-14.25 | 14.0-14.25 | 14.0-14.25 |
| Uplink Beam Polarization                          | Vertical   | Vertical    | Vertical    | Vertical   | Vertical   | Vertical   |
| Uplink Relative Contour Level (dB)                | -6.0       | -6.0        | -6.0        | -6.1       | -6.0       | -6.0       |
| Uplink Contour G/T (dB/K)                         | 0.3        | 0.3         | 0.3         | 0.2        | 0.3        | 0.3        |
| Uplink Contour SFD (dBW/m2)                       | -82.9      | -83.9       | -78.9       | -78.8      | -78.9      | -78.9      |
| <b>DOWNLINK BEAM INFORMATION</b>                  |            |             |             |            |            |            |
| Downlink Beam Name                                | EHDL       | EHDL        | EHDL        | EHDL       | EHDL       | EHDL       |
| Downlink Frequency (GHz)                          | 10.95-11.2 | 10.95-11.2  | 10.95-11.2  | 10.95-11.2 | 10.95-11.2 | 10.95-11.2 |
| Downlink Beam Polarization                        | Horizontal | Horizontal  | Horizontal  | Horizontal | Horizontal | Horizontal |
| Downlink Relative Contour Level (dB)              | -6.1       | -6.1        | -6.1        | -6.1       | -6.1       | -6.1       |
| Downlink Contour EIRP (dBW)                       | 44.8       | 44.8        | 44.8        | 44.8       | 44.8       | 44.8       |
| <b>ADJACENT SATELLITE 1</b>                       |            |             |             |            |            |            |
| Satellite 1 Orbital Location                      | 53.6W      | 53.6W       | 53.6W       | 53.6W      | 53.6W      | 53.6W      |
| Uplink Power Density (dBW/Hz)                     | -45.0      | -45.0       | -45.0       | -45.0      | -45.0      | -45.0      |
| Beam Peak Downlink EIRP Density (dBW/Hz)          | -20.0      | -20.0       | -20.0       | -20.0      | -20.0      | -20.0      |
| Downlink EIRP Density at ES (dBW/Hz)              | -26.1      | -26.1       | -26.1       | -26.1      | -26.1      | -26.1      |
| <b>ADJACENT SATELLITE 2</b>                       |            |             |             |            |            |            |
| Satellite 1 Orbital Location                      | 57.6W      | 57.6W       | 57.6W       | 57.6W      | 57.6W      | 57.6W      |
| Uplink Power Density (dBW/Hz)                     | -45.0      | -45.0       | -45.0       | -45.0      | -45.0      | -45.0      |
| Beam Peak Downlink EIRP Density (dBW/Hz)          | -20.0      | -20.0       | -20.0       | -20.0      | -20.0      | -20.0      |
| Downlink EIRP Density at ES (dBW/Hz)              | -26.1      | -26.1       | -26.1       | -26.1      | -26.1      | -26.1      |
| <b>CARRIER INFORMATION</b>                        |            |             |             |            |            |            |
| Carrier ID                                        | 25M0F3F    | 27M0G7W     | 8M25G7W     | 1M43G7W    | 717KG7W    | 111KG7W    |
| Carrier Modulation                                | TV/FM      | QPSK        | QPSK        | BPSK       | BPSK       | QPSK       |
| Peak to Peak Bandwidth of EDS (MHz)               | 4          | N/A         | N/A         | N/A        | N/A        | N/A        |
| Information Rate(kbps)                            | N/A        | 27650       | 8448        | 512        | 256        | 128        |
| Code Rate                                         | N/A        | 3/4x188/204 | 3/4x188/204 | 1/2        | 1/2        | 3/4        |
| Occupied Bandwidth(kHz)                           | 20700      | 20002.1     | 6111.3      | 1024.0     | 512.0      | 85.3       |
| Allocated Bandwidth(kHz)                          | 25000      | 27003       | 8250.5      | 1434.0     | 717.0      | 111.0      |
| Minimum C/N, Clear Sky (dB)                       | 14.2       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| Minimum C/N, Rain (dB)                            | 14.2       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| <b>UPLINK EARTH STATION</b>                       |            |             |             |            |            |            |
| Earth Station Diameter (meters)                   | 2.4        | 2.4         | 4.0         | 2.4        | 2.4        | 4.0        |
| Earth Station Gain (dBi)                          | 48.7       | 48.7        | 53.1        | 48.7       | 48.7       | 53.1       |
| Earth Station Elevation Angle                     | 46.5       | 46.5        | 46.5        | 46.4       | 46.5       | 46.5       |
| Rain Rate (mm/yr)                                 | 1007       | 1007        | 1007        | 1090       | 1007       | 1007       |
| <b>DOWNLINK EARTH STATION</b>                     |            |             |             |            |            |            |
| Earth Station Diameter (meters)                   | 6.5        | 2.4         | 2.4         | 1.8        | 1.8        | 2.4        |
| Earth Station Gain (dBi)                          | 55.6       | 47.0        | 47.0        | 44.5       | 44.5       | 47.0       |
| Earth Station G/T (dB/K)                          | 34.0       | 25.0        | 25.0        | 23.3       | 23.3       | 25.0       |
| Earth Station Elevation Angle                     | 10.2       | 10.2        | 10.2        | 10.2       | 10.2       | 10.2       |
| Rain Rate (mm/yr)                                 | 3131       | 3131        | 3131        | 3131       | 3131       | 3131       |
| <b>LINK FADE TYPE</b>                             |            |             |             |            |            |            |
|                                                   | Clear Sky  | Clear Sky   | Clear Sky   | Clear Sky  | Clear Sky  | Clear Sky  |
| <b>UPLINK PERFORMANCE</b>                         |            |             |             |            |            |            |
| Uplink Earth Station EIRP (dBW)                   | 70.9       | 69.5        | 68.8        | 56.9       | 53.9       | 49.1       |
| Uplink Path Loss, Clear Sky (dB)                  | -207.0     | -207.0      | -207.0      | -207.0     | -207.0     | -207.0     |
| Satellite G/T(dB/K)                               | 0.3        | 0.3         | 0.3         | 0.2        | 0.3        | 0.3        |
| Boltzman Constant(dBW/K-Hz)                       | 228.6      | 228.6       | 228.6       | 228.6      | 228.6      | 228.6      |
| Carrier Noise Bandwidth (MHz)                     | 20.7       | 20.0        | 6.1         | 1.0        | 0.5        | 0.1        |
| Uplink C/N(dB)                                    | 19.6       | 18.4        | 22.8        | 18.6       | 18.7       | 21.7       |
| <b>DOWNLINK PERFORMANCE</b>                       |            |             |             |            |            |            |
| Downlink EIRP per Carrier (dBW)                   | 41.1       | 40.8        | 35.0        | 22.9       | 19.9       | 15.1       |
| Downlink Path Loss, Clear Sky (dB)                | -206.0     | -206.0      | -206.0      | -206.0     | -206.0     | -206.0     |
| Downlink Earth Station G/T (dB/K)                 | 34.0       | 25.0        | 25.0        | 23.3       | 23.3       | 25.0       |
| Boltzman Constant(dBW/K-Hz)                       | 228.6      | 228.6       | 228.6       | 228.6      | 228.6      | 228.6      |
| Carrier Noise Bandwidth (MHz)                     | 20.7       | 20.0        | 6.1         | 1.0        | 0.5        | 0.1        |
| Transponder Correction Factor                     | 0.0        | 0.6         | 0.0         | 0.0        | 0.0        | 0.0        |
| Downlink C / N(dB)                                | 24.5       | 16.0        | 14.7        | 8.7        | 8.7        | 13.4       |
| <b>COMPOSITE LINK PERFORMANCE</b>                 |            |             |             |            |            |            |
| Uplink Earth Station HPA Intermodulation C/N (dB) | 32.8       | 31.6        | 36.0        | 31.9       | 31.9       | 34.9       |
| C/N Uplink (dB)                                   | 19.6       | 18.4        | 22.8        | 18.6       | 18.7       | 21.7       |
| Uplink Interference C/I (dB)                      | 44.5       | 32.8        | 32.2        | 34.3       | 28.8       | 42.4       |
| Uplink Adjacent Satellite C/I (dB)                | 18.7       | 17.5        | 21.9        | 17.8       | 17.8       | 20.8       |
| Intermodulation C/IM (dB)                         | 126.8      | 200.0       | 25.8        | 19.1       | 18.8       | 21.7       |
| Downlink C/N (dB)                                 | 24.5       | 16.0        | 14.7        | 8.7        | 8.7        | 13.4       |
| Downlink Interference C/I (dB)                    | 45.0       | 32.4        | 29.4        | 20.2       | 20.6       | 24.6       |
| Downlink Adjacent Satellite C/I (dB)              | 20.4       | 11.5        | 10.9        | 4.0        | 4.0        | 9.5        |
| Subtotal C/N (dB)                                 | 14.3       | 8.9         | 8.8         | 2.3        | 2.3        | 7.4        |
| Margin - Other Losses (dB)                        | 0          | 1.5         | 1.5         | 1.5        | 1.5        | 1.5        |
| Total C/N (dB)                                    | 14.3       | 7.4         | 7.3         | 0.8        | 0.8        | 5.9        |
| Minimum Required C/N (dB)                         | 14.2       | 7.3         | 7.3         | -0.2       | -0.2       | 5.9        |
| Number of Carriers                                | 1          | 1           | 3           | 19         | 38         | 243        |
| <b>CARRIER DENSITY LEVELS</b>                     |            |             |             |            |            |            |
| Uplink Power Density (dBW/Hz)                     | -43.8      | -52.2       | -52.2       | -51.9      | -51.9      | -53.3      |
| Downlink EIRP Density At Beam Peak (dBW/Hz)       | -18.8      | -26.1       | -26.8       | -31.1      | -31.1      | -28.1      |