

EXHIBIT 13 : ADJACENT SATELLITE (28.15° EL) LINK BUDGETS

UPLINK BEAM INFORMATION				
Uplink Beam Name	Eur / ME / Afr	Eur / ME / Afr	Eur / ME / Afr	Eur / ME / Afr
Uplink Frequency (MHz)	6185	6185	6185	6185
Uplink Beam Polarization	Vertical / Horizontal	Vertical / Horizontal	Vertical / Horizontal	Vertical / Horizontal
Uplink Relative Contour Level (dB)	6	6	6	6
Uplink Contour G/T (dB/K)	-5.0	-5.0	-5.0	-5.0
Uplink SFD (dBW/m ²)	-88.5	-88.5	-81.0	-81.0
Rain Rate (mm/hr)	n/a	n/a	n/a	n/a
DOWNLINK BEAM INFORMATION				
Downlink Beam Name	Eur / ME / Afr	Eur / ME / Afr	Eur / ME / Afr	Eur / ME / Afr
Downlink Frequency (MHz)	3960	3960	3960	3960
Downlink Beam Polarization	Vertical / Horizontal	Vertical / Horizontal	Vertical / Horizontal	Vertical / Horizontal
Downlink Relative Contour Level (dB)	6	6	6	6
Downlink Contour EIRP (dBW)	35.3	35.3	35.3	35.3
Rain Rate (mm/hr)	n/a	n/a	n/a	n/a
ADJACENT SATELLITE 1				
Satellite 1 Orbital Location	26.15 EL	26.15 EL	26.15 EL	26.15 EL
Uplink Power Density (dBW/Hz)	-50.8	-50.8	-50.8	-50.8
Uplink Polarization Advantage (dB)	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-33.50	-33.50	-33.50	-33.50
Downlink Polarization Advantage (dB)	0	0	0	0
ADJACENT SATELLITE 2				
Satellite 2 Orbital Location	30.5 EL	30.5 EL	30.5 EL	30.5 EL
Uplink Power Density (dBW/Hz)	-45.0	-45.0	-45.0	-45.0
Uplink Polarization Advantage (dB)	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-30.00	-30.00	-30.00	-30.00
Downlink Polarization Advantage (dB)	0	0	0	0
CARRIER INFORMATION				
Carrier ID	36M0F3F	30M1G7W	5M57G7W	77K0G7W
Carrier Modulation	TV/FM	QPSK	QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	4	n/a	n/a	n/a
Code Rate	n/a	3/4 + RS	3/4	1/2
Occupied Bandwidth (kHz)	36000	30133	5565	77
Allocated Bandwidth (kHz)	36000	36000	6000	100
Minimum C/N, Clear Sky (dB)	10	6.1	6.8	6.8
Minimum C/N, Rain (dB)	n/a	n/a	n/a	n/a
UPLINK EARTH STATION				
Earth Station Diameter (meters)	7	7	7	7
Earth Station Gain (dBi)	51	51	51	51
Earth Station Elevation Angle	20	20	20	20
DOWNLINK EARTH STATION				
Earth Station Diameter (meters)	7	3.7	4.5	4.5
Earth Station Gain (dBi)	47.5	41.2	43.9	43.9
Earth Station G/T, Clear Sky (dB/K)	26.6	20.9	23.6	23.6
Earth Station Elevation Angle	20	20	20	20
LINK FADE TYPE				
	Clear Sky	Clear Sky	Clear Sky	Clear Sky
UPLINK PERFORMANCE				
Uplink Earth Station EIRP (dBW)	74.4	74.4	67.7	49.1
Uplink Path Loss, Clear Sky (dB)	-200.2	-200.2	-200.2	-200.2
Uplink Rain Attenuation (dB)	0.0	0.0	0.0	0.0
Satellite G/T (dB/K)	-5.0	-5.0	-5.0	-5.0
Boltzman Constant (dBW/K-Hz)	228.6	228.6	228.6	228.6
Carrier Noise Bandwidth (dB-Hz)	-75.6	-74.8	-67.5	-48.9
Uplink C/N (dB)	22.2	23.0	23.6	23.6
DOWNLINK PERFORMANCE				
Downlink EIRP per Carrier (dBW)	35.3	35.3	25.8	7.2
Antenna Pointing Error (dB)	-0.5	-0.5	-0.5	-0.5
Downlink Path Loss, Clear Sky (dB)	-196.4	-196.4	-196.4	-196.4
Downlink Rain Attenuation (dB)	0.0	0.0	0.0	0.0
Earth Station G/T, Clear Sky (dB/K)	26.6	20.9	23.6	23.6
Boltzman Constant (dBW/K-Hz)	228.6	228.6	228.6	228.6
Carrier Noise Bandwidth (dB-Hz)	-75.6	-74.8	-67.5	-48.9
Downlink C/N (dB)	18.1	13.2	13.7	13.7
COMPOSITE LINK PERFORMANCE				
C/N Uplink (dB)	22.2	23.0	23.6	23.6
C/N Downlink (dB)	18.1	13.2	13.7	13.7
C/I Intermodulation (dB)	n/a	n/a	18.7	18.7
C/I Uplink Co-Channel (dB)*	25.0	25.0	26.8	26.0
C/I Downlink Co-Channel (dB)*	25.0	25.0	26.8	26.0
C/I Uplink Adjacent Satellite 1 (dB)	25.6	26.4	27.0	27.1
C/I Downlink Adjacent Satellite 1 (dB)	18.5	12.1	12.9	12.9
C/I Uplink Adjacent Satellite 2 (dB)	21.7	22.4	23.1	23.1
C/I Downlink Adjacent Satellite 2 (dB)	18.3	13.3	13.6	13.6
C/(N+I) Composite (dB)	11.8	7.6	7.8	7.8
Required System Margin (dB)	-1.0	-1.0	-1.0	-1.0
Net C/(N+I) Composite (dB)	10.8	6.6	6.8	6.8
Minimum Required C/N (dB)	-10.0	-6.1	-6.8	-6.8
Excess Link Margin (dB)	0.8	0.5	0.0	0.0
Carrier Density Levels				
Uplink Power Density (dBW/Hz)	-42.6	-51.4	-50.8	-50.8
Downlink EIRP Density At Beam Peak (dBW/Hz)	-24.7	-33.5	-35.7	-35.7

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