

EXHIBIT 3: LINK BUDGETS

UPLINK BEAM INFORMATION						
Uplink Beam Name	CONUS	CONUS	CONUS	CONUS	CONUS	CONUS
Uplink Frequency (MHz)	14000 - 14500	14000 - 14500	14000 - 14500	14000 - 14500	14000 - 14500	14000 - 14500
Uplink Beam Polarization	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical
Uplink Relative Contour Level (dB)	-10	-10	-10	-10	-10	-10
Uplink Contour G/T (dB/K)	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8
Uplink SFD (dBW/m ²)	-83.2	-83.2	-83.2	-83.2	-83.2	-83.2
Rain Rate (mm/hr)	42.0	42.0	42.0	42.0	42.0	42.0
DOWNLINK BEAM INFORMATION						
Downlink Beam Name	CONUS	CONUS	CONUS	CONUS	CONUS	CONUS
Downlink Frequency (MHz)	11700 - 12200	11700 - 12200	11700 - 12200	11700 - 12200	11700 - 12200	11700 - 12200
Downlink Beam Polarization	Vertical/Horizontal	Vertical/Horizontal	Vertical/Horizontal	Vertical/Horizontal	Vertical/Horizontal	Vertical/Horizontal
Downlink Relative Contour Level (dB)	-10	-10	-10	-10	-10	-10
Downlink Contour EIRP (dBW)	40.9	40.9	40.9	40.9	40.9	40.9
Rain Rate (mm/hr)	42.0	42.0	42.0	42.0	42.0	42.0
ADJACENT SATELLITE 1						
Satellite 1 Orbital Location	74.85 W.L.	74.85 W.L.	74.85 W.L.	74.85 W.L.	74.85 W.L.	74.85 W.L.
Uplink Power Density (dBW/Hz)	-50.0	-50.0	-50.0	-50.0	-50.0	-50.0
Uplink Polarization Advantage (dB)	0	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-26.0	-26.0	-26.0	-26.0	-26.0	-26.0
Downlink Polarization Advantage (dB)	0	0	0	0	0	0
ADJACENT SATELLITE 2						
Satellite 2 Orbital Location	78.85 W.L.	78.85 W.L.	78.85 W.L.	78.85 W.L.	78.85 W.L.	78.85 W.L.
Uplink Power Density (dBW/Hz)	-50.0	-50.0	-50.0	-50.0	-50.0	-50.0
Uplink Polarization Advantage (dB)	0	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-26.0	-26.0	-26.0	-26.0	-26.0	-26.0
Downlink Polarization Advantage (dB)	0	0	0	0	0	0
CARRIER INFORMATION						
Carrier ID	1	1	1	2	2	2
Emission Designation	36M0F3F	36M0F3F	36M0F3F	41M9G7W	41M9G7W	41M9G7W
Information Rate (kbps)	n/a	n/a	n/a	28380	28380	28380
Carrier Modulation	TV/FM	TV/FM	TV/FM	QPSK	QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	4	4	4	n/a	n/a	n/a
Code Rate	n/a	n/a	n/a	1/2	1/2	1/2
Occupied Bandwidth (kHz)	36000	36000	36000	30800	30800	30800
Allocated Bandwidth (kHz)	36000	36000	36000	41890	41890	41890
Minimum C/N, Clear Sky (dB)	10	10	10	5.2	5.2	5.2
Minimum C/N, Rain (dB)	10	10	10	4.2	4.2	4.2
UPLINK EARTH STATION						
Earth Station Diameter (meters)	6.1	6.1	6.1	6.1	6.1	6.1
Earth Station Gain (dBi)	56.9	56.9	56.9	56.9	56.9	56.9
Earth Station Elevation Angle	20	20	20	20	20	20
DOWNLINK EARTH STATION						
Earth Station Diameter (meters)	4.6	4.6	4.6	9.0	9.0	9.0
Earth Station Gain (dBi)	53.5	53.5	53.5	59.0	59.0	59.0
Earth Station G/T (dB/K)	31.0	31.0	28.4	36.6	36.6	33.2
Earth Station Elevation Angle	20	20	20	20	20	20
LINK FADE TYPE						
	Clear Sky	Uplink Fade	Downlink Fade	Clear Sky	Uplink Fade	Downlink Fade
UPLINK PERFORMANCE						
Uplink Earth Station EIRP (dBW)	79.7	79.7	79.7	66.2	66.2	66.2
Uplink Path Loss, Clear Sky (dB)	-207.5	-207.5	-207.5	-207.5	-207.5	-207.5
Uplink Rain Attenuation (dB)	0.0	-5.9	0.0	0.0	-1.9	0.0
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 (dB-Hz)	-75.6	-75.6	-75.6	-74.9	-74.9	-74.9
Uplink C/N (dB)	24.5	18.6	24.5	11.6	9.7	11.6
DOWNLINK PERFORMANCE						
Downlink EIRP per Carrier (dBW)	40.9	39.9	40.9	34.9	33.2	34.9
Antenna Pointing Error (dB)	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Downlink Path Loss, Clear Sky (dB)	-205.9	-205.9	-205.9	-205.9	-205.9	-205.9
Downlink Rain Attenuation (dB)	0.0	0.0	-3.3	0.0	-6.2	-6.2
Earth Station G/T (dB/K)	31.0	31.0	28.4	36.6	36.6	33.2
Boltzman Constant (dBW/K-Hz)	228.6	228.6	228.6	228.6	228.6	228.6
Carrier Noise Bandwidth (dB-Hz)	-75.6	-75.6	-75.6	-74.9	-74.9	-74.9
Downlink C/N (dB)	18.5	17.5	12.6	18.8	17.1	9.2
COMPOSITE LINK PERFORMANCE						
C/N Uplink (dB)	24.5	18.6	24.5	11.6	9.7	11.6
C/N Downlink (dB)	18.5	17.5	12.6	18.8	17.1	9.2
C/I Intermodulation (dB)	n/a	n/a	n/a	n/a	n/a	n/a
C/I Uplink Co-Channel (dB)*	24.8	18.9	24.8	22.6	20.7	22.6
C/I Downlink Co-Channel (dB)*	24.8	23.8	24.8	22.6	20.9	22.6
C/I Uplink Adjacent Satellite 1 (dB)	26.1	20.2	26.1	13.3	11.4	13.3
C/I Downlink Adjacent Satellite 1 (dB)	22.9	21.9	22.9	23.3	21.6	23.3
C/I Uplink Adjacent Satellite 2 (dB)	26.1	20.2	26.1	13.3	11.4	13.3
C/I Downlink Adjacent Satellite 2 (dB)	23.7	22.8	23.7	23.7	22.0	23.7
C/(N+I) Composite (dB)	14.1	11.0	11.0	7.1	5.2	5.2
Required System Margin (dB)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Net C/(N+I) Composite (dB)	13.1	10.0	10.0	6.1	4.2	4.2
Minimum Required C/N (dB)	-10.0	-10.0	-10.0	-5.2	-4.2	-4.2
Excess Link Margin (dB)	3.1	0.0	0.0	0.9	0.0	0.0
Number of Carriers	1	1	1	1	1	1
Carrier Density Levels						
Uplink Power Density (dBW/Hz)	-43.2	-43.2	-43.2	-65.6	-65.6	-65.6
Downlink EIRP Density At Beam Peak	-15.1	-16.1	-15.1	-30.0	-31.7	-30.0

* Note: The C/I level is adjusted depending on the signal level and transponder mode of operation.

EXHIBIT 3: LINK BUDGETS (continued)

UPLINK BEAM INFORMATION						
Uplink Beam Name	CONUS	CONUS	CONUS	CONUS	CONUS	CONUS
Uplink Frequency (MHz)	14000 - 14500	14000 - 14500	14000 - 14500	14000 - 14500	14000 - 14500	14000 - 14500
Uplink Beam Polarization	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical
Uplink Relative Contour Level (dB)	-10	-10	-10	-10	-10	-10
Uplink Contour G/T (dB/K)	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8
Uplink SFD (dBW/m ²)	-83.2	-83.2	-83.2	-83.2	-83.2	-83.2
Rain Rate (mm/hr)	42.0	42.0	42.0	42.0	42.0	42.0
DOWNLINK BEAM INFORMATION						
Downlink Beam Name	CONUS	CONUS	CONUS	CONUS	CONUS	CONUS
Downlink Frequency (MHz)	11700 - 12200	11700 - 12200	11700 - 12200	11700 - 12200	11700 - 12200	11700 - 12200
Downlink Beam Polarization	Vertical/Horizontal	Vertical/Horizontal	Vertical/Horizontal	Vertical/Horizontal	Vertical/Horizontal	Vertical/Horizontal
Downlink Relative Contour Level (dB)	-10	-10	-10	-10	-10	-10
Downlink Contour EIRP (dBW)	40.9	40.9	40.9	40.9	40.9	40.9
Rain Rate (mm/hr)	42.0	42.0	42.0	42.0	42.0	42.0
ADJACENT SATELLITE 1						
Satellite 1 Orbital Location	74.85 W.L.	74.85 W.L.	74.85 W.L.	74.85 W.L.	74.85 W.L.	74.85 W.L.
Uplink Power Density (dBW/Hz)	-50.0	-50.0	-50.0	-50.0	-50.0	-50.0
Uplink Polarization Advantage (dB)	0	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-26.0	-26.0	-26.0	-26.0	-26.0	-26.0
Downlink Polarization Advantage (dB)	0	0	0	0	0	0
ADJACENT SATELLITE 2						
Satellite 2 Orbital Location	78.85 W.L.	78.85 W.L.	78.85 W.L.	78.85 W.L.	78.85 W.L.	78.85 W.L.
Uplink Power Density (dBW/Hz)	-50.0	-50.0	-50.0	-50.0	-50.0	-50.0
Uplink Polarization Advantage (dB)	0	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-26.0	-26.0	-26.0	-26.0	-26.0	-26.0
Downlink Polarization Advantage (dB)	0	0	0	0	0	0
CARRIER INFORMATION						
Carrier ID	3	3	3	4	4	4
Emission Designation	10M3G7W	10M3G7W	10M3G7W	100KG7W	100KG7W	100KG7W
Information Rate (kbps)	6000	6000	6000	64	64	64
Carrier Modulation	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	n/a	n/a	n/a	n/a	n/a	n/a
Code Rate	1/2xRS	1/2xRS	1/2xRS	1/2xRS	1/2xRS	1/2xRS
Occupied Bandwidth (kHz)	6771.1	6771.1	6771.1	75.4	75.4	75.4
Allocated Bandwidth (kHz)	10300	10300	10300	100	100	100
Minimum C/N, Clear Sky (dB)	3.9	3.9	3.9	3.0	3.0	3.0
Minimum C/N, Rain (dB)	3.6	3.6	3.6	2.8	2.8	2.8
UPLINK EARTH STATION						
Earth Station Diameter (meters)	6.1	6.1	6.1	6.1	6.1	6.1
Earth Station Gain (dBi)	56.9	56.9	56.9	56.9	56.9	56.9
Earth Station Elevation Angle	20	20	20	20	20	20
DOWNLINK EARTH STATION						
Earth Station Diameter (meters)	9.0	9.0	9.0	6.1	6.1	6.1
Earth Station Gain (dBi)	59.0	59.0	59.0	55.5	55.5	55.5
Earth Station G/T (dB/K)	36.6	36.6	33.0	33.1	33.1	29.9
Earth Station Elevation Angle	20	20	20	20	20	20
LINK FADE TYPE						
	Clear Sky	Uplink Fade	Downlink Fade	Clear Sky	Uplink Fade	Downlink Fade
UPLINK PERFORMANCE						
Uplink Earth Station EIRP (dBW)	60.1	60.1	60.1	40.4	40.4	40.4
Uplink Path Loss, Clear Sky (dB)	-207.5	-207.5	-207.5	-207.5	-207.5	-207.5
Uplink Rain Attenuation (dB)	0.0	-2.4	0.0	0.0	-2.5	0.0
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 (dB-Hz)	-68.3	-68.3	-68.3	48.8	48.8	48.8
Uplink C/N (dB)	12.1	9.7	12.1	12.0	9.5	12.0
DOWNLINK PERFORMANCE						
Downlink EIRP per Carrier (dBW)	28.3	26.0	28.3	8.7	6.2	8.7
Antenna Pointing Error (dB)	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Downlink Path Loss, Clear Sky (dB)	-205.9	-205.9	-205.9	-205.9	-205.9	-205.9
Downlink Rain Attenuation (dB)	0.0	0.0	-7.2	0.0	0.0	-5.2
Earth Station G/T, Clear Sky (dB/K)	36.6	36.6	33.0	33.1	33.1	29.9
Boltzman Constant (dBW/K-Hz)	228.6	228.6	228.6	228.6	228.6	228.6
Carrier Noise Bandwidth (dB-Hz)	-68.3	-68.3	-68.3	-48.8	-48.8	-48.8
Downlink C/N (dB)	18.7	16.4	8.0	15.1	12.6	6.7
COMPOSITE LINK PERFORMANCE						
C/N Uplink (dB)	12.1	9.7	12.1	12.0	9.5	12.0
C/N Downlink (dB)	18.7	16.4	8.0	15.1	12.6	6.7
C/I Intermodulation (dB)	16.5	14.5	16.5	16.4	13.9	16.4
C/I Uplink Co-Channel (dB)*	21.6	19.2	21.6	22.1	19.6	22.1
C/I Downlink Co-Channel (dB)*	21.6	19.3	21.6	22.1	19.6	22.1
C/I Uplink Adjacent Satellite 1 (dB)	13.8	11.4	13.8	13.7	11.2	13.7
C/I Downlink Adjacent Satellite 1 (dB)	23.3	20.9	23.3	19.6	17.1	19.6
C/I Uplink Adjacent Satellite 2 (dB)	13.8	11.4	13.8	13.7	11.2	13.7
C/I Downlink Adjacent Satellite 2 (dB)	23.7	21.4	23.7	20.2	17.7	20.2
C/(N+I) Composite (dB)	6.9	4.6	4.6	6.3	3.8	3.8
Required System Margin (dB)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Net C/(N+I) Composite (dB)	5.9	3.6	3.6	5.3	2.8	2.8
Minimum Required C/N (dB)	-3.9	-3.6	-3.6	-3.0	-2.8	-2.8
Excess Link Margin (dB)	2.0	0.0	0.0	2.3	0.0	0.0
Number of Carriers	4.2	4.2	4.2	430	430	430
Carrier Density Levels						
Uplink Power Density (dBW/Hz)	-65.1	-65.1	-65.1	-65.2	-65.2	-65.2
Downlink EIRP Density At Beam Peak	-30.0	-32.3	-30.0	-30.1	-32.6	-30.1

* Note: The C/I level is adjusted depending on the signal level and transponder mode of operation.

EXHIBIT 3: LINK BUDGETS (continued)

UPLINK BEAM INFORMATION						
Uplink Beam Name	CONUS	CONUS	CONUS	CONUS	CONUS	CONUS
Uplink Frequency (MHz)	14000 - 14500	14000 - 14500	14000 - 14500	14000 - 14500	14000 - 14500	14000 - 14500
Uplink Beam Polarization	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical
Uplink Relative Contour Level (dB)	-10	-10	-10	-10	-10	-10
Uplink Contour G/T (dB/K)	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8
Uplink SFD (dBW/m ²)	-83.2	-83.2	-83.2	-83.2	-83.2	-83.2
Rain Rate (mm/hr)	42.0	42.0	42.0	42.0	42.0	42.0
DOWNLINK BEAM INFORMATION						
Downlink Beam Name	CONUS	CONUS	CONUS	CONUS	CONUS	CONUS
Downlink Frequency (MHz)	11700 - 12200	11700 - 12200	11700 - 12200	11700 - 12200	11700 - 12200	11700 - 12200
Downlink Beam Polarization	Vertical/Horizontal	Vertical/Horizontal	Vertical/Horizontal	Vertical/Horizontal	Vertical/Horizontal	Vertical/Horizontal
Downlink Relative Contour Level (dB)	-10	-10	-10	-10	-10	-10
Downlink Contour EIRP (dBW)	40.9	40.9	40.9	40.9	40.9	40.9
Rain Rate (mm/hr)	42.0	42.0	42.0	42.0	42.0	42.0
ADJACENT SATELLITE 1						
Satellite 1 Orbital Location	74.85 W.L.	74.85 W.L.	74.85 W.L.	74.85 W.L.	74.85 W.L.	74.85 W.L.
Uplink Power Density (dBW/Hz)	-50.0	-50.0	-50.0	-50.0	-50.0	-50.0
Uplink Polarization Advantage (dB)	0	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-26.0	-26.0	-26.0	-26.0	-26.0	-26.0
Downlink Polarization Advantage (dB)	0	0	0	0	0	0
ADJACENT SATELLITE 2						
Satellite 2 Orbital Location	78.85 W.L.	78.85 W.L.	78.85 W.L.	78.85 W.L.	78.85 W.L.	78.85 W.L.
Uplink Power Density (dBW/Hz)	-50.0	-50.0	-50.0	-50.0	-50.0	-50.0
Uplink Polarization Advantage (dB)	0	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-26.0	-26.0	-26.0	-26.0	-26.0	-26.0
Downlink Polarization Advantage (dB)	0	0	0	0	0	0
CARRIER INFORMATION						
Carrier ID	5	5	5	6	6	6
Emission Designation	1M45G7W	1M45G7W	1M45G7W	400KG7W	400KG7W	400KG7W
Information Rate (kbps)	512	512	512	128	128	128
Carrier Modulation	BPSK	BPSK	BPSK	BPSK	BPSK	BPSK
Peak to Peak Bandwidth of EDS (MHz)	n/a	n/a	n/a	n/a	n/a	n/a
Code Rate	1/2	1/2	1/2	1/2	1/2	1/2
Occupied Bandwidth (kHz)	1229	1229	1229	307	307	307
Allocated Bandwidth (kHz)	1450	1450	1450	400	400	400
Minimum C/N, Clear Sky (dB)	3.4	3.4	3.4	3.4	3.4	3.4
Minimum C/N, Rain (dB)	2.7	2.7	2.7	2.7	2.7	2.7
UPLINK EARTH STATION						
Earth Station Diameter (meters)	6.1	6.1	6.1	6.1	6.1	6.1
Earth Station Gain (dBi)	56.9	56.9	56.9	56.9	56.9	56.9
Earth Station Elevation Angle	20	20	20	20	20	20
DOWNLINK EARTH STATION						
Earth Station Diameter (meters)	6.1	6.1	6.1	6.1	6.1	6.1
Earth Station Gain (dBi)	55.5	55.5	55.5	55.5	55.5	55.5
Earth Station G/T, Clear Sky (dB/K)	33.1	33.1	29.9	33.1	33.1	29.9
Earth Station Elevation Angle	20	20	20	20	20	20
LINK FADE TYPE						
	Clear Sky	Uplink Fade	Downlink Fade	Clear Sky	Uplink Fade	Downlink Fade
UPLINK PERFORMANCE						
Uplink Earth Station EIRP (dBW)	52.5	52.5	52.5	46.5	46.5	46.5
Uplink Path Loss, Clear Sky (dB)	-207.5	-207.5	-207.5	-207.5	-207.5	-207.5
Uplink Rain Attenuation (dB)	0.0	-2.5	0.0	0.0	-2.5	0.0
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 (dB-Hz)	-60.9	-60.9	-60.9	-54.9	-54.9	-54.9
Uplink C/N (dB)	11.9	9.4	11.9	11.9	9.4	11.9
DOWNLINK PERFORMANCE						
Downlink EIRP per Carrier (dBW)	20.7	18.2	20.7	14.7	12.2	14.7
Antenna Pointing Error (dB)	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Downlink Path Loss, Clear Sky (dB)	-205.9	-205.9	-205.9	-205.9	-205.9	-205.9
Downlink Rain Attenuation (dB)	0.0	0.0	-5.2	0.0	0.0	-5.2
Earth Station G/T, Clear Sky (dB/K)	33.1	33.1	29.9	33.1	33.1	29.9
Boltzman Constant (dBW/K-Hz)	228.6	228.6	228.6	228.6	228.6	228.6
Carrier Noise Bandwidth (dB-Hz)	-60.9	-60.9	-60.9	-54.9	-54.9	-54.9
Downlink C/N (dB)	15.0	12.5	6.6	15.0	12.5	6.6
COMPOSITE LINK PERFORMANCE						
C/N Uplink (dB)	11.9	9.4	11.9	11.9	9.4	11.9
C/N Downlink (dB)	15.0	12.5	6.6	15.0	12.5	6.6
C/I Intermodulation (dB)	16.3	13.9	16.3	16.3	13.8	16.3
C/I Uplink Co-Channel (dB)*	22.5	20.0	22.5	22.1	19.6	22.1
C/I Downlink Co-Channel (dB)*	22.5	20.0	22.5	22.1	19.6	22.1
C/I Uplink Adjacent Satellite 1 (dB)	13.6	11.1	13.6	13.6	11.1	13.6
C/I Downlink Adjacent Satellite 2 (dB)	19.4	17.0	19.4	19.5	17.0	19.5
C/I Uplink Adjacent Satellite 2 (dB)	13.6	11.1	13.6	13.6	11.1	13.6
C/I Downlink Adjacent Satellite 2 (dB)	20.1	17.6	20.1	20.1	17.6	20.1
C/(N+I) Composite (dB)	6.2	3.7	3.7	6.2	3.7	3.7
Required System Margin (dB)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Net C/(N+I) Composite (dB)	5.2	2.7	2.7	5.2	2.7	2.7
Minimum Required C/N (dB)	-3.4	-2.7	-2.7	-3.4	-2.7	-2.7
Excess Link Margin (dB)	1.8	0.0	0.0	1.8	0.0	0.0
Number of Carriers	29.7	29.7	29.7	107.5	107.5	107.5
Carrier Density Levels						
Uplink Power Density (dBW/Hz)	-65.3	-65.3	-65.3	-65.3	-65.3	-65.3
Downlink EIRP Density At Beam Peak	-30.2	-32.7	-30.2	-30.2	-32.7	-30.2

* Note: The C/I level is adjusted depending on the signal level and transponder mode of operation