

EXHIBIT 13: IS 11 C-Band Link Budgets
[Channel Bandwidth: 54 MHz]

UPLINK BEAM INFORMATION					
Unlink Beam Name	Americas	Americas	Americas	Americas	Americas
Unlink Frequency (MHz)	5925 - 6425	5925 - 6425	5925 - 6425	5925 - 6425	5925 - 6425
Unlink Beam Polarization	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical
Unlink Beam Relative Contour (dB)	-10	-10	-10	-10	-10
Unlink Contour G/T (dB/K)	-6.3	-6.3	-6.3	-6.3	-6.3
Unlink SFD (dBW/m ²)	-76.7	-88.7	-78.7	-78.7	-78.7
DOWNLINK BEAM INFORMATION					
Downlink Beam Name	Americas & Europe	Americas & Europe	Americas & Europe	Americas & Europe	Americas & Europe
Downlink Frequency (MHz)	3700 - 4200	3700 - 4200	3700 - 4200	3700 - 4200	3700 - 4200
Downlink Beam Polarization	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical
Downlink Beam Relative Contour (dB)	-8	-8	-8	-8	-8
Downlink Contour EIRP (dBW)	34.7	34.7	34.7	34.7	34.7
ADJACENT SATELLITE 1					
Satellite 1 Orbital Location	45 WL	45 WL	45 WL	45 WL	45 WL
Unlink Power Density (dBW/Hz)	-45	-45	-45	-45	-45
Unlink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-33.7	-33.7	-33.7	-33.7	-33.7
Downlink Polarization Advantage (dB)	0	0	0	0	0
ADJACENT SATELLITE 2					
Satellite 2 Orbital Location	41 WL	41 WL	41 WL	41 WL	41 WL
Unlink Power Density (dBW/Hz)	-45	-45	-45	-45	-45
Unlink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-33.7	-33.7	-33.7	-33.7	-33.7
Downlink Polarization Advantage (dB)	0	0	0	0	0
CARRIER INFORMATION					
Carrier ID	24M0F3F	44M8G7W	4M15G7W	1M21G7W	75K4G7W
Information Rate (kbps)	N/A	34368	6000	1544	64
Carrier Modulation	TV/FM	QPSK	QPSK	QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	4	n/a	n/a	n/a	n/a
Code Rate	N/A	1/2 - RS	3/4 - RS	3/4-RS	1/2-RS
Occupied Bandwidth (kHz)	24000	44751.5	4154	1212.8	75.4
Allocated Bandwidth (kHz)	24000	52583.0	6875	1550	100
Minimum C/N _{min} (dB)	10.0	3.1	6.7	5.7	3.0
UPLINK EARTHSTATION					
Earth Station Diameter (meters)	7.0	7.0	7.0	7.0	7.0
Earth Station Gain (dBi)	51.0	51.0	51.0	51.0	51.0
Earth Station Elevation Angle	20	20	20	20	20
DOWNLINK EARTHSTATION					
Earth Station Diameter (meters)	11	3.5	6.1	6.1	4.5
Earth Station Gain (dBi)	51.9	41.1	46.5	46.5	43.9
Earth Station G/T (dB/K)	31.0	21.0	26.2	26.2	23.6
Earth Station Elevation Angle	20	20	20	20	20
UPLINK PERFORMANCE					
Unlink Earth Station EIRP (dBW)	75.2	74.2	68.9	62.4	49.9
Unlink Path Loss, Clear Skv (dB)	-200.2	-200.2	-200.2	-200.2	-200.2
Satellite G/T (dB/K)	-6.3	-6.3	-6.3	-6.3	-6.3
Boltzman Constant (dBW/K-Hz)	228.6	228.6	228.6	228.6	228.6
Carrier Noise Bandwidth (dB-Hz)	-73.8	-76.5	-66.2	-60.8	-48.8
Unlink C/N (dB)	23.5	19.8	24.8	23.6	23.2
DOWNLINK PERFORMANCE					
Downlink EIRP per Carrier (dBW)	30.2	34.7	21.4	14.9	2.4
Antenna Pointing Error (dB)	-0.5	-0.5	-0.5	-0.5	-0.5
Downlink Path Loss, Clear Skv (dB)	-196.3	-196.3	-196.3	-196.3	-196.3
Earth Station G/T (dB/K)	31.0	21.0	26.2	26.2	23.6
Boltzman Constant (dBW/K-Hz)	228.6	228.6	228.6	228.6	228.6
Carrier Noise Bandwidth (dB-Hz)	-73.8	-76.5	-66.2	-60.8	-48.8
Downlink C/N (dB)	19.2	11.0	13.2	12.0	9.0
COMPOSITE LINK PERFORMANCE					
C/N Unlink (dB)	23.5	19.8	24.8	23.6	23.2
C/N Downlink (dB)	19.2	11.0	13.2	12.0	9.0
C/I Intermodulation (dB)	n/a	n/a	28.0	26.9	26.5
C/I Unlink Co-Channel (dB)*	20.5	20.1	21.6	21.6	21.0
C/I Downlink Co-Channel (dB)*	23.5	23.1	24.6	24.6	24.0
C/I Unlink Adjacent Satellite 1 (dB)	18.4	14.7	19.7	18.6	18.1
C/I Downlink Adjacent Satellite 1 (dB)	20.0	8.2	12.9	11.8	8.4
C/I Unlink Adjacent Satellite 2 (dB)	18.4	14.7	19.7	18.6	18.1
C/I Downlink Adjacent Satellite 2 (dB)	21.0	13.0	14.8	13.7	10.9
C/(N+I) Composite (dB)	11.1	4.3	7.7	6.7	4.0
Required System Margin (dB)	-1.0	-1.0	-1.0	-1.0	-1.0
Net C/(N+I) Composite (dB)	10.1	3.3	6.7	5.7	3.0
Minimum Required C/N (dB)	-10.0	-3.1	-6.7	-5.7	-3.0
Excess Link Margin (dB)	0.1	0.2	0.0	0.0	0.0
CARRIER DENSITY LEVELS					
Unlink Power Density (dBW/Hz)	-41.8	-53.3	-48.3	-49.4	-49.9
Downlink EIRP Density At Beam Peak	-27.8	-33.8	-36.8	-37.9	-38.4
Number of Carriers	2.0	1.0	5.4	24.0	424.8

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

EXHIBIT 13: IS 11 C-Band Link Budgets (continued)
[Channel Bandwidth: 64 MHz]

UPLINK BEAM INFORMATION					
Unlink Beam Name	Americas	Americas	Americas	Americas	Americas
Unlink Frequency (MHz)	5925 – 6425	5925 – 6425	5925 – 6425	5925 – 6425	5925 – 6425
Unlink Beam Polarization	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical
Unlink Beam Relative Contour (dB)	-10	-10	-10	-10	-10
Unlink Contour G/T (dB/K)	-6.3	-6.3	-6.3	-6.3	-6.3
Unlink SFD (dBW/m ²)	-76.7	-88.7	-78.7	-78.7	-78.7
DOWNLINK BEAM INFORMATION					
Downlink Beam Name	Americas & Europe	Americas & Europe	Americas & Europe	Americas & Europe	Americas & Europe
Downlink Frequency (MHz)	3700 – 4200	3700 – 4200	3700 – 4200	3700 – 4200	3700 – 4200
Downlink Beam Polarization	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical
Downlink Beam Relative Contour (dB)	-8	-8	-8	-8	-8
Downlink Contour EIRP (dBW)	34.7	34.7	34.7	34.7	34.7
ADJACENT SATELLITE					
Satellite 1 Orbital Location	45 WL	45 WL	45 WL	45 WL	45 WL
Unlink Power Densiv (dBW/Hz)	-45	-45	-45	-45	-45
Unlink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Densiv (dBW/Hz)	-33.7	-33.7	-33.7	-33.7	-33.7
Downlink Polarization Advantage (dB)	0	0	0	0	0
ADJACENT SATELLITE					
Satellite 2 Orbital Location	41 WL	41 WL	41 WL	41 WL	41 WL
Unlink Power Densiv (dBW/Hz)	-45	-45	-45	-45	-45
Unlink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Densiv (dBW/Hz)	-34.2	-34.2	-34.2	-34.2	-34.2
Downlink Polarization Advantage (dB)	0	0	0	0	0
CARRIER INFORMATION					
Carrier ID	30M0E3F	49M0G7W	4M15G7W	1M21G7W	75K4G7W
Information Rate (kbps)	N/A	60000	6000	1544	64
Carrier Modulation	TV/FM	OPSK	OPSK	OPSK	OPSK
Peak to Peak Bandwidth of EDS (MHz)	4	n/a	n/a	n/a	n/a
Code Rate	N/A	3/4 – RS	3/4 – RS	3/4-RS	1/2-RS
Occupied Bandwidth (kHz)	30000	49046.8	4154	1212.8	75.4
Allocated Bandwidth (kHz)	30000	62950.0	6875	1550	100
Minimum C/N (dB)	10.0	6.1	6.7	5.7	3.0
UPLINK EARTH STATION					
Earth Station Diameter (meters)	7.0	7.0	7.0	7.0	7.0
Earth Station Gain (dBi)	51.0	51.0	51.0	51.0	51.0
Earth Station Elevation Angle	20	20	20	20	20
DOWNLINK EARTH STATION					
Earth Station Diameter (meters)	13.1	6.1	7.0	7.0	4.5
Earth Station Gain (dBi)	53.5	46.5	47.5	47.5	43.9
Earth Station G/T (dB/K)	33.0	26.2	26.6	26.6	23.6
Earth Station Elevation Angle	20	20	20	20	20
UPLINK PERFORMANCE					
Unlink Earth Station EIRP (dBW)	75.2	74.2	68.1	61.6	49.8
Unlink Path Loss, Clear Sky (dB)	-200.2	-200.2	-200.2	-200.2	-200.2
Satellite G/T (dB/K)	-6.3	-6.3	-6.3	-6.3	-6.3
Boltzman Constant (dBW/K-Hz)	228.6	228.6	228.6	228.6	228.6
Carrier Noise Bandwidth (dB-Hz)	-74.8	-76.9	-66.2	-60.8	-48.8
Unlink C/N (dB)	22.5	19.4	24.0	22.9	23.1
DOWNLINK PERFORMANCE					
Downlink EIRP per Carrier (dBW)	30.2	34.7	20.6	14.1	2.3
Antenna Pointing Error (dB)	-0.5	-0.5	-0.5	-0.5	-0.5
Downlink Path Loss, Clear Sky (dB)	-196.3	-196.3	-196.3	-196.3	-196.3
Earth Station G/T (dB/K)	33.0	26.2	26.6	26.6	23.6
Boltzman Constant (dBW/K-Hz)	228.6	228.6	228.6	228.6	228.6
Carrier Noise Bandwidth (dB-Hz)	-74.8	-76.9	-66.2	-60.8	-48.8
Downlink C/N (dB)	20.2	15.8	12.8	11.7	8.9
COMPOSITE LINK PERFORMANCE					
C/N Uplink (dB)	22.5	19.4	24.0	22.9	23.1
C/N Downlink (dB)	20.2	15.8	12.8	11.7	8.9
C/I Intermodulation (dB)	n/a	n/a	28.0	26.9	27.1
C/I Unlink Co-Channel (dB)*	20.3	20.1	21.6	21.6	21.7
C/I Downlink Co-Channel (dB)*	20.3	23.1	24.6	24.6	24.7
C/I Unlink Adjacent Satellite 1 (dB)	17.4	14.3	19.0	17.8	18.0
C/I Downlink Adjacent Satellite 1 (dB)	20.7	15.5	13.4	12.2	8.3
C/I Unlink Adjacent Satellite 2 (dB)	17.4	14.3	19.0	17.8	18.0
C/I Downlink Adjacent Satellite 2 (dB)	22.0	17.9	15.4	14.3	11.3
C/(N+I) Composite (dB)	11.0	7.7	7.7	6.7	4.0
Required System Margin (dB)	-1.0	-1.0	-1.0	-1.0	-1.0
Net C/(N+I) Composite (dB)	10.0	6.7	6.7	5.7	3.0
Minimum Required C/N (dB)	-10.0	-6.1	-6.7	-5.7	-3.0
Excess Link Margin (dB)	0.0	0.5	0.0	0.0	0.0
CARRIER DENSITY LEVELS					
Unlink Power Density (dBW/Hz)	-41.8	-53.7	-49.1	-50.2	-50.0
Downlink EIRP Densiv At Beam Peak	-27.8	-34.2	-37.5	-38.7	-38.5
Number of Carriers	2.0	1.0	6.4	28.6	436.8

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

EXHIBIT 14: IS 11 Ku-Band Link Budgets

Unlink Beam Name	Americas & Europe	Americas & Europe	Americas & Europe	Americas & Europe	Americas & Europe	Americas & Europe
Unlink Frequency (MHz)	13750 -14000	13750 -14000	13750 - 14000	13750 - 14000	13750 - 14000	13750 - 14000
Unlink Beam Polarization	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical
Unlink Beam Relative Contour (dB)	-6	-6	-6	-6	-6	-6
Unlink Contour G/T (dB/K)	-4.2	-4.2	-4.2	-4.2	-4.2	-4.2
Unlink SED (dBW/m²)	-82.8	-82.8	-82.8	-82.8	-82.8	-82.8
Rain Rate (mm/hr)	42.0	42.0	42.0	42.0	42.0	42.0
Downlink Beam Name	East Brazil	East Brazil	East Brazil	East Brazil	East Brazil	East Brazil
Downlink Frequency (MHz)	10950 - 11200	10950 - 11200	10950 - 11200	10950 - 11200	10950 - 11200	10950 - 11200
Downlink Beam Polarization	Vertical/Horizontal	Vertical/Horizontal	Vertical/Horizontal	Vertical/Horizontal	Vertical/Horizontal	Vertical/Horizontal
Downlink Beam Relative Contour (dB)	-4	-4	-4	-4	-4	-4
Downlink Contour EIRP (dBW)	51.4	51.4	51.4	51.4	51.4	51.4
Rain Rate (mm/hr)	95.0	95.0	95.0	95.0	95.0	95.0
Satellite 1 Orbital Location	45 WL	45 WL	45 WL	45 WL	45 WL	45 WL
Unlink Power Density (dBW/Hz)	-45	-45	-45	-45	-45	-45
Unlink Polarization Advantage (dB)	0	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-23.8	-23.8	-23.8	-23.8	-23.8	-23.8
Downlink Polarization Advantage (dB)	0	0	0	0	0	0
Satellite 2 Orbital Location	41 WL	41 WL	41 WL	41 WL	41 WL	41 WL
Unlink Power Density (dBW/Hz)	-45.0	-45.0	-45.0	-45.0	-45.0	-45.0
Unlink Polarization Advantage (dB)	0	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-19.3	-19.3	-19.3	-19.3	-19.3	-19.3
Downlink Polarization Advantage (dB)	0	0	0	0	0	0
Carrier ID	36M0F3F	36M0F3F	36M0F3F	30M1G7W	30M1G7W	30M1G7W
Information Rate (kbns)	n/a	n/a	n/a	36863	36863	36863
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	3/4 - RS	3/4 - RS	3/4 - RS
Occupied Bandwidth (kHz)	36000	36000	36000	30133	30133	30133
Allocated Bandwidth (kHz)	36000	36000	36000	36000	36000	36000
Minimum C/N (dB)	10.0	10.0	10.0	6.1	6.1	6.1
Earth Station Diameter (meters)	6.1	6.1	6.1	6.1	6.1	6.1
Earth Station Gain (dBi)	56.7	56.7	56.7	56.7	56.7	56.7
Earth Station Elevation Angle	20	20	20	20	20	20
Earth Station Diameter (meters)	1.8	1.8	1.8	1.2	1.2	1.2
Earth Station Gain (dBi)	44.1	44.1	44.1	40.6	40.6	40.6
Earth Station G/T (dB/K)	21.6	21.6	18.9	18.1	18.1	14.9
Earth Station Elevation Angle	20	20	20	20	20	20
Link Budget Type	Clear Skv	Unlink Fade	Downlink Fade	Clear Skv	Unlink Fade	Downlink Fade
Unlink Earth Station EIRP (dBW)	80.1	80.1	80.1	80.1	80.1	80.1
Unlink Path Loss, Clear Skv (dB)	-207.2	-207.2	-207.2	-207.2	-207.2	-207.2
Unlink Rain Attenuation (dB)	0.0	-3.6	0.0	0.0	-6.1	0.0
Satellite G/T (dB/K)	-4.2	-4.2	-4.2	-4.2	-4.2	-4.2
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	-74.8	-74.8	-74.8
Unlink C/N (dB)	21.7	18.1	21.7	22.5	16.4	22.5
Downlink EIRP per Carrier (dBW)	51.4	50.5	51.4	51.4	48.7	51.4
Antenna Pointing Error (dB)	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Downlink Path Loss, Clear Skv (dB)	-205.3	-205.3	-205.3	-205.3	-205.3	-205.3
Downlink Rain Attenuation (dB)	0.0	0.0	-3.5	0.0	0.0	-5.3
Earth Station G/T, Clear Skv (dB/K)	21.6	21.6	18.9	18.1	18.1	14.9
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	-74.8	-74.8	-74.8
Downlink C/N (dB)	20.3	19.4	14.1	17.5	14.9	9.0
C/N Unlink (dB)	21.7	18.1	21.7	22.5	16.4	22.5
C/N Downlink (dB)	20.3	19.4	14.1	17.5	14.9	9.0
C/I Intermodulation (dB)	n/a	n/a	n/a	n/a	n/a	n/a
C/I Unlink Co-Channel (dB)*	23.0	19.4	23.0	23.0	16.9	23.0
C/I Downlink Co-Channel (dB)*	27.0	26.1	27.0	27.0	24.3	27.0
C/I Unlink Adjacent Satellite 1 (dB)	25.5	21.9	25.5	26.3	20.2	26.3
C/I Downlink Adjacent Satellite 1 (dB)	21.1	20.2	21.1	15.3	12.6	15.3
C/I Unlink Adjacent Satellite 2 (dB)	25.5	21.9	25.5	26.3	20.2	26.3
C/I Downlink Adjacent Satellite 2 (dB)	18.8	17.9	18.8	16.6	13.9	16.6
C/(N+I) Composite (dB)	13.0	11.0	11.0	10.6	7.1	7.1
Required System Margin (dB)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Net C/(N+I) Composite (dB)	12.0	10.0	10.0	9.6	6.1	6.1
Minimum Required C/N (dB)	-10.0	-10.0	-10.0	-6.1	-6.1	-6.1
Excess Link Margin (dB)	2.0	0.0	0.0	3.5	0.0	0.0
Unlink Power Density (dBW/Hz)	-42.6	-42.6	-42.6	-51.4	-51.4	-51.4
Downlink EIRP Density At Beam Peak	-10.6	-11.5	-10.6	-19.4	-22.1	-19.4
Number of Carriers	1.0	1.0	1.0	1.0	1.0	1.0

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

EXHIBIT 14: IS 11 Ku-Band Link Budgets (continued)

Unlink Beam Name	Americas & Europe	Americas & Europe	Americas & Europe	Americas & Europe	Americas & Europe	Americas & Europe
Unlink Frequency (MHz)	13750 - 14000	13750 - 14000	13750 - 14000	13750 - 14000	13750 - 14000	13750 - 14000
Unlink Beam Polarization	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical
Unlink Beam Relative Contour (dB)	-6	-6	-6	-6	-6	-6
Unlink Contour G/T (dB/K)	-4.2	-4.2	-4.2	-4.2	-4.2	-4.2
Unlink SPD (dBW/m²)	-77.8	-77.8	-77.8	-77.8	-77.8	-77.8
Rain Rate (mm/hr)	42.0	42.0	42.0	42.0	42.0	42.0
Downlink Beam Name	East Brazil	East Brazil	East Brazil	East Brazil	East Brazil	East Brazil
Downlink Frequency (MHz)	10950 - 11200	10950 - 11200	10950 - 11200	10950 - 11200	10950 - 11200	10950 - 11200
Downlink Beam Polarization	Vertical/Horizontal	Vertical/Horizontal	Vertical/Horizontal	Vertical/Horizontal	Vertical/Horizontal	Vertical/Horizontal
Downlink Beam Relative Contour (dB)	-4	-4	-4	-4	-4	-4
Downlink Contour EIRP (dBW)	51.4	51.4	51.4	51.4	51.4	51.4
Rain Rate (mm/hr)	95.0	95.0	95.0	95.0	95.0	95.0
Satellite 1 Orbital Location	45 WL	45 WL	45 WL	45 WL	45 WL	45 WL
Unlink Power Density (dBW/Hz)	-45	-45	-45	-45	-45	-45
Unlink Polarization Advantage (dB)	0	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-23.8	-23.8	-23.8	-23.8	-23.8	-23.8
Downlink Polarization Advantage (dB)	0	0	0	0	0	0
Satellite 2 Orbital Location	41 WL	41 WL	41 WL	41 WL	41 WL	41 WL
Unlink Power Density (dBW/Hz)	-45.0	-45.0	-45.0	-45.0	-45.0	-45.0
Unlink Polarization Advantage (dB)	0	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-19.3	-19.3	-19.3	-19.3	-19.3	-19.3
Downlink Polarization Advantage (dB)	0	0	0	0	0	0
Carrier ID	4M15G7W	4M15G7W	4M15G7W	1M21G7W	1M21G7W	1M21G7W
Information Rate (kbps)	6000	6000	6000	1544	1544	1544
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	3/4 - RS	3/4 - RS	3/4 - RS	3/4 - RS	3/4 - RS	3/4 - RS
Occupied Bandwidth (kHz)	4154	4154	4154	1212.8	1212.8	1212.8
Allocated Bandwidth (kHz)	6875	6875	6875	1550	1550	1550
Minimum C/N (dB)	6.7	6.3	6.3	5.7	5.5	5.5
Earth Station Diameter (meters)	6.1	6.1	6.1	6.1	6.1	6.1
Earth Station Gain (dBi)	56.7	56.7	56.7	56.7	56.7	56.7
Earth Station Elevation Angle	20	20	20	20	20	20
Earth Station Diameter (meters)	1.2	1.2	1.2	1.2	1.2	1.2
Earth Station Gain (dBi)	40.6	40.6	40.6	40.6	40.6	40.6
Earth Station G/T (dB/K)	18.1	18.1	15.2	18.1	18.1	15.2
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
Unlink Earth Station EIRP (dBW)	73.3	73.3	73.3	67.2	67.2	67.2
Unlink Path Loss, Clear Sky (dB)	-207.2	-207.2	-207.2	-207.2	-207.2	-207.2
Unlink Rain Attenuation (dB)	0.0	-2.9	0.0	0.0	-2.9	0.0
Satellite G/T (dB/K)	-4.2	-4.2	-4.2	-4.2	-4.2	-4.2
Boltzman Constant (dBW/K-Hz)	228.6	228.6	228.6	228.6	228.6	228.6
Carrier Noise Bandwidth (dB-Hz)	-66.2	-66.2	-66.2	-60.8	-60.8	-60.8
Unlink C/N (dB)	24.3	21.4	24.3	23.5	20.7	23.5
Downlink EIRP per Carrier (dBW)	42.1	39.5	42.1	36.0	33.2	36.0
Antenna Pointing Error (dB)	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Downlink Path Loss, Clear Sky (dB)	-205.3	-205.3	-205.3	-205.3	-205.3	-205.3
Downlink Rain Attenuation (dB)	0.0	0.0	-4.2	0.0	0.0	-4.4
Earth Station G/T, Clear Sky (dB/K)	18.1	18.1	15.2	18.1	18.1	15.2
Boltzman Constant (dBW/K-Hz)	228.6	228.6	228.6	228.6	228.6	228.6
Carrier Noise Bandwidth (dB-Hz)	-66.2	-66.2	-66.2	-60.8	-60.8	-60.8
Downlink C/N (dB)	16.9	14.2	9.8	16.1	13.3	8.8
C/N Uplink (dB)	24.3	21.4	24.3	23.5	20.7	23.5
C/N Downlink (dB)	16.9	14.2	9.8	16.1	13.3	8.8
C/I Intermodulation (dB)	20.4	18.9	20.4	19.6	17.1	19.6
C/I Uplink Co-Channel (dB)*	24.4	21.5	24.4	24.8	21.9	24.8
C/I Downlink Co-Channel (dB)*	28.4	25.7	28.4	28.8	26.0	28.8
C/I Uplink Adjacent Satellite 1 (dB)	28.2	25.2	28.2	27.4	24.5	27.4
C/I Downlink Adjacent Satellite 1 (dB)	14.6	12.0	14.6	13.9	11.1	13.9
C/I Uplink Adjacent Satellite 2 (dB)	28.2	25.2	28.2	27.4	24.5	27.4
C/I Downlink Adjacent Satellite 2 (dB)	15.9	13.3	15.9	15.2	12.4	15.2
C/(N+I) Composite (dB)	10.0	7.3	7.3	9.2	6.5	6.5
Required System Margin (dB)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Net C/(N+I) Composite (dB)	9.0	6.3	6.3	8.2	5.5	5.5
Minimum Required C/N (dB)	-6.7	-6.3	-6.3	-5.7	-5.5	-5.5
Excess Link Margin (dB)	2.2	0.0	0.0	2.6	0.0	0.0
Unlink Power Density (dBW/Hz)	-49.5	-49.5	-49.5	-50.3	-50.3	-50.3
Downlink EIRP Density At Beam Peak	-20.1	-22.7	-20.1	-20.8	-23.6	-20.8
Number of Carriers	3.8	3.8	3.8	15.4	15.4	15.4

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

EXHIBIT 14: IS 11 Ku-Band Link Budgets (continued)

UPLINK PERFORMANCE						
Unlink Beam Name	Americas & Europe	Americas & Europe	Americas & Europe	Americas & Europe	Americas & Europe	Americas & Europe
Unlink Frequency (MHz)	13750-14000	12750-13250	12750-13250	12750-13250	12750-13250	13750-14000
Unlink Beam Polarization	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical
Unlink Beam Relative Contour (dB)	-6	-6	-6	-6	-6	-6
Unlink Contour G/T (dB/K)	-4.2	-4.2	-4.2	-4.2	-4.2	-4.2
Unlink SFD (dBW/m ²)	-77.8	-77.8	-77.8	-77.8	-77.8	-77.8
Rain Rate (mm/hr)	95.0	95.0	95.0	95.0	95.0	95.0
DOWNLINK PERFORMANCE						
Downlink Beam Name	East Brazil	East Brazil	East Brazil	East Brazil	East Brazil	East Brazil
Downlink Frequency (MHz)	10950-11200	10950-11200	10950-11200	10950-11200	10950-11200	10950-11200
Downlink Beam Polarization	Vertical/Horizontal	Vertical/Horizontal	Vertical/Horizontal	Vertical/Horizontal	Vertical/Horizontal	Vertical/Horizontal
Downlink Beam Relative Contour (dB)	-4	-4	-4	-4	-4	-4
Downlink Contour EIRP (dBW)	51.4	51.4	51.4	51.4	51.4	51.4
Rain Rate (mm/hr)	95.0	95.0	95.0	95.0	95.0	95.0
SATellite 1 ORBITAL LOCATION						
Satellite 1 Orbital Location	45 WL	45 WL	45 WL	45 WL	45 WL	45 WL
Unlink Power Density (dBW/Hz)	-45	-45	-45	-45	-45	-45
Unlink Polarization Advantage (dB)	0	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-23.8	-23.8	-23.8	-23.8	-23.8	-23.8
Downlink Polarization Advantage (dB)	0	0	0	0	0	0
SATellite 2 ORBITAL LOCATION						
Satellite 2 Orbital Location	41 WL	41 WL	41 WL	41 WL	41 WL	41 WL
Unlink Power Density (dBW/Hz)	-45.0	-45.0	-45.0	-45.0	-45.0	-45.0
Unlink Polarization Advantage (dB)	0	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-19.3	-19.3	-19.3	-19.3	-19.3	-19.3
Downlink Polarization Advantage (dB)	0	0	0	0	0	0
CARRIER INFORMATION						
Carrier ID	1M23G7W	1M23G7W	1M23G7W	307KG7W	307KG7W	307KG7W
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 (dB)	3.4	2.7	2.7	3.4	2.7	2.7
EARTH STATION PERFORMANCE						
Earth Station Diameter (meters)	6.1	6.1	6.1	1.8	1.8	1.8
Earth Station Gain (dBi)	56.7	56.7	56.7	46.2	46.2	46.2
Earth Station Elevation Angle	20	20	20	20	20	20
DOWNLINK PERFORMANCE AT EARTH STATION						
Earth Station Diameter (meters)	1.8	1.8	1.8	6.1	6.1	6.1
Earth Station Gain (dBi)	44.1	44.1	44.1	54.8	54.8	54.8
Earth Station G/T (dB/K)	21.6	21.6	18.2	32.4	32.4	28.5
Earth Station Elevation Angle	20	20	20	20	20	20
LINK BUDGET SUMMARY						
	Clear Sky	Uplink Fade	Downlink Fade	Clear Sky	Uplink Fade	Downlink Fade
UPLINK PERFORMANCE						
Unlink Earth Station EIRP (dBW)	63.1	63.1	63.1	53.4	53.4	53.4
Unlink Path Loss, Clear Sky (dB)	-207.2	-207.2	-207.2	-207.2	-207.2	-207.2
Unlink Rain Attenuation (dB)	0.0	-4.5	0.0	0.0	-4.2	0.0
Satellite G/T (dB/K)	-4.2	-4.2	-4.2	-4.2	-4.2	-4.2
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
Unlink C/N (dB)	19.3	14.9	19.3	15.7	11.5	15.7
DOWNLINK PERFORMANCE AT EARTH STATION						
Downlink EIRP per Carrier (dBW)	31.9	27.4	31.9	22.2	18.0	22.2
Antenna Pointing Error (dB)	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Downlink Path Loss, Clear Sky (dB)	-205.3	-205.3	-205.3	-205.3	-205.3	-205.3
Downlink Rain Attenuation (dB)	0.0	0.0	-6.7	0.0	0.0	-12.9
Earth Station G/T, Clear Sky (dB/K)	21.6	21.6	18.2	32.4	32.4	28.5
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)	15.4	11.0	5.2	22.6	18.4	5.7
C/N PERFORMANCE						
C/N Uplink (dB)	19.3	14.9	19.3	15.7	11.5	15.7
C/N Downlink (dB)	15.4	11.0	5.2	22.6	18.4	5.7
C/I Intermodulation (dB)	15.4	11.1	15.4	11.8	7.6	11.8
C/I Unlink Co-Channel (dB)*	20.9	16.4	20.9	16.8	12.7	16.8
C/I Downlink Co-Channel (dB)*	24.9	20.5	24.9	20.8	16.7	20.8
C/I Unlink Adjacent Satellite 1 (dB)	23.2	18.7	23.2	19.5	15.3	19.5
C/I Downlink Adjacent Satellite 1 (dB)	16.3	11.8	16.3	24.1	20.0	24.1
C/I Unlink Adjacent Satellite 2 (dB)	23.2	18.7	23.2	19.5	15.3	19.5
C/I Downlink Adjacent Satellite 2 (dB)	13.9	9.5	13.9	20.2	16.1	20.2
C/(N+I) Composite (dB)	8.1	3.7	3.7	7.8	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)	7.1	2.7	2.7	6.8	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)	3.7	0.0	0.0	3.4	0.0	0.0
Channel Data Levels						
Unlink Power Density (dBW/Hz)	-54.5	-54.5	-54.5	-47.7	-47.7	-47.7
Downlink EIRP Density At Beam Peak	-25.0	-22.5	-25.0	-28.7	-32.9	-28.7
Number of Carriers	24.8	24.8	24.8	90.0	90.0	90.0

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

EXHIBIT 14: IS 11 Ku-Band Link Budgets (continued)

UPLINK BEAM INFORMATION			
Uplink Beam Name	Americas & Europe	Americas & Europe	Americas & Europe
Uplink Frequency (MHz)	13750 - 14000	13750 - 14000	13750 - 14000
Uplink Beam Polarization	Horizontal/Vertical	Horizontal/Vertical	Horizontal/Vertical
Uplink Beam Relative Contour (dB)	-6	-6	-6
Uplink Contour G/T (dB/K)	-4.2	-4.2	-4.2
Uplink SED (dBW/m ²)	-77.8	-77.8	-77.8
Rain Rate (mm/hr)	42.0	42.0	42.0
DOWNLINK BEAM INFORMATION			
Downlink Beam Name	East Brazil	East Brazil	East Brazil
Downlink Frequency (MHz)	10950 - 11200	10950 - 11200	10950 - 11200
Downlink Beam Polarization	Vertical/Horizontal	Vertical/Horizontal	Vertical/Horizontal
Downlink Beam Relative Contour (dB)	-4	-4	-4
Downlink Contour EIRP (dBW)	51.4	51.4	51.4
Rain Rate (mm/hr)	95.0	95.0	95.0
SATELLITE 1 INFORMATION			
Satellite 1 Orbital Location	45 WL	45 WL	45 WL
Uplink Power Density (dBW/Hz)	-45	-45	-45
Uplink Polarization Advantage (dB)	0	0	0
Downlink EIRP Density (dBW/Hz)	-23.8	-23.8	-23.8
Downlink Polarization Advantage (dB)	0	0	0
SATELLITE 2 INFORMATION			
Satellite 2 Orbital Location	41 WL	41 WL	41 WL
Uplink Power Density (dBW/Hz)	-45.0	-45.0	-45.0
Uplink Polarization Advantage (dB)	0	0	0
Downlink EIRP Density (dBW/Hz)	-19.3	-19.3	-19.3
Downlink Polarization Advantage (dB)	0	0	0
CARRIER INFORMATION			
Carrier ID	75K4G7W	75K4G7W	75K4G7W
Information Rate (kbps)	64	64	64
Carrier Modulation	QPSK	QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	n/a	n/a	n/a
Code Rate	1/2 - RS	1/2 - RS	1/2 - RS
Occupied Bandwidth (kHz)	75.4	75.4	75.4
Allocated Bandwidth (kHz)	100.0	100.0	100.0
Minimum C/N (dB)	3.0	2.8	2.8
EARTH STATION INFORMATION			
Earth Station Diameter (meters)	6.1	6.1	6.1
Earth Station Gain (dBi)	56.7	56.7	56.7
Earth Station Elevation Angle	20	20	20
EARTH STATION INFORMATION			
Earth Station Diameter (meters)	1.2	1.2	1.2
Earth Station Gain (dBi)	40.6	40.6	40.6
Earth Station G/T (dB/K)	18.1	18.1	15.1
Earth Station Elevation Angle	20	20	20
LINK BUDGET SUMMARY			
	Clear Sky	Uplink Fade	Downlink Fade
UPLINK LINK BUDGET			
Uplink Earth Station EIRP (dBW)	52.5	52.5	52.5
Uplink Path Loss, Clear Sky (dB)	-207.2	-207.2	-207.2
Uplink Rain Attenuation (dB)	0.0	-2.8	0.0
Satellite G/T (dB/K)	-4.2	-4.2	-4.2
Boltzman Constant (dBW/K-Hz)	228.6	228.6	228.6
Carrier Noise Bandwidth (dB-Hz)	-48.8	-48.8	-48.8
Uplink C/N (dB)	20.9	18.1	20.9
DOWNLINK LINK BUDGET			
Downlink EIRP per Carrier (dBW)	21.4	18.5	21.4
Antenna Pointing Error (dB)	-0.5	-0.5	-0.5
Downlink Path Loss, Clear Sky (dB)	-205.3	-205.3	-205.3
Downlink Rain Attenuation (dB)	0.0	0.0	-4.4
Earth Station G/T, Clear Sky (dB/K)	18.1	18.1	15.1
Boltzman Constant (dBW/K-Hz)	228.6	228.6	228.6
Carrier Noise Bandwidth (dB-Hz)	-48.8	-48.8	-48.8
Downlink C/N (dB)	13.5	10.7	6.1
COMPOSITE LINK BUDGET			
C/N Uplink (dB)	20.9	18.1	20.9
C/N Downlink (dB)	13.5	10.7	6.1
C/I Intermodulation (dB)	17.0	14.2	17.0
C/I Uplink Co-Channel (dB)*	22.0	19.2	22.0
C/I Downlink Co-Channel (dB)*	26.0	23.2	26.0
C/I Uplink Adjacent Satellite 1 (dB)	24.8	21.9	24.8
C/I Downlink Adjacent Satellite 1 (dB)	11.3	8.4	11.3
C/I Uplink Adjacent Satellite 2 (dB)	24.8	21.9	24.8
C/I Downlink Adjacent Satellite 2 (dB)	12.6	9.7	12.6
C/(N+I) Composite (dB)	6.6	3.8	3.8
Required System Margin (dB)	-1.0	-1.0	-1.0
Net C/(N+I) Composite (dB)	5.6	2.8	2.8
Minimum Required C/N (dB)	-3.0	-2.8	-2.8
Excess Link Margin (dB)	2.6	0.0	0.0
POWER DENSITY AND EIRP AT BEAM PEAK			
Uplink Power Density (dBW/Hz)	-52.9	-52.9	-52.9
Downlink EIRP Density At Beam Peak	-23.4	-26.3	-23.4
Number of Carriers	360.0	360.0	360.0

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