EXHIBIT 4: PAS-9 Link Budgets

UPLINK BEAM INFORMATION						
Uplink Beam Name	Middle East	Middle East	Middle East	Middle East	Middle East	Middle East
Uplink Frequency (MHz)	14000 – 14250	14000 – 14250	14000 – 14250	14000 – 14250	14000 – 14250	14000 - 14250
Uplink Beam Polarization	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal
Uplink Relative Contour Level (dB)	-12	-12	-12	-12	-12	-12
Uplink Contour G/T (dB/K)	-9.1	-9.1	-9.1	-9.1	-9.1	-9.1
Uplink SFD (dBW/m^2)	-78.4	-78.4	-78.4	-75.4	-75.4	-75.4
Rain Rate (mm/hr)	15.0	15.0	15.0	15.0	15.0	15.0
DOWNLINK BEAM INFORMATION						
Downlink Beam Name	Middle East	Middle East	Middle East	Middle East	Middle East	Middle East
Downlink Frequency (MHz)	11450 -11700	11450 – 11700	11450 – 11700	11450 – 11700	11450 – 11700	11450 -11700
Downlink Beam Polarization	Vertical	Vertical	Vertical	Vertical	Vertical	Vertical
Downlink Relative Contour Level (dB)	-2	-2	-2	-2	-2	-2
Downlink Contour EIRP (dBW)	47.6	47.6	47.6	47.6	47.6	47.6
Rain Rate (mm/hr)	15.0	15.0	15.0	15.0	15.0	15.0
ADJACENT SATELLITE 1						
Satellite 1 Orbital Location	24.2 EL	24.2 EL	24.2 EL	24.2 EL	24.2 EL	24.2 EL
Uplink Power Density (dBW/Hz)	-45	-45	-45	-45	-45	-45
Uplink Polarization Advantage (dB)	0	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-24.8	-24.8	-24.8	-24.8	-24.8	-24.8
Downlink Polarization Advantage (dB)	0	0	0	0	0	0
ADJACENT SATELLITE 2						
Satellite 2 Orbital Location	28.2 EL	28.2 EL	28.2 EL	28.2 EL	28.2 EL	28.2 EL
Uplink Power Density (dBW/Hz)	-45	-45	-45	-45	-45	-45
Uplink Polarization Advantage (dB)	0	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-20	-20	-20	-20	-20	-20
Downlink Polarization Advantage (dB)	0	0	0	0	0	0
CARRIER INFORMATION						
Carrier ID	27M5G7W	27M5G7W	27M5G7W	3M00G7W	3M00G7W	3M00G7W
Information Rate (kbps)	38000	38000	38000	4000	4000	4000
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	0.75+RS	0.75+RS	0.75+RS	0.75+RS	0.75+RS	0.75+RS
Occupied Bandwidth (kHz)	27500	27500	27500	3000	3000	3000
Assumed Allocated Bandwidth (kHz)	36000	36000	36000	4000	4000	4000
Assumed Minimum C/N, Clear Sky (dB)	6.9	6.9	6.9	6.7	6.7	6.7
Assumed Minimum C/N, Rain (dB)	6.9	6.9	6.9	6.7	6.7	6.7
UPLINK EARTH STATION						
Earth Station Diameter (meters)	7	7	7	7	7	7
Earth Station Gain (dBi)	58	58	58	58	58	58
Earth Station Elevation Angle	20	20	20	20	20	20
DOWNLINK EARTH STATION						
Earth Station Diameter (meters)	1.2	1.2	1.2	1.8	1.8	1.8
Earth Station Gain (dBi)	41	41	41	44.5	44.5	44.5
Earth Station G/T (dB/K)	18.5	18.5	17.1	22	22	20.3
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)	84.5	84.5	84.5	72.4	72.4	72.4
Uplink Path Loss, Clear Sky (dB)	-207.4	-207.4	-207.4	-207.4	-207.4	-207.4
Uplink Rain Attenuation (dB)	0.0	-3.0	0.0	0.0	-1.2	0.0
Satellite G/T (dB/K)	-9.1	-9.1	-9.1	-9.1	-9.1	-9.1
Boltzman Constant (dBW/K-Hz)	228.6	228.6	228.6	228.6	228.6	228.6
Carrier Noise Bandwidth (dB-Hz)	-74.4	-74.4	-74.4	-64.8	-64.8	-64.8
Uplink C/N (dB)	22.2	19.2	22.2	19.7	18.6	19.7
DOWNLINK PERFORMANCE						
Downlink EIRP per Carrier (dBW)	47.6	47.0	47.6	35.0	33.9	35.0
Antenna Pointing Error (dB)	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Downlink Path Loss, Clear Sky (dB)	-205.7	-205.7	-205.7	-205.7	-205.7	-205.7
Downlink Rain Attenuation (dB)	0.0	0.0	-1.2	0.0	0.0	-1.6
Earth Station G/T, Clear Sky (dB/K)	18.5	18.5	17.1	22.0	22.0	20.3
Boltzman Constant (dBW/K-Hz)	228.6	228.6	228.6	228.6	228.6	228.6
Carrier Noise Bandwidth (dB-Hz)	-74.4	-74.4	-74.4	-64.8	-64.8	-64.8
Downlink C/N (dB)	14.1	13.5	11.5	14.7	13.6	11.4
COMPOSITE LINK PERFORMANCE						
C/N Uplink (dB)	22.2	19.2	22.2	19.7	18.6	19.7
C/N Downlink (dB)	14.1	13.5	11.5	14.7	13.6	11.4
C/I Intermodulation (dB)	n/a	n/a	n/a	18.5	17.6	18.5
C/I Uplink Co-Channel (dB)*	24.0	21.0	24.0	24.4	23.3	24.4
C/I Downlink Co-Channel (dB)*	24.0	23.4	24.0	24.4	23.3	24.4
C/I Uplink Adjacent Satellite 1 (dB)	25.1	22.1	25.1	22.6	21.5	22.6
C/I Downlink Adjacent Satellite 1 (dB)	14.5	13.9	14.5	17.0	15.9	17.0
C/I Uplink Adjacent Satellite 2 (dB)	25.4	22.4	25.4	22.9	21.8	22.9
C/I Downlink Adjacent Satellite 2 (dB)	14.5	13.9	14.5	14.5	13.4	14.5
C/(N+I) Composite (dB)	8.9	7.9	7.9	8.8	7.7	7.7
Required System Margin (dB)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Net C/(N+I) Composite (dB)	7.9	6.9	6.9	7.8	6.7	6.7
Minimum Required C/N (dB)	-6.9	-6.9	-6.9	-6.7	-6.7	-6.7
Excess Link Margin (dB)	1.0	0.0	0.0	1.1	0.0	0.0
Carrier Density Levels						
Uplink Power Density (dBW/Hz)	-47.9	-47.9	-47.9	-50.4	-50.4	-50.4
Downlink EIRP Density At Beam Peak	-24.8	-25.4	-24.8	-27.8	-28.9	-27.8
Number of Carriers	1	1	1	8	8	8

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