Engineering Statement

Intelsat License LLC ("Intelsat") proposes to relocate its Intelsat 702 ("IS 702") spacecraft to 33.0° E.L. and to operate from that location. The spacecraft will utilize the frequency bands 5925 - 6425 MHz, 14000 - 14500 MHz, 3700 - 4200 MHz, 10950 - 11200 MHz, 11450 - 11700 MHz and 12500 - 12750 MHz to provide service to Europe, Africa, and Asia.¹ Intelsat 702 will be collocated with Intelsat New Dawn, which currently operates at 32.8° E.L.

Intelsat also requests that the Part 25 waivers originally granted to the Intelsat 702 spacecraft continue to apply at the 33.0° E.L. location, namely, the waivers of Sections 25.202(g), 25.210(a)(1), 25.210(a)(3), 25.210(i)(1) and 25.211(a) of the Commission's rules.²

In April 2009, the Commission granted Intelsat authorization to operate Intelsat 702 from 66.0° E.L. (see FCC File No.: SAT-MOD-20081217-00233). The Commission subsequently granted a Special Temporary Authority ("STA") to Intelsat to relocate and operate Intelsat 702 at 47.5° E.L. Currently the satellite is operating from 47.5° E.L. as authorized under a Special Temporary Authority (see FCC File No.: SAT-STA-20120416-00068). As part of its overall satellite fleet management, Intelsat now proposes to relocate Intelsat 702 from 47.5° E.L. to 33.0° E.L.

This engineering statement provides and updates, as appropriate, the following technical information for Intelsat 702: (1) frequency plan (2) beam performance and gain contours, (3) emission designators, (4) power flux density calculations, (5) link budget analysis, (6) adjacent satellite link analysis, (7) Schedule S information and (8) orbital debris mitigation plan. In all other respects, the characteristics of Intelsat 702 are the same as those described in SAT-MOD-20081217-00233.

¹ Intelsat 702 also has the capability to transmit in the 11700 - 11950 MHz frequency band; however, this capability will not be utilized from the proposed orbital location.

² See Applications of Intelsat LLC for Authority to Operate and Further Construct, Launch, and Operate C-Band and Ku-Band Satellites that Form a Global Communications System in Geostationary Orbit, 15 FCC Rcd 15460, 15529 (Appendix C)(2000)(Memorandum Opinion and Order and Authorization), *recon. denied*, 15 FCC Rcd 25234(2000)(Order on Reconsideration).

1.0) <u>Frequency Plan</u>

The Intelsat 702 frequency and polarization plan is provided in Exhibit 1. The plan details all of the transponder combinations, channel bandwidths and channel gains. The channel gain for the transponders were calculated using the specific parameters for each transponder.

2.0) <u>Gain Contours</u>

The co-polarized coverage patterns of Intelsat 702 operating from 33.0° E.L. are shown in Exhibit 2. The peak antenna gain, G/T, SFD ("Saturaturation Flux Density") and EIRP levels for each uplink and downlink beam, as appropriate, are also provided in these exhibits.

Given that the cross-polarization isolation performance of Intelsat 702 with respect to the axis of each satellite beam will not change as a result of the proposed relocation of Intelsat 702 to 33.0° E.L., no cross-polarization patterns are provided herein.

3.0) <u>Emission Designators</u>

Emission designators and allocated bandwidths for representative communication carriers are provided in Exhibit 3.

4.0) <u>Power Flux Density Levels</u>

The power flux density ("PFD") limits for space stations operating in the 3650 - 4200 MHz, 10950 - 11200 MHz and 11450 - 11700 MHz bands are contained in section 25.208 of the Commission's rules. With respect to the 12500 - 12750 MHz bands, the PFD limits are specified in No. 21.16 of the ITU Radio Regulations.

The maximum PFD levels for the Intelsat 702 transmissions were calculated for a number of TV/FM and digital carriers listed in Exhibit 3 operating in the 3700 – 4200 MHz, 10950 – 11200 MHz, 11450 – 11700 MHz and 12500 – 12750 MHz bands. These carriers were chosen because they generally produce high PFD levels on the Earth's surface. The maximum PFD levels for the Intelsat 702 telemetry and uplink power control beacons were also calculated. The results are provided in Exhibit 4 and show that the downlink power flux density levels of the Intelsat 702 carriers do not exceed the limits specified in section 25.208 of the Commission's rules or No. 21.16 of the ITU Radio Regulations.

5.0) <u>Link Budgets and Interference Analysis</u>

Link analysis for Intelsat 702 was conducted for a number of representative carriers at C- and Ku-band frequencies. For the analysis in C-Band, it was assumed that the nearest satellites to Intelsat 702 were a hypothetical satellite operating at 31.0° E.L. and a hypothetical satellite operating at 35.0° E.L.³ The uplink power density of emissions for each of the hypothetical satellites was assumed to be -38.7 dBW/Hz, the maximum level specified in section 25.212(d)(2) of the Commission's rules for digital C-Band carriers. At C-band, the maximum downlink EIRP density of each of the hypothetical satellites was assumed to be -32 dBW/Hz. All other operational parameters for the hypothetical satellites were assumed be the same as Intelsat 702.

For the 12500 - 12750 MHz band analysis, it was assumed that the nearest satellites to Intelsat 702 were Astra 1G, located at 31.5° E.L., and a hypothetical satellite located at 35.0° E.L.⁴ The hypothetical satellite was assumed to have the same characteristics as Intelsat 702. The maximum uplink power density of emissions for each of these satellites was assumed to be -45 dBW/Hz.

Astra 1G utilizes the downlink frequencies spanning 11700 - 12750 MHz to provide service to Eastern and Western Europe using two Ku-band beams. It was assumed that this satellite utilized the uplink frequency band of 14000 – 14500 MHz.⁵ The maximum EIRP of the Astra 1G downlink beams is 52 dBW with a channel bandwidth of 26 MHz.⁶ The maximum downlink EIRP density of the Astra 1G carriers was assumed to be -21.4 dBW (corresponding to the maximum EIRP of 52 dBW being evenly distributed within an occupied bandwidth of 21.7 MHz). No beam isolation was considered between Astra 1G and Intelsat 702 due to the fact that the Intelsat 702 Ku-Band utilizes steerable beams.

For the hypothetical satellite at 35.0° E.L. in Ku-Band, the downlink EIRP density was assumed to be -20 dBW/Hz. All other operational parameters were assumed to be the same as those specified for Intelsat 702.

 $^{^3}$ Arabsat 2B is located at 34° E.L. and has the capability to operate in the 5925 – 6425 MHz, 3700 – 4200 MHz, 13750 – 14000 MHz and 12500 – 12750 MHz bands. However, the operational status of this satellite is unknown and for the purposes of the link budget analysis was not considered.

⁴ *Supra* footnote 3.

⁵ No information was available for the Astra 1G uplink beams.

⁶ Both the maximum EIRP and minimum channel bandwidth for Astra 1G were obtained from The Satellite Encyclopedia website (<u>http://www.tbs-satellite.com/tse/online/sat_astra_1g html</u>).

For the 10950 - 11200 MHz and 11450 - 11700 MHz band analysis, it was assumed that the nearest satellites to Intelsat 702 were a hypothetical satellite located at 31.5° E.L. and a hypothetical satellite located at 35.0° E.L. The hypothetical satellites were assumed to be identical to Intelsat 702 and operated with a maximum downlink EIRP density of -20.0 dBW/Hz. The maximum uplink power density of -45 dBW/Hz was assumed for each of these satellites.

Other assumptions made for the link budget analysis were as follows:

- a) In the plane of the geostationary satellite orbit, all transmitting and receiving earth station antennas have off-axis co-polar gains that are compliant with the limits specified in section 25.209(a)(1) and 25.209(a)(2) of the FCC's rules.
- b) All transmitting and receiving earth stations have a cross-polarization isolation value of at least 30 dB within their main beam lobe.
- c) At C-band frequencies, degradation due to rain is not considered, given that rain (attenuation) effects are insignificant at C-band.
- d) At Ku-band frequencies, rain attenuation predictions are derived using Recommendation ITU-R P.618.
- e) At Ku-band frequencies, increase in noise temperature of the receiving earth station due to rain is taken into account.
- f) For the cases where the transponder operates in a multi-carrier mode, the effects due to intermodulation interference are taken into account.

The impact of the TV/FM carriers from the adjacent satellites at 31.0° E.L, 31.5° E.L, and 35.0° E.L on the transmissions of Intelsat 702 was not considered due to the fact that TV/FM carriers are known to be high-density carriers with most of the energy contained within the near vicinity of the carrier center frequency. Operation of sensitive narrow-band carriers is typically precluded within these high power density areas of the TV/FM carrier. Accordingly, placement and operation of TV/FM carriers are normally achieved through internal coordination and/or coordination discussions with the adjacent satellite operator, whichever may be the case, rather than through C/I calculations – since the results of such calculations would show that narrow-band carriers typically could not operate on a co-frequency basis with TV/FM carriers.

As shown in Exhibit 1, the Intelsat 702 beam connectivities are extensive. In order to keep the number of Intelsat 702 link calculations to a manageable number, worst-case performance values were assumed for each beam type. The worst-case beam parameters were derived from the beam parameters listed in Exhibit 2 and chosen in such a manner that would make carrier links utilizing any specific

uplink/downlink beam combination as sensitive to adjacent satellite interference as possible. This would ensure that the link performance objectives would be achieved for all possible Intelsat 702 uplink/downlink beam combinations. The worst-case beam performance for each Intelsat 702 beam type is provided below:

Beam Name	Aggregate Beam Designation	Worst-Case Beam Peak G/T (dB/K)	Worst-Case Beam SFD Range @ Peak G/T (dBW/m ²)	Worst-Case Beam EIRP (dBW)
Global A Global B	Global	-7.0	-93.3 to -79.3	31.6
C-Spot A C-Spot B	C-Spot	3.0	-96.3 to -82.3	38.6
West Hemi East Hemi	Hemi	-1.5	-95.0 to -77.0	37.5
Northwest Zone Northeast Zone Southwest Zone Southeast Zone Combined Northwest and Southeast Zone Combined Northeast and Southwest Zone	Zone	0.4	-92.9 to -78.9	36.9
Spot 1 Spot 2 Spot 2A Spot 3	Ku-Spot	9.8	-93.2 to 79.2	47.7

 Table 1: Worst-Case Beam Performance

As shown in Exhibit 1, Intelsat 702 utilizes beam channels having varying bandwidths. In an effort to keep the number of link calculations to a manageable level, link calculations were not performed for each channel size, but rather for largest channel size for each possible beam combination. Also, link budgets for the C- band to Ku-band and the Ku-band to C-band transponders are not shown since the results are an amalgamation of the results of the C-band and Ku-band analyses.

As previously mentioned, at Ku-band, Intelsat 702 can utilize the downlink frequency bands of 10950 - 11200 MHz, 11450 - 11700 MHz and 12500 - 12750

MHz. In order to keep the number the Intelsat 702 link calculations to a manageable number, all Ku-band link calculations were conducted at the single representative uplink frequency of 14250 MHz and downlink frequency of 11950 MHz (that is approximately midway between 10950 MHz and 12750 MHz). At C-band, all calculations were conducted at the single representative frequency of 6175 MHz for the uplink and 3950 MHz for the downlink.

The results of the C-band and Ku-band analyses are shown in Exhibit 5 and demonstrate that operation of the Intelsat 702 satellite from 33.0° E.L. would permit the intended services to achieve their respective performance objectives while maintaining sufficient link margin. Additionally, the EIRP density levels of the carriers listed in Exhibit 5 comply with the FCC limits contained in section 25.212(c) and 25.212(d) of the Commission's rules.

It is noted that Intelsat has an agreement in place with Eutelsat with respect to its operation at 33.1° E.L. Intelsat 702 operations will be conducted in accordance with the terms of the coordination agreement with Eutelsat, as well as other applicable agreements (with other satellite operators).

6.0) Adjacent Satellite Link Analysis

At C-band, the impact of the Intelsat 702 emissions on a hypothetical satellite located at 31.0° E.L. and a hypothetical satellite located 35.0° E.L. was analyzed. The hypothetical satellites were assumed to have the same operating characteristics as Intelsat 702. All calculations were conducted at the single representative frequency of 6175 MHz for the uplink and 3950 MHz for the downlink. As with the Intelsat 702 link budgets, link calculations for the hypothetical satellites at 31° E.L. and 29° E.L. were performed only for the largest channel bandwidth applicable to the particular uplink-downlink beam combination. The results of the analysis are found in Exhibits 6 and 7.

For the hypothetical satellite at 31.0° E.L., it was assumed that the nearest cofrequency satellites were Intelsat 702 at 33.0° E.L. and a hypothetical satellite located at 29.0° E.L.⁷ The hypothetical satellite located at 29.0° E.L. was assumed to have the same operational characteristics as Intelsat 702. The maximum uplink power density of the carriers transmitted to Intelsat 702 and the hypothetical satellite at 29.0 ° E.L. was assumed to be -38.7 dBW/Hz, the maximum level

⁷ Arabsat 5A is located at 30.5 ° E.L but was not used in the C-Band analysis of the hypothetical 31.0 ° E.L satellite since the two satellites are separated only by 0.5° and would not effectively show the impact of adjacent satellite interference in a 2° environment.

specified in section 25.212(d)(2) of the Commission's rules for digital C-band carriers. On downlink, the Intelsat 702 transmissions and those of the hypothetical satellite located at 29.0° E.L. were assumed to have a maximum EIRP density of - 32 dBW/Hz.

For the hypothetical satellite at 35.0° E.L., it was assumed that the nearest cofrequency satellites were Intelsat 702 at 33.0° E.L. and a hypothetical satellite located at 37.0° E.L.⁸ The hypothetical satellite located at 37.0° E.L. was assumed to have the same operational characteristics as Intelsat 702. The maximum uplink power density of the carriers transmitted to Intelsat 702 and the hypothetical satellite located at 37.0° E.L. was assumed to be -38.7 dBW/Hz, the maximum level specified in section 25.212(d)(2) of the Commission's rules for digital Cband carriers. On downlink, the Intelsat 702 transmissions and those of the hypothetical satellite located at 37.0° E.L. were assumed to have a maximum EIRP density of -32 dBW/Hz.

In the 12500 – 12700 MHz band, the impact of the Intelsat 702 emissions on Astra 1G located at 31.5° E.L. and a hypothetical satellite located at 35.0° E.L. were analyzed. The results of the analysis are found in Exhibits 7 and 8.

Astra 1G has two linearly polarized Ku-band beams covering Eastern and Western Europe. Both beams have identical downlink characteristics and it was assumed that the uplink characteristics were also identical. Consequently, only one Astra 1G representative beam was used in the link analysis to illustrate the impact of the Intelsat 702 emissions. It was assumed that the Astra 1G beam uplink beam had a beam peak G/T of 9.8 dB/K with a beam peak saturation flux density ranging from -93.2 to -79.2 dBW/m².⁹ Astra 1G downlink beams can transmit with a maximum EIRP of 52 dBW between 11700 and 12750 MHz and utilize transponders that have a bandwidth of 26 MHz between the frequencies 11700 and 12500 MHz.

For Astra 1G at 31.5° E.L., it was assumed that the nearest co-frequency satellites were Intelsat 702 at 33.0° E.L. and a hypothetical satellite located at 29.5° E.L.¹⁰ The hypothetical satellite at 29.5° E.L. was assumed to have the same

⁸ See supra n. 3.

⁹ Intelsat was unable to obtain information pertaining to the SFD and G/T performance of Astra 1G uplink beams. Accordingly, it was assumed that the Astra 1G uplink beam performance was the same as the Intelsat 702 Ku-band Spot beam as specified in section 5.0 of this Engineering Statement.

¹⁰ Arabsat 5A is located at 30.5 ° E.L but was not used in the Ku-band analysis of Astra 1G at 31.5 ° E.L since the two satellites are separated by 1.0° and would not effectively show the impact of adjacent satellite interference in a 2° environment.

characteristics as Astra 1G. It was assumed that the uplink EIRP transmitted to both adjacent satellites was -45 dBW/Hz. It was assumed that the maximum downlink EIRP density of Intelsat 702 was -20 dBW/Hz. The downlink EIRP density of the hypothetical satellite located at 29.5° E.L was assumed to be -21.4 dBW/Hz.

For the 10950 - 11200 MHz and 11450 - 11700 MHz band analysis, a hypothetical satellite identical to Intelsat 702 was assumed to be operating at 31.5° E.L. The nearest satellites to the hypothetical satellite at 31.5° E.L. were assumed to be a hypothetical satellite identical to Intelsat 702 located at 29.5° E.L. and Intelsat 702 located at 33.0° E.L. Intelsat 702 and the hypothetical satellite at 29.5° E.L. were assumed to operate with a maximum uplink power density of -45.0 dBW/Hz and a maximum downlink EIRP density of -20.0 dBW/Hz. The results of the analysis are provided in Exhibit 8.

At Ku-band, the hypothetical satellite located at 35.0° E.L. was assumed to have the same operating characteristics as the Intelsat 702 Ku-band. The nearest cofrequency satellites to the hypothetical satellite at 35.0° E.L. satellite were assumed to be Intelsat 702 and a hypothetical satellite located at 37.0° E.L.¹¹ It was assumed that the uplink EIRP transmitted to both adjacent satellites was -45 dBW/Hz. It was also assumed that Intelsat 702 and the hypothetical satellite located at 37.0° E.L. operated with a maximum downlink EIRP density transmitted of -20 dBW/Hz. The results of the analysis are provided in Exhibit 7.

The results of the C- and Ku-band analysis are listed in Exhibits 6 through 8. The Intelsat 702 transmissions will be limited to those levels contained in Sections 25.212(c) and (d), as applicable, unless higher levels are coordinated with affected adjacent satellite operators. In any case, the uplink power density of the Intelsat 702 digital carriers operating in the 5925 – 6425 MHz and 14000 – 14500 MHz band will not exceed -38.7 dBW/Hz and -45 dBW/Hz, respectively; and within the 3700 – 4200 MHz band the downlink EIRP density of the Intelsat 702 digital carriers will not exceed -32 dBW/Hz; and within the 10950 – 11200 MHz, 11450 – 11700 MHz, and 12500 – 12750 MHz bands the downlink EIRP density of the Intelsat 702 digital carriers will not exceed -20 dBW/Hz.

¹¹ Arabsat 2B is located at 34° E.L. and has the capability to operate in the 5925 - 6425 MHz, 3700 - 4200 MHz, 13750 - 14000 MHz and 12500 - 12750 MHz bands. However, the operational status of this satellite is unknown and for the purposes of the link budget analysis was not considered. Eutelsat 36A and 36B at 36.0 ° E.L. were not used in the Ku-band analysis of the hypothetical 35.0° E.L satellite since the satellites are only by 1.0° away and would not effectively show the impact of adjacent satellite interference in a 2° environment.

7.0) Schedule S Submission

Intelsat is providing with its application a Schedule S for the operations of Intelsat 702 from 33.0° E.L. The Schedule S contains only those Intelsat 702 data items that have changed as a result of the proposed modification and data items whose inclusion was required in order for the software application to function properly.

In column "g" of section S13 of the Schedule S, a link budget file has been included for the first link (i.e. the first of row of data) contained in that section. This link budget file is applicable to all of the links listed in section S13 and should have been included with each row of data in that section of the Schedule S. However, given that the link budget file is rather large and its inclusion with each link (or data row) would lead to the Schedule S file having an unmanageable size, all other links (or rows of data) contain a small ASCII file that references the link budget file that is attached to the first link (*i.e.*, the link budget file attached to the first row of data).

8.0) Orbital Debris Mitigation Plan

Intelsat is proactive in ensuring safe operation and disposal of this and all spacecraft under its control. The four elements of debris mitigation are addressed below.

8.1) Spacecraft Hardware Design: The spacecraft is designed such that no debris will be released during normal operations. Intelsat has assessed the probability of collision with meteoroids and other small debris (<1 cm diameter) and has taken the following steps to limit the effects of such collisions: (1) critical spacecraft components are located inside the protective body of the spacecraft and properly shielded; and (2) all spacecraft subsystems have redundant components to ensure no single-point failures. The spacecraft does not use any subsystems for end-of-life disposal that are not used for normal operations.

8.2) Minimizing Accidental Explosions: Intelsat has assessed the probability of accidental explosions during and after completion of mission operations. The spacecraft is designed in a manner to minimize the potential for such explosions. Propellant tanks and thrusters are isolated using redundant valves and electrical power systems are shielded in accordance with standard industry practices. At the completion of the mission, and upon disposal of the spacecraft, Intelsat will ensure the removal of all stored energy on the spacecraft by depleting all propellant tanks, venting all pressurized systems, and turning off all active units.

8.3) Safe Flight Profiles: Intelsat has assessed and limited the probability of the space station becoming a source of debris as a result of collisions with large debris or other operational space stations. Intelsat is not aware of any other FCC licensed system, or any other system applied for and under consideration by the FCC, having an overlapping station-keeping volume with Intelsat 702. Intelsat is also not aware of any non-Intelsat system with an overlapping station-keeping volume with Intelsat 702 that is the subject of an ITU filing and that is progressing towards launch.¹²

8.4) Post Mission Disposal: At the end of the mission, Intelsat expects to dispose of the spacecraft by moving it to a planned minimum altitude of 150 kilometers (perigee) above the geostationary arc.¹³ Nevertheless, as the Commission is aware, because there is no mechanism for precisely calculating the amount of fuel left on the spacecraft once it is in orbit, it is possible that the spacecraft will not meet the planned minimum de-orbit altitude.

In its Second Report and Order in IB Docket 02-54 (FCC Document Number: 04-130), the FCC declared that satellites launched prior to March 18, 2002, such as Intelsat 702, would be designated as grandfathered satellites not subject to a specific disposal altitude. Therefore, the Intelsat 702 planned disposal orbit complies with the FCC's rules.

In addition, Intelsat provides the following information:

- 1) Planned orbital eccentricity: 1.7846E-04 (This is a best estimate of optimal eccentricity to match the natural eccentricity circle due to Sun and Moon perturbations after decommission.¹⁴)
- 2) Planned apogee altitude: 165 km¹⁵

 $^{^{12}}$ Eutelsat operates the Eutelsat 33A spacecraft at the orbital location of 33.1° E.L. As best as can be determined, the position of this spacecraft is maintained to within $\pm 0.05^{\circ}$ of this orbital location. Consequently, there would be no overlap of the station-keeping volumes of Intelsat 702 and Eutelsat 33A.

¹³ Intelsat has reserved 30.22 kilograms of fuel for this purpose. The fuel gauging uncertainty has been taken into account in these calculations.

¹⁴ Because it is extremely difficult to anticipate end-of-life thruster performance and operational conditions, it is extremely difficult to achieve the planned eccentricity. Intelsat's priority is to achieve the planned minimum perigee of 150 kilometers. In order to achieve the planned eccentricity, not only must there be sufficient propellant reserved but, in addition, individual thrusters must be fired at specific times during satellite decommissioning because the timing of thruster firing will affect eccentricity. Due to difficulties in predicting the thruster end-of-life performance, as well as earth station availability and visibility as the satellite drifts, it may not be possible to fire the right thrusters at the optimal times. Thus, optimal eccentricity may not be achieved, which, in turn, will affect the apogee altitude.

¹⁵ See supra n. 2.

3) Information concerning the methods that will be used to assess and provide adequate margins concerning fuel gauging uncertainty: For the Intelsat 702 spacecraft, in addition to the nominal hold-back and reserves provided to us by the manufacturer, Intelsat propulsion engineers review the current propellant usage – particularly the mixing ratio – to properly allocate sufficient margin to account for unavailable propellant that may result from a non-optimal mixing ratio. In addition, Intelsat performs thermal gauging near the spacecraft's end of life by inferring the remaining propellant from the thermal signature when Intelsat applies heat to different parts of the propellant tank system. This information is considered when determining the additional hold-back and adjustments to book values to attempt to ensure sufficient propellant to achieve the planned minimum altitude. There are, however, many uncertainties to both methods that could lead to incorrect conclusions regarding remaining fuel.

Certification Statement

I hereby certify that I am a technically qualified person and am familiar with Part 25 of the Commission's Rules and Regulations. The contents of this engineering statement were prepared by me or under my direct supervision and to the best of my knowledge are complete and accurate.

/s/ Abdolmajid Khalilzadeh

October 1, 2012

Date

Abdolmajid Khalilzadeh Intelsat Senior Principle Engineer Spectrum Strategy

Exhibit 1: Frequency and Beam Assignments

Uplink		TT 1' 1	Uplink	Downlink	D (11)		Downlink	Channel	Channel
Transponder Designation	Uplink Beam Name	Uplink Polarization	Center Frequency	Transponder Designation	Downlink Beam Name	Downlink Polarization	Center Frequency	Bandwidth (MHz)	Gain (dB)
AUA	Global A	LHCP	(MHz) 6280	ADA	Global A	RHCP	(MHz) 4055	36	123.0
AUA	Global A Global A	LHCP	6320	ADA	Global A Global A	RHCP	4035	36	123.0
AUC	Global A	LHCP	6360	ADC	Global A	RHCP	4135	36	120.3
AUD	Global A	LHCP	6402.5	ADD	Global A	RHCP	4177.5	41	123.8
AUA	Global A	LHCP	6280	CDA	C Sect A	RHCP	4055	36	122.5
AUA	Global A Global A	LHCP	6320	CDA	C-Spot A C-Spot A	RHCP	4035	36	122.5
AUC	Global A Global A	LHCP	6360	CDC	C-Spot A C-Spot A	RHCP	4035	36	121.2
AUD	Global A	LHCP	6402.5	CDD	C-Spot A	RHCP	4177.5	41	123.4
			(200		-	DUGD	1055		100.5
AUA	Global A	LHCP	6280	EDA	West Hemi	RHCP	4055	36	123.5
BUA	Global B	RHCP	6280	BDA	Global B	LHCP	4055	36	120.2
BUB	Global B	RHCP	6320	BDB	Global B	LHCP	4095	36	121.8
BUC	Global B	RHCP	6360	BDC	Global B	LHCP	4135	36	122.3
BUD	Global B	RHCP	6402.5	BDD	Global B	LHCP	4177.5	41	123.4
BUA	Global B	RHCP	6280	DDA	C-Spot B	LHCP	4055	36	119.8
BUB	Global B	RHCP	6320	DDB	C-Spot B	LHCP	4095	36	121.4
BUC	Global B	RHCP	6360	DDC	C-Spot B	LHCP	4135	36	121.9
BUD	Global B	RHCP	6402.5	DDD	C-Spot B	LHCP	4177.5	41	123.2
BUA	Global B	LHCP	6280	FDA	East Hemi	RHCP	4055	36	121.1
CUA	C-Spot A	LHCP	6280	CDA	C-Spot A	RHCP	4055	36	115.3
CUB	C-Spot A	LHCP	6320	CDB	C-Spot A	RHCP	4095	36	113.5
CUC CUD	C-Spot A C-Spot A	LHCP LHCP	6360 6402,5	CDC CDD	C-Spot A C-Spot A	RHCP RHCP	4135 4177.5	36 41	113.4 116.0
COD	C-Spot A	LHCP	0402.5	CDD	C-Spot A	KHCP	41/7.3	41	110.0
CUA	C-Spot A	LHCP	6280	ADA	Global A	RHCP	4055	36	115.8
CUB	C-Spot A	LHCP	6320	ADB	Global A	RHCP	4095	36	113.8
CUC	C-Spot A	LHCP	6360	ADC	Global A	RHCP	4135	36	113.4
CUD	C-Spot A	LHCP	6402.5	ADD	Global A	RHCP	4177.5	41	116.4
CUA	C-Spot A	LHCP	6280	EDA	West Hemi	RHCP	4055	36	116.3
DIVA	6 6 · D	DUGD	(200		6 4 · P	LUCE	1055	24	
DUA DUB	C-Spot B	RHCP RHCP	6280 6320	DDA	C-Spot B	LHCP LHCP	4055 4095	36 36	113.4 114.0
DUB	C-Spot B C-Spot B	RHCP	6360	DDB DDC	C-Spot B C-Spot B	LHCP	4095	36	114.0
DUD	C-Spot B C-Spot B	RHCP	6402.5	DDD	C-Spot B C-Spot B	LHCP	4155	41	114.2
	•				*				
DUA	C-Spot B	RHCP	6280	BDA	Global B	LHCP	4055	36	113.8
DUB	C-Spot B	RHCP	6320	BDB	Global B	LHCP	4095	36	114.4
DUC	C-Spot B	RHCP	6360	BDC	Global B	LHCP	4135	36	114.6
DUD	C-Spot B	RHCP	6402.5	BDD	Global B	LHCP	4177.5	41	117.0
DUA	C-Spot B	RHCP	6280	FDA	East Hemi	RHCP	4055	36	114.7
EU1	West Hemi	LHCP	5967.5	ED1	West Hemi	RHCP	3742.5	77	118.8
EU1 EU2	West Hemi	LHCP	6050	ED1 ED2	West Hemi	RHCP	3825	72	118.9
EU3	West Hemi	LHCP	6111	ED3	West Hemi	RHCP	3886	34	118.7
EU4	West Hemi	LHCP	6149	ED4	West Hemi	RHCP	3924	34	118.9
EU5	West Hemi	LHCP	6130	ED5	West Hemi	RHCP	3905	72	118.8
EU6	West Hemi	LHCP	6220	ED6	West Hemi	RHCP	3995	72	120.6
EUA	West Hemi	LHCP	6280	EDA	West Hemi	RHCP	4055	36	122.0
EU1	West Hemi	LHCP	5967.5	FD1	East Hemi	RHCP	3742.5	77	116.9
EU2	West Hemi	LHCP	6050	FD2	East Hemi	RHCP	3825	72	116.6
EU3	West Hemi	LHCP	6111	FD3	East Hemi	RHCP	3886	34	116.9
EU4	West Hemi	LHCP	6149	FD4	East Hemi	RHCP	3924	34	117.1
EU5	West Hemi	LHCP	6130	FD5	East Hemi	RHCP	3905	72	117.0
EU6	West Hemi	LHCP	6220	FD6	East Hemi	RHCP	3995	72	118.7
EUA	West Hemi	LHCP	6280	FDA	East Hemi	RHCP	4055	36	120.3

Uplink Transponder Designation	Uplink Beam Name	Uplink Polarization	Uplink Center Frequency (MHz)	Downlink Transponder Designation	Downlink Beam Name	Downlink Polarization	Downlink Center Frequency (MHz)	Channel Bandwidth (MHz)	Channel Gain (dB)
EU1	West Hemi	LHCP	5967.5	GD1	NW Zone	LHCP	3742.5	77	116.2
EU2	West Hemi	LHCP	6050	GD2	NW Zone	LHCP	3825	72	115.9
EU3	West Hemi	LHCP	6111	GD3	NW Zone	LHCP	3886	34	115.6
EU4	West Hemi	LHCP	6149	GD4	NW Zone	LHCP	3924	34	115.8
EU5	West Hemi	LHCP	6130	GD5	NW Zone	LHCP	3905	72	115.7
EU6	West Hemi	LHCP	6220	GD6	NW Zone	LHCP	3995	72	117.5
EUA	West Hemi	LHCP	6280	GDA	NW Zone	LHCP	4055	36	119.4
EU1	West Hemi	LHCP	5967.5	JD1	SE Zone	LHCP	3742.5	77	116.6
EU2	West Hemi	LHCP	6050	JD2	SE Zone	LHCP	3825	72	116.7
EU3	West Hemi	LHCP	6111	JD3	SE Zone	LHCP	3886	34	115.7
EU4 EU5	West Hemi West Hemi	LHCP LHCP	6149 6130	JD4 JD5	SE Zone SE Zone	LHCP LHCP	3924 3905	34 72	115.9 115.8
EU3 EU6	West Hemi West Hemi	LHCP	6220	JD3 JD6	SE Zone	LHCP	3903	72	115.8
EUA	West Hemi	LHCP	6280	JD0 JDA	SE Zone	LHCP	4055	36	118.1
EU1	West Hemi	LHCP	5967.5	HD1	NE Zone	LHCP	3742.5	77	114.2
EU2	West Hemi	LHCP	6050	HD2	NE Zone	LHCP	3825	72	113.8
EU3 EU4	West Hemi West Hemi	LHCP LHCP	6111 6149	HD3 HD4	NE Zone NE Zone	LHCP LHCP	3886 3924	34 34	113.8 114.0
EU4 EU5	West Hemi West Hemi	LHCP	6149 6130	HD4 HD5	NE Zone NE Zone	LHCP	3924 3905	34 72	114.0
EU3 EU6	West Hemi	LHCP	6220	HD5 HD6	NE Zone	LHCP	3903	72	115.9
EUA	West Hemi	LHCP	6280	HDA	NE Zone	LHCP	4055	36	117.2
TT II	W . II .	LUCD	50/7.5		CW 7	LUOD	2742.5	77	114.0
EU1 EU2	West Hemi West Hemi	LHCP LHCP	5967.5 6050	1D1 1D2	SW Zone SW Zone	LHCP LHCP	3742.5 3825	77 72	114.2 114.6
EU3	West Hemi	LHCP	6111	ID2 ID3	SW Zone	LHCP	3886	34	114.0
EU4	West Hemi	LHCP	6149	ID4	SW Zone	LHCP	3924	34	115.0
EU5	West Hemi	LHCP	6130	ID5	SW Zone	LHCP	3905	72	113.9
EU6	West Hemi	LHCP	6220	ID6	SW Zone	LHCP	3995	72	116.4
EUA	West Hemi	LHCP	6280	IDA	SW Zone	LHCP	4055	36	117.2
EUA	West Hemi	LHCP	6280	ADA	Global A	RHCP	4055	36	121.5
EUA	West Hemi	LHCP	6280	CDA	C-Spot A	RHCP	4055	36	121.0
FU1	East Hemi	LHCP	5967.5	FD1	East Hemi	RHCP	3742.5	77	114.0
FU2	East Hemi	LHCP	6050	FD2	East Hemi	RHCP	3825	72	113.8
FU3	East Hemi	LHCP	6111	FD3	East Hemi	RHCP	3886	34	114.5
FU4	East Hemi	LHCP	6149	FD4	East Hemi	RHCP	3924	34	114.5
FU5	East Hemi	LHCP	6130	FD5	East Hemi	RHCP	3905	72	114.5
FU6	East Hemi	LHCP	6220	FD6	East Hemi	RHCP	3995	72	116.0
FUA	East Hemi	LHCP	6280	FDA	East Hemi	RHCP	4055	36	117.7
FU1	East Hemi	LHCP	5967.5	ED1	West Hemi	RHCP	3742.5	77	115.9
FU2	East Hemi	LHCP	6050	ED2	West Hemi	RHCP	3825	72	116.1
FU3	East Hemi	LHCP	6111	ED3	West Hemi	RHCP	3886	34	116.3
FU4	East Hemi	LHCP	6149	ED4	West Hemi	RHCP	3924	34	116.3
FU5 FU6	East Hemi East Hemi	LHCP LHCP	6130 6220	ED5 ED6	West Hemi West Hemi	RHCP RHCP	3905 3995	72 72	116.3 117.9
FUA	East Hemi	LHCP	6280	EDO	West Hemi	RHCP	4055	36	117.9
1711	E	LUCD	5067 5	CDI	NUU 7	LUCD	2742 5	77	112.2
FU1	East Hemi	LHCP	5967.5	GD1 GD2	NW Zone	LHCP	3742.5	77	113.3
FU2 FU3	East Hemi East Hemi	LHCP LHCP	6050 6111	GD2 GD3	NW Zone NW Zone	LHCP LHCP	3825 3886	72 34	113.1 113.2
FU3 FU4	East Hemi	LHCP	6149	GD3 GD4	NW Zone	LHCP	3924	34	113.2
FU5	East Hemi	LHCP	6130	GD5	NW Zone	LHCP	3905	72	113.2
FU6	East Hemi	LHCP	6220	GD6	NW Zone	LHCP	3995	72	114.8
FUA	East Hemi	LHCP	6280	GDA	NW Zone	LHCP	4055	36	116.8
FU1	East Hemi	LHCP	5967.5	JD1	SE Zone	LHCP	3742.5	77	113.7
FU2	East Hemi	LHCP	6050	JD1 JD2	SE Zone	LHCP	3825	72	113.7
FU3	East Hemi	LHCP	6111	JD3	SE Zone	LHCP	3886	34	113.3
FU4	East Hemi	LHCP	6149	JD4	SE Zone	LHCP	3924	34	113.3
FU5	East Hemi	LHCP	6130	JD5	SE Zone	LHCP	3905	72	113.3
FU6	East Hemi	LHCP	6220	JD6	SE Zone	LHCP	3995	72	115.4
FUA	East Hemi	LHCP	6280	JDA	SE Zone	LHCP	4055	36	117.0

Uplink Transponder Designation	Uplink Beam Name	Uplink Polarization	Uplink Center Frequency (MHz)	Downlink Transponder Designation	Downlink Beam Name	Downlink Polarization	Downlink Center Frequency (MHz)	Channel Bandwidth (MHz)	Channel Gain (dB)
FU1	East Hemi	LHCP	5967.5	HD1	NE Zone	LHCP	3742.5	77	111.3
FU2	East Hemi	LHCP	6050	HD2	NE Zone	LHCP	3825	72	111.0
FU3	East Hemi	LHCP	6111	HD3	NE Zone	LHCP	3886	34	111.4
FU4	East Hemi	LHCP	6149	HD4	NE Zone	LHCP	3924	34	111.4
FU5	East Hemi	LHCP	6130	HD5	NE Zone	LHCP	3905	72	111.4
FU6	East Hemi	LHCP	6220	HD6	NE Zone	LHCP	3995	72	112.9
FUA	East Hemi	LHCP	6280	HDA	NE Zone	LHCP	4055	36	114.6
FU1	East Hemi	LHCP	5967.5	ID1	SW Zone	LHCP	3742.5	77	111.3
FU2	East Hemi	LHCP	6050	ID2	SW Zone	LHCP	3825	72	111.8
FU3	East Hemi	LHCP	6111	ID3	SW Zone	LHCP	3886	34	111.4
FU4	East Hemi	LHCP	6149	ID4	SW Zone	LHCP	3924	34	111.4
FU5	East Hemi	LHCP	6130	ID5	SW Zone	LHCP	3905	72	111.4
FU6	East Hemi	LHCP	6220	ID6	SW Zone	LHCP	3995	72	113.7
FUA	East Hemi	LHCP	6280	IDA	SW Zone	LHCP	4055	36	114.6
FUA	East Hemi	LHCP	6280	BDA	Global B	LHCP	4055	36	116.8
FUA	East Hemi	LHCP	6280	DDA	C-Spot B	LHCP	4055	36	116.4
GU1	NW Zone	RHCP	5967.5	GD1	NW Zone	LHCP	3742.5	77	114.1
GU2	NW Zone	RHCP	6050	GD2	NW Zone	LHCP	3825	72	113.9
GU3	NW Zone	RHCP	6111	GD3	NW Zone	LHCP	3886	34	113.1
GU4	NW Zone	RHCP	6149	GD4	NW Zone	LHCP	3924	34	113.1
GU5	NW Zone	RHCP	6130	GD5	NW Zone	LHCP	3905	72	113.1
GU6	NW Zone	RHCP	6220	GD6	NW Zone	LHCP	3995	72	114.1
GUA	NW Zone	RHCP	6280	GDA	NW Zone	LHCP	4055	36	116.2
GU1	NW Zone	RHCP	5967.5	JD1	SE Zone	LHCP	3742.5	77	114.5
GU2	NW Zone	RHCP	6050	JD2	SE Zone	LHCP	3825	72	114.7
GU3	NW Zone	RHCP	6111	JD3	SE Zone	LHCP	3886	34	113.2
GU4 GU5	NW Zone NW Zone	RHCP RHCP	6149 6130	JD4 JD5	SE Zone SE Zone	LHCP	3924 3905	34 72	113.2 113.2
GU5 GU6	NW Zone	RHCP	6220	JD3 JD6	SE Zone	LHCP LHCP	3905	72	113.2
GUA	NW Zone	RHCP	6280	JDA	SE Zone	LHCP	4055	36	114.7
CIII	NUV 7	DUCD	50(7.5	IID1		LUCD	2742.5	22	112.1
GU1 GU2	NW Zone NW Zone	RHCP RHCP	5967.5 6050	HD1 HD2	NE Zone NE Zone	LHCP LHCP	3742.5 3825	77 72	112.1 111.8
GU2 GU3	NW Zone	RHCP	6111	HD2 HD3	NE Zone	LHCP	3886	34	111.8
GU4	NW Zone	RHCP	6149	HD4	NE Zone	LHCP	3924	34	111.3
GU5	NW Zone	RHCP	6130	HD5	NE Zone	LHCP	3905	72	111.3
GU6	NW Zone	RHCP	6220	HD6	NE Zone	LHCP	3995	72	112.2
GUA	NW Zone	RHCP	6280	HDA	NE Zone	LHCP	4055	36	114.0
GU1	NW Zone	RHCP	5967.5	ID1	SW Zone	LHCP	3742.5	77	112.1
GU2	NW Zone	RHCP	6050	ID2	SW Zone	LHCP	3825	72	112.6
GU3	NW Zone	RHCP	6111	ID3	SW Zone	LHCP	3886	34	111.3
GU4	NW Zone	RHCP	6149	ID4	SW Zone	LHCP	3924	34	111.3
GU5	NW Zone	RHCP	6130	ID5	SW Zone	LHCP	3905	72	111.3
GU6 GUA	NW Zone NW Zone	RHCP RHCP	6220 6280	ID6 IDA	SW Zone SW Zone	LHCP LHCP	3995 4055	72 36	113.0 114.0
GU1	NW Zone	RHCP	5967.5	ED1	West Hemi	RHCP	3742.5	77	116.7
GU2 GU3	NW Zone NW Zone	RHCP RHCP	6050 6111	ED2 ED3	West Hemi West Hemi	RHCP RHCP	3825 3886	72 34	116.9 116.2
GU3 GU4	NW Zone	RHCP	6149	ED3 ED4	West Hemi	RHCP	3924	34	116.2
GU5	NW Zone	RHCP	6130	ED5	West Hemi	RHCP	3905	72	116.2
GU6	NW Zone	RHCP	6220	ED6	West Hemi	RHCP	3995	72	117.2
GUA	NW Zone	RHCP	6280	EDA	West Hemi	RHCP	4055	36	118.8
GU1	NW Zone	RHCP	5967.5	FD1	East Hemi	RHCP	3742.5	77	114.8
GU2	NW Zone	RHCP	6050	FD2	East Hemi	RHCP	3825	72	114.6
GU3	NW Zone	RHCP	6111	FD3	East Hemi	RHCP	3886	34	114.4
GU4	NW Zone	RHCP	6149	FD4	East Hemi	RHCP	3924	34	114.4
GU5	NW Zone	RHCP	6130	FD5	East Hemi	RHCP	3905	72	114.4
GU6	NW Zone	RHCP	6220	FD6	East Hemi	RHCP	3995	72	115.3
GUA	NW Zone	RHCP	6280	FDA Page 15 of 1	East Hemi	RHCP	4055	36	117.1

Uplink Transponder Designation	Uplink Beam Name	Uplink Polarization	Uplink Center Frequency (MHz)	Downlink Transponder Designation	Downlink Beam Name	Downlink Polarization	Downlink Center Frequency (MHz)	Channel Bandwidth (MHz)	Channel Gain (dB)
JU1	SE Zone	RHCP	5967.5	GD1	NW Zone	LHCP	3742.5	77	114.1
JU2	SE Zone	RHCP	6050	GD2	NW Zone	LHCP	3825	72	113.9
JU3	SE Zone	RHCP	6111	GD3	NW Zone	LHCP	3886	34	113.1
JU4	SE Zone	RHCP	6149	GD4	NW Zone	LHCP	3924	34	113.1
JU5	SE Zone	RHCP	6130	GD5	NW Zone	LHCP	3905	72	113.1
JU6	SE Zone	RHCP	6220	GD6	NW Zone	LHCP	3995	72	114.1
JUA	SE Zone	RHCP	6280	GDA	NW Zone	LHCP	4055	36	116.2
JU1	SE Zone	RHCP	5967.5	JD1	SE Zone	LHCP	3742.5	77	114.5
JU2	SE Zone	RHCP	6050	JD2	SE Zone	LHCP	3825	72	114.7
JU3	SE Zone	RHCP	6111	JD3	SE Zone	LHCP	3886	34	113.2
JU4	SE Zone	RHCP	6149	JD4	SE Zone	LHCP	3924	34	113.2
JU5	SE Zone	RHCP	6130	JD5	SE Zone	LHCP	3905	72	113.2
JU6 JUA	SE Zone	RHCP RHCP	6220	JD6	SE Zone	LHCP	3995	72 36	114.7
JUA	SE Zone		6280	JDA	SE Zone	LHCP	4055		116.4
JU1	SE Zone	RHCP	5967.5	HD1	NE Zone	LHCP	3742.5	77	112.1
JU2	SE Zone	RHCP	6050	HD2	NE Zone	LHCP	3825	72	111.8
JU3	SE Zone	RHCP	6111	HD3	NE Zone	LHCP	3886	34	111.3
JU4	SE Zone	RHCP	6149	HD4	NE Zone	LHCP	3924	34	111.3
JU5	SE Zone	RHCP	6130	HD5	NE Zone	LHCP	3905	72	111.3
JU6 JUA	SE Zone SE Zone	RHCP RHCP	6220 6280	HD6 HDA	NE Zone NE Zone	LHCP LHCP	3995 4055	72 36	112.2 114.0
JUA	SE Zone		0280	IDA			4055	30	114.0
JU1	SE Zone	RHCP	5967.5	ID1	SW Zone	LHCP	3742.5	77	112.1
JU2	SE Zone	RHCP	6050	ID2	SW Zone	LHCP	3825	72	112.6
JU3	SE Zone	RHCP	6111	ID3	SW Zone	LHCP	3886	34	111.3
JU4	SE Zone	RHCP	6149	ID4	SW Zone	LHCP	3924	34	111.3
JU5	SE Zone	RHCP	6130	ID5	SW Zone	LHCP	3905	72	111.3
JU6 JUA	SE Zone SE Zone	RHCP RHCP	6220 6280	ID6 IDA	SW Zone SW Zone	LHCP LHCP	3995 4055	72 36	113.0 114.0
JUA	SE Zone	KHCP	0280	IDA	Sw Zone	LHCP	4055	30	114.0
JU1	SE Zone	RHCP	5967.5	ED1	West Hemi	RHCP	3742.5	77	116.7
JU2	SE Zone	RHCP	6050	ED2	West Hemi	RHCP	3825	72	116.9
JU3	SE Zone	RHCP	6111	ED3	West Hemi	RHCP	3886	34	116.2
JU4	SE Zone	RHCP	6149	ED4	West Hemi	RHCP	3924	34	116.2
JU5 JU6	SE Zone SE Zone	RHCP RHCP	6130 6220	ED5 ED6	West Hemi West Hemi	RHCP RHCP	3905 3995	72 72	116.2 117.2
JU6 JUA	SE Zone SE Zone	RHCP	6220	ED6 EDA	West Hemi	RHCP	4055	36	117.2
JU1	SE Zone	RHCP	5967.5	FD1	East Hemi	RHCP	3742.5	77	114.8
JU2	SE Zone	RHCP	6050	FD2	East Hemi	RHCP	3825	72	114.6
JU3	SE Zone	RHCP	6111	FD3	East Hemi	RHCP	3886	34	114.4
JU4 JU5	SE Zone SE Zone	RHCP RHCP	6149 6130	FD4 FD5	East Hemi East Hemi	RHCP RHCP	3924 3905	34 72	114.4 114.4
JU6	SE Zone	RHCP	6220	FD6	East Hemi	RHCP	3905	72	114.4
JUA	SE Zone	RHCP	6280	FDA	East Hemi	RHCP	4055	36	117.1
HU1	NE Zone	RHCP	5967.5	GD1	NW Zone	LHCP	3742.5	77	110.9
HU2	NE Zone	RHCP	6050	GD2	NW Zone	LHCP	3825	72	110.3
HU3	NE Zone	RHCP	6111	GD3	NW Zone	LHCP	3886	34	109.9
HU4	NE Zone	RHCP	6149	GD4	NW Zone	LHCP	3924	34	109.7
HU5	NE Zone	RHCP	6130	GD5	NW Zone	LHCP	3905	72	109.8
HU6	NE Zone	RHCP	6220	GD6	NW Zone	LHCP	3995	72	111.6
HUA	NE Zone	RHCP	6280	GDA	NW Zone	LHCP	4055	36	114.0
HU1	NE Zone	RHCP	5967.5	JD1	SE Zone	LHCP	3742.5	77	111.3
HU2	NE Zone	RHCP	6050	JD2	SE Zone	LHCP	3825	72	111.1
HU3	NE Zone	RHCP	6111	JD3	SE Zone	LHCP	3886	34	110.0
HU4	NE Zone	RHCP	6149	JD4	SE Zone	LHCP	3924	34	109.8
HU5	NE Zone	RHCP	6130	JD5	SE Zone	LHCP	3905	72	109.9
HU6	NE Zone	RHCP	6220	JD6	SE Zone	LHCP	3995	72	112.2
HUA	NE Zone	RHCP	6280	JDA	SE Zone	LHCP	4055	36	114.2
HU1	NE Zone	RHCP	5967.5	HD1	NE Zone	LHCP	3742.5	77	108.9
HU2	NE Zone	RHCP	6050	HD2	NE Zone	LHCP	3825	72	108.2
1102	THE LONG		0000	1102	IL LOIC	Liiter	5625	12	100.2

Uplink Transponder	Uplink Beam Name	Uplink	Uplink Center	Downlink Transponder	Downlink Beam	Downlink	Downlink Center	Channel Bandwidth	Channel Gain
Designation	opinin Douin Funito	Polarization	Frequency (MHz)	Designation	Name	Polarization	Frequency (MHz)	(MHz)	(dB)
HU4	NE Zone	RHCP	6149	HD4	NE Zone	LHCP	3924	34	107.9
HU5	NE Zone	RHCP	6130	HD5	NE Zone	LHCP	3905	72	108.0
HU6	NE Zone	RHCP	6220	HD6	NE Zone	LHCP	3995	72	109.7
HUA	NE Zone	RHCP	6280	HDA	NE Zone	LHCP	4055	36	111.8
HU1	NE Zone	RHCP	5967.5	ID1	SW Zone	LHCP	3742.5	77	108.9
HU2	NE Zone	RHCP	6050	ID2	SW Zone	LHCP	3825	72	109.0
HU3	NE Zone	RHCP	6111	D 3	SW Zone	LHCP	3886	34	108.1
HU4 HU5	NE Zone NE Zone	RHCP RHCP	6149 6130	ID4 ID5	SW Zone SW Zone	LHCP LHCP	3924 3905	34 72	107.9 108.0
HU6	NE Zone	RHCP	6220	ID5 ID6	SW Zone	LHCP	3905	72	1108.0
HUA	NE Zone	RHCP	6280	IDA	SW Zone	LHCP	4055	36	111.8
HU1	NE Zone	RHCP	5967.5	ED1	West Hemi	RHCP	3742.5	77	113.5
HU2 HU3	NE Zone NE Zone	RHCP RHCP	6050 6111	ED2 ED3	West Hemi West Hemi	RHCP RHCP	3825 3886	72 34	113.3 113.0
HU3 HU4	NE Zone	RHCP	6149	ED3 ED4	West Hemi	RHCP	3924	34	113.0
HU5	NE Zone	RHCP	6130	ED5	West Hemi	RHCP	3905	72	112.9
HU6	NE Zone	RHCP	6220	ED6	West Hemi	RHCP	3995	72	114.7
HUA	NE Zone	RHCP	6280	EDA	West Hemi	RHCP	4055	36	116.6
HU1	NE Zone	RHCP	5967.5	FD1	East Hemi	RHCP	3742.5	77	111.6
HU2	NE Zone	RHCP	6050	FD1 FD2	East Hemi	RHCP	3825	72	111.0
HU3	NE Zone	RHCP	6111	FD3	East Hemi	RHCP	3886	34	111.0
HU4	NE Zone	RHCP	6149	FD4	East Hemi	RHCP	3924	34	111.0
HU5	NE Zone	RHCP	6130	FD5	East Hemi	RHCP	3905	72	111.1
HU6	NE Zone	RHCP	6220	FD6	East Hemi	RHCP	3995	72	112.8
HUA	NE Zone	RHCP	6280	FDA	East Hemi	RHCP	4055	36	114.9
IU1	SW Zone	RHCP	5967.5	GD1	NW Zone	LHCP	3742.5	77	110.9
IU2	SW Zone	RHCP	6050	GD2	NW Zone	LHCP	3825	72	110.3
IU3	SW Zone	RHCP	6111	GD3	NW Zone	LHCP	3886	34	109.9
IU4	SW Zone	RHCP	6149	GD4	NW Zone	LHCP	3924	34	109.7
IU5 IU6	SW Zone SW Zone	RHCP RHCP	6130 6220	GD5 GD6	NW Zone NW Zone	LHCP LHCP	3905 3995	72 72	109.8 111.6
IUA	SW Zone	RHCP	6280	GD6 GDA	NW Zone	LHCP	4055	36	111.0
IU1	SW Zone	RHCP	5967.5	JD1	SE Zone	LHCP	3742.5	77	111.3
IU2	SW Zone	RHCP	6050	JD2	SE Zone	LHCP	3825	72	111.1
IU3 IU4	SW Zone SW Zone	RHCP RHCP	6111 6149	JD3 JD4	SE Zone SE Zone	LHCP LHCP	3886 3924	34 34	110.0 109.8
IU4 IU5	SW Zone	RHCP	6130	JD4 JD5	SE Zone	LHCP	3924	72	109.8
IU6	SW Zone	RHCP	6220	JD6	SE Zone	LHCP	3995	72	112.2
IUA	SW Zone	RHCP	6280	JDA	SE Zone	LHCP	4055	36	114.2
IU1 IU2	SW Zone SW Zone	RHCP RHCP	5967.5 6050	HD1 HD2	NE Zone NE Zone	LHCP LHCP	3742.5	77 72	108.9 108.2
IU2 IU3	SW Zone	RHCP	6111	HD2 HD3	NE Zone	LHCP	3825 3886	34	108.2
IU4	SW Zone	RHCP	6149	HD4	NE Zone	LHCP	3924	34	100.1
IU5	SW Zone	RHCP	6130	HD5	NE Zone	LHCP	3905	72	108.0
IU6	SW Zone	RHCP	6220	HD6	NE Zone	LHCP	3995	72	109.7
IUA	SW Zone	RHCP	6280	HDA	NE Zone	LHCP	4055	36	111.8
IU1	SW Zone	RHCP	5967.5	ID1	SW Zone	LHCP	3742.5	77	108.9
IU2	SW Zone	RHCP	6050	ID1 ID2	SW Zone	LHCP	3825	72	108.9
IU3	SW Zone	RHCP	6111	ID3	SW Zone	LHCP	3886	34	108.1
IU4	SW Zone	RHCP	6149	ID4	SW Zone	LHCP	3924	34	107.9
IU5	SW Zone	RHCP	6130	ID5	SW Zone	LHCP	3905	72	108.0
IU6 IUA	SW Zone SW Zone	RHCP RHCP	6220 6280	ID6 IDA	SW Zone SW Zone	LHCP LHCP	3995 4055	72 36	110.5 111.8
IUA	3 w Zone	KIICP	6280	IDA	SW Lone	LITCP	4033	30	111.8
IU1	SW Zone	RHCP	5967.5	ED1	West Hemi	RHCP	3742.5	77	113.5
IU2	SW Zone	RHCP	6050	ED2	West Hemi	RHCP	3825	72	113.3
IU3	SW Zone	RHCP	6111	ED3	West Hemi	RHCP	3886	34	113.0
IU4 IU5	SW Zone	RHCP	6149	ED4 ED5	West Hemi	RHCP	3924	34	112.8
IU5 IU6	SW Zone SW Zone	RHCP RHCP	6130 6220	ED5 ED6	West Hemi West Hemi	RHCP RHCP	3905 3995	72 72	112.9 114.7
100	511 2010	14101		Page 17 of 1			5775	12	

Uplink Transponder Designation	Uplink Beam Name	Uplink Polarization	Uplink Center Frequency (MHz)	Downlink Transponder Designation	Downlink Beam Name	Downlink Polarization	Downlink Center Frequency (MHz)	Channel Bandwidth (MHz)	Channel Gain (dB)
ĪUA	SW Zone	RHCP	6280	EDA	West Hemi	RHCP	4055	36	116.6
		DUICD	60.67.6	551		DUCD	2742.5		
IU1	SW Zone	RHCP	5967.5	FD1	East Hemi	RHCP	3742.5	77	111.6
IU2 IU3	SW Zone SW Zone	RHCP	6050	FD2 FD3	East Hemi	RHCP RHCP	3825	72	111.0
IU3 IU4	SW Zone	RHCP RHCP	6111 6149	FD3 FD4	East Hemi East Hemi	RHCP	3886 3924	34 34	111.2 111.0
IU5	SW Zone	RHCP	6130	FD5	East Hemi	RHCP	3905	72	111.0
IU6	SW Zone	RHCP	6220	FD6	East Hemi	RHCP	3995	72	112.8
IUA	SW Zone	RHCP	6280	FDA	East Hemi	RHCP	4055	36	114.9
KU1	Combined NW+SE Zone	RHCP	5967.5	GD1	NW Zone	LHCP	3742.5	77	116.6
KU2	Combined NW+SE Zone	RHCP	6050	GD2	NW Zone	LHCP	3825	72	116.4
KU3	Combined NW+SE Zone	RHCP	6111	GD3	NW Zone	LHCP	3886	34	115.6
KU4	Combined NW+SE Zone	RHCP	6149	GD4	NW Zone	LHCP	3924	34	115.6
KU5	Combined NW+SE Zone	RHCP	6130	GD5	NW Zone	LHCP	3905	72	115.6
KU6	Combined NW+SE Zone	RHCP	6220	GD6	NW Zone	LHCP	3995	72	116.6
KUA	Combined NW+SE Zone	RHCP	6280	GDA	NW Zone	LHCP	4055	36	118.7
ET 11	Combined NW+SE Zone	RHCP	5067.5	ID1	SE Zone	LUCD	2742.5	77	117.0
KU1 KU2	Combined NW+SE Zone	RHCP	5967.5 6050	JD1 JD2	SE Zone SE Zone	LHCP LHCP	3742.5 3825	77 72	117.0 117.2
KU2 KU3	Combined NW+SE Zone	RHCP	6111	JD2 JD3	SE Zone	LHCP	3825	34	117.2
KU4	Combined NW+SE Zone	RHCP	6149	JD3 JD4	SE Zone	LHCP	3924	34	115.7
KU5	Combined NW+SE Zone	RHCP	6130	JD4 JD5	SE Zone	LHCP	3905	72	115.7
KU6	Combined NW+SE Zone	RHCP	6220	JD6	SE Zone	LHCP	3995	72	117.2
KUA	Combined NW+SE Zone	RHCP	6280	JDA	SE Zone	LHCP	4055	36	118.9
KU1	Combined NW+SE Zone	RHCP	5967.5	HD1	NE Zone	LHCP	3742.5	77	114.6
KU2	Combined NW+SE Zone	RHCP	6050	HD2	NE Zone	LHCP	3825	72	114.3
KU3	Combined NW+SE Zone	RHCP	6111	HD3	NE Zone	LHCP	3886	34	113.8
KU4	Combined NW+SE Zone	RHCP	6149	HD4	NE Zone	LHCP	3924	34	113.8
KU5	Combined NW+SE Zone	RHCP	6130	HD5	NE Zone	LHCP	3905	72	113.8
KU6	Combined NW+SE Zone	RHCP	6220	HD6	NE Zone	LHCP	3995	72	114.7
KUA	Combined NW+SE Zone	RHCP	6280	HDA	NE Zone	LHCP	4055	36	116.5
KU1	Combined NW+SE Zone	RHCP	5967.5	ID1	SW Zone	LHCP	3742.5	77	114.6
KU2	Combined NW+SE Zone	RHCP	6050	ID1 ID2	SW Zone	LHCP	3825	72	114.0
KU3	Combined NW+SE Zone	RHCP	6111	ID2 ID3	SW Zone	LHCP	3886	34	113.8
KU4	Combined NW+SE Zone	RHCP	6149	ID4	SW Zone	LHCP	3924	34	113.8
KU5	Combined NW+SE Zone	RHCP	6130	ID5	SW Zone	LHCP	3905	72	113.8
KU6	Combined NW+SE Zone	RHCP	6220	ID6	SW Zone	LHCP	3995	72	115.5
KUA	Combined NW+SE Zone	RHCP	6280	IDA	SW Zone	LHCP	4055	36	116.5
KU1	Combined NW+SE Zone	RHCP	5967.5	ED1	West Hemi	RHCP	3742.5	77	119.2
KU2	Combined NW+SE Zone	RHCP	6050	ED2	West Hemi	RHCP	3825	72	119.4
KU3	Combined NW+SE Zone	RHCP	6111	ED3	West Hemi	RHCP	3886	34	118.7
KU4	Combined NW+SE Zone	RHCP	6149	ED4	West Hemi	RHCP	3924	34	118.7
KU5	Combined NW+SE Zone	RHCP	6130	ED5 ED6	West Hemi West Hemi	RHCP	3905	72	118.7
KU6 KUA	Combined NW+SE Zone Combined NW+SE Zone	RHCP RHCP	6220 6280	ED6 EDA	West Hemi West Hemi	RHCP RHCP	3995 4055	72 36	119.7 121.3
KUA	Comonica i w + SE Zone	MICF	0200	EDA	W CSI HCIIII	MICF	JUJJ	50	121.3
KU1	Combined NW+SE Zone	RHCP	5967.5	FD1	East Hemi	RHCP	3742.5	77	117.3
KU2	Combined NW+SE Zone	RHCP	6050	FD2	East Hemi	RHCP	3825	72	117.1
KU3	Combined NW+SE Zone	RHCP	6111	FD3	East Hemi	RHCP	3886	34	116.9
KU4	Combined NW+SE Zone	RHCP	6149	FD4	East Hemi	RHCP	3924	34	116.9
KU5	Combined NW+SE Zone	RHCP	6130	FD5	East Hemi	RHCP	3905	72	116.9
KU6	Combined NW+SE Zone	RHCP	6220	FD6	East Hemi	RHCP	3995	72	117.8
KUA	Combined NW+SE Zone	RHCP	6280	FDA	East Hemi	RHCP	4055	36	119.6
LU1	Combined NE+SW Zone	RHCP	5967.5	GD1	NW Zone	LHCP	3742.5	77	113.4
LU2	Combined NE+SW Zone	RHCP	6050	GD2	NW Zone	LHCP	3825	72	112.8
LU3	Combined NE+SW Zone	RHCP	6111	GD3	NW Zone	LHCP	3886	34	112.4
LU4	Combined NE+SW Zone	RHCP	6149	GD4	NW Zone	LHCP	3924	34	112.2
LU5	Combined NE+SW Zone	RHCP	6130	GD5 GD6	NW Zone	LHCP	3905	72	112.3
LU6 LUA	Combined NE+SW Zone Combined NE+SW Zone	RHCP RHCP	6220 6280	GD6 GDA	NW Zone NW Zone	LHCP LHCP	3995 4055	72 36	114.1 116.5
LUA	Comonica NE+5 W Zoile	MICF	0200	JDA	TIW LOID	LINF	-1055	50	110.5
LU1	Combined NE+SW Zone	RHCP	5967.5	JD1	SE Zone	LHCP	3742.5	77	113.8
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Uplink Transponder Designation	Uplink Beam Name	Uplink Polarization	Uplink Center Frequency (MHz)	Downlink Transponder Designation	Downlink Beam Name	Downlink Polarization	Downlink Center Frequency (MHz)	Channel Bandwidth (MHz)	Channel Gain (dB)
LU2	Combined NE+SW Zone	RHCP	6050	JD2	SE Zone	LHCP	3825	72	113.6
LU3	Combined NE+SW Zone	RHCP	6111	JD3	SE Zone	LHCP	3886	34	112.5
LU4	Combined NE+SW Zone	RHCP	6149	JD4	SE Zone	LHCP	3924	34	112.3
LU5	Combined NE+SW Zone	RHCP	6130	JD5	SE Zone	LHCP	3905	72	112.4
LU6	Combined NE+SW Zone	RHCP	6220	JD6	SE Zone	LHCP	3995	72	114.7
LUA	Combined NE+SW Zone	RHCP	6280	JDA	SE Zone	LHCP	4055	36	116.7
LU1	Combined NE+SW Zone	RHCP	5967.5	HD1	NE Zone	LHCP	3742.5	77	111.4
LU2	Combined NE+SW Zone	RHCP	6050	HD2	NE Zone	LHCP	3825	72	110.7
LU3	Combined NE+SW Zone	RHCP	6111	HD3	NE Zone	LHCP	3886	34	110.6
LU4	Combined NE+SW Zone	RHCP	6149	HD4	NE Zone	LHCP	3924	34	110.4
LU5	Combined NE+SW Zone	RHCP	6130	HD5	NE Zone	LHCP	3905	72	110.5
LU6	Combined NE+SW Zone	RHCP	6220	HD6	NE Zone	LHCP	3995	72	112.2
LUA	Combined NE+SW Zone	RHCP	6280	HDA	NE Zone	LHCP	4055	36	114.3
		DITOD	50.67.5			L LIGD	2712.5		
LU1	Combined NE+SW Zone	RHCP	5967.5	ID1	SW Zone	LHCP	3742.5	77	111.4
LU2	Combined NE+SW Zone	RHCP	6050	ID2	SW Zone	LHCP	3825	72	111.5
LU3	Combined NE+SW Zone	RHCP	6111	ID3	SW Zone	LHCP	3886	34	110.6
LU4	Combined NE+SW Zone	RHCP	6149	ID4	SW Zone	LHCP	3924	34	110.4
LU5	Combined NE+SW Zone	RHCP	6130	ID5 ID6	SW Zone	LHCP	3905	72	110.5
LU6	Combined NE+SW Zone	RHCP	6220		SW Zone	LHCP	3995	72	113.0
LUA	Combined NE+SW Zone	RHCP	6280	IDA	SW Zone	LHCP	4055	36	114.3
		DUCD	6067.5	ED1	TT7 . TT .	DUCD	2742.5	22	116.0
LU1	Combined NE+SW Zone	RHCP	5967.5	ED1	West Hemi	RHCP	3742.5	77	116.0
LU2	Combined NE+SW Zone	RHCP	6050	ED2	West Hemi	RHCP	3825	72	115.8
LU3	Combined NE+SW Zone	RHCP	6111	ED3	West Hemi	RHCP	3886	34	115.5
LU4	Combined NE+SW Zone	RHCP	6149	ED4	West Hemi	RHCP	3924	34	115.3
LU5	Combined NE+SW Zone	RHCP	6130	ED5	West Hemi	RHCP	3905	72	115.4
LU6	Combined NE+SW Zone	RHCP	6220	ED6	West Hemi	RHCP	3995	72	117.2
LUA	Combined NE+SW Zone	RHCP	6280	EDA	West Hemi	RHCP	4055	36	119.1
		DUCD	6067.5	ED 1	E . H .	DUCD	2742.5	22	
LU1	Combined NE+SW Zone	RHCP	5967.5	FD1	East Hemi	RHCP	3742.5	77	114.1
LU2	Combined NE+SW Zone	RHCP	6050	FD2	East Hemi	RHCP	3825	72	113.5
LU3	Combined NE+SW Zone	RHCP	6111	FD3	East Hemi	RHCP	3886	34	113.7
LU4 LU5	Combined NE+SW Zone Combined NE+SW Zone	RHCP RHCP	6149	FD4 FD5	East Hemi	RHCP RHCP	3924 3905	34 72	113.5 113.6
LU3 LU6		RHCP	6130 6220	FD5 FD6	East Hemi	RHCP	3903	72	
LUG	Combined NE+SW Zone Combined NE+SW Zone	RHCP	6280	FDA	East Hemi East Hemi	RHCP	4055	36	115.3 117.4
LUA	Combined NE+Sw Zone	RHCP	0280	FDA	East Hemi	KHCP	4033	30	117.4
SU1	Seat 1	Н	14042.5	S1D1	Smot 1	V	10992.5	77	113.7
SU2	Spot 1 Spot 1	H	14042.5	S1D1 S1D2	Spot 1 Spot 1	V	110992.3	72	113.7
SU3		H	14125	\$1D2 \$1D3		V	11136	34	113.9
SU4	Spot 1 Spot 1	H	14180	\$1D3 \$1D4	Spot 1 Spot 1	V	11130	34	113.2
SU5	Spot 1	H	14205	\$1D4 \$1D5	Spot 1	V	11174	72	113.3
SU6	Spot 1 Spot 1	H	14205	\$1D5 \$1D6	Spot 1 Spot 1	V	11514	112	115.2
SU7	Spot 1 Spot 1	H	14438	\$1D0 \$1D7	Spot 1 Spot 1	v	11638	112	112.3
307	Spor 1		007771	5107	Spor 1	v	11030	112	114.3
SU1	Spot 1	Н	14042.5	U1D1	Spot 2	Н	10992.5	77	115.2
SU2	Spot 1 Spot 1	H	14042.5	U1D2	Spot 2 Spot 2	Н	110992.3	72	115.2
SU2 SU3	Spot 1 Spot 1	H H	14125	U1D2 U1D3	Spot 2 Spot 2	H	11075	34	115.5
SU4	Spot 1	H	14180	U1D3	Spot 2 Spot 2	Н	11130	34	115.0
SU5	Spot 1 Spot 1	H	14224	U1D4 U1D5	Spot 2 Spot 2	Н	11174	72	115.0
SU6	Spot 1	H	14205	U1D5	Spot 2 Spot 2	H	11514	112	115.0
SU7	Spot 1 Spot 1	H	14438	U1D7	Spot 2 Spot 2	H	11638	112	110.4
507	50011		1150	5127	opvi 2		110/0	114	111.0
SU1	Spot 1	Н	14042.5	Y1D1	Spot 2A	Н	10992.5	77	115.2
SU2	Spot 1 Spot 1	H	14125	Y1D2	Spot 2A	H	11075	72	115.5
SU3	Spot 1 Spot 1	H	14125	Y1D3	Spot 2A	H	11136	34	115.1
SU4	Spot 1 Spot 1	H	14224	Y1D4	Spot 2A	H	11174	34	115.0
SU5	Spot 1 Spot 1	H	14205	Y1D5	Spot 2A	H	11174	72	115.0
SU6	Spot 1	H	14205	Y1D5	Spot 2A Spot 2A	H	11514	112	115.0
SU7	Spot 1 Spot 1	H	14438	Y1D7	Spot 2A Spot 2A	H	11638	112	110.4
507	50011	-11	11150	1107	500121		11050	112	117.0
SU1	Spot 1	Н	14042.5	W1D1	Spot 3	v	10992.5	77	113.5
SU2	Spot 1 Spot 1	H	14125	W1D1 W1D2	Spot 3	v	11075	72	113.6
SU3	Spot 1 Spot 1	H	14125	W1D2 W1D3	Spot 3	V	11136	34	113.3
SU4	Spot 1 Spot 1	H	14180	W1D3 W1D4	Spot 3	V	11130	34	113.2
501	oport			Page 19 of 1	•		TTTT	24	113.4

Uplink Transponder Designation	Uplink Beam Name	Uplink Polarization	Uplink Center Frequency (MHz)	Downlink Transponder Designation	Downlink Beam Name	Downlink Polarization	Downlink Center Frequency (MHz)	Channel Bandwidth (MHz)	Channel Gain (dB)
SU5	Spot 1	Н	14205	W1D5	Spot 3	v	11155	72	113.2
SU5 SU6	Spot 1 Spot 1	H	14314	W1D5 W1D6	Spot 3	v	11514	112	114.8
SU7	Spot 1 Spot 1	H	14438	W1D0 W1D7	Spot 3	v	11638	112	112.1
	oport		11150	1127	Sports		11050	112	
UU1	Spot 2	V	14042.5	\$1D1	Spot 1	V	10992.5	77	116.2
UU2	Spot 2	V	14125	\$1D2	Spot 1	V	11075	72	115.8
UU3	Spot 2	V	14186	\$1D3	Spot 1	V	11136	34	115.6
UU4	Spot 2	V	14224	S1D4	Spot 1	V	11174	34	115.7
UU5	Spot 2	V	14205	\$1D5	Spot 1	V	11155	72	115.6
UU6	Spot 2	V	14314	S1D6	Spot 1	V	11514	112	118.0
UU7	Spot 2	v	14438	S1D7	Spot 1	V	11638	112	116.3
					-				
UU1	Spot 2	V	14042.5	U1D1	Spot 2	Н	10992.5	77	117.7
UU2	Spot 2	V	14125	U1D2	Spot 2	Н	11075	72	117.4
UU3	Spot 2	V	14186	U1D3	Spot 2	Н	11136	34	117.5
UU4	Spot 2	V	14224	U1D4	Spot 2	Н	11174	34	117.4
UU5	Spot 2	V	14205	U1D5	Spot 2	Н	11155	72	117.4
UU6	Spot 2	V	14314	U1D6	Spot 2	Н	11514	112	119.4
UU 7	Spot 2	V	14438	U1D7	Spot 2	Н	11638	112	118.0
	*				•				
UU1	Spot 2	v	14042.5	W1D1	Spot 3	v	10992.5	77	116.0
UU2	Spot 2	V	14125	W1D2	Spot 3	V	11075	72	115.5
UU3	Spot 2	V	14186	W1D3	Spot 3	V	11136	34	115.7
UU4	Spot 2	V	14224	W1D4	Spot 3	V	11174	34	115.6
UU5	Spot 2	V	14205	W1D5	Spot 3	V	11155	72	115.6
UU6	Spot 2	V	14314	W1D6	Spot 3	V	11514	112	117.8
UU7	Spot 2	V	14438	W1D7	Spot 3	V	11638	112	116.1
	*				•				
YU1	Spot 2A	V	14042.5	S1D1	Spot 1	V	10992.5	77	118.2
YU2	Spot 2A	V	14125	\$1D2	Spot 1	V	11075	72	117.8
YU3	Spot 2A	V	14186	\$1D3	Spot 1	V	11136	34	117.6
YU4	Spot 2A	V	14224	S1D4	Spot 1	V	11174	34	117.7
YU5	Spot 2A	V	14205	\$1D5	Spot 1	V	11155	72	117.6
YU6	Spot 2A	V	14314	\$1D6	Spot 1	V	11514	112	120.0
YU7	Spot 2A	V	14438	\$1D7	Spot 1	V	11638	112	118.3
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YU1	Spot 2A	V	14042.5	Y1D1	Spot 2A	Н	10992.5	77	119.7
YU2	Spot 2A	V	14125	Y1D2	Spot 2A	Н	11075	72	119.4
YU3	Spot 2A	V	14186	Y1D3	Spot 2A	Н	11136	34	119.5
YU4	Spot 2A	V	14224	Y1D4	Spot 2A	Н	11174	34	119.4
YU5	Spot 2A	V	14205	Y1D5	Spot 2A	Н	11155	72	119.4
YU6	Spot 2A	V	14314	Y1D6	Spot 2A	Н	11514	112	121.4
YU7	Spot 2A	V	14438	Y1D7	Spot 2A	Н	11638	112	120.0
YU1	Spot 2A	V	14042.5	W1D1	Spot 3	V	10992.5	77	118.0
YU2	Spot 2A	V	14125	W1D2	Spot 3	V	11075	72	117.5
YU3	Spot 2A	v	14186	W1D3	Spot 3	V	11136	34	117.7
YU4	Spot 2A	V	14224	W1D4	Spot 3	V	11174	34	117.6
YU5	Spot 2A	v	14205	W1D5	Spot 3	V	11155	72	117.6
YU6	Spot 2A	V	14314	W1D6	Spot 3	V	11514	112	119.8
YU7	Spot 2A	V	14438	W1D7	Spot 3	V	11638	112	118.1
WU1	Spot 3	Н	14042.5	\$1D1	Spot 1	V	10992.5	77	112.4
WU2	Spot 3	Н	14125	S1D2	Spot 1	V	11075	72	113.1
WU3	Spot 3	Н	14186	\$1D3	Spot 1	V	11136	34	113.0
WU4	Spot 3	Н	14224	S1D4	Spot 1	V	11174	34	113.0
WU5	Spot 3	Н	14205	S1D5	Spot 1	V	11155	72	113.0
WU6	Spot 3	Н	14314	S1D6	Spot 1	V	11514	112	114.1
WU7	Spot 3	Н	14438	S1D7	Spot 1	V	11638	112	112.4
WU1	Spot 3	Н	14042.5	U1D1	Spot 2	Н	10992.5	77	113.9
WU2	Spot 3	Н	14125	U1D2	Spot 2	H	11075	72	114.7
WU3	Spot 3	Н	14186	U1D3	Spot 2	Н	11136	34	114.9
WU4	Spot 3	Н	14224	U1D4	Spot 2	Н	11174	34	114.7
WU5	Spot 3	Н	14205	U1D5	Spot 2	Н	11155	72	114.8
	Smat 2	Н	14314	U1D6	Spot 2	Н	11514	112	115.5
WU6 WU7	Spot 3	H	14438	0120	Spot 2 Spot 2	Н	11638	112	114.1

Uplink Transponder Designation	Uplink Beam Name	Uplink Polarization	Uplink Center Frequency (MHz)	Downlink Transponder Designation	Downlink Beam Name	Downlink Polarization	Downlink Center Frequency (MHz)	Channel Bandwidth (MHz)	Channel Gain (dB)
WU1	Spot 3	Н	14042.5	Y1D1	Spot 2A	Н	10992.5	77	113.9
WU2	Spot 3	Н	14125	Y1D2	Spot 2A	Н	11075	72	114.7
WU3	Spot 3	Н	14186	Y1D3	Spot 2A	Н	11136	34	114.9
WU4	Spot 3	Н	14224	Y1D4	Spot 2A	Н	11174	34	114.7
WU5	Spot 3	Н	14205	Y1D5	Spot 2A	Н	11155	72	114.8
WU6	Spot 3	Н	14314	Y1D6	Spot 2A	H	11514	112	115.5
WU7	Spot 3	Н	14438	Y1D7	Spot 2A	Н	11638	112	114.1
WU1	Spot 3	Н	14042.5	W1D1	Spot 3	v	10992.5	77	112.2
WU2	Spot 3	Н	14125	W1D2	Spot 3	V	11075	72	112.8
WU3	Spot 3	Н	14186	W1D3	Spot 3	V	11136	34	113.1
WU4	Spot 3	H	14224	W1D4	Spot 3	V	11174	34	112.9
WU5	Spot 3	Н	14205	W1D5	Spot 3	V	11155	72	113.0
WU6	Spot 3	Н	14314	W1D6	Spot 3	V	11514	112	113.9
WU7	Spot 3	Н	14438	W1D7	Spot 3	V	11638	112	112.2
SU1	Spot 1	Н	14042.5	U2D1	Spot 2	Н	12547.5	77	115.3
SU2	Spot 1 Spot 1	H	14125	U2D2	Spot 2 Spot 2	H	12630	72	115.5
SU2 SU3	Spot 1 Spot 1	H	14186	U2D3	Spot 2 Spot 2	H	12691	34	114.9
SU4	Spot 1	Н	14224	U2D4	Spot 2	Н	12729	34	114.9
SU5	Spot 1	Н	14205	U2D5	Spot 2	Н	12710	72	114.9
SU1	Spot 1	Н	14042.5	Y2D1	Spot 2A	Н	12547.5	77	115.3
SU2	Spot 1	Н	14125	Y2D2	Spot 2A	Н	12630	72	115.5
SU3	Spot 1	Н	14186	Y2D3	Spot 2A	Н	12691	34	114.9
SU4	Spot 1	Н	14224	Y2D4	Spot 2A	Н	12729	34	114.9
SU5	Spot 1	Н	14205	Y2D5	Spot 2A	Н	12710	72	114.9
SU1	Spot 1	Н	14042.5	W2D1	Spot 3	v	12547.5	77	114.6
SU2	Spot 1 Spot 1	H	14125	W2D2	Spot 3	v	12630	72	114.8
SU3	Spot 1	Н	14186	W2D3	Spot 3	V	12691	34	113.9
SU4	Spot 1	Н	14224	W2D4	Spot 3	V	12729	34	113.9
SU5	Spot 1	Н	14205	W2D5	Spot 3	V	12710	72	113.9
UU1	Spot 2	v	14042.5	U2D1	Spot 2	Н	12547.5	77	117.8
UU2	Spot 2 Spot 2	v	14125	U2D2	Spot 2 Spot 2	H	12630	72	117.4
UU3	Spot 2	V	14186	U2D3	Spot 2	Н	12691	34	117.3
UU4	Spot 2	V	14224	U2D4	Spot 2	Н	12729	34	117.3
UU5	Spot 2	V	14205	U2D5	Spot 2	H	12710	72	117.3
UU1	Spot 2	v	14042.5	W2D1	Spot 3	v	12547.5	77	117.1
UU2	Spot 2 Spot 2	v	14125	W2D2	Spot 3	v	12630	72	116.7
UU3	Spot 2	V	14186	W2D3	Spot 3	V	12691	34	116.3
UU4	Spot 2	V	14224	W2D4	Spot 3	V	12729	34	116.3
UU5	Spot 2	V	14205	W2D5	Spot 3	V	12710	72	116.3
YU1	Spot 2A	v	14042.5	Y2D1	Spot 2A	Н	12547.5	77	119.8
YU2	Spot 2A	v	14125	Y2D2	Spot 2A	H	12630	72	119.8
YU3	Spot 2A Spot 2A	v	14186	Y2D3	Spot 2A Spot 2A	Н	12691	34	119.3
YU4	Spot 2A	V	14224	Y2D4	Spot 2A	H	12729	34	119.3
YU5	Spot 2A	V	14205	Y2D5	Spot 2A	Н	12710	72	119.3
YU1	Spot 2A	v	14042.5	W2D1	Spot 3	v	12547.5	77	119.1
YU2	Spot 2A Spot 2A	V V	14042.5	W2D1 W2D2	Spot 3	V V	12547.5	72	119.1
YU3	Spot 2A	v	14125	W2D2 W2D3	Spot 3	V	12691	34	118.7
YU4	Spot 2A Spot 2A	v	14224	W2D4	Spot 3	v	12729	34	118.3
YU5	Spot 2A	V	14205	W2D5	Spot 3	V	12710	72	118.3
WU1	Spot 3	Н	14042.5	U2D1	Spot 2	Н	12547.5	77	114.0
WU2	Spot 3	H	14125	U2D2	Spot 2 Spot 2	Н	12630	72	114.7
WU3	Spot 3	H	14186	U2D3	Spot 2 Spot 2	H	12691	34	114.7
WU4	Spot 3	Н	14224	U2D4	Spot 2	Н	12729	34	114.6
WU5	Spot 3	Н	14205	U2D5	Spot 2	Н	12710	72	114.6
WU1	Spot 3	Н	14042.5	¥2D1	Spot 2A	Н	12547.5	77	114.0
WU2	Spot 3	H	14125	Y2D2	Spot 2A	H	12630	72	114.7
WU3	Spot 3	Н	14186	Y2D3	Spot 2A	Н	12691	34	114.7

Uplink Transponder Designation	Uplink Beam Name	Uplink Polarization	Uplink Center Frequency (MHz)	Downlink Transponder Designation	Downlink Beam Name	Downlink Polarization	Downlink Center Frequency (MHz)	Channel Bandwidth (MHz)	Channel Gain (dB)
WU4	Spot 3	Н	14224	Y2D4	Spot 2A	Н	12729	34	114.6
WU5	Spot 3	Н	14205	Y2D5	Spot 2A	Н	12710	72	114.6
	i = = =								
WU1	Spot 3	Н	14042.5	W2D1	Spot 3	V	12547.5	77	113.3
WU2	Spot 3	Н	14125	W2D2	Spot 3	V	12630	72	114.0
WU3	Spot 3	Н	14186	W2D3	Spot 3	V	12691	34	113.7
WU4	Spot 3	Н	14224	W2D4	Spot 3	V	12729	34	113.6
WU5	Spot 3	Н	14205	W2D5	Spot 3	V	12710	72	113.6
	-				-				
EU1	West Hemi	LHCP	5967.5	\$1D1	Spot 1	V	10992.5	77	118.7
EU2	West Hemi	LHCP	6050	\$1D2	Spot 1	V	11075	72	118.6
EU3	West Hemi	LHCP	6111	\$1D3	Spot 1	V	11136	34	118.2
EU4	West Hemi	LHCP	6149	\$1D4	Spot 1	V	11174	34	118.5
EU5	West Hemi	LHCP	6130	\$1D5	Spot 1	V	11155	72	118.3
EU6	West Hemi	LHCP	6220	S1DC	Spot 1	V	11495	72	121.0
EU1	West Hemi	LHCP	5967.5	U1D1	Spot 2	Н	10992.5	77	120.2
EU2	West Hemi	LHCP	6050	U1D2	Spot 2	Н	11075	72	120.2
EU3	West Hemi	LHCP	6111	U1D3	Spot 2	Н	11136	34	120.1
EU4	West Hemi	LHCP	6149	U1D4	Spot 2	Н	11174	34	120.2
EU5	West Hemi	LHCP	6130	U1D5	Spot 2	Н	11155	72	120.1
EU6	West Hemi	LHCP	6220	U1DC	Spot 2	Н	11495	72	122.4
EU1	West Hemi	LHCP	5967.5	Y1D1	Spot 2A	Н	10992.5	77	120.2
EU2	West Hemi	LHCP	6050	Y1D2	Spot 2A	Н	11075	72	120.2
EU3	West Hemi	LHCP	6111	Y1D3	Spot 2A	Н	11136	34	120.1
EU4	West Hemi	LHCP	6149	Y1D4	Spot 2A	Н	11174	34	120.2
EU5	West Hemi	LHCP	6130	Y1D5	Spot 2A	Н	11155	72	120.1
EU6	West Hemi	LHCP	6220	Y1DC	Spot 2A	Н	11495	72	122.4
EU1	West Hemi	LHCP	5967.5	W1D1	Spot 3	V	10992.5	77	119.2
EU2	West Hemi	LHCP	6050	W1D2	Spot 3	V	11075	72	119.5
EU3	West Hemi	LHCP	6111	W1D3	Spot 3	V	11136	34	119.2
EU4	West Hemi	LHCP	6149	W1D4	Spot 3	V	11174	34	119.4
EU5	West Hemi	LHCP	6130	W1D5	Spot 3	V	11155	72	119.3
EU6	West Hemi	LHCP	6220	W1DC	Spot 3	V	11495	72	121.8
FU1	East Hemi	LHCP	5967.5	\$1D1	Spot 1	V	10992.5	77	115.8
FU2	East Hemi	LHCP	6050	\$1D2	Spot 1	v	11075	72	115.8
FU3	East Hemi	LHCP	6111	S1D3	Spot 1	V	11136	34	115.8
FU4	East Hemi	LHCP	6149	\$1D4	Spot 1	V	11174	34	115.9
FU5	East Hemi	LHCP	6130	\$1D5	Spot 1	V	11155	72	115.8
FU6	East Hemi	LHCP	6220	S1DC	Spot 1	V	11495	72	118.3
FU1	East Hemi	LHCP	5967.5	U1D1	Spot 2	H	10992.5	77	117.3
FU2	East Hemi	LHCP	6050	U1D2	Spot 2	Н	11075	72	117.4
FU3	East Hemi	LHCP	6111	U1D3	Spot 2	Н	11136	34	117.7
FU4	East Hemi	LHCP	6149	U1D4	Spot 2	Н	11174	34	117.6
FU5	East Hemi	LHCP	6130	U1D5	Spot 2	Н	11155	72	117.6
FU6	East Hemi	LHCP	6220	U1DC	Spot 2	Н	11495	72	119.7
	(10 100 m =								
FU1	East Hemi	LHCP	5967.5	Y1D1	Spot 2A	Н	10992.5	77	117.3
FU2	East Hemi	LHCP	6050	Y1D2	Spot 2A	H	11075	72	117.4
FU3	East Hemi	LHCP	6111	Y1D3	Spot 2A	H	11136	34	117.7
FU4	East Hemi	LHCP	6149	Y1D4	Spot 2A	Н	11174	34	117.6
FU5	East Hemi	LHCP	6130	Y1D5	Spot 2A	H	11155	72	117.6
FU6	East Hemi	LHCP	6220	Y1DC	Spot 2A	H	11495	72	119.7
FU1	East Hemi	LHCP	5967.5	W1D1	Spot 3	V	10992.5	77	115.6
FU2	East Hemi	LHCP	6050	W1D2	Spot 3	V	11075	72	115.5
FU3	East Hemi	LHCP	6111	W1D3	Spot 3	V	11136	34	115.9
FU4	East Hemi	LHCP	6149	W1D4	Spot 3	V	11174	34	115.8
FU5	East Hemi	LHCP	6130	W1D5	Spot 3	V	11155	72	115.8
FU6	East Hemi	LHCP	6220	W1DC	Spot 3	v	11495	72	118.1
GU1	NW Zone	RHCP	5967.5	S1D1	Spot 1	V	10992.5	77	116.6
GU2	NW Zone	RHCP	6050	\$1D2	Spot 1	V	11075	72	116.6

Uplink Transponder	Uplink Beam Name	Uplink	Uplink Center	Downlink Transponder	Downlink Beam	Downlink	Downlink Center	Channel Bandwidth	Channel Gain
Designation	-1	Polarization	Frequency (MHz)	Designation	Name	Polarization	Frequency (MHz)	(MHz)	(dB)
GU3	NW Zone	RHCP	6111	S1D3	Spot 1	V	11136	34	115.7
GU4	NW Zone	RHCP	6149	S1D4	Spot 1	V	11174	34	115.8
GU5	NW Zone	RHCP	6130	S1D5	Spot 1	V	11155	72	115.7
GU6	NW Zone	RHCP	6220	S1DC	Spot 1	V	11495	72	117.6
GU1	NW Zone	RHCP	5967.5	U1D1	Spot 2	Н	10992.5	77	118.1
GU2	NW Zone	RHCP	6050	U1D2	Spot 2	Н	11075	72	118.2
GU3	NW Zone	RHCP	6111	U1D3	Spot 2	H	11136	34	117.6
GU4 GU5	NW Zone NW Zone	RHCP RHCP	6149 6130	U1D4 U1D5	Spot 2 Spot 2	H H	11174 11155	34 72	117.5 117.5
GU5 GU6	NW Zone	RHCP	6220	UIDC	Spot 2 Spot 2	Н	11495	72	117.5
000	TW Zone	Mici	0220	onde	Spor 2		11475	12	112.0
GU1	NW Zone	RHCP	5967.5	Y1D1	Spot 2A	Н	10992.5	77	118.1
GU2	NW Zone	RHCP	6050	Y1D2	Spot 2A	Н	11075	72	118.2
GU3	NW Zone	RHCP	6111	Y1D3	Spot 2A	H	11136	34	117.6
GU4	NW Zone	RHCP	6149	Y1D4	Spot 2A	H	11174	34	117.5
GU5 GU6	NW Zone NW Zone	RHCP RHCP	6130 6220	Y1D5 Y1DC	Spot 2A Spot 2A	H H	11155 11495	72 72	117.5 119.0
606	INW Zone	KHCP	0220	HDC	Spot 2A	п	11495	12	119.0
GU1	NW Zone	RHCP	5967.5	W1D1	Spot 3	V	10992.5	77	117.1
GU2	NW Zone	RHCP	6050	W1D2	Spot 3	V	11075	72	117.5
GU3	NW Zone	RHCP	6111	W1D3	Spot 3	V	11136	34	116.7
GU4	NW Zone	RHCP	6149	W1D4	Spot 3	V V	11174	34	116.7
GU5 GU6	NW Zone NW Zone	RHCP RHCP	6130 6220	W1D5 W1DC	Spot 3 Spot 3	V V	11155 11495	72 72	116.7 118.4
600	INW Zone	KHCP	0220	WIDC	spor 5	v	11495	12	110.4
JU1	SE Zone	RHCP	5967.5	\$1D1	Spot 1	v	10992.5	77	116.6
JU2	SE Zone	RHCP	6050	\$1D2	Spot 1	V	11075	72	116.6
JU3	SE Zone	RHCP	6111	S1D3	Spot 1	v	11136	34	115.7
JU4	SE Zone	RHCP	6149	S1D4	Spot 1	V	11174	34	115.8
JU5 JU6	SE Zone SE Zone	RHCP RHCP	6130 6220	S1D5 S1DC	Spot 1	V V	11155 11495	72 72	115.7
100	SE Zone	RHCP	6220	SIDC	Spot 1	v	11495	12	117.6
JU1	SE Zone	RHCP	5967.5	U1D1	Spot 2	Н	10992.5	77	118.1
JU2	SE Zone	RHCP	6050	U1D2	Spot 2	Н	11075	72	118.2
JU3	SE Zone	RHCP	6111	U1D3	Spot 2	Н	11136	34	117.6
JU4	SE Zone	RHCP	6149	U1D4	Spot 2	H	11174	34	117.5
JU5	SE Zone	RHCP	6130	U1D5	Spot 2	H	11155	72	117.5
JU6	SE Zone	RHCP	6220	U1DC	Spot 2	Н	11495	72	119.0
JU1	SE Zone	RHCP	5967.5	Y1D1	Spot 2A	Н	10992.5	77	118.1
JU2	SE Zone	RHCP	6050	Y1D2	Spot 2A	H	11075	72	118.2
JU3	SE Zone	RHCP	6111	Y1D3	Spot 2A	Н	11136	34	117.6
JU4	SE Zone	RHCP	6149	Y1D4	Spot 2A	Н	11174	34	117.5
JU5	SE Zone	RHCP	6130	Y1D5	Spot 2A	Н	11155	72	117.5
JU6	SE Zone	RHCP	6220	Y1DC	Spot 2A	H	11495	72	119.0
JU1	SE Zone	RHCP	5967.5	W1D1	Spot 3	V	10992.5	77	117.1
JU2	SE Zone	RHCP	6050	W1D1 W1D2	Spot 3	v	11075	72	117.5
JU3	SE Zone	RHCP	6111	W1D3	Spot 3	V	11136	34	116.7
JU4	SE Zone	RHCP	6149	W1D4	Spot 3	V	11174	34	116.7
JU5	SE Zone	RHCP	6130	W1D5	Spot 3	V	11155	72	116.7
JU6	SE Zone	RHCP	6220	W1DC	Spot 3	V	11495	72	118.4
HU1	NE Zone	RHCP	5967.5	S1D1	Spot 1	V	10992.5	77	113.4
HU2	NE Zone	RHCP	6050	S1D1 S1D2	Spot 1 Spot 1	V	11075	72	113.0
HU3	NE Zone	RHCP	6111	\$1D3	Spot 1	V	11136	34	112.5
HU4	NE Zone	RHCP	6149	S1D4	Spot 1	V	11174	34	112.4
HU5	NE Zone	RHCP	6130	S1D5	Spot 1	V	11155	72	112.4
HU6	NE Zone	RHCP	6220	S1DC	Spot 1	V	11495	72	115.1
HU1	NE Zone	RHCP	5967.5	U1D1	Spot 2	Н	10992.5	77	114.9
HU2	NE Zone	RHCP	6050	U1D2	Spot 2 Spot 2	H	11075	72	114.5
HU3	NE Zone	RHCP	6111	U1D3	Spot 2 Spot 2	H	11136	34	114.4
HU4	NE Zone	RHCP	6149	U1D4	Spot 2	Н	11174	34	114.1
HU5	NE Zone	RHCP	6130	U1D5	Spot 2	Н	11155	72	114.2
HU6	NE Zone	RHCP	6220	U1DC	Spot 2	Н	11495	72	116.5

Uplink Transponder Designation	Uplink Beam Name	Uplink Polarization	Uplink Center Frequency (MHz)	Downlink Transponder Designation	Downlink Beam Name	Downlink Polarization	Downlink Center Frequency (MHz)	Channel Bandwidth (MHz)	Channel Gain (dB)
HU1	NE Zone	RHCP	5967.5	Y1D1	Spot 2A	Н	10992.5	77	114.9
HU2	NE Zone	RHCP	6050	Y1D2	Spot 2A	Н	11075	72	114.6
HU3	NE Zone	RHCP	6111	Y1D3	Spot 2A	Н	11136	34	114.4
HU4	NE Zone	RHCP	6149	Y1D4	Spot 2A	Н	11174	34	114.1
HU5	NE Zone	RHCP	6130	Y1D5	Spot 2A	H	11155	72	114.2
HU6	NE Zone	RHCP	6220	Y1DC	Spot 2A	Н	11495	72	116.5
11111	NT 7	DUCD	50(7.5	WIDI	6 (2		10002.5	77	112.0
HU1 HU2	NE Zone NE Zone	RHCP RHCP	5967.5 6050	W1D1 W1D2	Spot 3	V V	10992.5 11075	77 72	113.9 113.9
HU2 HU3	NE Zone	RHCP	6111	W1D2 W1D3	Spot 3 Spot 3	V	11075	34	113.5
HU4	NE Zone	RHCP	6149	W1D3 W1D4	Spot 3	V	11130	34	113.3
HU5	NE Zone	RHCP	6130	W1D5	Spot 3	v	11155	72	113.4
HU6	NE Zone	RHCP	6220	WIDC	Spot 3	v	11495	72	115.9
IU1	SW Zone	RHCP	5967.5	\$1D1	Spot 1	V	10992.5	77	113.4
IU2	SW Zone	RHCP	6050	\$1D2	Spot 1	v	11075	72	113.0
IU3	SW Zone	RHCP	6111	\$1D3	Spot 1	V	11136	34	112.5
IU4	SW Zone	RHCP	6149	\$1D4	Spot 1	V	11174	34	112.4
IU5	SW Zone	RHCP	6130	S1D5	Spot 1	V	11155	72	112.4
IU6	SW Zone	RHCP	6220	S1DC	Spot 1	V	11495	72	115.1
	A	PUC	60 40 S		a . a		10000 5		1112
IU1	SW Zone	RHCP	5967.5	U1D1	Spot 2	H	10992.5	77	114.9
IU2	SW Zone	RHCP	6050	U1D2	Spot 2	H	11075	72	114.6
IU3 IU4	SW Zone SW Zone	RHCP RHCP	6111 6149	U1D3 U1D4	Spot 2	H H	11136 11174	34 34	114.4 114.1
IU4 IU5	SW Zone	RHCP	6130	U1D4 U1D5	Spot 2 Spot 2	H H	11174	72	114.1
IU6	SW Zone	RHCP	6220	UIDC	Spot 2 Spot 2	H	11495	72	114.2
100	S II Zolic	Iuici	0220	CIDC	Spot 2		11155	12	110.5
IU1	SW Zone	RHCP	5967.5	Y1D1	Spot 2A	Н	10992.5	77	114.9
IU2	SW Zone	RHCP	6050	Y1D2	Spot 2A	H	11075	72	114.6
IU3	SW Zone	RHCP	6111	Y1D3	Spot 2A	Н	11136	34	114.4
IU4	SW Zone	RHCP	6149	Y1D4	Spot 2A	Н	11174	34	114.1
IU5	SW Zone	RHCP	6130	Y1D5	Spot 2A	Н	11155	72	114.2
IU6	SW Zone	RHCP	6220	Y1DC	Spot 2A	H	11495	72	116.5
IU1	SW Zone	RHCP	5967.5	W1D1	Spot 3	V	10992.5	77	113.9
IU2	SW Zone	RHCP	6050	W1D2	Spot 3	V	11075	72	113.9
IU3 IU4	SW Zone SW Zone	RHCP RHCP	6111 6149	W1D3 W1D4	Spot 3	V V	11136 11174	34 34	113.5 113.3
IU4 IU5	SW Zone SW Zone	RHCP	6130	W1D4 W1D5	Spot 3 Spot 3	V V	11174	72	113.5
IUS IU6	SW Zone	RHCP	6220	W1D5 W1DC	Spot 3	V	11135	72	115.4
100	SW Zone	MICI	0220	WIDC	500.5	· ·	11455	12	115.7
KU1	Combined NW+SE Zone	RHCP	5967.5	\$1D1	Spot 1	V	10992.5	77	119.1
KU2	Combined NW+SE Zone	RHCP	6050	S1D2	Spot 1	V	11075	72	119.1
KU3	Combined NW+SE Zone	RHCP	6111	\$1D3	Spot 1	V	11136	34	118.2
KU4	Combined NW+SE Zone	RHCP	6149	S1D4	Spot 1	V	11174	34	118.3
KU5	Combined NW+SE Zone	RHCP	6130	\$1D5	Spot 1	V	11155	72	118.2
KU6	Combined NW+SE Zone	RHCP	6220	S1DC	Spot 1	V	11495	72	120.1
			50 (T T						
KU1	Combined NW+SE Zone	RHCP	5967.5	U1D1	Spot 2	H	10992.5	77	120.6
KU2	Combined NW+SE Zone	RHCP	6050	U1D2	Spot 2	H	11075	72	120.7
KU3	Combined NW+SE Zone	RHCP	6111	U1D3	Spot 2	H	11136 11174	34 34	120.1
KU4 KU5	Combined NW+SE Zone Combined NW+SE Zone	RHCP RHCP	6149 6130	U1D4 U1D5	Spot 2 Spot 2	H H	11174 11155	34 72	120.0 120.0
KU5 KU6	Combined NW+SE Zone	RHCP	6220	UIDS	Spot 2 Spot 2	H H	11135	72	120.0
	Somemon Intro DE Lone		0220	5120	opor 2			12	
KU1	Combined NW+SE Zone	RHCP	5967.5	Y1D1	Spot 2A	Н	10992.5	77	120.6
KU2	Combined NW+SE Zone	RHCP	6050	Y1D2	Spot 2A	H	11075	72	120.7
KU3	Combined NW+SE Zone	RHCP	6111	Y1D3	Spot 2A	Н	11136	34	120.1
KU4	Combined NW+SE Zone	RHCP	6149	Y1D4	Spot 2A	Н	11174	34	120.0
KU5	Combined NW+SE Zone	RHCP	6130	Y1D5	Spot 2A	Н	11155	72	120.0
KU6	Combined NW+SE Zone	RHCP	6220	Y1DC	Spot 2A	Н	11495	72	121.5
KU1	Combined NW+SE Zone	RHCP	5967.5	W1D1	Spot 3	V	10992.5	77	119.6
KU2	Combined NW+SE Zone	RHCP	6050	W1D2	Spot 3	V	11075	72	120.0
KU3	Combined NW+SE Zone	RHCP	6111	W1D3	Spot 3	V	11136	34	119.2
KU4	Combined NW+SE Zone	RHCP	6149	W1D4 Page 24 of 1	Spot 3	V	11174	34	119.2

Transponder Designation KU5 KU6 LU1 LU2 LU3 LU4 LU5 LU6 LU6 LU1 LU2 LU3 LU4 LU3 LU4 LU3 LU4 LU5 LU4 LU5 LU6	Uplink Beam Name Combined NW+SE Zone Combined NW+SE Zone Combined NE+SW Zone	Polarization RHCP RHCP RHCP RHCP RHCP RHCP RHCP RHCP	Frequency (MHz) 6130 6220 5967.5 6050 6111 6149 6130 6220 5967.5 6050 6111	Transponder Designation W1D5 W1DC S1D1 S1D2 S1D3 S1D4 S1D5 S1DC U1D1 U1D1	Name Spot 3 Spot 3 Spot 1 Spot 1 Spot 1 Spot 1 Spot 1 Spot 1 Spot 1 Spot 1	Polarization V V V V V V V V V V	Frequency (MHz) 11155 11495 10992.5 11075 11136 11174 11155 11495	Bandwidth (MHz) 72 72 72 77 72 34 34 34 72 72	Gain (dB) 119.2 120.9 115.9 115.5 115.0 114.9 114.9
KU6 LU1 LU2 LU3 LU4 LU5 LU6 LU1 LU2 LU3 LU4 LU5 LU6 LU1 LU2 LU3 LU4 LU5 LU4 LU5 LU4 LU5 LU4 LU5 LU4 LU5 LU6	Combined NW+SE Zone Combined NE+SW Zone	RHCP RHCP RHCP RHCP RHCP RHCP RHCP RHCP	6130 6220 5967.5 6050 6111 6149 6130 6220 5967.5 6050	W1DC S1D1 S1D2 S1D3 S1D4 S1D5 S1DC U1D1	Spot 3 Spot 1 Spot 1 Spot 1 Spot 1 Spot 1 Spot 1	V V V V V V V	11155 11495 10992.5 11075 11136 11174 11155	72 77 72 34 34 72	120.9 115.9 115.5 115.0 114.9 114.9
LU1 LU2 LU3 LU4 LU5 LU6 LU1 LU2 LU3 LU4 LU5 LU6	Combined NE+SW Zone Combined NE+SW Zone	RHCP RHCP RHCP RHCP RHCP RHCP RHCP RHCP	5967.5 6050 6111 6149 6130 6220 5967.5 6050	S1D1 S1D2 S1D3 S1D4 S1D5 S1DC U1D1	Spot 1 Spot 1 Spot 1 Spot 1 Spot 1 Spot 1	V V V V V	10992.5 11075 11136 11174 11155	77 72 34 34 72	115.9 115.5 115.0 114.9 114.9
LU2 LU3 LU4 LU5 LU6 LU1 LU2 LU3 LU4 LU5 LU6	Combined NE+SW Zone Combined NE+SW Zone	RHCP RHCP RHCP RHCP RHCP RHCP RHCP RHCP	6050 6111 6149 6130 6220 5967.5 6050	\$1D2 \$1D3 \$1D4 \$1D5 \$1DC U1D1	Spot 1 Spot 1 Spot 1 Spot 1 Spot 1	V V V V	11075 11136 11174 11155	72 34 34 72	115.5 115.0 114.9 114.9
LU2 LU3 LU4 LU5 LU6 LU1 LU2 LU3 LU4 LU5 LU6	Combined NE+SW Zone Combined NE+SW Zone	RHCP RHCP RHCP RHCP RHCP RHCP RHCP RHCP	6050 6111 6149 6130 6220 5967.5 6050	\$1D2 \$1D3 \$1D4 \$1D5 \$1DC U1D1	Spot 1 Spot 1 Spot 1 Spot 1 Spot 1	V V V V	11075 11136 11174 11155	72 34 34 72	115.5 115.0 114.9 114.9
LU3 LU4 LU5 LU6 LU1 LU2 LU3 LU4 LU5 LU6	Combined NE+SW Zone Combined NE+SW Zone	RHCP RHCP RHCP RHCP RHCP RHCP RHCP RHCP	6111 6149 6130 6220 5967.5 6050	\$1D3 \$1D4 \$1D5 \$1DC U1D1	Spot 1 Spot 1 Spot 1	V V V	11136 11174 11155	34 34 72	115.0 114.9 114.9
LU4 LU5 LU6 LU1 LU2 LU3 LU4 LU5 LU6	Combined NE+SW Zone Combined NE+SW Zone Combined NE+SW Zone Combined NE+SW Zone Combined NE+SW Zone Combined NE+SW Zone Combined NE+SW Zone	RHCP RHCP RHCP RHCP RHCP RHCP RHCP	6149 6130 6220 5967.5 6050	\$1D4 \$1D5 \$1DC U1D1	Spot 1 Spot 1	V V	11174 11155	34 72	114.9 114.9
LU5 LU6 LU1 LU2 LU3 LU4 LU5 LU6	Combined NE+SW Zone Combined NE+SW Zone Combined NE+SW Zone Combined NE+SW Zone Combined NE+SW Zone Combined NE+SW Zone Combined NE+SW Zone	RHCP RHCP RHCP RHCP RHCP RHCP	6130 6220 5967.5 6050	S1D5 S1DC U1D1	Spot 1	V	11155	72	114.9
LU6 LU1 LU2 LU3 LU4 LU5 LU6	Combined NE+SW Zone Combined NE+SW Zone Combined NE+SW Zone Combined NE+SW Zone Combined NE+SW Zone Combined NE+SW Zone	RHCP RHCP RHCP RHCP RHCP	6220 5967.5 6050	SIDC UID1					
LU1 LU2 LU3 LU4 LU5 LU6	Combined NE+SW Zone Combined NE+SW Zone Combined NE+SW Zone Combined NE+SW Zone Combined NE+SW Zone	RHCP RHCP RHCP RHCP	5967.5 6050	U1D1	Spot 1	V	11495		1176
LU2 LU3 LU4 LU5 LU6	Combined NE+SW Zone Combined NE+SW Zone Combined NE+SW Zone Combined NE+SW Zone	RHCP RHCP RHCP	6050					72	117.6
LU2 LU3 LU4 LU5 LU6	Combined NE+SW Zone Combined NE+SW Zone Combined NE+SW Zone Combined NE+SW Zone	RHCP RHCP RHCP	6050		S===+ 2	Н	10992.5	77	117.4
LU3 LU4 LU5 LU6	Combined NE+SW Zone Combined NE+SW Zone Combined NE+SW Zone	RHCP RHCP		U1D2	Spot 2 Spot 2	H H	110992.5	72	117.4
LU4 LU5 LU6	Combined NE+SW Zone Combined NE+SW Zone	RHCP	0111	U1D2	Spot 2 Spot 2	H	11136	34	116.9
LU5 LU6	Combined NE+SW Zone		6149	U1D4	Spot 2 Spot 2	H	11174	34	116.6
LU6			6130	U1D5	Spot 2 Spot 2	H	11155	72	116.7
	e como med 112 · S / Lone	RHCP	6220	UIDC	Spot 2 Spot 2	H	11495	72	119.0
		luioi	0220	0120	Spor 2				
LU1	Combined NE+SW Zone	RHCP	5967.5	Y1D1	Spot 2A	Н	10992.5	77	117.4
LU2	Combined NE+SW Zone	RHCP	6050	Y1D2	Spot 2A	Н	11075	72	117.1
LU3	Combined NE+SW Zone	RHCP	6111	Y1D3	Spot 2A	Н	11136	34	116.9
LU4	Combined NE+SW Zone	RHCP	6149	Y1D4	Spot 2A	Н	11174	34	116.6
LU5	Combined NE+SW Zone	RHCP	6130	Y1D5	Spot 2A	Н	11155	72	116.7
LU6	Combined NE+SW Zone	RHCP	6220	Y1DC	Spot 2A	Н	11495	72	119.0
LU1	Combined NE+SW Zone	RHCP	5 96 7.5	W1D1	Spot 3	V	10992.5	77	116.4
LU2	Combined NE+SW Zone	RHCP	6050	W1D2	Spot 3	V	11075	72	116.4
LU3	Combined NE+SW Zone	RHCP	6111	W1D3	Spot 3	V	11136	34	116.0
LU4	Combined NE+SW Zone	RHCP	6149	W1D4	Spot 3	V	11174	34	115.8
LU5	Combined NE+SW Zone	RHCP	6130	W1D5	Spot 3	V	11155	72	115.9
LU6	Combined NE+SW Zone	RHCP	6220	W1DC	Spot 3	V	11495	72	118.4
		LUCD	50.67.5	LID (<i>a</i> . a		10517.5		100.0
EU1	West Hemi	LHCP	5967.5	U2D1	Spot 2	H	12547.5	77	120.3
EU2	West Hemi	LHCP	6050	U2D2	Spot 2	H	12630	72	120.2
EU3 EU4	West Hemi West Hemi	LHCP LHCP	6111	U2D3 U2D4	Spot 2	H H	12691 12729	34 34	119.9
EU4 EU5	West Hemi	LHCP	6149 6130	U2D4 U2D5	Spot 2 Spot 2	H H	12729	72	120.1 120.0
EUJ	west riem	LICP	0150	0203	Spot 2	п	12/10	12	120.0
EU1	West Hemi	LHCP	5967.5	Y2D1	Spot 2A	Н	12547.5	77	120.3
EU2	West Hemi	LHCP	6050	Y2D2	Spot 2A	H	12630	72	120.2
EU3	West Hemi	LHCP	6111	Y2D3	Spot 2A	H	12691	34	119.9
EU4	West Hemi	LHCP	6149	Y2D4	Spot 2A	H	12729	34	120.1
EU5	West Hemi	LHCP	6130	Y2D5	Spot 2A	H	12710	72	120.0
EU1	West Hemi	LHCP	5967.5	W2D1	Spot 3	V	12547.5	77	119.6
EU2	West Hemi	LHCP	6050	W2D2	Spot 3	V	12630	72	119.5
EU3	West Hemi	LHCP	6111	W2D3	Spot 3	v	12691	34	118.9
EU4	West Hemi	LHCP	6149	W2D4	Spot 3	V	12729	34	119.1
EU5	West Hemi	LHCP	6130	W2D5	Spot 3	V	12710	72	119.0
FU1	East Hemi	LHCP	5967.5	U2D1	Spot 2	Н	12547.5	77	117.4
FU2	East Hemi	LHCP	6050	U2D2	Spot 2	H	12630	72	117.4
FU3	East Hemi	LHCP	6111	U2D3	Spot 2	H	12691	34	117.5
FU4	East Hemi	LHCP	6149	U2D4	Spot 2	H	12729	34	117.5
FU5	East Hemi	LHCP	6130	U2D5	Spot 2	Н	12710	72	117.5
FU1	East Hemi	LHCP	5967.5	Y2D1	Spot 2A	Н	12547.5	77	117.4
FU1 FU2	East Hemi	LHCP	6050	Y2D2	Spot 2A Spot 2A	H	12547.5	72	117.4
FU2 FU3	East Hemi	LHCP	6111	Y2D2 Y2D3	Spot 2A Spot 2A	H	12630	34	117.4
FU4	East Hemi	LHCP	6149	Y2D4	Spot 2A Spot 2A	H	12091	34	117.5
FU5	East Hemi	LHCP	6130	Y2D5	Spot 2A Spot 2A	H	12729	72	117.5
105	LAST ITALI	LINF	0150	12100	Spot 21		12/10	12	111.3
FU1	East Hemi	LHCP	5967.5	W2D1	Spot 3	v	12547.5	77	116.7
FU2	East Hemi	LHCP	6050	W2D1 W2D2	Spot 3	v	12630	72	116.7
FU3	East Hemi	LHCP	6111	W2D2 W2D3	Spot 3	v	12691	34	116.5
FU4	East Hemi	LHCP	6149	W2D4	Spot 3	V	12729	34	116.5
FU5	East Hemi	LHCP	6130	W2D5	Spot 3	V	12710	72	116.5

Uplink Transponder Designation	Uplink Beam Name	Uplink Polarization	Uplink Center Frequency (MHz)	Downlink Transponder Designation	Downlink Beam Name	Downlink Polarization	Downlink Center Frequency (MHz)	Channel Bandwidth (MHz)	Channel Gain (dB)
GU1	NW Zone	RHCP	5967.5	U2D1	Spot 2	Н	12547.5	77	118.2
GU2	NW Zone	RHCP	6050	U2D2	Spot 2	Н	12630	72	118.2
GU3	NW Zone	RHCP	6111	U2D3	Spot 2	Н	12691	34	117.4
GU4	NW Zone	RHCP	6149	U2D4	Spot 2	Н	12729	34	117.4
GU5	NW Zone	RHCP	6130	U2D5	Spot 2	Н	12710	72	117.4
					•				
GU1	NW Zone	RHCP	5967.5	Y2D1	Spot 2A	Н	12547.5	77	118.2
GU2	NW Zone	RHCP	6050	Y2D2	Spot 2A	Н	12630	72	118.2
GU3	NW Zone	RHCP	6111	Y2D3	Spot 2A	Н	12691	34	117.4
GU4	NW Zone	RHCP	6149	Y2D4	Spot 2A	Н	12729	34	117.4
GU5	NW Zone	RHCP	6130	Y2D5	Spot 2A	Н	12710	72	117.4
GU1	NW Zone	RHCP	5967.5	W2D1	Spot 3	V	12547.5	77	117.5
GU2	NW Zone	RHCP	6050	W2D2	Spot 3	v	12630	72	117.5
GU3	NW Zone	RHCP	6111	W2D2 W2D3	Spot 3 Spot 3	v	12691	34	116.4
GU4	NW Zone	RHCP	6149	W2D3 W2D4	Spot 3	v	12729	34	116.4
GU5	NW Zone	RHCP	6130	W2D4 W2D5	Spot 3	v	12729	72	116.4
005	NW Zone	MICF	0150	WZDJ	3001 5	v	12/10	12	110.4
JU1	SE Zone	RHCP	5967.5	U2D1	Sent 2	Н	12547.5	77	118.2
JU1 JU2	SE Zone SE Zone	RHCP		U2D1 U2D2	Spot 2	H H		72	118.2
			6050		Spot 2		12630		
JU3	SE Zone	RHCP	6111	U2D3	Spot 2	Н	12691	34	117.4
JU4	SE Zone	RHCP	6149	U2D4	Spot 2	H	12729	34	117.4
JU5	SE Zone	RHCP	6130	U2D5	Spot 2	Н	12710	72	117.4
	AL 2000 AUG		10 10 100		•r ====				
JU1	SE Zone	RHCP	5967.5	Y2D1	Spot 2A	H	12547.5	77	118.2
JU2	SE Zone	RHCP	6050	Y2D2	Spot 2A	Н	12630	72	118.2
JU3	SE Zone	RHCP	6111	Y2D3	Spot 2A	Н	12691	34	117.4
JU4	SE Zone	RHCP	6149	Y2D4	Spot 2A	Н	12729	34	117.4
JU5	SE Zone	RHCP	6130	Y2D5	Spot 2A	Н	12710	72	117.4
JU1	SE Zone	RHCP	5967.5	W2D1	Spot 3	V	12547.5	77	117.5
JU2	SE Zone	RHCP	6050	W2D2	Spot 3	V	12630	72	117.5
JU3	SE Zone	RHCP	6111	W2D3	Spot 3	V	12691	34	116.4
JU4	SE Zone	RHCP	6149	W2D4	Spot 3	V	12729	34	116.4
JU5	SE Zone	RHCP	6130	W2D5	Spot 3	V	12710	72	116.4
	SE Lonc	- Indies	0150		spore		12/10	12	
HU1	NE Zone	RHCP	5967.5	U2D1	Spot 2	Н	12547.5	77	115.0
HU2	NE Zone	RHCP	6050	U2D2	Spot 2 Spot 2	Н	12630	72	114.6
HU3	NE Zone	RHCP	6111	U2D2	Spot 2 Spot 2	H	12690	34	114.0
HU4	NE Zone	RHCP	6149	U2D3	Spot 2 Spot 2	H	12729	34	114.0
HU5	NE Zone	RHCP	6130	U2D4	Spot 2 Spot 2	H	12729	72	114.0
nos	INE ZOILE	MICF	0150	0205	spor 2	п	12/10	12	114.1
11111	NE Z	BUCD	5067.5	V2D1	C+ 2 A	TT	10547.5	77	115.0
HU1	NE Zone	RHCP	5967.5	Y2D1	Spot 2A	H	12547.5	77	115.0
HU2 HU3	NE Zone	RHCP RHCP	6050	Y2D2 Y2D3	Spot 2A	H	12630	72 34	114.6
	NE Zone		6111		Spot 2A	H	12691		114.2
HU4	NE Zone	RHCP	6149	Y2D4 V2D5	Spot 2A	H	12729	34	114.0
HU5	NE Zone	RHCP	6130	Y2D5	Spot 2A	H	12710	72	114.1
		DITOD	5067.5	TIONA	0.12	.	10517.5	77	114.2
HU1	NE Zone	RHCP	5967.5	W2D1	Spot 3	V	12547.5	77	114.3
HU2	NE Zone	RHCP	6050	W2D2	Spot 3	V	12630	72	113.9
HU3	NE Zone	RHCP	6111	W2D3	Spot 3	V	12691	34	113.2
HU4	NE Zone	RHCP	6149	W2D4	Spot 3	V	12729	34	113.0
HU5	NE Zone	RHCP	6130	W2D5	Spot 3	V	12710	72	113.1
IU1	SW Zone	RHCP	5967.5	U2D1	Spot 2	Н	12547.5	77	115.0
IU2	SW Zone	RHCP	6050	U2D2	Spot 2	Н	12630	72	114.6
IU3	SW Zone	RHCP	6111	U2D3	Spot 2	Н	12691	34	114.2
IU4	SW Zone	RHCP	6149	U2D4	Spot 2	Н	12729	34	114.0
IU5	SW Zone	RHCP	6130	U2D5	Spot 2	Н	12710	72	114.1
IU1	SW Zone	RHCP	5967.5	Y2D1	Spot 2A	Н	12547.5	77	115.0
IU2	SW Zone	RHCP	6050	Y2D2	Spot 2A	Н	12630	72	114.6
IU3	SW Zone	RHCP	6111	Y2D3	Spot 2A	Н	12691	34	114.2
IU4	SW Zone	RHCP	6149	Y2D4	Spot 2A	Н	12729	34	114.0
IU5	SW Zone	RHCP	6130	Y2D5	Spot 2A Spot 2A	Н	12729	72	114.1
100	511 2010		0100	1225	Spotter				
IU1	SW Zone	RHCP	5967.5	W2D1	Spot 3	v	12547.5	77	114.3
IU2	SW Zone	RHCP	6050	W2D1 W2D2	Spot 3	V	12630	72	114.5
102	S W ZOILE	MICF		w2D2 Page 26 of 1	•	v	12030	12	113.9

Uplink Transponder Designation	Uplink Beam Name	Uplink Polarization	Uplink Center Frequency (MHz)	Downlink Transponder Designation	Downlink Beam Name	Downlink Polarization	Downlink Center Frequency (MHz)	Channel Bandwidth (MHz)	Channel Gain (dB)
IU3	SW Zone	RHCP	6111	W2D3	Spot 3	V	12691	34	113.2
IU4	SW Zone	RHCP	6149	W2D4	Spot 3	V	12729	34	113.0
IU5	SW Zone	RHCP	6130	W2D5	Spot 3	V	12710	72	113.1
KU1	Combined NW+SE Zone	RHCP	5967.5	U2D1	Spot 2	Н	12547.5	77	120.7
KU2	Combined NW+SE Zone	RHCP	6050	U2D2	Spot 2	Н	12630	72	120.7
KU3	Combined NW+SE Zone	RHCP	6111	U2D3	Spot 2	H	12691	34	119.9
KU4	Combined NW+SE Zone	RHCP	6149	U2D4	Spot 2	Н	12729	34	119.9
KU5	Combined NW+SE Zone	RHCP	6130	U2D5	Spot 2	Н	12710	72	119.9
KU1	Combined NW+SE Zone	RHCP	5967.5	Y2D1	Spot 2A	H	12547.5	77	120.7
KU2	Combined NW+SE Zone	RHCP	6050	Y2D2	Spot 2A	Н	12630	72	120.7
KU3	Combined NW+SE Zone	RHCP	6111	Y2D3	Spot 2A	H	12691	34	119.9
KU4	Combined NW+SE Zone	RHCP	6149	Y2D4	Spot 2A	Н	12729	34	119.9
KU5	Combined NW+SE Zone	RHCP	6130	Y2D5	Spot 2A	Н	12710	72	119.9
KU1	Combined NW+SE Zone	RHCP	5967.5	W2D1	Spot 3	V	12547.5	77	120.0
KU2	Combined NW+SE Zone	RHCP	6050	W2D2	Spot 3	V	12630	72	120.0
KU3	Combined NW+SE Zone	RHCP	6111	W2D3	Spot 3	v	12691	34	118.9
KU4	Combined NW+SE Zone	RHCP	6149	W2D4	Spot 3	v	12729	34	118.9
KU5	Combined NW+SE Zone	RHCP	6130	W2D5	Spot 3	V	12710	72	118.9
LU1	Combined NE+SW Zone	RHCP	5967.5	U2D1	Spot 2	Н	12547.5	77	117.5
LU2	Combined NE+SW Zone	RHCP	6050	U2D2	Spot 2	Н	12630	72	117.1
LU3	Combined NE+SW Zone	RHCP	6111	U2D3	Spot 2	H	12691	34	116.7
LU4	Combined NE+SW Zone	RHCP	6149	U2D4	Spot 2	Н	12729	34	116.5
LU5	Combined NE+SW Zone	RHCP	6130	U2D5	Spot 2	H	12710	72	116.6
LU1	Combined NE+SW Zone	RHCP	5967.5	Y2D1	Spot 2A	H	12547.5	77	117.5
LU2	Combined NE+SW Zone	RHCP	6050	Y2D2	Spot 2A	H	12630	72	117.1
LU3	Combined NE+SW Zone	RHCP	6111	Y2D3	Spot 2A	H	12691	34	116.7
LU4	Combined NE+SW Zone	RHCP	6149	Y2D4	Spot 2A	H	12729	34	116.5
LU5	Combined NE+SW Zone	RHCP	6130	Y2D5	Spot 2A	H	12710	72	116.6
LU1	Combined NE+SW Zone	RHCP	5967.5	W2D1	Spot 3	V	12547.5	77	116.8
LU2	Combined NE+SW Zone	RHCP	6050	W2D2	Spot 3	V	12630	72	116.4
LU3	Combined NE+SW Zone	RHCP	6111	W2D3	Spot 3	V	12691	34	115.7
LU4	Combined NE+SW Zone	RHCP	6149	W2D4	Spot 3	V	12729	34	115.5
LU5	Combined NE+SW Zone	RHCP	6130	W2D5	Spot 3	V	12710	72	115.6
SU1	Spot 1	Н	14042.5	ED1	West Hemi	RHCP	3742.5	77	113.8
SU2	Spot 1	H	14125	ED2	West Hemi	RHCP	3825	72	114.2
SU3	Spot 1	H	14186	ED3	West Hemi	RHCP	3886	34	113.7
SU4	Spot 1	H	14224	ED4	West Hemi	RHCP	3924	34	113.7
SU5	Spot 1	Н	14205	ED5	West Hemi	RHCP	3905	72	113.7
SUC	Spot 1	Н	14295	ED6	West Hemi	RHCP	3995	72	114.6
07.71	C 1		14042.5	ED 1	T . T .	DUCD	2742.5	77	111.0
SU1	Spot 1	H	14042.5	FD1	East Hemi	RHCP	3742.5	77	111.9
SU2	Spot 1	H	14125	FD2	East Hemi	RHCP	3825	72	111.9
SU3	Spot 1	H	14186	FD3	East Hemi	RHCP	3886	34	111.9
SU4	Spot 1	H	14224	FD4	East Hemi	RHCP	3924	34	111.9
SU5	Spot 1	H	14205	FD5	East Hemi	RHCP	3905	72	111.9
SUC	Spot 1	Н	14295	FD6	East Hemi	RHCP	3995	72	112.7
	A		14040.5	6751	1017	I HOD	2742.5	22	111.2
SU1	Spot 1	H	14042.5	GD1	NW Zone	LHCP	3742.5	77	111.2
SU2	Spot 1	Н	14125	GD2	NW Zone	LHCP	3825	72	111.2
SU3	Spot 1	Н	14186	GD3	NW Zone	LHCP	3886	34	110.6
SU4	Spot 1	Н	14224	GD4	NW Zone	LHCP	3924	34	110.6
SU5	Spot 1	Н	14205	GD5	NW Zone	LHCP	3905	72	110.6
SUC	Spot 1	Н	14295	GD6	NW Zone	LHCP	3995	72	111.5
					070 55		0.7/2 5		
SU1	Spot 1	Н	14042.5	JD1	SE Zone	LHCP	3742.5	77	111.6
SU2	Spot 1	Н	14125	JD2	SE Zone	LHCP	3825	72	112.0
SU3	Spot 1	H	14186	JD3	SE Zone	LHCP	3886	34	110.7
SU4	Spot 1	Н	14224	JD4	SE Zone	LHCP	3924	34	110.7
07 T.C			14205	JD5	CE Zana				1 10 7
SU5 SUC	Spot 1 Spot 1	H H	14205 14295	JD5 JD6	SE Zone SE Zone	LHCP LHCP	3905 3995	72 72	110.7 112.1

Uplink Transponder Designation	Uplink Beam Name	Uplink Polarization	Uplink Center Frequency (MHz)	Downlink Transponder Designation	Downlink Beam Name	Downlink Polarization	Downlink Center Frequency (MHz)	Channel Bandwidth (MHz)	Channel Gain (dB)
SU1	Spot 1	Н	14042.5	HD1	NE Zone	LHCP	3742.5	77	109.2
SU2	Spot 1 Spot 1	H	14125	HD2	NE Zone	LHCP	3825	72	109.1
SU3	Spot 1 Spot 1	H	14186	HD3	NE Zone	LHCP	3886	34	108.8
SU4	Spot 1	H	14224	HD4	NE Zone	LHCP	3924	34	108.8
SU5	Spot 1	Н	14205	HD5	NE Zone	LHCP	3905	72	108.8
SUC	Spot 1	Н	14295	HD6	NE Zone	LHCP	3995	72	109.6
SU1	Spot 1	H	14042.5	ID1	SW Zone	LHCP	3742.5	77	109.2
SU2	Spot 1	H	14125	ID2	SW Zone	LHCP	3825	72	109.9
SU3	Spot 1	Н	14186	ID3	SW Zone	LHCP	3886	34	108.8
SU4	Spot 1	H	14224	ID4	SW Zone	LHCP	3924	34	108.8
SU5	Spot 1	H	14205	ID5	SW Zone	LHCP	3905	72	108.8
SUC	Spot 1	Н	14295	ID6	SW Zone	LHCP	3995	72	110.4
1111	C ()	T	14042 5	ED1	TT . T	DUCD	2742.5	77	116.2
UU1 UU2	Spot 2 Spot 2	V V	14042.5 14125	ED1 ED2	West Hemi West Hemi	RHCP RHCP	3742.5 3825	77 72	116.3 116.1
UU3	Spot 2 Spot 2	V	14125	ED2 ED3	West Hemi	RHCP	3886	34	116.1
UU4	Spot 2 Spot 2	V	14180	ED3 ED4	West Hemi	RHCP	3924	34	116.1
UU5	Spot 2 Spot 2	V	14224	ED4 ED5	West Hemi	RHCP	3924	72	116.1
UUC	Spot 2	V	14205	ED5 ED6	West Hemi	RHCP	3995	72	117.6
	Spor 2			2200	cov rielin		5775		
UU1	Spot 2	V	14042.5	FD1	East Hemi	RHCP	3742.5	77	114.4
UU2	Spot 2	V	14125	FD2	East Hemi	RHCP	3825	72	113.8
UU3	Spot 2	V	14186	FD3	East Hemi	RHCP	3886	34	114.3
UU4	Spot 2	V	14224	FD4	East Hemi	RHCP	3924	34	114.3
UU5	Spot 2	V	14205	FD5	East Hemi	RHCP	3905	72	114.3
UUC	Spot 2	V	14295	FD6	East Hemi	RHCP	3995	72	115.7
UU1	Spot 2	v	14042.5	GD1	NW Zone	LHCP	3742.5	77	113.7
UU2	Spot 2	V	14125	GD2	NW Zone	LHCP	3825	72	113.1
UU3	Spot 2	V	14186	GD3	NW Zone	LHCP	3886	34	113.0
UU4	Spot 2	V	14224	GD4	NW Zone	LHCP	3924	34	113.0
005	Spot 2	V	14205	GD5	NW Zone	LHCP	3905	72	113.0
UUC	Spot 2	v	14295	GD6	NW Zone	LHCP	3995	72	114.5
UU1	Spot 2	v	14042.5	JD1	SE Zone	LHCP	3742.5	77	114.1
UU2	Spot 2 Spot 2	v	14042.5	JD1 JD2	SE Zone	LHCP	3825	72	114.1
UU3	Spot 2 Spot 2	v	14125	JD3	SE Zone	LHCP	3886	34	113.1
UU4	Spot 2 Spot 2	v	14224	JD4	SE Zone	LHCP	3924	34	113.1
UU5	Spot 2 Spot 2	v	14205	JD5	SE Zone	LHCP	3905	72	113.1
UUC	Spot 2 Spot 2	v	14295	JD6	SE Zone	LHCP	3995	72	115.1
	•								
UU1	Spot 2	V	14042.5	HD1	NE Zone	LHCP	3742.5	77	111.7
UU2	Spot 2	V	14125	HD2	NE Zone	LHCP	3825	72	111.0
UU3	Spot 2	V	14186	HD3	NE Zone	LHCP	3886	34	111.2
UU4	Spot 2	V	14224	HD4	NE Zone	LHCP	3924	34	111.2
UU5	Spot 2	V	14205	HD5	NE Zone	LHCP	3905	72	111.2
UUC	Spot 2	V	14295	HD6	NE Zone	LHCP	3995	72	112.6
TITT	e_ + 0		14040 5	TD1	CWI 7	LICD	2742 5	22	111.7
	Spot 2	V V	14042.5	ID1 ID2	SW Zone	LHCP	3742.5	77	111.7
UU2 UU3	Spot 2 Spot 2	V	14125 14186	ID2 ID3	SW Zone SW Zone	LHCP LHCP	3825	72 34	111.8 111.2
UU3 UU4	Spot 2 Spot 2	V	14186	ID3 ID4	SW Zone SW Zone	LHCP	3886 3924	34	111.2
UU5	Spot 2 Spot 2	V	14224	ID4 ID5	SW Zone	LHCP	3924	72	111.2
UUC	Spot 2	V	14205	ID5 ID6	SW Zone	LHCP	3995	72	111.2
	~per 2	1 1						.~	
YU1	Spot 2A	V	14042.5	ED1	West Hemi	RHCP	3742.5	77	118.3
YU2	Spot 2A	V	14125	ED2	West Hemi	RHCP	3825	72	118.1
YU3	Spot 2A	V	14186	ED3	West Hemi	RHCP	3886	34	118.1
YU4	Spot 2A	V	14224	ED4	West Hemi	RHCP	3924	34	118.1
YU5	Spot 2A	V	14205	ED5	West Hemi	RHCP	3905	72	118.1
YUC	Spot 2A	V	14295	ED6	West Hemi	RHCP	3995	72	119.6
YU1	Spot 2A	V	14042.5	FD1	East Hemi	RHCP	3742.5	77	116.4
YU2	Spot 2A	V	14125	FD2	East Hemi	RHCP	3825	72	115.8
YU3	Spot 2A	V	14186	FD3	East Hemi	RHCP	3886	34	116.3

YU4 YU5 YUC YU1 YU3 YU4 YU5 YU0 YU1 YU2 YU2 YU3 YU2 YU1 YU2 YU3 YU1 YU2 YU3 YU4 YU5 YU1 YU2 YU3 YU4 YU5 YU0 YU1 YU2 YU3 YU4 YU2 YU3 YU4 YU2 YU3 YU4 YU5 YU4 YU5 YU2 YU3 YU4 YU5 YUC WU1	Spot 2A Spot 2A	V V V V V V V V V V V V V V V V	(MHz) 14224 14205 14295 14042.5 14125 14186 14224 14205 14295 14042.5 14042.5 14125	FD4 FD5 FD6 GD1 GD2 GD3 GD4 GD5 GD6 JD1	East Hemi East Hemi NW Zone NW Zone NW Zone NW Zone NW Zone NW Zone NW Zone	RHCP RHCP LHCP LHCP LHCP LHCP LHCP LHCP	(MHz) 3924 3905 3995 3742.5 3825 3886 3924	34 72 72 77 77 72 34	116.3 116.3 117.7 115.7 115.1
YUC YU1 YU2 YU3 YU4 YU5 YUC YU1 YU2 YU3 YU4 YU2 YU3 YU4 YU5 YUC YU1 YU2 YU3 YU4 YU5 YU2 YU3 YU4 YU5 YUC YU1 YU5 YUC YU1 YU2 YU3 YU4 YU5 YUC WU1 WU1	Spot 2A Spot 2A	V V V V V V V V V V V V V V	14295 14042.5 14125 14186 14224 14205 14295 14042.5 14125	FD6 GD1 GD2 GD3 GD4 GD5 GD6	East Hemi NW Zone NW Zone NW Zone NW Zone NW Zone	RHCP LHCP LHCP LHCP LHCP	3995 3742.5 3825 3886	72 77 72	117.7 115.7 115.1
YU1 YU2 YU3 YU4 YU5 YUC YU1 YU2 YU3 YU2 YU3 YU4 YU5 YUC YU1 YU2 YU3 YU4 YU2 YU3 YU4 YU5 YUC YU1 YU5 YUC YU1 YU2 YU3 YU4 YU5 YUC WU1 WU1	Spot 2A Spot 2A	V V V V V V V V V V V V	14042.5 14125 14186 14224 14205 14295 14295 14042.5 14125	GD1 GD2 GD3 GD4 GD5 GD6	NW Zone NW Zone NW Zone NW Zone NW Zone	LHCP LHCP LHCP LHCP	3742.5 3825 3886	77 72	115.7 115.1
YU2 YU3 YU4 YU5 YUC YU1 YU2 YU3 YU4 YU5 YUC YU1 YU2 YU3 YU4 YU2 YU3 YU4 YU5 YUC YU1 YU5 YUC YU1 YU2 YU3 YU4 YU5 YUC WU1 WU1	Spot 2A Spot 2A	V V V V V V V V V V	14125 14186 14224 14205 14295 14295 14042.5 14125	GD2 GD3 GD4 GD5 GD6	NW Zone NW Zone NW Zone NW Zone	LHCP LHCP LHCP	3825 3886	72	115.1
YU2 YU3 YU4 YU5 YUC YU1 YU2 YU3 YU4 YU5 YUC YU1 YU2 YU3 YU4 YU2 YU3 YU4 YU5 YUC YU1 YU5 YUC YU1 YU2 YU3 YU4 YU5 YUC WU1 WU1	Spot 2A Spot 2A	V V V V V V V V V V	14125 14186 14224 14205 14295 14295 14042.5 14125	GD2 GD3 GD4 GD5 GD6	NW Zone NW Zone NW Zone NW Zone	LHCP LHCP LHCP	3825 3886	72	115.1
YU3 YU4 YU5 YUC YU1 YU2 YU3 YU4 YU5 YUC YU1 YU2 YU3 YU4 YU2 YU3 YU4 YU5 YUC YU1 YU5 YUC YU1 YU2 YU3 YU4 YU5 YUC WU1 WU1	Spot 2A Spot 2A	V V V V V V V V V	14186 14224 14205 14295 14042.5 14125	GD3 GD4 GD5 GD6	NW Zone NW Zone NW Zone	LHCP LHCP	3886		
YU4 YU5 YUC YU1 YU2 YU3 YU4 YU5 YUC YU1 YU2 YU3 YU4 YU2 YU3 YU4 YU5 YUC YU1 YU2 YU1 YU2 YU3 YU4 YU5 YUC WU1 WU1	Spot 2A Spot 2A	V V V V V V V V	14224 14205 14295 14042.5 14125	GD4 GD5 GD6	NW Zone NW Zone	LHCP		34	
YU5 YUC YU1 YU2 YU3 YU4 YU5 YUC YU1 YU2 YU3 YU4 YU5 YUC YU1 YU5 YUC YU1 YU2 YU1 YU5 YUC YU1 YU2 YU3 YU4 YU2 YU3 YU4 YU2 YU3 YU4 YU2 YU3 YU4 YU2 YU3 YU2 YU3 YU2 YU3 YU2 YU3 YU2 YU2 YU3 YU2 YU3 YU4 YU4 YU3 YU4 YU2 YU3 YU2 YU3 YU2 YU2 YU3 YU2 YU3 YU4 YU5 YU2 YU2 YU3 YU2 YU2 YU3 YU2 YU2 YU3 YU2 YU3 YU4 YU5 YU2 YU2 YU2 YU3 YU2 YU2 YU3 YU2 YU2 YU3 YU2 YU2 YU3 YU2 YU2 YU3 YU2 YU2 YU3 YU2 YU2 YU3 YU2 YU3 YU2 YU3 YU2 YU2 YU3 YU2 YU3 YU2 YU3 YU2 YU3 YU2 YU3 YU4 YU3 YU2 YU3 YU4 YU3 YU4 YU3 YU4 YU3 YU4 YU3 YU4 YU3 YU4 YU3 YU4 YU3 YU4 YU3 YU4 YU3 YU4 YU5 YU2 YU2 YU3 YU2 YU2 YU3 YU4 YU3 YU4 YU5 YU2 YU2 YU3 YU2 YU2 YU3 YU2 YU2 YU2 YU2 YU3 YU2 YU2 YU3 YU2 YU2 YU3 YU2 YU2 YU3 YU2 YU3 YU2 YU3 YU2 YU3 YU2 YU3 YU2 YU3 YU2 YU3 YU2 YU3 YU2 YU3 YU2 YU3 YU2 YU3 YU2 YU3 YU2 YU3 YU2 YU3 YU2 YU3 YU2 YU3 YU4 YU3 YU4 YU2 YU3 YU4 YU3 YU4 YU2 YU3 YU4 YU2 YU3 YU4 YU3 YU4 YU2 YU3 YU4 YU4 YU3 YU4 YU3 YU4 YU4 YU3 YU4 YU4 YU4 YU4 YU4 YU4 YU4 YU4 YU4 YU4	Spot 2A Spot 2A Spot 2A Spot 2A Spot 2A Spot 2A Spot 2A Spot 2A Spot 2A Spot 2A	V V V V V V V	14205 14295 14042.5 14125	GD5 GD6	NW Zone		3924		115.0
YUC YU1 YU2 YU3 YU4 YU5 YUC YU1 YU2 YU3 YU4 YU5 YUC YU1 YU5 YUC YU1 YU2 YU3 YU4 YU5 YUC YU1 YU5 YUC YU1 YU5 YUC YU2 YU3 YU4 YU5 YUC YU3 YU4 YU5 YU2 YU3 YU4 YU5 YU2 YU3 YU4 YU5 YU2 YU3 YU2 YU3 YU4 YU5 YU2 YU3 YU4 YU5 YUC YU2 YU3 YU4 YU5 YU2 YU3 YU4 YU5 YU2 YU3 YU4 YU5 YU2 YU3 YU4 YU5 YU2 YU3 YU4 YU5 YU2 YU3 YU4 YU5 YU2 YU3 YU4 YU5 YU2 YU5 YUC YU5 YU2 YU3 YU4 YU5 YU2 YU5 YUC YU5 YUC YU5 YU2 YU5 YU2 YU5 YUC YU5 YUC YU5 YUC YU5 YUC YU5 YUC YU5 YUC YU5 YUC YU5 YUC YU5 YUC YU5 YU2 YU5 YU2 YU5 YU2 YU5 YU2 YU3 YU2 YU3 YU2 YU3 YU2 YU3 YU2 YU3 YU2 YU3 YU4 YU5 YU2 YU3 YU4 YU5 YU2 YU3 YU4 YU5 YU2 YU3 YU4 YU5 YU2 YU3 YU4 YU5 YU2 YU3 YU4 YU5 YU4 YU5 YU4 YU5 YU2 YU3 YU4 YU5 YU4 YU5 YU4 YU5 YU4 YU5 YU4 YU5 YU4 YU5 YU4 YU5 YU4 YU5 YU4 YU5 YU4 YU5 YU4 YU5 YU4 YU5 YU4 YU5 YU2 YU3 YU4 YU5 YU2 YU5 YU2 YU3 YU4 YU5 YU2 YU5 YU2 YU5 YU2 YU3 YU4 YU5 YU2 YU5 YU2 YU3 YU4 YU5 YU2 YU5 YU2 YU3 YU4 YU5 YU2 YU5 YU2 YU3 YU4 YU5 YU2 YU2 YU3 YU4 YU5 YU2 YU2 YU3 YU4 YU5 YU2 YU2 YU2 YU3 YU4 YU5 YU2 YU2 YU2 YU3 YU4 YU5 YU2 YU2 YU2 YU2 YU3 YU4 YU5 YU2 YU2 YU2 YU2 YU2 YU2 YU2 YU2 YU2 YU3 YU4 YU5 YU2 YU2 YU2 YU2 YU2 YU2 YU2 YU2 YU2 YU2	Spot 2A Spot 2A Spot 2A Spot 2A Spot 2A Spot 2A Spot 2A Spot 2A Spot 2A	V V V V V	14295 14042.5 14125	GD6		TUCD		34	115.0
YU1 YU2 YU3 YU4 YU5 YUC YU1 YU2 YU3 YU4 YU5 YUC YU1 YU2 YU3 YU4 YU2 YU3 YU4 YU5 YU2 YU3 YU4 YU5 YU2 YU3 YU4 YU5 YUC	Spot 2A Spot 2A Spot 2A Spot 2A Spot 2A Spot 2A Spot 2A Spot 2A	V V V V	14042.5 14125		NW Zone		3905	72	115.0
YU2 YU3 YU4 YU5 YUC YU1 YU2 YU3 YU4 YU5 YUC YU1 YU2 YU1 YU2 YU3 YU4 YU3 YU4 YU5 YU2 YU3 YU4 YU5 YUC	Spot 2A Spot 2A Spot 2A Spot 2A Spot 2A Spot 2A	V V V	14125	ID1		LHCP	3995	72	116.5
YU2 YU3 YU4 YU5 YUC YU1 YU2 YU3 YU4 YU5 YUC YU1 YU2 YU1 YU2 YU3 YU4 YU3 YU4 YU5 YU2 YU3 YU4 YU5 YUC	Spot 2A Spot 2A Spot 2A Spot 2A Spot 2A Spot 2A	V V V	14125		AE 7	LUCD	2742.5		
YU3 YU4 YU5 YUC YU1 YU2 YU3 YU4 YU5 YUC YU1 YU2 YU1 YU2 YU3 YU4 YU4 YU5 YU4 YU5 YUC WU1	Spot 2A Spot 2A Spot 2A Spot 2A Spot 2A	V V			SE Zone	LHCP	3742.5	77	116.1
YU4 YU5 YUC YU1 YU2 YU3 YU4 YU5 YUC YU1 YU2 YU3 YU4 YU2 YU3 YU4 YU5 YUC WU1	Spot 2A Spot 2A Spot 2A Spot 2A	V	14106	JD2	SE Zone	LHCP	3825	72	115.9
YU5 YUC YU1 YU2 YU3 YU4 YU5 YUC YU1 YU2 YU3 YU4 YU5 YU4 YU5 YUC WU1	Spot 2A Spot 2A Spot 2A		14186	JD3	SE Zone	LHCP	3886	34	115.1
YUC YU1 YU2 YU3 YU4 YU5 YUC YU1 YU2 YU3 YU4 YU5 YUC WU1	Spot 2A Spot 2A	v	14224	JD4	SE Zone	LHCP	3924	34	115.1
YU1 YU2 YU3 YU4 YU5 YUC YU1 YU2 YU3 YU4 YU5 YUC WU1	Spot 2A	v	14205 14295	JD5 JD6	SE Zone SE Zone	LHCP LHCP	3905 3995	72 72	115.1 117.1
YU2 YU3 YU4 YU5 YUC YU1 YU2 YU3 YU4 YU5 YUC WU1		v	14293	JD0	SE Zone	LHCP	3993	12	117.1
YU2 YU3 YU4 YU5 YUC YU1 YU2 YU3 YU4 YU5 YUC WU1		v	14042.5	HD1	NE Zone	LHCP	3742.5	77	113.7
YU3 YU4 YU5 YUC YU1 YU2 YU3 YU4 YU5 YUC WU1	JUOL ZA	V V	14042.5	HD1 HD2	NE Zone NE Zone	LHCP	3742.5	72	113.7
YU4 YU5 YUC YU1 YU2 YU3 YU4 YU5 YUC WU1	Spot 2A Spot 2A	V V	14125	HD2 HD3	NE Zone NE Zone	LHCP	3825	34	113.0
YU5 YUC YU1 YU2 YU3 YU4 YU5 YUC WU1	Spot 2A Spot 2A	V V	14186	HD3 HD4	NE Zone NE Zone	LHCP	3880	34	113.2
YUC YU1 YU2 YU3 YU4 YU5 YUC WU1	Spot 2A Spot 2A	V	14224	HD4 HD5	NE Zone	LHCP	3924	72	113.2
YU1 YU2 YU3 YU4 YU5 YUC WU1	Spot 2A	v	14205	HD5 HD6	NE Zone	LHCP	3905	72	113.2
YU2 YU3 YU4 YU5 YUC WU1	Spot 2A	v	14293	про	INE Zone	LITCP	3993	12	114.0
YU2 YU3 YU4 YU5 YUC WU1	Spot 2A	v	14042.5	ID1	SW Zone	LHCP	3742.5	77	113.7
YU3 YU4 YU5 YUC WU1	Spot 2A Spot 2A	v	14125	ID1 ID2	SW Zone	LHCP	3825	72	113.7
YU4 YU5 YUC WU1	Spot 2A Spot 2A	v	14125	ID2 ID3	SW Zone	LHCP	3886	34	113.8
YU5 YUC WU1	Spot 2A Spot 2A	v	14180	ID3 ID4	SW Zone	LHCP	3924	34	113.2
YUC WU1	Spot 2A	v	14205	ID5	SW Zone	LHCP	3905	72	113.2
WU1	Spot 2A	v	14295	ID6	SW Zone	LHCP	3995	72	115.4
	Spot 2A	v	14275	шо	SW ZOIIC	LIICI	3775	12	115.4
	Spot 3	Н	14042.5	ED1	West Hemi	RHCP	3742.5	77	112.5
WU2	Spot 3	H	14125	ED2	West Hemi	RHCP	3825	72	113.4
WU3	Spot 3	H	14186	ED3	West Hemi	RHCP	3886	34	113.5
WU4	Spot 3	H	14224	ED4	West Hemi	RHCP	3924	34	113.4
WU5	Spot 3	Н	14205	ED5	West Hemi	RHCP	3905	72	113.4
WUC	Spot 3	Н	14295	ED6	West Hemi	RHCP	3995	72	113.7
	•								
WU1	Spot 3	Н	14042.5	FD1	East Hemi	RHCP	3742.5	77	110.6
WU2	Spot 3	Н	14125	FD2	East Hemi	RHCP	3825	72	111.1
WU3	Spot 3	Н	14186	FD3	East Hemi	RHCP	3886	34	111.7
WU4	Spot 3	Н	14224	FD4	East Hemi	RHCP	3924	34	111.6
WU5	Spot 3	Н	14205	FD5	East Hemi	RHCP	3905	72	111.6
WUC	Spot 3	Н	14295	FD6	East Hemi	RHCP	3995	72	111.8
WU1	Spot 3	Н	14042.5	GD1	NW Zone	LHCP	3742.5	77	109.9
WU2	Spot 3	Н	14125	GD2	NW Zone	LHCP	3825	72	110.4
WU3	Spot 3	Н	14186	GD3	NW Zone	LHCP	3886	34	110.4
WU4	Spot 3	H	14224	GD4	NW Zone	LHCP	3924	34	110.3
WU5	Spot 3	Н	14205	GD5	NW Zone	LHCP	3905	72	110.3
WUC	Spot 3	Н	14295	GD6	NW Zone	LHCP	3995	72	110.6
WU1	Spot 3	H	14042.5	JD1	SE Zone	LHCP	3742.5	77	110.3
WU2	Spot 3	Н	14125	JD2	SE Zone	LHCP	3825	72	111.2
WU3	Spot 3	H	14186	JD3	SE Zone	LHCP	3886	34	110.5
WU4	Spot 3	H	14224	JD4	SE Zone	LHCP	3924	34	110.4
WU5	Spot 3	H	14205	JD5	SE Zone	LHCP	3905	72	110.4
WUC	Spot 3	Н	14295	JD6	SE Zone	LHCP	3995	72	111.2
WU1	Spot 3	Н	14042.5	HD1	NE Zone	LHCP	3742.5	77	107.9
WU2	Spot 3	H	14125	HD2	NE Zone	LHCP	3825	72	108.3
WU3	Spot 3	H	14186	HD3	NE Zone	LHCP	3886	34	108.6
WU4	Spot 3	Н	14224	HD4	NE Zone	LHCP	3924	34	108.5
WU5	•	H	14205	HD5	NE Zone	LHCP	2005	70	
WUC	Spot 3 Spot 3	H	14295	HD6	NE Zone	LHCP	3905 3995	72 72	108.5 108.7

Uplink Transponder Designation	Uplink Beam Name	Uplink Polarization	Uplink Center Frequency (MHz)	Downlink Transponder Designation	Downlink Beam Name	Downlink Polarization	Downlink Center Frequency (MHz)	Channel Bandwidth (MHz)	Channel Gain (dB)
WU1	Spot 3	H	14042.5	ID1	SW Zone	LHCP	3742.5	77	107.9
WU2	Spot 3	H	14125	ID2	SW Zone	LHCP	3825	72	109.1
WU3	Spot 3	H	14186	ID3	SW Zone	LHCP	3886	34	108.6
WU4	Spot 3	H	14224	ID4	SW Zone	LHCP	3924	34	108.5
WU5	Spot 3	H	14205	ID5	SW Zone	LHCP	3905	72	108.5
WUC	Spot 3	H	14295	ID6	SW Zone	LHCP	3995	72	109.5
CMD1	Global	LHCP	6173.7					1.0	
CMD2	Global	LHCP	6176.3					1.0	
				TM1	Global	RHCP	3947.5	0.5	
				TM2	Global	RHCP	3952.5	0.5	
				TM3	Global	RHCP	3948	0.5	
				TM4	Global	RHCP	3952	0.5	
				BC1	Global	V	3950	0.025	
				BNK1	Global	RHCP	11198	0.025	
				BNK2	Global	RHCP	11452	0.025	
				BNK3	Spot 1	V	11701	0.025	
				BNK4	Spot 2	Н	11701	0.025	
				BNK5	Spot 2A	H	11701	0.025	
				BNK6	Spot 3	V	11701	0.025	
				BNK8	Spot 1	V	12501	0.025	
				BNK9	Spot 2	Н	12501	0.025	
				BNK10	Spot 2A	Н	12501	0.025	
				BNK11	Spot 3	V	12501	0.025	

Note:

H: Linear horizontal polarization V: Linear vertical polarization RHCP: Right hand circular polarization LHCP: Left hand circular polarization

Exhibit 2: Gain Contours

Exhibit 2-1: C-Band Global A Uplink Beam

[Schedule S Beam Designation: GAUL]

Beam Peak Gain: 20.3 dBi Beam Polarization: Left Hand Circular Beam Peak G/T: -7.0 dB/K Saturated Flux Density @ Beam Peak G/T: -93.3 to -79.3 dBW/m²

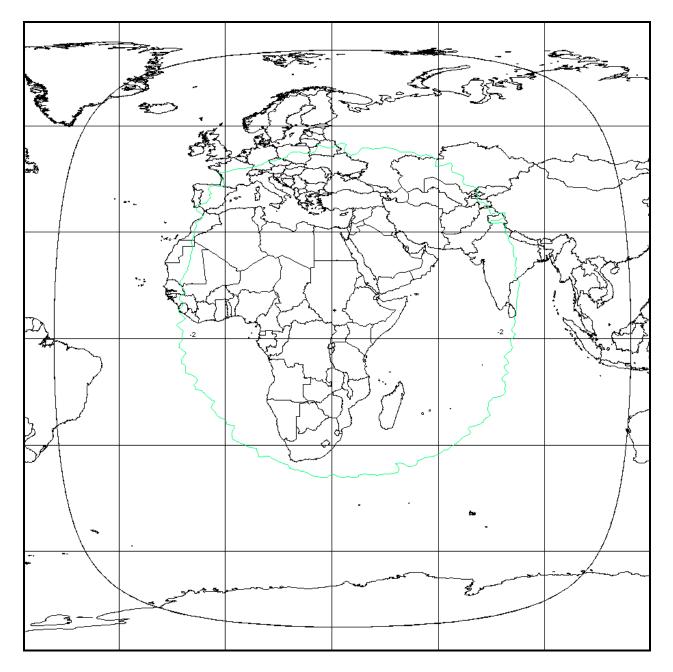


Exhibit 2-2: C-Band Global A Downlink Beam [Schedule S Beam Designation: GADL]

Beam Peak Gain: 20.5 dBi Beam Polarization: Right Hand Circular Beam Peak EIRP: 32.4 dBW

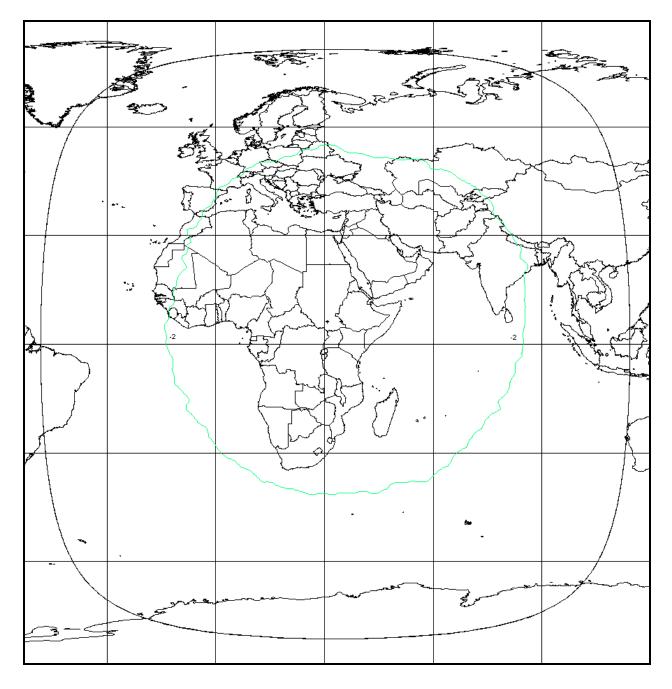


Exhibit 2-3: C-Band Global B Uplink Beam [Schedule S Beam Designation: GBUL]

Beam Peak Gain: 20.3 dBi Beam Polarization: Right Hand Circular Beam Peak G/T: -7.0 dB/K Saturated Flux Density @ Beam Peak G/T: -93.2 to -79.2 dBW/m²

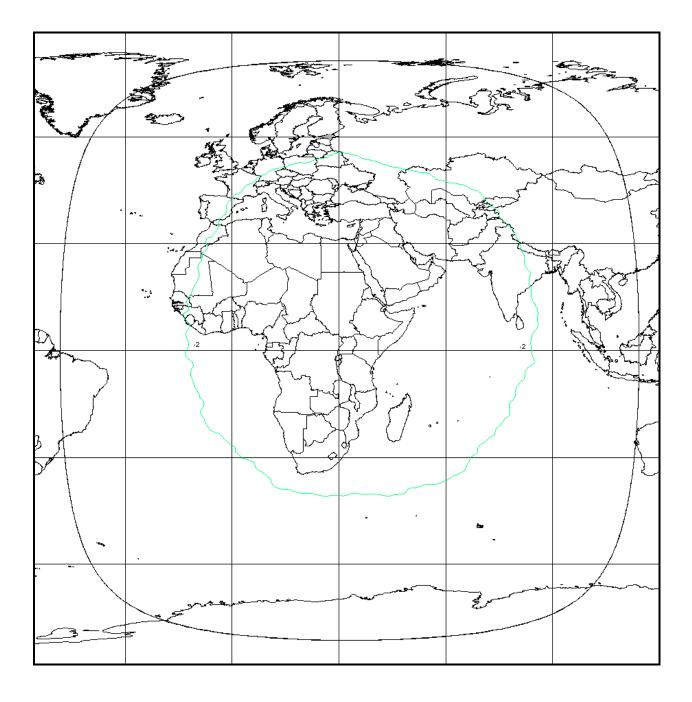


Exhibit 2-4: Global B Downlink Beam

[Schedule S Beam Designation: GBDL]

Beam Peak Gain: 20.5 dBi Beam Polarization: Left Hand Circular Beam Peak EIRP: 31.6 dBW

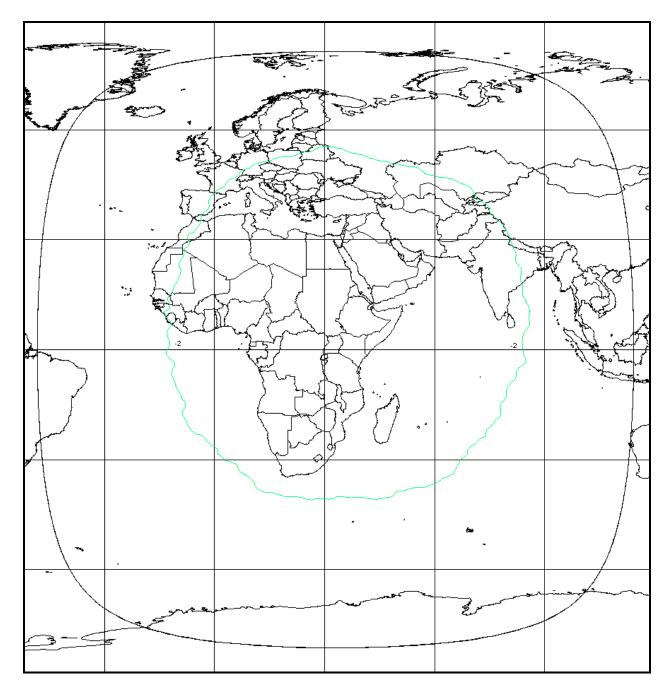


Exhibit 2-5: C-Band Spot A Uplink Beam

[Schedule S Beam Designation: CAUL]

Beam Peak Gain: 30.3 dBi Beam Polarization: Left Hand Circular Beam Peak G/T: 3.0 dB/K Saturated Flux Density @ Beam Peak G/T: -95.8 to -81.8 dBW/m²

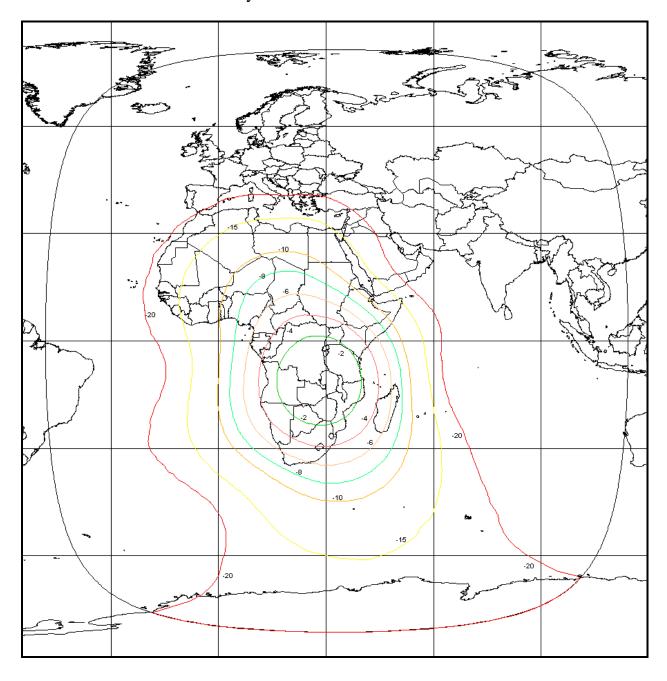


Exhibit 2-6: C-Band Spot A Downlink Beam [Schedule S Beam Designation: CADL]

Beam Peak Gain: 27.5 dBi Beam Polarization: Right Hand Circular Beam Peak EIRP: 39.5 dBW

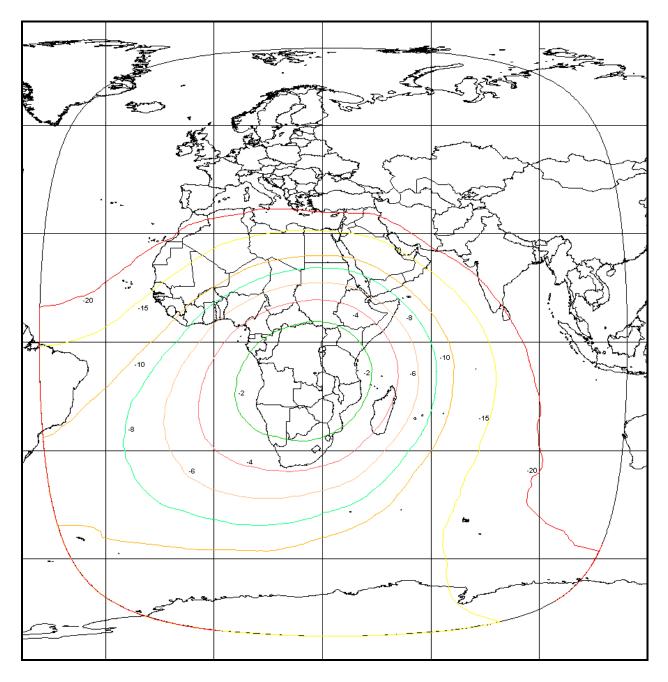


Exhibit 2-7: C-Band Spot B Uplink Beam

[Schedule S Beam Designation: CBUL]

Beam Peak Gain: 30.3 dBi Beam Polarization: Right Hand Circular Beam Peak G/T: 3.0 dB/K Saturated Flux Density @ Beam Peat G/T: -96.3 to -82.3 dBW/m²

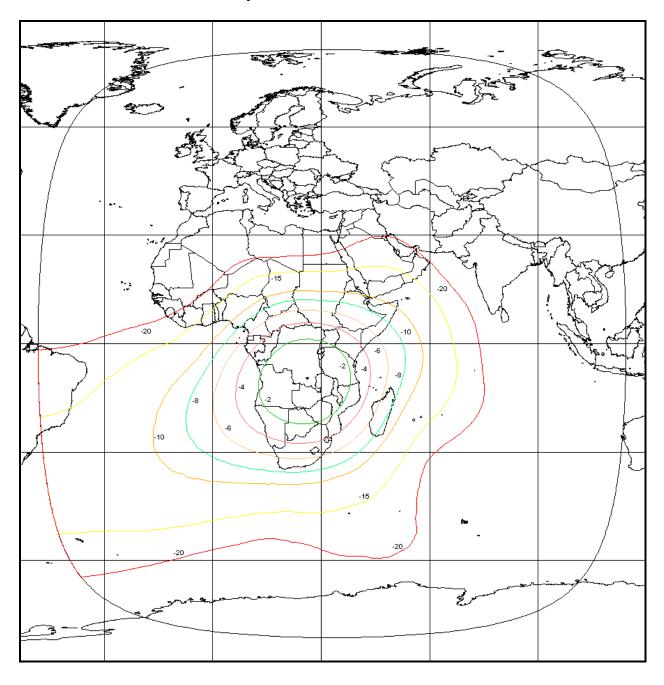


Exhibit 2-8: C-Band Spot B Downlink Beam

[Schedule S Beam Designation: CBDL]

Beam Peak Gain: 27.5 dBi Beam Polarization: Left Hand Circular Beam Peak EIRP: 38.6 dBW

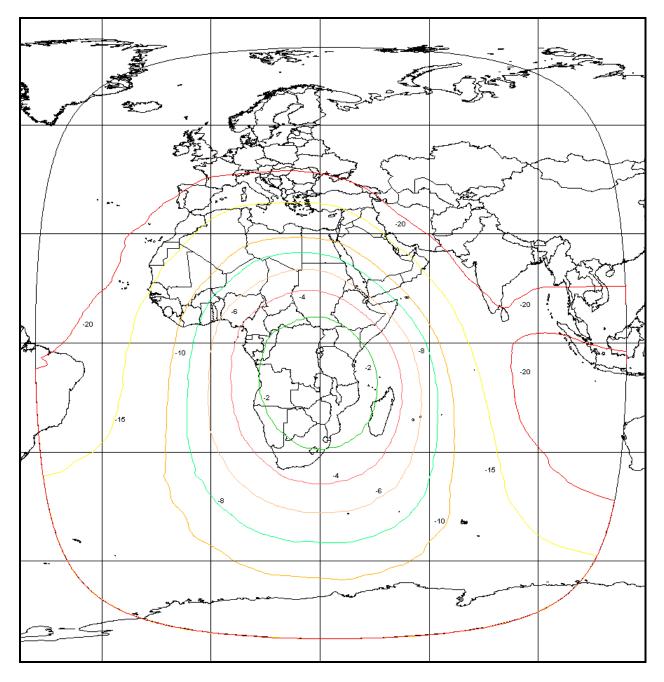


Exhibit 2-9: C-Band West Hemi Uplink Beam

[Schedule S Beam Designation: WHUL]

Beam Peak Gain: 23.2 dBi Beam Polarization: Left Hand Circular Beam Peak G/T: -3.5 dB/K Saturated Flux Density @ Beam Peat G/T: -91.8 to -77.8 dBW/m²

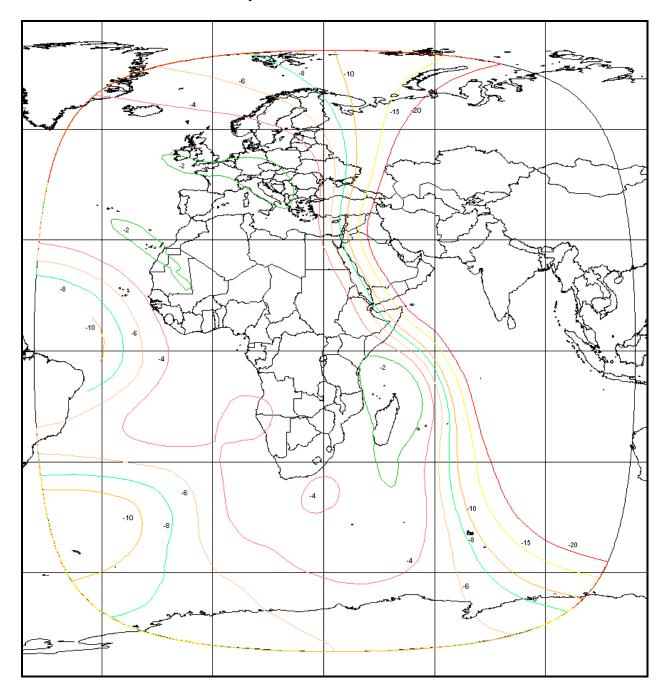


Exhibit 2-10: C-Band West Hemi Downlink Beam

[Schedule S Beam Designation: WHDL]

Beam Peak Gain: 24.5 dBi Beam Polarization: Right Hand Circular Beam Peak EIRP: 37.5 dBW

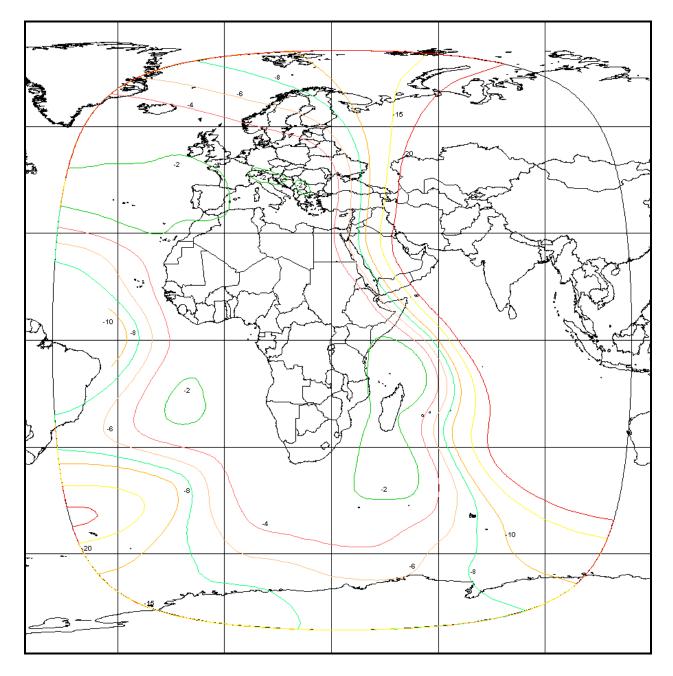


Exhibit 2-11: C-Band East Hemi Uplink Beam

[Schedule S Beam Designation: EHUL]

Beam Peak Gain: 25.9 dBi Beam Polarization: Left Hand Circular Beam Peak G/T: -1.5 dB/K Saturated Flux Density @ Beam Peat G/T: -91.4 to -77.4 dBW/m²

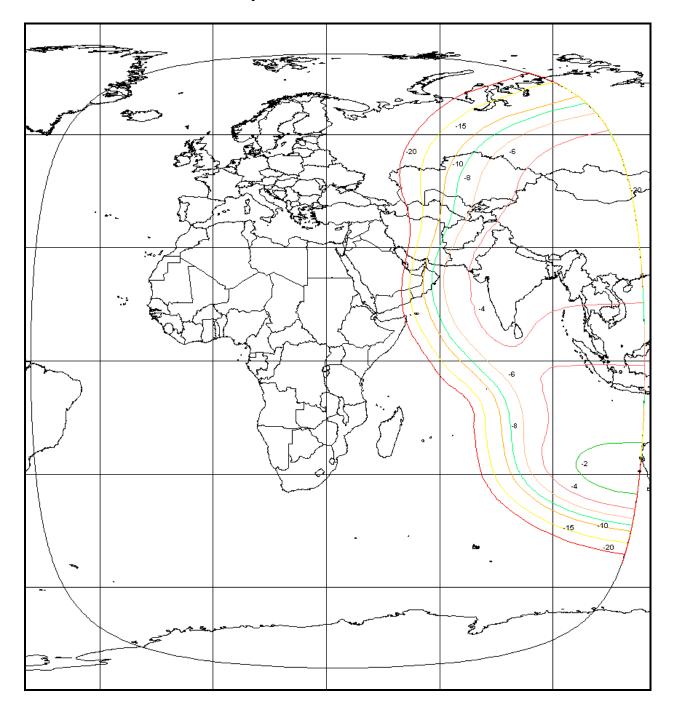


Exhibit 2-12: C-Band East Hemi Downlink Beam

[Schedule S Beam Designation: EHDL]

Beam Peak Gain: 27.2 dBi Beam Polarization: Right Hand Circular Beam Peak EIRP: 38.9dBW

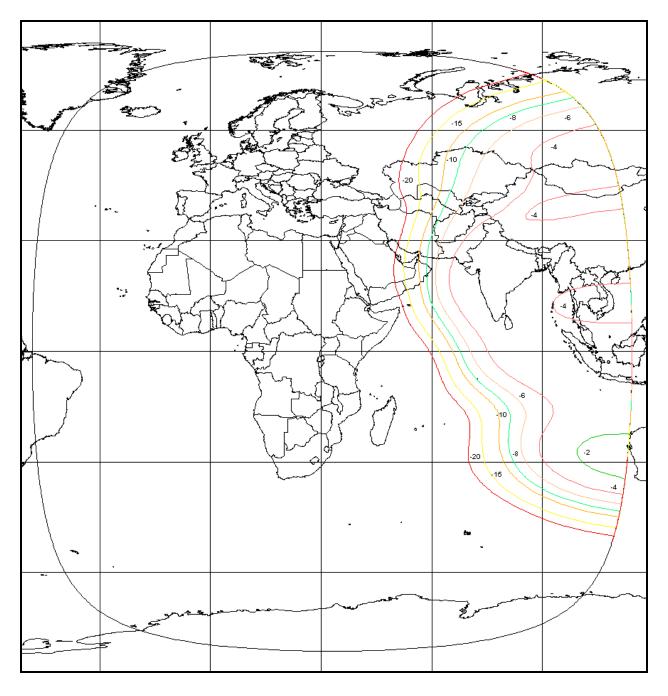


Exhibit 2-13: C-Band Northwest Zone Uplink Beam

[Schedule S Beam Designation: NWUL]

Beam Peak Gain: 25.6 dBi Beam Polarization: Right Hand Circular Beam Peak G/T: -1.5 dB/K Saturated Flux Density @ Beam Peat G/T: -92.4 to -78.4 dBW/m²

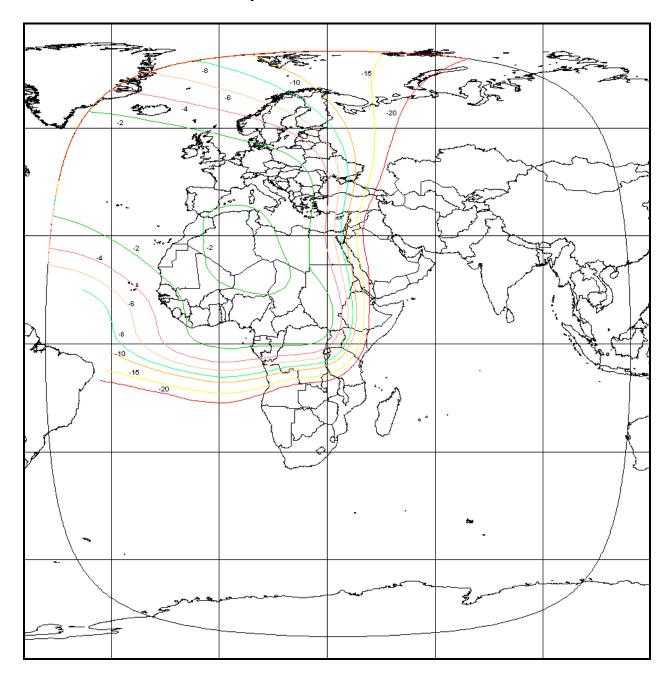


Exhibit 2-14: C-Band Northwest Downlink Beam

[Schedule S Beam Designation: NWDL]

Beam Peak Gain: 26.9dBi Beam Polarization: Left Hand Circular Beam Peak EIRP: 36.9 dBW

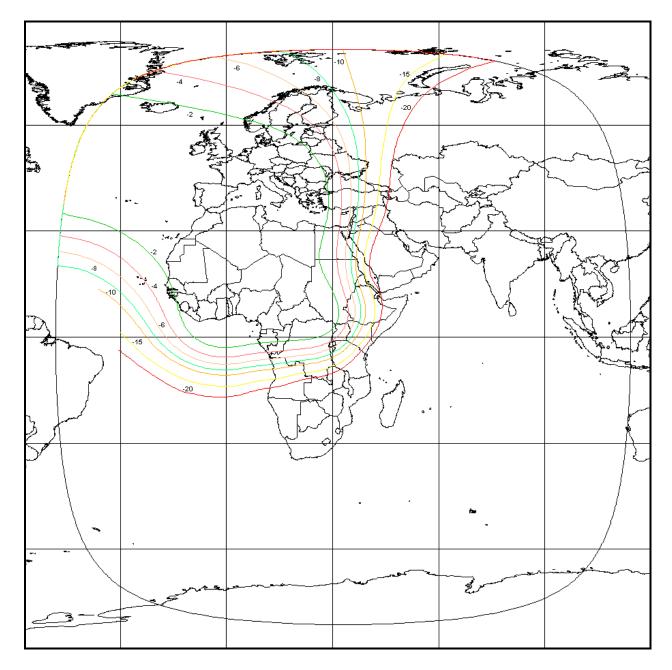


Exhibit 2-15: C-Band Southeast Zone Uplink Beam

[Schedule S Beam Designation: SEUL]

Beam Peak Gain: 26.8 dBi Beam Polarization: Right Hand Circular Beam Peak G/T: -0.7 dB/K Saturated Flux Density @ Beam Peat G/T: -92.9 to -78.9 dBW/m²

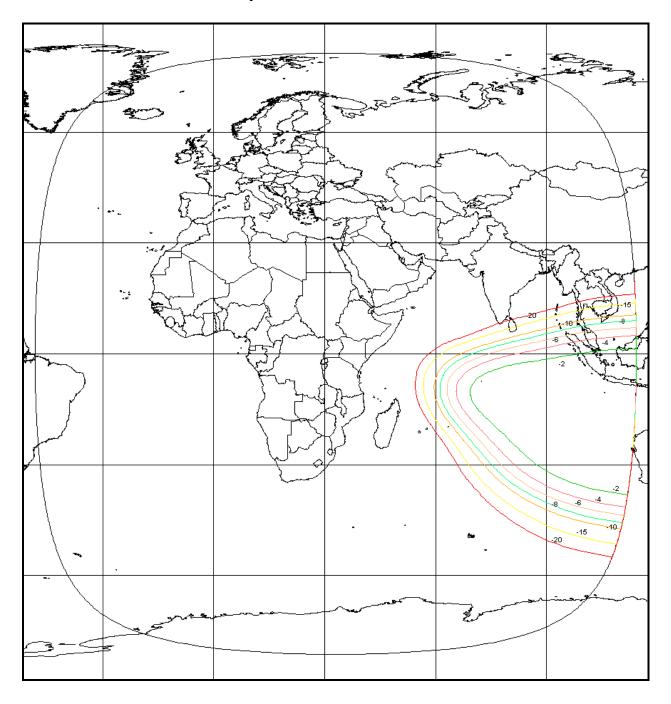


Exhibit 2-16: C-Band Southeast Downlink Beam

[Schedule S Beam Designation: SEDL]

Beam Peak Gain: 28.7 dBi Beam Polarization: Left Hand Circular Beam Peak EIRP: 39.5 dBW

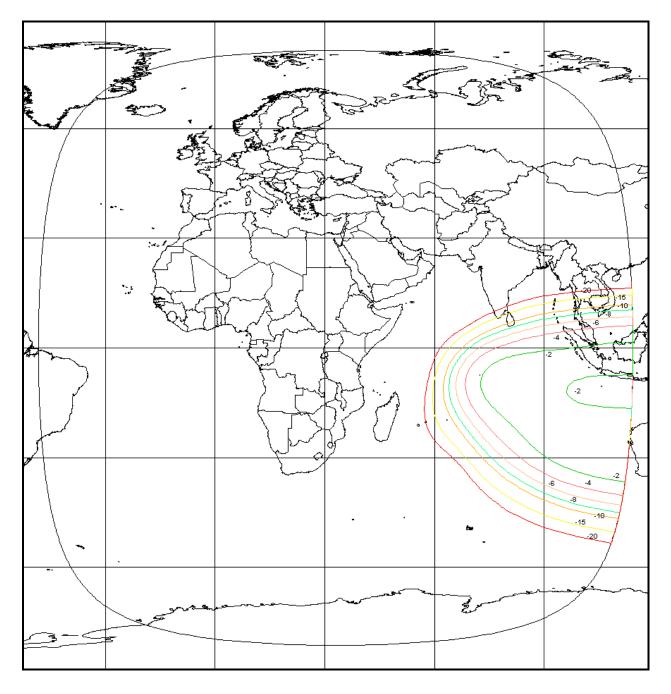


Exhibit 2-17: C-Band Northeast Zone Uplink Beam

[Schedule S Beam Designation: NEUL]

Beam Peak Gain: 27.8 dBi Beam Polarization: Right Hand Circular Beam Peak G/T: 0.3 dB/K Saturated Flux Density @ Beam Peat G/T: -90.2 to -76.2 dBW/m²

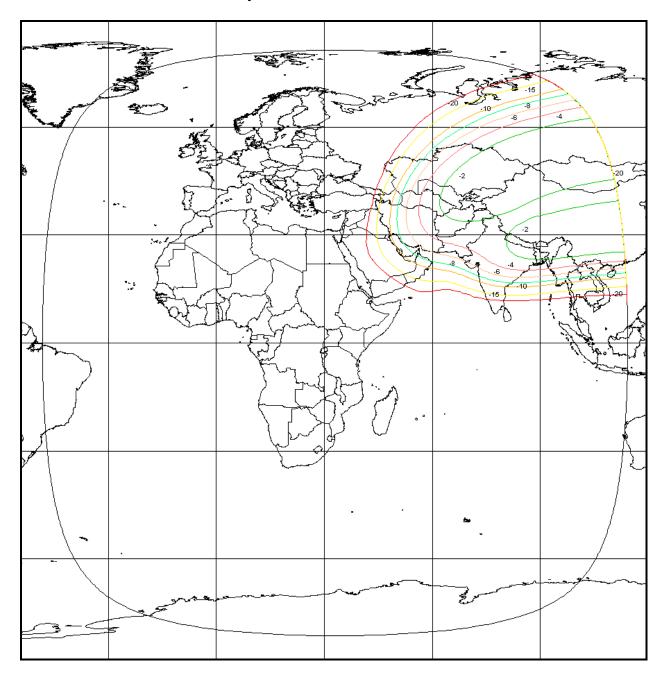


Exhibit 2-18: C-Band Northeast Downlink Beam

[Schedule S Beam Designation: NEDL]

Beam Peak Gain: 30.8 dBi Beam Polarization: Left Hand Circular Beam Peak EIRP: 39.2 dBW

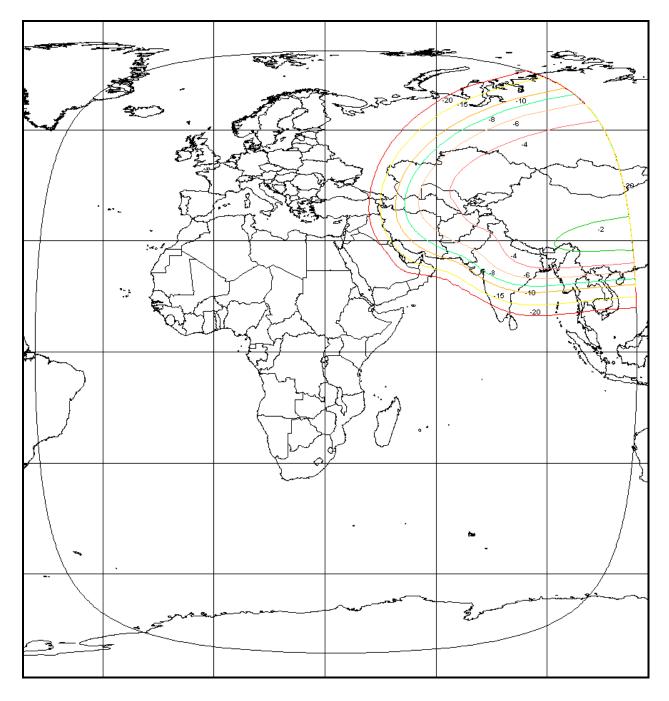


Exhibit 2-19: C-Band Southwest Zone Uplink Beam

[Schedule S Beam Designation: SWUL]

Beam Peak Gain: 27.8 dBi Beam Polarization: Right Hand Circular Beam Peak G/T: 0.4 dB/K Saturated Flux Density @ Beam Peat G/T: -90.3 to -76.3 dBW/m²

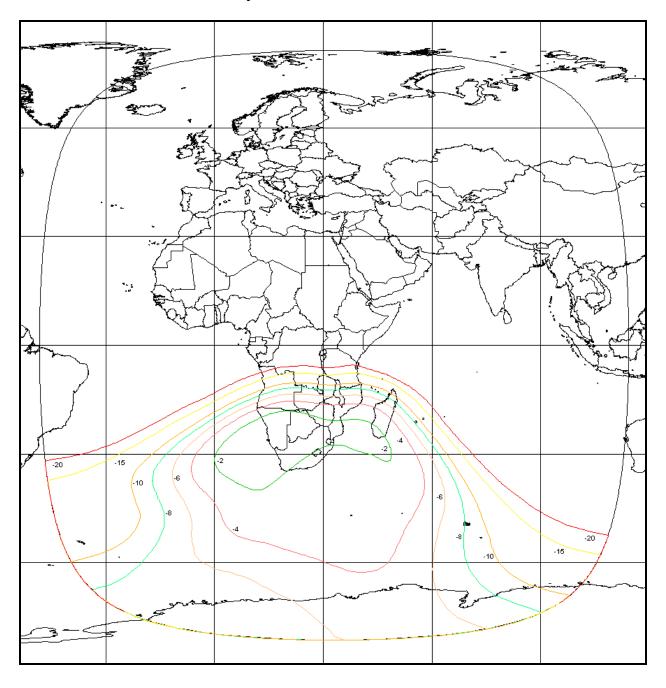


Exhibit 2-20: C-Band Southwest Downlink Beam

[Schedule S Beam Designation: SWDL]

Beam Peak Gain: 30.8 dBi Beam Polarization: Left Hand Circular Beam Peak EIRP: 37.2 dBW

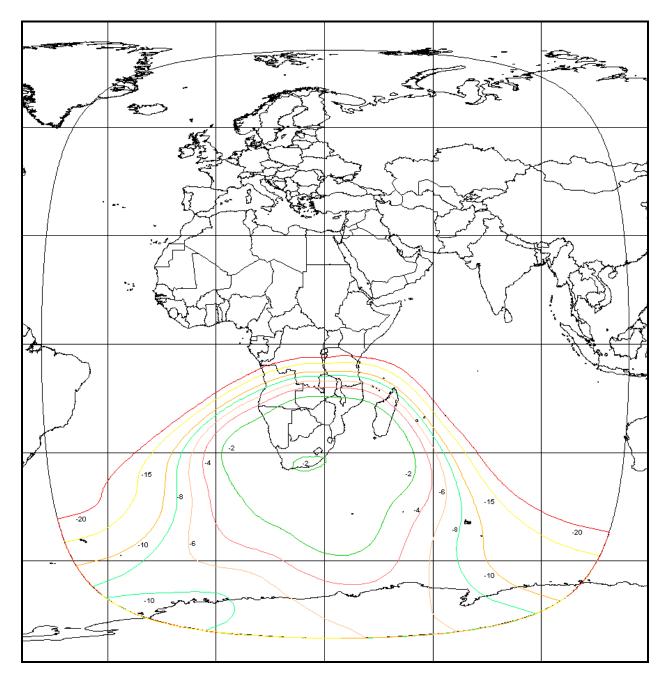


Exhibit 2-21: C-Band Combined Northwest and Southeast Zone Uplink Beam

[Schedule S Beam Designation: X1UL]

Beam Peak Gain: 22.7 dBi Beam Polarization: Right Hand Circular Beam Peak G/T: -5.0 dB/K Saturated Flux Density @ Beam Peat G/T: -91.1 to -77.1 dBW/m²

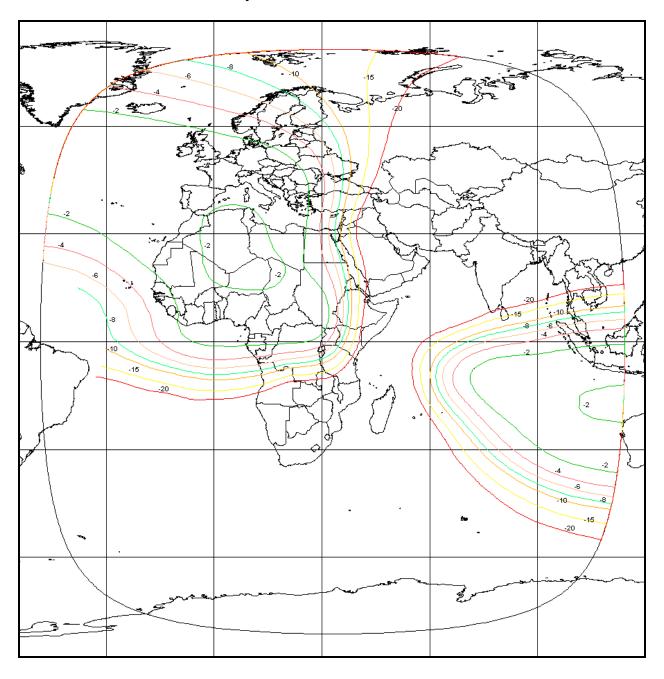


Exhibit 2-22: C-Band Combined Northeast and Southwest Zone Uplink Beam

[Schedule S Beam Designation: X2UL]

Beam Peak Gain: 24.3 dBi Beam Polarization: Right Hand Circular Beam Peak G/T: -3.6 dB/K Saturated Flux Density @ Beam Peat G/T: -88.8 to -74.8 dBW/m²

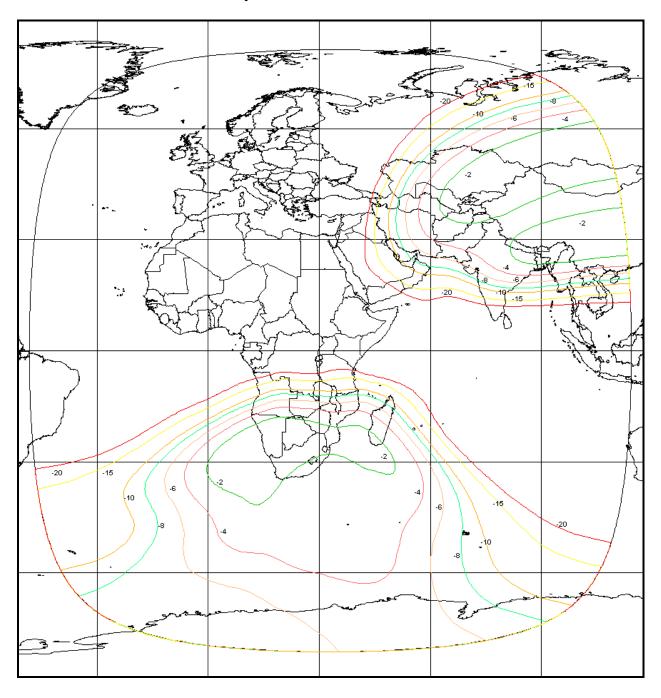


Exhibit 2-23: Ku-Band Spot 1 Uplink Beam

[Schedule S Beam Designation: S1UL]

Beam Peak Gain: 36.9 dBi Beam Polarization: Horizontal Beam Peak G/T: 9.3 dB/K Saturated Flux Density @ Beam Peat G/T: -92.6 to -78.6 dBW/m²

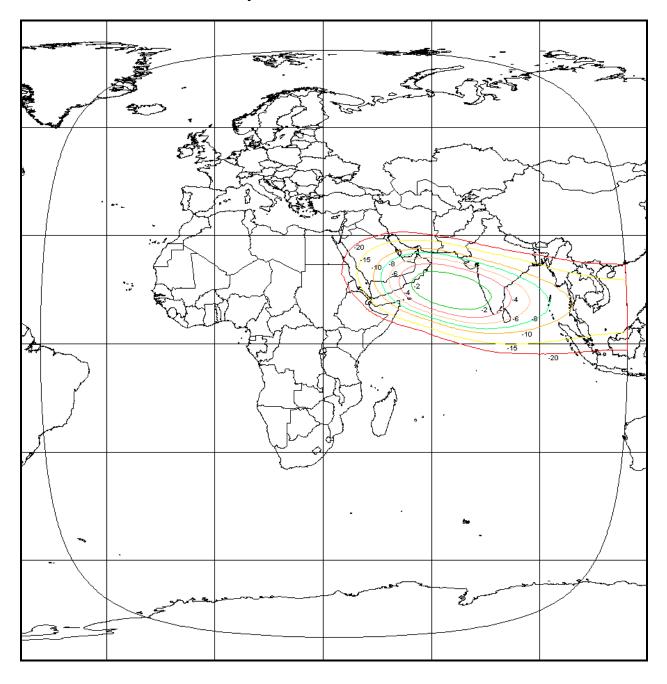


Exhibit 2-24: Ku-Band Spot 1 Downlink Beam

[Schedule S Beam Designation: S1DL]

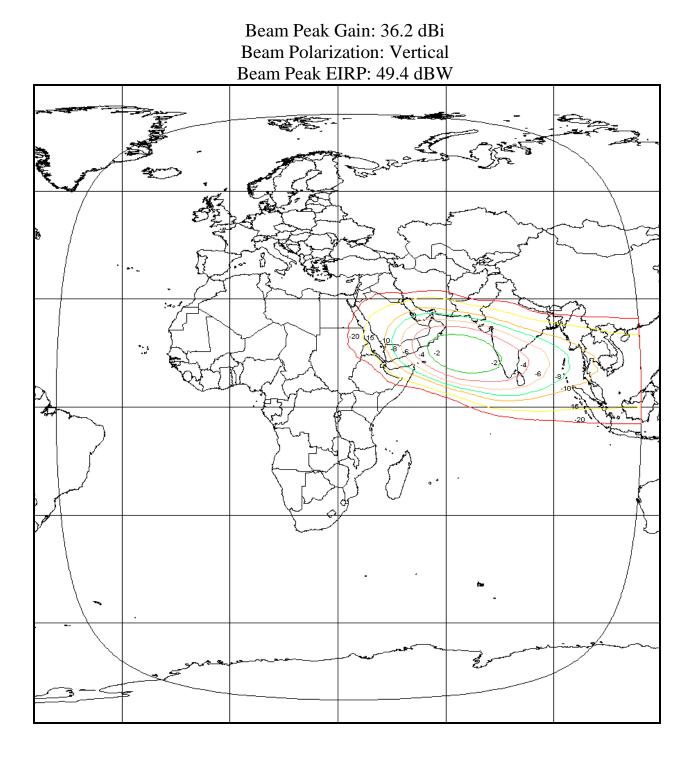


Exhibit 2-25: Ku-Band Spot 2 Uplink Beam

[Schedule S Beam Designation: S2UL]

Beam Peak Gain: 34.8 dBi Beam Polarization: Vertical Beam Peak G/T: 6.9 dB/K Saturated Flux Density @ Beam Peat G/T: -92.8 to -78.8 dBW/m²

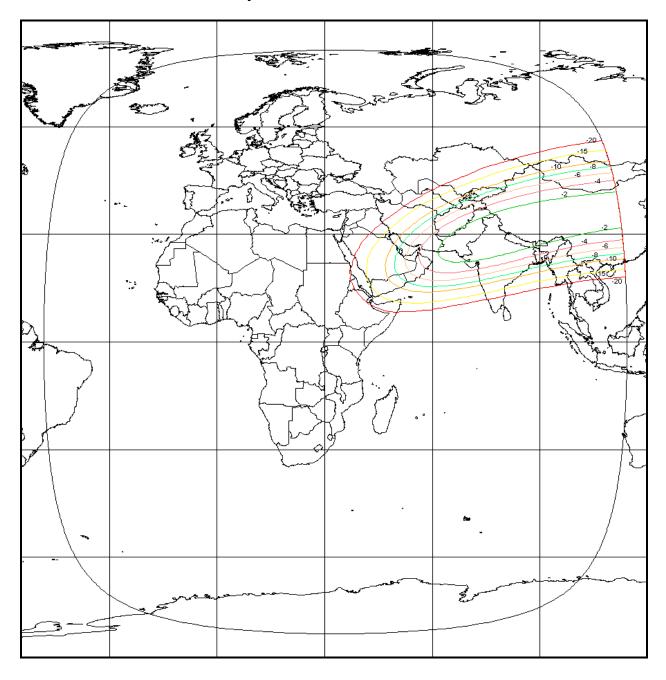


Exhibit 2-26: Ku-Band Spot 2 Downlink Beam

[Schedule S Beam Designation: S2DL]

Beam Peak Gain: 34.8 dBi Beam Polarization: Horizontal Beam Peak EIRP: 49.6 dBW

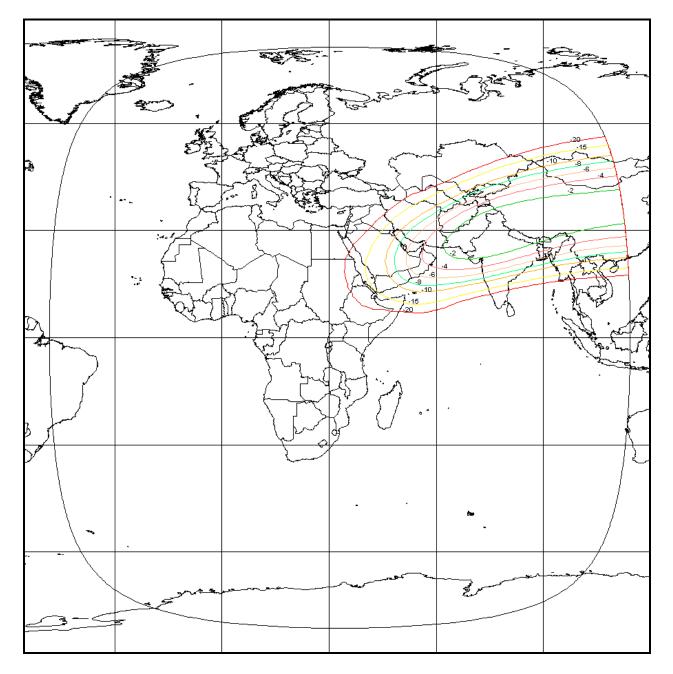


Exhibit 2-27: Ku-Band Spot 2A Uplink Beam

[Schedule S Beam Designation: S2AU]

Beam Peak Gain: 32.9 dBi Beam Polarization: Vertical Beam Peak G/T: 5.0 dB/K Saturated Flux Density @ Beam Peat G/T: -92.9 to -78.9 dBW/m²

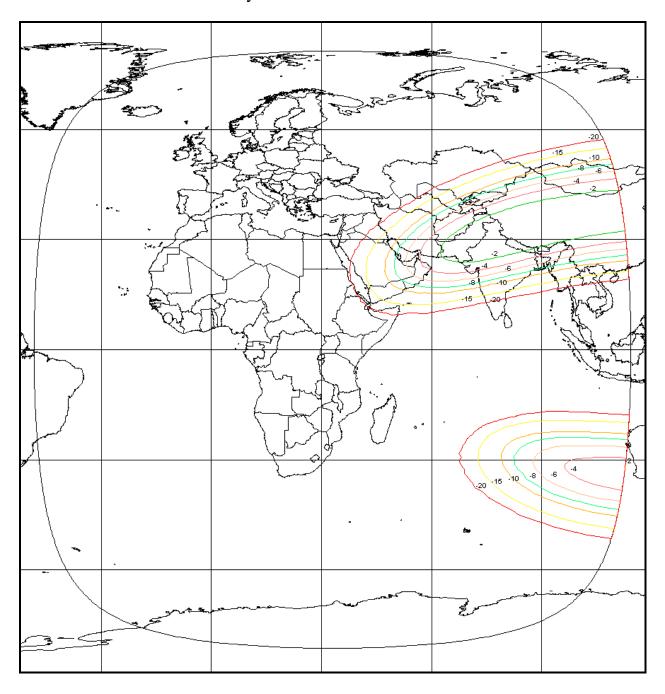


Exhibit 2-28: Ku-Band Spot 2A Downlink Beam

[Schedule S Beam Designation: S2AD]

Beam Peak Gain: 32.7 dBi Beam Polarization: Horizontal Beam Peak EIRP: 47.7 dBW

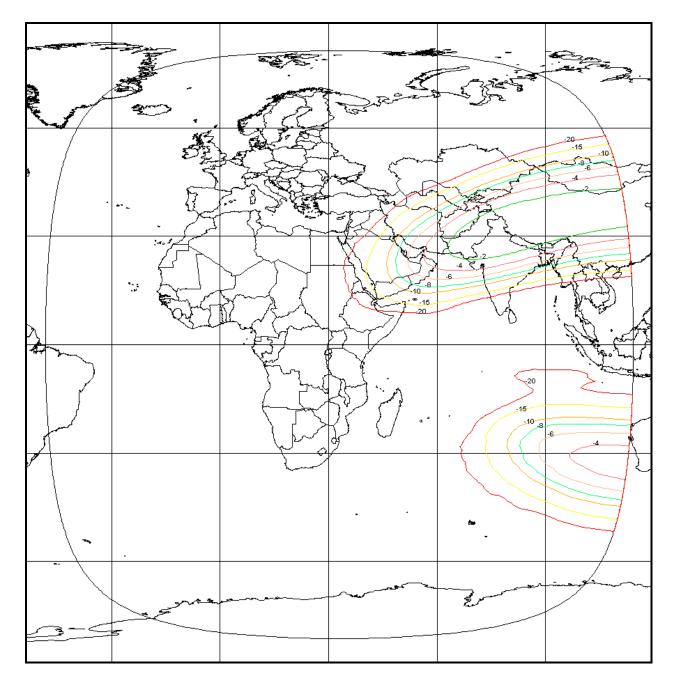
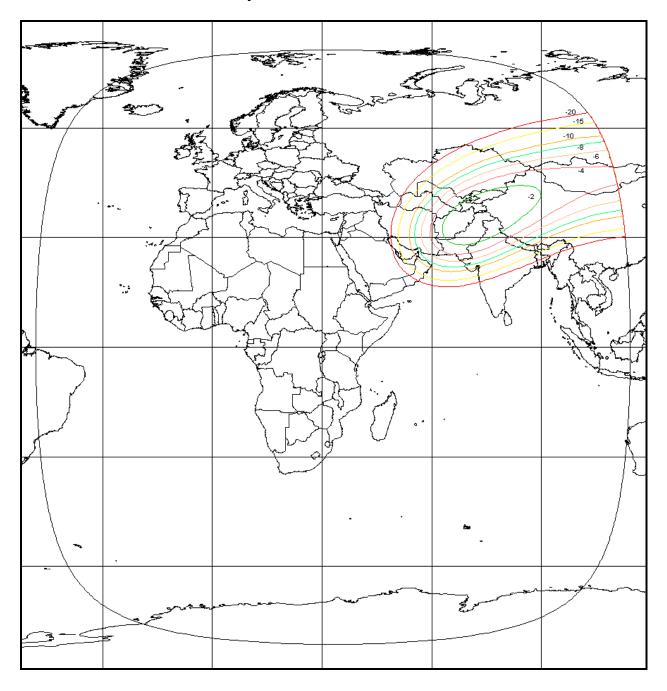


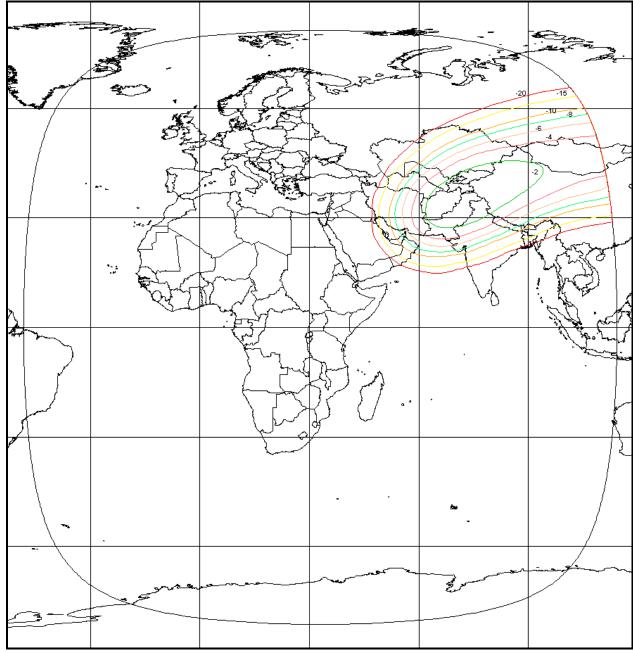
Exhibit 2-29: Ku-Band Spot 3 Uplink Beam

[Schedule S Beam Designation: S3UL]

Beam Peak Gain: 37.8 dBi Beam Polarization: Horizontal Beam Peak G/T: 9.8 dB/K Saturated Flux Density @ Beam Peat G/T: -93.2 to -79.2 dBW/m²



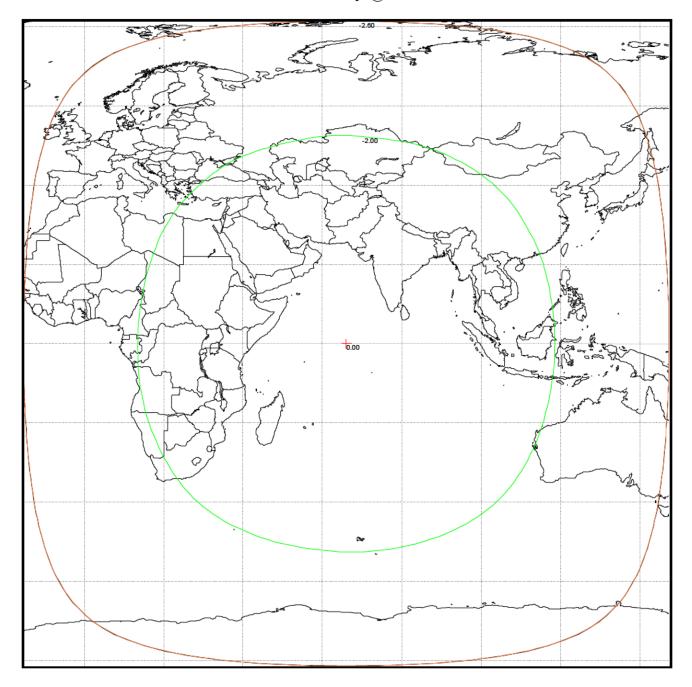
Beam Peak Gain: 36.6 dBi Beam Polarization: Vertical Beam Peak EIRP: 51.5 dBW



Note: This beam can also be operated in a low power mode with a corresponding beam peak EIRP of 50.7 dBW.

Exhibit 2-31: Command Uplink Beam [Schedule S Beam Designation: CMD]

Peak Beam Gain: 8.3 dBi Polarization: Left Hand Circular Peak G/T: -28.5 dB/K Command Threshold Flux Density @ Peak G/T: -107.4 dBW/m^2



Peak Beam Gain: 16.5 dBi Polarization: Right Hand Circular Peak EIRP: 8.2 dBW

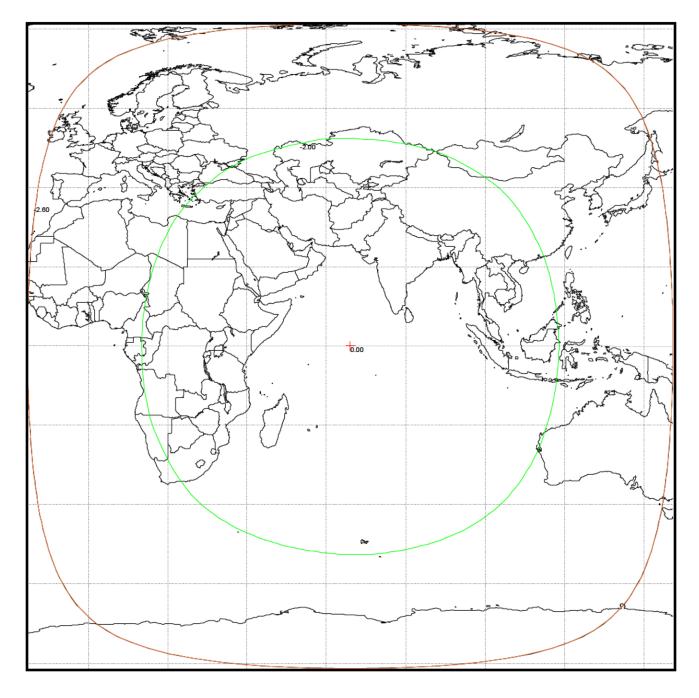


Exhibit 2-33: Back-up Telemetry Downlink Beam

[Schedule S Beam Designation: TLMB]

Peak Beam Gain: -5.3 dBi Polarization: Right Hand Circular Peak EIRP: 0.7 dBW

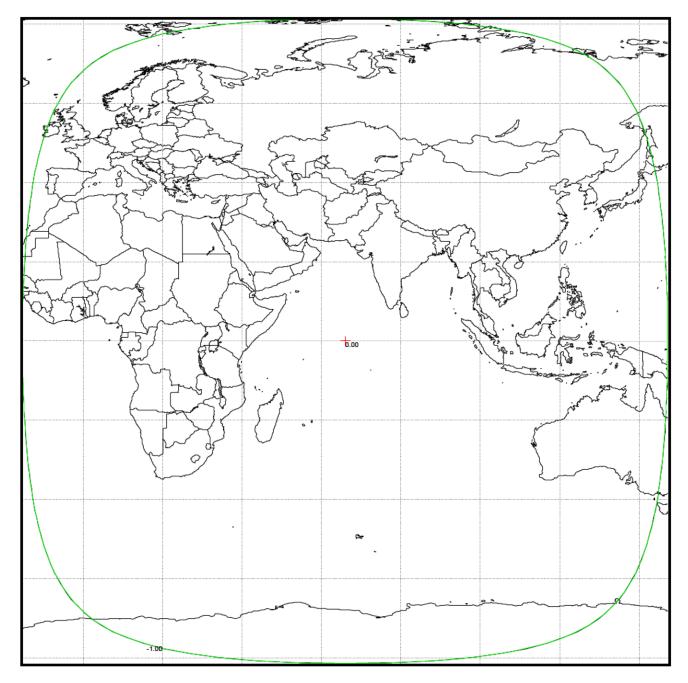


Exhibit 2-34: C-Band Uplink Power Control Downlink Beam

[Schedule S Beam Designation: BNC]

Peak Beam Gain: 10.7 dBi Polarization: Linear Vertical Peak EIRP: 11.7 dBW

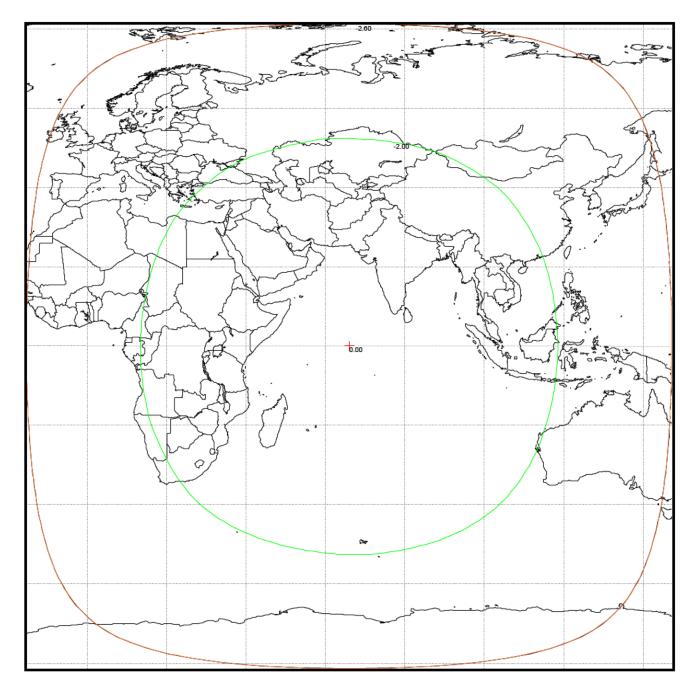
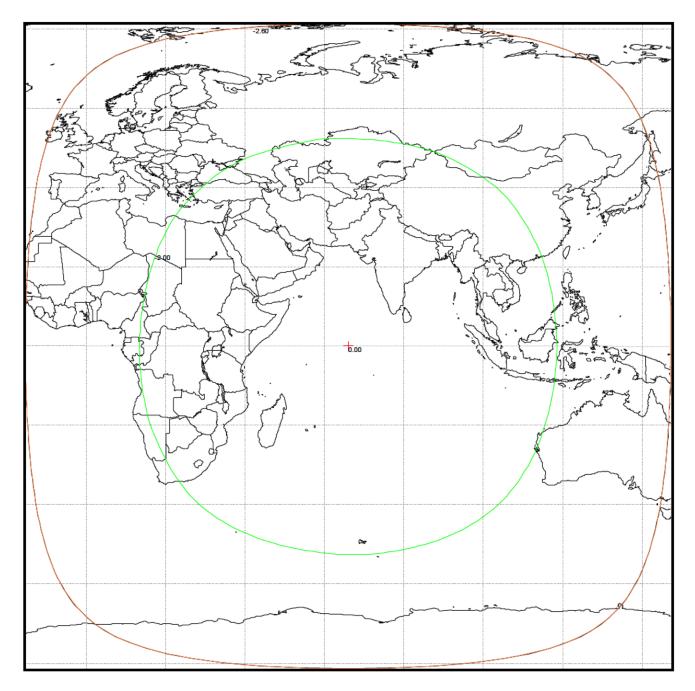


Exhibit 2-35: Ku-Band Uplink Power Control Global Downlink Beams

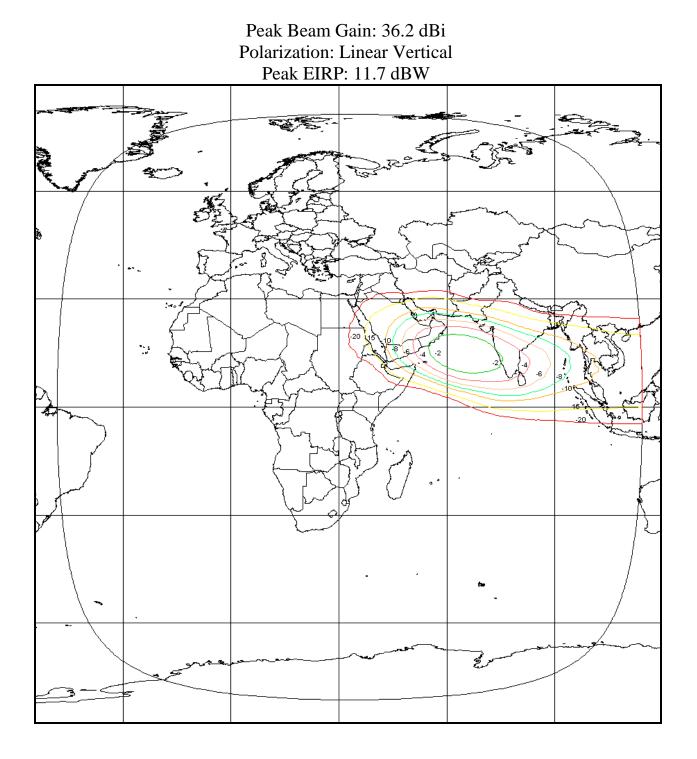
[Schedule S Beam Designation: BNK1, BNK2]

Peak Beam Gain: 16.7 dBi Polarization: Right Hand Circular Peak EIRP: 8.0 dBW



Ku-Band Uplink Power Control Spot 1 Downlink Beams

[Schedule S Beam Designation: BNK3, BNK8]



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Exhibit 2-36: Ku-Band Uplink Power Control Spot 2 Downlink Beams

[Schedule S Beam Designation: BNK4, BNK9]

Peak Beam Gain: 34.5 dBi Polarization: Linear Horizontal Peak EIRP: 10.3 dBW

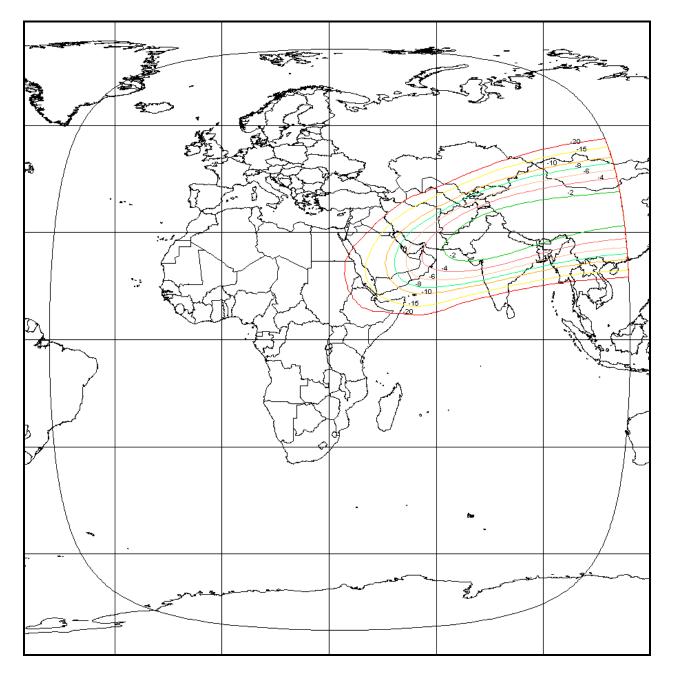


Exhibit 2-37: Ku-Band Uplink Power Control Spot 2A Downlink Beams

[Schedule S Beam Designation: BNK5, BNK10]

Peak Beam Gain: 32.7 dBi Polarization: Linear Horizontal Peak EIRP: 8.5 dBW

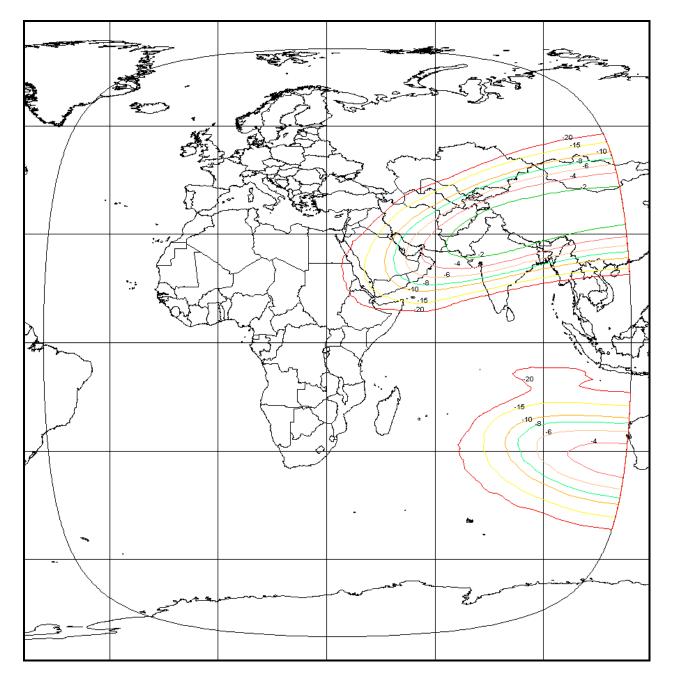


Exhibit 2-38: Ku-Band Uplink Power Control Spot 3 Downlink Beams

[Schedule S Beam Designation: BNK6, BNK11]

Peak Beam Gain: 36.6 dBi Polarization: Linear Vertical Peak EIRP: 12.3 dBW

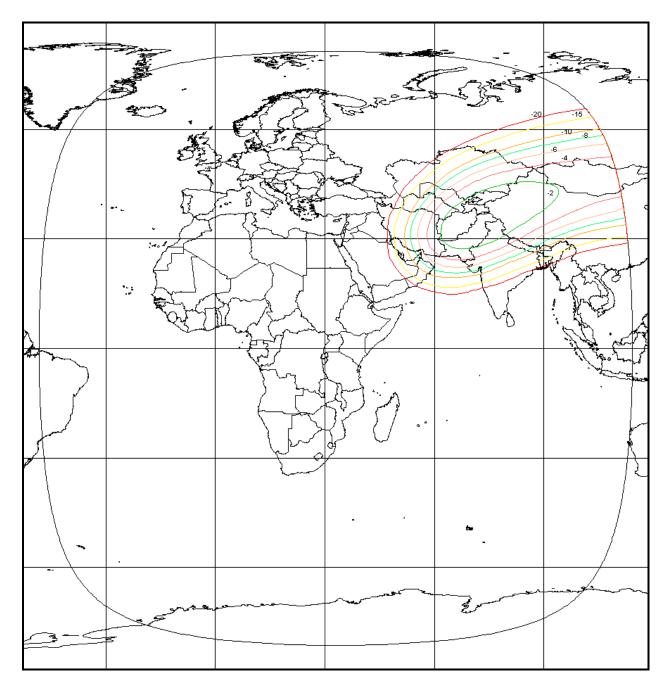


Exhibit 3: EMISSION DESIGNATORS

Signal Type	Emission Designator	Allocated Bandwidth (kHz)
Analog TV/FM Carrier	36M0F3F	36000
Analog TV/FM Carrier	30M0F3F	30000
76436 kbps Carrier	112MG7W	112000
52550 kbps Carrier	77M0G7W	77000
49138 kbps Carrier	72M0G7W	72000
27981 kbps Carrier	41M0G7W	41000
24575 kbps Carrier	36M0G7W	36000
23204 kbps Carrier	34M0G7W	34000
6000 kbps carrier	10M3G7W	10300
64 kbps Carrier	100KG7W	100
512 kbps Carrier	1M45G7W	1450
128 kbps Carrier	400KG7W	400

Exhibit 4: POWER FLUX DENSITY CALCULATIONS

Exhibit 4-1: C-Band PFD Calculations

FREQUENCY BAND : 3.7 - 4.2 GHz								
Global A Beam - 36M0F3F								
Elevation Angle (degrees)	0	5	10	15	20	25	90	
Assumed EIRP	32.4	32.4	32.4	32.4	32.4	32.4	32.4	
Carrier Occupied Bandwidth (kHz)	4000	4000	4000	4000	4000	4000	4000	
Spreading Loss $(dB/m^2) - (4\pi^*(Slant Range)^2)$	163.4	163.3	163.2	163.0	162.9	162.8	162.1	
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-161.0	-160.9	-160.8	-160.6	-160.5	-160.4	-159.7	
FCC Limit (dBW/m ² /4Hz)	-152.0	-152.0	-149.5	-147.0	-144.5	-142.0	-142.0	
Margin (dB)	9.0	8.9	11.3	13.6	16.0	18.4	17.7	
Global A Beam - 36M0G7W								
Elevation Angle (degrees)	0	5	10	15	20	25	90	
Assumed EIRP	32.4	32.4	32.4	32.4	32.4	32.4	32.4	
Carrier Occupied Bandwidth (kHz)	30133	30133	30133	30133	30133	30133	30133	
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1	
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-169.8	-169.6	-169.5	-169.4	-169.3	-169.2	-168.4	
FCC Limit (dBW/m ² /4Hz)	-152.0	-152.0	-149.5	-147.0	-144.5	-142.0	-142.0	
Margin (dB)	17.8	17.6	20.0	22.4	24.8	27.2	26.4	
Global B Beam - 36M0F3F								
Elevation Angle (degrees)	0	5	10	15	20	25	90	
Assumed EIRP	31.6	31.6	31.6	31.6	31.6	31.6	31.6	
Carrier Occupied Bandwidth (kHz)	4000	4000	4000	4000	4000	4000	4000	
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1	
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-161.8	-161.7	-161.6	-161.4	-161.3	-161.2	-160.5	
FCC Limit (dBW/m ² /4Hz)	-152.0	-152.0	-149.5	-147.0	-144.5	-142.0	-142.0	
Margin (dB)	9.8	9.7	12.1	14.4	16.8	19.2	18.5	
Global B Beam - 36M0G7W								
Elevation Angle (degrees)	0	5	10	15	20	25	90	
Assumed EIRP	31.6	31.6	31.6	31.6	31.6	31.6	31.6	
Carrier Occupied Bandwidth (kHz)	30133	30133	30133	30133	30133	30133	30133	
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1	
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-170.6	-170.4	-170.3	-170.2	-170.1	-170.0	-169.2	
FCC Limit (dBW/m ² /4Hz)	-152.0	-152.0	-149.5	-147.0	-144.5	-142.0	-142.0	
Margin (dB)	18.6	18.4	20.8	23.2	25.6	28.0	27.2	
C-Spot A Beam - 36M0F3F								
Elevation Angle (degrees)	0	5	10	15	20	25	90	
Assumed EIRP	39.5	39.5	39.5	39.5	39.5	39.5	39.5	
Carrier Occupied Bandwidth (kHz)	4000.0	4000.0	4000.0	4000.0	4000.0	4000.0	4000.0	
Spreading Loss $(dB/m^2) - (4\pi^*(Slant Range)^2)$	163.4	163.3	163.2	163.0	162.9	162.8	162.1	
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-153.9	-153.8	-153.7	-153.5	-153.4	-153.3	-152.6	
FCC Limit (dBW/m ² /4Hz)	-152.0	-152.0	-149.5	-147.0	-144.5	-142.0	-142.0	
Margin (dB)	1.9	1.8	4.2	6.5	8.9	11.3	10.6	
C-Spot A Beam - 36M0G7W								
Elevation Angle (degrees)	0	5	10	15	20	25	90	
Assumed EIRP	39.5	39.5	39.5	39.5	39.5	39.5	39.5	
Carrier Occupied Bandwidth (kHz)	30133	30133	30133	30133	30133	30133	30133	
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1	
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-162.7	-162.5	-162.4	-162.3	-162.2	-162.1	-161.3	
FCC Limit (dBW/m ² /4Hz)	-152.0	-152.0	-149.5	-147.0	-144.5	-142.0	-142.0	
Margin (dB)	10.7	10.5	12.9	15.3	17.7	20.1	19.3	

FREQUEN	ICY BANI): 3.7 - 4.	2 GHz				
C-Spot B Beam - 36M0F3F							
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP	38.6	38.6	38.6	38.6	38.6	38.6	38.6
Carrier Occupied Bandwidth (kHz)	4000	4000	4000	4000	4000	4000	4000
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-154.8	-154.7	-154.6	-154.4	-154.3	-154.2	-153.5
FCC Limit (dBW/m ² /4Hz)	-152.0	-152.0	-149.5	-147.0	-144.5	-142.0	-142.0
Margin (dB)	2.8	2.7	5.1	7.4	9.8	12.2	11.5
C-Spot B Beam - 36M0G7W	2.0	2.7	5.1	7.4	2.0	12.2	11.5
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP	38.6	38.6	38.6	38.6	38.6	38.6	38.6
Carrier Occupied Bandwidth (kHz)	30133	30133	30133	30133	30133	30133	30133
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-163.6	-163.4	-163.3	-163.2	-163.1	-163.0	-162.2
FCC Limit (dBW/m ² /4Hz)	-152.0	-152.0	-149.5	-147.0	-144.5	-142.0	-142.0
Margin (dB)	11.6	11.4	13.8	16.2	18.6	21.0	20.2
West Hemi Beam - 30M0F3F	11.0	11.4	15.0	10.2	10.0	21.0	20.2
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP	37.5	37.5	37.5	37.5	37.5	37.5	37.5
Carrier Occupied Bandwidth (kHz)			4000	4000		4000	
Spreading Loss $(dB/m^2) - (4\pi^*(Slant Range)^2)$	4000	4000			4000		4000
	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-155.9	-155.8	-155.7	-155.5	-155.4	-155.3	-154.6
FCC Limit (dBW/m ² /4Hz)	-152.0	-152.0	-149.5	-147.0	-144.5	-142.0	-142.0
Margin (dB)	3.9	3.8	6.2	8.5	10.9	13.3	12.6
West Hemi Beam - 34M0G7W			10	1.5	•		0.0
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP	37.5	37.5	37.5	37.5	37.5	37.5	37.5
Carrier Occupied Bandwidth (kHz)	28459	28459	28459	28459	28459	28459	28459
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-164.4	-164.3	-164.2	-164.1	-164.0	-163.9	-163.1
FCC Limit (dBW/m ² /4Hz)	-152.0	-152.0	-149.5	-147.0	-144.5	-142.0	-142.0
Margin (dB)	12.4	12.3	14.7	17.1	19.5	21.9	21.1
East Hemi Beam - 30M0F3F							
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP	38.9	38.9	38.9	38.9	38.9	38.9	38.9
Carrier Occupied Bandwidth (kHz)	4000	4000	4000	4000	4000	4000	4000
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-154.5	-154.4	-154.3	-154.1	-154.0	-153.9	-153.2
FCC Limit (dBW/m ² /4Hz)	-152.0	-152.0	-149.5	-147.0	-144.5	-142.0	-142.0
Margin (dB)	2.5	2.4	4.8	7.1	9.5	11.9	11.2
East Hemi Beam - 34M0G7W							
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP	38.9	38.9	38.9	38.9	38.9	38.9	38.9
Carrier Occupied Bandwidth (kHz)	28459	28459	28459	28459	28459	28459	28459
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-163.0	-162.9	-162.8	-162.7	-162.6	-162.5	-161.7
FCC Limit (dBW/m ² /4Hz)	-152.0	-152.0	-149.5	-147.0	-144.5	-142.0	-142.0
Margin (dB)	11.0	10.9	13.3	15.7	18.1	20.5	19.7
Northwest Beam - 30M0F3F							
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP	36.9	36.9	36.9	36.9	36.9	36.9	36.9
Carrier Occupied Bandwidth (kHz)	4000	4000	4000	4000	4000	4000	4000
Spreading Loss $(dB/m^2) - (4\pi^*(Slant Range)^2)$	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-156.5	-156.4	-156.3	-156.1	-156.0	-155.9	-155.2
FCC Limit (dBW/m ² /4Hz)	-152.0	-152.0	-149.5	-147.0	-144.5	-142.0	-142.0
Margin (dB)	4.5	4.4	6.8	9.1	11.5	13.9	13.2

FREQUEN	ICY BANI): 3.7 - 4.	2 GHz				
Northwest Beam - 34M0G7W							
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP	36.9	36.9	36.9	36.9	36.9	36.9	36.9
Carrier Occupied Bandwidth (kHz)	28459	28459	28459	28459	28459	28459	28459
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-165.0	-164.9	-164.8	-164.7	-164.6	-164.5	-163.7
FCC Limit (dBW/m ² /4Hz)	-152.0	-152.0	-149.5	-147.0	-144.5	-142.0	-142.0
Margin (dB)	13.0	12.9	15.3	17.7	20.1	22.5	21.7
Southeast Beam - 30M0F3F	15.0	12.7	10.0	17.7	20.1	22.0	21.7
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP	39.5	39.5	39.5	39.5	39.5	39.5	39.5
Carrier Occupied Bandwidth (kHz)	4000	4000	4000	4000	4000	4000	4000
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-153.9	-153.8	-153.7	-153.5	-153.4	-153.3	-152.6
FCC Limit (dBW/m ² /4Hz)	-152.0	-155.0	-149.5	-147.0	-144.5	-142.0	-142.0
Margin (dB)	1.9	1.8	4.2	6.5	8.9	11.3	10.6
Southeast Beam - 34M0G7W	1.7	1.0	4.2	0.5	0.5	11.5	10.0
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP	39.5	39.5	39.5	39.5	39.5	39.5	39.5
Carrier Occupied Bandwidth (kHz)	28459	28459	28459	28459	28459	28459	28459
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-162.4	-162.3	-162.2	-162.1	-162.0	-161.9	-161.1
FCC Limit (dBW/m ² /4Hz)	-152.0	-152.0	-149.5	-147.0	-144.5	-142.0	-142.0
Margin (dB)	10.4	10.3	12.7	15.1	17.5	19.9	19.1
Northeast Beam - 30M0F3F	0		10	16	20	25	00
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP	39.2	39.2	39.2	39.2	39.2	39.2	39.2
Carrier Occupied Bandwidth (kHz)	4000	4000	4000	4000	4000	4000	4000
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-154.2	-154.1	-154.0	-153.8	-153.7	-153.6	-152.9
FCC Limit (dBW/m ² /4Hz)	-152.0	-152.0	-149.5	-147.0	-144.5	-142.0	-142.0
Margin (dB)	2.2	2.1	4.5	6.8	9.2	11.6	10.9
Northeast Beam - 34M0G7W		_					
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP	39	39.2	39.2	39.2	39.2	39.2	39.2
Carrier Occupied Bandwidth (kHz)	28459	28459	28459	28459	28459	28459	28459
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-162.7	-162.6	-162.5	-162.4	-162.3	-162.2	-161.4
FCC Limit (dBW/m ² /4Hz)	-152.0	-152.0	-149.5	-147.0	-144.5	-142.0	-142.0
Margin (dB)	10.7	10.6	13.0	15.4	17.8	20.2	19.4
Southwest Beam - 30M0F3F							
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP	37.2	37.2	37.2	37.2	37.2	37.2	37.2
Carrier Occupied Bandwidth (kHz)	4000	4000	4000	4000	4000	4000	4000
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-156.2	-156.1	-156.0	-155.8	-155.7	-155.6	-154.9
FCC Limit (dBW/m ² /4Hz)	-152.0	-152.0	-149.5	-147.0	-144.5	-142.0	-142.0
Margin (dB)	4.2	4.1	6.5	8.8	11.2	13.6	12.9
Southwest Beam - 34M0G7W							
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP	37.2	37.2	37.2	37.2	37.2	37.2	37.2
Carrier Occupied Bandwidth (kHz)	28459	28459	28459	28459	28459	28459	28459
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-164.7	-164.6	-164.5	-164.4	-164.3	-164.2	-163.4
FCC Limit (dBW/m ² /4Hz)	-152.0	-152.0	-149.5	-147.0	-144.5	-142.0	-142.0
Margin (dB)	12.7	12.6	15.0	17.4	19.8	22.2	21.4

FREQUEN	CY BANI) : 3. 7 - 4.2	2 GHz				
Telemetry - Global Beam (On-Station Operation)							
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP (dBW)	8.2	8.2	8.2	8.2	8.2	8.2	8.2
Occupied Bandwidth (kHz)	250	250	250	250	250	250	250
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-173.1	-173.0	-172.9	-172.8	-172.7	-172.6	-171.8
PFD Limit (dBW/m ² /4kHz)	-152.0	-152.0	-149.5	-147.0	-144.5	-142.0	-142.0
Margin (dB)	21.1	21.0	23.4	25.8	28.2	30.6	29.8
Telemetry - Global Beam (Back-up Operation)							
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP (dBW)	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Occupied Bandwidth (kHz)	250	250	250	250	250	250	250
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-180.6	-180.5	-180.4	-180.3	-180.2	-180.1	-179.3
PFD Limit (dBW/m ² /4kHz)	-152.0	-152.0	-149.5	-147.0	-144.5	-142.0	-142.0
Margin (dB)	28.6	28.5	30.9	33.3	35.7	38.1	37.3
C-Band ULPC Global Beam							
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP (dBW)	11.7	11.7	11.7	11.7	11.7	11.7	11.7
Occupied Bandwidth (kHz)	25	25	25	25	25	25	25
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m²/4kHz)	-159.6	-159.5	-159.4	-159.3	-159.2	-159.1	-158.3
PFD Limit (dBW/m ² /4kHz)	-152.0	-152.0	-149.5	-147.0	-144.5	-142.0	-142.0
Margin (dB)	7.6	7.5	9.9	12.3	14.7	17.1	16.3

Exhibit 4-2: Ku-Band (10.95-11.2 GHz & 11.45-11.70 GHz) PFD Calculations

FREQUENCY BAND	· 10 95 - 11	2 GH7 &	11 45 - 11	70 GHz			
Spot 1 Beam - 30M0F3F	. 10.25 - 11		11.45 - 11				
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP	43.4*	43.3*	45.7*	48.0*	49.4	49.4	49.4
Carrier Occupied Bandwidth (kHz)	4000	4000	4000	4000	49.4	49.4	49.4
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-150.0	-150.0	-147.5	-145.0	-143.5	-143.4	-142.7
FCC Limit (dBW/m ² /4Hz)	-150.0	-150.0	-147.5	-145.0 -145.0	-143.5	-143.4	-142.7
	-	-130.0					
Margin (dB)	0.0	0.0	0.0	0.0	1.0	3.4	2.7
Spot 1 Beam - 34M0G7W	0	5	10	16	20	25	00
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP	49.4	49.4	49.4	49.4	49.4	49.4	49.4
Carrier Occupied Bandwidth (kHz)	28459	28459	28459	28459	28459	28459	28459
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-152.5	-152.4	-152.3	-152.2	-152.1	-152.0	-151.2
FCC Limit (dBW/m ² /4Hz)	-150.0	-150.0	-147.5	-145.0	-142.5	-140.0	-140.0
Margin (dB)	2.5	2.4	4.8	7.2	9.6	12.0	11.2
Spot 2 Beam - 30M0F3F							
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP	43.4*	43.3*	45.7*	48.0*	49.6	49.6	49.6
Carrier Occupied Bandwidth (kHz)	4000	4000	4000	4000	4000	4000	4000
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-150.0	-150.0	-147.5	-145.0	-143.3	-143.2	-142.5
FCC Limit (dBW/m ² /4Hz)	-150.0	-150.0	-147.5	-145.0	-142.5	-140.0	-140.0
Margin (dB)	0.0	0.0	0.0	0.0	0.8	3.2	2.5
Spot 2 Beam - 34M0G7W							
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP	49.6	49.6	49.6	49.6	49.6	49.6	49.6
Carrier Occupied Bandwidth (kHz)	28459	28459	28459	28459	28459	28459	28459
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-152.3	-152.2	-152.1	-152.0	-151.9	-151.8	-151.0
FCC Limit (dBW/m ² /4Hz)	-150.0	-150.0	-147.5	-145.0	-142.5	-140.0	-140.0
Margin (dB)	2.3	2.2	4.6	7.0	9.4	11.8	11.0
Spot 2A Beam - 30M0F3F							
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP	43.4*	43.3*	45.7*	47.7	47.7	47.7	47.7
Carrier Occupied Bandwidth (kHz)	4000	4000	4000	4000	4000	4000	4000
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-150.0	-150.0	-147.5	-145.3	-145.2	-145.1	-144.4
FCC Limit (dBW/m ² /4Hz)	-150.0	-150.0	-147.5	-145.0	-142.5	-140.0	-140.0
Margin (dB)	0.0	0.0	0.0	0.3	2.7	5.1	4.4
Spot 2A Beam - 34M0G7W							
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP	47.7	47.7	47.7	47.7	47.7	47.7	47.7
Carrier Occupied Bandwidth (kHz)	28459	28459	28459	28459	28459	28459	28459
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-154.2	-154.1	-154.0	-153.9	-153.8	-153.7	-152.9
FCC Limit (dBW/m ² /4Hz)	-150.0	-150.0	-147.5	-145.0	-142.5	-140.0	-140.0
Margin (dB)	4.2	4.1	6.5	8.9	11.3	13.7	12.9
	4.4	4.1	0.5	0.9	11.5	15.7	14.7

* This is the maximum allowable EIRP level at the specified elevation angle. The actual EIRP level of the beam at this particular elevation angle will be made to be equal to or lower than the value listed in the table through reduction in the output power of the channel and/or restriction on the movement/placement of the beam.

FREQUENCY BAN	D : 10.95 -	11.2 GHz	& 11.45 - 1	1.70 GHz			
Spot 3 Beam - 30M0F3F							
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP	43.4*	43.3*	45.7*	48.0*	50.4*	51.5	51.5
Carrier Occupied Bandwidth (kHz)	4000	4000	4000	4000	4000	4000	4000
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-150.0	-150.0	-147.5	-145.0	-142.5	-141.3	-140.6
FCC Limit (dBW/m ² /4Hz)	-150.0	-150.0	-147.5	-145.0	-142.5	-140.0	-140.0
Margin (dB)	0.0	0.0	0.0	0.0	0.0	1.3	0.6
Spot 3 Beam - 34M0G7W							
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP	51.5	51.5	51.5	51.5	51.5	51.5	51.5
Carrier Occupied Bandwidth (kHz)	28459	28459	28459	28459	28459	28459	28459
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m²/4kHz)	-150.4	-150.3	-150.2	-150.1	-150.0	-149.9	-149.1
FCC Limit (dBW/m ² /4Hz)	-150.0	-150.0	-147.5	-145.0	-142.5	-140.0	-140.0
Margin (dB)	0.4	0.3	2.7	5.1	7.5	9.9	9.1

*This is the maximum allowable EIRP level at the specified elevation angle. The actual EIRP level of the beam at this particular elevation angle will be made to be equal to or lower than the value listed in the table through reduction in the output power of the channel and/or restriction on the movement/placement of the beam.

Exhibit 4-3: Ku-Band (12.50-12.75 GHz) PFD Calculations

FREQUENCY BARD : 12:30 - 12:30 - 12:30 - 12:30 - 12:30 Spot 2 Beam - 30M073F Image: spot 2 Beam - 30M073F Image: spot 2 Beam - 30M073F Image: spot 2 Beam - 30M073F Assumed EIRP 45.4* 45.3* 47.7* 49.6 49.6 49.6 49.6 Carrier Occupied Bandwidth (H1z) 4000 40.5 143.2 143.2 143.2 143.2 143.2 143.2 143.2 143.2 143.2 143.2 143.5 143.0 148	EDEOU	NOV DAND	12 50	12 750 CH-				
Elevation Angle (degrees) 0 5 10 15 20 25 90 Assumed EIRP 454 45.3* 47.7* 49.6 49.6 49.6 49.6 Carrier Occupied Bandwidth (kHz) 4000 4143.2 145.2 143.1 140.1 143.8 143.0 140.1		INC I BAND	7 : 12.30	12.750 GHZ				
Assumed EIRP 45.4* 45.3* 47.7* 49.6 49.6 49.6 Carrier Occupied Bandwidh (kHz) 4000<		0	5	10	16	20	25	00
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		-						
Spreading Loss (dB/m ²) 163.4 163.3 163.2 163.4 163.3 163.2 163.4 163.2 163.4 163.3 163.2 163.4 143.5 143.4 143.3 143.2 143.2 143.5 143.6 143.5 143.6 143.5 143.6 143								
Maximum ERP Spectral Density (dBW/m ² /4kHz) -148.0 -145.5 -143.4 -143.3 -143.2 -142.5 TTU Limit (dBW/m ² /4Hz) -148.0 -148								
TTU Limit (dBW/m//4Hz) -148.0 <								
Margin (dB) 0.0 0.0 0.0 0.4 2.8 5.2 4.5 Spot 2 Beam - 34M0G7W 0 5 10 15 20 25 90 Assumed EIRP 49.6 28.459 28.459 28.459 28.459 28.459 28.459 28.459 28.459 28.459 28.459 28.459 28.450								
Spot 2 Beam 34M0G7W 0 5 10 15 20 25 90 Assumed EIRP 49.6 162.8 162.8 162.8 162.8 162.8 162.8 162.8 162.8 162.8 162.8 143.0 140.5 -148.0 -148.0 -148.0 -148.0 -148.0 143.3 13.0 Spot 2A Beam 300073F 0 5 10 15 20 25 90 Assumed EIRP 45.4* 45.3* 47.7 47.7 47.7 47.7 47.7 47.7 47.7 47.7 47.7 47.7		-148.0	-148.0	-145.5	-143.0			
Elevation Angle (degrees) 0 5 10 15 20 25 90 Assumed EIRP 49.6 163.0 162.8 162.1 151.0 151.0 151.0 151.8 151.0 151.8 151.0 138.0 -138.0 -138.0 -138.0 138.0 138.0 138.0 138.0 148.0 145.3 147.7 47.7		0.0	0.0	0.0	0.4	2.8	5.2	4.5
Assumed EIRP 49.6 49.6 49.6 49.6 49.6 49.6 49.6 49.6 49.6 49.6 49.6 Carrier Occupied Bandwidh (kHz) 28459 <	Spot 2 Beam - 34M0G7W							
$\begin{array}{c cccc} Carrier Occupied Bandwidth (kHz) 28459 284$	Elevation Angle (degrees)	0	5	10	15	20	25	90
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Assumed EIRP	49.6	49.6	49.6	49.6	49.6	49.6	49.6
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Carrier Occupied Bandwidth (kHz)	28459	28459	28459	28459	28459	28459	28459
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-152.3	-152.2	-152.1	-152.0	-151.9	-151.8	-151.0
Margin (dB) 4.3 4.2 6.6 9.0 11.4 13.8 13.0 Spot 2A Beam - 30M0F3F 0 5 10 15 20 25 90 Assumed EIRP 45.4* 45.3* 47.7 138.0		-148.0	-148.0					
Spot 2A Beam - 30M0F3F 0 5 10 15 20 25 90 Assumed EIRP 45.4* 45.3* 47.7 47.1 41.8.0 148.0 -145.5 -145.3 -145.2 -145.0 -148.0 -148.0 -145.5 -143.0 143.0 5.8.0 15.8.0 138.0 138.0 138.0 138.0 138.0 138.0 138.0 138.0 138.0 138.0 138.0 138.0 148.0 145.5 -143.0 140.5 138.0 158.0 138.0 138.0 138.0 138.0 138.0 138.0 138.0 138.0 138.0 138.0 138.0 158.0 138.0 1								
$\begin{array}{c c c c c c c c c c c c c c c c c c c $								
Assumed EIRP 45.4* 45.3* 47.7 47.7 47.7 47.7 47.7 Carrier Occupied Bandwidth (kHz) 4000 415.5 145.3 145.2 145.1 145.5 145.0 -145.5 143.0 -140.5 138.0 138.0 138.0 138.0 138.0 138.0 138.0 138.0 138.0 138.0 138.0 138.0 138.0 138.0 138.0 138.0 138.0 138.0 138.0 <td< td=""><td></td><td>0</td><td>5</td><td>10</td><td>15</td><td>20</td><td>25</td><td>90</td></td<>		0	5	10	15	20	25	90
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		45.4*						
$\begin{array}{c c c c c c c c c c c c c c c c c c c $								
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ITU Limit (dBW/m ² /4Hz) -148.0 -148.0 -145.5 -143.0 -140.5 -138.0 -138.0 Margin (dB) 0.0 0.0 0.0 2.3 4.7 7.1 6.4 Spot 2A Beam - 34M0G7W 0 0 0.0 15 20 25 90 Assumed EIRP 47.7 47.3 40.5 148.0								
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Assumed EIRP47.747.747.747.747.747.747.747.7Carrier Occupied Bandwidth (kHz)28459<		0	5	10	15	20	25	00
Carrier Occupied Bandwidth (kHz)28459		-						
Spreading Loss (dB/m²)163.4163.3163.2163.0162.9162.8162.1Maximum EIRP Spectral Density (dBW/m²/4Hz) -154.2 -154.1 -154.0 -153.9 -153.8 -153.7 -152.9 ITU Limit (dBW/m²/4Hz) -148.0 -148.0 -145.5 -143.0 -140.5 -138.0 -138.0 Margin (dB)6.26.18.510.913.315.7 14.9 Spot 3 Beam - 30M0F3F								
Maximum EIRP Spectral Density (dBW/m²/4kHz) -154.2 -154.1 -154.0 -153.9 -153.8 -153.7 -152.9 ITU Limit (dBW/m²/4Hz) -148.0 -148.0 -148.0 -145.5 -143.0 -140.5 -138.0 Margin (dB) 6.2 6.1 8.5 10.9 13.3 15.7 14.9 Spot 3 Beam - 30M0F3F 0 5 10 15 20 25 90 Assumed EIRP $45.4*$ $45.3*$ $47.7*$ $50.0*$ 51.5 51.5 51.5 Carrier Occupied Bandwidth (kHz) 4000 4000 4000 4000 4000 4000 Spreading Loss (dB/m²) 163.4 163.3 163.2 163.0 162.9 162.8 162.1 Maximum EIRP Spectral Density (dBW/m²/4kHz) -148.0 -145.5 -143.0 -141.4 -141.3 -140.6 ITU Limit (dBW/m²/4Hz) -148.0 -145.5 -143.0 -140.5 -138.0 -138.0 Margin (dB) 0.0 0.0 0.0 0.9 3.3 2.6 Spot 3 Beam $- 34M0G7W$ -148.0 -148.0 -145.5 51.5 51.5 51.5 Carrier Occupied Bandwidth (kHz) 28459 28459 28459 28459 28459 28459 Spreading Loss (dB/m²) 0 5 51.5 51.5 51.5 51.5 51.5 51.5 51.5 51.5 Carrier Occupied Bandwidth (kHz) 28459 28459 28459 28459 28459 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>								
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Margin (dB)6.26.18.510.913.315.714.9Spot 3 Beam - 30M0F3F051015202590Assumed ElRP45.4*45.3*47.7*50.0*51.551.551.5Carrier Occupied Bandwidth (kHz)400040004000400040004000Spreading Loss (dB/m²)163.4163.3163.2163.0162.9162.8162.1Maximum EIRP Spectral Density (dBW/m²/4kHz)-148.0-145.5-143.0-141.4-141.3-140.6ITU Limit (dBW/m²/4Hz)-148.0-148.0-145.5-143.0-140.5-138.0-138.0Margin (dB)0.00.00.00.00.93.32.6Spot 3 Beam - 34M0G7W051.551.551.551.551.551.5Carrier Occupied Bandwidth (kHz)284592845928459284592845928459Spreading Loss (dB/m²)051015202590Assumed EIRP51.551.551.551.551.551.551.551.5Carrier Occupied Bandwidth (kHz)28459284592845928459284592845928459Spreading Loss (dB/m²)163.4163.3163.2163.0162.9162.8162.1Maximum EIRP Spectral Density (dBW/m²/4kHz)-150.4-150.3-150.2-150.1-150.0-149.9-149.1ITU Limit (dBW/m²/4Hz)-168.								
Spot 3 Beam - 30M0F3F051015202590Assumed EIRP45.4*45.3*47.7*50.0*51.551.551.551.5Carrier Occupied Bandwidth (kHz)40004000400040004000400040004000Spreading Loss (dB/m²)163.4163.3163.2163.0162.9162.8162.1Maximum EIRP Spectral Density (dBW/m²/4kHz)-148.0-148.0-145.5-143.0-141.4-141.3-140.6ITU Limit (dBW/m²/4Hz)-148.0-148.0-145.5-143.0-140.5-138.0-138.0Margin (dB)0.00.00.00.00.93.32.6Spot 3 Beam - 34M0G7WElevation Angle (degrees)051015202590Assumed EIRP51.551.551.551.551.551.551.551.5Carrier Occupied Bandwidth (kHz)28459284592845928459284592845928459Spreading Loss (dB/m²)163.4163.3163.2163.0162.9162.8162.1Maximum EIRP Spectral Density (dBW/m²/4kHz)-150.4-150.3-150.2-150.1-150.0-149.9-149.1ITU Limit (dBW/m²/4Hz)-163.4163.3163.2163.0162.9162.8162.1Maximum EIRP Spectral Density (dBW/m²/4kHz)-150.4-150.3-150.2-150.1-150.0-14								
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		6.2	6.1	8.5	10.9	13.3	15.7	14.9
Assumed EIRP 45.4^* 45.3^* 47.7^* 50.0^* 51.5 51.5 51.5 Carrier Occupied Bandwidth (kHz)4000400040004000400040004000Spreading Loss (dB/m²)163.4163.3163.2163.0162.9162.8162.1Maximum EIRP Spectral Density (dBW/m²/4kHz)-148.0-145.5-143.0-141.4-141.3-140.6ITU Limit (dBW/m²/4Hz)-148.0-148.0-145.5-143.0-140.5-138.0-138.0Margin (dB)0.00.00.00.00.93.32.6Spot 3 Beam - 34M0G7WElevation Angle (degrees)051015202590Assumed EIRP51.551.551.551.551.551.551.551.5Carrier Occupied Bandwidth (kHz)28459284592845928459284592845928459Spreading Loss (dB/m²)163.4163.3163.2163.0162.9162.8162.1Maximum EIRP Spectral Density (dBW/m²/4kHz)-150.4-150.3-150.2-150.1-150.0-149.9-149.1ITU Limit (dBW/m²/4Hz)-148.0-148.0-148.0-145.5-143.0-140.5-138.0-138.0ITU Limit (dBW/m²/4Hz)-160.4-150.3-150.2-150.1-150.0-149.9-149.1ITU Limit (dBW/m²/4Hz)-148.0-148.0-145.5-143.0 <td< td=""><td></td><td></td><td>-</td><td>10</td><td></td><td>• •</td><td></td><td></td></td<>			-	10		• •		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		-						
Spreading Loss (dB/m²)163.4163.3163.2163.0162.9162.8162.1Maximum EIRP Spectral Density (dBW/m²/4kHz)-148.0-148.0-145.5-143.0-141.4-141.3-140.6ITU Limit (dBW/m²/4Hz)-148.0-148.0-145.5-143.0-140.5-138.0-138.0Margin (dB)0.00.00.00.00.93.32.6Spot 3 Beam - 34M0G7W -160.5 -100.5 100.5 150.5 51.5								
Maximum EIRP Spectral Density (dBW/m²/4kHz) -148.0 -148.0 -145.5 -143.0 -141.4 -141.3 -140.6 ITU Limit (dBW/m²/4Hz) -148.0 -148.0 -145.5 -143.0 -140.5 -138.0 -138.0 Margin (dB)0.00.00.00.00.00.93.32.6Spot 3 Beam - 34M0G7W								
ITU Limit (dBW/m²/4Hz)-148.0-148.0-145.5-143.0-140.5-138.0-138.0Margin (dB)0.00.00.00.00.00.93.32.6Spot 3 Beam - 34M0G7W								
Margin (dB) 0.0								
Spot 3 Beam - 34M0G7W Image: Constraint of the system Image: Constraint of the	· · · · · · · · · · · · · · · · · · ·	-148.0	-148.0	-145.5	-143.0		-138.0	
Elevation Angle (degrees)051015202590Assumed EIRP51.551.551.551.551.551.551.551.551.5Carrier Occupied Bandwidth (kHz)28459284592845928459284592845928459284592845928459Spreading Loss (dB/m²)163.4163.3163.2163.0162.9162.8162.1Maximum EIRP Spectral Density (dBW/m²/4kHz)-150.4-150.3-150.2-150.1-150.0-149.9-149.1ITU Limit (dBW/m²/4Hz)-148.0-148.0-145.5-143.0-140.5-138.0-138.0		0.0	0.0	0.0	0.0	0.9	3.3	2.6
Assumed EIRP 51.5	Spot 3 Beam - 34M0G7W							
Carrier Occupied Bandwidth (kHz) 28459	Elevation Angle (degrees)	0	5	10	15	20	25	90
Spreading Loss (dB/m ²) 163.4 163.3 163.2 163.0 162.9 162.8 162.1 Maximum EIRP Spectral Density (dBW/m ² /4kHz) -150.4 -150.3 -150.2 -150.1 -150.0 -149.9 -149.1 ITU Limit (dBW/m ² /4Hz) -148.0 -148.0 -145.5 -143.0 -140.5 -138.0 -138.0	Assumed EIRP	51.5	51.5	51.5	51.5	51.5	51.5	51.5
Spreading Loss (dB/m ²) 163.4 163.3 163.2 163.0 162.9 162.8 162.1 Maximum EIRP Spectral Density (dBW/m ² /4kHz) -150.4 -150.3 -150.2 -150.1 -150.0 -149.9 -149.1 ITU Limit (dBW/m ² /4Hz) -148.0 -148.0 -145.5 -143.0 -140.5 -138.0 -138.0	Carrier Occupied Bandwidth (kHz)	28459	28459	28459	28459	28459	28459	28459
Maximum EIRP Spectral Density (dBW/m²/4kHz) -150.4 -150.3 -150.2 -150.1 -150.0 -149.9 -149.1 ITU Limit (dBW/m²/4Hz) -148.0 -148.0 -145.5 -143.0 -140.5 -138.0 -138.0		163.4	163.3	163.2	163.0	162.9	162.8	162.1
ITU Limit (dBW/m ² /4Hz) -148.0 -148.0 -145.5 -143.0 -140.5 -138.0 -138.0								-149.1
	Margin (dB)							

*This is the maximum allowable EIRP level at the specified elevation angle. The actual EIRP level of the beam at this particular elevation angle will be made to be equal to or lower than the value listed in the table through reduction in the output power of the channel and/or restriction on the movement/placement of the beam.

Exhibit 4-4: Ku-Band ULPC PFD Calculations

	Ku-Band U	JLPC					
Ku-Band ULPC - Global Beam BNK1							
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Carrier Occupied Bandwidth (kHz)	25	25	25	25	25	25	25
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-163.3	-163.2	-163.1	-163.0	-162.9	-162.8	-162.0
FCC Limit (dBW/m ² /4Hz)	-150.0	-150.0	-147.5	-145.0	-142.5	-140.0	-140.0
Margin (dB)	13.3	13.2	15.6	18.0	20.4	22.8	22.0
Ku-Band ULPC – Global Beam BNK2							
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Carrier Occupied Bandwidth (kHz)	25	25	25	25	25	25	25
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-163.3	-163.2	-163.1	-163.0	-162.9	-162.8	-162.0
FCC Limit (dBW/m ² /4Hz)	-150.0	-150.0	-147.5	-145.0	-142.5	-140.0	-140.0
Margin (dB)	13.3	13.2	15.6	18.0	20.4	22.8	22.0
Ku-Band ULPC - Spot 1 BNK8							
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP	11.7	11.7	11.7	11.7	11.7	11.7	11.7
Carrier Occupied Bandwidth (kHz)	25	25	25	25	25	25	25
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-159.6	-159.5	-159.4	-159.3	-159.2	-159.1	-158.3
ITU Limit (dBW/m ² /4Hz)	-148.0	-148.0	-145.5	-145.0	-142.5	-140.0	-140.0
Margin (dB)	11.6	11.5	13.9	14.3	16.7	19.1	18.3
Ku-Band ULPC - Spot2 BNK9							
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP	10.3	10.3	10.3	10.3	10.3	10.3	10.3
Carrier Occupied Bandwidth (kHz)	25	25	25	25	25	25	25
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-161.0	-160.9	-160.8	-160.7	-160.6	-160.5	-159.7
ITU Limit (dBW/m ² /4Hz)	-148.0	-148.0	-145.5	-145.0	-142.5	-140.0	-140.0
Margin (dB)	13.0	12.9	15.3	15.7	18.1	20.5	19.7
Ku-Band ULPC – Spot2A BNK10							
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP	8.5	8.5	8.5	8.5	8.5	8.5	8.5
Carrier Occupied Bandwidth (kHz)	25	25	25	25	25	25	25
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-162.8	-162.7	-162.6	-162.5	-162.4	-162.3	-161.5
ITU Limit (dBW/m ² /4Hz)	-148.0	-148.0	-145.5	-145.0	-142.5	-140.0	-140.0
Margin (dB)	14.8	14.7	17.1	17.5	19.9	22.3	21.5
Ku-Band ULPC – Spot3 BNK11							
Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP	12.3	12.3	12.3	12.3	12.3	12.3	12.3
Carrier Occupied Bandwidth (kHz)	25	25	25	25	25	25	25
Spreading Loss (dB/m ²)	163.4	163.3	163.2	163.0	162.9	162.8	162.1
Maximum EIRP Spectral Density (dBW/m ² /4kHz)	-159.0	-158.9	-158.8	-158.7	-158.6	-158.5	-157.7
ITU Limit (dBW/m ² /4Hz)	-148.0	-148.0	-145.5	-145.0	-142.5	-140.0	-140.0
Margin (dB)	11.0	10.9	13.3	13.7	16.1	18.5	17.7

<u>Exhibit 5: IS-702 Link Budgets</u> <u>Exhibit 5-1: C-Band Global Uplink/Global Downlink</u>

UPLINK BEAM INFORMATION					
Uplink Beam Name	GLOBAL	GLOBAL	GLOBAL	GLOBAL	GLOBAL
Uplink Frequency (GHz)	6 175	6 175	6 175	6 175	<mark>6</mark> 175
Uplink Beam Polarization	CIRCULAR -4	CIRCULAR -4	CIRCULAR -4	CIRCULAR -4	CIRCULAR -4
Uplink Relative Contour Level (dB) Uplink Contour G/T (dB/K)	-4 -11	-4 -11	-4 -11	4 11	-4 -11
Uplink SFD (dBW/m2)	-84 3	-89 3	-81 3	-81 3	-89 3
Rain Rate (mm/hr)	42	42	42	42	42
DOWNLINK BEAM INFORMATION					
Downlink Beam Name Downlink Frequency (GHz)	GLOBAL 3 95	GLOBAL 3 95	GLOBAL 3 95	GLOBAL 3 95	GLOBAL 3 95
Downlink Frequency (GHz)	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Downlink Relative Contour Level (dB)	-4	-4	-4	-4	-4
Downlink Contour EIRP (dBW)	27 6	27 6	27 6	276	27 6
Rain Rate (mm/hr)	42	42	42	42	42
ADJACENT SATELLITE 1 Satellite 1 Orbital Location	31 0E	31 0E	31 0E	31 0E	31 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
ADJACENT SATELLITE 2 Satellite 1 Orbital Location	35 0E	35 0E	35 0E	35 0E	35 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
CARRIER INFORMATION Carrier ID	36M0F3F	36M0G7W	10M3G7W	100KG7W	41M0G7W
Carrier ID Carrier Modulation	TV/FM	QPSK	QPSK	QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	4	N/A	N/A	N/A	N/A
Information Rate(kbps)	N/A	24575	6000	64	31490
Code Rate	N/A	1/2x188/204	1/2x188/204	1/2x239/256	1/2x188/204
Occupied Bandwidth(kHz)	36000	30133	6771 1	75 4 100	34170 0 41000
Allocated Bandwidth(kHz) Minimum C/N, Clear Sky (dB)	36000 10	36000 3 36	10300 3 87	2 99	3 4
Minimum C/N, Rain (dB)	10	3 36	3 57	2 79	34
UPLINK EARTH STATION					
Earth Station Diameter (meters)	13 0	61	24	24	70
Earth Station Gain (dBi)	56 4 20	49 4 20	41 9 20	41 9 20	51 0 20
Earth Station Elevation Angle DOWNLINK EARTH STATION	20	20	20	20	20
Earth Station Diameter (meters)	152	70	11 0	11 0	81
Earth Station Gain (dBi)	55 0	47 5	51 9	51 9	49 3
Earth Station G/T (dB/K)	34 5	26 6	31 0	31 0	28 4
Earth Station Elevation Angle LINK FADE TYPE	20 Clear Sky	20 Clear Sky	20 Clear Sky	20 Clear Sky	20 Clear Sky
UPLINK PERFORMANCE	Clear Sky	Clear Sky	Clear Sky	Стеат эку	Clear Sky
Uplink Earth Station EIRP (dBW)	80 6	73 6	66 6	46 5	73 6
Uplink Path Loss, Clear Sky (dB)	-200 2	-200 2	-200 2	-200 2	-200 2
Uplink Rain Attenuation Satellite G/T(dB/K)	00	00	0.0	00	0.0
Boltzman Constant(dBW/K-Hz)	-11 0 228 6	-11 0 228 6	-11 0 228 6	-11 0 228 6	-11 0 228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8	-75 3
Uplink C/N(dB)	22 4	16 2	157	151	157
DOWNLINK PERFORMANCE					
Downlink EIRP per Carrier (dBW)	276	276	17.5	-26	27 6
Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB)	-0 5 -196 3	-0 5 -196 3	-0 5 -196 3	-0 5 -196 3	-0 5 -196 3
Downlink Rain Attenuation	00	00	00	00	00
Earth Station G/T (dB/K)	34 5	26 6	31 0	31 0	28 4
Boltzman Constant(dBW / K - Hz)	228 6	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB)	-75 6	-74 8 11 2	-68 3 12 0	-48 8 11 4	-75 3 12 5
COMPOSITE LINK PERFORMANCE	183	11.2	12.0	114	12.5
C/N Uplink (dB)	22 4	16 2	157	15 1	157
C/N Downlink (dB)	18 3	11 2	12 0	11 4	12 5
C/I Intermodulation (dB)	N/A	N/A	189	18.3	N/A
		276	27 0	270	27 6 27 6
C/I Uplink Co-Channel (dB)*	276		27.0		210
C/I Downlink Co-Channel (dB)*	27 6	27 6	27 0 15 0	27 0 14 4	
			27 0 15 0 11 1	14 4 10 5	15 0 11 4
C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB)	27 6 21 7 17 2 21 7	27 6 15 5 10 0 15 5	150 111 150	14 4 10 5 14 4	150 114 150
C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB)	27 6 21 7 17 2	276 155 100	150 111	14 4 10 5	150 114
C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB)	27 6 21 7 17 2 21 7 17 9	27 6 15 5 10 0 15 5 11 6	150 111 150 121	14 4 10 5 14 4 11 6	150 114 150 127
C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB)	276 217 172 217 179 114	27 6 15 5 10 0 15 5 11 6 4 8	150 111 150 121 51	144 105 144 116 45	150 114 150 127 56
C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB)	27 6 21 7 17 2 21 7 17 9	27 6 15 5 10 0 15 5 11 6	150 111 150 121	14 4 10 5 14 4 11 6	150 114 150 127
C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB)	27 6 21 7 17 2 21 7 17 9 11 4 -1 0 10 4 -10 0	276 155 100 155 116 48 -10 38 -34	150 111 150 121 51 -10 41 -39	14 4 10 5 14 4 11 6 4 5 -1 0 3 5 -3 0	150 114 150 127 56 -10 46 -34
C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+1) Composite (dB) Required System Margin (dB) Net C/(N+1) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB)	27 6 21 7 17 2 21 7 17 9 11 4 -1 0 10 4 -10 0 0 4	276 155 100 155 116 48 -10 38 -34 04	150 111 150 121 51 -10 41 -39 02	144 105 144 116 45 -10 35 -30 05	150 114 150 127 56 -10 46 -34 12
C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers	27 6 21 7 17 2 21 7 17 9 11 4 -1 0 10 4 -10 0	276 155 100 155 116 48 -10 38 -34	150 111 150 121 51 -10 41 -39	14 4 10 5 14 4 11 6 4 5 -1 0 3 5 -3 0	150 114 150 127 56 -10 46 -34
C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers CARRIER DENSITY LEVELS	27 6 21 7 17 2 21 7 17 9 11 4 -1 0 10 4 -10 0 0 4 1	276 155 100 155 116 48 -10 38 -34 04 1	150 111 150 121 51 -10 41 -39 02 4	144 105 144 116 45 -10 35 -30 05 410	150 114 150 127 56 -10 46 -34 12 1
C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers	27 6 21 7 17 2 21 7 17 9 11 4 -1 0 10 4 -10 0 0 4	276 155 100 155 116 48 -10 38 -34 04	150 111 150 121 51 -10 41 -39 02	144 105 144 116 45 -10 35 -30 05	150 114 150 127 56 -10 46 -34 12

Exhibit 5-2: C-Band Global Uplink/C-Band Spot Downlink

UPLINK BEAM INFORMATION Uplink Beam Name	GLOBAL	GLOBAL	GLOBAL	GLOBAL	GLOBAL
Uplink Frequency (GHz)	6175	6175	6175	6175	6 175
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Uplink Relative Contour Level (dB)	-4	-4	-4	-4	-4
Uplink Contour G/T (dB/K)	-11	-11	-11	-11	-11
Uplink SFD (dBW/m2)	-84 3	-89 3	-84 3	-84 3	-89 3
Rain Rate (mm/hr)	42	42	42	42	42
DOWNLINK BEAM INFORMATION					
Downlink Beam Name	CSPOT	CSPOT	CSPOT	CSPOT	CSPOT
Downlink Frequency (GHz)	3 95	3 95	3 95	3 95	3 95
Downlink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Downlink Relative Contour Level (dB) Downlink Contour EIRP (dBW)	-4	-4	-4	-4	-4
Rain Rate (mm/hr)	34 6 42	34 6 42	34 6 42	34 6 42	34 6 42
ADJACENT SATELLITE 1	42	42	42	42	42
Satellite 1 Orbital Location	31 0E	31 0E	31 0E	31 0E	31 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
ADJACENT SATELLITE 2					
Satellite 1 Orbital Location	35 0E	35 0E	35 0E	35 0E	35 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
CARRIER INFORMATION					
Carrier ID	36M0F3F	36M0G7W	10M3G7W	100KG7W	41M0G7W
Carrier Modulation	TV/FM	QPSK	QPSK	QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	4	N/A	N/A	N/A	N/A
Information Rate(kbps) Code Rate	N/A	24575	6000	64	31490
	N/A 36000	1/2x188/204 30133	1/2x188/204	1/2x239/256	1/2x188/204 34170 0
Occupied Bandwidth(kHz) Allocated Bandwidth(kHz)	36000	30133 36000	6771 1 10300	75 4 100	34170 0 41000
Minimum C/N, Clear Sky (dB)	10	3 36	3 87	2 99	3 4
Minimum C/N, Rain (dB)	10	3 36	3 57	2 79	34
UPLINK EARTH STATION	10	5.50	551	219	54
Earth Station Diameter (meters)	11 0	61	24	24	70
Earth Station Gain (dBi)	55.4	49.4	41.9	41.9	51.0
Earth Station Elevation Angle	20	20	20	20	20
DOWNLINK EARTH STATION					
Earth Station Diameter (meters)	81	35	61	61	37
Earth Station Gain (dBi)	49 3	41 1	46 5	46 5	41 2
Earth Station G/T (dB/K)	28 4	21 0	26 2	26 2	20 9
Earth Station Elevation Angle	20	20	20	20	20
LINK FADE TYPE	Clear Sky	Clear Sky	Clear Sky	Clear Sky	Clear Sky
UPLINK PERFORMANCE					
Uplink Earth Station EIRP (dBW)					
	78 6	73 6	64 1	44 0	73 6
Uplink Path Loss, Clear Sky (dB)	-200 2	-200 2	-200 2	-200 2	-200 2
Uplink Rain Attenuation	-200 2 0 0	-200 2 0 0	-200 2 0 0	-200 2 0 0	-200 2 0 0
Uplink Rain Attenuation Satellite G/T(dB/K)	-200 2 0 0 -11 0	-200 2 0 0 -11 0	-200 2 0 0 -11 0	-200 2 0 0 -11 0	-200 2 0 0 -11 0
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz)	-200 2 0 0 -11 0 228 6	-200 2 0 0 -11 0 228 6	-200 2 0 0 -11 0 228 6	-200 2 0 0 -11 0 228 6	-200 2 0 0 -11 0 228 6
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz)	-200 2 0 0 -11 0 228 6 -75 6	-200 2 0 0 -11 0 228 6 -74 8	-200 2 0 0 -11 0 228 6 -68 3	-200 2 0 0 -11 0 228 6 -48 8	-200 2 0 0 -11 0 228 6 -75 3
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB)	-200 2 0 0 -11 0 228 6	-200 2 0 0 -11 0 228 6	-200 2 0 0 -11 0 228 6	-200 2 0 0 -11 0 228 6	-200 2 0 0 -11 0 228 6
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE	-200 2 0 0 -11 0 228 6 -75 6	-200 2 0 0 -11 0 228 6 -74 8	-200 2 0 0 -11 0 228 6 -68 3	-200 2 0 0 -11 0 228 6 -48 8	-200 2 0 0 -11 0 228 6 -75 3
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB)	-200 2 0 0 -11 0 228 6 -75 6 20 4	-200 2 0 0 -11 0 228 6 -74 8 16 2	-200 2 0 0 -11 0 228 6 -68 3 13 2	-200 2 0 0 -11 0 228 6 -48 8 12 6	-200 2 0 0 -11 0 228 6 -75 3 15 7
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW)	-200 2 0 0 -11 0 228 6 -75 6 20 4 -34 6	-200 2 0 0 -11 0 228 6 -74 8 16 2 34 6	-200 2 0 0 -11 0 228 6 -68 3 13 2 25 1	-200 2 0 0 -11 0 228 6 -48 8 12 6 4 9	-200 2 0 0 -11 0 228 6 -75 3 15 7 34 6
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation	-200 2 0 0 -11 0 228 6 -75 6 20 4 	-200 2 0 0 -11 0 228 6 -74 8 16 2 34 6 -0 5	-200 2 0 0 -11 0 228 6 -68 3 13 2 25 1 -0 5	-200 2 0 0 -11 0 228 6 -48 8 12 6 4 9 -0 5	-200 2 0 0 -11 0 228 6 -75 3 15 7 -15 7 -196 3 0 0
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K)	-200 2 0 0 -11 0 228 6 -75 6 20 4 -05 -196 3 0 0 28 4	-200 2 0 0 -11 0 228 6 -74 8 16 2 34 6 -0 5 -196 3 0 0 21 0	-200 2 0 0 -11 0 228 6 -68 3 13 2 25 1 -0 5 -196 3 0 0 26 2	-200 2 0 0 -11 0 228 6 -48 8 12 6 -0 5 -196 3 0 0 26 2	-200 2 0 0 -11 0 228 6 -75 3 15 7 -15 7 -196 3 0 0 20 9
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz)	-200 2 0 0 -11 0 228 6 -75 6 20 4 -05 -196 3 0 0 28 4 228 6	-200 2 0 0 -11 0 228 6 -74 8 16 2 34 6 -0 5 -196 3 0 0 21 0 228 6	-200 2 0 0 -11 0 228 6 -68 3 13 2 25 1 -0 5 -196 3 0 0 26 2 228 6	-200 2 0 0 -11 0 228 6 -48 8 12 6 -0 5 -196 3 0 0 26 2 228 6	-200 2 0 0 -11 0 228 6 -75 3 15 7 -15 7 -196 3 0 0 20 9 228 6
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz)	-200 2 0 0 -11 0 228 6 -75 6 20 4 - 34 6 -0 5 -196 3 0 0 28 4 228 6 -75 6	-200 2 0 0 -11 0 228 6 -74 8 16 2 34 6 -0 5 -196 3 0 0 21 0 228 6 -74 8	-200 2 0 0 -11 0 228 6 -68 3 13 2 25 1 -0 5 -196 3 0 0 26 2 228 6 -68 3	-200 2 0 0 -11 0 228 6 -48 8 12 6 4 9 -0 5 -196 3 0 0 26 2 228 6 -48 8	-200 2 0 0 -11 0 228 6 -75 3 15 7 34 6 -0 5 -196 3 0 0 20 9 228 6 -75 3
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB)	-200 2 0 0 -11 0 228 6 -75 6 20 4 -05 -196 3 0 0 28 4 228 6	-200 2 0 0 -11 0 228 6 -74 8 16 2 34 6 -0 5 -196 3 0 0 21 0 228 6	-200 2 0 0 -11 0 228 6 -68 3 13 2 25 1 -0 5 -196 3 0 0 26 2 228 6	-200 2 0 0 -11 0 228 6 -48 8 12 6 -0 5 -196 3 0 0 26 2 228 6	-200 2 0 0 -11 0 228 6 -75 3 15 7 -15 7 -196 3 0 0 20 9 228 6
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE	-200 2 0 0 -11 0 228 6 -75 6 20 4 -0 5 -196 3 0 0 28 4 228 6 -75 6 19 2	-200 2 0 0 -11 0 228 6 -74 8 16 2 34 6 -0 5 -196 3 0 0 21 0 228 6 -74 8 12 6	-200 2 0 0 -11 0 228 6 -68 3 13 2 25 1 -0 5 -196 3 0 0 26 2 228 6 -68 3 14 7	-200 2 0 0 -11 0 228 6 -48 8 12 6 -49 -0 5 -196 3 0 0 26 2 228 6 -48 8 14 2	-200 2 0 0 -11 0 228 6 -75 3 15 7 34 6 -0 5 -196 3 0 0 20 9 228 6 -75 3 12 0
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB)	-200 2 0 0 -11 0 228 6 -75 6 20 4 -05 -196 3 0 0 28 4 228 6 -75 6 19 2 20 4	-200 2 0 0 -11 0 228 6 -74 8 16 2 -34 6 -0 5 -196 3 0 0 21 0 228 6 -74 8 12 6 	-200 2 0 0 -11 0 228 6 -68 3 13 2 25 1 -0 5 -196 3 0 0 26 2 228 6 -68 3 14 7 13 2	-200 2 0 0 -11 0 228 6 -48 8 12 6 - - 196 3 0 0 26 2 228 6 -48 8 14 2 - 12 6	-200 2 0 0 -11 0 228 6 -75 3 15 7 -196 3 0 0 20 9 228 6 -75 3 12 0 -15 7
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Path Loss, Clear Sky (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attennation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB)	-200 2 0 0 -11 0 228 6 -75 6 20 4 -34 6 -0 5 -196 3 0 0 28 4 228 6 -75 6 19 2 -20 4 19 2	-200 2 0 0 -11 0 228 6 -74 8 16 2 34 6 -0 5 -196 3 0 0 21 0 228 6 -74 8 12 6 16 2 12 6	-200 2 0 0 -11 0 228 6 -68 3 13 2 25 1 -0 5 -196 3 0 0 26 2 228 6 -68 3 14 7 13 2 14 7	-200 2 0 0 -11 0 228 6 -48 8 12 6 4 9 -0 5 -196 3 0 0 26 2 228 6 -48 8 14 2 12 6 14 2	-200 2 0 0 -11 0 228 6 -75 3 15 7 34 6 -0 5 -196 3 0 0 20 9 228 6 -75 3 12 0
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dB/K). Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dB/K / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Intermodulation (dB)	-200 2 0 0 -11 0 228 6 -75 6 20 4 	-200 2 0 0 -11 0 228 6 -74 8 16 2 34 6 -0 5 -196 3 0 0 21 0 228 6 -74 8 12 6 16 2 12 6 N/A	-200 2 0 0 -11 0 228 6 -68 3 13 2 25 1 -0 5 -196 3 0 0 26 2 228 6 -68 3 14 7 13 2 14 7 17 4	-200 2 0 0 -11 0 228 6 -48 8 12 6 -49 -0 5 -196 3 0 0 26 2 228 6 -48 8 14 2 12 6 14 2 16 8	-200 2 0 0 -11 0 228 6 -75 3 15 7 34 6 -0 5 -196 3 0 0 20 9 228 6 -75 3 12 0 15 7 12 0 N/A
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Ditermodulation (dB) C/I Uplink Co-Channel (dB)*	-200 2 0 0 -11 0 228 6 -75 6 20 4 -75 6 -0 5 -196 3 0 0 28 4 228 6 -75 6 19 2 -75 6 19 2 -75 6 19 2 -75 6 -75 6 -75 7 -196 3 0 0 -75 6 -75 6 -75 6 -196 3 0 0 -75 6 -75 6 -75 6 -196 3 0 0 -75 6 -192 4 -75 6 -75 6 -196 3 0 0 -75 6 -192 4 -75 6 -75 6 -75 6 -75 6 -196 3 0 0 -75 6 -192 4 -75 6 -75 6	-200 2 0 0 -11 0 228 6 -74 8 16 2 34 6 -0 5 -196 3 0 0 21 0 228 6 -74 8 12 6 12 6 N/A 27 6	-200 2 0 0 -11 0 228 6 -68 3 13 2 25 1 -0 5 -196 3 0 0 26 2 228 6 -68 3 14 7 13 2 14 7 17 4 27 0	-200 2 0 0 -11 0 228 6 -48 8 12 6 4 9 -0 5 -196 3 0 0 26 2 228 6 -48 8 14 2 12 6 14 2 16 8 27 0	-200 2 0 0 -11 0 228 6 -75 3 15 7 34 6 -0 5 -196 3 0 0 20 9 228 6 -75 3 12 0 15 7 12 0 N/A 27 0
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)*	-200 2 0 0 -11 0 228 6 -75 6 20 4 -0 5 -196 3 0 0 28 4 228 6 -75 6 19 2 -20 4 19 2 -20 4 19 2 N/A 27 6 27 6	-200 2 0 0 -11 0 228 6 -74 8 16 2 34 6 -0 5 -196 3 0 0 21 0 228 6 -74 8 12 6 16 2 12 6 N/A 27 6 27 6	-200 2 0 0 -11 0 228 6 -68 3 13 2 25 1 -0 5 -196 3 0 0 26 2 228 6 -68 3 14 7 13 2 14 7 13 2 14 7 17 4 27 0 27 0	-200 2 0 0 -11 0 228 6 -48 8 12 6 4 9 -0 5 -196 3 0 0 26 2 228 6 -48 8 14 2 12 6 14 2 12 6 14 2 16 8 27 0 27 0	-200 2 0 0 -11 0 228 6 -75 3 15 7 -196 3 0 0 20 9 228 6 -75 3 12 0 -15 7 12 0 N/A 27 0 27 0
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB)	-200 2 0 0 -11 0 228 6 -75 6 20 4 -34 6 -0 5 -196 3 0 0 28 4 228 6 -75 6 19 2 -28 4 228 6 -75 6 19 2 -20 4 19 2 N/A 27 6 27 6 19 7	-200 2 0 0 -11 0 228 6 -74 8 16 2 34 6 -0 5 -196 3 0 0 21 0 228 6 -74 8 12 6 N/A 27 6 15 5	-200 2 0 0 -11 0 228 6 -68 3 13 2 25 1 -0 5 -196 3 0 0 26 2 228 6 -68 3 14 7 13 2 14 7 17 4 27 0 27 0 12 5	-200 2 0 0 -11 0 228 6 -48 8 12 6 49 -0 5 -196 3 0 0 26 2 228 6 -48 8 14 2 12 6 14 2 16 8 27 0 27 0 11 9	-200 2 0 0 -11 0 228 6 -75 3 15 7 34 6 -0 5 -196 3 0 0 20 9 228 6 -75 3 12 0 N/A 27 0 27 0 15 0
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dB/K). Boltzman Constant(dB/K). Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB)	-200 2 0 0 -11 0 228 6 -75 6 20 4 	-200 2 0 0 -11 0 228 6 -74 8 16 2 34 6 -0 5 -196 3 0 0 21 0 228 6 -74 8 12 6 12 6 N/A 27 6 27 6 15 5 8 1	-200 2 0 0 -11 0 228 6 -68 3 13 2 25 1 -0 5 -196 3 0 0 26 2 228 6 -68 3 14 7 13 2 14 7 17 4 27 0 27 0 12 5 12 8	-200 2 0 0 -11 0 228 6 -48 8 12 6 4 9 -0 5 -196 3 0 0 26 2 228 6 -48 8 14 2 12 6 14 2 16 8 27 0 27 0 11 9 12 2	-200 2 0 0 -11 0 228 6 -75 3 15 7
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Dutermodulation (dB) C/I Uplink Adjacent Satellite 1 (dB)	-200 2 0 0 -11 0 228 6 -75 6 20 4 -34 6 -0 5 -196 3 0 0 28 4 228 6 -75 6 19 2 -20 4 19 2 N/A 27 6 27 6 19 7 18 1 19 7	-200 2 0 0 -11 0 228 6 -74 8 16 2 34 6 -0 5 -196 3 0 0 21 0 228 6 -74 8 12 6 16 2 12 6 N/A 27 6 27 6 15 5 8 1 15 5	-200 2 0 0 -11 0 228 6 -68 3 13 2 25 1 -0 5 -196 3 0 0 26 2 228 6 -68 3 14 7 13 2 14 7 17 4 27 0 27 0 12 5 12 8 12 5	-200 2 0 0 -11 0 228 6 -48 8 12 6 -49 -0 5 -196 3 0 0 26 2 228 6 -48 8 14 2 12 6 14 2 16 8 27 0 27 0 27 0 11 9 12 2 11 9	-200 2 0 0 -11 0 228 6 -75 3 15 7 34 6 -0 5 -196 3 0 0 20 9 228 6 -75 3 12 0 15 7 12 0 N/A 27 0 27 0 15 0 9 3 15 0
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dB/K). Boltzman Constant(dB/K). Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB)	-200 2 0 0 -11 0 228 6 -75 6 20 4 	-200 2 0 0 -11 0 228 6 -74 8 16 2 34 6 -0 5 -196 3 0 0 21 0 228 6 -74 8 12 6 12 6 N/A 27 6 27 6 15 5 8 1	-200 2 0 0 -11 0 228 6 -68 3 13 2 25 1 -0 5 -196 3 0 0 26 2 228 6 -68 3 14 7 13 2 14 7 17 4 27 0 27 0 12 5 12 8	-200 2 0 0 -11 0 228 6 -48 8 12 6 4 9 -0 5 -196 3 0 0 26 2 228 6 -48 8 14 2 12 6 14 2 16 8 27 0 27 0 11 9 12 2	-200 2 0 0 -11 0 228 6 -75 3 15 7
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C/ N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB)	-200 2 0 0 -11 0 228 6 -75 6 20 4 -0 5 -196 3 0 0 28 4 228 6 -75 6 19 6 3 0 0 28 4 -228 6 -75 6 19 2 -20 4 19 2 -20 4 19 2 -20 4 19 2 -20 4 19 2 -27 6 27 6 27 6 27 6 27 6 -27 6 -27 6 -27 6 -27 6 -27 6 -27 6 -27 6 -27 7 -28 7 -28 7 -28 7 -28 7 -28 7 -28 7 -29 7 -28 7 -29 7 -28 7 -29 7 -28 7 -28 7 -29 7 -28 7 -29 7 -28 7 -29 7 -29 7 -29 7 -29 7 -29 7 -29 7 -29 7 -20 7 -27 6 -27 7 -27 7 -27 7 -27 7 -27 7 -27 7 -27 7 -27	-200 2 0 0 -11 0 228 6 -74 8 16 2 34 6 -0 5 -196 3 0 0 21 0 228 6 -74 8 12 6 12 6 N/A 27 6 27 6 15 5 8 1 15 5 12 9	-200 2 0 0 -11 0 228 6 -68 3 13 2 25 1 -0 5 -196 3 0 0 26 2 228 6 -68 3 14 7 13 2 14 7 17 4 27 0 27 0 12 5 12 8 12 5 14 6	-200 2 0 0 -11 0 228 6 -48 8 12 6 4 9 -0 5 -196 3 0 0 26 2 228 6 -48 8 14 2 12 6 14 2 16 8 27 0 27 0 11 9 12 2 11 9 14 1	-200 2 0 0 -11 0 228 6 -75 3 15 7 34 6 -0 5 -196 3 0 0 20 9 228 6 -75 3 12 0 15 7 12 0 N/A 27 0 27 0 15 0 12 4
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) ComPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB)	-200 2 0 0 -11 0 228 6 -75 6 20 4 34 6 -0 5 -196 3 0 0 28 4 228 6 -75 6 19 2 -20 4 19 2 N/A 27 6 27 6 27 6 19 7 18 1 19 7 19 5 -11 0 -20 4 -27 6 -27 7 -28 4 -28 6 -27 6 -19 7 -19 7 -19 7 -19 7 -19 7 -19 7 -19 7 -19 7 -19 7 -27 6 -27 6 -19 7 -19 7 -11 -19 7 -19 7 -11 -19 7 -11 -19 7 -11 -11 -11 -11 -11 -11 -11 -11 -11 -11	-200 2 0 0 -11 0 228 6 -74 8 16 2 34 6 -0 5 -196 3 0 0 21 0 228 6 -74 8 12 6 16 2 12 6 N/A 27 6 27 6 15 5 8 1 15 5 12 9 4 6	-200 2 0 0 -11 0 228 6 -68 3 13 2 25 1 -0 5 -196 3 0 0 26 2 228 6 -68 3 14 7 13 2 14 7 17 4 27 0 27 0 12 5 12 8 12 5 14 6 5 2	-200 2 0 0 -11 0 228 6 -48 8 12 6 4 9 -0 5 -196 3 0 0 26 2 228 6 -48 8 14 2 12 6 14 2 16 8 27 0 27 0 11 9 12 2 11 9 14 1 4 6	-200 2 0 0 -11 0 228 6 -75 3 15 7 34 6 -0 5 -196 3 0 0 20 9 228 6 -75 3 12 0 N/A 27 0 15 7 12 0 N/A 27 0 15 0 9 3 15 0 12 4
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+f) Composite (dB) Required System Margin (dB)	-200 2 0 0 -11 0 228 6 -75 6 20 4 -0 5 -196 3 0 0 28 4 228 6 -75 6 19 6 3 0 0 28 4 -228 6 -75 6 19 2 -20 4 19 2 N/A 27 6 27 6 27 6 19 7 18 1 19 7 19 5	-200 2 0 0 -11 0 228 6 -74 8 16 2 34 6 -0 5 -196 3 0 0 21 0 228 6 -74 8 12 6 12 6 N/A 27 6 27 6 15 5 8 1 15 5 12 9	-200 2 0 0 -11 0 228 6 -68 3 13 2 25 1 -0 5 -196 3 0 0 26 2 228 6 -68 3 14 7 13 2 14 7 17 4 27 0 27 0 12 5 12 8 12 5 14 6	-200 2 0 0 -11 0 228 6 -48 8 12 6 4 9 -0 5 -196 3 0 0 26 2 228 6 -48 8 14 2 12 6 14 2 16 8 27 0 27 0 11 9 12 2 11 9 14 1	-200 2 0 0 -11 0 228 6 -75 3 15 7 34 6 -0 5 -196 3 0 0 20 9 228 6 -75 3 12 0 15 7 12 0 N/A 27 0 27 0 15 0 12 4
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) ComPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB)	-200 2 0 0 -11 0 228 6 -75 6 20 4 -34 6 -0 5 -196 3 0 0 28 4 228 6 -75 6 19 2 -20 4 19 2 -75 6 19 2 -20 4 19 2 N/A 27 6 27 6 19 7 18 1 19 7 19 7 19 5 -11 0 -11 0 -11 0 -11 0 -11 0 -28 6 -75 6 -20 4 -27 6 -27 6 -20 4 -28 7 -28 7 -20 4 -28 7 -20 4 -28 7 -20 4 -28 7 -28 7 -27 6 -20 4 -27 6 -27 6 -19 7 -19 7 -19 7 -19 7 -19 7 -19 7 -19 7 -20 4 -27 6 -27 6 -19 7 -19 7 -19 7 -19 7 -19 7 -19 7 -19 7 -19 7 -19 7 -27 6 -19 7 -19 7 -10 -10 -10 -10 -10	-200 2 0 0 -11 0 228 6 -74 8 16 2 34 6 -0 5 -196 3 0 0 21 0 228 6 -74 8 12 6 16 2 12 6 N/A 27 6 27 6 15 5 8 1 15 5 12 9 4 6 -1 0	-200 2 0 0 -11 0 228 6 -68 3 13 2 25 1 -0 5 -196 3 0 0 26 2 228 6 -68 3 14 7 13 2 14 7 17 4 27 0 27 0 12 5 12 8 12 5 14 6 5 2 -1 0	-200 2 0 0 -11 0 228 6 -48 8 12 6 4 9 -0 5 -196 3 0 0 26 2 228 6 -48 8 14 2 12 6 14 2 16 8 27 0 27 0 11 9 12 2 11 9 14 1 -4 6 -1 0	-200 2 0 0 -11 0 228 6 -75 3 15 7 34 6 -0 5 -196 3 0 0 20 9 228 6 -75 3 12 0 15 7 12 0 N/A 27 0 27 0 15 0 9 3 15 0 12 4 4 8 -1 0
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Uplink (dB) C/I Uplink (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB)	-200 2 0 0 -11 0 228 6 -75 6 20 4 -34 6 -0 5 -196 3 0 0 28 4 228 6 -75 6 19 2 -20 4 19 2 N/A 27 6 27 6 19 7 18 1 19 7 19 5 -11 4 -1 0 10 4	-200 2 0 0 -11 0 228 6 -74 8 16 2 34 6 -0 5 -196 3 0 0 21 0 228 6 -74 8 12 6 12 6 N/A 27 6 27 6 27 6 15 5 8 1 15 5 12 9 4 6 -1 0 3 6	-200 2 0 0 -11 0 228 6 -68 3 13 2 25 1 -0 5 -196 3 0 0 26 2 228 6 -68 3 14 7 13 2 14 7 17 4 27 0 27 0 12 5 12 8 12 5 12 8 12 5 14 6 5 2 -1 0 4 2	-200 2 0 0 -11 0 228 6 -48 8 12 6 4 9 -0 5 -196 3 0 0 26 2 228 6 -48 8 14 2 12 6 14 2 16 8 27 0 27 0 27 0 27 0 11 9 12 2 11 9 14 1 -4 6 -1 0 3 6	-200 2 0 0 -11 0 228 6 -75 3 15 7 34 6 -0 5 -196 3 0 0 20 9 228 6 -75 3 12 0 15 7 12 0 N/A 27 0 27 0 15 0 15 0 15 4 4 8 -1 0 3 8
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink C-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB)	-200 2 0 0 -11 0 228 6 -75 6 20 4 -34 6 -0 5 -196 3 0 0 28 4 228 6 -75 6 19 2 -20 4 19 2 N/A 27 6 27 6 19 7 18 1 19 7 19 5 -11 4 -1 0 10 4 -10 0	-200 2 0 0 -11 0 228 6 -74 8 16 2 34 6 -0 5 -196 3 0 0 21 0 228 6 -74 8 12 6 16 2 12 6 N/A 27 6 27 6 15 5 8 1 15 5 12 9 4 6 -1 0 3 6 -3 4	-200 2 0 0 -11 0 228 6 -68 3 13 2 25 1 -0 5 -196 3 0 0 26 2 228 6 -68 3 14 7 13 2 14 7 17 4 27 0 27 0 12 5 12 8 12 5 12 8 12 5 14 6 5 2 -1 0 4 2 -3 9	-200 2 0 0 -11 0 228 6 -48 8 12 6 4 9 -0 5 -196 3 0 0 26 2 228 6 -48 8 14 2 12 6 14 2 16 8 27 0 27 0 11 9 12 2 11 9 14 1 4 6 -1 0 3 6 -3 0	-200 2 0 0 -11 0 228 6 -75 3 15 7 34 6 -0 5 -196 3 0 0 20 9 228 6 -75 3 12 0 15 7 12 0 N/A 27 0 27 0 15 0 12 4 4 8 -1 0 3 8 -3 4
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dB/K). Boltzman Constant(dB/K). Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net (/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB)	-200 2 0 0 -11 0 228 6 -75 6 20 4 -34 6 -0 5 -196 3 0 0 28 4 228 6 -75 6 19 2 -20 4 19 2 -75 6 19 2 -20 4 19 2 N/A 27 6 27 6 19 7 18 1 19 7 19 5 -11 0 10 4 -10 0 0 4	-200 2 0 0 -11 0 228 6 -74 8 16 2 34 6 -0 5 -196 3 0 0 21 0 228 6 -74 8 12 6 N/A 27 6 15 5 8 1 15 5 12 9 4 6 -1 0 3 6 -3 4 0 2	-200 2 0 0 -11 0 228 6 -68 3 13 2 25 1 -0 5 -196 3 0 0 26 2 228 6 -68 3 14 7 13 2 14 7 17 4 27 0 27 0 12 5 12 8 12 5 14 6 5 2 -1 0 4 2 -3 9 0 3	-200 2 0 0 -11 0 228 6 -48 8 12 6 4 9 -0 5 -196 3 0 0 26 2 228 6 -48 8 14 2 12 6 14 2 16 8 27 0 27 0 11 9 12 2 11 9 12 2 11 9 14 1 4 6 -1 0 3 6 -3 0 0 6	-200 2 0 0 -11 0 228 6 -75 3 15 7 34 6 -0 5 -196 3 0 0 20 9 228 6 -75 3 12 0 N/A 27 0 27 0 15 7 12 0 N/A 27 0 15 0 9 3 15 0 9 3 15 0 9 3 15 0 9 3 15 2 4 8 -1 0 3 8 -3 4 0 4
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Required System Margin (dB) Number of Carriers	-200 2 0 0 -11 0 228 6 -75 6 20 4 -34 6 -0 5 -196 3 0 0 28 4 228 6 -75 6 19 2 -20 4 19 2 -75 6 19 2 -20 4 19 2 N/A 27 6 27 6 19 7 18 1 19 7 19 5 -11 0 10 4 -10 0 0 4	-200 2 0 0 -11 0 228 6 -74 8 16 2 34 6 -0 5 -196 3 0 0 21 0 228 6 -74 8 12 6 N/A 27 6 15 5 8 1 15 5 12 9 4 6 -1 0 3 6 -3 4 0 2	-200 2 0 0 -11 0 228 6 -68 3 13 2 25 1 -0 5 -196 3 0 0 26 2 228 6 -68 3 14 7 13 2 14 7 17 4 27 0 27 0 12 5 12 8 12 5 14 6 5 2 -1 0 4 2 -3 9 0 3	-200 2 0 0 -11 0 228 6 -48 8 12 6 4 9 -0 5 -196 3 0 0 26 2 228 6 -48 8 14 2 12 6 14 2 16 8 27 0 27 0 11 9 12 2 11 9 12 2 11 9 14 1 4 6 -1 0 3 6 -3 0 0 6	-200 2 0 0 -11 0 228 6 -75 3 15 7 34 6 -0 5 -196 3 0 0 20 9 228 6 -75 3 12 0 N/A 27 0 27 0 15 7 12 0 N/A 27 0 15 0 9 3 15 0 9 3 15 0 9 3 15 0 9 3 15 2 4 8 -1 0 3 8 -3 4 0 4
Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Intermodulation (dB) C/I Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers CARRIER DENSITY LEVELS	-200 2 0 0 -11 0 228 6 -75 6 20 4 -34 6 -0 5 -196 3 0 0 28 4 228 6 -75 6 19 2 -20 4 19 2 N/A 27 6 27 6 19 7 18 1 19 7 19 5 -11 0 10 4 -10 0 0 4 1	-200 2 0 0 -11 0 228 6 -74 8 16 2 34 6 -0 5 -196 3 0 0 21 0 228 6 -74 8 12 6 16 2 12 6 N/A 27 6 27 6 15 5 8 1 15 5 12 9 4 6 -1 0 3 6 -3 4 0 2 1 1 5	-200 2 0 0 -11 0 228 6 -68 3 13 2 25 1 -0 5 -196 3 0 0 26 2 228 6 -68 3 14 7 13 2 14 7 17 4 27 0 27 0 12 5 12 8 12 5 14 6 5 2 -1 0 4 2 -3 9 0 3 4	-200 2 0 0 -11 0 228 6 -48 8 12 6 4 9 -0 5 -196 3 0 0 26 2 228 6 -48 8 14 2 12 6 14 2 12 6 14 2 16 8 27 0 27 0 27 0 27 0 27 0 27 0 11 9 12 2 11 9 14 1 4 6 -1 0 3 6 -3 0 0 6 410	-200 2 0 0 -11 0 228 6 -75 3 15 7

Exhibit 5-3: C-Band Global Uplink/Hemi Downlink

UPLINK BEAM INFORMATION				
Uplink Beam Name	GLOBAL	GLOBAL	GLOBAL	GLOBAL
Uplink Frequency (GHz)	6175	6 175	6 175	6175
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Uplink Relative Contour Level (dB)	-4	-4	-4	-4
Uplink Contour G/T (dB/K)	-11	-11	-11	-11
Uplink SFD (dBW/m2)	-83 3	-89 3	-83 3	-83 3
Rain Rate (mm/hr)	42	42	42	42
DOWNLINK BEAM INFORMATION	IIII) (I			IIII) (I
Downlink Beam Name	HEMI	HEMI	HEMI	HEMI
Downlink Frequency (GHz) Downlink Beam Polarization	3 95 CIRCULAR	3 95 CIRCULAR	3 95 CIRCULAR	3 95 CIRCULAR
Downlink Beam Polarization Downlink Relative Contour Level (dB)	-6	-6	-6	-6
Downlink Contour EIRP (dBW)	31.5	31.5	31.5	31.5
Rain Rate (mm/hr)	42	42	42	42
ADJACENT SATELLITE 1				
Satellite 1 Orbital Location	31 OE	31 0E	31 0E	31 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0
ADJACENT SATELLITE 2				
Satellite 1 Orbital Location	35 0E	35 0E	35 0E	35 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0 0	-32 0 0	-32 0 0	-32 0 0
Downlink Polarization Advantage (dB) CARRIER INFORMATION	U	U	U	U
CARRIER INFORMATION Carrier ID	36M0F3F	36M0G7W	10M3G7W	100KG7W
Carrier Modulation	TV/FM	QPSK	QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	4	N/A	N/A	N/A
Information Rate(kbps)	N/A	24575	6000	64
Code Rate	N/A	1/2x188/204	1/2x188/204	1/2x239/256
Occupied Bandwidth(kHz)	36000	30133	6771 1	75 4
Allocated Bandwidth(kHz)	36000	36000	10300	100
Minimum C/N, Clear Sky (dB)	10	3 36	3 87	2 99
Minimum C/N, Rain (dB)	10	3 36	3 57	2 79
UPLINK EARTH STATION				
Earth Station Diameter (meters)	13 0	70	24	24
Earth Station Gain (dBi)	56 4	51 0	41 9	41 9
Earth Station Elevation Angle	20	20	20	20
DOWNLINK EARTH STATION		15		
Earth Station Diameter (meters)	11 0 51 9	4 5 43 9	8 1 49 3	8 1 49 3
Earth Station Gain (dBi) Earth Station G/T (dB/K)	31 0	23 6	28 4	28 4
Earth Station Corr (dBA)	20	20	20	20 4
LINK FADE TYPE	Clear Sky	Clear Sky	Clear Sky	Clear Sky
UPLINK PERFORMANCE				
Uplink Earth Station EIRP (dBW)	79 6	73 6	65 8	45
Uplink Path Loss, Clear Sky (dB)	-200 2	-200 2	-200 2	-200 2
Uplink Rain Attenuation	0 0	0 0	0 0	0 0
Satellite G/T(dB/K)	-11 0	-11 0	-11 0	-11 0
Boltzman Constant(dBW/K-Hz)	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8
Uplink C/N(dB)	21 4	16 2	14 9	13 7
DOWNLINK PERFORMANCE	31 5	31 5	21.7	09
Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB)	-0.5	-0.5	-0 5	-0.5
Downlink Path Loss, Clear Sky (dB)	-196 3	-196 3	-196 3	-196 3
Downlink Rain Attenuation	00	00	00	00
Earth Station G/T (dB/K)	31 0	23 6	28 4	28 4
Boltzman Constant(dBW / K - Hz)	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8
Downlink C / N(dB)	18 7	12 1	13 6	12 3
COMPOSITE LINK PERFORMANCE				
C/N Uplink (dB)	21 4	162	14 9	13 7
C/N Downlink (dB)	18 7	121	13 6	12 3
C/I Intermodulation (dB)	N/A	N/A	22 1	20 9
C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)*	N/A 27 0	N/A 27 0	277	27 0
C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)*	N/A 27 0 27 0	N/A 27 0 27 0	27 7 27 7	27 0 27 0
C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB)	N/A 27 0 27 0 20 7	N/A 27 0 27 0 15 5	277 277 142	27 0 27 0 13
C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB)	N/A 27 0 27 0 20 7 17 8	N/A 27 0 27 0 15 5 9 8	277 277 142 125	27 0 27 0 13 11 2
C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB)	N/A 27 0 27 0 20 7 17 8 20 7	N/A 27 0 27 0 15 5 9 8 15 5	277 277 142 125 142	27 0 27 0 13 11 2 13
C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB)	N/A 27 0 27 0 20 7 17 8	N/A 27 0 27 0 15 5 9 8	277 277 142 125	27 0 27 0 13 11 2
C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Downlink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB)	N/A 27 0 27 0 20 7 17 8 20 7 18 8	N/A 27 0 27 0 15 5 9 8 15 5 12 3	277 277 142 125 142 138	27 0 27 0 13 11 2 13 12 6
C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Downlink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB)	N/A 27 0 27 0 20 7 17 8 20 7 18 8 11 5	N/A 27 0 27 0 15 5 9 8 15 5 12 3 5 1	277 277 142 125 142 138	27 0 27 0 13 11 2 13 12 6 4 6
C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB)	N/A 27 0 27 0 20 7 17 8 20 7 18 8	N/A 27 0 27 0 15 5 9 8 15 5 12 3	277 277 142 125 142 138	270 270 13 112 13 126 46 -10
C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Downlink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB)	N/A 27 0 27 0 20 7 17 8 20 7 18 8 11 5 -1 0	N/A 27 0 27 0 15 5 9 8 15 5 12 3 5 1 -1 0	277 277 142 125 142 138 59 -10	27 0 27 0 13 11 2 13 12 6 4 6
C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB)	N/A 27 0 27 0 20 7 17 8 20 7 18 8 11 5 -1 0 10 5	N/A 27 0 27 0 15 5 9 8 15 5 12 3 5 1 -1 0 4 1	277 277 142 125 142 138 59 -10 49	270 270 13 112 13 126 46 -10 36
C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB)	N/A 27 0 27 0 20 7 17 8 20 7 18 8 11 5 -1 0 10 5 -10 0	N/A 27 0 27 0 15 5 9 8 15 5 12 3 5 1 -1 0 4 1 -3 4	277 277 142 125 142 138 59 -10 49 -39	27 0 27 0 13 11 2 13 12 6 4 6 -1 0 3 6 -3 0
C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB)	N/A 27 0 27 0 20 7 17 8 20 7 18 8 11 5 -1 0 10 5 -10 0 0 5	N/A 27 0 27 0 15 5 98 15 5 12 3 5 1 -1 0 4 1 -3 4 0 7	277 277 142 125 142 138 59 -10 49 -39 10	27 0 27 0 13 11 2 13 12 6 -1 0 3 6 -3 0 0 6
C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers	N/A 27 0 27 0 20 7 17 8 20 7 18 8 11 5 -1 0 10 5 -10 0 0 5	N/A 27 0 27 0 15 5 98 15 5 12 3 5 1 -1 0 4 1 -3 4 0 7	277 277 142 125 142 138 59 -10 49 -39 10	27 0 27 0 13 11 2 13 12 6 -1 0 3 6 -3 0 0 6

Exhibit 5-4: C-Band Spot Uplink/C-Band Spot Downlink

UPLINK BEAM INFORMATION Uplink Beam Name	CSPOT	CSPOT	CSPOT	CSPOT	CSPOT
Uplink Frequency (GHz)	6175	6175	6 175	6175	6175
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Uplink Relative Contour Level (dB)	-4	-4	-4	-4	-4
Uplink Contour G/T (dB/K)	-1	-1	-1	-1	-1
Uplink SFD (dBW/m2)	-88 3	-92 3	-87 3	-873	-92 3
Rain Rate (mm/hr)	42	42	42	42	42
DOWNLINK BEAM INFORMATION					
Downlink Beam Name	CSPOT	CSPOT	CSPOT	CSPOT	CSPOT
Downlink Frequency (GHz)	3 95	3 95	3 95	3 95	3 95
Downlink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Downlink Relative Contour Level (dB) Downlink Contour EIRP (dBW)	-4 34 6	-4 34 6	_4 34 6	-4 34 6	-4 34 6
Rain Rate (mm/hr)	42	42	42	42	43
ADJACENT SATELLITE 1	42	42	42	72	45
Satellite 1 Orbital Location	31 0E	31 0E	31 0E	31 0E	31 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-387
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
ADJACENT SATELLITE 2					
Satellite 1 Orbital Location	35 0E	35 0E	35 0E	35 0E	35 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz) Downlink Polarization Advantage (dB)	-32 0 0	-32 0 0	-32 0 0	-32 0 0	-32 0 0
CARRIER INFORMATION	v	v	v	v	v
CARRIER INFORMATION Carrier ID	36M0F3F	36M0G7W	10M3G7W	100KG7W	41M0G7W
Carrier Modulation	TV/FM	OPSK	QPSK	QPSK	OPSK
Peak to Peak Bandwidth of EDS (MHz)	4	N/A	N/A	N/A	N/A
Information Rate(kbps)	N/A	24575	6000	64	31490
Code Rate	N/A	1/2x188/204	1/2x188/204	1/2x239/256	1/2x188/204
Occupied Bandwidth(kHz)	36000	30133	6771 1	75 4	34170 0
Allocated Bandwidth(kHz)	36000	36000	10300	100	41000
Minimum C/N, Clear Sky (dB)	10	3 36	3 87	2 99	34
Minimum C/N, Rain (dB)	10	3 36	3 57	2 79	34
UPLINK EARTH STATION					
Earth Station Diameter (meters)	70	45	24	24	50
Earth Station Gain (dBi)	51	46 5	41 9	41 9	47 5
Earth Station Elevation Angle	20	20	20	20	20
DOWNLINK EARTH STATION					
Earth Station Diameter (meters)	131	37	92	92	45
Earth Station Gain (dBi)	53 5	41 2	50 3	50 3	43 9
Earth Station Gain (dBi) Earth Station G/T (dB/K)	53 5 33 0	41 2 20 9	50 3 29 4	50 3 29 4	43 9 23 6
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle	53 5 33 0 20	41 2 20 9 20	50 3 29 4 20	50 3 29 4 20	43 9 23 6 20
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE	53 5 33 0	41 2 20 9	50 3 29 4	50 3 29 4	43 9 23 6
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE	53 5 33 0 20 Clear Sky	41 2 20 9 20 Clear Sky	50 3 29 4 20 Clear Sky	50 3 29 4 20 Clear Sky	43 9 23 6 20 Clear Sky
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW)	53 5 33 0 20	41 2 20 9 20	50 3 29 4 20	50 3 29 4 20	43 9 23 6 20
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE	53 5 33 0 20 Clear Sky 74 6	41 2 20 9 20 Clear Sky 70 6	50 3 29 4 20 Clear Sky 61 1	50 3 29 4 20 Clear Sky 41 0	43 9 23 6 20 Clear Sky 70 6
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB)	53 5 33 0 20 Clear Sky 74 6 -200 2	41 2 20 9 20 Clear Sky 70 6 -200 2	50 3 29 4 20 Clear Sky 61 1 -200 2	50 3 29 4 20 Clear Sky 41 0 -200 2	43 9 23 6 20 Clear Sky 70 6 -200 2
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz)	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0 -1 0 228 6 -75 6	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -74 8	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0 -1 0 228 6 -68 3	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0 -1 0 228 6 -48 8	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -75 3
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Stellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB)	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0 -1 0 228 6	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0 -1 0 228 6	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0 -1 0 228 6	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0 -10 228 6 -75 6 26 4	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -74 8 23 2	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0 -1 0 228 6 -68 3 20 2	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0 -1 0 228 6 -48 8 19 6	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -75 3 22 7
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Rath Loss, Clear Sky (dB) Uplink Rath Loss, Clear Sky (dB) Down Loss Rath Loss Rat	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0 -1 0 228 6 -75 6 26 4 34 6	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -74 8 23 2 34 6	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0 -1 0 228 6 -68 3 20 2 25 1	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0 -1 0 228 6 -48 8 19 6 4 9	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -75 3 22 7 34 6
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station C/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB)	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0 -1 0 228 6 -75 6 26 4 34 6 -0 5	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -74 8 23 2 34 6 -0 5	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0 -1 0 228 6 -68 3 20 2 25 1 -0 5	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0 -1 0 228 6 -48 8 19 6 -49 -0 5	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -75 3 22 7 34 6 -0 5
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elvation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB)	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0 -1 0 228 6 -75 6 26 4 34 6 -0 5 -196 3	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -74 8 23 2 34 6 -0 5 -196 3	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0 -1 0 228 6 -68 3 20 2 25 1 -0 5 -196 3	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0 -1 0 228 6 -48 8 19 6 4 9 -0 5 -196 3	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -75 3 22 7 34 6 -0 5 -196 3
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0 -1 0 228 6 -75 6 26 4 -0 5 -196 3 0 0	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -74 8 23 2 34 6 -0 5 -196 3 0 0	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0 -1 0 228 6 -68 3 20 2 25 1 -0 5 -196 3 0 0	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0 -1 0 228 6 -48 8 19 6 4 9 -0 5 -196 3 0 0	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -75 3 22 7 34 6 -0 5 -196 3 0 0
Earth Station Gain (dBi) Earth Station GT (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rath Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K)	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0 -1 0 228 6 -75 6 26 4 -0 5 -196 3 0 0 33 0	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -74 8 23 2 34 6 -0 5 -196 3 0 0 20 9	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0 -1 0 228 6 -68 3 20 2 25 1 -0 5 -196 3 0 0 29 4	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0 -1 0 228 6 -48 8 19 6 - 4 9 -0 5 -196 3 0 0 29 4	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -75 3 22 7 34 6 -0 5 -196 3 0 0 23 6
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station C/T (dB/K) Earth Station C/T (dB/K) Earth Station Ellevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz)	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0 -1 0 228 6 -75 6 26 4 34 6 -0 5 -196 3 0 0 33 0 228 6	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -74 8 23 2 34 6 -0 5 -196 3 0 0 20 9 228 6	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0 -1 0 228 6 -68 3 20 2 25 1 -0 5 -196 3 0 0 29 4 228 6	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0 -1 0 228 6 -48 8 19 6 -48 8 19 6 -0 5 -196 3 0 0 29 4 228 6	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -75 3 22 7 34 6 -0 5 -196 3 0 0 23 6 228 6
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink CIN(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz)	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0 -1 0 228 6 -0 5 -196 3 0 0 33 0 228 6 -75 6	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -74 8 23 2 34 6 -0 5 -196 3 0 0 20 9 228 6 -74 8	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0 -1 0 228 6 -68 3 20 2 25 1 -0 5 -196 3 0 0 29 4 228 6 -68 3	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0 -1 0 228 6 -48 8 19 6 49 -0 5 -196 3 0 0 29 4 228 6 -48 8	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -75 3 22 7 34 6 -0 5 -196 3 0 0 23 6 228 6 -75 3
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station C/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) Downlink PERFORMANCE Downlink Perform (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB)	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0 -1 0 228 6 -75 6 26 4 34 6 -0 5 -196 3 0 0 33 0 228 6	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -74 8 23 2 34 6 -0 5 -196 3 0 0 20 9 228 6	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0 -1 0 228 6 -68 3 20 2 25 1 -0 5 -196 3 0 0 29 4 228 6	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0 -1 0 228 6 -48 8 19 6 -48 8 19 6 -0 5 -196 3 0 0 29 4 228 6	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -75 3 22 7 34 6 -0 5 -196 3 0 0 23 6 228 6
Earth Station Gain (dBi) Earth Station GT (dB/K) Earth Station EIRvation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rath Loss, Clear Sky (dB) Uplink Rath Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EiRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / M(dB) Compositie Bandwidth (dB-Hz) Downlink C / N(dB)	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0 -1 0 228 6 -75 6 26 4 34 6 -0 5 -75 6 33 0 228 6 -75 6 23 8	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -74 8 23 2 34 6 -0 5 -196 3 0 0 20 9 228 6 -74 8 12 5	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0 -1 0 228 6 -68 3 20 2 25 1 -0 5 -196 3 0 0 29 4 228 6 -68 3 17 9	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0 -1 0 228 6 -48 8 19 6 4 9 -0 5 -196 3 0 0 29 4 228 6 -48 8 17 4	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -75 3 22 7 34 6 -0 5 -196 3 0 0 23 6 228 6 -75 3 14 7
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station C/T (dB/K) Earth Station Elrevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink CMB) Compositie LINK PERFORMANCE COMPOSITE LINK PERFORMANCE C/N Uplink (dB)	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0 -1 0 228 6 -75 6 26 4 34 6 -0 5 -196 3 0 0 33 0 228 6 -75 6 23 8 26 4	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -74 8 23 2 34 6 -0 5 -196 3 0 0 20 9 228 6 -74 8 12 5 23 2	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0 -1 0 228 6 -68 3 20 2 25 1 -0 5 -196 3 0 0 29 4 228 6 -68 3 17 9 20 2	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0 -1 0 228 6 -48 8 19 6 4 9 -0 5 -196 3 0 0 29 4 228 6 -48 8 17 4 19 6	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -75 3 22 7 34 6 -0 5 -196 3 0 0 23 6 228 6 -75 3 14 7 22 7
Earth Station Gain (dBi) Earth Station GT (dB/K) Earth Station EIRvation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rath Loss, Clear Sky (dB) Uplink Rath Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EiRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / M(dB) Compositie Bandwidth (dB-Hz) Downlink C / N(dB)	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0 -1 0 228 6 -75 6 26 4 34 6 -0 5 -75 6 33 0 228 6 -75 6 23 8	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -74 8 23 2 34 6 -0 5 -196 3 0 0 20 9 228 6 -74 8 12 5	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0 -1 0 228 6 -68 3 20 2 25 1 -0 5 -196 3 0 0 29 4 228 6 -68 3 17 9	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0 -1 0 228 6 -48 8 19 6 4 9 -0 5 -196 3 0 0 29 4 228 6 -48 8 17 4	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -75 3 22 7 34 6 -0 5 -196 3 0 0 23 6 228 6 -75 3 14 7
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station C/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) C/N Uplink (dB) C/N Uplink (dB)	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0 -1 0 228 6 -75 6 26 4 34 6 -0 5 -196 3 0 0 33 0 228 6 -75 6 23 8 26 4 23 8	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -74 8 23 2 34 6 -0 5 -196 3 0 0 20 9 228 6 -74 8 12 5 23 2 12 5	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0 -1 0 228 6 -68 3 20 2 25 1 -0 5 -196 3 0 0 29 4 228 6 -68 3 17 9 20 2 17 9	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0 -1 0 228 6 -48 8 19 6 4 9 -0 5 -196 3 0 0 29 4 228 6 -48 8 17 4 19 6 17 4	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -75 3 22 7 34 6 -0 5 -196 3 0 0 23 6 228 6 -75 3 14 7 22 7 14 7
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station C/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Uplink (dB) C/N Uplink (dB) C/N Intermodulation (dB)	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0 -1 0 228 6 -75 6 26 4 34 6 -0 5 -196 3 0 0 33 0 228 6 -75 6 23 8 26 4 23 8 N/A	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -74 8 23 2 34 6 -0 5 -196 3 0 0 20 9 228 6 -74 8 12 5 N/A	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0 -1 0 228 6 -68 3 20 2 25 1 -0 5 -196 3 0 0 29 4 228 6 -68 3 17 9 20 2 17 9 17 4	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0 -1 0 228 6 -48 8 19 6 49 -0 5 -196 3 0 0 29 4 228 6 -48 8 17 4 19 6 17 4 16 8	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -75 3 22 7 34 6 -0 5 -196 3 0 0 23 6 228 6 -75 3 14 7 N/A
Earth Station Gain (dBi) Earth Station GT (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rath Loss, Clear Sky (dB) Uplink Rath Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / M(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/N Downlink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink (cdB) C/I Uplink (cdB) C/I Uplink Co-Channel (dB)*	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0 -10 228 6 -75 6 26 4 34 6 -05 -196 3 0 0 33 0 228 6 -75 6 23 8 26 4 23 8 N/A 27 6	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -74 8 23 2 34 6 -0 5 -196 3 0 0 20 9 228 6 -74 8 12 5 23 2 12 5 N/A 27 6	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0 -1 0 228 6 -68 3 20 2 25 1 -0 5 -196 3 0 0 29 4 228 6 -68 3 17 9 20 2 17 9 17 4 27 0	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0 -1 0 228 6 -48 8 19 6 4 9 -0 5 -196 3 0 0 29 4 228 6 -48 8 17 4 19 6 17 4 16 8 27 0	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -75 3 22 7 34 6 -0 5 -196 3 0 0 23 6 228 6 -75 3 14 7 14 7 N/A 27 0
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station C/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rant Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Cain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)*	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0 -10 228 6 -75 6 26 4 34 6 -0 5 -196 3 0 0 33 0 228 6 -75 6 23 8 26 4 26 4 27 6 27 6 27 6	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -74 8 23 2 34 6 -0 5 -196 3 0 0 20 9 228 6 -74 8 12 5 23 2 23 2 12 5 N/A 27 6 27 6	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0 -1 0 228 6 -68 3 20 2 25 1 -0 5 -196 3 0 0 29 4 228 6 -68 3 17 9 20 2 17 9 17 4 27 0 27 0	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0 -1 0 228 6 -48 8 19 6 4 9 -0 5 -196 3 0 0 29 4 228 6 -48 8 17 4 19 6 17 4 19 6 17 4 16 8 27 0 27 0 27 0	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -75 3 22 7 34 6 -0 5 -196 3 0 0 23 6 228 6 -75 3 14 7 22 7 14 7 22 7 14 7 N/A 27 0 27 0
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station C/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Downlink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite I (dB)	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0 -10 228 6 -75 6 26 4 34 6 -0 5 -196 3 0 0 33 0 228 6 -75 6 23 8 26 4 23 8 N/A 27 6 27 6 15 7	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -74 8 23 2 34 6 -0 5 -196 3 0 0 20 9 228 6 -74 8 12 5 N/A 27 6 12 5	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0 -1 0 228 6 -68 3 20 2 25 1 -0 5 -196 3 0 0 29 4 228 6 -68 3 17 9 20 2 17 9 17 4 27 0 27 0 9 5	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0 -1 0 228 6 -48 8 19 6 4 9 -0 5 -196 3 0 0 29 4 228 6 -48 8 17 4 19 6 17 4 16 8 27 0 27 0 8 9	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -75 3 22 7 34 6 -0 5 -196 3 0 0 23 6 228 6 -75 3 14 7 N/A 27 0 27 0 12 0
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Ellevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB)	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0 -1 0 228 6 -75 6 26 4 34 6 -0 5 -196 3 0 0 33 0 228 6 -75 6 23 8 -75 6 23 8 N/A 27 6 27 6 15 7 22 6	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -74 8 23 2 34 6 -0 5 -196 3 0 0 20 9 228 6 -74 8 12 5 N/A 27 6 27 6 12 5 9 9	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0 -1 0 228 6 -68 3 20 2 25 1 -0 5 -196 3 0 0 29 4 228 6 -68 3 17 9 20 2 17 9 17 4 27 0 27 0 9 5 16 9	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0 -1 0 228 6 -48 8 19 6 -48 8 19 6 -49 -0 5 -196 3 0 0 29 4 228 6 -48 8 17 4 19 6 17 4 19 6 17 4 16 8 27 0 27 0 8 9 16 3	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -75 3 22 7 34 6 -0 5 -196 3 0 0 23 6 228 6 -75 3 14 7 N/A 27 0 22 7 14 7 N/A 27 0 12 0 12 0 12 3
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Carlier Original (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB)	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0 -10 228 6 -75 6 26 4 34 6 -0 5 -196 3 0 0 33 0 228 6 -75 6 23 8 26 4 23 8 N/A 27 6 27 6 15 7 22 6 15 7 23 4	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -74 8 23 2 34 6 -0 5 -196 3 0 0 20 9 228 6 -74 8 12 5 N/A 27 6 27 6 12 5 9 9 12 5 12 9	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0 -1 0 228 6 -68 3 20 2 25 1 -0 5 -196 3 0 0 29 4 228 6 -68 3 17 9 20 2 17 9 17 4 27 0 27 0 9 5 16 9 9 5 18 2	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0 -1 0 228 6 -48 8 19 6 4 9 -0 5 -196 3 0 0 29 4 228 6 -48 8 17 4 19 6 17 4 16 8 27 0 27 0 8 9 16 3 8 9 17 6	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -75 3 22 7 34 6 -0 5 -196 3 0 0 23 6 228 6 -75 3 14 7 N/A 22 7 14 7 N/A 27 0 12 0 12 3 12 0 14 8
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Ellevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) ComPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+1) Composite (dB)	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0 -10 228 6 -75 6 26 4 34 6 -0 5 -196 3 0 0 33 0 228 6 -75 6 23 8 N/A 27 6 15 7 22 6 15 7 23 4 11 4	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -74 8 23 2 34 6 -0 5 -196 3 0 0 20 9 228 6 -74 8 12 5 N/A 27 6 27 6 12 5 9 9 12 5 12 9 4 8	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0 -1 0 228 6 -68 3 20 2 25 1 -0 5 -196 3 0 0 29 4 228 6 -68 3 17 9 20 2 17 9 17 4 27 0 27 0 9 5 16 9 9 5 18 2 5 1	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0 -1 0 228 6 -48 8 19 6 4 9 -0 5 -196 3 0 0 29 4 228 6 -48 8 17 4 19 6 17 4 16 8 27 0 27 0 8 9 16 3 8 9 17 6 4 5	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -75 3 22 7 34 6 -0 5 -196 3 0 0 23 6 228 6 -75 3 14 7 N/A 27 0 22 7 14 7 N/A 27 0 12 0 12 3 12 0 14 8 5 8
Earth Station Gain (dBi) Earth Station GT (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rath Loss, Clear Sky (dB) Uplink Rath Attaion EIRP (dBW) Uplink Rath Attaion EIRP (dBW) Uplink Rath Attaion EIRP (dBW) Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Downlink (dB) C/I Downlink (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB)	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0 -10 228 6 -75 6 26 4 34 6 -0 5 -196 3 0 0 33 0 228 6 -75 6 23 8 -75 6 23 8 -75 6 23 8 -75 6 23 8 -75 6 23 8 -75 6 23 8 -75 6 23 8 N/A 27 6 15 7 22 6 15 7 23 4 11 4 -1 0	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -74 8 23 2 34 6 -0 5 -196 3 0 0 20 9 228 6 -74 8 12 5 N/A 27 6 27 6 12 5 9 9 12 5 12 9 4 8 -1 0	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0 -1 0 228 6 -68 3 20 2 25 1 -0 5 -196 3 0 0 29 4 228 6 -68 3 17 9 20 2 17 9 17 4 27 0 27 0 9 5 16 9 9 5 18 2 5 1 -1 0	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0 -1 0 228 6 -48 8 19 6 49 -0 5 -196 3 0 0 29 4 228 6 -48 8 17 4 19 6 17 4 19 6 17 4 19 6 17 4 16 8 27 0 27 0 8 9 16 3 8 9 17 6 -1 0 4 5 -1 0	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -75 3 22 7 34 6 -0 5 -196 3 0 0 23 6 228 6 -75 3 14 7 N/A 22 7 14 7 N/A 27 0 27 0 12 0 12 3 12 0 14 8 5 8 -1 0
Earth Station Gain (dBi) Earth Station GT (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rant Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Net C/(N+I) Composite (dB)	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0 -10 228 6 -75 6 26 4 34 6 -0 5 -196 3 0 0 33 0 228 6 -75 6 23 8 264 23 8 N/A 27 6 27 6 15 7 22 6 15 7 23 4 11 4 -1 0 10 4	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -74 8 23 2 34 6 -0 5 -196 3 0 0 20 9 228 6 -74 8 12 5 12 5 N/A 27 6 27 6 12 5 9 9 12 5 12 9 4 8 -1 0 3 8	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0 -1 0 228 6 -68 3 20 2 25 1 -0 5 -196 3 0 0 29 4 228 6 -68 3 17 9 20 2 17 9 20 2 17 9 20 2 17 9 20 2 17 9 17 4 27 0 9 5 16 9 9 5 18 2 5 1 -1 0 4 1	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0 -1 0 228 6 -48 8 19 6 4 9 -0 5 -196 3 0 0 29 4 228 6 -48 8 17 4 19 6 17 7 19 6 17 7 19 6 17 7 19 6 17 7 19 6 17 7 19 6 17 7 19 6 17 7 19 6 17 7 16 3 8 9 17 6 4 5 -1 0 3 5	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -75 3 22 7 34 6 -0 5 -196 3 0 0 23 6 228 6 -75 3 14 7 14 7 N/A 27 0 27 0 12 0 12 2 12 0 14 8 5 8 -1 0 4 8
Earth Station Gain (dBi) Earth Station G.T (dB/K) Earth Station ElRV (dB/K) LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rath Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink C/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK FERFORMANCE C/N Uplink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB)	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0 -10 228 6 -75 6 26 4 34 6 -0 5 -196 3 0 0 33 0 228 6 -75 6 23 8 26 4 23 8 N/A 27 6 27 6 15 7 22 3 4 11 4 -1 0 10 4 -10 0	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -74 8 23 2 34 6 -0 5 -196 3 0 0 20 9 228 6 -74 8 12 5 23 2 12 5 N/A 27 6 27 6 12 5 9 9 12 5 12 9 4 8 -1 0 3 8 -3 4	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0 -1 0 228 6 -68 3 20 2 25 1 -0 5 -196 3 0 0 29 4 228 6 -68 3 17 9 20 2 17 9 17 4 27 0 27 0 27 0 9 5 16 9 9 5 18 2 -1 0 4 1 -3 9	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0 -1 0 228 6 -48 8 19 6 29 4 228 6 -48 8 17 4 19 6 17 4 19 6 17 4 16 8 27 0 27 0 8 9 16 3 8 9 17 6 4 5 -1 0 3 5 -3 0	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -75 3 22 7 34 6 -0 5 -196 3 0 0 23 6 228 6 -75 3 14 7 22 7 14 7 N/A 27 0 22 7 14 7 N/A 27 0 22 7 14 8 -1 0 4 8 -3 4
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elrevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB)	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0 -10 228 6 -75 6 26 4 34 6 -0 5 -196 3 0 0 33 0 228 6 -75 6 23 8 N/A 27 6 27 6 15 7 22 4 15 7 23 4 11 4 -1 0 10 4 -10 0 0 4	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -74 8 23 2 34 6 -0 5 -196 3 0 0 20 9 228 6 -74 8 12 5 23 2 12 5 N/A 27 6 12 5 9 9 12 5 12 9 4 8 -1 0 3 8 -3 4 0 4	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0 -1 0 228 6 -68 3 20 2 25 1 -0 5 -196 3 0 0 29 4 228 6 -68 3 17 9 20 2 177 9 27 0 27 0 9 5 16 9 9 5 18 2 5 1 -1 0 4 1 -3 9 0 2	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0 -1 0 228 6 -48 8 19 6 -196 3 0 0 228 6 -48 8 17 4 19 6 17 4 16 8 27 0 27 0 8 9 16 3 8 9 16 3 3 5 -3 0 0 5	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -75 3 22 7 34 6 -0 5 -196 3 0 0 23 6 228 6 -75 3 14 7 N/A 22 7 14 7 N/A 27 0 12 0 12 0 12 3 12 0 14 8 5 8 -1 0 4 8 -3 4 1 4
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Ellevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N-1) Composite (dB) Required System Margin (dB) Number of Carriers	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0 -10 228 6 -75 6 26 4 34 6 -0 5 -196 3 0 0 33 0 228 6 -75 6 23 8 26 4 23 8 N/A 27 6 27 6 15 7 22 3 4 11 4 -1 0 10 4 -10 0	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -74 8 23 2 34 6 -0 5 -196 3 0 0 20 9 228 6 -74 8 12 5 23 2 12 5 N/A 27 6 27 6 12 5 9 9 12 5 12 9 4 8 -1 0 3 8 -3 4	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0 -1 0 228 6 -68 3 20 2 25 1 -0 5 -196 3 0 0 29 4 228 6 -68 3 17 9 20 2 17 9 17 4 27 0 27 0 27 0 9 5 16 9 9 5 18 2 -1 0 4 1 -3 9	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0 -1 0 228 6 -48 8 19 6 29 4 228 6 -48 8 17 4 19 6 17 4 19 6 17 4 16 8 27 0 27 0 8 9 16 3 8 9 17 6 4 5 -1 0 3 5 -3 0	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -75 3 22 7 34 6 -0 5 -196 3 0 0 23 6 228 6 -75 3 14 7 22 7 14 7 N/A 27 0 22 7 14 7 N/A 27 0 12 0 12 0 12 0 14 8 -1 0 4 8 -3 4
Earth Station Gain (dBi) Earth Station G.T (dB/K) Earth Station C.T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rath Loss, Clear Sky (dB) Uplink Rath Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Downlink (dB) C/I Uplink (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(I Downlink Adjacent Satellite 2 (dB) C/(I Uplink Adjacent Satellite 2 (dB) C/(I Uplink Adjacent Satellite 2 (dB) C/(I Uplink Adjacent Satellite 2 (dB) C/(I Downlink Adjacent Satellite 2 (dB) C/(I Uplink Adjacent Satellite 2 (dB) Net C/(N+I) Composite (dB) Net C/(N+I) Composite (dB) Net C/(N+I) Composite (dB) Number of Carriers CARRIER DENSITY LEVELS	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0 -10 228 6 -75 6 26 4 34 6 -0 5 -196 3 0 0 33 0 228 6 -75 6 23 8 26 4 23 8 N/A 27 6 27 6 15 7 22 6 15 7 23 4 11 4 -10 10 4 -10 0 0 4	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -74 8 23 2 34 6 -0 5 -196 3 0 0 20 9 228 6 -74 8 12 5 12 5 N/A 27 6 27 6 12 5 9 9 12 5 12 9 4 8 -1 0 3 8 -3 4 0 4 1 -1 0 -2 8 -1 0 -2 8 -2 0 -2 2 -2 7 -2 2 -2 2 -2 2 -2 2 -2 2 -2 7 -2 2 -2 2	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0 -1 0 228 6 -68 3 20 2 25 1 -0 5 -196 3 0 0 29 4 228 6 -68 3 17 9 20 2 17 9 20 2 17 9 20 2 17 9 20 2 17 9 16 9 9 5 18 2 5 1 -1 0 4 1 -3 9 0 2 4	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0 -1 0 228 6 -48 8 19 6 49 -0 5 -196 3 0 0 29 4 228 6 -48 8 17 4 19 6 27 0 27 0 27 0 27 0 27 0 3 5 -3 0 0 5 410	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0 -10 228 6 -75 3 22 7 34 6 -0 5 -196 3 0 0 23 6 228 6 -75 3 14 7 22 7 14 7 N/A 27 0 27 0 12 0 14 8 5 8 -1 0 4 8 -3 4 1 4
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station E/T (dB/K) Earth Station Ellevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink CdB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Number of Carriers	53 5 33 0 20 Clear Sky 74 6 -200 2 0 0 -10 228 6 -75 6 26 4 34 6 -0 5 -196 3 0 0 33 0 228 6 -75 6 23 8 N/A 27 6 27 6 15 7 22 4 15 7 23 4 11 4 -1 0 10 4 -10 0 0 4	41 2 20 9 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -74 8 23 2 34 6 -0 5 -196 3 0 0 20 9 228 6 -74 8 12 5 23 2 12 5 N/A 27 6 12 5 9 9 12 5 12 9 4 8 -1 0 3 8 -3 4 0 4	50 3 29 4 20 Clear Sky 61 1 -200 2 0 0 -1 0 228 6 -68 3 20 2 25 1 -0 5 -196 3 0 0 29 4 228 6 -68 3 17 9 20 2 177 9 27 0 27 0 9 5 16 9 9 5 18 2 5 1 -1 0 4 1 -3 9 0 2	50 3 29 4 20 Clear Sky 41 0 -200 2 0 0 -1 0 228 6 -48 8 19 6 -196 3 0 0 228 6 -48 8 17 4 19 6 17 4 16 8 27 0 27 0 8 9 16 3 8 9 16 3 3 5 -3 0 0 5	43 9 23 6 20 Clear Sky 70 6 -200 2 0 0 -1 0 228 6 -75 3 22 7 34 6 -0 5 -196 3 0 0 23 6 228 6 -75 3 14 7 N/A 22 7 14 7 N/A 27 0 12 0 12 0 12 3 12 0 14 8 5 8 -1 0 4 8 -3 4 1 4

Exhibit 5-5: C-Band Spot Uplink/Global Downlink

IDI INT DE AM INFORMATION					
UPLINK BEAM INFORMATION Uplink Beam Name	CSPOT	CSPOT	CSPOT	CSPOT	CSPOT
Uplink Frequency (GHz)	6175	6175	6175	6175	6 175
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Uplink Relative Contour Level (dB)	-4	-4	-4	-4	-4
Uplink Contour G/T (dB/K)	-1	-1	-1	-1	-1
Uplink SFD (dBW/m2)	-85 3	-92 3	-86 3	-86 3	-92 3
Rain Rate (mm/hr)	42	42	42	42	42
DOWNLINK BEAM INFORMATION Downlink Beam Name	GLOBAL	GLOBAL	GLOBAL	GLOBAL	GLOBAL
Downlink Beam Name Downlink Frequency (GHz)	3 95	3 95	3 95	3 95	3 95
Downlink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Downlink Relative Contour Level (dB)	-4	-4	-4	-4	-4
Downlink Contour EIRP (dBW)	276	276	27 6	276	276
Rain Rate (mm/hr)	42	42	42	42	43
ADJACENT SATELLITE 1					
Satellite 1 Orbital Location	31 0E	31 0E	31 0E	31 0E	31 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB) Downlink EIRP Density (dBW/Hz)	0 -32 0	0 -32 0	0 -32 0	0 -32 0	0 -32 0
Downlink EIRP Density (dBw/Hz) Downlink Polarization Advantage (dB)	-32 0	-32 0	-32 0	-32 0	-32 0
ADJACENT SATELLITE 2	v	v	v	v	•
Satellite 1 Orbital Location	35 0E	35 0E	35 0E	35 0E	35 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
CARRIER INFORMATION					
Carrier ID	36M0F3F	36M0G7W	10M3G7W	100KG7W	41M0G7W
Carrier Modulation	TV/FM	QPSK	QPSK	QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz) Information Rate(kbps)	4 N/A	N/A 24575	N/A 6000	N/A 64	N/A 31490
Code Rate	N/A N/A	24575 1/2x188/204	1/2x188/204	04 1/2x239/256	31490 1/2x188/204
Occupied Bandwidth(kHz)	36000	30133	6771 1	75.4	34170 0
Allocated Bandwidth(kHz)	36000	36000	10300	100	41000
Minimum C/N, Clear Sky (dB)	10	3 36	3 87	2 99	34
Minimum C/N, Rain (dB)	10	3 36	3 57	2 79	34
UPLINK EARTH STATION					
Earth Station Diameter (meters)	10 0	4 6	24	24	4 6
Earth Station Gain (dBi)	541	46 9	41 9	41 9	46 9
Earth Station Elevation Angle	20	20	20	20	20
DOWNLINK EARTH STATION Earth Station Diameter (meters)	183	81	183	15.2	81
Earth Station Gain (dBi)	56	49 3	56 0	55 0	49 3
Earth Station G/T (dB/K)	35.5	28 4	35.5	34.5	28.4
Earth Station Elevation Angle	20	20	20	20	20
LINK FADE TYPE	Clear Sky	Clear Sky	Clear Sky	Clear Sky	Clear Sky
UPLINK PERFORMANCE					
Uplink Earth Station EIRP (dBW)	77 6	70 6	61 6	41 5	70 6
Uplink Path Loss, Clear Sky (dB)	-200 2	-200 2	-200 2	-200 2	-200 2
Uplink Rain Attenuation Satellite G/T(dB/K)	0 0 -1 0	0 0 -1 0	-10	0 0 -1 0	00 -10
Boltzman Constant(dBW/K-Hz)	228 6	228 6	228.6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8	-75 3
Uplink C/N(dB)	29 4	23 2	20 7	201	22 7
DOWNLINK PERFORMANCE					
Downlink EIRP per Carrier (dBW)	276	27 6	175	-2 6	27 6
Antenna Pointing Error (dB)	-05	-05	-05	-05	-05
Downlink Path Loss, Clear Sky (dB)	-196 3	-196 3	-196 3	-196 3	-196 3
Downlink Rain Attenuation	00	0 0 28 4	00	0 0 34 5	0 0 28 4
Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz)	35 5 228 6	28 4 228 6	35 5 228 6	34 5 228 6	28 4 228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8	-75 3
Downlink C / N(dB)	193	13 0	16 5	14 9	12.5
COMPOSITE LINK PERFORMANCE					
C/N Uplink (dB)	29 4	23 2	20 7	20 1	22 7
C/N Downlink (dB)	19 3	13 0	16 5	14 9	12 5
C/I Intermodulation (dB)	N/A	N/A	189	18 3	N/A
C/I Uplink Co-Channel (dB)*	276	276	270	270	270
C/I Downlink Co-Channel (dB)*	276	276	270	270	270
C/I Uplink Adjacent Satellite 1 (dB)	187	12 5	100	94	120
C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB)	18 2 18 7	11 9 12 5	154 100	13 8 9 4	11 4 12 0
C/I Downlink Adjacent Satellite 2 (dB)	18 7	12.3	160	14 5	12 0
CALDOWININK Aujacent Batenne 2 (uD)	100		100	14.7	12 /
C/(N+I) Composite (dB)	11 5	55	52	43	50
Required System Margin (dB)	-10	-10	-10	-10	-10
Net C/(N+I) Composite (dB)	10 5	4 5	4 2	33	40
Minimum Required C/N (dB)	-10 0	-34	-39	-30	-34
Excess Link Margin (dB)	0 5	11	03	03	06
Number of Carriers	1	1	4	410	1
CARRIER DENSITY LEVELS	53.1	51.1	40.4	10.2	
Uplink Power Density (dBW/Hz)	-52 1	-51 1	-48 6	-49 2	-51 6
Downlink EIRP Density At Beam Peak (dBW/Hz)	-44 0	-43 2	-46 8	-47 4	-43 7

Exhibit 5-6: C-Band Spot Uplink/Hemi Downlink

Uplink Frequency (GHz) 6 Uplink Relative Contour Level (dB) 0 Uplink SED (dBW/m2)	3 92 3 2 42 MI HEMI 15 3 95 7LAR CIRCUL 5 -6 5 31 5 2 42 DE 31 0E 7 -38 7 0 -32 0 0 -32 0 0 0 0 -32 0 0 0 0 -32 0 0 -32 0 0 -32 0 0 -32 0 0 -32 0 0 -32 0 0 -32 0 0 -32 0 0 -32 0 0 -32 0 0 -32 0 0 -32 0 0 -32 0 0 0 0 -32 0 0 0 0 -32 0 0 0 0 0 <th>6 175 AR CIRCULAR -4 -1 -88 3 42 -1 -88 3 42 -1 -88 3 42 -1 -88 3 42 -6 31 5 42 -6 31 5 42 -6 31 0E -38 7 0 -35 0E -38 7 0</th> <th>CSPOT 6 175 CIRCULAR -1 -88 3 42 HEMI 3 95 CIRCULAR -6 31 5 42 -38 7 0 -32 0 0 -35 0E -38 7 0 0</th>	6 175 AR CIRCULAR -4 -1 -88 3 42 -1 -88 3 42 -1 -88 3 42 -1 -88 3 42 -6 31 5 42 -6 31 5 42 -6 31 0E -38 7 0 -35 0E -38 7 0	CSPOT 6 175 CIRCULAR -1 -88 3 42 HEMI 3 95 CIRCULAR -6 31 5 42 -38 7 0 -32 0 0 -35 0E -38 7 0 0
Uplink Frequency (GHz) 6 Uplink Bative Contour Level (dB) 7 Uplink Contour GT (dB/K) 7 Uplink SFD (dBW/m2) 8 Rain Rate (mm/hr) 7 DOWNLINK BEAM INFORMATION 7 Downlink Beam Name HI Downlink Beam Name HI Downlink Ream Polarization CIRC Downlink Ream Polarization CIRC Downlink Ream Polarization GIRC Downlink Reative Contour Level (dB) 7 Downlink Reative Contour Level (dB) 7 Downlink Relative Contour Level (dB) 7 Jplink Power Density (dBW/Hz) 3 Downlink EIRP Density (dBW/Hz) 3 Downlink EIRP Density (dBW/Hz) 3 Downlink EIRP Density (dBW/Hz) 3 Downlink FIRP Density (dBW/Hz) 3 Downlink Folarization Advantage (dB) 7 Downlink FIRP Density (dBW/Hz) 3 Downlink FIRP Density (dBW/Hz) 3 Downlink Folarization Advantage (dB) 7 Carrier ID 30M Carrier BD 30M Carrier ID 30M <	75 6175 JLAR CIRCUL 4 -1 3 -923 2 42 MI HEMI 15 395 JLAR CIRCUL 5 -6 5 315 2 42 DE 310E 7 -387 0 -320 0 0 0 -320 0 0 0 -320 0 -320 0 -320 0 -320 0 -320 0 -320 0 -320 0 -320 0 -320 0 -320 0 -320 0 -320 0 -320 0 -320 0 -320 0 -320 0 -320 <t< td=""><td>6 175 AR CIRCULAR -4 -1 -88 3 42 -1 -88 3 42 -1 -88 3 42 -1 -88 3 -2 -1 -88 3 42 -1 -88 3 -2 -1 -88 3 -2 -8 -3 95 AR CIRCULAR -6 -31 5 -42 -6 -31 5 -2 -38 7 0 -32 0 -32 0 -32 0</td><td>6 175 CIRCULAR -1 -88 3 42 HEMI 3 95 CIRCULAR -6 31 5 42 -31 0E -38 7 0 -32 0 0 -35 0E -38 7</td></t<>	6 175 AR CIRCULAR -4 -1 -88 3 42 -1 -88 3 42 -1 -88 3 42 -1 -88 3 -2 -1 -88 3 42 -1 -88 3 -2 -1 -88 3 -2 -8 -3 95 AR CIRCULAR -6 -31 5 -42 -6 -31 5 -2 -38 7 0 -32 0 -32 0 -32 0	6 175 CIRCULAR -1 -88 3 42 HEMI 3 95 CIRCULAR -6 31 5 42 -31 0E -38 7 0 -32 0 0 -35 0E -38 7
Uplink Beam Polarization CIRC Uplink Contour GT (dBX) Uplink StD (dBW/n2) Rain Rate (mm/hr) A DOWNLINK BEAM INFORMATION A Downlink Beam Name H Downlink Beam Name H Downlink Beam Name CIRC Downlink Beam Name CIRC Downlink Relative Contour Level (dB) CIRC Downlink Contour EIRP (dBW) 3 Rain Rate (mm/hr) 4 ADJACENT SATELLITE 1 S Satellite 1 Obtial Location 31 Uplink Power Density (dBW/Hz) -3 Downlink FIRP Density (dBW/Hz) -3 Downlink Folarization Advantage (dB) -3 Downlink FIRP Density (dBW/Hz) -3 Uplink Power Density (dBW/Hz) -3 Downlink FIRP Density (dBW/Hz) -3 Downlink FIRP Density (dBW/Hz) -3 Downlink FIRP Density (dBW/Hz) -3 Downlink Relative Advantage (dB) -3 Downlink Relative Advantage (dB) -3 Downlink Collation TV Pack to Feak Bandwidth of EDS (MHz) -3 Information Rate(kbps)<	TLAR CIRCUIL 4 -1 3 -923 2 42 MI HEMI 5 395 7 -387 0 -320 0 -320 0 -320 0 -320 0 -320 0 -320 0 -320 0 -320 0 -320 0 -320 0 -320 0 -320 0 -320 0 -320 0 -320 0 -320	AR CIRCULAR -4 -1 -88 3 42 -4 -1 -88 3 42 -6 31 5 42 -6 31 5 42 -6 -6 31 5 42 -6 -6 -31 5 -38 7 0 -38 7 0 -38 7 0 -38 7 0 -38 7 0 -32 0 0 -32 0 0 -32 0 0 -32 0 0 -32 0 0 -38 7 -38 7 0 -32 0 0 -32 0 -38 7 0 -38 7 0 -32 0 -38 7 0 -38 7 0 -32 0 -38 7 0 -32 0 -38 7 0 -38 7 0 -38 7 0 -32 0 -38 7 0 -38 7 0 -38 7 0 -32 0 -38 7 0 -38 7 0 -32 0 -38 7 0 -32 0 -38 7 0 -38 7 0 -32 0 -32 0	CIRCULAR -4 -1 -88 3 42 HEMI 3 95 CIRCULAR -6 31 5 42 -31 0E -38 7 0 -32 0 0 -35 0E -38 7
Uplink Relative Contour Level (dB)	4 -4 3 -92 3 2 42 MI HEM 55 39 55 JLAR CIRCUL 5 -6 5 31 5 2 42 DE 31 0E 7 -38 7 0 -32 0 0 -32 0 0 -32 0 0 -32 0 F3F 36M0G7 FM QPSK N/A N/A	-4 -1 -88 3 42 	-4 -1 -88 3 42 HEMI 3 95 CIRCULAR -6 31 5 42 -31 0E -38 7 0 -32 0 0 -32 0 0 -32 0 0 -35 0E -38 7
Uplink SFD (dBW/m2) -8 Rain Rate (mm/hr) -7 DOWNLINK BEAM INFORMATION -7 Downlink Beam Name HI Downlink Frequency (GHz) 3 Downlink Relative Contour Level (dB) -7 Juplink Power Density (dBW/Hz) -3 Downlink Fore Density (dBW/Hz) -3 Downlink Rolarization Advantage (dB) -7 Downlink Power Density (dBW/Hz) -3 Downlink Rolarization Advantage (dB) -7 Downlink Rolarization Advantage (dB) -7 Downlink Rolarization Advantage (dB) -3 Downlink Rolarization Advantage (dB) -3 Carrier D 36M Carrier Modulation TV Pak to Peak Bandwidth of EDS (MHz) -3 Information Rate(kbps) N Cocopied Bandwidth of EDS (MHz) -3 Information Rate(kbps) -1 Code Rate N	3 92 3 2 42 MI HEMI 15 3 95 7LAR CIRCUL 5 -6 5 31 5 2 42 DE 31 0E 7 -38 7 0 -32 0 0 -32 0 0 0 0 -32 0 0 0 0 -32 0 0 -32 0 0 -32 0 0 -32 0 0 -32 0 0 -32 0 0 -32 0 0 -32 0 0 -32 0 0 -32 0 0 -32 0 0 -32 0 0 -32 0 0 0 0 -32 0 0 0 0 -32 0 0 0 0 0 <td>-88 3 42 HEMI 3 95 AR CIRCULAR -6 31 5 42 -31 0E -38 7 0 -32 0 0 0 -32 0 0 -32 0 0 -32 0</td> <td>-88 3 42 HEMI 3 95 CIRCULAR -6 31 5 42 31 0E -38 7 0 -32 0 0 -32 0 0 -35 0E -38 7</td>	-88 3 42 HEMI 3 95 AR CIRCULAR -6 31 5 42 -31 0E -38 7 0 -32 0 0 0 -32 0 0 -32 0 0 -32 0	-88 3 42 HEMI 3 95 CIRCULAR -6 31 5 42 31 0E -38 7 0 -32 0 0 -32 0 0 -35 0E -38 7
Rain Rate (mm/hr) 4 DOWNLINK BEAM INFORMATION 1 Downlink Beam Name HI Downlink Beam Name HI Downlink Beam Name 1 Downlink Reant Polarization CIRC Downlink Relative Contour Level (dB) 5 Downlink Relative Contour Level (dB) 3 Dawnlink Relative Contour Level (dB) 3 Downlink Polarization Advantage (dB) 3 Uplink Polarization Advantage (dB) 3 Downlink FIRP Density (dBW/Hz) 3 Downlink Polarization Advantage (dB) 3 Uplink Polarization Advantage (dB) 3 Uplink Polarization Advantage (dB) 3 Downlink EIRP Density (dBW/Hz) 3 Downlink Polarization Advantage (dB) 3 Downlink Polarization Advantage (dB) 3 Carrier ID 36M Carrier ID 36M Carrier ID 36M Carrier Modulation TV Peak to Peak Bandwidth of EDS (MHz) 36 Information Rate(kps) N Cock Rate N Occupied Bandwidth(kHz) 36 <	2 42 MI HEM 15 395 7LAR CIRCUL 5 -6 5 315 2 42 DE 310E 7 -387 0 -320 0 -320 0 -320 0 F3F 36M0G7 FM QPSK N/A	42 HEMI 3 95 AR CIRCULAR -6 31 5 42 -38 7 0 -32 0 0 -32 0 0 -32 0	42 HEMI 3 95 CIRCULAR -6 31 5 42 31 0E -38 7 0 -32 0 0 -32 0 0 35 0E -38 7
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Satellite 1 Orbital Location 31 Uplink Power Density (dBW/Hz) -3 Downlink EIRP Density (dBW/Hz) -3 Downlink EIRP Density (dBW/Hz) -3 Satellite 1 Orbital Location 35 Uplink Power Density (dBW/Hz) -3 Uplink Power Density (dBW/Hz) -3 Uplink Power Density (dBW/Hz) -3 Downlink EIRP Density (dBW/Hz) -3 Downlink Polarization Advantage (dB) -3 Downlink Polarization Advantage (dB) -3 Downlink Polarization Advantage (dB) -3 CARRIER INFORMATION -3 Carrier Modulation TV Peak to Peak Bandwidth of EDS (MHz) -3 Information Rate(kbps) N Occupied Bandwidth(kHz) -36 Allocated Bandwidth(kHz) -36 Minimum C/N, Clear Sky (dB) -1 Minimum C/N, Clear Sky (dB) -1 Minimum C/N, Clear Sky (dB) -1 DOWNLINK EARTH STATION -2 Earth Station Diameter (meters) -3 Earth Station Carin (dB) -3 DoWNLINK EARTH STATION -3 <t< td=""><td>738 7 0 -32 0 0 -32 0 0 0 0 0 0 0 0 0 -32 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td><td>-38 7 0 -32 0 0 -35 0E -38 7 0 -32 0</td><td>-38 7 0 -32 0 0 35 0E -38 7</td></t<>	738 7 0 -32 0 0 -32 0 0 0 0 0 0 0 0 0 -32 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-38 7 0 -32 0 0 -35 0E -38 7 0 -32 0	-38 7 0 -32 0 0 35 0E -38 7
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ADJACENT SATELLITE 2 Satellite 1 Orbital Location Satellite 1 Orbital Location Uplink Power Density (dBW/Hz) Ownlink EIRP Density (dBW/Hz) Jownlink EIRP Density (dBW/Hz) Ownlink Polarization Advantage (dB) CARREE INFORMATION Carrier ID Carrier Modulation TV Peak to Peak Bandwidth of EDS (MHz) Information Rate(kbps) Code Rate Occupied Bandwidth(kHz) 360 Minimum C/N, Clear Sky (dB) Minimum C/N, Rain (dB) UPLINK EARTH STATION Earth Station Diameter (meters) Earth Station Diameter (meters) Earth Station Diameter (meters) I Earth Station Carrier (MBK) Uplink PerFORMANCE Uplink Rath Loss, Clear Sky (dB) Uplink Rath Attenuation Coc I DOWNLINK FADE TYPE Clear Sky (dB) Uplink Rain Attenuation Coc	DE 35 0E 7 -38 7 0 -32 0 0 -32 0 0 F3F 36M0G7 FM QPSR N/A	35 0E -38 7 0 -32 0	35 0E -38 7
Satellite 1 Orbital Location 35 Uplink Power Density (dBW/Hz) -3 Uplink Polarization Advantage (dB) -3 Downlink EIRP Density (dBW/Hz) -3 Downlink Polarization Advantage (dB) -3 CARREE INFORMATION -3 Carrier ID 36M Carrier Modulation TV Peak to Peak Bandwidth of EDS (MHz) -3 Information Rate(kbps) N Coccupied Bandwidth(kHz) 36 Minimum C/N, Clear Sky (dB) -3 Minimum C/N, Rain (dB) -3 UPLINK EARTH STATION -3 Earth Station Diameter (meters) 8 Earth Station Diameter (meters) 8 Earth Station Diameter (meters) 1 Earth Station Gain (dBi) 5 Earth Station Gain (dBi) -2 Uplink Parth Loss, Clear Sky (dB) -2 <	7 -387 0 -320 0 -320 0 F3F 36M0G FM QPSK N/A	-38 7 0 -32 0	-38 7
Uplink Power Density (dBW/Hz) -3 Uplink Polarization Advantage (dB) -3 Downlink EIRP Density (dBW/Hz) -3 Downlink FIRP Density (dBW/Hz) -3 Carrier ID 36M Carrier Modulation TV Peak to Peak Bandwidth of EDS (MHz) Information Rate(kbps) Information Rate(kbps) N Code Rate N Occupied Bandwidth(kHz) 36 Allocated Bandwidth(kHz) 36 Minimum C/N, Clear Sky (dB) 1 Minimum C/N, Rain (dB) 1 UPLINK EARTH STATION 2 Earth Station Diameter (meters) 8 Earth Station Diameter (meters) 1 Earth Station Gain (dBi) 5 Earth Station Gain (dBi) 5 Earth Station Gain (dBi) 5 Earth Station FlRP (dBW) 7 Uplink Earth Station ElRP (dBW) 7 Uplink Rain Attenuation 20 Stelitie G/T(dB/K) -2	7 -387 0 -320 0 -320 0 F3F 36M0G FM QPSK N/A	-38 7 0 -32 0	-38 7
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Carrier ID 36M Carrier Modulation TV Peak to Peak Bandwidth of EDS (MHz) TV Information Rate(kbps) N Code Rate N Occupied Bandwidth(kHz) 36 Allocated Bandwidth(kHz) 36 Minimum C/N, Clear Sky (dB) 36 Minimum C/N, Rain (dB) 36 UPLINK EARTH STATION 8 Earth Station Diameter (meters) 8 Earth Station Elevation Angle 37 DOWNLINK EARTH STATION 36 Earth Station Diameter (meters) 11 Earth Station Gain (dBi) 5 Earth Station Gain (dBi) 5 Earth Station G/T (dB/K) 3 Earth Station FleP (dBW) 7 Uplink Rain Attenuation 00 Statellite G/T(dB/K) -2 Uplink Rain Attenuation 00 Satellite G/T(dB/K) -7 DownLINK PERFORMANCE 22 DOWNLINK PERFORMANCE 22 Uplink Rain Attenuation 00 Satellite G/T(dB/K) -7 Boltzman Constant(dBW/K-Hz) -7 <td>FM QPSK N/A</td> <td></td> <td>0</td>	FM QPSK N/A		0
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Peak to Peak Bandwidth of EDS (MHz) Information Rate(kbps) N Code Rate N Occupied Bandwidth(kHz) 36 Allocated Bandwidth(kHz) 36 Minimum C/N, Clear Sky (dB) 1 Minimum C/N, Rain (dB) 1 UPLINK EARTH STATION 2 Earth Station Diameter (meters) 8 Earth Station Diameter (meters) 1 DOWNLINK EARTH STATION 2 Earth Station Diameter (meters) 1 Earth Station Diameter (meters) 1 Earth Station Diameter (meters) 1 Earth Station Gain (dBi) 5 Earth Station Gain (dBi) 5 Earth Station Gain (dBi) 5 Earth Station Gain (dBi) 3 Earth Station Gain (dBi) 3 Earth Station Gain (dBi) 2 Uplink Earth Station EIRP (dBW) 7 Uplink Rain Attenuation 6 Satellite G/T(dB/K) - Boltzman Constant(dBW/K-Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Upwink CIN(dB) -4 Downlink Rain Attenuation </td <td>N/A</td> <td></td> <td>100KG7W</td>	N/A		100KG7W
Information Rate(kbps) N Code Rate N Occupied Bandwidth(kHz) 36 Allocated Bandwidth(kHz) 36 Minimum C/N, Clear Sky (dB) 1 Minimum C/N, Rain (dB) 1 UPLINK EARTH STATION 2 Earth Station Diameter (meters) 8 Earth Station Cain (dBi) 5 Earth Station Diameter (meters) 1 Earth Station Clevation Angle 2 DOWNLINK EARTH STATION 5 Earth Station Clevation Angle 3 Earth Station Clevation Angle 2 UPLINK PERFORMANCE 2 Uplink Earth Station EIRP (dBW) 7 Uplink Rain Attenuation 0 Satellite G/T(dB/K) -2 Boltzman Constant(dBW/K-Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Downlink PERFORMANCE 2 Downlink PerFORMANCE 2 Downlink Rain Attenuation 3 Antenna P		-	QPSK N/A
Code RateNOccupied Bandwidth(kHz)36Allocated Bandwidth(kHz)36Minimum C/N, Clear Sky (dB)31Minimum C/N, Rain (dB)32UPLINK EARTH STATION32Earth Station Diameter (meters)35Earth Station Elevation Angle32DOWNLINK EARTH STATION32Earth Station Diameter (meters)11Earth Station Elevation Angle32DOWNLINK EARTH STATION32Earth Station Elevation Angle32Interface32Earth Station Girl (dBi)55Earth Station Girl (dBi/K)33Earth Station Elevation Angle32UPLINK PERFORMANCE32Uplink Farth Loss, Clear Sky (dB)-22Uplink Rain Attenuation32Stellite G/T(dB/K)-32Boltzman Constant(dBW/K-Hz)22Carrier Noise Bandwidth (dB-Hz)-72Downlink EIRP per Carrier (dBW)33Antenna Pointing Error (dB)-41Downlink Rain Attenuation02Earth Station G/T (dB/K)33Boltzman Constant(dBW/K-Hz)22Carrier Noise Bandwidth (dB-Hz)-72Downlink Rain Attenuation02Carrier Noise Bandwidth (dB-Hz)-72Downlink Rain Attenuation02Carrier Noise Bandwidth (dB-Hz)-73Downlink Rain Attenuation02Carrier Noise Bandwidth (dB-Hz)-73Downlink Rain Attenuation02Carrier Noise Bandwidth (dB-Hz)-73Down		N/A 6000	N/A 64
Occupied Bandwidth(kHz) 36 Allocated Bandwidth(kHz) 36 Minimum C/N, Clear Sky (dB) 36 Minimum C/N, Rain (dB) 36 UPLINK EARTH STATION 38 Earth Station Diameter (meters) 8 Earth Station Elevation Angle 5 DOWNLINK EARTH STATION 36 Earth Station Gain (dBi) 5 Earth Station Flevation Angle 7 UPLINK FARTH STATION 3 Earth Station G/T (dB/K) 3 Earth Station Elevation Angle 7 Uplink Earth Station EIRP (dBW) 7 Uplink Path Loss, Clear Sky (dB) -2 Uplink Rain Attenuation 6 Satellite G/T(dB/K) -7 Boltzman Constant(dBW/K-Hz) 7 Downlink CIN (dB) -7 Downlink Rin Attenuation 6 Outrier Noise Bandwidth (dB-Hz) -7 Uplink CIN (dB) -4 Downlink Rin Attenuation 6 Carrier Noise			04 1/2x239/256
Allocated Bandwidth(kHz) 36 Minimum C/N, Clear Sky (dB) 1 Minimum C/N, Rain (dB) 1 UPLINK EARTH STATION 2 Earth Station Diameter (meters) 28 Earth Station Cain (dBi) 5 Earth Station Diameter (meters) 28 DOWNLINK EARTH STATION 2 DOWNLINK EARTH STATION 1 Earth Station Diameter (meters) 1 Earth Station Cain (dBi) 5 Earth Station Gain (dBi) 5 Earth Station Gain (dBi) 5 Earth Station Gain (dBi) 5 Earth Station Carl (dB/K) 3 Barth Station ElRP (dB/W) 3 Uplink Earth Station ELRP (dB/W) 7 Uplink Rath Loss, Clear Sky (dB) -20 Uplink Rath Attenuation 6 Satellite G/T(dB/K) -7 Boltzman Constant(dBW/K-Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Uplink Rain Attenuation 6 Downlink EIRP per Carrier (dBW) 3 Antenna Pointing Error (dB) -4 Downlink Rain Attenuation 6			75.4
Minimum C/N, Clear Sky (dB) 1 Minimum C/N, Rain (dB) 1 UPLINK EARTH STATION 1 Earth Station Diameter (meters) 8 Earth Station Elevation Angle 2 DOWNLINK EARTH STATION 1 Earth Station Diameter (meters) 1 Earth Station Diameter (meters) 1 Earth Station Gain (dBi) 5 Earth Station Gain (dBi) 5 Earth Station Gain (dBi) 3 Earth Station G/T (dB/K) 3 Earth Station FIP (dB/K) 3 Earth Station EIRP (dBW) 7 Uplink Earth Station EIRP (dBW) 7 Uplink Rain Attenuation 60 Satellite G/T(dB/K) -2 Boltzman Constant(dBW/K-Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Downlink Rain Attenuation 4	00 36000		100
Minimum C/N, Rain (dB) 1 UPLINK EARTH STATION 1 Earth Station Diameter (meters) 8 Earth Station Elevation Angle 2 DOWNLINK EARTH STATION 1 Earth Station Elevation Angle 2 DOWNLINK EARTH STATION 1 Earth Station Diameter (meters) 1 Earth Station Gin (dBi) 5 Earth Station G/T (dB/K) 3 Earth Station Elevation Angle 2 UPLINK PERFORMANCE 2 Uplink Earth Station ElRP (dBW) 7 Uplink Rain Attenuation 0 Satellite G/T(dB/K) -2 Boltzman Constant(dBW/K-Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Downlink Path Loss, Clear Sky (dB) -4 Downlink Path Loss, Clear Sky (dB) -4 Downlink Rain Attenuation 0 Garier Noise Bandwidth (dB-Hz) -2 Downlink Rain Attenuation 0 Carrier Noise Bandwidth (dB-Hz) -1 Downlink Rain Attenuation 0 Carrier Noise Bandwidth (dB-Hz) -1 Downlink Rain Attenuation	3 36		2 99
UPLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gain (dBi) Earth Station Elevation Angle DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Diameter (meters) Earth Station Diameter (meters) Earth Station Gain (dBi) Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Cotzman Constant(dBW/K-Hz) Cotrier Noise Bandwidth (dB-Hz) Uplink FRP FORMANCE DownLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Jownlink Rain Attenuation Corrier Noise Bandwidth (dB-Hz) Downlink Rin Attenuation Cotrier (dB/K) Boltzman Constant(dBW/K-Hz) Downlink Ring Artenuation Cotrier (dB) Jownlink CIP (dB/K) Boltzman Constant(dBW/K-Hz) Downlink Rain Attenuation Cotrier Noise Bandwidth (dB-Hz) Jownlink Rain Attenuation Carrier Noise Bandwidth (dB-H	3 36	3 57	2 79
Earth Station Gain (dBi) 5 Earth Station Elevation Angle 7 DOWNLINK EARTH STATION 7 Earth Station Diameter (meters) 11 Earth Station Gain (dBi) 5 Earth Station Gain (dBi) 5 Earth Station Gin (dBi) 3 Earth Station G/T (dB/K) 3 Earth Station Elevation Angle 7 UPLINK PERFORMANCE 7 Uplink Earth Station EIRP (dBW) 7 Uplink Rain Attenuation 60 Satellite G/T(dB/K) -2 Boltzman Constant(dBW/K-Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Downlink EIRP per Carrier (dBW) 3 Antenna Pointing Error (dB) -4 Downlink Rain Attenuation 60 Downlink Rain Attenuation 60 Earth Station G/T (dB/K) 3 Boltzman Constant(dBW/ K-Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Downlink Rain Attenuation 60 Carrier Noise Bandwidth (dB-Hz) -7 Downlink C / M(dB) 22 Carrier Noise Bandwidth (dB-Hz) -7			
Earth Station Elevation Angle 2 DOWNLINK EARTH STATION 1 Earth Station Diameter (meters) 1 Earth Station G/T (dB/K) 3 Earth Station G/T (dB/K) 3 Earth Station Elevation Angle 2 LINK FADE TYPE Clear UPLINK PERFORMANCE 7 Uplink Earth Station ElRP (dBW) 7 Uplink Rain Attenuation 0 Satellite G/T(dB/K) -2 Boltzman Constant(dBW/K-Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Downlink EIRP per Carrier (dBW) 3 Antenna Pointing Error (dB) -4 Downlink Path Loss, Clear Sky (dB) -11 Downlink Rain Attenuation 00 Earth Station G/T (dB/K) 3 Boltzman Constant(dBW/K-Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Downlink Rain Attenuation 00 Garter Noise Societ Sky (dB) -11 Downlink Rain Attenuation 00 Carrier Noise Bandwidth (dB-Hz) -7 Downlink Rain Attenuation 00 Carrier Noise Bandwidth (dB-Hz)	1 45	24	24
DOWNLINK EARTH STATION Earth Station Diameter (meters) 11 Earth Station Gain (dBi) 55 Earth Station G/T (dB/K) 33 Earth Station Elevation Angle 2 LINK FADE TYPE Clear UPLINK PERFORMANCE 7 Uplink Farth Station ElRP (dBW) 7 Uplink Parth Loss, Clear Sky (dB) -22 Uplink Rain Attenuation 00 Satellite G/T(dB/K) -3 Boltzman Constant(dBW/K-Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Uplink PERFORMANCE 20 Downlink EIRP per Carrier (dBW) 3 Antenna Pointing Error (dB) -4 Downlink Rain Attenuation 00 Carrier Noise Bandwidth (dB-Hz) -19 Downlink Rin Per Carrier (dBW) 3 Antenna Pointing Error (dB) -4 Downlink Rain Attenuation 00 Earth Station G/T (dB/K) 3 Boltzman Constant(dBW / K - Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Downlink R (2 / N(dB) 27	8 46 5	41 9	41 9
Earth Station Diameter (meters) 1 Earth Station Grin (dBi) 55 Earth Station G/T (dB/K) 33 Earth Station Elevation Angle 7 LINK FADE TYPE Clear UPLINK PERFORMANCE 7 Uplink Path Loss, Clear Sky (dB) -22 Uplink Rain Attenuation 60 Satellite G/T(dB/K) -7 Boltzman Constant(dBW/K-Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Uplink EIRP per Carrier (dBW) 3 Antenna Pointing Error (dB) -4 DownLink Rain Attenuation 60 Satellite G/T (dB/K) -4 Downlink EIRP per Carrier (dBW) 3 Antenna Pointing Error (dB) -4 Downlink Rain Attenuation 60 Carrier Noise Bandwidth (dB-Hz) -7 Downlink Rain Attenuation 60 Carrier Noise Bandwidth (dB-Hz) -7 Downlink Rain Attenuation 60 Carrier Noise Bandwidth (dB-Hz) -7 Downlink C / M(dB) 22 Carrier Noise Bandwidth (dB-Hz) -7 Downlink C / M(dB) 27) 20	20	20
Earth Station Gain (dBi) 5 Earth Station G/T (dB/K) 3 Earth Station Elevation Angle 3 ILINK FADE TYPE Cleat UPLINK PERFORMANCE 7 Uplink Earth Station EIRP (dBW) 7 Uplink Rain Attenuation 60 Satellite G/T(dB/K) -2 Boltzman Constant(dBW/K-Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Downlink EIRP per Carrier (dBW) 3 Antenna Pointing Error (dB) -4 Downlink Rain Attenuation 0 Downlink Rain Attenuation 0 Carrier Noise Bandwidth (dB-Hz) -3 Downlink Rain Attenuation 0 Carrier Noise Bandwidth (dB-Hz) -4 Downlink Cain Attenuation 0 Carrier Noise Bandwidth (dB-Hz) -7 Downlink C / M(dB) 22 Carrier Noise Bandwidth (dB-Hz) -7 Downlink C / M(dB) 22 COMPOSITE LINK PERFORMANCE 3			
Earth Station G/T (dB/K) 3 Earth Station Elevation Angle 7 LINK FADE TYPE Cleat UPLINK PERFORMANCE 7 Uplink Earth Station EIRP (dBW) 7 Uplink Rain Attenuation 6 Satellite G/T(dB/K) -2 Boltzman Constant(dBW/K-Hz) 22 Carrier Noise Bandwidth (dB-Hz) 7 Uplink C/N(dB) 2 Downlink Parth Loss, Clear Sky (dB) 3 Antenna Pointing Error (dB) 4 Downlink Path Loss, Clear Sky (dB) -11 Downlink Rain Attenuation 6 Earth Station G/T (dB/K) 3 Boltzman Constant(dBW/K-Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Downlink Rin Attenuation 6 Carrier Noise Scier Sky (dB) -11 Downlink Rain Attenuation 6 Carrier Noise Bandwidth (dB-Hz) -7 Downlink Rain Attenuation 6 Carrier Noise Bandwidth (dB-Hz) -7 Downlink C / M(dB) 22 ComPOSITE LINK PERFORMANCE 2	3 45	9 2	13 1
Earth Station Elevation Angle 2 LINK FADE TYPE Cleat UPLINK PERFORMANCE 7 Uplink Earth Station EIRP (dBW) 7 Uplink Rath Loss, Clear Sky (dB) -2 Uplink Rain Attenuation 0 Satellite G/T(dB/K) -2 Boltzman Constant(dBW/K-Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Uplink Rin PerFORMANCE 2 DownLink PERFORMANCE 2 Downlink EIRP per Carrier (dBW) 3 Antenna Pointing Error (dB) -4 Downlink Rain Attenuation 0 Earth Station G/T (dB/K) 3 Boltzman Constant(dBW / K - Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Downlink Rain Attenuation 0 Earth Station G/T (dB/K) 3 Boltzman Constant(dBW / K - Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Downlink C / M(dB) 27	0 43 9	50 3	53 5
LINK FADE TYPE Cleat UPLINK PERFORMANCE - Uplink Earth Station EIRP (dBW) 7 Uplink Path Loss, Clear Sky (dB) -2 Uplink Rain Attenuation 0 Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) 22 Carrier Noise Bandwidth (dB-Hz) 7 DownLink C/N(dB) 2 Downlink EIRP per Carrier (dBW) 3 Antenna Pointing Error (dB) -4 Downlink Rain Attenuation 0 Earth Station G/T (dB/K) 3 Boltzman Constant(dBW / K - Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Downlink CM (dB/K) 3 Boltzman Constant(dBW / K - Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Downlink C / M(dB) 27 ComPOSITIE LINK PERFORMANCE 27	5 23 6		33 0
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) 7 Uplink Path Loss, Clear Sky (dB) -20 Uplink Rain Attenuation 0 Satellite G/T(dB/K) - Boltzman Constant(dBW/K-Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Uplink C/N(dB) 2 DOWNLINK PERFORMANCE 2 Downlink EIRP per Carrier (dBW) 3 Antenna Pointing Error (dB) -4 Downlink Rain Attenuation 0 Earth Station G/T (dB/K) 3 Boltzman Constant(dBW / K - Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Downlink C / M(dB) 27 ComPOSITE LINK PERFORMANCE 27		20	20
Uplink Earth Station EIRP (dBW) 7 Uplink Path Loss, Clear Sky (dB) -20 Uplink Rain Attenuation 00 Satellite G/T(dB/K) -7 Boltzman Constant(dBW/K-Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Uplink C/N(dB) 22 DOWNLINK PERFORMANCE -7 Downlink EIRP per Carrier (dBW) 3 Antenna Pointing Error (dB) -4 Downlink Path Loss, Clear Sky (dB) -19 Downlink Rain Attenuation 00 Earth Station G/T (dB/K) 3 Boltzman Constant(dBW / K - Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Downlink C / N(dB) 27 ComPOSITE LINK PERFORMANCE 27	Sky Clear S	ky Clear Sky	Clear Sky
Uplink Path Loss, Clear Sky (dB) -20 Uplink Rain Attenuation 00 Satellite G/T(dB/K) -20 Boltzman Constant(dBW/K-Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Uplink C/N(dB) 22 DOWNLINK PERFORMANCE -7 Downlink EIRP per Carrier (dBW) 33 Antenna Pointing Error (dB) -4 Downlink Path Loss, Clear Sky (dB) -11 Downlink Rain Attenuation 00 Earth Station G/T (dB/K) 33 Boltzman Constant(dBW / K - Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Downlink C / M(dB) 22 COMPOSITE LINK PERFORMANCE 21	6 70 6	61 3	40.5
Uplink Rain Attenuation CC Satellite G/T(dB/K)	0 2 -200 2		-200 2
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Uplink C/N(dB) 27 DOWNLINK PERFORMANCE 27 Downlink EIRP per Carrier (dBW) 3 Antenna Pointing Error (dB) -4 Downlink Rain Attenuation 07 Downlink Rain Attenuation 07 Boltzman Constant(dBW/K - Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Downlink C / N(dB) 22 COMPOSITE LINK PERFORMANCE 21	0 00	00	00
Boltzman Constant(dBW/K-Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Uplink C/N(dB) 2 DOWNLINK PERFORMANCE 2 Downlink EIRP per Carrier (dBW) 3 Antenna Pointing Error (dB) -4 Downlink Path Loss, Clear Sky (dB) -19 Downlink Rain Attenuation 0 Earth Station G/T (dB/K) 3 Boltzman Constant(dBW/K - Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Downlink C / N(dB) 2 COMPOSITE LINK PERFORMANCE 2		-10	-10
Carrier Noise Bandwidth (dB-Hz) -7 Uplink C/N(dB) 2 DOWNLINK PERFORMANCE 2 Downlink EIRP per Carrier (dBW) 3 Antenna Pointing Error (dB) -4 Downlink Path Loss, Clear Sky (dB) -19 Downlink Rain Attenuation 00 Earth Station G/T (dB/K) 3 Boltzman Constant(dBW / K - Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Downlink C / N(dB) 2 COMPOSITE LINK PERFORMANCE 2	6 228 6	228 6	228 6
DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) 3 Antenna Pointing Error (dB) -1 Downlink Rain Attenuation 0 Downlink Rain Attenuation 0 Earth Station G/T (dB/K) 3 Boltzman Constant(dBW / K - Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Downlink C / M(dB) 2 COMPOSITE LINK PERFORMANCE 2	6 -748	-68 3	-48 8
Downlink EIRP per Carrier (dBW) 3 Antenna Pointing Error (dB) -4 Downlink Path Loss, Clear Sky (dB) -4 Downlink Rain Attenuation 0 Earth Station G/T (dB/K) 3 Boltzman Constant(dBW / K - Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Downlink C / N(dB) 2 COMPOSITE LINK PERFORMANCE 2	4 23 2	20 4	19 2
Antenna Pointing Error (dB)			
Downlink Path Loss, Clear Sky (dB) -19 Downlink Rain Attenuation 0 Earth Station G/T (dB/K) 3 Boltzman Constant(dBW / K - Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Downlink C / N(dB) 2 COMPOSITE LINK PERFORMANCE 2	5 31 5	23 2	24
Downlink Rain Attenuation 00 Earth Station G/T (dB/K) 3 Boltzman Constant(dBW / K - Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Downlink C / N(dB) 2 COMPOSITE LINK PERFORMANCE 2	5 -05	-0 5	-0 5
Earth Station G/T (dB/K) 3 Boltzman Constant(dBW / K - Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Downlink C / N(dB) 2 COMPOSITE LINK PERFORMANCE 2	5 3 -196 3		-196 3
Boltzman Constant(dBW / K - Hz) 22 Carrier Noise Bandwidth (dB-Hz) -7 Downlink C / N(dB) 2 COMPOSITE LINK PERFORMANCE 2		0.0	00
Carrier Noise Bandwidth (dB-Hz) -7 Downlink C / N(dB) 2 COMPOSITE LINK PERFORMANCE	5 23 6		33 0
Downlink C / N(dB) 2 COMPOSITE LINK PERFORMANCE 2			228 6 -48 8
COMPOSITE LINK PERFORMANCE	6 228 6	-08 5	-48 8
	6 228 6 6 -74 8	101	10 4
	6 228 6	20 4	19 2
	36 228 6 6 -74 8 2 12 1	16 1	19 2
	6 228 6 6 -74 8	18 1	16 8
	6 228 6 6 -74 8 2 12 1 4 23 2		27 0
	6 228 6 6 -74 8 2 12 1 4 23 2 2 12 1	27 7	27 0
	6 228 6 6 -74 8 2 12 1 4 23 2 2 12 1 A N/A	27 7 27 7	85
	16 228 6 6 -74 8 2 12 1 4 23 2 2 12 1 A N/A 0 27 0		17 2
	16 228 6 6 -74 8 2 12 1 4 23 2 2 12 1 A N/A 0 27 0 0 27 0	27 7	
C/I Downlink Adjacent Satellite 2 (dB) 2	16 228 6 6 -74 8 2 12 1 4 23 2 2 12 1 A N/A 0 27 0 0 27 0 7 12 5 1 9 8 7 12 5	27 7 9 7 15 1 9 7	85
	16 228 6 6 -74 8 2 12 1 4 23 2 2 12 1 A N/A 0 27 0 7 12 5 1 9 8	27 7 9 7 15 1	8 5 18 0
	16 228 6 6 -74 8 2 12 1 4 23 2 2 12 1 A N/A 0 27 0 0 27 0 0 27 0 7 12 5 1 9 8 7 12 5 7 12 3	27 7 9 7 15 1 9 7 16 3	18 0
	16 228 6 6 -74 8 2 12 1 4 23 2 2 12 1 A N/A 0 27 0 7 12 5 7 12 5 7 12 3 9 4 6	27 7 97 15 1 97 16 3 4 9	18 0 4 3
	16 228 6 6 -74 8 2 12 1 4 23 2 2 12 1 A N/A 0 27 0 7 12 5 7 12 5 7 12 3 9 4 6 0 -10	277 97 151 97 163 49 -10	18 0 4 3 -1 0
	16 228 6 6 -74 8 2 12 1 4 23 2 2 12 1 A N/A 0 27 0 0 27 0 0 27 0 7 12 5 7 12 3 9 4 6 0 -1 0 9 3 6	277 97 151 97 163 49 -10 39	18 0 4 3 -1 0 3 3
	16 228 6 6 -74 8 2 12 1 4 23 2 2 12 1 A N/A 0 27 0 0 27 0 7 12 5 1 9 8 7 12 3 9 4 6 0 -10 9 3 6 0 -3 4	277 97 151 97 163 49 -10 39 -39	18 0 4 3 -1 0 3 3 -3 0
	16 2286 6 -748 2 121 4 232 2 121 4 232 2 121 A N/A 0 270 7 125 1 98 7 125 7 123 9 46 0 -10 9 36 0 -34 9 02	277 97 151 97 163 	18 0 4 3 -1 0 3 3 -3 0 0 3
CARRIER DENSITY LEVELS	16 228 6 6 -74 8 2 12 1 4 23 2 2 12 1 A N/A 0 27 0 0 27 0 7 12 5 1 9 8 7 12 3 9 4 6 0 -10 9 3 6 0 -3 4	277 97 151 97 163 49 -10 39 -39	18 0 4 3 -1 0 3 3 -3 0
Uplink Power Density (dBW/Hz) -5 Downlink EIRP Density At Beam Peak (dBW/Hz) -3	16 228 6 6 -74 8 2 12 1 4 23 2 2 12 1 A N/A 0 27 0 7 12 5 7 12 5 7 12 3 9 4 6 0 -10 9 3 6 0 -3 4 9 0 2 1 1	277 97 151 97 163 49 -10 39 -39 00 3	18 0 4 3 -1 0 3 3 -3 0 0 3

Exhibit 5-7: C-Band Hemi Uplink/Hemi Downlink

UPLINK BEAM INFORMATION Uplink Beam Name	HEMI	HEMI	HEMI	HEMI	HEMI
Uplink Frequency (GHz)	6175	6175	6175	6 175	6 175
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Uplink Relative Contour Level (dB)	-6	-6	-6	-6	-6
Uplink Contour G/T (dB/K)	-75	-75	-75	-75	-75
Uplink SFD (dBW/m2)	-86 0	-88 0	-81 0	-81 0	-89 0
Rain Rate (mm/hr)	42	42	42	42	42
DOWNLINK BEAM INFORMATION Downlink Beam Name	HEMI	HEMI	HEMI	HEMI	HEMI
Downlink Frequency (GHz)	3 95	3 95	3 95	3 95	3 95
Downlink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Downlink Relative Contour Level (dB)	-6	-6	-6	-6	-6
Downlink Contour EIRP (dBW)	31 5	31 5	31 5	31 5	31 5
Rain Rate (mm/hr)	42	42	42	42	43
ADJACENT SATELLITE 1	21.05	21.05	21.05	21.05	21.05
Satellite 1 Orbital Location Uplink Power Density (dBW/Hz)	31 0E -38 7	31 0E -38 7	31 0E -38 7	31 0E -38 7	31 0E -38 7
Uplink Polarization Advantage (dB)	-387	-387	-387	-387	-387
Downlink EIRP Density (dBW/Hz)	-38 0	-38 0	-38 0	-38 0	-38 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
ADJACENT SATELLITE 2					
Satellite 1 Orbital Location	35 0E	35 0E	35 0E	35 0E	35 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz) Downlink Polarization Advantage (dB)	-38 0 0	-38 0 0	-38 0 0	-38 0 0	-38 0 0
CARRIER INFORMATION	, v	v	v	v	v
Carrier ID	36M0F3F	36M0G7W	10M3G7W	100KG7W	77M0G7W
Carrier Modulation	TV/FM	QPSK	QPSK	QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	4	N/A	N/A	N/A	N/A
Information Rate(kbps)	N/A	24575	6000	64	52563
Code Rate	N/A	1/2x188/204	1/2x188/204	1/2x239/256	1/2x188/204
Occupied Bandwidth(kHz) Allocated Bandwidth(kHz)	36000 36000	30133 36000	6771 1 10300	75 4 100	64451 77000
Minimum C/N, Clear Sky (dB)	10	3 36	3 87	2 99	3 36
Minimum C/N, Rain (dB)	10	3 36	3 57	2 79	3 36
UPLINK EARTH STATION					
Earth Station Diameter (meters)	90	4 5	24	24	70
Earth Station Gain (dBi)	53 4	46 5	41 9	41 9	51 0
Earth Station Elevation Angle	20	20	20	20	20
DOWNLINK EARTH STATION	12.1	7.0	12.1	12.1	(1
Earth Station Diameter (meters) Earth Station Gain (dBi)	13 1 53 5	70 475	13 1 53 5	13 1 53 5	6 1 46 5
Earlin Station Gam (dBr)					
Farth Station G/T (dB/K)					
Earth Station G/T (dB/K) Earth Station Elevation Angle	33 0 20	26 6 20	33 0 20	33 0 20	26 2 20
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE	33 0	26 6	33 0	33 0	26 2
Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE	33 0 20 Clear Sky	26 6 20 Clear Sky	33 0 20 Clear Sky	33 0 20 Clear Sky	26 2 20 Clear Sky
Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW)	33 0 20 Clear Sky 76 9	26 6 20 Clear Sky 69 9	33 0 20 Clear Sky 63 4	33 0 20 Clear Sky 43 0	26 2 20 Clear Sky 73 9
Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB)	33 0 20 Clear Sky 76 9 -200 2	26 6 20 Clear Sky 69 9 -200 2	33 0 20 Clear Sky 63 4 -200 2	33 0 20 Clear Sky 43 0 -200 2	26 2 20 Clear Sky 73 9 -200 2
Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation	33 0 20 Clear Sky 76 9 -200 2 0 0	26 6 20 Clear Sky 69 9 -200 2 0 0	33 0 20 Clear Sky 63 4 -200 2 0 0	33 0 20 Clear Sky 43 0 -200 2 0 0	26 2 20 Clear Sky 73 9 -200 2 0 0
Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K)	33 0 20 Clear Sky 76 9 -200 2 0 0 -7 5	26 6 20 Clear Sky 69 9 -200 2 0 0 -7 5	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5
Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation	33 0 20 Clear Sky 76 9 -200 2 0 0	26 6 20 Clear Sky 69 9 -200 2 0 0	33 0 20 Clear Sky 63 4 -200 2 0 0	33 0 20 Clear Sky 43 0 -200 2 0 0	26 2 20 Clear Sky 73 9 -200 2 0 0
Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz)	33 0 20 Clear Sky 76 9 -200 2 0 0 -7 5 228 6	26 6 20 Clear Sky 69 9 -200 2 0 0 -7 5 228 6	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6
Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Path Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE	33 0 20 Clear Sky 76 9 -200 2 0 0 -7 5 228 6 -75 6 22 2	26 6 20 Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7
Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Path Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW)	33 0 20 Clear Sky 76 9 -200 2 0 0 -7 5 228 6 -75 6 22 2 31 5	26 6 20 Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5
Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Path Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB)	33 0 20 Clear Sky 76 9 -200 2 0 0 -7 5 228 6 -75 6 22 2 -15 6 22 2 -15 6 -25 5 -0 5	26 6 20 Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 -88 3 16 0 -0 5	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5	26 2 20 Clear Sky -200 2 0 0 -7 5 228 6 -78 1 16 7 -15 215 -0 5
Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB)	33 0 20 Clear Sky 76 9 -200 2 0 0 -7 5 228 6 -75 6 22 2 31 5 -0 5 -196 3	26 6 20 Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3	26 2 20 Clear Sky -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3
Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation	33 0 20 Clear Sky 76 9 -200 2 0 0 -7 5 228 6 -75 6 22 2 31 5 -0 5 -196 3 0 0	26 6 20 Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0
Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB)	33 0 20 Clear Sky 76 9 -200 2 0 0 -7 5 228 6 -75 6 22 2 31 5 -0 5 -196 3	26 6 20 Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3	26 2 20 Clear Sky -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3
Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Downlink Rain Attenuation Earth Station G/T (dB/K)	33 0 20 Clear Sky 76 9 -200 2 0 0 -7 5 228 6 -75 6 22 2 31 5 -05 -196 3 0 0 33 0	26 6 20 Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2
Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB)	33 0 20 Clear Sky 76 9 -200 2 0 0 -75 228 6 -75 6 22 2 31 5 -0 5 -196 3 0 0 33 0 228 6	26 6 20 Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0 228 6	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6
Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) ComPOSITE LINK PERFORMANCE	33 0 20 Clear Sky 76 9 -200 2 0 0 -75 228 6 -75 6 22 2 31 5 -05 -196 3 0 0 33 0 228 6 -75 6 20 7	26 6 20 Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4
Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Compositie (JBW) Compositie (JBW / K - Hz) Compositie (JBW / K - Hz) Compositie (JBW / K - Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Compositie LINK PERFORMANCE C/N Uplink (dB)	33 0 20 Clear Sky 76 9 -200 2 0 0 -75 228 6 -75 6 22 2 31 5 -05 -196 3 0 0 33 0 228 6 -75 6 20 7 22 2	26 6 20 Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 16 0	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 15 1	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 11 4
Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Sature Sky (dB) Uplink Rain Attenuation Sature Sky (dB) Uplink C/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) Downlink PERFORMANCE Downlink PERFORMANCE Downlink Perform (dBW) Antenua Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Uplink (dB)	33 0 20 Clear Sky 76 9 -200 2 0 0 -75 228 6 -75 6 22 2 31 5 -05 -196 3 0 0 33 0 228 6 -75 6 20 7 22 2 20 7	26 6 20 Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 16 0 12 3	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 16 0 14 5	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -5 -15 1 13 6	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 16 7 11 4
Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Performance Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Uplink (dB)	33 0 20 Clear Sky 76 9 -200 2 0 0 -7 5 228 6 -75 6 22 2 31 5 -0 5 -196 3 0 0 33 0 228 6 -75 6 20 7 22 2 20 7 N/A	26 6 20 Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 16 0 12 3 N/A	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 16 0 14 5 21 8	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 15 1 13 6 20 9	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 11 4 N/A
Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Sature Sky (dB) Uplink Rain Attenuation Sature Sky (dB) Uplink C/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) Downlink PERFORMANCE Downlink PERFORMANCE Downlink Perform (dBW) Antenua Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Uplink (dB)	33 0 20 Clear Sky 76 9 -200 2 0 0 -75 228 6 -75 6 22 2 31 5 -05 -196 3 0 0 33 0 228 6 -75 6 20 7 22 2 20 7	26 6 20 Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 16 0 12 3	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 16 0 14 5	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -5 -15 1 13 6	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 16 7 11 4
Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Uplink Co-Channel (dB)*	33 0 20 Clear Sky 76 9 -200 2 0 0 -75 228 6 -75 6 22 2 31 5 -05 -196 3 0 0 33 0 228 6 -75 6 20 7 -228 6 -75 6 20 7 -228 7 -208 7	26 6 20 Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 16 0 12 3 N/A 30 3	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 16 0 14 5 21 8 27 3	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 15 1 13 6 20 9 27 0	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 11 4 16 7 11 4 N/A 27 0
Earth Station Elevation Angle LINK FADE TYPE UPLINE AFERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) Compositie LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Downlink C - Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB)	33 0 20 Clear Sky 76 9 -200 2 0 0 -75 228 6 -75 6 22 2 31 5 -05 -196 3 0 0 33 0 228 6 -75 6 20 7 -196 3 0 0 33 0 228 6 -75 6 20 7 N/A 30 3 30 3 16 0 25 5	26 6 20 Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 16 0 12 3 N/A 30 3 30 3 9 8 17 1	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 21 8 27 3 27 3 9 8 19 3	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 15 1 13 6 20 9 27 0 27 0 9 0 18 4	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 16 7 11 4 N/A 27 0 27 0 10 5 15 4
Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) ComPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Uplink (dB) C/I Uplink (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB)	33 0 20 Clear Sky 76 9 -200 2 0 0 -7 5 228 6 -75 6 22 2 31 5 -0 5 -196 3 0 0 33 0 228 6 -75 6 20 7 22 2 20 7 N/A 30 3 16 0 22 5 16 0	26 6 20 Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 16 0 12 3 N/A 30 3 9 8 17 1 9 8	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 16 0 14 5 21 8 27 3 27 3 9 8 19 3 9 8	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 15 1 13 6 20 9 27 0 27 0 27 0 9 0 18 4 9 0	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 16 7 11 4 N/A 27 0 27 0 27 0 10 5 15 4 10 5
Earth Station Elevation Angle LINK FADE TYPE UPLINE AFERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) Compositie LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Downlink C - Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB)	33 0 20 Clear Sky 76 9 -200 2 0 0 -75 228 6 -75 6 22 2 31 5 -05 -196 3 0 0 33 0 228 6 -75 6 20 7 -196 3 0 0 33 0 228 6 -75 6 20 7 N/A 30 3 30 3 16 0 25 5	26 6 20 Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 16 0 12 3 N/A 30 3 30 3 9 8 17 1	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 21 8 27 3 27 3 9 8 19 3	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 15 1 13 6 20 9 27 0 27 0 9 0 18 4	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 16 7 11 4 N/A 27 0 27 0 15 4
Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I N Downlink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB)	33 0 20 Clear Sky 76 9 -200 2 0 0 -75 228 6 -75 6 22 2 31 5 -05 -196 3 0 0 33 0 228 6 -75 6 20 7 22 2 20 7 N/A 30 3 30 3 16 0 25 5 16 0 26 3	26 6 20 Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 N/A 30 3 30 3 9 8 17 1 9 8 18 7	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 16 0 14 5 21 8 27 3 27 3 9 8 19 3 9 8 20 1	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -28 -196 3 0 0 33 0 228 6 -48 8 13 6 -27 0 27 0 27 0 27 0 9 0 18 4 9 0 19 2	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 N/A 27 0 27 0 10 5 15 4 10 5 17 3
Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C/ N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB)	33 0 20 Clear Sky 76 9 -200 2 0 0 -75 228 6 -75 6 22 2 31 5 -05 -196 3 0 0 33 0 228 6 -75 6 20 7 22 2 20 7 N/A 30 3 30 3 16 0 25 5 16 0 26 3 -11 5	26 6 20 Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 N/A 30 3 30 3 9 8 17 1 9 8 18 7 -4 8	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 21 8 27 3 27 3 9 8 19 3 9 8 20 1 5 2	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -28 6 -48 8 13 6 -29 27 0 27 0 9 0 18 4 9 0 19 2 	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 N/A 27 0 27 0 10 5 15 4 10 5 17 3 4 9
Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Station EIRP (dBW) Uplink Rain Attenuation Station EIRP (dBW) Uplink Rain Attenuation Station EIRP (dBW) Uplink C/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Constant(dB/K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I	33 0 20 Clear Sky 76 9 -200 2 0 0 -75 228 6 -75 6 22 2 31 5 -05 -196 3 0 0 33 0 228 6 -75 6 20 7 22 2 20 7 N/A 30 3 30 3 16 0 25 5 16 0 26 3	26 6 20 Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 N/A 16 0 12 3 N/A 30 3 30 3 9 8 17 1 9 8 18 7	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 16 0 14 5 21 8 27 3 27 3 9 8 19 3 9 8 20 1	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -28 -196 3 0 0 33 0 228 6 -48 8 13 6 -27 0 27 0 27 0 27 0 9 0 18 4 9 0 19 2	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 N/A 27 0 27 0 10 5 15 4 10 5 17 3
Earth Station Elevation Angle LINK FADE TYPE UPLINE AFERTORMANCE Uplink Earth Station EIRP (dBW) Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Sate of the state of the st	33 0 20 Clear Sky 76 9 -200 2 0 0 -75 228 6 -75 6 22 2 31 5 -05 -196 3 0 0 33 0 228 6 -75 6 20 7 22 7 20 7 N/A 30 3 30 3 30 3 16 0 25 5 16 0 26 3 -10 -10 -10 -10 -10 -10 -10 -10	26 6 20 Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 N/A 30 3 30 3 9 8 17 1 9 8 18 7 -4 8 -1 0	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 21 8 27 3 27 3 9 8 19 3 9 8 20 1 5 2 -1 0	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 228 6 -48 8 13 6 20 9 27 0 27 0 27 0 9 0 18 4 9 0 19 2 -4 -1 0	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 11 4 N/A 27 0 27 0 10 5 15 4 10 5 17 3 4 9 -1 0
Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) ComPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Downlink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB)	33 0 20 Clear Sky 76 9 -200 2 0 0 -75 228 6 -75 6 22 2 31 5 -05 -196 3 0 0 33 0 228 6 -75 6 20 7 22 2 20 7 N/A 30 3 30 3 16 0 25 5 16 0 26 3 -10 10 5	26 6 20 Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 16 0 12 3 N/A 30 3 30 3 9 8 18 7 -4 8 -10 3 8	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 16 0 14 5 21 8 27 3 27 3 9 8 19 3 9 8 20 1 5 2 -10 4 2	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -28 6 -48 8 13 6 -29 27 0 27 0 27 0 27 0 27 0 27 0 9 0 18 4 9 0 19 2 -44 -1 0 3 4	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 11 4 16 7 11 4 N/A 27 0 27 0 27 0 27 0 10 5 15 4 10 5 17 3 4 9 -1 0 3 9
Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink (dB) C/N Uplink (dB) C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I/N+I) Composite (dB) Required System Margin (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Mumber of Carriers	33 0 20 Clear Sky 76 9 -200 2 0 0 -75 228 6 -75 6 22 2 31 5 -05 -196 3 0 0 33 0 228 6 -75 6 20 7 22 2 20 7 N/A 30 3 30 3 16 0 25 5 16 0 26 3 -10 5 -10 5 -10 5 -10 5 -10 5 -10 5 -10 0 -10 5 -10 5 -20 7 -22 2 -20 7 -22 2 -20 7 -22 2 -20 7 -22 2 -20 7 -16 0 -25 5 -16 0 -25 5 -16 0 -25 5 -16 0 -26 3 -10 5 -10 0 -10 0 -1	26 6 20 Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 N/A 30 3 30 3 9 8 17 1 9 8 18 7 -10 38 -3 4	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 14 5 16 0 14 5 21 8 27 3 27 3 9 8 19 3 9 8 20 1 5 2 -1 0 4 2 -3 9	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 20 9 27 0 27 0 27 0 9 0 18 4 9 0 19 2 -10 3 4 -3 0	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 N/A 27 0 27 0 10 5 15 4 10 5 15 4 10 5 17 3 4 9 -1 0 3 9 -3 4
Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dB/K) Boltzman Constant(dB/K) Boltzman Constant(dB/K) Boltzman Constant(dB/K) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Number of Carriers CARRIER DENSITY LEVELS	33 0 20 Clear Sky 76 9 -200 2 0 0 -75 228 6 -75 6 22 2 31 5 -05 -196 3 0 0 33 0 228 6 -75 6 20 7 22 7 20 7 N/A 30 3 30 3 16 0 25 5 16 0 26 3 -10 5 -10 5 -10 0 0 5 1	26 6 20 Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 16 0 12 3 N/A 30 3 30 3 9 8 17 1 9 8 18 7 -4 8 -1 0 3 8 -3 4 0 4 1 1	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 21 8 27 3 27 3 9 8 19 3 9 8 20 1 -5 -10 4 2 -3 9 0 3 7	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 228 6 -48 8 13 6 20 9 27 0 27 0 27 0 27 0 9 0 18 4 9 0 19 2 -4 -1 0 3 4 -3 0 0 4 770	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 11 4 16 7 11 4 N/A 27 0 27 0 10 5 15 4 10 5 17 3 4 9 -1 0 3 9 -3 4 0 5 1 1
Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink (dB) C/N Uplink (dB) C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I/N+I) Composite (dB) Required System Margin (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Mumber of Carriers	33 0 20 Clear Sky 76 9 -200 2 0 0 -75 228 6 -75 6 22 2 31 5 -05 -196 3 0 0 33 0 228 6 -75 6 20 7 22 2 20 7 N/A 30 3 30 3 16 0 25 5 16 0 26 3 -10 5 -10 0 0 5	26 6 20 Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 N/A 30 3 30 3 9 8 17 1 9 8 18 7 4 8 -1 0 3 8 -3 4 0 4	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 218 27 3 27 3 27 3 27 3 9 8 19 3 9 8 20 1 5 2 -1 0 4 2 -3 9 0 3 0 3	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 20 9 27 0 27 0 27 0 27 0 27 0 9 0 18 4 9 0 19 2 	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 N/A 27 0 27 0 27 0 10 5 15 4 10 5 17 3 4 9 -1 0 3 9 -3 4 0 5

Exhibit 5-8: C-Band Hemi Uplink/Zone Downlink

THE INT DE ALC INTODICATION					
UPLINK BEAM INFORMATION Uplink Beam Name	HEMI	HEMI	HEMI	HEMI	HEMI
Uplink Frequency (GHz)	6175	6175	6 175	6175	6 175
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Uplink Relative Contour Level (dB)	-6	-6	-6	-6	-6
Uplink Contour G/T (dB/K)	-75	-75	-75	-75	-75
Uplink SFD (dBW/m2)	-73 0	-83 0	-81 0	-81 0	-89 0
Rain Rate (mm/hr)	42	42	42	42	42
DOWNLINK BEAM INFORMATION Downlink Beam Name	ZONE	ZONE	ZONE	ZONE	ZONE
Downlink Beam Name Downlink Frequency (GHz)	3 95	3 95	3 95	3 95	3 95
Downlink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Downlink Relative Contour Level (dB)	-6	-6	-6	-6	-6
Downlink Contour EIRP (dBW)	30 9	30 9	30 9	30 9	30 9
Rain Rate (mm/hr)	42	42	42	42	43
ADJACENT SATELLITE 1					
Satellite 1 Orbital Location	31 0E	31 0E	31 0E	31 0E	31 0E
Uplink Power Density (dBW/Hz) Uplink Polarization Advantage (dB)	-38 7 0	-38 7	-38 7 0	-38 7 0	-38 7 0
Downlink EIRP Density (dBW/Hz)	-38 0	-38 0	-38 0	-38 0	-38 0
Downlink Elici Density (dB w/12) Downlink Polarization Advantage (dB)	-580	-580	-580	0	0
ADJACENT SATELLITE 2	-	-	-		
Satellite 1 Orbital Location	35 0E	35 0E	35 0E	35 0E	35 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-38 0	-38 0	-38 0	-38 0	-38 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
CARRIER INFORMATION	36M0F3F	36M0G7W	10M3G7W	100KG7W	77 M0G 7W
Carrier ID Carrier Modulation	36M0F3F TV/FM	36M0G/W OPSK	OPSK	OPSK 0	OPSK
Peak to Peak Bandwidth of EDS (MHz)	4	N/A	N/A	N/A	N/A
Information Rate(kbps)	N/A	24575	6000	64	52563
Code Rate	N/A	1/2x188/204	1/2x188/204	1/2x239/256	1/2x188/204
Occupied Bandwidth(kHz)	36000	30133	6771 1	75 4	64451
Allocated Bandwidth(kHz)	36000	36000	10300	100	77000
Minimum C/N, Clear Sky (dB)	10	3 36	3 87	2 99	3 36
Minimum C/N, Rain (dB)	10	3 36	3 57	2 79	3 36
UPLINK EARTH STATION	11.0	4.5	24	24	7.0
Earth Station Diameter (meters) Earth Station Gain (dBi)	11 0 55 4	4 5 46 5	2 4 41 9	2 4 41 9	7 0 51 0
Earth Station Elevation Angle	20	20	20	20	20
DOWNLINK EARTH STATION	20	20	20	20	20
Earth Station Diameter (meters)	18 3	13 1	13 1	13 1	61
Earth Station Gain (dBi)	56 0	53 5	53 5	53 5	46 5
Earth Station G/T (dB/K)	35 5	33 0	33 0	33 0	26 2
Earth Station Elevation Angle	20	20	20	20	20
LINK FADE TYPE UPLINK PERFORMANCE	Clear Sky	Clear Sky	Clear Sky	Clear Sky	Clear Sky
Uplink Earth Station EIRP (dBW)	79.4	69.4	63 4	43 0	73 9
Uplink Path Loss, Clear Sky (dB)	-200 2	-200 2	-200 2	-200 2	-200 2
Uplink Rain Attenuation	0 0	0 0	0 0	0 0	0 0
Satellite G/T(dB/K)	-75	-75	-75	-75	-7 5
Boltzman Constant(dBW/K-Hz)	228 6	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8	-78 1
Uplink C/N(dB)	24 7	15 5	160	15 1	16 7
DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW)	25 3	25 3	174	-30	30 9
Antenna Pointing Error (dB)	-05	-05	-05	-30	-0 5
Downlink Path Loss, Clear Sky (dB)	-196 3	-196 3	-196 3	-196 3	-196 3
Downlink Rain Attenuation	00	0.0	0.0	00	00
Earth Station G/T (dB/K)	35 5	33 0	33 0	33 0	26 2
Boltzman Constant(dBW / K - Hz)	228 6	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8	-78 1
Downlink C / N(dB)	170	153	13 9	13 0	10 8
COMPOSITE LINK PERFORMANCE	24.7	15.5	16.0	15.1	167
C/N Uplink (dB) C/N Downlink (dB)	24 7 17 0	15 5 15 3	160 139	15 1 13 0	167 108
C/I Intermodulation (dB)	N/A	N/A	21.8	20.9	N/A
C/I Uplink Co-Channel (dB)*	273	273	27 3	27 0	27 0
C/I Downlink Co-Channel (dB)*	273	27 3	27 3	27 0	27 0
C/I Uplink Adjacent Satellite 1 (dB)	18 5	93	98	90	10 5
C/I Downlink Adjacent Satellite 1 (dB)	21 9	201	187	178	148
C/I Uplink Adjacent Satellite 2 (dB)	18 5	93	98	90	10 5
C/I Downlink Adjacent Satellite 2 (dB)	22 6	20 9	19 5	18 6	16 7
C/(N+D) Composite (dP)	11 7	50	5.1	42	47
C/(N+I) Composite (dB) Required System Margin (dB)	-10	-10	5 1 -1 0	-1 0	4 / -1 0
Net C/(N+I) Composite (dB)	107	40	41	32	37
Minimum Required C/N (dB)	-10 0	-34	-39	-30	-34
Excess Link Margin (dB)	07	0 6	0 2	0 2	03
Number of Carriers	2	2	7	770	1
CARRIER DENSITY LEVELS					
Uplink Power Density (dBW/Hz)	-51 6	-51 9	-46 8	-47 6	-55 2
Downlink EIRP Density At Beam Peak (dBW/Hz)	-44 3	-43 5	-44 9	-45 8	-41 2

Exhibit 5-9: C-Band Hemi Uplink/Global Downlink

UPLINK BEAM INFORMATION		1		
Uplink Beam Name	HEMI	HEMI	HEMI	HEMI
Uplink Frequency (GHz)	6 175	6 175	6 175	6175
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Uplink Relative Contour Level (dB)	-6	-6	-6	-6
Uplink Contour G/T (dB/K)	-75	-75	-75	-75
Uplink SFD (dBW/m2)	-83 0	-89 0	-84 0	-84 0
Rain Rate (mm/hr)	42	42	42	42
DOWNLINK BEAM INFORMATION	CLODAL	CLODAL	CLODAL	CLODAT
Downlink Beam Name	GLOBAL	GLOBAL	GLOBAL 2.05	GLOBAL
Downlink Frequency (GHz) Downlink Beam Polarization	3 95 CIRCULAR	3 95 CIRCULAR	3 95 CIRCULAR	3 95 CIRCULAR
Downlink Beam Folanzation Downlink Relative Contour Level (dB)	-4	-4	-4	-4
Downlink Contour EIRP (dBW)	27.6	27.6	27.6	27.6
Rain Rate (mm/hr)	42	42	42	42
ADJACENT SATELLITE 1				
Satellite 1 Orbital Location	31 0E	31 0E	31 0E	31 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0
ADJACENT SATELLITE 2				
Satellite 1 Orbital Location	35 0E	35 0E	35 0E	35 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0
CARRIER INFORMATION	261 (0525	261400000	10102020	1002030
Carrier ID Carrier Modulation	36M0F3F	36M0G7W	10M3G7W	100KG7W
Peak to Peak Bandwidth of EDS (MHz)	TV/FM 4	QPSK N/A	QPSK N/A	QPSK N/A
Information Rate(kbps)	4 N/A	24575	6000	N/A 64
Code Rate	N/A N/A	1/2x188/204	1/2x188/204	1/2x239/256
Occupied Bandwidth(kHz)	36000	30133	6771 1	75.4
Allocated Bandwidth(kHz)	36000	36000	10300	100
Minimum C/N, Clear Sky (dB)	10	3 36	3 87	2 99
Minimum C/N, Rain (dB)	10	3 36	3 57	2 79
UPLINK EARTH STATION				
Earth Station Diameter (meters)	13 0	70	24	24
Earth Station Gain (dBi)	56 4	51 0	41 9	41 9
Earth Station Elevation Angle	20	20	20	20
DOWNLINK EARTH STATION				
Earth Station Diameter (meters)	18 3	70	13 1	13 1
Earth Station Gain (dBi)	56 0	47 5	53 5	53 5
Earth Station G/T (dB/K)	35 5	26 6	33 0	33 0
Earth Station Elevation Angle	20	20	20	20
LINK FADE TYPE UPLINK PERFORMANCE	Clear Sky	Clear Sky	Clear Sky	Clear Sky
Uplink Earth Station EIRP (dBW)	79.9	73 9	65 1	44 3
Uplink Path Loss, Clear Sky (dB)	-200 2	-200 2	-200 2	-200 2
Uplink Rain Attenuation	0 0	00	00	0.0
Satellite G/T(dB/K)	-75	-75	-75	-75
Boltzman Constant(dBW/K-Hz)	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8
Uplink C/N(dB)	25 2	20 0	177	16 5
DOWNLINK PERFORMANCE				
Downlink EIRP per Carrier (dBW)	27 6	27 6	18 8	-2 0
Antenna Pointing Error (dB)	-0 5	-0 5	-0 5	-0 5
Downlink Path Loss, Clear Sky (dB)	-196 3	-196 3	-196 3	-196 3
Downlink Rain Attenuation	00	0.0	0.0	0.0
Earth Station G/T (dB/K)	35.5	26.6	33 0	33 0
Boltzman Constant(dBW / K - Hz)	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3 15 3	-48 8 14 0
		11.2		140
Downlink C / N(dB)	19 3	11 2	153	
COMPOSITE LINK PERFORMANCE				
COMPOSITE LINK PERFORMANCE C/N Uplink (dB)	25 2	20 0	177	16 5
COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB)	25 2 19 3	20 0 11 2	177 153	16 5 14 0
COMPOSITE LINK PERFORMANCE C/N Uplink (dB)	25 2	20 0	177	16 5
COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB)	25 2 19 3 N/A	20 0 11 2 N/A	177 153 196	165 140 183
COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)*	25 2 19 3 N/A 27 0	20 0 11 2 N/A 27 0	177 153 196 277	16 5 14 0 18 3 27 0
COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)*	25 2 19 3 N/A 27 0 27 0	20 0 11 2 N/A 27 0 27 0	17 7 15 3 19 6 27 7 27 7	16 5 14 0 18 3 27 0 27 0
COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB)	25 2 19 3 N/A 27 0 27 0 19 0	20 0 11 2 N/A 27 0 27 0 13 8	17 7 15 3 19 6 27 7 27 7 11 5	16 5 14 0 18 3 27 0 27 0 10 3
COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB)	25 2 19 3 N/A 27 0 27 0 19 0 18 2	20 0 11 2 N/A 27 0 27 0 13 8 10 0	17 7 15 3 19 6 27 7 27 7 11 5 14 0	16 5 14 0 18 3 27 0 27 0 10 3 12 8
COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB)	25 2 19 3 N/A 27 0 27 0 19 0 18 2 19 0 18 8	20 0 11 2 N/A 27 0 27 0 13 8 10 0 13 8 11 6	177 153 196 277 277 115 140 115 149	165 140 183 270 270 103 128 103 136
COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB)	252 193 N/A 270 270 190 182 190 188 114	20 0 11 2 N/A 27 0 27 0 13 8 10 0 13 8 11 6 4 7	177 153 196 277 277 115 140 115 149 56	165 140 183 270 270 103 128 103 136
COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB)	25 2 19 3 N/A 27 0 27 0 19 0 18 2 19 0 18 8 11 4 -1 0	20 0 11 2 N/A 27 0 27 0 13 8 10 0 13 8 11 6 4 7 -1 0	177 153 196 277 277 115 140 115 149 56 -10	165 140 183 270 270 103 128 103 136 44 -10
COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB)	25 2 19 3 N/A 27 0 27 0 19 0 18 2 19 0 18 8 11 4 -1 0 10 4	20 0 11 2 N/A 27 0 27 0 13 8 10 0 13 8 11 6 4 7 -1 0 3 7	177 153 196 277 277 115 140 115 149 56 -10 46	165 140 183 270 270 103 128 103 136 44 -10 34
COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB)	25 2 19 3 N/A 27 0 27 0 19 0 18 2 19 0 18 8 11 4 -1 0 10 4 -10 0	20 0 11 2 N/A 27 0 27 0 13 8 10 0 13 8 11 6 4 7 -1 0 3 7 -3 4	177 153 196 277 277 115 140 115 149 56 -10 46 -39	165 140 183 270 270 103 128 103 136
COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) Minimum Required C/N (dB) Minimum Required C/N (dB) Excess Link Margin (dB)	25 2 19 3 N/A 27 0 27 0 19 0 18 2 19 0 18 8 11 4 -10 10 4 -10 0 0 4	200 112 N/A 270 270 138 100 138 116 47 -10 37 -34 03	177 153 196 277 277 115 140 115 149 56 -10 46 -39 07	165 140 183 270 270 103 128 103 136 44 -10 34 -30 04
COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers	25 2 19 3 N/A 27 0 27 0 19 0 18 2 19 0 18 8 11 4 -1 0 10 4 -10 0	20 0 11 2 N/A 27 0 27 0 13 8 10 0 13 8 11 6 4 7 -1 0 3 7 -3 4	177 153 196 277 277 115 140 115 149 56 -10 46 -39	165 140 183 270 270 103 128 103 136
COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers CARRIER DENSITY LEVELS	25 2 19 3 N/A 27 0 27 0 19 0 18 2 19 0 18 8 	20 0 11 2 N/A 27 0 27 0 13 8 10 0 13 8 11 6 47 -1 0 37 -3 4 0 3 1	177 153 196 277 277 115 140 115 149 56 -10 46 -39 07 3	165 140 183 270 270 103 128 103 136 44 -10 34 -30 04 360
COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers	25 2 19 3 N/A 27 0 27 0 19 0 18 2 19 0 18 8 11 4 -10 10 4 -10 0 0 4	200 112 N/A 270 270 138 100 138 116 47 -10 37 -34 03	177 153 196 277 277 115 140 115 149 56 -10 46 -39 07	165 140 183 270 270 103 128 103 136 44 -10 34 -30 04

Exhibit 5-10: C-Band Hemi Uplink/C-Band Spot Downlink

THE INC BEAM INFORMATION				
UPLINK BEAM INFORMATION Uplink Beam Name	HEMI	HEMI	HEMI	HEMI
Uplink Frequency (GHz)	6 175	6 175	6 175	6 175
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Uplink Relative Contour Level (dB)	-6	-6	-6	-6
Uplink Contour G/T (dB/K) Uplink SFD (dBW/m2)	-7 5 -85 0	-7 5 -89 0	-7 5 -84 0	-7 5 -84 0
Rain Rate (mm/hr)	42	42	42	42
DOWNLINK BEAM INFORMATION				
Downlink Beam Name	CSPOT	CSPOT	CSPOT	CSPOT
Downlink Frequency (GHz)	3 95	3 95	3 95	3 95
Downlink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Downlink Relative Contour Level (dB) Downlink Contour EIRP (dBW)	-4 34 6	-4 34 6	-4 34 6	4 34 6
Rain Rate (mm/hr)	42	42	42	42
ADJACENT SATELLITE 1				
Satellite 1 Orbital Location	31 0E	31 0E	31 0E	31 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0 0	-32 0 0	-32 0 0
Downlink Polarization Advantage (dB) ADJACENT SATELLITE 2	U	v	v	v
Satellite 1 Orbital Location	35 0E	35 0E	35 0E	35 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0
CARRIER INFORMATION Carrier ID	36M0F3F	36M0G7W	10M3G7W	100KG7W
Carrier ID Carrier Modulation	36M0F3F TV/FM	36M0G/W QPSK	QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	4	N/A	N/A	N/A
Information Rate(kbps)	N/A	24575	6000	64
Code Rate	N/A	1/2x188/204	1/2x188/204	1/2x239/256
Occupied Bandwidth(kHz)	36000	30133	6771 1	75 4
Allocated Bandwidth(kHz)	36000	36000	10300	100
Minimum C/N, Clear Sky (dB) Minimum C/N, Rain (dB)	10	3 36 3 36	3 87 3 57	2 99 2 79
UPLINK EARTH STATION	10	3 30	3.57	2 19
Earth Station Diameter (meters)	10 0	70	24	24
Earth Station Gain (dBi)	54 1	51	41 9	41 9
Earth Station Elevation Angle	20	20	20	20
DOWNLINK EARTH STATION				
Earth Station Diameter (meters)	11 0	37	61	61
Earth Station Gain (dBi) Earth Station G/T (dB/K)	51 9 31 0	41 2 20 9	46 5 26 2	46 5 26 2
Earth Station Elevation Angle	20	20 9	20 2	202
LINK FADE TYPE	Clear Sky	Clear Sky	Clear Sky	Clear Sky
UPLINK PERFORMANCE				
Uplink Earth Station EIRP (dBW)	77 9	73 9	65 6	44 8
Uplink Path Loss, Clear Sky (dB)	-200 2	-200 2	-200 2	-200 2
Uplink Rain Attenuation Satellite G/T(dB/K)	-75	-75	-7 5	-7 5
Boltzman Constant(dBW/K-Hz)	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8
Uplink C/N(dB)	23 2	20 0	18 2	170
DOWNLINK PERFORMANCE				
Downlink EIRP per Carrier (dBW)	34.6	34.6	263	55
Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB)	-0 5	-0 5 -196 3	-0 5 -196 3	-0 5 -196 3
Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation	0 0	00	00	00
Earth Station G/T (dB/K)	31 0	20.9	26 2	26 2
Boltzman Constant(dBW / K - Hz)	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8
Downlink C / N(dB)	21 8	12 5	160	147
COMPOSITE LINK PERFORMANCE	23 2	20.0	10.2	170
C/N Uplink (dB) C/N Downlink (dB)	23 2	20 0 12 5	18 2 16 0	1/0
C/I Intermodulation (dB)	N/A	N/A	18 1	16 8
C/I Uplink Co-Channel (dB)*	27 0	27 0	27 7	27 0
C/I Downlink Co-Channel (dB)*	27 0	27 0	277	27 0
C/I Uplink Adjacent Satellite 1 (dB)	170	13 8	120	10 8
C/I Downlink Adjacent Satellite 1 (dB)	20 9	99	140	128
C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB)	17 0 21 9	13 8 12 9	12 0 15 9	10 8 14 6
Un Lowmink Aujacent Salemie 2 (0D)	219	129	172	140
			<u> </u>	4 8
	11 6	51	60	
C/(N+I) Composite (dB) Required System Margin (dB)	11 6 -1 0	5 1 -1 0	60 -10	-1 0
C/(N+I) Composite (dB)				38
C/(N+1) Composite (dB) Required System Margin (dB) Net C/(N+1) Composite (dB) Minimum Required C/N (dB)	-1 0 10 6 -10 0	-10 41 -34	-10 50 -39	38 -30
C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB)	-1 0 10 6 -10 0 0 6	-10 41 -34 07	-10 50 -39 11	38 -30 08
C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers	-1 0 10 6 -10 0	-10 41 -34	-10 50 -39	38 -30
C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB)	-1 0 10 6 -10 0 0 6	-10 41 -34 07	-10 50 -39 11	38 -30 08

Exhibit 5-11: C-Band Zone Uplink/Zone Downlink

UPLINK BEAM INFORMATION					
Uplink Beam Name	ZONE	ZONE	ZONE	ZONE	ZONE
Uplink Frequency (GHz)	6 175	6 175	6 175	6 175	6 175
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Uplink Relative Contour Level (dB) Uplink Contour G/T (dB/K)	-6 -56	-6 -56	-6 -56	-6 -56	-6 -56
Uplink SFD (dBW/m2)	-73 9	-80.9	-80.9	-80.9	-86 9
Rain Rate (mm/hr)	42	42	42	42	42
DOWNLINK BEAM INFORMATION					
Downlink Beam Name	ZONE	ZONE	ZONE	ZONE	ZONE
Downlink Frequency (GHz) Downlink Beam Polarization	3 95 CIRCULAR	3 95 CIRCULAR	3 95 CIRCULAR	3 95 CIRCULAR	3 95 CIRCULAR
Downlink Beati Polarization Downlink Relative Contour Level (dB)	-6	-6	-6	-6	-6
Downlink Contour EIRP (dBW)	30 9	30 9	30 9	30 9	30 9
Rain Rate (mm/hr)	42	42	42	42	42
ADJACENT SATELLITE 1 Satellite 1 Orbital Location	31 0E	31 0E	31 0E	31 0E	31 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-38 0	-38 0	-38 0	-38 0	-38 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
ADJACENT SATELLITE 2 Satellite 1 Orbital Location	35 0E	35 0E	25.0E	35 0E	35 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	35 0E -38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-38 0	-38 0	-38 0	-38 0	-38 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
CARRIER INFORMATION Carrier ID	36M0F3F	36M0G7W	10M3G7W	100KG7W	77 M0G 7W
Carrier ID Carrier Modulation	TV/FM	QPSK	QPSK	QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	4	N/A	N/A	N/A	N/A
Information Rate(kbps)	N/A	24575	6000	64	52563
Code Rate	N/A	1/2x188/204	1/2x188/204	1/2x239/256	1/2x188/204
Occupied Bandwidth(kHz) Allocated Bandwidth(kHz)	36000 36000	30133 36000	6771 1 10300	75 4 100	64451 77000
Minimum C/N, Clear Sky (dB)	10	3 36	3 87	2 99	3 36
Minimum C/N, Rain (dB)	10	3 36	3 57	2 79	3 36
UPLINK EARTH STATION					
Earth Station Diameter (meters)	110	45	24	24	15.2
Earth Station Gain (dBi) Earth Station Elevation Angle	55 4 20	46 5 20	41 9 20	41 9 20	58 4 20
DOWNLINK EARTH STATION	20	20	20	20	20
Earth Station Diameter (meters)	18 3	13 1	152	152	61
Earth Station Gain (dBi)	56 0	53 5	55 0	55 0	46 5
Earth Station G/T (dB/K) Earth Station Elevation Angle	35 5 20	33 0 20	34 5 20	34 5 20	26 2 20
LINK FADE TYPE	Clear Sky	Clear Sky	Clear Sky	Clear Sky	Clear Sky
UPLINK PERFORMANCE		,			
Uplink Earth Station EIRP (dBW)	78 5	<u>69 5</u>	63 5	43 1	76 0
Uplink Path Loss, Clear Sky (dB)	-200 2	-200 2	-200 2	-200 2	-200 2
Uplink Rain Attenuation Satellite G/T(dB/K)	00 -56	00 -56	00 -56	00 -56	-56
Boltzman Constant(dBW/K-Hz)	228 6	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8	-78 1
Uplink C/N(dB)	25 7	175	180	171	20 7
DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW)	253	25 3	174	-30	30 9
Antenna Pointing Error (dB)	-05	-05	-05	-05	-0 5
Downlink Path Loss, Clear Sky (dB)	-196 3	-196 3	-196 3	-196 3	-196 3
Downlink Rain Attenuation	00	0 0	0.0	00	
Earth Station G/T (dB/K)			0 0		0 0
	35.5	33 0	34 5	34 5	26 2
Boltzman Constant(dBW / K - Hz)	228 6	33 0 228 6	34 5 228 6	34 5 228 6	26 2 228 6
		33 0	34 5	34 5	26 2
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE	228 6 -75 6 17 0	33 0 228 6 -74 8 15 3	34 5 228 6 -68 3 15 4	34 5 228 6 -48 8 14 5	26 2 228 6 -78 1 10 8
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB)	228 6 -75 6 17 0 25 7	33 0 228 6 -74 8 15 3 17 5	34 5 228 6 -68 3 15 4 18 0	34 5 228 6 -48 8 14 5 17 1	26 2 228 6 -78 1 10 8 20 7
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB)	228 6 -75 6 17 0 	33 0 228 6 -74 8 15 3 17 5 15 3	34 5 228 6 -68 3 15 4 -80 15 4	34 5 228 6 -48 8 14 5 17 1 14 5	26 2 228 6 -78 1 10 8 20 7 10 8
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB)	228 6 -75 6 17 0 25 7 17 0 N/A	33 0 228 6 -74 8 15 3 17 5 15 3 N/A	34 5 228 6 -68 3 15 4 18 0 15 4 21 8	34 5 228 6 -48 8 14 5 17 1 14 5 20 9	26 2 228 6 -78 1 10 8 20 7 10 8 N/A
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB)	228 6 -75 6 17 0 	33 0 228 6 -74 8 15 3 17 5 15 3	34 5 228 6 -68 3 15 4 -80 15 4	34 5 228 6 -48 8 14 5 17 1 14 5	26 2 228 6 -78 1 10 8 20 7 10 8
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB)	228 6 -75 6 17 0 25 7 17 0 N/A 27 3 27 3 17 6	33 0 228 6 -74 8 15 3 17 5 15 3 N/A 27 3 27 3 27 3 9 4	34 5 228 6 -68 3 15 4 18 0 15 4 21 8 27 3 27 3 9 9	34 5 228 6 -48 8 14 5 17 1 14 5 20 9 27 0 27 0 27 0 9 1	26 2 228 6 -78 1 10 8 20 7 10 8 N/A 27 0 27 0 27 0 12 6
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB)	228 6 -75 6 17 0 25 7 17 0 N/A 27 3 27 3 17 6 21 9	33 0 228 6 -74 8 15 3 17 5 15 3 N/A 27 3 27 3 27 3 9 4 20 1	34 5 228 6 -68 3 15 4 18 0 15 4 21 8 27 3 27 3 9 9 20 2	34 5 228 6 -48 8 14 5 	26 2 228 6 -78 1 10 8 20 7 10 8 N/A 27 0 27 0 27 0 12 6 14 8
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB)	228 6 -75 6 17 0 25 7 17 0 N/A 27 3 27 3 17 6 21 9 17 6	33 0 228 6 -74 8 15 3 17 5 15 3 N/A 27 3 27 3 9 4 20 1 9 4	34 5 228 6 -68 3 15 4 	34 5 228 6 -48 8 14 5 17 1 14 5 20 9 27 0 27 0 27 0 9 1 19 4 9 1	26 2 228 6 -78 1 10 8 20 7 10 8 N/A 27 0 27 0 27 0 12 6 14 8 12 6
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB)	228 6 -75 6 17 0 25 7 17 0 N/A 27 3 27 3 17 6 21 9	33 0 228 6 -74 8 15 3 17 5 15 3 N/A 27 3 27 3 27 3 9 4 20 1	34 5 228 6 -68 3 15 4 18 0 15 4 21 8 27 3 27 3 9 9 20 2	34 5 228 6 -48 8 14 5 	26 2 228 6 -78 1 10 8 20 7 10 8 N/A 27 0 27 0 27 0 12 6 14 8
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB)	228 6 -75 6 17 0 25 7 17 0 N/A 27 3 27 3 17 6 21 9 17 6	33 0 228 6 -74 8 15 3 17 5 15 3 N/A 27 3 27 3 9 4 20 1 9 4	34 5 228 6 -68 3 15 4 	34 5 228 6 -48 8 14 5 17 1 14 5 20 9 27 0 27 0 27 0 9 1 19 4 9 1	26 2 228 6 -78 1 10 8 20 7 10 8 N/A 27 0 27 0 27 0 12 6 14 8 12 6
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Downlink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB)	228 6 -75 6 17 0 25 7 17 0 N/A 27 3 27 3 27 3 17 6 21 9 17 6 22 6 22 6 11 4 -1 0	33 0 228 6 -74 8 15 3 17 5 15 3 N/A 27 3 27 3 9 4 20 1 9 4 20 9 5 2 -1 0	34 5 228 6 -68 3 15 4 18 0 15 4 27 3 27 3 27 3 9 9 20 2 9 9 21 0 5 6 -1 0	34 5 228 6 -48 8 14 5 17 1 14 5 20 9 27 0 27 0 27 0 27 0 9 1 19 4 9 1 20 1 4 7 -1 0	26 2 228 6 -78 1 10 8 20 7 10 8 N/A 27 0 27 0 27 0 12 6 14 8 12 6 16 7 5 9 -1 0
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Downlink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB)	228 6 -75 6 17 0 25 7 17 0 N/A 27 3 27 3 17 6 21 9 17 6 22 6 11 4 -1 0 10 4	33 0 228 6 -74 8 15 3 17 5 15 3 N/A 27 3 27 3 9 4 20 1 9 4 20 9 5 2 -1 0 4 2	34 5 228 6 -68 3 15 4 18 0 15 4 21 8 27 3 27 3 27 3 9 9 20 2 9 9 21 0 5 6 -1 0 4 6	34 5 228 6 -48 8 14 5 17 1 14 5 20 9 27 0 27 0 9 1 19 4 9 1 20 1 4 7 -1 0 3 7	26 2 228 6 -78 1 10 8 20 7 10 8 N/A 27 0 27 0 12 6 14 8 12 6 16 7 5 9 -1 0 4 9
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB)	228 6 -75 6 17 0 25 7 17 0 N/A 27 3 27 3 27 3 27 3 17 6 21 9 17 6 22 6 11 4 -1 0 10 4 -10 0	33 0 228 6 -74 8 15 3 17 5 15 3 N/A 27 3 27 3 9 4 20 1 9 4 20 9 5 2 -1 0 4 2 -3 4	34 5 228 6 -68 3 15 4 18 0 15 4 21 8 27 3 27 3 9 9 20 2 9 9 21 0 5 6 -1 0 4 6 -3 9	34 5 228 6 -48 8 14 5 17 1 14 5 20 9 27 0 27 0 9 1 19 4 9 1 20 1 	26 2 228 6 -78 1 10 8 20 7 10 8 N/A 27 0 27 0 12 6 14 8 12 6 16 7 5 9 -1 0 4 9 -3 4
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB)	228 6 -75 6 17 0 25 7 17 0 N/A 27 3 27 3 17 6 21 9 17 6 22 6 11 4 -1 0 10 4 -10 0 0 4	33 0 228 6 -74 8 15 3 17 5 15 3 N/A 27 3 27 3 9 4 20 1 9 4 20 9 5 2 -1 0 4 2 -3 4 0 8	34 5 228 6 -68 3 15 4 18 0 15 4 21 8 27 3 27 3 9 9 20 2 9 9 21 0 5 6 -1 0 4 6 -3 9 0 7	34 5 228 6 -48 8 14 5 17 1 14 5 20 9 27 0 27 0 27 0 27 0 27 0 9 1 19 4 9 1 20 1 4 7 -1 0 3 7 -3 0 0 7	26 2 228 6 -78 1 10 8 20 7 10 8 N/A 27 0 27 0 12 6 14 8 12 6 14 8 12 6 14 8 12 6 14 7 59 -1 0 49 -3 4 1 5
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Downlink (dB) C/I Diplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+1) Composite (dB) Minimum Required C/N (dB)	228 6 -75 6 17 0 25 7 17 0 N/A 27 3 27 3 27 3 27 3 17 6 21 9 17 6 22 6 11 4 -1 0 10 4 -10 0	33 0 228 6 -74 8 15 3 17 5 15 3 N/A 27 3 27 3 9 4 20 1 9 4 20 9 5 2 -1 0 4 2 -3 4	34 5 228 6 -68 3 15 4 18 0 15 4 21 8 27 3 27 3 9 9 20 2 9 9 21 0 5 6 -1 0 4 6 -3 9	34 5 228 6 -48 8 14 5 17 1 14 5 20 9 27 0 27 0 9 1 19 4 9 1 20 1 	26 2 228 6 -78 1 10 8 20 7 10 8 N/A 27 0 27 0 12 6 14 8 12 6 16 7 5 9 -1 0 4 9 -3 4
Boltzman Constaut(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers	228 6 -75 6 17 0 25 7 17 0 N/A 27 3 27 3 17 6 21 9 17 6 22 6 11 4 -1 0 10 4 -10 0 0 4	33 0 228 6 -74 8 15 3 17 5 15 3 N/A 27 3 27 3 9 4 20 1 9 4 20 9 5 2 -1 0 4 2 -3 4 0 8	34 5 228 6 -68 3 15 4 18 0 15 4 21 8 27 3 27 3 9 9 20 2 9 9 21 0 5 6 -1 0 4 6 -3 9 0 7	34 5 228 6 -48 8 14 5 17 1 14 5 20 9 27 0 27 0 27 0 27 0 27 0 9 1 19 4 9 1 20 1 4 7 -1 0 3 7 -3 0 0 7	26 2 228 6 -78 1 10 8 20 7 10 8 N/A 27 0 27 0 12 6 14 8 12 6 14 8 12 6 14 8 12 6 14 7 59 -1 0 49 -3 4 1 5

Exhibit 5-12: C-Band Zone Uplink/Hemi Downlink

UPLINK BEAM INFORMATION					
Uplink Beam Name	ZONE	ZONE	ZONE	ZONE	ZONE
Uplink Frequency (GHz)	6175	6 175	6 175	6 175	6 175
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Uplink Relative Contour Level (dB)	-6	-6	-6	-6	-6
Uplink Contour G/T (dB/K)	-56	-56	-56	-56	-56
Uplink SFD (dBW/m2)	-73 9	-82 9	-80 9	-80 9	-86 9
Rain Rate (mm/hr)	42	42	42	42	42
DOWNLINK BEAM INFORMATION Downlink Beam Name	HEMI	HEMI	HEMI	HEMI	HEMI
Downlink Frequency (GHz)	3 95	3 95	3 95	3 95	3 95
Downlink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Downlink Relative Contour Level (dB)	-6	-6	-6	-6	-6
Downlink Contour EIRP (dBW)	31.5	31.5	31.5	31.5	31.5
Rain Rate (mm/hr)	42	42	42	42	42
ADJACENT SATELLITE 1					
Satellite 1 Orbital Location	31 0E	31 0E	31 0E	31 0E	31 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-38 0	-38 0	-38 0	-38 0	-38 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
ADJACENT SATELLITE 2	25.05	25.05	25.0E	25.05	25.05
Satellite 1 Orbital Location Uplink Power Density (dBW/Hz)	35 0E -38 7	35 0E -38 7	35 0E -38 7	35 0E -38 7	35 0E -38 7
Uplink Power Density (dB W/Hz) Uplink Polarization Advantage (dB)	-38 /	-38 /	-38 /	-38 /	-38 /
Downlink EIRP Density (dBW/Hz)	-38 0	-38 0	-38 0	-38 0	-38 0
Downlink Polarization Advantage (dB)	-380	-380	-380	-380	-380
CARRIER INFORMATION	i ř	~	Ť	Ť	~
Carrier ID	36M0F3F	36M0G7W	10M3G7W	100KG7W	77M0G7W
Carrier Modulation	TV/FM	QPSK	QPSK	QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	4	N/A	N/A	N/A	N/A
Information Rate(kbps)	N/A	24575	6000	64	52563
Code Rate	N/A	1/2x188/204	1/2x188/204	1/2x239/256	1/2x188/204
Occupied Bandwidth(kHz)	36000	30133	6771 1	75 4	64451
Allocated Bandwidth(kHz)	36000	36000	10300	100	77000
Minimum C/N, Clear Sky (dB)	10	3 36	3 87	2 99	3 36
Minimum C/N, Rain (dB)	10	3 36	3 57	2 79	3 36
UPLINK EARTH STATION	10 0	4.5	24	24	81
Earth Station Diameter (meters) Earth Station Gain (dBi)	54 1	45	41 9	41 9	52.8
Earth Station Claim (dB)	20	20	20	20	20
DOWNLINK EARTH STATION	20	20	20	20	20
Earth Station Diameter (meters)	18 3	11 0	11 0	13 1	45
Earth Station Gain (dBi)	56 0	51 9	51 9	53 5	43 9
Earth Station G/T (dB/K)	35 5	31 0	31 0	33 0	23 6
			20	20	20
Earth Station Elevation Angle	20	20	20	20	20
LINK FADE TYPE	20 Clear Sky	20 Clear Sky	Clear Sky	Clear Sky	20 Clear Sky
LINK FADE TYPE UPLINK PERFORMANCE	Clear Sky	Clear Sky	Clear Sky	Clear Sky	Clear Sky
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW)	Clear Sky 78 5	Clear Sky 69 5	Clear Sky 63 5	Clear Sky 43 1	Clear Sky 76 0
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB)	Clear Sky 78 5 -200 2	Clear Sky 69 5 -200 2	Clear Sky 63 5 -200 2	Clear Sky 43 1 -200 2	Clear Sky 76 0 -200 2
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation	Clear Sky 78 5 -200 2 0 0	Clear Sky 69 5 -200 2 0 0	Clear Sky 63 5 -200 2 0 0	Clear Sky 43 1 -200 2 0 0	Clear Sky 76 0 -200 2 0 0
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K)	Clear Sky 78 5 -200 2 0 0 -5 6	Clear Sky 69 5 -200 2 0 0 -5 6	Clear Sky 63 5 -200 2 0 0 -5 6	Clear Sky 43 1 -200 2 0 0 -5 6	Clear Sky 76 0 -200 2 0 0 -5 6
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz)	Clear Sky 78 5 -200 2 0 0 -5 6 228 6	Clear Sky 69 5 -200 2 0 0 -5 6 228 6	Clear Sky 63 5 -200 2 0 0 -5 6 228 6	Clear Sky 43 1 -200 2 0 0 -5 6 228 6	Clear Sky 76 0 -200 2 0 0 -5 6 228 6
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz)	Clear Sky 78 5 -200 2 0 0 -5 6	Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8	Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3	Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8	Clear Sky 76 0 -200 2 0 0 -5 6
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz)	Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6	Clear Sky 69 5 -200 2 0 0 -5 6 228 6	Clear Sky 63 5 -200 2 0 0 -5 6 228 6	Clear Sky 43 1 -200 2 0 0 -5 6 228 6	Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB)	Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6	Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8	Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3	Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8	Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB)	Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5	Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5	Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -8 -8 -8 -68 3 18 0 -0 5	Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5	Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB)	Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 -25 9 -0 5 -196 3	Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3	Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -18 0 -0 5 -196 3	Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3	Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation	Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0	Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0	Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0	Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0	Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K)	Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 -0 5 -0 5 -196 3 0 0 35 5	Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0	Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0	Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0	Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz)	Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6	Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6	Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6	Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6	Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz)	Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6 -75 6	Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8	Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3	Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8	Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB)	Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6	Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6	Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6	Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6	Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW/ K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW/ K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE	Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 -05 -196 3 0 0 35 5 228 6 -75 6 -75 6 17 6	Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 -25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9	Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5	Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6	Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB)	Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 -0 5 -0 5 -0 5 -0 5 -0 5 -0 5 -0 5 -0 5	Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 17 5	Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 -18 0	Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 17 1	Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW/ K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW/ K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE	Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 -05 -196 3 0 0 35 5 228 6 -75 6 -75 6 17 6	Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 -25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9	Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5	Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6	Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB)	Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 6 25 7 17 6	Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 17 5 13 9	Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 -8 -8 -8 -68 3 12 5 -8 -8 -8 -8 -8 -8 -8 -8 -6 -6 -6 -6 -6 -6 -6 -6 -6 -6	Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6	Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7 8 8
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Intermodulation (dB)	Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 6 17 6 N/A	Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 N/A	Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 18 0 12 5 21 8	Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 17 1 13 6 20 9	Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 228 6 -78 1 8 8 20 7 8 8 N/A
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/KHz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Downlink (dB) C/I Uplink (dB) C/I Uplink (c-Channel (dB)*	Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6 -75 6 -75 6 -75 6 -75 6 -75 6 -75 7 17 6 N/A 27 3	Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 -25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 -74 8 13 9 N/A 27 3	Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 -195 3 0 0 31 0 228 6 -68 3 12 5 21 8 27 3	Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -17 1 13 6 20 9 27 0	Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7 8 8 N/A 27 0
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)*	Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 -05 -196 3 0 0 35 5 228 6 -75 6 17 6 -75 6 17 6 N/A 27 3 27 3	Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 17 5 13 9 N/A 27 3 27 3	Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 -18 0 12 5 -18 0 12 5 -21 8 27 3 27 3	Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 17 1 13 6 20 9 27 0 27 0	Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7 8 8 N/A 27 0 27 0
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Downlink (dB) C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB)	Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 6 17 6 N/A 27 3 27 3 17 6 22 5 17 6	Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 17 5 13 9 N/A 27 3 27 3 9 4 19 0 9 4	Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 18 0 12 5 21 8 27 3 27 3 9 9 17 6 9 9	Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -17 1 13 6 20 9 27 0 27 0 9 1 18 4 9 1	Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7 8 8 N/A 27 0 27 0 12 6 12 5 12 6
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB)	Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 6 N/A 27 3 27 3 17 6 22 5	Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 N/A 27 3 27 3 9 4 19 0	Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 -18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 -18 0 -27 3 27 3 9 9 17 6	Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 20 9 27 0 27 0 9 1 18 4	Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7 8 8 N/A 27 0 27 0 12 6 12 5
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Nownlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB)	Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 6 25 7 17 6 N/A 27 3 27 3 17 6 22 5 17 6 22 5 17 6 22 5 17 6 22 5 17 6 23 2	Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 -25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 17 5 13 9 N/A 27 3 27 3 9 4 19 0 9 4 20 0	Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 -18 0 12 5 -18 0 12 5 -21 8 27 3 27 3 9 9 17 6 9 9 18 6	Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 17 1 13 6 20 9 27 0 27 0 9 1 18 4 9 1 19 2	Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7 8 8 N/A 27 0 27 0 12 6 12 5 12 6 15 0
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) ComPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB)*	Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 6 25 7 17 6 25 7 17 6 27 3 27 3 17 6 22 5 17 6 22 5 17 6 23 2 11 6	Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 N/A 27 3 27 3 9 4 19 0 9 4 20 0 5 0	Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 -18 0 12 5 -196 3 0 0 31 0 228 6 -68 3 12 5 -18 0 -68 3 12 5 -18 0 -68 3 12 5 -18 0 -68 3 12 5 -19 6 -68 3 12 5 -19 6 -68 3 12 5 -19 6 -68 3 -68 3 12 5 -19 6 -68 3 -68 3 -19 6 -68 3 -19 6 -68 3 -19 6 -68 3 -19 6 -68 3 -19 6 -68 3 -12 5 -19 6 -68 3 -12 5 -19 6 -68 3 -68 3 -12 5 -18 0 -68 3 -7 7 -19 6 -68 3 -7 7 -17 6 -9 9 -17 6 -9 9 -18 6 -5 -19 6 -5 -19 6 -5 -19 6 -6 -6 -6 -6 -6 -6 -6 -6 -6 -6 -6 -6 -6 -	Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 20 9 27 0 27 0 27 0 27 0 9 1 18 4 9 1 19 2 4 6	Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7 8 8 N/A 27 0 27 0 12 6 12 5 12 6 15 0 4 7
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) ComPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB)	Clear Sky 78 5 -200 2 0 0 -56 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 6 25 7 17 6 N/A 27 3 27 3 17 6 22 5 17 6 22 5 17 6 23 2 11 6 -1 0	Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 17 5 13 9 N/A 27 3 27 3 9 4 19 0 9 4 20 0 5 0 -1 0	Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 18 0 12 5 21 8 27 3 27 3 9 9 17 6 9 9 18 6 -5 5 0 -1 0	Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -48 8 13 6 -196 3 0 0 33 0 228 6 -48 8 13 6 -209 27 0 27 0 27 0 9 1 18 4 9 1 19 2 -46 -1 0 -1 0	Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7 8 8 N/A 27 0 27 0 12 6 12 5 12 6 15 0 4 7 -1 0
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) Composite (dB) C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Net C/(N+I) Composite (dB)	Clear Sky 78 5 -200 2 0 0 -56 228 6 -75 6 25 7 25 9 -05 -196 3 0 0 35 5 228 6 -75 6 17 6 25 7 17 6 25 7 17 6 27 3 27 3 27 3 17 6 22 5 17 6 22 5 17 6 23 2 11 6 -1 0 10 6	Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 -25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 -74 8 13 9 -74 8 13 9 -74 8 13 9 -74 8 -77 3 27 3 9 4 19 0 9 4 20 0 -1 0 4 0	Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 -196 3 12 5 -196 3 0 12 5 21 8 27 3 27 3 9 9 17 6 9 9 18 6 -5 0 -1 0 4 0	Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -17 1 13 6 20 9 27 0 27 0 27 0 27 0 9 1 18 4 9 1 19 2 -10 3 6	Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7 8 8 N/A 27 0 27 0 12 6 12 5 12 6 15 0 47 -1 0 3 7
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K.Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / M(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB)	Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -05 -196 3 0 0 35 5 228 6 -75 6 17 6 25 7 17 6 25 7 17 6 27 3 27 3 17 6 22 5 17 6 22 5 17 6 23 2 11 6 -1 0 10 6 -10 0	Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 17 5 13 9 N/A 27 3 27 3 9 4 19 0 9 4 20 0 5 0 -1 0 4 0 -3 4	Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 -18 0 12 5 21 8 27 3 27 3 9 9 17 6 9 9 18 6 -5 0 -1	Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -10 27 0 9 1 18 4 9 1 19 2 -10 -10 -3 6 -3 0	Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 00 23 6 228 6 -78 1 8 8 20 7 8 8 N/A 27 0 27 0 12 6 12 5 12 6 15 0 4 7 -1 0 3 7 -3 4
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Lintermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Meinimum Required C/N (dB) Excess Link Margin (dB) Excess Link Margin (dB)	Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 6 25 7 17 6 25 7 17 6 X/A 27 3 27 3 17 6 22 5 17 6 23 2 11 6 -10 10 6 -10 0 0 6	Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 17 5 13 9 N/A 27 3 27 3 9 4 19 0 9 4 20 0 5 0 -1 0 	Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 -18 0 12 5 -18 0 12 5 -18 0 12 5 -18 0 12 5 -18 0 -68 3 12 5 -18 0 -68 3 12 5 -18 0 -68 3 12 5 -18 0 -68 3 12 5 -19 5 -10 -10 -10 -3 -9 0 0 1 -10 -10 -10 -10 -1	Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 20 9 27 0 27 0 27 0 9 1 18 4 9 1 19 2 4 6 -1 0 3 6 -3 0 0 6	Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7 8 8 N/A 27 0 27 0 12 6 12 5 12 6 15 0 47 -1 0 3 7 -3 4 0 3
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink C/N(dB) Downlink Path Loss, Clear Sky (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Uplink (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Number of Carriers	Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -05 -196 3 0 0 35 5 228 6 -75 6 17 6 25 7 17 6 25 7 17 6 27 3 27 3 17 6 22 5 17 6 22 5 17 6 23 2 11 6 -1 0 10 6 -10 0	Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 17 5 13 9 N/A 27 3 27 3 9 4 19 0 9 4 20 0 5 0 -1 0 4 0 -3 4	Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 -18 0 12 5 21 8 27 3 27 3 9 9 17 6 9 9 18 6 -5 0 -1	Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -10 27 0 9 1 18 4 9 1 19 2 -10 -10 -3 6 -3 0	Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7 8 8 N/A 27 0 27 0 12 6 12 5 12 6 12 5 12 6 15 0 4 7 -1 0 3 7 -3 4
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) UDownlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Number of Carriers CARRIER DENSITY LEVELS	Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 6 22 5 17 6 N/A 27 3 27 3 17 6 22 5 17 6 23 2 11 6 -1 0 10 6 -10 0 0 6 2	Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 17 5 13 9 N/A 27 3 27 3 9 4 19 0 9 4 20 0 5 0 -1 0 4 0 -3 4 0 6 2	Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 18 0 12 5 21 8 27 3 27 3 9 9 17 6 9 9 18 6 5 0 -1 0 4 0 -3 9 0 1 7 -7 -7 -7 -7 -7 -7 -7 -7 -7 -7 -7 -7 -	Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -196 3 0 0 33 0 228 6 -48 8 13 6 -209 27 0 27 0 27 0 9 1 18 4 9 1 19 2 -46 -10 3 6 -3 0 0 6 770	Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7 8 8 N/A 27 0 27 0 12 6 15 0 47 -1 0 3 7 -3 4 0 3 1
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C/N(dB) ComPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Number of Carriers	Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 6 25 7 17 6 25 7 17 6 X/A 27 3 27 3 17 6 22 5 17 6 23 2 11 6 -10 10 6 -10 0 0 6	Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 17 5 13 9 N/A 27 3 27 3 9 4 19 0 9 4 20 0 5 0 -1 0 	Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 -18 0 12 5 -18 0 12 5 -18 0 12 5 -18 0 -68 3 12 5 -18 0 -68 3 12 5 -18 0 -68 3 12 5 -19 5 -10 -10 -10 -3 -9 -01 -10 -10 -10 -3 -9 -01	Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 20 9 27 0 27 0 27 0 9 1 18 4 9 1 19 2 4 6 -1 0 3 6 -3 0 0 6	Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7 8 8 N/A 27 0 27 0 12 6 12 5 12 6 15 0 47 -1 0 3 7 -3 4 0 3

Exhibit 5-13: Ku-Band Spot Uplink/Ku-Band Spot Downlink 12.5-12.75 GHz

UPLINK BEAM INFORMATION						
Uplink Beam Name	KUSPOT	KUSPOT	KUSPOT	KUSPOT	KUSPOT	KUSPOT
Uplink Frequency (GHz)	14 25	14 25	14 25	14 25	14 25	14 25
Uplink Beam Polarization	LINEAR	LINEAR	LINEAR	LINEAR	LINEAR	LINEAR
Uplink Relative Contour Level (dB) Uplink Contour G/T (dB/K)	-4 58	4 58	-4 58	-4 58	-4 58	-4 58
Uplink SFD (dBW/m2)	-77 2	-89 2	-83 2	-83 2	-83 2	-83 2
Rain Rate (mm/hr)	42	42	42	42	42	42
DOWNLINK BEAM INFORMATION						
Downlink Beam Name	KUSPOT 11 95	KUSPOT 11 95	KUSPOT 11 95	KUSPOT 11 95	KUSPOT 11 95	KUSPOT 11 95
Downlink Frequency (GHz) Downlink Beam Polarization	LINEAR	LINEAR	LINEAR	LINEAR	LINEAR	LINEAR
Downlink Relative Contour Level (dB)	-4	-4	-4	-4	-4	-4
Downlink Contour EIRP (dBW)	43 7	43 7	43 7	43 7	43 7	43 7
Rain Rate (mm/hr)	42	42	42	42	42	42
ADJACENT SATELLITE 1	21.65	21.65	21.65	21.65	21.65	21.65
Satellite 1 Orbital Location Uplink Power Density (dBW/Hz)	31 5E -45	31 5E -45	31 5E -45	31 5E -45	31 5E -45	31 5E -45
Uplink Polarization Advantage (dB)	0	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-21 4	-21 4	-21 4	-21 4	-21 4	-21 4
Downlink Polarization Advantage (dB)	0	0	0	0	0	0
ADJACENT SATELLITE 2	25.0E	25.0E	25 OF	25 OF	25.0E	25.05
Satellite 1 Orbital Location Uplink Power Density (dBW/Hz)	35 0E -45	35 0E -45	35 0E -45	35 0E -45	35 0E -45	35 0E -45
Uplink Polarization Advantage (dB)	0	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-20 0	-20 0	-20 0	-20 0	-20 0	-20 0
Downlink Polarization Advantage (dB)	0	0	0	0	0	0
CARRIER INFORMATION	261 (0525	771 (00 200	101/2020	1002030	11/450/2017	4002033
Carrier ID Carrier Modulation	36M0F3F TV/FM	77M0G7W QPSK	10M3G7W QPSK	100KG7W QPSK	1M45G7W BPSK	400KG7W BPSK
Peak to Peak Bandwidth of EDS (MHz)	4	N/A	N/A	N/A	N/A	N/A
Information Rate(kbps)	N/A	52563	6000	64	512	128
Code Rate	N/A	1/2x188/204	1/2x188/204	1/2x239/256	R1/2	R1/2
Occupied Bandwidth(kHz)	36000	64451	6771 1	75.4	1229	307
Allocated Bandwidth(kHz) Minimum C/N, Clear Sky (dB)	36000 10	77000 3 36	10300 3 87	100 2 99	1450 3 4	400 3 4
Minimum C/N, Rain (dB)	10	3 36	3 57	2 79	27	27
UPLINK EARTH STATION						
Earth Station Diameter (meters)	37	24	18	18	18	18
Earth Station Gain (dBi)	52 7	49	46 4	46 4	46 4	46 4
Earth Station Elevation Angle DOWNLINK EARTH STATION	20	20	20	20	20	20
Earth Station Diameter (meters)	11 0	30	61	61	70	61
Earth Station Gain (dBi)	60 4	49 2	55 5	55 5	57 0	55 5
Earth Station G/T (dB/K)	38 0	267	33 1	33 1	34 6	33 1
Earth Station Elevation Angle LINK FADE TYPE	20 Clear Sky	20 Clear Sky	20 Clear Sky	20 Clear Sky	20 Clear Sky	20 Clear Sky
LUNK FADE TIFE			Clear Sky	стеат эку		
	Clear Sky	cicia sity			Clear Sky	Clear Sky
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW)	75 2	73 7	61 2	40 7	52 3	46 7
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB)	75 2 -207 5	73 7 -207 5	-207 5	-207 5	52 3 -207 5	46 7 -207 5
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation	75 2 -207 5 0 0	73 7 -207 5 0 0	-207 5 0 0	-207 5 0 0	52 3 -207 5 0 0	46 7 -207 5 0 0
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K)	75 2 -207 5 0 0 5 8	73 7 -207 5 0 0 5 8	-207 5 0 0 5 8	-207 5 0 0 5 8	52 3 -207 5 0 0 5 8	46 7 -207 5 0 0 5 8
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz)	75 2 -207 5 0 0	73 7 -207 5 0 0	-207 5 0 0	-207 5 0 0	52 3 -207 5 0 0	46 7 -207 5 0 0
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB)	75 2 -207 5 0 0 5 8 228 6	73 7 -207 5 0 0 5 8 228 6	-207 5 0 0 5 8 228 6	-207 5 0 0 5 8 228 6	52 3 -207 5 0 0 5 8 228 6	46 7 -207 5 0 0 5 8 228 6
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE	75 2 -207 5 0 0 5 8 228 6 -75 6 26 6	73 7 -207 5 0 0 5 8 228 6 -78 1 22 5	-207 5 0 0 5 8 228 6 -68 3 19 8	-207 5 0 0 5 8 228 6 -48 8 18 9	52 3 -207 5 0 0 5 8 228 6 -60 9 18 4	46 7 -207 5 0 0 5 8 228 6 -54 9 18 8
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW)	75 2 -207 5 0 0 5 8 228 6 -75 6 26 6 38 2	73 7 -207 5 0 0 5 8 228 6 -78 1 22 5 43 7	-207 5 0 0 5 8 228 6 -68 3 19 8 30 2	-207 5 0 0 5 8 228 6 -48 8 18 9 9 7	52 3 -207 5 0 0 5 8 228 6 -60 9 18 4 21 3	467 -2075 00 58 2286 -549 188 157
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB)	75 2 -207 5 0 0 5 8 228 6 -75 6 26 6 38 2 -0 5	73 7 -207 5 0 0 5 8 228 6 -78 1 22 5 43 7 -0 5	-207 5 0 0 5 8 228 6 -68 3 19 8 30 2 -0 5	-207 5 0 0 5 8 228 6 -48 8 18 9 9 7 -0 5	52 3 -207 5 0 0 5 8 228 6 -60 9 18 4 21 3 -0 5	46 7 -207 5 0 0 5 8 228 6 -54 9 18 8 15 7 -0 5
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW)	75 2 -207 5 0 0 5 8 228 6 -75 6 26 6 38 2	73 7 -207 5 0 0 5 8 228 6 -78 1 22 5 43 7	-207 5 0 0 5 8 228 6 -68 3 19 8 30 2	-207 5 0 0 5 8 228 6 -48 8 18 9 9 7	52 3 -207 5 0 0 5 8 228 6 -60 9 18 4 21 3	467 -2075 00 58 2286 -549 188 157
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K)	75 2 -207 5 0 0 5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0	73 7 -207 5 0 0 5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7	-207 5 0 0 5 8 228 6 -68 3 19 8 -0 5 -0 5 -205 9 0 0 33 1	-207 5 0 0 5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 33 1	52 3 -207 5 0 0 5 8 228 6 -60 9 18 4 -21 3 -0 5 -205 9 0 34 6	46 7 -207 5 0 0 5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 33 1
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz)	75 2 -207 5 0 0 5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6	73 7 -207 5 0 0 5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6	-207 5 0 0 5 8 228 6 -68 3 19 8 -05 -05 -205 9 0 0 33 1 228 6	-207 5 0 0 5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 33 1 228 6	52 3 -207 5 0 0 5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6	46 7 -207 5 0 0 5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 33 1 228 6
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink CN(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz)	75 2 -207 5 0 0 5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6	73 7 -207 5 0 0 5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -78 1	-207 5 0 0 5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3	-207 5 0 0 5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 33 1 228 6 -48 8	52 3 -207 5 0 0 5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9	46 7 -207 5 0 0 5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 33 1 228 6 -54 9
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB)	75 2 -207 5 0 0 5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6	73 7 -207 5 0 0 5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6	-207 5 0 0 5 8 228 6 -68 3 19 8 -05 -05 -205 9 0 0 33 1 228 6	-207 5 0 0 5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 33 1 228 6	52 3 -207 5 0 0 5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6	46 7 -207 5 0 0 5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 33 1 228 6
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink CN(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz)	75 2 -207 5 0 0 5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6	73 7 -207 5 0 0 5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -78 1	-207 5 0 0 5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3	-207 5 0 0 5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 33 1 228 6 -48 8	52 3 -207 5 0 0 5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9	46 7 -207 5 0 0 5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 33 1 228 6 -54 9
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB)	75 2 -207 5 0 0 5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6 22 8	73 7 -207 5 0 0 5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 22 5 14 4	-207 5 0 0 5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1 19 8 17 1	-207 5 0 0 5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 33 1 228 6 -48 8 16 2 18 9 16 2	52 3 -207 5 0 0 5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 18 4 17 2	46 7 -207 5 0 0 5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 33 1 228 6 -54 9 16 1 18 8 16 1
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB)	75 2 -207 5 0 0 5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6 22 8 -25 9 0 0 38 0 228 6 -75 6 22 8 -26 6 22 8 N/A	73 7 -207 5 0 0 5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 22 5 14 4 N/A	-207 5 0 0 5 8 228 6 -68 3 19 8 -05 -205 9 0 0 33 1 228 6 -68 3 17 1 -19 8 17 1 19 8 17 1 19 0	-207 5 0 0 5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 33 1 228 6 -48 8 16 2 18 9 16 2 18 0	52 3 -207 5 0 0 5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 18 4 17 2 17 5	46 7 -207 5 0 0 5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 33 1 228 6 -54 9 16 1 18 8 16 1 17 9
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rath Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Uplink (dB) C/N Uplink (dB) C/I Uplink (dB) C/I Uplink CB)	75 2 -207 5 0 0 5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6 22 8 -75 6 22 8 -205 9 0 0	73 7 -207 5 0 0 5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 22 5 14 4 N/A 28 6	-207 5 0 0 5 8 228 6 -68 3 19 8 -68 3 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1 -19 8 17 1 19 0 27 4	-207 5 0 0 5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 33 1 228 6 -48 8 16 2 18 9 16 2 18 9 16 2 18 0 27 0	52 3 -207 5 0 0 5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 18 4 17 2 17 5 27 0	46 7 -207 5 0 0 5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 33 1 228 6 -54 9 16 1 18 8 16 1 17 9 27 0
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Uplink Co-Channel (dB)*	75 2 -207 5 0 0 5 8 228 6 -75 6 26 6 38 2 -05 -205 9 0 0 38 0 228 6 -75 6 22 8 22 8 26 6 22 8 N/A 28 9 28 9	73 7 -207 5 0 0 5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 22 5 14 4 N/A 28 6 28 6	-207 5 0 0 5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1 19 8 17 1 19 8 17 1 19 0 27 4 27 4	-207 5 0 0 5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 33 1 228 6 -48 8 16 2 18 9 16 2 18 9 16 2 18 0 27 0 27 0	52 3 -207 5 0 0 5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 18 4 17 2 18 4 17 2 27 0 27 0	46 7 -207 5 0 0 5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 33 1 228 6 -54 9 16 1 18 8 16 1 17 9 27 0 27 0
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rath Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Uplink (dB) C/N Uplink (dB) C/I Uplink (dB) C/I Uplink CB)	75 2 -207 5 0 0 5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6 22 8 -75 6 22 8 -205 9 0 0	73 7 -207 5 0 0 5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 22 5 14 4 N/A 28 6	-207 5 0 0 5 8 228 6 -68 3 19 8 -68 3 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1 -19 8 17 1 19 0 27 4	-207 5 0 0 5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 33 1 228 6 -48 8 16 2 18 9 16 2 18 9 16 2 18 0 27 0	52 3 -207 5 0 0 5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 18 4 17 2 17 5 27 0	46 7 -207 5 0 0 5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 33 1 228 6 -54 9 16 1 18 8 16 1 17 9 27 0
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rarth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink RCN(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Nownlink (dB) C/I Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB) C/I Uplink Adjacent Satellite 1 (dB)	75 2 -207 5 0 0 5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6 22 8 -75 6 22 8 -26 6 22 8 -75 9 -75 6 22 8 -75 7 26 -75 7 26 -75 7 27 7 26 -75 7 26 -75 7 26 -75 7 27 7 27 7 27 7 28 9 -79 7 28 9 28 9 28 9 28 9 28 9 29 28 9 28 9 2	73 7 -207 5 0 0 5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 22 5 14 4 N/A 28 6 28 6 15 3 10 5 18 6	-207 5 0 0 5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1 19 8 17 1 19 8 17 1 19 9 27 4 27 4 27 4 12 6 13 6 15 9	-207 5 0 0 5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 33 1 228 6 -48 8 16 2 18 9 16 2 18 0 27 0 27 0 27 0 11 6 12 6 14 9	52 3 -207 5 0 0 5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 3 17 4	46 7 -207 5 0 0 5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 33 1 228 6 -54 9 16 1 18 8 16 1 17 9 27 0 27 0 11 5 12 5 14 9
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) C/M DOwnlink (dB) C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB)	75 2 -207 5 0 0 5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6 22 8 -75 6 22 8 -75 6 22 8 N/A 28 9 28 9 28 9 19 3 19 4	73 7 -207 5 0 0 5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 22 5 14 4 N/A 28 6 28 6 15 3 10 5	-207 5 0 0 5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1 19 8 17 1 19 9 17 1 19 9 27 4 12 6 13 6	-207 5 0 0 5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 33 1 228 6 -48 8 16 2 18 9 16 2 18 0 27 0 27 0 27 0 11 6 12 6	52.3 -207.5 0.0 5.8 228.6 -60.9 18.4 -0.5 -205.9 0 34.6 -228.6 -60.9 17.2 18.4 -17.2 17.5 27.0 11.1 13.7	46 7 -207 5 0 0 5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 33 1 228 6 -54 9 16 1 17 9 27 0 27 0 27 0 11 5 12 5
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Carth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink PerFORMANCE Downlink PerFORMANCE Downlink Faith Loss, Clear Sky (dB) Downlink PerFORMANCE Composition G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB)	75 2 -207 5 0 0 5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6 22 8 26 6 22 8 N/A 28 9 28 9 19 3 19 4 22 6 21 7	73 7 -207 5 0 0 5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 22 5 14 4 N/A 28 6 15 3 10 5 18 6 13 9	-207 5 0 0 5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1 19 8 17 1 19 8 17 1 19 9 27 4 27 4 12 6 13 6 15 9 16 2	-207 5 0 0 5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 33 1 228 6 -48 8 16 2 18 9 16 2 18 9 16 2 18 0 27 0 27 0 11 6 12 6 14 9 15 2	52 3 -207 5 0 0 5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 16 2	46 7 -207 5 0 0 5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 0 33 1 228 6 -54 9 16 1 18 8 16 1 17 9 27 0 27 0 11 5 12 5 14 9 15 2
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Dynnlink Co-Channel (dB)* C/I Dynnlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+1) Composite (dB)	75 2 -207 5 0 0 5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6 22 8 26 6 22 8 N/A 28 9 28 9 28 9 28 9 19 3 19 4 22 6 21 7	73 7 -207 5 0 0 5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 22 5 14 4 N/A 28 6 15 3 10 5 18 6 13 9 6 6	-207 5 0 0 5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1 19 8 17 1 19 8 17 1 19 9 17 1 19 0 27 4 12 6 13 6 15 9 16 2 7 1	-207 5 0 0 5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 33 1 228 6 -48 8 16 2 18 9 16 2 18 0 27 0 27 0 27 0 11 6 12 6 14 9 15 2 6 1	52 3 -207 5 0 0 5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 18 4 172 18 4 172 18 4 172 18 4 162 6 3	46 7 -207 5 0 0 5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 33 1 228 6 -54 9 16 1 18 8 16 1 17 9 27 0 27 0 27 0 27 0 11 5 12 5 14 9 15 2 6 1
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB)	75 2 -207 5 0 0 5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6 22 8 26 6 22 8 N/A 28 9 28 9 19 3 19 4 22 6 21 7	73 7 -207 5 0 0 5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 22 5 14 4 N/A 28 6 15 3 10 5 18 6 13 9	-207 5 0 0 5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1 19 8 17 1 19 8 17 1 19 9 27 4 27 4 12 6 13 6 15 9 16 2	-207 5 0 0 5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 33 1 228 6 -48 8 16 2 18 9 16 2 18 9 16 2 18 0 27 0 27 0 11 6 12 6 14 9 15 2	52 3 -207 5 0 0 5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 16 2	46 7 -207 5 0 0 5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 0 33 1 228 6 -54 9 16 1 18 8 16 1 17 9 27 0 27 0 11 5 12 5 14 9 15 2
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Cain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB)	75 2 -207 5 0 0 5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6 22 8 -75 6 22 8 -75 6 22 8 N/A 28 9 28 9 28 9 19 3 19 4 22 6 21 7 -10	73 7 -207 5 0 0 5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 22 5 14 4 N/A 28 6 28 6 15 3 10 5 18 6 13 9 6 6 -1 0	-207 5 0 0 5 8 228 6 -68 3 19 8 -05 -205 9 0 0 33 1 228 6 -68 3 17 1 19 8 17 1 19 8 17 1 19 9 27 4 27 4 12 6 13 6 15 9 16 2 -7 1 -1 0	-207 5 0 0 5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 33 1 228 6 -48 8 16 2 18 9 16 2 18 9 16 2 18 0 27 0 27 0 27 0 11 6 12 6 14 9 15 2 6 1 -1 0 5 1 -3 0	52.3 -207 5 00 58 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 17 5 27 0 111 13 7 14 4 16 2 6 3 -1 0	46 7 -207 5 0 0 5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 33 1 228 6 -54 9 16 1 18 8 16 1 17 9 27 0 27 0 27 0 11 5 12 5 14 9 15 2 6 1 -1 0
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Nownlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB)	75 2 -207 5 0 0 5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6 22 8 -75 7 -205 9 0 0 38 0 28 9 28 9 19 3 19 4 22 6 21 7 -10 0 12 4 -10 0 2 4	73 7 -207 5 0 0 5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 N/A 28 6 28 6 15 3 10 5 18 6 13 9 66 -1 0 5 6 -3 4 2 2	-207 5 0 0 5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1 19 8 17 1 19 8 17 1 19 9 27 4 27 4 12 6 13 6 15 9 16 2 7 1 -1 0 6 1 -3 9 2 2	-207 5 0 0 5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 33 1 228 6 -48 8 16 2 18 9 16 2 18 9 16 2 18 0 27 0 27 0 27 0 27 0 11 6 12 6 14 9 15 2 6 1 -1 0 5 1 -3 0 2 1	52 3 -207 5 0 0 5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 6 3 -1 0 5 3 -3 4 1 9	46 7 -207 5 0 0 5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 33 1 228 6 -54 9 16 1 18 8 16 1 17 9 27 0 27 0 11 5 12 5 14 9 15 2 6 1 -1 0 5 1 -3 4 1 7
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) C/M Downlink (dB) C/I Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Required System Margin (dB) Number of Carriers	75 2 -207 5 0 0 5 8 228 6 -75 6 26 6 38 2 -05 -205 9 0 0 38 0 228 6 -75 6 22 8 26 6 22 8 N/A 28 9 28 9 19 3 19 4 22 6 21 7 13 4 -1 0 12 4 -10 0	73 7 -207 5 0 0 5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -781 144 22 5 144 22 5 144 22 5 144 N/A 28 6 28 6 15 3 10 5 18 6 13 9 6 6 -1 0 5 6 -3 4	-207 5 0 0 5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1 19 8 17 1 19 9 27 4 27 4 12 6 13 6 15 9 16 2 7 1 -1 0 6 1 -3 9	-207 5 0 0 5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 33 1 228 6 -48 8 16 2 18 9 16 2 18 9 16 2 18 0 27 0 27 0 27 0 11 6 12 6 14 9 15 2 6 1 -1 0 5 1 -3 0	52 3 -207 5 0 0 5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 18 4 172 18 4 172 18 4 17 2 18 4 17 2 18 4 17 2 18 4 16 2 6 3 -1 0 5 3 -3 4	46 7 -207 5 0 0 5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 33 1 228 6 -54 9 16 1 17 9 27 0 27 0 27 0 27 0 11 5 12 5 14 9 15 2 6 1 -1 0 5 1 -3 4
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink RAin Attenuation DownLink PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / M(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Uplink (dB) C/N Uplink (dB) C/I Downlink (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+1) Composite (dB) Required System Margin (dB) Net C/(N+1) Composite (dB) Required System Margin (dB) Number of Carriers CARRIER DENSITY LEVELS	75 2 -207 5 0 0 5 8 228 6 -75 6 26 6 38 2 -05 -205 9 0 0 38 0 228 6 -75 6 22 8 -75 6 22 7 -75 6 22 8 -75 6 22 7 -75 6 22 8 -75 7 -75 7 -77 7 -75 7 -75 7 -7	73 7 -207 5 0 0 5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 22 5 14 4 N/A 28 6 28 6 15 3 10 5 18 6 13 9 6 6 -1 0 5 6 -3 4 22 1	-207 5 0 0 5 8 228 6 -68 3 19 8 -05 -205 9 0 0 33 1 228 6 -68 3 17 1 -19 8 17 1 19 8 17 1 19 8 17 1 19 9 27 4 27 4 12 6 13 6 15 9 16 2 -71 -1 0 6 1 -3 9 2 2 10	-207 5 0 0 5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 33 1 228 6 -48 8 16 2 18 9 16 2 18 0 27 0 27 0 27 0 27 0 27 0 27 0 11 6 12 6 14 9 15 2 61 -1 0 5 1 -3 0 2 1 1120	52 3 -207 5 0 0 5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 17 2 17 5 27 0 27 0 11 1 13 7 14 4 16 2 6 3 -1 0 5 3 -3 4 19 77	46 7 -207 5 0 0 5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 33 1 228 6 -54 9 16 1 17 9 27 0 27 0 27 0 11 5 12 5 14 9 15 2 6 1 -1 0 5 1 -3 4 1 7 280
UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK FERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers	75 2 -207 5 0 0 5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6 22 8 -75 7 -205 9 0 0 38 0 28 9 28 9 19 3 19 4 22 6 21 7 -10 0 12 4 -10 0 2 4	73 7 -207 5 0 0 5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 N/A 28 6 28 6 15 3 10 5 18 6 13 9 66 -1 0 5 6 -3 4 2 2	-207 5 0 0 5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1 19 8 17 1 19 8 17 1 19 9 27 4 27 4 12 6 13 6 15 9 16 2 7 1 -1 0 6 1 -3 9 2 2	-207 5 0 0 5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 33 1 228 6 -48 8 16 2 18 9 16 2 18 9 16 2 18 0 27 0 27 0 27 0 27 0 11 6 12 6 14 9 15 2 6 1 -1 0 5 1 -3 0 2 1	52 3 -207 5 0 0 5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 6 3 -1 0 5 3 -3 4 1 9	467 -2075 00 58 2286 -549 188 157 -05 -2059 0 331 2286 -549 161 188 161 270 270 270 125 149 152 61 -10 51 -34

Exhibit 5-14: Ku-Band Spot Uplink/Ku-Band Spot Downlink 10.95-11.2 & 11.45-11.7 GHz

Uplink Beam Name KUSPOT KUSPAT I 425 14 25	UPLINK BEAM INFORMATION							
Tight Propensy (Bh) 14.25 <td></td> <td>KUSPOT</td> <td>KUSPOT</td> <td>KUSPOT</td> <td>KUSPOT</td> <td>KUSPOT</td> <td>KUSPOT</td> <td>KUSPOT</td>		KUSPOT	KUSPOT	KUSPOT	KUSPOT	KUSPOT	KUSPOT	KUSPOT
Gradit Schwier Control Level (a) 4 <th1< th=""> <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td>14 25</td><td></td></t<></th1<>							14 25	
Spin Control (C. (B.K)) 51								LINEAR
Cipal SD (4800m) 77.2 49.7 84.2 44.2 84.2 44.2 44.2 42.4								
Sam Exercise Q <thq< th=""> Q Q <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<></thq<>								
BOWNERS REAL REFORMATION Composition Resolution								
Decklam 1195								
Docadal Bein Pointasion LDEAR LDEAR <thldear< th=""> LDEAR LDEAR</thldear<>								KUSPOT
Domain Renter Conter Level (a) 4 <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>								
Domain Cartone EBP (BNP) 447 <td></td> <td>_</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		_						
Ban Res (marks) 42 43 43 43 43 43 43 43 44								
ABJACKY SATELLITE 1								
Update Reversion (dBW1kb) 443 445 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>								
Update Fabrication Advantage (df) 0	Satellite 1 Orbital Location	31 5E	31 5E	31 5E	31 5E	31 5E	31 5E	31 5E
Downlack EBP Density (diff) With) 200 300 300 300 300 200 200 200 ADJACENT SATULITY 0<							1.2	
Downlaw Advances O			-		-		-	
ADJACKY SATELLITE 2 -								
Stateline 33 0E 33 0E 35 0E	8 ()	U	U	U	U	U	U	U
Update Neurona Averange (BB) 45 <		35.0F	35.0F	35.0F	35.0F	35.0F	35.0E	35.0F
Update FRP Neutration Advantage (dB) 0								
Downlak ERP Demity (GRWE) 300 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>								
CARRER NFORMATION Description TMGCTW IDMGGTW IDMGGTW <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>								
Carner D 384.0FF 77.846.7W 104.0F0V 106.0F0V	8 ()	0	0	0	0	0	0	0
Carrier Modulation TV/FM QPSK QPSK QPSK BPSK BPSK BPSK DPSK Desk to Pek Lasokandin GED (DE) H4 N/A		20/0525	771 (000701)	101/20201	10080331	11/450799	40080788	110100000
Pack to Pack Bandwattin GTDS (DHz) IA NA NA NA NA NA NA NA Information Rankföhp) NKA 152383 5000 64 512 128 86015 Code Rate NKA 15248204 112x188204 112x18204 11229 307 93335 Allocated Bandwattin(EHz) 36000 6401 671 100 1450 400 110000 Minamu CN, Carles Say (BB) 10 336 357 279 27 27 336 Data Station Dannet (carleron) 57 7 4 18 18 18 13 336 Eard Station Dannet (carleron) 57 7 4 16 18 18 18 18 18 130 Eard Station Diamet (carleron) 110 30 61 70 70 70 17 Eard Station Diamet (carleron) 110 36 16 70 70 570 511 Eard Station Diamet (carleron) <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>								
Information Rate(Styp) NA 32563 6000 644 512 128 8001 Cocke Rate NA 1/2x182024 1/2x182024 1/2x182024 1/2x18202 1/2x18202 1/2x18202 1/2x18202 1/2x18202 1/2x18202 0/2x18202 1/2x18202 0/2x18202 0/2x1820		_		-	-			-
Code Rate NA 12x188/204 11/2x188/204 11/2x188/204 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>								
Allocade Bandwold(2E1) 36000 77000 1000 1450 400 11200 Mummun CN, Rain (dB) 10 336 337 299 34 34 336 Mummun CN, Rain (dB) 10 336 337 299 34 34 336 Earth Station Disneter (netrs) 37 24 18 18 18 18 18 18 18 18 18 18 18 18 10 357 24 44 464								1/2x188/204
Julianum CX, Cker Sky (dB) 10 336 387 299 34 34 336 UPLINK EARTH STATION 7 27 27 27 336 Land, Stato, Dameter (neters) 37 24 18 18 18 18 18 18 18 18 18 18 18 30 Eard, Stato, Dameter (neters) 10 336 377 29 20 </td <td>Occupied Bandwidth(kHz)</td> <td>36000</td> <td>64451</td> <td>6771 1</td> <td>75 4</td> <td>1229</td> <td>307</td> <td>93335</td>	Occupied Bandwidth(kHz)	36000	64451	6771 1	75 4	1229	307	93335
Minimum CN, Rain (48) 10 336 377 2.79 2.7 3.3 2.7								
UPLINK EARTH STATION 2 1 <th1< th=""> <th1< th=""> 1 <th1< th=""></th1<></th1<></th1<>								
Tarth Station Diameter (networ) 37 24 18 18 18 18 18 10 Earth Station Gauge 20 <t< td=""><td></td><td>10</td><td>3 36</td><td>3 57</td><td>2 79</td><td>27</td><td>27</td><td>3 36</td></t<>		10	3 36	3 57	2 79	27	27	3 36
Earth Stution Gain (dB) 527 49 464		3.7	24	1.8	1.8	1.8	1.8	3.0
Earth Station Elevation Angle 20								
Earth Station Diameter (meters) 110 30 61 70								
Earth Station Gain (dBi) 604 492 555 570 570 570 571 <td>DOWNLINK EARTH STATION</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	DOWNLINK EARTH STATION							
Earth Station GT (dB/X) 33 0 26 7 33 1 34 6 34 6 28 6 Earth Station Elevation Angle 20 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>								
Earth Sution Elevation Åagle 20 <								
LINK F ADE TYPE Clear Sky								
UPLINK PERFORMANCE Image: Constraint of the station and the statis and the station and the static and the station and								
		Cicil Sily	cical sky	Cicia Sily	Cicia Sily	Cicia Sily	cica bity	Cicil Sky
Uptime Rain Atternation 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Satelitte GT(dB/K) 5.8	Uplink Earth Station EIRP (dBW)	75 2	73 7	61 2	40 7	52 3	46 7	73 7
Shellite G/T(dB/K) 58 58 58 58 58 58 58 58 Boltzman Constant(dB/K/Hz) 228.6 20.5 9 -205.9								
Boltzman Constant(dBW/K-Hz) 228 6 200 V///////////////////////////////////	1							
$\begin{array}{c c c c c c c c c c c c c c c c c c c $								
Upink C/N(dB) 26 6 22 5 19 8 18 9 18 4 18 8 20 9 DOWNLINK PERFORMANCE								
DOWNLINK PERFORMANCE Downlink ERP per Carrier (dBW) 38.2 43.7 30.2 9.7 21.3 15.7 43.7 Downlink ERP per Carrier (dBW) .05								
Downlink EIRP per Carrier (dBW) 38 2 43 7 30 2 9 7 21 3 15 7 43 7 Antenna Pointing Error (dB) -05	• • • •							
Downlink Path Loss, Clear Sky (dB) -205 9 -20		38 2	43 7	30 2	97	21 3	157	43 7
Downlink Rain Attennation 00 00 00 00 00 00 00 00 Earth Station GT (dB/K) 380 267 331 346 346 346 286 2280 286 274 2710								
Earth Station G/T (dB/K)38 0 267 331 346 346 346 2286 Boltzman Constant(dBW / K - Hz)228 6 $228 6$ $227 6$ $228 6$ $227 6$ $228 6$ $227 6$ $228 6$ $227 6$ $227 0$ $27 0$ 2								
Boltzman Constant(dBW / K - Hz) 228 6 274 7 270 7						-	-	
Carrier Noise Bandwidth (dB-Hz) -75 6 -78 1 -68 3 -48 8 -60 9 -54 9 -79 7 Downlink C / N(dB) 22 8 14 4 17 1 17 7 17 2 17 6 14 7 COMPOSITE LINK PERFORMANCE								
Downlink C / N(dB) 22 8 14 4 17 1 17 7 17 2 17 6 14 7 COMPOSITE LINK PERFORMANCE 26 6 22 5 19 8 18 9 18 4 18 8 20 9 C/N Uplink (dB) 22 8 14 4 17 1 17 7 17 2 17 6 14 7 C/N Downlink (dB) 22 8 14 4 17 1 17 7 17 2 17 6 14 7 C/I Intermodulation (dB) N/A N/A N/A 19 0 18 0 17 5 17 9 N/A C/I Uplink Co-Channel (dB)* 28 9 28 6 27 4 27 0 27								
COMPOSITE LINK PERFORMANCE 266 225 198 189 184 188 209 C/N Uplink (dB) 2266 225 198 189 184 188 209 C/N Downlink (dB) 228 144 171 177 172 176 147 C/I Uplink Co-Channel (dB)* 289 286 274 270 27								
C/N Downlink (dB) 22 8 14 4 17 1 17 7 17 2 17 6 14 7 C/I Intermodulation (dB) N/A N/A N/A 19 0 18 0 17 5 17 9 N/A C/I Uplink Co-Channel (dB)* 28 9 28 6 27 4 27 0 <								
C/I Intermodulation (dB) N/A N/A 190 180 175 179 N/A C/I Uplink Co-Channel (dB)* 289 286 274 270 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>								
C/I Uplink Co-Channel (dB)* 28 9 28 6 27 4 27 0								
C/I Downlink Co-Channel (dB)* 28 9 28 6 27 4 27 0 <th27 0<="" th=""> <th27 0<="" th=""> 27 0 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<></th27></th27>								
C/I Uplink Adjacent Satellite 1 (dB) 19 3 15 3 12 6 11 6 11 1 11 5 13 7 C/I Downlink Adjacent Satellite 1 (dB) 18 0 9 1 12 2 12 8 12 3 12 7 9 6 C/I Uplink Adjacent Satellite 2 (dB) 22 6 18 6 15 9 14 9 14 4 14 9 17 0 C/I Downlink Adjacent Satellite 2 (dB) 22 6 18 6 15 9 14 9 14 4 14 9 17 0 C/I Downlink Adjacent Satellite 2 (dB) 21 7 13 9 16 2 16 7 16 2 16 6 14 1 C/I Downlink Adjacent Satellite 2 (dB) 21 7 13 9 16 2 16 7 16 2 16 6 14 1 C/I Downlink Adjacent Satellite 2 (dB) 13 0 6 0 6 7 6 5 6 0 6 4 5 9 Required System Margin (dB) -10 -34 <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>								
C/I Downlink Adjacent Satellite 1 (dB) 180 91 122 128 123 127 96 C/I Uplink Adjacent Satellite 2 (dB) 226 186 159 149 144 149 170 C/I Downlink Adjacent Satellite 2 (dB) 217 139 162 167 162 166 141 C/(N+I) Composite (dB) 130 60 67 65 60 64 59 Required System Margin (dB) -10 -10 -10 -10 -10 -10 -10 -10 Net C/(N+I) Composite (dB) 120 50 57 55 50 54 49 Minimum Required C/N (dB) -100 -34 -39 -30 -34 -34 -34 Excess Link Margin (dB) 20 16 18 25 16 20 15 Number of Carriers 2 1 10 1120 77 280 1 Uplink Power Density (dBW/Hz) -531 -534 -535 -545 -550 -545 -557								
C/I Uplink Adjacent Satellite 2 (dB) 22 6 18 6 15 9 14 9 14 4 14 9 17 0 C/I Downlink Adjacent Satellite 2 (dB) 21 7 13 9 16 2 16 7 16 2 16 6 14 1 C/(I Downlink Adjacent Satellite 2 (dB) 21 7 13 9 16 2 16 7 16 2 16 6 14 1 C/(N+I) Composite (dB) 13 0 6 0 6 7 6 5 6 0 6 4 5 9 Required System Margin (dB) -1 0 -3 4 -3 4 -3 4 -3 4 -3 4 -3 4 -3 4 -3 4 -3 4 -3 4 -3 4 -3 4 -3								
C/(N+I) Composite (dB) 130 60 67 65 60 64 59 Required System Margin (dB) -10 -34 -34 -34 -34 -34 -34 -34 -34 -34 -34 -34 -34 -34 -34 -34 -34 -34 -36 -36		22 6						
Required System Margin (dB) -10 -34<	C/I Downlink Adjacent Satellite 2 (dB)	21 7	13 9	16 2	167	16 2	16 6	14 1
Required System Margin (dB) -10 -34<								
Net C/(N+1) Composite (dB) 120 50 57 55 50 54 49 Minimum Required C/N (dB) -100 -34 -39 -30 -34 -34 -34 Excess Link Margin (dB) 20 16 18 25 16 20 15 Number of Carriers 2 1 10 1120 77 280 1 CARRIER DENSITY LEVELS								
Minimum Required C/N (dB) -10 0 -3 4 -3 9 -3 0 -3 4 -3 4 -3 4 Excess Link Margin (dB) 2 0 1 6 1 8 2 5 1 6 2 0 1 5 Number of Carriers 2 1 10 1120 77 280 1 CARREER DENSITY LEVELS								
Excess Link Margin (dB) 20 16 18 25 16 20 15 Number of Carriers 2 1 10 1120 77 280 1 CARRIER DENSITY LEVELS								
Number of Carriers 2 1 10 1120 77 280 1 CARRIER DENSITY LEVELS								
Uplink Power Density (dBW/Hz) -53 1 -53 4 -53 5 -54 5 -55 0 -54 5 -55 7	Number of Carriers							
Downlink EIRP Density At Beam Peak (dBW/Hz) -33 4 -30 4 -34 1 -35 1 -35 6 -35 1 -32 0								
	Downlink EIRP Density At Beam Peak (dBW/Hz)	-33 4	-30 4	-34 1	-35 1	-35 6	-35 1	-32 0

Exhibit 6 Adjacent Satellite 31.0° E.L. Link Budgets

Exhibit 6-1: 31.0° E.L. C-Band Global Uplink/Global Downlink

		_			
UPLINK BEAM INFORMATION	CLODAL	CLODAL	CLODAL	CLODAL	CLOBAL
Uplink Beam Name Uplink Frequency (GHz)	GLOBAL 6 175	GLOBAL 6 175	GLOBAL 6 175	GLOBAL 6 175	GLOBAL 6 175
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Uplink Relative Contour Level (dB)	-4	-4	-4	-4	-4
Uplink Contour G/T (dB/K)	-11	-11	-11	-11	-11
Uplink SFD (dBW/m2)	-84 3	-89 3	-81 3	-81 3	-89 3
Rain Rate (mm/hr)	42	42	42	42	42
DOWNLINK BEAM INFORMATION					
Downlink Beam Name	GLOBAL	GLOBAL	GLOBAL	GLOBAL	GLOBAL
Downlink Frequency (GHz)	3 95	3 95	3 95	3 95	3 95
Downlink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Downlink Relative Contour Level (dB)	-4	-4	-4	-4	-4
Downlink Contour EIRP (dBW) Rain Rate (mm/hr)	27 6 42	27 6 42	27 6 42	27 6 42	27 6 42
ADJACENT SATELLITE 1	42	42	42	42	42
Satellite 1 Orbital Location	33 0E	33 0E	33 0E	33 0E	33 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
ADJACENT SATELLITE 2					
Satellite 1 Orbital Location	29 0E	29 0E	29 OE	29 0E	29 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
CARRIER INFORMATION	26140525	36M0G7W	101/2020	1002030	411-0002014
Carrier ID Carrier Modulation	36M0F3F TV/FM	36M0G/W QPSK	10M3G7W QPSK	100KG7W QPSK	41M0G7W OPSK
Peak to Peak Bandwidth of EDS (MHz)	4	N/A	N/A	N/A	N/A
Information Rate(kbps)	4 N/A	24575	6000	64	31490
Code Rate	N/A N/A	1/2x188/204	1/2x188/204	1/2x239/256	1/2x188/204
Occupied Bandwidth(kHz)	36000	30133	6771 1	75.4	34170 0
Allocated Bandwidth(kHz)	36000	36000	10300	100	41000
Minimum C/N, Clear Sky (dB)	10	3 36	3 87	2 99	34
Minimum C/N, Rain (dB)	10	3 36	3 57	2 79	34
UPLINK EARTH STATION					
Earth Station Diameter (meters)	13 0	61	30	24	70
Earth Station Gain (dBi)	56 4	49 4	43 2	41 9	51 0
Earth Station Elevation Angle	20	20	20	20	20
DOWNLINK EARTH STATION					
Earth Station Diameter (meters) Earth Station Gain (dBi)	18 3 56 0	70 475	11 0 51 9	11 0 51 9	8 1 49 3
Earth Station Gan (dBi) Earth Station G/T (dB/K)	35 5	26 6	31 0	31 0	28 4
Earth Station Corr (uB/K)	20	200	20	20	20 0
LINK FADE TYPE	Clear Sky	Clear Sky	Clear Sky	Clear Sky	Clear Sky
UPLINK PERFORMANCE	cica suj	cical suj	child ship	cical sug	cica suy
Uplink Earth Station EIRP (dBW)	78 6	73 6	66 6	46 5	73 6
Uplink Path Loss, Clear Sky (dB)	-200 2	-200 2	-200 2	-200 2	-200 2
Uplink Rain Attenuation	0 0	0 0	0 0	0 0	0 0
Satellite G/T(dB/K)	-11 0	-11 0	-11 0	-11 0	-11 0
Boltzman Constant(dBW/K-Hz)	228 6	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8	-75 3
Uplink C/N(dB)	20 4	16 2	15 7	15 1	15 7
DOWNLINK PERFORMANCE	27.6	27.6	17.5	26	27.6
Downlink EIRP per Carrier (dBW)	27 6	27 6 -0 5	17 5 -0 5	-2 6 -0 5	27 6 -0 5
Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB)	-0.5		-0 5	-0 5	-0 5
				-1203	
Downlink Rain Attenuation	-196 3 0 0	-196 3 0 0			
Downlink Rain Attenuation Earth Station G/T (dB/K)	-196 3 0 0 35 5	-196 3 0 0 26 6	00	0 0 31 0	00 284
	0 0	00	0 0	00	0 0
Earth Station G/T (dB/K)	0 0 35 5	0 0 26 6	0 0 31 0	0 0 31 0	0 0 28 4
Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB)	0 0 35 5 228 6	0 0 26 6 228 6	0 0 31 0 228 6	0 0 31 0 228 6	0 0 28 4 228 6
Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE	0 0 35 5 228 6 -75 6 19 3	0 0 26 6 228 6 -74 8 11 2	0 0 31 0 228 6 -68 3 12 0	0 0 31 0 228 6 -48 8 11 4	0 0 28 4 228 6 -75 3 12 5
Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB)	0 0 35 5 228 6 -75 6 19 3 20 4	0 0 26 6 228 6 -74 8 11 2 16 2	0 0 31 0 228 6 -68 3 12 0 15 7	0 0 31 0 228 6 -48 8 11 4 15 1	0 0 28 4 228 6 -75 3 12 5 15 7
Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB)	0 0 35 5 228 6 -75 6 19 3 20 4 19 3	00 266 2286 -748 112 162 112	0 0 31 0 228 6 -68 3 12 0 15 7 12 0	0 0 31 0 228 6 -48 8 11 4 15 1 11 4	0 0 28 4 228 6 -75 3 12 5 15 7 12 5
Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB)	00 355 2286 -756 193 204 193 N/A	00 266 2286 -748 112 162 112 N/A	0 0 31 0 228 6 -68 3 12 0 15 7 12 0 18 9	0 0 31 0 228 6 -48 8 11 4 15 1 11 4 18 3	0 0 28 4 228 6 -75 3 12 5 15 7 12 5 N/A
Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)*	0 0 35 5 228 6 -75 6 19 3 20 4 19 3 N/A 27 6	00 266 2286 -748 112 162 112 N/A 276	0 0 31 0 228 6 -68 3 12 0 15 7 12 0 18 9 27 0	0 0 31 0 228 6 -48 8 11 4 15 1 11 4 18 3 27 0	0 0 28 4 228 6 -75 3 12 5 15 7 12 5 N/A 27 0
Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)*	00 355 2286 -756 193 204 193 N/A 276 276 276	0 0 26 6 228 6 -74 8 11 2 16 2 11 2 N/A 27 6 27 6	0 0 31 0 228 6 -68 3 12 0 15 7 12 0 18 9 27 0 27 0	0 0 31 0 228 6 -48 8 11 4 15 1 11 4 18 3 27 0 27 0	0 0 28 4 228 6 -75 3 12 5 15 7 12 5 N/A 27 0 27 0
Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB)	00 355 2286 -756 193 204 193 N/A 276 276 197	00 266 2286 -748 112 162 112 N/A 276 276 155	0 0 31 0 228 6 -68 3 12 0 15 7 12 0 18 9 27 0 27 0 15 0	0 0 31 0 228 6 -48 8 11 4 15 1 11 4 18 3 27 0 27 0 27 0 14 4	0 0 28 4 228 6 -75 3 12 5 15 7 12 5 N/A 27 0 27 0 15 0
Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Downlink (dB) C/I Nownlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB)	00 355 2286 -756 193 204 193 N/A 276 276 276 197 182	00 266 2286 -748 112 162 112 N/A 276 276 155 100	0 0 31 0 228 6 -68 3 12 0 15 7 12 0 18 9 27 0 27 0 15 0 11 1	0 0 31 0 228 6 -48 8 11 4 15 1 11 4 18 3 27 0 27 0 14 4 10 5	0 0 28 4 228 6 -75 3 12 5 15 7 12 5 N/A 27 0 27 0 15 0 11 4
Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Dpink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB)	00 355 2286 -756 193 204 193 N/A 276 276 276 197 182 197	0 0 26 6 228 6 -74 8 11 2 16 2 11 2 N/A 27 6 27 6 15 5 10 0 15 5	0 0 31 0 228 6 -68 3 12 0 15 7 12 0 18 9 27 0 27 0 15 0 11 1 15 0	0 0 31 0 228 6 -48 8 11 4 15 1 11 4 18 3 27 0 27 0 27 0 14 4 10 5 14 4	0 0 28 4 228 6 -75 3 12 5 12 5 N/A 27 0 27 0 15 0 11 4 15 0
Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Downlink (dB) C/I Nownlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB)	00 355 2286 -756 193 204 193 N/A 276 276 276 197 182	00 266 2286 -748 112 162 112 N/A 276 276 155 100	0 0 31 0 228 6 -68 3 12 0 15 7 12 0 18 9 27 0 27 0 15 0 11 1	0 0 31 0 228 6 -48 8 11 4 15 1 11 4 18 3 27 0 27 0 14 4 10 5	0 0 28 4 228 6 -75 3 12 5 15 7 12 5 N/A 27 0 27 0 15 0 11 4
Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB)	00 355 2286 -756 193 204 193 N/A 276 276 276 276 197 182 197 188	0 0 26 6 228 6 -74 8 11 2 16 2 11 2 N/A 27 6 27 6 15 5 10 0 15 5 11 6	0 0 31 0 228 6 -68 3 12 0 15 7 12 0 18 9 27 0 27 0 15 0 11 1 15 0 12 1	0 0 31 0 228 6 -48 8 11 4 15 1 11 4 18 3 27 0 27 0 27 0 14 4 10 5 14 4 11 6	0 0 28 4 228 6 -75 3 12 5 15 7 12 5 N/A 27 0 27 0 15 0 11 4 15 0 12 7
Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Dplink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB)	00 355 2286 -756 193 204 193 N/A 276 276 276 197 182 197	0 0 26 6 228 6 -74 8 11 2 16 2 11 2 N/A 27 6 27 6 15 5 10 0 15 5	0 0 31 0 228 6 -68 3 12 0 15 7 12 0 18 9 27 0 27 0 15 0 11 1 15 0	0 0 31 0 228 6 -48 8 11 4 15 1 11 4 18 3 27 0 27 0 27 0 14 4 10 5 14 4	0 0 28 4 228 6 -75 3 12 5 12 5 N/A 27 0 27 0 15 0 11 4 15 0
Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB)	00 355 2286 -756 193 204 193 N/A 276 276 276 276 197 182 197 188	00 266 2286 -748 112 162 112 N/A 276 276 276 155 100 155 116 48	0 0 31 0 228 6 -68 3 12 0 15 7 12 0 18 9 27 0 27 0 27 0 15 0 11 1 15 0 11 2 5 1	0 0 31 0 228 6 -48 8 11 4 15 1 11 4 18 3 27 0 27 0 27 0 14 4 10 5 14 4 11 6 4 5	00 284 2286 -753 125 N/A 270 270 150 114 150 127 56
Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Downlink (dB) C/I Dplink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB)	00 355 2286 -756 193 204 193 N/A 276 276 276 197 182 197 182 197 188 113 -10	0 0 26 6 228 6 -74 8 11 2 16 2 11 2 N/A 27 6 27 6 15 5 10 0 15 5 11 6 48 -1 0	0 0 31 0 228 6 -68 3 12 0 15 7 12 0 18 9 27 0 27 0 15 0 11 1 15 0 12 1 5 1 -1 0	0 0 31 0 228 6 -48 8 11 4 15 1 11 4 18 3 27 0 27 0 27 0 14 4 10 5 14 4 11 6 -45 -1 0	0 0 28 4 228 6 -75 3 12 5 15 7 12 5 N/A 27 0 27 0 15 0 11 4 15 0 12 7 5 6 -1 0
Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB)	00 355 2286 -756 193 204 193 N/A 276 276 276 276 197 182 197 182 197 188 -10 103	00 266 2286 -748 112 162 112 N/A 276 276 155 100 155 116 48 -10 38	0 0 31 0 228 6 -68 3 12 0 15 7 12 0 18 9 27 0 27 0 15 0 11 1 15 0 12 1 5 1 -1 0 4 1	0 0 31 0 228 6 -48 8 11 4 15 1 11 4 18 3 27 0 27 0 27 0 14 4 10 5 14 4 11 6 -1 0 3 5	0 0 28 4 228 6 -75 3 12 5 15 7 12 5 N/A 27 0 27 0 15 0 11 4 15 0 12 7 5 6 -1 0 4 6
Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB)	00 355 2286 -756 193 204 193 N/A 276 276 276 276 197 182 197 188 113 -10 103 -100	00 266 2286 -748 112 162 112 N/A 276 276 155 100 155 116 48 -10 38 -34	0 0 31 0 228 6 -68 3 12 0 15 7 12 0 18 9 27 0 27 0 15 0 11 1 15 0 12 1 5 1 -1 0 4 1 -3 9	0 0 31 0 228 6 -48 8 11 4 15 1 11 4 18 3 27 0 27 0 27 0 14 4 10 5 14 4 11 6 -1 0 3 5 -3 0	00 284 2286 -753 125 125 N/A 270 270 150 114 150 127 56 -10 46 -34
Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers CARRIER DENSITY LEVELS	00 355 2286 -756 193 204 193 N/A 276 276 276 276 276 197 182 197 182 197 188 113 -10 103 -100 03 1	0 0 26 6 228 6 -74 8 11 2 16 2 11 2 N/A 27 6 27 6 15 5 10 0 15 5 11 6 48 -1 0 3 8 -3 4 0 4 1	0 0 31 0 228 6 -68 3 12 0 15 7 12 0 18 9 27 0 27 0 15 0 11 1 15 0 12 1 5 1 -1 0 4 1 -3 9 0 2 4	0 0 31 0 228 6 -48 8 11 4 15 1 11 4 18 3 27 0 27 0 27 0 14 4 10 5 14 4 11 6 4 5 -1 0 3 5 -3 0 0 5 410	0 0 28 4 228 6 -75 3 12 5 12 5 N/A 27 0 27 0 15 0 11 4 15 0 12 7 5 6 -1 0 4 6 -3 4 1 2 1
Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers	00 355 2286 -756 193 204 193 N/A 276 276 276 276 276 197 182 197 188 197 188 113 -100 03	00 266 2286 -748 112 162 112 N/A 276 276 276 155 100 155 116 48 -10 38 -34 04	0 0 31 0 228 6 -68 3 12 0 15 7 12 0 18 9 27 0 27 0 15 0 11 1 15 0 12 1 5 1 -1 0 4 1 -3 9 0 2	0 0 31 0 228 6 -48 8 11 4 15 1 11 4 18 3 27 0 27 0 27 0 14 4 10 5 14 4 10 5 14 4 11 6 -1 0 3 5 -3 0 0 5	00 284 2286 -753 125 N/A 270 270 150 114 150 127 56 -10 46 -34 12

Exhibit 6-2: 31.0° E.L. C-Band Global Uplink/C-Band Spot Downlink

UPLINK BEAM INFORMATION Uplink Beam Name Uplink Frequency (GHz) Uplink Beam Polarization Uplink Relative Contour Level (dB) Uplink Contour G/T (dB/K) Uplink SED (dB/Wn2) Pairs Ref (cm/k)	GLOBAL 6 175 CIRCULAR	GLOBAL 6 175	GLOBAL	GLOBAL	GLOBAL
Uplink Frequency (GHz) Uplink Beam Polarization Uplink Relative Contour Level (dB) Uplink Contour G/T (dB/K) Uplink SFD (dBW/m2)	6 175				
Uplink Relative Contour Level (dB) Uplink Contour G/T (dB/K) Uplink SFD (dBW/m2)	CIRCULAR	01/5	6175	6 175	6 175
Uplink Contour G/T (dB/K) Uplink SFD (dBW/m2)		CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Uplink SFD (dBW/m2)	-4	-4	-4	-4	-4
	-11	-11	-11	-11	-11
	-84 3	-89 3 42	-84 3	-84 3 42	-89 3
Rain Rate (mm/hr) DOWNLINK BEAM INFORMATION	42	42	42	42	42
DownLink Beam Name	CSPOT	CSPOT	CSPOT	CSPOT	CSPOT
Downlink Frequency (GHz)	3.95	3.95	3.95	3.95	3.95
Downlink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Downlink Relative Contour Level (dB)	-4	-4	-4	-4	-4
Downlink Contour EIRP (dBW)	34 6	34 6	34 6	34 6	34 6
Rain Rate (mm/hr)	42	42	42	42	42
ADJACENT SATELLITE 1	22.05	22.05	22.05	22.05	22.05
Satellite 1 Orbital Location Uplink Power Density (dBW/Hz)	33 0E -38 7	33 0E -38 7	33 0E -38 7	33 0E -38 7	33 0E -38 7
Uplink Polarization Advantage (dB)	-38 /	-38 /	-38 /	-387	-387
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
ADJACENT SATELLITE 2					
Satellite 1 Orbital Location	29 0E	29 0E	29 0E	29 0E	29 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0 0	-32 0 0	-32 0 0	-32 0 0	-32 0 0
Downlink Polarization Advantage (dB) CARRIER INFORMATION		U	U	U	U
CARRIER INFORMATION Carrier ID	36M0F3F	36M0G7W	10M3G7W	100KG7W	41M0G7W
Carrier Modulation	TV/FM	QPSK	QPSK	QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	4	N/A	N/A	N/A	N/A
Information Rate(kbps)	N/A	24575	6000	64	31490
Code Rate	N/A	1/2x188/204	1/2x188/204	1/2x239/256	1/2x188/204
Occupied Bandwidth(kHz)	36000	30133	6771 1	75 4	34170 0
Allocated Bandwidth(kHz)	36000	36000	10300	100	41000
Minimum C/N, Clear Sky (dB) Minimum C/N, Rain (dB)	10	3 36 3 36	39 36	30 28	34 34
UPLINK EARTH STATION	10	3 30	30	20	34
Earth Station Diameter (meters)	11 0	61	24	24	70
Earth Station Gain (dBi)	55.4	49.4	41 9	41 9	51 0
Earth Station Elevation Angle	20	20	20	20	20
DOWNLINK EARTH STATION					
Earth Station Diameter (meters)	81	3 5	61	70	37
Earth Station Gain (dBi)	49 3	41 1	46 5	47 5	41 2
Earth Station G/T (dB/K) Earth Station Elevation Angle	28 4 20	21 0 20	26 2 20	26 6 20	20 9 20
LINK FADE TYPE	Clear Sky	Clear Sky	Clear Sky	Clear Sky	Clear Sky
UPLINK PERFORMANCE	Cical Sky	Cical Sky	Cical Sky	Cical Sky	Cical Sky
Uplink Earth Station EIRP (dBW)	78 6	73 6	64 1	44 0	73 6
Uplink Path Loss, Clear Sky (dB)	-200 2	-200 2	-200 2	-200 2	-200 2
Uplink Rain Attenuation	0 0	0 0	0 0	0 0	0 0
Satellite G/T(dB/K)	-11 0	-11 0	-11 0	-11 0	-11 0
Boltzman Constant(dBW/K-Hz)	228 6	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB)	-75 6 20 4	-74 8 16 2	-68 3 13 2	-48 8 12 6	-75 3 15 7
DOWNLINK PERFORMANCE	204	10.2	13.2	12.0	157
Downlink EIRP per Carrier (dBW)	34 6	34 6	25 1	49	34 6
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
Downlink Rain Attenuation	00	0.0	0.0	00	00
Earth Station G/T (dB/K)	28 4	210	26.2	26 6	20.9
Boltzman Constant(dBW / K - Hz)	228 6	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB)	-75 6 19 2	-74 8 12 6	-68 3 14 7	-48 8 14 6	-75 3 12 0
COMPOSITE LINK PERFORMANCE	192	12.0	14 /	140	120
C/N Uplink (dB)	20 4	16 2	13 2	12 6	157
C/N Downlink (dB)	19 2	12 6	14 7	14 6	12 0
C/I Intermodulation (dB)	N/A	N/A	174	168	N/A
C/I Uplink Co-Channel (dB)*	276	27 6	27 0	27 0	27 0
C/I Downlink Co-Channel (dB)*	276	276	270	270	270
C/I Uplink Adjacent Satellite 1 (dB)	197	15.5	12.5	119	150
C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB)	18 1 19 7	8 1 15 5	12 8 12 5	13 4 11 9	93 150
	197	12.9	12.5	149	12.4
	17.5	129	140	177	14 7
C/I Downlink Adjacent Satellite 2 (dB)		46	52	49	48
	11 4			-10	-10
C/I Downlink Adjacent Satellite 2 (dB)	-1 0	-10	-10	-10	
C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB)		-10 36	42	39	38
C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB)	-1 0 10 4 -10 0	3 6 -3 4	4 2 -3 9	39 -30	3 8 -3 4
C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB)	-1 0 10 4 -10 0 0 4	36 -34 02	4 2 -3 9 0 3	39 -30 09	38 -34 04
C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers	-1 0 10 4 -10 0	3 6 -3 4	4 2 -3 9	39 -30	3 8 -3 4
C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB)	-1 0 10 4 -10 0 0 4	36 -34 02	4 2 -3 9 0 3	39 -30 09	38 -34 04

Exhibit 6-3: 31.0° E.L. C-Band Global Uplink/Hemi Downlink

THE DRAW DE AM INFORMATION				
UPLINK BEAM INFORMATION Uplink Beam Name	GLOBAL	GLOBAL	GLOBAL	GLOBAL
Uplink Frequency (GHz)	6 175	6 175	6 175	6 175
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Uplink Relative Contour Level (dB)	-4	-4	-4	-4
Uplink Contour G/T (dB/K)	-11 -84 3	-11 -89 3	-11 -82 3	-11 -82 3
Uplink SFD (dBW/m2) Rain Rate (mm/hr)	-84 5 42	-89 3	-82 3 42	-82 5 42
DOWNLINK BEAM INFORMATION	72	42	72	42
Downlink Beam Name	HEMI	HEMI	HEMI	HEMI
Downlink Frequency (GHz)	3 95	3 95	3 95	3 95
Downlink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Downlink Relative Contour Level (dB) Downlink Contour EIRP (dBW)	-6 31 5	-6 31 5	-6 31 5	-6 31 5
Rain Rate (mm/hr)	42	42	42	42
ADJACENT SATELLITE 1	72	72	72	42
Satellite 1 Orbital Location	33 0E	33 0E	33 OE	33 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB) ADJACENT SATELLITE 2	0	0	0	0
Satellite 1 Orbital Location	29 0E	29 0E	29 0E	29 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0
CARRIER INFORMATION	10.000	10.000	101 00 0000	100
Carrier ID Carrier Madulation	36M0F3F	36M0G7W	10M3G7W	100KG7W
Carrier Modulation Peak to Peak Bandwidth of EDS (MHz)	TV/FM 4	QPSK N/A	QPSK N/A	QPSK N/A
Information Rate(kbps)	4 N/A	24575	6000	N/A 64
Code Rate	N/A	1/2x188/204	1/2x188/204	1/2x239/256
Occupied Bandwidth(kHz)	36000	30133	6771 1	75 4
Allocated Bandwidth(kHz)	36000	36000	10300	100
Minimum C/N, Clear Sky (dB)	10	3 36	3 87	2 99
Minimum C/N, Rain (dB)	10	3 36	3 57	2 79
UPLINK EARTH STATION Earth Station Diameter (meters)	10 0	70	24	24
Earth Station Diameter (meters)	541	51 0	41 9	41 9
Earth Station Elevation Angle	20	20	20	20
DOWNLINK EARTH STATION				
DOWNLINK EARTH STATION Earth Station Diameter (meters)	11 0	45	8 1	81
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gain (dBi)	51 9	43 9	49 3	49 3
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gain (dBi) Earth Station G/T (dB/K)	51 9 31 0	43 9 23 6	49 3 28 4	49 3 28 4
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gain (dBi) Earth Station GrT (dB/K) Earth Station Elevation Angle	51 9 31 0 20	43 9 23 6 20	49 3 28 4 20	49 3 28 4 20
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gain (dBi) Earth Station G/T (dB/K)	51 9 31 0	43 9 23 6	49 3 28 4	49 3 28 4
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE	51 9 31 0 20	43 9 23 6 20	49 3 28 4 20	49 3 28 4 20
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gain (dBi) Earth Station GT (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB)	51 9 31 0 20 Clear Sky 79 6 -200 2	43 9 23 6 20 Clear Sky 73 6 -200 2	49 3 28 4 20 Clear Sky 65 8 -200 2	49 3 28 4 20 Clear Sky 45 0 -200 2
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Path Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation	51 9 31 0 20 Clear Sky 79 6 -200 2 0 0	43 9 23 6 20 Clear Sky 73 6 -200 2 0 0	49 3 28 4 20 Clear Sky 65 8 -200 2 0 0	49 3 28 4 20 Clear Sky 45 0 -200 2 0 0
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rath Loss, Clear Sky (dB) Uplink Rain Attemation Satellite G/T(dB/K)	51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0	43 9 23 6 20 Clear Sky 73 6 -200 2 0 0 -11 0	49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0	49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station ElRP (dBW) Uplink Rath Loss, Clear Sky (dB) Uplink Rath Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz)	51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0 228 6	43 9 23 6 20 Clear Sky 73 6 -200 2 0 0 -11 0 228 6	49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0 228 6	49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0 228 6
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rath Loss, Clear Sky (dB) Uplink Rain Attemation Satellite G/T(dB/K)	51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0	43 9 23 6 20 Clear Sky 73 6 -200 2 0 0 -11 0	49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0	49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rath Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz)	51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0 228 6 -75 6	43 9 23 6 20 Clear Sky 73 6 -200 2 0 0 -11 0 228 6 -74 8 16 2	49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0 228 6 -68 3	49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0 228 6 -48 8
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Parth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink CN(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW)	51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0 228 6 -75 6 21 4 31 5	43 9 23 6 20 Clear Sky 73 6 -200 2 00 -11 0 228 6 -74 8 16 2 31 5	49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0 228 6 -68 3 14 9 21 7	49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0 228 6 -48 8 13 7 0 9
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rath Loss, Clear Sky (dB) Uplink Rath Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB)	51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0 228 6 -75 6 21 4 31 5 -0 5	43 9 23 6 20 Clear Sky 73 6 -200 2 0 0 -11 0 228 6 -74 8 16 2 31 5 -0 5	49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0 228 6 -68 3 14 9 21 7 -0 5	49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0 228 6 -48 8 13 7 0 9 -0 5
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gain (dBi) Earth Station Gir (dB/K) Earth Station GIT (dB/K) Earth Station Flevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB)	51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0 228 6 -75 6 21 4 31 5 -0 5 -196 3	43 9 23 6 20 Clear Sky 73 6 -200 2 0 0 -11 0 228 6 -74 8 16 2 31 5 -0 5 -196 3	49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0 228 6 -68 3 14 9 21 7 -0 5 -196 3	49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0 228 6 -48 8 13 7 0 9 -0 5 -196 3
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gain (dBi) Earth Station GT (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Fath Station ElRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink FIRP per Carrier (dB) Downlink Rath Loss, Clear Sky (dB) Downlink Rain Attenuation	51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0 228 6 -75 6 21 4 31 5 -0 5 -196 3 0 0	43 9 23 6 20 Clear Sky 73 6 -200 2 0 0 -11 0 228 6 -74 8 16 2 31 5 -0 5 -196 3 0 0	49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0 228 6 -68 3 14 9 21 7 -0 5 -196 3 0 0	49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0 228 6 -48 8 13 7 0 9 -0 5 -196 3 0 0
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gain (dBi) Earth Station Gir (dB/K) Earth Station GIT (dB/K) Earth Station Flevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB)	51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0 228 6 -75 6 21 4 31 5 -0 5 -196 3	43 9 23 6 20 Clear Sky 73 6 -200 2 0 0 -11 0 228 6 -74 8 16 2 31 5 -0 5 -196 3	49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0 228 6 -68 3 14 9 21 7 -0 5 -196 3	49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0 228 6 -48 8 13 7 0 9 -0 5 -196 3 0 0 28 4
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Parth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K)	51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0 228 6 -75 6 21 4 31 5 -0 5 -196 3 0 0 31 0	43 9 23 6 20 Clear Sky 73 6 -200 2 0 0 -11 0 228 6 -74 8 16 2 31 5 -0 5 -196 3 0 0 23 6	49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0 228 6 -68 3 14 9 21 7 -0 5 -196 3 0 0 28 4	49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0 228 6 -48 8 13 7 0 9 -0 5 -196 3 0 0
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gain (dBi) Earth Station Gir (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink EIRP per Carrier (dBW) Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW/K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rin Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB)	51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0 228 6 -75 6 21 4 31 5 -0 5 -196 3 0 0 31 0 228 6	43 9 23 6 20 Clear Sky 73 6 -200 2 0 0 -11 0 228 6 -74 8 16 2 31 5 -0 5 -196 3 0 0 23 6 228 6	49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0 228 6 -68 3 14 9 21 7 -0 5 -196 3 0 0 28 4 228 6	49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0 228 6 -48 8 13 7 0 9 -0 5 -196 3 0 0 28 4 228 6
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink EIRP per Carrier (dBW) DownLink PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Uplink Fath Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE	51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0 228 6 -75 6 21 4 31 5 -0 5 -196 3 0 0 31 0 228 6 -75 6 18 7	43 9 23 6 20 Clear Sky 73 6 -200 2 0 0 -11 0 228 6 -74 8 16 2 31 5 -0 5 -196 3 0 0 23 6 228 6 -74 8 12 1	49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0 228 6 -68 3 14 9 21 7 -0 5 -196 3 0 0 28 4 228 6 -68 3 13 6	49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0 228 6 -48 8 13 7 0 9 -0 5 -196 3 0 0 28 4 228 6 -48 8 12 3
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Parth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink KeIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Uplink Kein Attenuation Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB)	51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0 228 6 -75 6 21 4 31 5 -0 5 -196 3 0 0 31 0 228 6 -75 6 18 7 21 4	43 9 23 6 20 Clear Sky 73 6 -200 2 0 0 -11 0 228 6 -74 8 16 2 31 5 -0 5 -196 3 0 0 23 6 228 6 -74 8 12 1 16 2	49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0 228 6 -68 3 14 9 21 7 -0 5 -196 3 0 0 28 4 228 6 -68 3 13 6 14 9	49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0 228 6 -48 8 13 7 0 9 -0 5 -196 3 0 0 28 4 228 6 -48 8 12 3 13 7
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gain (dBi) Earth Station GT (dB/K) Earth Station GT (dB/K) Earth Station Flevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Uplink (dB)	51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0 228 6 -75 6 21 4 31 5 -0 5 -196 3 0 0 31 0 228 6 -75 6 18 7 21 4 18 7	43 9 23 6 20 Clear Sky 73 6 -200 2 0 0 -11 0 228 6 -74 8 16 2 31 5 -0 5 -196 3 0 0 23 6 228 6 -74 8 12 1 16 2 12 1	49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0 228 6 -68 3 14 9 21 7 -0 5 -196 3 0 0 28 4 228 6 -68 3 13 6 14 9 13 6	49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0 228 6 -48 8 13 7 0 9 -0 5 -196 3 0 0 28 4 228 6 -48 8 12 3 13 7 12 3
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gin (dBi) Earth Station GIT (dB/K) Earth Station Flevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dB/K) Boltzman Constant(dB/K) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Uplink (dB) C/I Uplink (dB)	51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0 228 6 -75 6 21 4 31 5 -0 5 -196 3 0 0 31 0 228 6 -75 6 18 7 21 4 18 7 N/A	43 9 23 6 20 Clear Sky 73 6 -200 2 0 0 -11 0 228 6 -74 8 16 2 31 5 -0 5 -196 3 0 0 23 6 228 6 -74 8 12 1 16 2 12 1 N/A	49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0 228 6 -68 3 14 9 21 7 -0 5 -196 3 0 0 28 4 228 6 -68 3 13 6 14 9 13 6 22 1	49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0 228 6 -48 8 13 7 0 9 -0 5 -196 3 0 0 28 4 228 6 -48 8 12 3 13 7 12 3 20 9
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gain (dBi) Earth Station GT (dB/K) Earth Station GT (dB/K) Earth Station Flevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Uplink (dB)	51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0 228 6 -75 6 21 4 31 5 -0 5 -196 3 0 0 31 0 228 6 -75 6 18 7 21 4 18 7	43 9 23 6 20 Clear Sky 73 6 -200 2 0 0 -11 0 228 6 -74 8 16 2 31 5 -0 5 -196 3 0 0 23 6 228 6 -74 8 12 1 16 2 12 1	49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0 228 6 -68 3 14 9 21 7 -0 5 -196 3 0 0 28 4 228 6 -68 3 13 6 14 9 13 6	49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0 228 6 -48 8 13 7 0 9 -0 5 -196 3 0 0 28 4 228 6 -48 8 12 3 13 7 12 3
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gain (dBi) Earth Station GT (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Fath Station ElRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink Performance Downlink FIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Nownlink (dB) C/I Nownlink (dB) C/I Nownlink (dB) C/I Uplink Co-Channel (dB)* <td>51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0 228 6 -75 6 21 4 31 5 -0 5 -196 3 0 0 31 0 228 6 -75 6 18 7 21 4 18 7 N/A 27 0</td> <td>43 9 23 6 20 Clear Sky 73 6 -200 2 0 0 -11 0 228 6 -74 8 16 2 31 5 -0 5 -196 3 0 0 228 6 -74 8 12 1 16 2 12 1 N/A 27 0</td> <td>49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0 228 6 -68 3 14 9 21 7 -0 5 -196 3 0 0 28 4 228 6 -68 3 13 6 14 9 13 6 22 1 27 7</td> <td>49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0 228 6 -48 8 13 7 0 9 -0 5 -196 3 0 0 28 4 228 6 -48 8 12 3 13 7 12 3 20 9 27 0</td>	51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0 228 6 -75 6 21 4 31 5 -0 5 -196 3 0 0 31 0 228 6 -75 6 18 7 21 4 18 7 N/A 27 0	43 9 23 6 20 Clear Sky 73 6 -200 2 0 0 -11 0 228 6 -74 8 16 2 31 5 -0 5 -196 3 0 0 228 6 -74 8 12 1 16 2 12 1 N/A 27 0	49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0 228 6 -68 3 14 9 21 7 -0 5 -196 3 0 0 28 4 228 6 -68 3 13 6 14 9 13 6 22 1 27 7	49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0 228 6 -48 8 13 7 0 9 -0 5 -196 3 0 0 28 4 228 6 -48 8 12 3 13 7 12 3 20 9 27 0
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gin (dBi) Earth Station Gir (dB/K) Earth Station GIT (dB/K) Earth Station GIT (dB/K) Earth Station Flevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink (dB) C/N Uplink (dB) C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB)	51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0 228 6 -75 6 21 4 31 5 -0 5 -196 3 0 0 31 0 228 6 -75 6 18 7 -21 4 18 7 N/A 27 0 27 0 20 7 17 8	43 9 23 6 20 Clear Sky 73 6 -200 2 0 0 -11 0 228 6 -74 8 16 2 31 5 -0 5 -196 3 0 0 23 6 228 6 -74 8 12 1 16 2 12 1 N/A 27 0 27 0 27 0 15 5 9 8	49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0 228 6 -68 3 14 9 21 7 -0 5 -196 3 0 0 28 4 228 6 -68 3 13 6 -22 1 27 7 27 7 14 2 12 5	49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0 228 6 -48 8 13 7 0 9 -0 5 -196 3 0 0 28 4 228 6 -48 8 12 3 13 7 12 3 20 9 27 0 13 0 11 2
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gir (dB/K) Earth Station GT (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink (dB) C/N Uplink (dB) C/N Uplink (dB) C/I Uplink (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent S	51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0 228 6 -75 6 21 4 31 5 -0 5 -196 3 0 0 31 0 228 6 -75 6 18 7 N/A 27 0 20 7 17 8 20 7	43 9 23 6 20 Clear Sky 73 6 -200 2 0 0 -11 0 228 6 -74 8 16 2 31 5 -0 5 -196 3 0 0 23 6 228 6 -74 8 12 1 16 2 12 1 N/A 27 0 27 0 27 0 15 5 9 8 15 5	49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0 228 6 -68 3 14 9 21 7 -0 5 -196 3 0 0 28 4 228 6 -68 3 13 6 14 9 13 6 22 1 27 7 27 7 14 2 12 5 14 2	49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0 228 6 -48 8 13 7 0 9 -0 5 -196 3 0 0 28 4 228 6 -48 8 12 3 13 7 12 3 20 9 27 0 27 0 13 0 11 2 13 0
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gin (dBi) Earth Station Gir (dB/K) Earth Station GIT (dB/K) Earth Station GIT (dB/K) Earth Station Flevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink (dB) C/N Uplink (dB) C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB)	51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0 228 6 -75 6 21 4 31 5 -0 5 -196 3 0 0 31 0 228 6 -75 6 18 7 -21 4 18 7 N/A 27 0 27 0 20 7 17 8	43 9 23 6 20 Clear Sky 73 6 -200 2 0 0 -11 0 228 6 -74 8 16 2 31 5 -0 5 -196 3 0 0 23 6 228 6 -74 8 12 1 16 2 12 1 N/A 27 0 27 0 27 0 15 5 9 8	49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0 228 6 -68 3 14 9 21 7 -0 5 -196 3 0 0 28 4 228 6 -68 3 13 6 -22 1 27 7 27 7 14 2 12 5	49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0 228 6 -48 8 13 7 0 9 -0 5 -196 3 0 0 28 4 228 6 -48 8 12 3 13 7 12 3 20 9 27 0 13 0 11 2
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink PERFORMANCE DownLink PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB)	51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0 228 6 -75 6 21 4 31 5 -0 5 -196 3 0 0 31 0 228 6 -75 6 18 7 21 4 18 7 N/A 27 0 27 0 20 7 17 8 20 7 18 8	43 9 23 6 20 Clear Sky 73 6 -200 2 0 0 -11 0 228 6 -74 8 16 2 31 5 -0 5 -196 3 0 0 23 6 228 6 -74 8 12 1 16 2 12 1 N/A 27 0 27 0 15 5 9 8 15 5 12 3	49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0 228 6 -68 3 14 9 21 7 -0 5 -196 3 0 0 28 4 228 6 -68 3 13 6 14 9 13 6 22 1 27 7 27 7 14 2 12 5 14 2 13 8	49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0 228 6 -48 8 13 7 0 9 -0 5 -196 3 0 0 28 4 228 6 -48 8 12 3 13 7 12 3 20 9 27 0 27 0 13 0 11 2 13 0 11 2 13 0 11 2 6
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gain (dBi) Earth Station Gir (dB/K) Earth Station GIT (dB/K) Earth Station Flevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink (dB) C/N Uplink (dB) C/N Uplink (dB) C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) <td>51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0 228 6 -75 6 21 4 31 5 -0 5 -196 3 0 0 31 0 228 6 -75 6 18 7 N/A 27 0 20 7 17 8 20 7 18 8 11 5</td> <td>43 9 23 6 20 Clear Sky 73 6 -200 2 0 0 -11 0 228 6 -74 8 16 2 </td> <td>49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0 228 6 -68 3 14 9 21 7 -0 5 -196 3 0 0 28 4 228 6 -68 3 13 6 22 1 27 7 27 7 14 2 12 5 14 2 13 8 5 9</td> <td>49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0 228 6 -48 8 13 7 0 9 -0 5 -196 3 0 0 28 4 228 6 -48 8 12 3 13 7 12 3 20 9 27 0 27 0 13 0 11 2 13 0 11 2 13 0 12 6 -46</td>	51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0 228 6 -75 6 21 4 31 5 -0 5 -196 3 0 0 31 0 228 6 -75 6 18 7 N/A 27 0 20 7 17 8 20 7 18 8 11 5	43 9 23 6 20 Clear Sky 73 6 -200 2 0 0 -11 0 228 6 -74 8 16 2 	49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0 228 6 -68 3 14 9 21 7 -0 5 -196 3 0 0 28 4 228 6 -68 3 13 6 22 1 27 7 27 7 14 2 12 5 14 2 13 8 5 9	49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0 228 6 -48 8 13 7 0 9 -0 5 -196 3 0 0 28 4 228 6 -48 8 12 3 13 7 12 3 20 9 27 0 27 0 13 0 11 2 13 0 11 2 13 0 12 6 -46
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gin (dBi) Earth Station GT (dF)K) Earth Station Flevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Fath Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) Downlink PERFORMANCE Downlink Performance Downlink Performance Downlink Path Loss, Clear Sky (dB) Downlink Path Loss, Clear Sky (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB)	51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0 228 6 -75 6 21 4 31 5 -0 5 -196 3 0 0 31 0 228 6 -75 6 18 7 21 4 18 7 N/A 27 0 20 7 17 8 20 7 17 8 20 7 11 5 -1 0	43 9 23 6 20 Clear Sky 73 6 -200 2 0 0 -11 0 228 6 -74 8 16 2 31 5 -0 5 -196 3 0 0 23 6 228 6 -74 8 12 1 16 2 12 1 N/A 27 0 27 0 15 5 9 8 15 5 12 3 5 1 -1 0	49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0 228 6 -68 3 14 9 21 7 -0 5 -196 3 0 0 28 4 228 6 -68 3 13 6 -22 1 27 7 27 7 14 2 12 5 14 2 13 8 5 9 -1 0	49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0 228 6 -48 8 13 7 0 9 -0 5 -196 3 0 0 28 4 228 6 -48 8 12 3 13 7 12 3 20 9 27 0 13 0 11 2 13 0 11 2 13 0 11 2 4 6 -1 0
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Grin (dBi) Earth Station GT (dB/K) Earth Station GT (dB/K) Earth Station GT (dB/K) Earth Station GT (dB/K) Earth Station Flor (dB/K) Earth Station Flor (dB/K) UPLINK PERFORMANCE Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidh (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C/ N(dB) C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB	51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0 228 6 -75 6 21 4 31 5 -0 5 -196 3 0 0 31 0 228 6 -75 6 18 7 N/A 27 0 20 7 17 8 20 7 18 8 11 5	43 9 23 6 20 Clear Sky 73 6 -200 2 0 0 -11 0 228 6 -74 8 16 2 	49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0 228 6 -68 3 14 9 21 7 -0 5 -196 3 0 0 28 4 228 6 -68 3 13 6 22 1 27 7 27 7 14 2 12 5 14 2 13 8 5 9	49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0 228 6 -48 8 13 7 0 9 -0 5 -196 3 0 0 28 4 228 6 -48 8 12 3 13 7 12 3 20 9 27 0 27 0 13 0 11 2 13 0 11 2 13 0 12 6 -46
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gari (dBi) Earth Station GT (dF)K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Fath Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite GT(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink CN(dB) DOWNLINK PERFORMANCE Downlink Performance Downlink Performance Downlink Performance Downlink Performance Downlink CN(dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station GT (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I N Downlink (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite	51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0 228 6 -75 6 21 4 31 5 -05 -196 3 0 0 31 0 228 6 -75 6 18 7 N/A 27 0 27 0 20 7 17 8 20 7 18 8 11 5 -1 0 10 5	43 9 23 6 20 Clear Sky 73 6 -200 2 0 0 -11 0 228 6 -74 8 16 2 31 5 -0 5 -196 3 0 0 23 6 228 6 -74 8 12 1 16 2 12 1 N/A 27 0 27 0 15 5 9 8 15 5 12 3 5 1 -1 0 4 1	49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0 228 6 -68 3 14 9 21 7 -0 5 -196 3 0 0 28 4 228 6 -68 3 13 6 22 1 27 7 27 7 14 2 12 5 14 2 13 8 5 9 -1 0 4 9	49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0 228 6 -48 8 13 7 0 9 -0 5 -196 3 0 0 28 4 228 6 -48 8 12 3 13 7 12 3 20 9 27 0 13 0 11 2 13 0 11 2 6 4 6 -1 0 3 6
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gin (dB) Earth Station Gin (dB/K) Earth Station GIT (dB/K) Earth Station Flevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dB) C/N Uplink (dB) C/N Uplink (dB) C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adja	51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0 228 6 -75 6 21 4 31 5 -0 5 -196 3 0 0 31 0 228 6 -75 6 18 7 N/A 21 4 18 7 N/A 27 0 20 7 17 8 20 7 18 8 11 5 -1 0 10 5 -10 0	43 9 23 6 20 Clear Sky 73 6 -200 2 0 0 -11 0 228 6 -74 8 16 2 31 5 -0 5 -196 3 0 0 23 6 228 6 -74 8 12 1 16 2 12 1 N/A 27 0 27 0 15 5 9 8 15 5 12 3 5 1 -1 0 4 1 -3 4	49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0 228 6 -68 3 14 9 21 7 -0 5 -196 3 0 0 28 4 228 6 -68 3 13 6 22 1 27 7 27 7 14 2 12 5 14 2 13 8 5 9 -1 0 4 9 -3 9	49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0 228 6 -48 8 13 7 0 9 -0 5 -196 3 0 0 28 4 228 6 -48 8 12 3 13 7 12 3 20 9 27 0 27 0 13 0 11 2 13 0 11 2 13 0 11 2 4 6 -1 0 3 6 -3 0
DOWNLINK EARTH STATION Earth Station Diameter (meters) Earth Station Gin (dB) Earth Station Gin (dB/K) Earth Station GIT (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Fath Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T (dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Adjacent Satellite 1 C/I Downlink (dB) C/I Uplink Adjacent Satellite 1 C/I Downlink Adjacent Satellite 2 (dB) C/I Uplink Adjacent	51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0 228 6 -75 6 21 4 31 5 -0 5 -196 3 0 0 31 0 228 6 -75 6 18 7 N/A 27 0 27 0 27 0 27 0 20 7 17 8 20 7 18 8 11 5 -1 0 10 5 -10 0 0 5 1	43 9 23 6 20 Clear Sky 73 6 -200 2 0 0 -11 0 228 6 -74 8 16 2 31 5 -0 5 -196 3 0 0 23 6 228 6 -74 8 12 1 16 2 12 1 N/A 27 0 27 0 15 5 9 8 15 5 12 3 5 1 -1 0 4 1 -3 4 0 7 1 1	49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0 228 6 -68 3 14 9 21 7 -0 5 -196 3 0 0 28 4 228 6 -68 3 13 6 22 1 27 7 27 7 14 2 12 5 14 2 13 8 5 9 -1 0 4 9 -3 9 1 0 3	49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0 228 6 -48 8 13 7 0 9 -0 5 -196 3 0 0 28 4 228 6 -48 8 12 3 13 7 12 3 20 9 27 0 13 0 11 2 13 0 11 2 13 0 12 6 -10 3 6 -3 0 0 6 360
DOWNLINK EARTH STATION Earth Station Gian (dBi) Earth Station Gin (dBi) Earth Station Gir (dB/K) Earth Station Gir (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dB/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dB/K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB)	51 9 31 0 20 Clear Sky 79 6 -200 2 0 0 -11 0 228 6 -75 6 21 4 31 5 -0 5 -196 3 0 0 31 0 228 6 -75 6 18 7 N/A 27 0 20 7 17 8 20 7 18 8 11 5 -1 0 10 5 -10 0 0 5	43 9 23 6 20 Clear Sky 73 6 -200 2 0 0 -11 0 228 6 -74 8 16 2 31 5 -0 5 -196 3 0 0 23 6 228 6 -74 8 12 1 16 2 12 1 N/A 27 0 27 0 15 5 9 8 15 5 12 3 5 1 -1 0 4 1 -3 4 0 7	49 3 28 4 20 Clear Sky 65 8 -200 2 0 0 -11 0 228 6 -68 3 14 9 21 7 -0 5 -196 3 0 0 28 4 228 6 -68 3 13 6 22 1 27 7 27 7 14 2 12 5 14 2 13 8 5 9 -1 0 4 9 -3 9 1 0	49 3 28 4 20 Clear Sky 45 0 -200 2 0 0 -11 0 228 6 -48 8 13 7 0 9 -0 5 -196 3 0 0 28 4 228 6 -48 8 12 3 0 0 28 4 228 6 -48 8 12 3 0 0 28 4 228 6 -48 8 12 3 0 0 27 0 27 0 27 0 13 0 11 2 13 0 11 2 13 0 12 6 -3 0 0 6

Exhibit 6-4: 31.0° E.L. C-Band Spot Uplink/C-Band Spot Downlink

UPLINK BEAM INFORMATION Uplink Beam Name	CSPOT	CSPOT	CSPOT	CSPOT	CSPOT
Uplink Frequency (GHz)	6175	6175	6175	6175	6 175
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Uplink Relative Contour Level (dB)	-4	-4	-4	-4	-4
Uplink Contour G/T (dB/K)	-1	-1	-1	-1	-1
Uplink SFD (dBW/m2)	-88 3	-92 3	-87 3	-87 3	-92 3
Rain Rate (mm/hr)	42	42	42	42	42
DOWNLINK BEAM INFORMATION	CSPOT	CSPOT	CEBOT	CSPOT	CSPOT
Downlink Beam Name Downlink Frequency (GHz)	3 95	3 95	CSPOT 3 95	3 95	3 95
Downlink Prequency (GHZ)	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Downlink Belative Contour Level (dB)	-4	-4	-4	-4	-4
Downlink Contour EIRP (dBW)	34.6	34.6	34.6	34.6	34.6
Rain Rate (mm/hr)	42	42	42	42	42
ADJACENT SATELLITE 1					
Satellite 1 Orbital Location	33 0E	33 OE	33 OE	33 0E	33 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
ADJACENT SATELLITE 2 Satellite 1 Orbital Location	29 0E	29 0E	29 0E	29 0E	29 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	-387	-38 /	-38 /	-387	-38 /
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
CARRIER INFORMATION					
Carrier ID	36M0F3F	36M0G7W	10M3G7W	100KG7W	41M0G7W
Carrier Modulation	TV/FM	QPSK	QPSK	QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	4	N/A	N/A	N/A	N/A
Information Rate(kbps)	N/A	24575 1/2x188/204	6000 1/2x188/204	64	31490
Code Rate Occupied Bandwidth(kHz)	N/A 36000	1/2x188/204 30133	6771 1	1/2x239/256 75 4	1/2x188/204 34170 0
Allocated Bandwidth(kHz)	36000	36000	10300	100	41000
Minimum C/N, Clear Sky (dB)	10	3 36	3 87	2 99	34
Minimum C/N, Rain (dB)	10	3 36	3 57	2 79	34
UPLINK EARTH STATION					
Earth Station Diameter (meters)	70	4 5	24	24	50
Earth Station Gain (dBi)	51	46 5	41 9	41 9	47 5
Earth Station Elevation Angle	20	20	20	20	20
DOWNLINK EARTH STATION					
Earth Station Diameter (meters)	13 1	37	92	9 2	45
Earth Station Gain (dBi)	53 5	41 2	50 3	50 3	43 9
Earth Station G/T (dB/K)	33 0 20	20 9 20	29 4 20	29 4 20	23 6 20
Earth Station Elevation Angle LINK FADE TYPE	Clear Sky	Clear Sky	Clear Sky	Clear Sky	Clear Sky
UPLINK PERFORMANCE	Clear Sky	Clear Sky	Clear Sky	Clear Sky	Cical Sky
Uplink Earth Station EIRP (dBW)	746	70 6	61 1	41 0	70 6
Uplink Path Loss, Clear Sky (dB)	-200 2	-200 2	-200 2	-200 2	-200 2
Uplink Rain Attenuation	0 0	0 0	0 0	0 0	0 0
Satellite G/T(dB/K)	-10	-10	-10	-1 0	-1 0
Boltzman Constant(dBW/K-Hz)	228 6	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8	-75 3
Uplink C/N(dB)	26 4	23 2	20 2	19 6	22 7
DOWNLINK PERFORMANCE	24.6	24.6	25.1	4.0	24.5
Downlink EIRP per Carrier (dBW)	34.6	34.6	251	49	34.6
Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB)	-0 5 -196 3	-0 5 -196 3	-0 5 -196 3	-0 5 -196 3	-0 5 -196 3
Downlink Path Loss, Clear Sky (db)	-190 3	-1903	-190 5	00	-1903
Earth Station G/T (dB/K)	33 0	20.9	29.4	29.4	23 6
Boltzman Constant(dBW / K - Hz)	228 6	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8	-75 3
Downlink C / N(dB)	23 8	12 5	179	174	14 7
COMPOSITE I DIV DEBEODICINCE					
COMPOSITE LINK PERFORMANCE					
C/N Uplink (dB)	26 4	23 2	20 2	19 6	22 7
C/N Uplink (dB) C/N Downlink (dB)	23 8	12 5	179	174	14 7
C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB)	23 8 N/A	12 5 N/A	179 174	17 4 16 8	14 7 N/A
C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)*	23 8 N/A 27 6	12 5 N/A 27 6	179 174 270	174 168 270	14 7 N/A 27 0
C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)*	23 8 N/A 27 6 27 6	12 5 N/A 27 6 27 6	179 174 270 270	174 168 270 270	14 7 N/A 27 0 27 0
C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB)	23 8 N/A 27 6 27 6 15 7	12 5 N/A 27 6 27 6 12 5	179 174 270 270 95	174 168 270 270 89	147 N/A 270 270 120
C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB)	23 8 N/A 27 6 27 6 15 7 22 6	12 5 N/A 27 6 27 6 12 5 9 9	179 174 270 270 95 169	17 4 16 8 27 0 27 0 8 9 16 3	14 7 N/A 27 0 27 0 12 0 12 3
C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB)	23 8 N/A 27 6 27 6 15 7	12 5 N/A 27 6 27 6 12 5	179 174 270 270 95	174 168 270 270 89	14 7 N/A 27 0 27 0 12 0
C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB)	23 8 N/A 27 6 27 6 15 7 22 6 15 7	12 5 N/A 27 6 27 6 12 5 9 9 12 5	179 174 270 270 95 169 95	174 168 270 270 89 163 89	14 7 N/A 27 0 27 0 12 0 12 3 12 0
C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB)	23 8 N/A 27 6 27 6 15 7 22 6 15 7	12 5 N/A 27 6 27 6 12 5 9 9 12 5	179 174 270 270 95 169 95	174 168 270 270 89 163 89	14 7 N/A 27 0 27 0 12 0 12 3 12 0
C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB)	23 8 N/A 27 6 27 6 15 7 22 6 15 7 23 4	12 5 N/A 27 6 27 6 12 5 9 9 12 5 12 9	179 174 270 270 95 169 95 182	174 168 270 270 89 163 89 176	14 7 N/A 27 0 27 0 12 0 12 3 12 0 14 8
C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB)	23 8 N/A 27 6 15 7 22 6 15 7 23 4 	12 5 N/A 27 6 27 6 12 5 9 9 12 5 12 9 4 8 -1 0 3 8	179 174 270 95 169 95 182 51 -10 41	174 168 270 270 89 163 89 176 45 -10 35	14 7 N/A 27 0 12 0 12 3 12 0 14 8 5 8 -1 0 4 8
C/N Uplink (dB) C/I Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB)	23 8 N/A 27 6 27 6 15 7 22 6 15 7 23 4 -10 10 4 -10 0	12 5 N/A 27 6 27 6 12 5 9 9 12 5 12 9 4 8 -1 0 3 8 -3 4	179 174 270 95 169 95 182 51 -10 41 -39	174 168 270 270 89 163 89 176 45 -10 35 -30	14 7 N/A 27 0 12 0 12 3 12 0 14 8 5 8 -1 0 4 8 -3 4
C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB)	23 8 N/A 27 6 27 6 15 7 22 6 15 7 23 4 11 4 -10 10 4 -10 0 0 4	12 5 N/A 27 6 12 5 9 9 12 5 12 9 4 8 -1 0 3 8 -3 4 0 4	179 174 270 95 169 95 182 51 -10 41 -39 02	174 168 270 270 89 163 89 176 45 -10 35 -30 05	147 N/A 270 270 123 120 148 58 -10 48 -34 14
C/N Uplink (dB) C/I Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers	23 8 N/A 27 6 27 6 15 7 22 6 15 7 23 4 -10 10 4 -10 0	12 5 N/A 27 6 27 6 12 5 9 9 12 5 12 9 4 8 -1 0 3 8 -3 4	179 174 270 95 169 95 182 51 -10 41 -39	174 168 270 270 89 163 89 176 45 -10 35 -30	14 7 N/A 27 0 12 0 12 3 12 0 14 8 5 8 -1 0 4 8 -3 4
C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers CARRIER DENSITY LEVELS	23 8 N/A 27 6 15 7 22 6 15 7 23 4 11 4 -1 0 10 4 -10 0 0 4 1	12 5 N/A 27 6 27 6 12 5 9 9 12 5 12 9 4 8 -1 0 3 8 -3 4 0 4 1	179 174 270 95 169 95 182 51 -10 41 -39 02 4	174 168 270 270 89 163 89 176 45 -10 35 -30 05 410	147 N/A 270 270 123 120 148 58 -10 48 -34 14 1 1
C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers	23 8 N/A 27 6 27 6 15 7 22 6 15 7 23 4 11 4 -10 10 4 -10 0 0 4	12 5 N/A 27 6 12 5 9 9 12 5 12 9 4 8 -1 0 3 8 -3 4 0 4	179 174 270 95 169 95 182 51 -10 41 -39 02	174 168 270 270 89 163 89 176 45 -10 35 -30 05	147 N/A 270 270 123 120 148 58 -10 48 -34 14

Exhibit 6-5: 31.0° E.L. C-Band Spot Uplink/Global Downlink

UNITAR DE AM INFORMATION	_				
UPLINK BEAM INFORMATION Uplink Beam Name	CSPOT	CSPOT	CSPOT	CSPOT	CSPOT
Uplink Frequency (GHz)	6175	6175	6175	6175	6 175
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Uplink Relative Contour Level (dB)	-4	-4	-4	-4	-4
Uplink Contour G/T (dB/K)	-1	-1	-1	-1	-1
Uplink SFD (dBW/m2)	-85 3	-92 3	-86 3	-86 3	-92 3
Rain Rate (mm/hr)	42	42	42	42	42
DOWNLINK BEAM INFORMATION	CLODAL	CLODAL	CLODAL	CLODAL	CLODAL
Downlink Beam Name Downlink Frequency (GHz)	GLOBAL 3 95	GLOBAL 3 95	GLOBAL 3 95	GLOBAL 3 95	GLOBAL 3 95
Downlink Prequency (GH2)	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Downlink Relative Contour Level (dB)	-4	-4	-4	-4	-4
Downlink Contour EIRP (dBW)	276	276	276	276	276
Rain Rate (mm/hr)	42	42	42	42	42
ADJACENT SATELLITE 1					
Satellite 1 Orbital Location	33 OE	33 OE	33 0E	33 OE	33 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz) Downlink Polarization Advantage (dB)	-32 0 0	-32 0 0	-32 0 0	-32 0 0	-32 0 0
ADJACENT SATELLITE 2	v	v	v	v	0
Satellite 1 Orbital Location	29 0E	29 0E	29 0E	29 0E	29 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
CARRIER INFORMATION					
Carrier ID	36M0F3F	36M0G7W	10M3G7W	100KG7W	41M0G7W
Carrier Modulation	TV/FM	QPSK	QPSK	QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	4 N/A	N/A 24575	N/A 6000	N/A 64	N/A 31490
Information Rate(kbps) Code Rate	N/A N/A	24575 1/2x188/204	6000 1/2x188/204	04 1/2x239/256	31490 1/2x188/204
Occupied Bandwidth(kHz)	36000	30133	6771 1	75.4	34170 0
Allocated Bandwidth(kHz)	36000	36000	10300	100	41000
Minimum C/N, Clear Sky (dB)	10	3 36	3 87	2 99	34
Minimum C/N, Rain (dB)	10	3 36	3 57	2 79	34
UPLINK EARTH STATION					
Earth Station Diameter (meters)	10 0	46	24	24	46
Earth Station Gain (dBi)	54 1	46 9	41 9	41 9	46 9
Earth Station Elevation Angle	20	20	20	20	20
DOWNLINK EARTH STATION	10.2	0.1	10.2	15.2	0 1
Earth Station Diameter (meters) Earth Station Gain (dBi)	18 3 56	8 1 49 3	18 3 56 0	15 2 55 0	8 1 49 3
Earth Station G/T (dB/K)	35.5	28 4	35.5	34.5	28.4
Earth Station Elevation Angle	20	20	20	20	20
LINK FADE TYPE	Clear Sky	Clear Sky	Clear Sky	Clear Sky	Clear Sky
UPLINK PERFORMANCE					
Uplink Earth Station EIRP (dBW)	77 6	70 6	61 6	41 5	70 6
Uplink Path Loss, Clear Sky (dB)	-200 2	-200 2	-200 2	-200 2	-200 2
Uplink Rain Attenuation	00	00	00	00	00
Satellite G/T(dB/K)	-1 0 228 6	-1 0 228 6	-1 0 228 6	-1 0 228 6	-1 0 228 6
Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8	-75 3
Uplink C/N(dB)	29 4	-74 8	-08 5	-48 8	22.7
DOWNLINK PERFORMANCE			237		/
Downlink EIRP per Carrier (dBW)	276	276	175	-26	276
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
Downlink Rain Attenuation	0 0	0 0	0 0	0 0	0 0
Earth Station G/T (dB/K)	35 5	28 4	35.5	34.5	28 4
Boltzman Constant(dBW / K - Hz)				228 6	228 6
Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB)	228 6	228 6	228 6		
COMPOSITE LINK PERFORMANCE	-75 6	-74 8	-68 3	-48 8	-75 3
C/N Uplink (dB)					
	-75 6 19 3	-74 8 13 0	-68 3 16 5	-48 8 14 9	-75 3 12 5
C/N Downlink (dB)	-75 6	-74 8	-68 3	-48 8	-75 3
	-75 6 19 3 29 4	-74 8 13 0 23 2	-68 3 16 5 20 7	-48 8 14 9 20 1	-75 3 12 5 22 7
C/N Downlink (dB)	-75 6 19 3 29 4 19 3	-74 8 13 0 23 2 10 8	-68 3 16 5 20 7 14 0	-48 8 14 9 20 1 13 4	-75 3 12 5 22 7 12 5
C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)*	-75 6 19 3 29 4 19 3 N/A 27 6 27 6	-74 8 13 0 23 2 10 8 N/A 27 6 27 6	-68 3 16 5 20 7 14 0 18 9 27 0 27 0	-48 8 14 9 20 1 13 4 18 3 27 0 27 0	-75 3 12 5 22 7 12 5 N/A 27 0 27 0
C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB)	-75 6 19 3 29 4 19 3 N/A 27 6 27 6 27 6 18 7	-74 8 13 0 23 2 10 8 N/A 27 6 27 6 12 5	-68 3 16 5 20 7 14 0 18 9 27 0 27 0 27 0 10 0	-48 8 14 9 20 1 13 4 18 3 27 0 27 0 27 0 9 4	-75 3 12 5 22 7 12 5 N/A 27 0 27 0 12 0
C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB)	-75 6 19 3 29 4 19 3 N/A 27 6 27 6 18 7 18 2	-74 8 13 0 23 2 10 8 N/A 27 6 27 6 12 5 11 9	-68 3 16 5 20 7 14 0 18 9 27 0 27 0 27 0 10 0 15 4	-48 8 14 9 20 1 13 4 18 3 27 0 27 0 9 4 13 8	-75 3 12 5 22 7 12 5 N/A 27 0 27 0 12 0 11 4
C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB)	-75 6 19 3 29 4 19 3 N/A 27 6 27 6 27 6 18 7 18 2 18 7	-74 8 13 0 23 2 10 8 N/A 27 6 27 6 12 5 11 9 12 5	-68 3 16 5 20 7 14 0 18 9 27 0 27 0 27 0 10 0 15 4 10 0	-48 8 14 9 20 1 13 4 18 3 27 0 27 0 9 4 13 8 9 4	-75 3 12 5 22 7 12 5 N/A 27 0 27 0 27 0 12 0 11 4 12 0
C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB)	-75 6 19 3 29 4 19 3 N/A 27 6 27 6 18 7 18 2	-74 8 13 0 23 2 10 8 N/A 27 6 27 6 12 5 11 9	-68 3 16 5 20 7 14 0 18 9 27 0 27 0 27 0 10 0 15 4	-48 8 14 9 20 1 13 4 18 3 27 0 27 0 9 4 13 8	-75 3 12 5 22 7 12 5 N/A 27 0 27 0 12 0 11 4
C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB)	-75 6 19 3 29 4 19 3 N/A 27 6 27 6 27 6 18 7 18 2 18 7 18 8	-74 8 13 0 23 2 10 8 N/A 27 6 27 6 12 5 11 9 12 5 13 3	-68 3 16 5 20 7 14 0 18 9 27 0 27 0 10 0 15 4 10 0 16 0	-48 8 14 9 20 1 13 4 18 3 27 0 27 0 27 0 9 4 13 8 9 4 14 5	-75 3 12 5 22 7 12 5 N/A 27 0 27 0 27 0 12 0 11 4 12 0 12 7
C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB)	-75 6 19 3 29 4 19 3 N/A 27 6 27 6 18 7 18 2 18 7 18 8 11 5	-74 8 13 0 23 2 10 8 N/A 27 6 27 6 12 5 11 9 12 5 13 3 5 5	-68 3 16 5 20 7 14 0 18 9 27 0 27 0 10 0 15 4 10 0 16 0 5 2	-48 8 14 9 20 1 13 4 18 3 27 0 27 0 9 4 13 8 9 4 14 5 4 3	-75 3 12 5 22 7 12 5 N/A 27 0 27 0 12 0 11 4 12 0 12 7 27 5 0
C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB)	-75 6 19 3 29 4 19 3 N/A 27 6 27 6 27 6 18 7 18 2 18 7 18 2 18 7 18 8 11 5 -1 0	-74 8 13 0 23 2 10 8 N/A 27 6 27 6 12 5 11 9 12 5 13 3 5 5 -1 0	-68 3 16 5 20 7 14 0 18 9 27 0 27 0 10 0 15 4 10 0 16 0 5 2 -1 0	-48 8 14 9 20 1 13 4 18 3 27 0 27 0 9 4 13 8 9 4 14 5 -1 0	-75 3 12 5 22 7 12 5 N/A 27 0 12 0 11 4 12 0 12 7 12 7 5 0 -1 0
C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB)	-75 6 19 3 29 4 19 3 N/A 27 6 27 6 18 7 18 2 18 7 18 8 11 5	-74 8 13 0 23 2 10 8 N/A 27 6 27 6 12 5 11 9 12 5 13 3 5 5	-68 3 16 5 20 7 14 0 18 9 27 0 27 0 10 0 15 4 10 0 16 0 5 2	-48 8 14 9 20 1 13 4 18 3 27 0 27 0 9 4 13 8 9 4 14 5 4 3	-75 3 12 5 22 7 12 5 N/A 27 0 27 0 12 0 11 4 12 0 12 7 27 5 0
C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB)	-75 6 19 3 29 4 19 3 N/A 27 6 27 6 18 7 18 2 18 7 18 8 -10 10 5	-74 8 13 0 23 2 10 8 N/A 27 6 27 6 12 5 11 9 12 5 13 3 5 5 -1 0 4 5	-68 3 16 5 20 7 14 0 18 9 27 0 27 0 10 0 15 4 10 0 16 0 5 2 -1 0 4 2	-48 8 14 9 20 1 13 4 18 3 27 0 27 0 9 4 13 8 9 4 14 5 4 3 -1 0 3 3	-75 3 12 5 22 7 12 5 N/A 27 0 27 0 12 0 11 4 12 0 12 7 5 0 -1 0 4 0
C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB)	-75 6 19 3 29 4 19 3 N/A 27 6 27 6 18 7 18 2 18 7 18 2 18 7 18 8 -10 10 5 -10 0	-74 8 13 0 23 2 10 8 N/A 27 6 27 6 12 5 11 9 12 5 13 3 5 5 -1 0 4 5 -3 4	-68 3 16 5 20 7 14 0 18 9 27 0 27 0 10 0 15 4 10 0 16 0 5 2 -1 0 4 2 -3 9	-48 8 14 9 20 1 13 4 18 3 27 0 27 0 9 4 13 8 9 4 14 5 -1 0 3 3 -3 0	-75 3 12 5 22 7 12 5 N/A 27 0 27 0 12 0 11 4 12 0 12 7 5 0 -1 0 4 0 -3 4
C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers CARRIER DENSITY LEVELS	-75 6 19 3 29 4 19 3 N/A 27 6 27 6 27 6 18 7 18 2 18 7 18 2 18 7 18 8 -10 10 5 -10 0 0 5 1	-74 8 13 0 23 2 10 8 N/A 27 6 27 6 12 5 11 9 12 5 13 3 5 5 -1 0 4 5 -3 4 1 1 1	-68 3 16 5 20 7 14 0 18 9 27 0 27 0 10 0 15 4 10 0 16 0 5 2 -1 0 4 2 -3 9 0 3 4	-48 8 14 9 20 1 13 4 18 3 27 0 27 0 9 4 13 8 9 4 14 5 -1 0 3 3 -3 0 0 3 410	-75 3 12 5 22 7 12 5 N/A 27 0 12 0 11 4 12 0 12 7 50 -1 0 4 0 -3 4 0 6 1
C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers	-75 6 19 3 29 4 19 3 N/A 27 6 18 7 18 2 18 7 18 8 11 5 -10 10 5 -10 0 0 5	-74 8 13 0 23 2 10 8 N/A 27 6 27 6 12 5 11 9 12 5 13 3 5 5 -1 0 4 5 -3 4 11	-68 3 16 5 20 7 14 0 18 9 27 0 27 0 10 0 15 4 10 0 16 0 5 2 -1 0 4 2 -3 9 0 3	-48 8 14 9 20 1 13 4 18 3 27 0 27 0 9 4 13 8 9 4 14 5 4 3 -1 0 3 3 -3 0 0 3	-75 3 12 5 22 7 12 5 N/A 27 0 27 0 12 0 11 4 12 0 12 7 5 0 -1 0 4 0 -3 4 0 6

Exhibit 6-6: 31.0° E.L. C-Band Spot Uplink/Hemi Downlink

THE INT DEAM INFORMATION				
UPLINK BEAM INFORMATION Uplink Beam Name	CSPOT	CSPOT	CSPOT	CSPOT
Uplink Frequency (GHz)	6175	6175	6175	6175
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Uplink Relative Contour Level (dB)	-4	-4	-4	-4
Uplink Contour G/T (dB/K)	-1	-1	-1	-1
Uplink SFD (dBW/m2)	-87 3	-92 3	-88 3	-88 3
Rain Rate (mm/hr)	42	42	42	42
DOWNLINK BEAM INFORMATION Downlink Beam Name	HEMI	HEMI	HEMI	HEMI
Downlink Beam Name Downlink Frequency (GHz)	3 95	3 95	3 95	3 95
Downlink Frequency (GHZ)	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Downlink Relative Contour Level (dB)	-6	-6	-6	-6
Downlink Contour EIRP (dBW)	31.5	31.5	31.5	31.5
Rain Rate (mm/hr)	42	42	42	42
ADJACENT SATELLITE 1				
Satellite 1 Orbital Location	33 OE	33 0E	33 0E	33 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0
ADJACENT SATELLITE 2 Satellite 1 Orbital Location	29 0E	29 0E	29 0E	29 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	-387	-387	-387	-387
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0
CARRIER INFORMATION	-	-	-	-
Carrier ID	36M0F3F	36M0G7W	10M3G7W	100KG7W
Carrier Modulation	TV/FM	QPSK	QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	4	N/A	N/A	N/A
Information Rate(kbps)	N/A	24575	6000	64
Code Rate	N/A	1/2x188/204	1/2x188/204	1/2x239/256
Occupied Bandwidth(kHz)	36000	30133	6771 1	75 4
Allocated Bandwidth(kHz)	36000	36000	10300	100
Minimum C/N, Clear Sky (dB)	10	3 36	3 87	2 99
Minimum C/N, Rain (dB)	10	3 36	3 57	2 79
UPLINK EARTH STATION		16	2.4	2.4
Earth Station Diameter (meters)	<u>81</u> 528	4 6 46 9	2 4 41 9	2 4 41 9
Earth Station Gain (dBi) Earth Station Elevation Angle	20	20	20	20
DOWNLINK EARTH STATION	20	20	20	20
Earth Station Diameter (meters)	15.2	45	92	13 1
Earth Station Gain (dBi)	55.0	43 9	50.3	53 5
Earth Station G/T (dB/K)	34.5	23 6	29.4	33 0
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)	756	70 6	61 3	40 5
Uplink Path Loss, Clear Sky (dB)	-200 2	-200 2	-200 2	-200 2
Uplink Rain Attenuation	00	00	00	00
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz)	-1 0 228 6	-1 0 228 6	-1 0 228 6	-1 0 228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8
Uplink C/N(dB)	27.4	23 2	-08 5	-48 8 19 2
DOWNLINK PERFORMANCE	217	-22	204	.72
Downlink EIRP per Carrier (dBW)	31 5	31 5	23 2	24
Antenna Pointing Error (dB)	-0 5	-05	-0 5	-0 5
Downlink Path Loss, Clear Sky (dB)	-196 3	-196 3	-196 3	-196 3
Downlink Rain Attenuation	0 0	0 0	0 0	0 0
Earth Station G/T (dB/K)	34 5	23 6	29 4	33 0
Boltzman Constant(dBW / K - Hz)	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8
Downlink C / N(dB)	22 2	12 1	16 1	18 4
COMPOSITE LINK PERFORMANCE	27.1	22.2	20.4	10.0
C/N Uplink (dB)	27 4	23 2	20 4	192
C/N Downlink (dB)	22 2 N/A	12 1 N/A	161	184
C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)*	N/A 27 0	N/A 27 0	18 1 27 7	16 8 27 0
C/I Downlink Co-Channel (dB)*	270	270	277	270
C/I Uplink Adjacent Satellite 1 (dB)	167	12.5	97	85
C/I Downlink Adjacent Satellite 1 (dB)	21 1	98	151	172
C/I Uplink Adjacent Satellite 2 (dB)	167	12.5	97	85
C/I Downlink Adjacent Satellite 2 (dB)	21.8	12 3	163	180
C/(N+I) Composite (dB)	11 6	46	49	43
Required System Margin (dB)	-1 0	-1 0	-1 0	-1 0
	10 6	36	39	3 3
Net C/(N+I) Composite (dB)	100	2.4	-39	-30
Net C/(N+I) Composite (dB) Minimum Required C/N (dB)	-10 0	-34		
Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB)	-10 0 0 6	0 2	0 0	03
Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers	-10 0			0 3 360
Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers CARRIER DENSITY LEVELS	-10 0 0 6 1	02	00 3	360
Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers	-10 0 0 6	0 2	0 0	

Exhibit 6-7: 31.0° E.L. C-Band Hemi Uplink/Hemi Downlink

Update Progeness (Figh) HEML HE	THE INT BEAM INFORMATION	_				
Update Request (GH2) OBJ	UPLINK BEAM INFORMATION Uplink Beam Name	HEMI	HEMI	HEMI	HEMI	HEMI
Upake Extenser (1 dB) 4 4 4 4 4 Oplate Center (1 dB) -75 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>						
Upine Conter GT (dBK) -75 -75 -75 -75 -75 QPine STD (dBK) 480 480 481		CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Upber SD (dBWm2) 440 440 440 440 420 420 DONNLAN REAM INFORMATION 42 42 42 42 42 42 DONNLAN REAM INFORMATION 1356 356 356 355 420 42 DONNLAN REAM INFORMATION 1356 356 356 4355 420 42 43 53				-	-	-
Ban Base (ambt) 42 42 42 42 42 Dowilsk Exercise 1957						
DOWNLIKE BEAM INFORMATION IP IP IP IP IP Downlak Fragmery (GE) 190						
Downlair Beam Near HEAL Days Days <thdays< th=""> Days Days<td></td><td>42</td><td>42</td><td>42</td><td>42</td><td>42</td></thdays<>		42	42	42	42	42
Downlak Beam Pointanion CBCULAR		HEMI	HEMI	HEMI	HEMI	HEMI
Domainal Relative Carlow Level (dB) -6 -6 -6 -6 -6 -6 -6 -7 Rain Ret (embr) 42 43 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td></t<>						
Downlank Contour ERP (400 y) 4115 3115 <						
Rain Rate (combr) 42 43 36		-		-		
ADJACKY SATELLITE 1						
SataBite Orbani Location 33 0E 38 0 38 0 38 0 38 0 38 0E 30 0E </td <td></td> <td>42</td> <td>72</td> <td>42</td> <td>72</td> <td>42</td>		42	72	42	72	42
Uplate Neurosin Advantage (dB) 0 0 0 0 0 0 Downlike ERP Density (dBW/Hz) -38.0 -38.0 -38.0 -38.0 -38.0 Downlike ERP Density (dBW/Hz) -29.0E -29.0E -29.0E -29.0E -29.0E Statistic 1 Obtail Lowino -29.0E -29.0E -29.0E -29.0E -29.0E Statistic 1 Obtail Lowino -38.7 -38.7 -38.7 -38.7 -38.7 -38.0 <td></td> <td>33 0E</td> <td>33 0E</td> <td>33 0E</td> <td>33 0E</td> <td>33 0E</td>		33 0E	33 0E	33 0E	33 0E	33 0E
Devalue IRP Density (dBWHz) -38 0 -38 0 -0 0 ADVACENT SATELLITE 2 - - - - ADVACENT SATELLITE 2 - - - - Seatliet 1 Obtain Location 29 0E 20 0E						-38 7
Downlar Polarization Ádvantage (dB) 0 0 0 0 0 0 Satellie 1 Obtal Location 29 0E 20 0E 0 <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td>		-				
ADJACKY SATELLITE 2 -						
Satellier 1 Ochrial Location 29 0E 29 0E 29 0E 29 0E 29 0E 29 0E Uplake Power Density (GBW/RL2) 38 7 78 7 77 70077 77700770 77700770 77700770 77700770 77100770 77100771 774 7 7754 7 775 7 753 7 779 7		U	U	U	U	0
Uplate Notizitian Advantage (BB) 38 7 38 7 38 7 38 7 38 7 Dynalis ERP Density (BW/Hz) 38 0 38 0 38 0 38 0 0		29 OE	29 OE	29 OE	29 OE	29 OE
Upska Polarization Advantage (dB) 0						
Downlaw Pointration Advantage (dit) 0 0 0 0 0 Carner D 36M073F 36M073F 10M5G7W 77M0G7W Carner Mollation TV/FM QPSK	Uplink Polarization Advantage (dB)					
CARRER INFORMATION						
Carrier ID 36M057W 10MG7W 10MG7W 10MG7W 17M007W Carrier Modulation TVFM QPSK		0	0	0	0	0
Carner Modulation TV/FM QPSK QPSK QPSK QPSK QPSK QPSK Dex to Peak Bandwidth of EDS (MEr) N/A Discussion and advalut of EDS (MEr) M/A Discussion and advalut of EDS (MEr) M/A Discussion and advalut of EDS (MEr) Discussion advalut advalut of EDS (MER) Discussion advalut		261/0525	261002701	101/2070	10080700	771002701
Peak Isondwidth CEDS (MHz) 4 N/A N/A <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>						
Information Rate(Exp) N/A 24573 6900 64 52563 Occopied Bandwidth(Hz) 36000 30133 6771 754 64451 Allocated Bandwidth(Hz) 36000 30133 6771 754 64451 Minimum CN, Clear Siry (dB) 10 336 387 299 336 Minimum CN, Rain (dB) 0 45 2.4 2.4 7.0 Earth Station Dimeter (meters) 9.0 4.5 2.4 2.4 7.0 Earth Station Dimeter (meters) 9.0 4.5 2.4 2.4 7.0 DOWNLINK EARTH STATION - - - - - Earth Station Ginn (dB) 335 475 335 355 465 Earth Station Grin (dB) 335 475 335 330 262 Earth Station Grin (dBN) 330 2.66 330 330 262 Earth Station Grin (dBN) 759 Clear Sky Clear Sky Clear Sky Uplatk Parth Loss, Clear Sk				-		
Occupied Bandwidth(Hz) 36000 30133 6771 77.4 64431 Minimum CN, Cher Sty (dB) 10 336 387 2.99 336 Minimum CN, Cher Sty (dB) 10 336 387 2.99 336 VELWK EARTH STATION 0 3.90 4.5 2.4 7.0 336 Earth Station Diameter (netters) 9.0 4.5 2.4 7.0 2.0 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>						
Allocated Bandwidh(Ehz) 36000 36000 100 17000 Minimum CN, Rain (dB) 10 336 387 299 336 Minimum CN, Rain (dB) 10 336 387 299 336 Lend Station Dameter (netter) 90 4.5 2.4 7.0 Earth Station Carlot 90 4.5 2.4 7.0 Earth Station Carlot 20						
Minimum CN, Clear Sky (dB) 10 336 387 2.99 336 UPLINK EARTH STATION 0 36 357 2.79 336 Larth Station Gain (dB) 534 465 419 419 510 Earth Station Gain (dB) 534 465 419 419 510 Earth Station Cancelers 131 70 131 61 535 465 535 465 535 465 20						
Minimum CN, Rain (db) 10 336 357 279 336 Earth Station Danneter (meters) 90 45 24 24 70 Earth Station Ging (db) 534 4455 419 419 510 Earth Station Elevation Angle 20 20 20 20 20 20 DOWNLINK EARTH STATION						
UPLINK EARTH STATION 9 4 24 Earth Station Grain (dBi) 534 465 419 419 510 Earth Station Elevation Angle 200 20 20 20 20 20 200 20 200 20 200 200 20 200 20 200 20 200 20 200 20 200 20 200 20 200						
Earth Station Diameter (meters) 90 4.5 2.4 2.4 7.0 Earth Station Elevation Angle 2002 -2002 -2002 -2002 -2002 -2002 -2002 -2002 -2002 -2002 -2002 -2002 -2002 -2002 -20		10	3 30	3.57	2 19	3 30
Earth Station Elevation Augle 20 20 20 20 20 DOWNLINK EARTH STATION		90	4 5	24	24	70
DOWNLINK EARTH STATION I I I I Earth Station Diameter (meters) 131 70 131 131 61 Earth Station Grin (dB) 53 5 47 5 53 5 53 5 46 5 Earth Station Elevation Angle 200 2002 200 200	Earth Station Gain (dBi)	53 4	46 5	41 9	41 9	51 0
Earth Station Diameter (meters) 131 70 131 131 61 Earth Station Grin (dB) 535 475 533 535 465 Earth Station GT (dB/K) 330 266 330 330 262 Earth Station Elevation Angle 20	¥	20	20	20	20	20
Earth Station Grain (dBi) 33 5 47 5 53 3 33 5 46 5 Earth Station GT (dBK) 33 0 26 6 33 0 33 0 26 2 Earth Station Elevation Angle 200 2 200 2 -200 2 -200 2 -200 2 -200 2 -200 2 -200 2 200 2 200 2 -200 2 <t< td=""><td></td><td>12.1</td><td>7.0</td><td>12.1</td><td>12.1</td><td>(1</td></t<>		12.1	7.0	12.1	12.1	(1
Earth Station G/T (db/k) 33 0 26 f 33 0 26 2 Earth Station Elevation Angle 20 20 20 20 20 UPLINK PERFORMANCE Clear Sky Clear Sky <t< td=""><td></td><td>_</td><td></td><td></td><td></td><td></td></t<>		_				
Earth Station Elevation Ångle 20 20 20 20 20 LINK FADE TYPE Clear Sky Clear Skr Clear Skr Clear Skr Clea						
UPLINK PERFORMANCE						
Uplink Path Loss, Clear Sky (dB) 76 9 69 9 63 4 43 0 73 9 Uplink Path Loss, Clear Sky (dB) -200 2 -200 3 -200 3 -200 3 -200 2 -200 15 -200 3 -200 3 -200 3 -200 3 -200 3 -200 3 -200 3	LINK FADE TYPE	Clear Sky	Clear Sky	Clear Sky	Clear Sky	Clear Sky
Uplink Path Loss, Clear Sky (dB) -200 2 Dexedered BW-100 - 10 -		240			10.0	73.0
Uplink Rain Attenuation 00 00 00 00 00 00 Satelite GT(dB/K) -75 -7						
Satellite G/T(dB/K) -7.5 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>						
Boltzman Constant(dBW/K-Hz) 228 6 228 7 18 0 -48 8 -78 1 Downlink EIRP per Carrier (dBW) 31 5 28 7 18 0 -24 31 5 Downlink Path Loss, Clear Sky (dB) -196 3 -196 3 -196 3 -196 3 -196 3 -196 3 Downlink Rain Attennation 0 0 0						
Uplink C/N(dB) 22.2 16.0 16.0 15.1 16.7 DOWNLINK PERFORMANCE					228 6	228 6
DOWNLINK PERFORMANCE						
Downlink EIRP per Carrier (dBW) 31 5 28 7 18 0 -2.4 31 5 Antenna Pointing Error (dB) -05 -063 -1963 -228 6 -228 6 -228 6 -228 6 -228 6 -228 6 -228 6 -228 6 -228 6 -228 6 -218 6 -218 6		22 2	160	160	151	16 7
Antenna Pointing Error (dB) -0.5 -0.5 -0.5 -0.5 -0.5 Downlink Path Loss, Clear Sky (dB) -196.3 -106.7 -106.3 -116.3 -116.7 -116.3 <		21.5	20.7	10.0	2.4	21.5
Downlink Path Loss, Clear Sky (dB) -196 3 00						
Downlink Rain Attenuation 00 00 00 00 00 00 Earth Station G/T (dB/K) 330 266 330 330 262 Boltzman Constant(dBW / K - Hz) 2286 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td></t<>						
Boltzman Constant(dBW / K - Hz) 228 6 11 4 16 11 1 16 7 16 11 1 16 16 16 0 16 0 18 20 9 N/A C/I Uplink Adjacent Satellite 1 (dB) 16 0 9 8 9 0 10 5 10 5 10 5 10 5 10 5 10 5 10 5 10 5 10 5						
Carrier Noise Bandwidth (dB-Hz) -75 6 -74 8 -68 3 -48 8 -78 1 Downlink C / N(dB) 20 7 12 3 14 5 13 6 11 4 COMPOSITE LINK PERFORMANCE						
Downlink C / N(dB) 20 7 12 3 14 5 13 6 11 4 COMPOSITE LINK PERFORMANCE 22 2 16 0 16 0 15 1 16 7 C/N Downlink (dB) 20 7 12 3 14 5 13 6 11 4 C/N Downlink (dB) 20 7 12 3 14 5 13 6 11 4 C/I Intermodulation (dB) N/A N/A N/A 21 8 20 9 N/A C/I Uplink Co-Channel (dB)* 30 3 30 3 27 3 27 0 27 0 C/I Uplink Adjacent Satellite 1 (dB) 16 0 9 8 9 8 9 0 10 5 C/I Uplink Adjacent Satellite 1 (dB) 16 0 9 8 9 8 9 0 10 5 C/I Downlink Adjacent Satellite 1 (dB) 26 3 18 7 20 1 19 2 17 3 C/I Downlink Adjacent Satellite 2 (dB) 11 5 4 8 5 2 4 4 4 9 C/I Downlink Adjacent Satellite 2 (dB) 11 5 4 8 5 2 4 4 4 9 C/I Downlink Adjacent Satellite 2 (dB) 10 5 3 8		228 6	228 6	228.6	228 6	228 6
COMPOSITE LINK PERFORMANCE 22.2 160 160 151 167 C/N Uplink (dB) 20.7 12.3 14.5 13.6 11.4 C/I Uplink (dB) 20.7 12.3 14.5 13.6 11.4 C/I Uplink Co-Channel (dB)* 30.3 30.3 27.3 27.0 27.0 C/I Uplink Co-Channel (dB)* 30.3 30.3 27.3 27.0 27.0 C/I Uplink Adjacent Satellite 1 (dB) 16.0 9.8 9.8 9.0 10.5 C/I Uplink Adjacent Satellite 1 (dB) 16.0 9.8 9.8 9.0 10.5 C/I Uplink Adjacent Satellite 2 (dB) 16.0 9.8 9.8 9.0 10.5 C/I Uplink Adjacent Satellite 2 (dB) 16.0 9.8 9.8 9.0 10.5 C/I Downlink Adjacent Satellite 2 (dB) 16.0 9.8 9.8 9.0 10.5 C/I Uplink Adjacent Satellite 2 (dB) 11.5 4.8 5.2 4.4 4.9 Required System Margin (dB) -1.0 -1.0 -1.0	Common Marine David Activity (1D-11.)	75.4			10.0	70.4
C/N Uplink (dB) 22.2 16.0 16.0 15.1 16.7 C/N Downlink (dB) 20.7 12.3 14.5 13.6 11.4 C/I Uplink Co-Channel (dB)* N/A N/A N/A 20.9 N/A C/I Uplink Co-Channel (dB)* 30.3 30.3 27.3 27.0 27.0 C/I Uplink Co-Channel (dB)* 30.3 30.3 27.3 27.0 27.0 C/I Uplink Adjacent Satellite 1 (dB) 16.0 9.8 9.8 9.0 10.5 C/I Uplink Adjacent Satellite 1 (dB) 25.5 17.1 19.3 18.4 15.4 C/I Uplink Adjacent Satellite 2 (dB) 16.0 9.8 9.8 9.0 10.5 C/I Uplink Adjacent Satellite 2 (dB) 16.0 9.8 9.8 9.0 10.5 C/I Downlink Adjacent Satellite 2 (dB) 16.0 9.8 9.8 9.0 10.5 C/I Downlink Adjacent Satellite 2 (dB) 11.5 4.8 5.2 4.4 4.9 Required System Margin (dB) -1.0 -1.0 -1.0			-74 8	-68 3		
C/N Downlink (dB) 20 7 12 3 14 5 13 6 11 4 C/I Intermodulation (dB) N/A N/A N/A 21 8 20 9 N/A C/I Uplink Co-Channel (dB)* 30 3 30 3 30 3 27 3 27 0 27 0 C/I Downlink Co-Channel (dB)* 30 3 30 3 30 3 27 3 27 0 27 0 C/I Downlink Co-Channel (dB)* 16 0 9 8 9 8 9 0 10 5 C/I Uplink Adjacent Satellite 1 (dB) 25 5 17 1 19 3 18 4 15 4 C/I Uplink Adjacent Satellite 2 (dB) 16 0 9 8 9 8 9 0 10 5 C/I Uplink Adjacent Satellite 2 (dB) 26 3 18 7 20 1 19 2 17 3 C/I Uplink Adjacent Satellite 2 (dB) 11 5 4 8 5 2 4 4 4 9 C/I Uplink Adjacent Satellite 2 (dB) 11 5 4 8 5 2 4 4 4 9 C/I Uplink Adjacent Satellite 2 (dB) 10 5 3 8 4 2 3 4 3 9 Minimum Required Sys	Downlink C / N(dB)		-74 8	-68 3		
C/I Uplink Co-Channel (dB)* 30 3 30 3 27 3 27 0 27 0 C/I Downlink Co-Channel (dB)* 30 3 30 3 30 3 27 3 27 0 27 0 C/I Uplink Adjacent Satellite 1 (dB) 16 0 9 8 9 8 9 0 10 5 C/I Uplink Adjacent Satellite 1 (dB) 25 5 17 1 19 3 18 4 15 4 C/I Uplink Adjacent Satellite 2 (dB) 26 3 18 7 20 1 19 2 17 3 C/(N+I) Composite (dB) 11 5 4 8 5 2 4 4 4 9 Required System Margin (dB) -1 0 -1 0 -1 0 -1 0 -1 0 Net C/(N+I) Composite (dB) 10 5 3 8 4 2 3 4 3 9 Minimum Required C/N (dB) -10 0 -3 4 -3 9 -3 0 -3 4 Excess Link Margin (dB) 0 5 0 4 0 3 0 4 0 5 Number of Carriers 1 1 7 770 1 Uplink Power Density (dBW/Hz) -52 1 -51 4 -46 8 -47 6 -55 2	Downlink C / N(dB) COMPOSITE LINK PERFORMANCE	20 7	-74 8 12 3	-68 3 14 5	13 6	11 4
C/I Downlink Co-Channel (dB)* 30 3 30 3 27 3 27 0 27 0 C/I Uplink Adjacent Satellite 1 (dB) 16 0 9 8 9 8 9 0 10 5 C/I Downlink Adjacent Satellite 1 (dB) 25 5 17 1 19 3 18 4 15 4 C/I Uplink Adjacent Satellite 2 (dB) 16 0 9 8 9 8 9 0 10 5 C/I Downlink Adjacent Satellite 2 (dB) 26 3 18 7 20 1 19 2 17 3 C/(N+I) Composite (dB) 11 5 4 8 5 2 4 4 4 9 Required System Margin (dB) -10 -10 -10 -10 -10 Net C/(N+I) Composite (dB) 10 5 3 8 4 2 3 4 3 9 Minimum Required C/N (dB) -10 0 -3 4 -3 9 -3 0 -3 4 Excess Link Margin (dB) 0 5 0 4 0 3 0 4 0 5 Number of Carriers 1 1 7 770 1 Uplink Power Density (dBW/Hz) -52 1 -51 4 -46 8 -47 6 <td>Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB)</td> <td>20 7 22 2</td> <td>-74 8 12 3 16 0</td> <td>-68 3 14 5 16 0</td> <td>13 6 15 1</td> <td>11 4 16 7</td>	Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB)	20 7 22 2	-74 8 12 3 16 0	-68 3 14 5 16 0	13 6 15 1	11 4 16 7
C/I Uplink Adjacent Satellite I (dB) 160 98 98 90 105 C/I Downlink Adjacent Satellite 1 (dB) 255 171 193 184 154 C/I Uplink Adjacent Satellite 2 (dB) 160 98 98 90 105 C/I Uplink Adjacent Satellite 2 (dB) 263 187 201 192 173 C/I Downlink Adjacent Satellite 2 (dB) 263 187 201 192 173 C/I Downlink Adjacent Satellite 2 (dB) 263 187 201 192 173 C/(N+I) Composite (dB) 115 4.8 5.2 4.4 4.9 Required System Margin (dB) -10 -10 -10 -10 -10 Net C/(N+I) Composite (dB) 105 3.8 4.2 3.4 3.9 Minimum Required C/N (dB) -100 -3.4 -3.9 -3.0 -3.4 Excess Link Margin (dB) 0.5 0.4 0.3 0.4 0.5 Number of Carriers 1 1 7 770 1 CARREE DENSITY LEVELS	Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB)	20 7 22 2 20 7 N/A	-74 8 12 3 16 0 12 3 N/A	-68 3 14 5 16 0 14 5 21 8	13 6 15 1 13 6 20 9	11 4 16 7 11 4 N/A
C/I Downlink Adjacent Satellite 1 (dB) 25 5 17 1 19 3 18 4 15 4 C/I Uplink Adjacent Satellite 2 (dB) 16 0 9 8 9 8 9 0 10 5 C/I Uplink Adjacent Satellite 2 (dB) 26 3 18 7 20 1 19 2 17 3 C/I Downlink Adjacent Satellite 2 (dB) 26 3 18 7 20 1 19 2 17 3 C/(N+I) Composite (dB) 11 5 4 8 5 2 4 4 4 9 Required System Margin (dB) -1 0 -1 0 -1 0 -1 0 -1 0 Net C/(N+I) Composite (dB) 10 5 3 8 4 2 3 4 3 9 Minimum Required C/N (dB) -10 0 -3 4 -3 9 -3 0 -3 4 Excess Link Margin (dB) 0 5 0 4 0 3 0 4 0 5 Number of Carriers 1 1 7 770 1 Uplink Power Density (dBW/Hz) -52 1 -51 4 -46 8 -47 6 -55 2	Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)*	20 7 22 2 20 7 N/A 30 3	-74 8 12 3 16 0 12 3 N/A 30 3	-68 3 14 5 16 0 14 5 21 8 27 3	13 6 15 1 13 6 20 9 27 0	11 4 16 7 11 4 N/A 27 0
C/I Uplink Adjacent Satellite 2 (dB) 160 98 98 90 105 C/I Downlink Adjacent Satellite 2 (dB) 263 187 201 192 173 C/(N+I) Composite (dB) 115 48 52 44 49 Required System Margin (dB) -10 -10 -10 -10 -10 Net C/(N+I) Composite (dB) 105 38 42 34 39 Minimum Required C/N (dB) -100 -34 -39 -30 -34 Excess Link Margin (dB) 05 04 03 04 05 Number of Carriers 1 1 7 770 1 Uplink Power Density (dBW/Hz) -521 -514 -468 -47.6 -55.2	Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)*	20 7 22 2 20 7 N/A 30 3 30 3	-74 8 12 3 16 0 12 3 N/A 30 3 30 3	-68 3 14 5 16 0 14 5 21 8 27 3 27 3	13 6 15 1 13 6 20 9 27 0 27 0	11 4 16 7 11 4 N/A 27 0 27 0
C/I Downlink Adjacent Satellite 2 (dB) 26 3 18 7 20 1 19 2 17 3 C/(N+I) Composite (dB) 11 5 4 8 5 2 4 4 4 9 Required System Margin (dB) -10 -10 -10 -10 -10 Net C/(N+I) Composite (dB) 10 5 3 8 4 2 3 4 3 9 Minimum Required C/N (dB) -100 -3 4 -3 9 -3 0 -3 4 Excess Link Margin (dB) 0 5 0 4 0 3 0 4 0 5 Number of Carriers 1 1 7 770 1 CARREER DENSITY LEVELS	Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Ownlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB)	20 7 22 2 20 7 N/A 30 3 30 3 16 0	-74 8 12 3 16 0 12 3 N/A 30 3 30 3 9 8	-68 3 14 5 16 0 14 5 21 8 27 3 27 3 9 8	13 6 15 1 13 6 20 9 27 0 27 0 9 0	11 4 16 7 11 4 N/A 27 0 27 0 10 5
C/(N+1) Composite (dB) 11 5 4 8 5 2 4 4 4 9 Required System Margin (dB) -10 -10 -10 -10 -10 Net C/(N+1) Composite (dB) 10 5 3 8 4 2 3 4 3 9 Minimum Required C/N (dB) -100 -3 4 -3 9 -3 0 -3 4 Excess Link Margin (dB) 0 5 0 4 0 3 0 4 0 5 Number of Carriers 1 1 7 770 1 CARRER DENSITY LEVELS	Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB)	20 7 22 2 20 7 N/A 30 3 30 3 16 0 25 5	-74 8 12 3 16 0 12 3 N/A 30 3 30 3 9 8 17 1	-68 3 14 5 16 0 14 5 21 8 27 3 27 3 27 3 9 8 19 3	13 6 15 1 13 6 20 9 27 0 27 0 9 0 18 4	11 4 16 7 11 4 N/A 27 0 27 0 27 0 10 5 15 4
Required System Margin (dB) -10 -34 39 -31 -34 -39 -30 -34 0 -34 05 04 03 04 05 05 04 03 04 05 05 04 03 04 05 01 01 01 01 01 01 01	Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Nownlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB)	20 7 22 2 20 7 N/A 30 3 30 3 16 0 25 5 16 0	-74 8 12 3 16 0 12 3 N/A 30 3 30 3 9 8 17 1 9 8	-68 3 14 5 16 0 14 5 21 8 27 3 27 3 27 3 9 8 19 3 9 8	13 6 15 1 13 6 20 9 27 0 27 0 9 0 18 4 9 0	11 4 16 7 11 4 N/A 27 0 27 0 10 5 15 4 10 5
Net C/(N+I) Composite (dB) 10 5 3 8 4 2 3 4 3 9 Minimum Required C/N (dB) -10 0 -3 4 -3 9 -3 0 -3 4 Excess Link Margin (dB) 0 5 0 4 0 3 0 4 0 5 Number of Carriers 1 1 7 770 1 CARREER DENSITY LEVELS	Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Nownlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB)	20 7 22 2 20 7 N/A 30 3 30 3 16 0 25 5 16 0	-74 8 12 3 16 0 12 3 N/A 30 3 30 3 9 8 17 1 9 8 18 7	-68 3 14 5 16 0 14 5 21 8 27 3 27 3 9 8 19 3 9 8 20 1	13 6 15 1 13 6 20 9 27 0 27 0 9 0 18 4 9 0 19 2	11 4 16 7 11 4 N/A 27 0 27 0 10 5 15 4 10 5 17 3
Minimum Required C/N (dB) -10 0 -3 4 -3 9 -3 0 -3 4 Excess Link Margin (dB) 0 5 0 4 0 3 0 4 0 5 Number of Carriers 1 1 7 770 1 CARREER DENSITY LEVELS	Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB)	20 7 22 2 20 7 N/A 30 3 30 3 16 0 25 5 16 0 26 3 11 5	-74 8 12 3 16 0 12 3 N/A 30 3 30 3 9 8 17 1 9 8 18 7 4 8	-68 3 14 5 16 0 14 5 21 8 27 3 27 3 9 8 19 3 9 8 20 1 5 2	13 6 15 1 13 6 20 9 27 0 27 0 9 0 18 4 9 0 19 2 4 4	11 4 16 7 11 4 N/A 27 0 27 0 10 5 15 4 10 5 17 3 4 9
Excess Link Margin (dB) 0.5 0.4 0.3 0.4 0.5 Number of Carriers 1 1 7 770 1 CARRIER DENSITY LEVELS Uplink Power Density (dBW/Hz) -52.1 -51.4 -46.8 -47.6 -55.2	Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB)	20 7 22 2 20 7 N/A 30 3 30 3 16 0 25 5 16 0 26 3 -1 0	-74 8 12 3 16 0 12 3 N/A 30 3 30 3 9 8 17 1 9 8 18 7 4 8 -1 0	-68 3 14 5 16 0 14 5 21 8 27 3 27 3 9 8 19 3 9 8 20 1 5 2 -1 0	13 6 15 1 13 6 20 9 27 0 27 0 9 0 18 4 9 0 19 2 4 4 -1 0	11 4 16 7 11 4 N/A 27 0 27 0 10 5 15 4 10 5 17 3 4 9 -1 0
Number of Carriers 1 1 7 770 1 CARRIER DENSITY LEVELS	Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Nownlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB)	207 222 207 N/A 303 303 160 255 160 263 -115 -10 105	-74 8 12 3 16 0 12 3 N/A 30 3 30 3 9 8 17 1 9 8 18 7 4 8 -1 0 3 8	-68 3 14 5 16 0 14 5 21 8 27 3 27 3 9 8 19 3 9 8 20 1 5 2 -1 0 4 2	13 6 15 1 13 6 20 9 27 0 27 0 9 0 18 4 9 0 19 2 4 4 -1 0 3 4	114 167 114 N/A 270 270 270 105 154 105 173 49 -10 39
CARRIER DENSITY LEVELS	Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Nownlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Downlink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+1) Composite (dB) Minimum Required C/N (dB)	20 7 22 2 20 7 N/A 30 3 30 3 16 0 25 5 16 0 26 3 -1 0 10 5 -10 0	-74 8 12 3 16 0 12 3 N/A 30 3 30 3 9 8 17 1 9 8 18 7 4 8 -1 0 3 8 -3 4	-68 3 14 5 16 0 14 5 21 8 27 3 27 3 9 8 19 3 9 8 20 1 5 2 -1 0 4 2 -3 9	13 6 15 1 13 6 20 9 27 0 27 0 9 0 18 4 9 0 19 2 4 4 -1 0 3 4 -3 0	114 167 114 N/A 270 270 270 105 154 105 173 49 -10 39 -34
Uplink Power Density (dBW/Hz) -52 1 -51 4 -46 8 -47 6 -55 2	Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Downlink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+1) Composite (dB) Required System Margin (dB) Net C/(N+1) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB)	207 222 207 N/A 303 303 160 255 160 263 -115 -10 105 -100 05	-74 8 12 3 16 0 12 3 N/A 30 3 30 3 9 8 17 1 9 8 18 7 4 8 -1 0 3 8 -3 4 0 4	-68 3 14 5 16 0 14 5 21 8 27 3 27 3 9 8 19 3 9 8 20 1 5 2 -1 0 4 2 -3 9 0 3	13 6 15 1 13 6 20 9 27 0 27 0 9 0 18 4 9 0 19 2 4 4 -1 0 3 4 -3 0 0 4	114 167 114 N/A 270 270 270 105 154 105 173 49 -10 39 -34 05
Downlink EIRP Density At Beam Peak (dBW/Hz) -38 1 -40 1 -44 3 -45 2 -40 6	Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 2 (dB) E/(N+I) Composite (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers	207 222 207 N/A 303 303 160 255 160 263 -115 -10 105 -100 05	-74 8 12 3 16 0 12 3 N/A 30 3 30 3 9 8 17 1 9 8 18 7 4 8 -1 0 3 8 -3 4 0 4	-68 3 14 5 16 0 14 5 21 8 27 3 27 3 9 8 19 3 9 8 20 1 5 2 -1 0 4 2 -3 9 0 3	13 6 15 1 13 6 20 9 27 0 27 0 9 0 18 4 9 0 19 2 4 4 -1 0 3 4 -3 0 0 4	114 167 114 N/A 270 270 270 105 154 105 173 49 -10 39 -34 05
	Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Nownlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers CARRIER DENSITY LEVELS Uplink Power Density (dBW/Hz)	20 7 22 2 20 7 N/A 30 3 30 3 16 0 25 5 16 0 26 3 11 5 -1 0 10 5 -10 0 0 5 1 -10 0 -10 0 -10 -10 -10 -	-74 8 12 3 16 0 12 3 N/A 30 3 30 3 9 8 17 1 9 8 18 7 4 8 -1 0 3 8 -3 4 0 4 1 -51 4	-68 3 14 5 16 0 14 5 21 8 27 3 27 3 9 8 19 3 9 8 20 1 5 2 -1 0 4 2 -3 9 0 3 7 -46 8	13 6 15 1 13 6 20 9 27 0 27 0 9 0 18 4 9 0 19 2 4 4 -1 0 3 4 -3 0 0 4 770 -47 6	114 167 114 N/A 270 270 105 154 105 173 49 -10 39 -34 05 1 -552

Exhibit 6-8: 31.0° E.L. C-Band Hemi Uplink/Zone Downlink

UPLINK BEAM INFORMATION Uplink Beam Name	HEMI	HEMI	HEMI	HEMI	HEMI
Uplink Frequency (GHz)	6175	6175	6 175	6175	6 175
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Uplink Relative Contour Level (dB)	-6	-6	-6	-6	-6
Uplink Contour G/T (dB/K)	-75	-75	-75	-75	-75
Uplink SFD (dBW/m2)	-73 0	-83 0	-81 0	-81 0	-89 0
Rain Rate (mm/hr) DOWNLINK BEAM INFORMATION	42	42	42	42	42
DownLink Beam Information Downlink Beam Name	ZONE	ZONE	ZONE	ZONE	ZONE
Downlink Frequency (GHz)	3 95	3 95	3 95	3 95	3 95
Downlink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Downlink Relative Contour Level (dB)	-6	-6	-6	-6	-6
Downlink Contour EIRP (dBW)	30 9	30 9	30 9	30 9	30 9
Rain Rate (mm/hr)	42	42	42	42	42
ADJACENT SATELLITE 1 Satellite 1 Orbital Location	33 0E	33 0E	33 0E	33 0E	33 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-38 0	-38 0	-38 0	-38 0	-38 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
ADJACENT SATELLITE 2					
Satellite 1 Orbital Location	29 0E	29 0E	29 0E	29 0E	29 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB) Downlink EIRP Density (dBW/Hz)	0 -38 0	0 -38 0	-38 0	0 -38 0	0 -38 0
Downlink EIRP Density (dBw/Hz) Downlink Polarization Advantage (dB)	-38 0	-38 0	-38 0	-38 0	-38 0
CARRIER INFORMATION	Ť	Ť	Ť	, , , , , , , , , , , , , , , , , , ,	~
Carrier ID	36M0F3F	36M0G7W	10M3G7W	100KG7W	77 M0G 7W
Carrier Modulation	TV/FM	QPSK	QPSK	QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	4	N/A	N/A	N/A	N/A
Information Rate(kbps)	N/A	24575	6000	64	52563
Code Rate	N/A 36000	1/2x188/204	1/2x188/204	1/2x239/256	1/2x188/204
Occupied Bandwidth(kHz) Allocated Bandwidth(kHz)	36000	30133 36000	6771 1 10300	75 4 100	64451 77000
Minimum C/N, Clear Sky (dB)	10	3 36	3 87	2.99	3 36
Minimum C/N, Rain (dB)	10	3 36	3 57	2 79	3 36
UPLINK EARTH STATION					
Earth Station Diameter (meters)	11 0	4 5	24	24	70
Earth Station Gain (dBi)	55 4	46 5	41 9	41 9	51 0
Earth Station Elevation Angle	20	20	20	20	20
DOWNLINK EARTH STATION Earth Station Diameter (meters)	18 3	13 1	13 1	13 1	61
	10.5	131			
Earth Station Gain (dBi)	56.0	53.5	53.5	53.5	46.5
Earth Station Gain (dBi) Earth Station G/T (dB/K)	56 0 35 5	53 5 33 0	53 5 33 0	53 5 33 0	46 5 26 2
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle					
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE	35 5	33 0	33 0	33 0	26 2
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE	35 5 20 Clear Sky	33 0 20 Clear Sky	33 0 20 Clear Sky	33 0 20 Clear Sky	26 2 20 Clear Sky
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW)	35 5 20 Clear Sky 79 4	33 0 20 Clear Sky 69 4	33 0 20 Clear Sky 63 4	33 0 20 Clear Sky 43 0	26 2 20 Clear Sky 73 9
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB)	35 5 20 Clear Sky 79 4 -200 2	33 0 20 Clear Sky 69 4 -200 2	33 0 20 Clear Sky 63 4 -200 2	33 0 20 Clear Sky 43 0 -200 2	26 2 20 Clear Sky 73 9 -200 2
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation	35 5 20 Clear Sky 79 4 -200 2 0 0	33 0 20 Clear Sky 69 4 -200 2 0 0	33 0 20 Clear Sky 63 4 -200 2 0 0	33 0 20 Clear Sky 43 0 -200 2 0 0	26 2 20 Clear Sky 73 9 -200 2 0 0
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB)	35 5 20 Clear Sky 79 4 -200 2	33 0 20 Clear Sky 69 4 -200 2	33 0 20 Clear Sky 63 4 -200 2	33 0 20 Clear Sky 43 0 -200 2	26 2 20 Clear Sky 73 9 -200 2
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz)	35 5 20 Clear Sky 79 4 -200 2 0 0 -7 5 228 6 -75 6	33 0 20 Clear Sky 69 4 -200 2 0 0 -7 5 228 6 -74 8	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8	26 2 20 Clear Sky -200 2 0 0 -7 5 228 6 -78 1
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB)	35 5 20 Clear Sky 79 4 -200 2 0 0 -7 5 228 6	33 0 20 Clear Sky 69 4 -200 2 0 0 -7 5 228 6	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE	35 5 20 Clear Sky 79 4 -200 2 0 0 -7 5 228 6 -75 6 24 7	33 0 20 Clear Sky 69 4 -200 2 0 0 -7 5 228 6 -74 8 15 5	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW)	35 5 20 Clear Sky 79 4 -200 2 0 0 -7 5 228 6 -75 6 24 7 25 3	33 0 20 Clear Sky 69 4 -200 2 0 0 -7 5 228 6 -74 8 15 5 25 3	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 17 4	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -3 0	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 30 9
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB)	35 5 20 Clear Sky 79 4 -200 2 0 0 -7 5 228 6 -75 6 24 7 24 7 25 3 -0 5	33 0 20 Clear Sky 69 4 -200 2 0 0 -7 5 228 6 -74 8 15 5 25 3 -0 5	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 17 4 -0 5	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -3 0 -0 5	26 2 20 Clear Sky -200 2 0 0 -7 5 228 6 -78 1 16 7 30 9 -0 5
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW)	35 5 20 Clear Sky 79 4 -200 2 0 0 -7 5 228 6 -75 6 24 7 25 3	33 0 20 Clear Sky 69 4 -200 2 0 0 -7 5 228 6 -74 8 15 5 25 3	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 17 4	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -3 0	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 30 9
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink EIRP per Carrier (kgB) Downlink Rain Attenuation Earth Station G/T (dB/K)	35 5 20 Clear Sky 79 4 -200 2 0 0 -7 5 228 6 -75 6 24 7 25 3 -0 5 -196 3	33 0 20 Clear Sky 69 4 -200 2 0 0 -7 5 228 6 -74 8 15 5 25 3 -0 5 -196 3 0 0 33 0	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 17 4 -0 5 -196 3 0 0 33 0	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -3 0 -0 5 -196 3 0 0 33 0	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 16 7 30 9 -0 5 -196 3 0 0 26 2
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink CN(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz)	35 5 20 Clear Sky 79 4 -200 2 0 0 -7 5 228 6 -75 6 24 7 25 3 -0 5 -196 3 0 0 35 5 228 6	33 0 20 Clear Sky 69 4 -200 2 0 0 -7 5 228 6 -74 8 15 5 25 3 -0 5 -196 3 0 0 33 0 228 6	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 17 4 -0 5 -196 3 0 0 33 0 228 6	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -3 0 -0 5 -196 3 0 0 33 0 228 6	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 30 9 -0 5 -196 3 0 0 26 2 228 6
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz)	35 5 20 Clear Sky 79 4 -200 2 0 0 -7 5 228 6 -75 6 24 7 -25 3 -0 5 -196 3 0 0 35 5 228 6 -75 6	33 0 20 Clear Sky 69 4 -200 2 0 0 -7 5 228 6 -74 8 15 5 25 3 -0 5 -196 3 0 0 33 0 228 6 -74 8	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 17 4 -0 5 -196 3 0 0 33 0 228 6 -68 3	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -3 0 -0 5 -196 3 0 0 33 0 228 6 -48 8	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB)	35 5 20 Clear Sky 79 4 -200 2 0 0 -7 5 228 6 -75 6 24 7 25 3 -0 5 -196 3 0 0 35 5 228 6	33 0 20 Clear Sky 69 4 -200 2 0 0 -7 5 228 6 -74 8 15 5 25 3 -0 5 -196 3 0 0 33 0 228 6	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 17 4 -0 5 -196 3 0 0 33 0 228 6	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -3 0 -0 5 -196 3 0 0 33 0 228 6	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 30 9 -0 5 -196 3 0 0 26 2 228 6
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) Compositie LINK PERFORMANCE	35 5 20 Clear Sky 79 4 -200 2 0 0 -7 5 228 6 -75 6 24 7 25 3 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 0	33 0 20 Clear Sky 69 4 -200 2 0 0 -7 5 228 6 -74 8 15 5 25 3 -0 5 -196 3 0 0 33 0 228 6 -74 8 15 3	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 17 4 -0 5 -196 3 0 0 33 0 228 6 -68 3 13 9	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -3 0 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 0	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink CN(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Fath Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB)	35 5 20 Clear Sky 79 4 -200 2 0 0 -7 5 228 6 -75 6 24 7 25 3 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 0	33 0 20 Clear Sky 69 4 -200 2 0 0 -7 5 228 6 -74 8 15 5 -196 3 0 0 33 0 228 6 -74 8 15 3 -0 5 -195 3 0 0 33 0 228 6 -74 8 15 3	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 17 4 -0 5 -196 3 0 0 33 0 228 6 -68 3 13 9 16 0	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -3 0 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 0 13 0	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 10 8
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) Compositie LINK PERFORMANCE	35 5 20 Clear Sky 79 4 -200 2 0 0 -7 5 228 6 -75 6 24 7 25 3 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 0	33 0 20 Clear Sky 69 4 -200 2 0 0 -7 5 228 6 -74 8 15 5 25 3 -0 5 -196 3 0 0 33 0 228 6 -74 8 15 3	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 17 4 -0 5 -196 3 0 0 33 0 228 6 -68 3 13 9	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -3 0 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 0	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Uplink (dB)	35 5 20 Clear Sky 79 4 -200 2 0 0 -7 5 228 6 -75 6 24 7 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 0 -75 6 17 0	33 0 20 Clear Sky 69 4 -200 2 0 0 -7 5 228 6 -74 8 15 5 -196 3 0 0 33 0 228 6 -74 8 15 3	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 17 4 -0 5 -196 3 0 0 33 0 228 6 -68 3 13 9 16 0 13 9	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -3 0 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 0 -15 1 13 0	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 16 7 10 8
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Nownlink (dB) C/I Uplink (dB) C/I Uplink Co-Channel (dB)*	35 5 20 Clear Sky 79 4 -200 2 0 0 -7 5 228 6 -75 6 24 7 25 3 -0 5 -196 3 0 0 35 5 228 6 -75 6 -75 6 17 0 17 0 17 0 N/A 27 3 27 3	33 0 20 Clear Sky 69 4 -200 2 0 0 -7 5 228 6 -74 8 15 5 -196 3 0 0 33 0 228 6 -74 8 15 3 15 5 15 3 N/A 27 3 27 3	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 17 4 -0 5 -196 3 0 0 33 0 228 6 -68 3 13 9 16 0 13 9 21 8 27 3 27 3	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -3 0 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 0 13 0 20 9 27 0 27 0	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 10 8 16 7 10 8 N/A 27 0 27 0
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink CN(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB)	35 5 20 Clear Sky 79 4 -200 2 0 0 -7 5 228 6 -75 6 24 7 25 3 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 0 35 5 228 6 -75 6 17 0 24 7 17 0 N/A 27 3 27 3 18 5	33 0 20 Clear Sky 69 4 -200 2 0 0 -7 5 228 6 -74 8 15 5 -196 3 0 0 33 0 228 6 -74 8 15 3 -196 3 0 0 33 0 228 6 -74 8 15 5 -196 3 N/A 27 3 27 3 9 3	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 17 4 -0 5 -196 3 0 0 33 0 228 6 -68 3 13 9 16 0 13 9 21 8 27 3 27 3 9 8	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -3 0 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 0 228 6 -48 8 13 0 228 6 -48 8 13 0 228 6 -48 8 13 0 228 7 -7 5 -196 3 0 0 -0 5 -196 3 0 0 -27 5 -196 3 0 0 -27 5 -196 3 0 0 -27 5 -196 3 0 0 -27 5 -28 6 -48 8 -13 0 -20 2 -196 3 0 0 -27 5 -196 3 0 0 -28 6 -48 8 -13 0 -20 5 -196 3 0 0 -28 6 -48 8 -13 0 -20 5 -196 3 0 0 -28 6 -48 8 -13 0 -28 6 -48 8 -196 3 0 0 -28 6 -48 8 -13 0 -28 6 -48 8 -13 0 -27 5 -228 6 -48 8 -196 3 0 0 -27 5 -228 6 -48 8 -196 3 0 0 -27 5 -27 5 -28 6 -48 8 -196 3 0 0 -27 5 -27 5 -27 5 -196 3 0 0 -27 5 -27 6 -28 6 -48 8 -13 0 -27 5 -27 6 -27 7 -27 6 -27 7 -27 6 -27 7 -27 6 -27 7 -27 0 -27 0	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 N/A 27 0 27 0 10 5
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink (dB) C/N Uplink (dB) C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB)	35 5 20 Clear Sky 79 4 -200 2 0 0 -7 5 228 6 -75 6 24 7 -25 3 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 0 -75 6 17 0 N/A 27 3 27 3 18 5 21 9	33 0 20 Clear Sky 69 4 -200 2 0 0 -7 5 228 6 -74 8 15 5 -196 3 0 0 33 0 228 6 -74 8 15 3 N/A 27 3 9 3 20 1	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 17 4 -0 5 -196 3 0 0 33 0 228 6 -68 3 13 9 16 0 13 9 21 8 27 3 27 3 9 8 18 7	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -3 0 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 0 228 6 -48 8 13 0 228 6 -48 8 13 0 229 27 0 27 0 27 0 9 0 17 8	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 16 7 10 8 N/A 27 0 27 0 10 5 14 8
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attennation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) Downlink PERFORMANCE Downlink PERFORMANCE Downlink FIRP per Carrier (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attennation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB)	35 5 20 Clear Sky 79 4 -200 2 0 0 -7 5 228 6 -75 6 24 7 25 3 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 0 228 6 -75 6 17 0 24 7 17 0 N/A 27 3 27 3 18 5 21 9 18 5	33 0 20 Clear Sky 69 4 -200 2 0 0 -7 5 228 6 -74 8 15 5 -196 3 0 0 33 0 228 6 -74 8 15 3 15 5 15 3 N/A 27 3 27 3 9 3 20 1 9 3	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 17 4 -0 5 -196 3 0 0 33 0 228 6 -68 3 13 9 16 0 13 9 21 8 27 3 27 3 9 8 18 7 9 8	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -3 0 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 0 228 6 -48 8 13 0 228 6 -48 8 13 0 228 6 -47 5 -196 3 0 0 33 0 228 6 -48 8 13 0 228 6 -47 5 -196 3 0 0 33 0 228 6 -48 8 15 1 -3 0 -20 2 -196 3 0 0 33 0 228 6 -48 8 15 1 -3 0 -20 2 -196 3 0 0 33 0 228 6 -48 8 13 0 -20 2 -196 3 0 0 33 0 228 6 -48 8 13 0 -20 2 -196 3 0 0 -20 2 -196 3 0 0 -20 2 -196 3 0 0 -20 2 -196 3 0 0 -20 2 -20 2 -196 3 0 0 -228 6 -48 8 13 0 -228 6 -48 8 13 0 -27 5 -27 5 -27 5 -27 5 -27 5 -196 3 0 0 -27 5 -27 6 -28 6 -48 8 -13 0 -27 5 -27 6 -27 5 -27 6 -27 5 -196 3 0 0 -27 0 -2	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 16 7 10 8 N/A 27 0 27 0 10 5 14 8 10 5
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink (dB) C/N Uplink (dB) C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB)	35 5 20 Clear Sky 79 4 -200 2 0 0 -7 5 228 6 -75 6 24 7 -25 3 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 0 -75 6 17 0 N/A 27 3 27 3 18 5 21 9	33 0 20 Clear Sky 69 4 -200 2 0 0 -7 5 228 6 -74 8 15 5 -196 3 0 0 33 0 228 6 -74 8 15 3 N/A 27 3 9 3 20 1	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 17 4 -0 5 -196 3 0 0 33 0 228 6 -68 3 13 9 16 0 13 9 21 8 27 3 27 3 9 8 18 7	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -3 0 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 0 228 6 -48 8 13 0 228 6 -48 8 13 0 229 27 0 27 0 27 0 9 0 17 8	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 16 7 10 8 N/A 27 0 27 0 10 5 14 8
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Dowalink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink EIRP per Carrier (dBW) Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB)	35 5 20 Clear Sky 79 4 -200 2 0 0 -7 5 228 6 -75 6 24 7 25 3 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 0 24 7 17 0 X/A 27 3 27 3 27 3 18 5 21 9 18 5 22 6	33 0 20 Clear Sky 69 4 -200 2 0 0 -7 5 228 6 -74 8 15 5 -196 3 0 0 33 0 228 6 -74 8 15 3 -0 5 -196 3 0 0 33 0 228 6 -74 8 15 3 N/A 27 3 27 3 9 3 20 9 20 9	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 17 4 -0 5 -196 3 0 0 33 0 228 6 -68 3 13 9 228 6 -68 3 13 9 21 8 27 3 27 3 9 8 18 7 9 8 19 5	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 N/A 27 0 27 0 10 5 14 8 10 5 16 7
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attennation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) Downlink PERFORMANCE Downlink PERFORMANCE Downlink FIRP per Carrier (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attennation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB)	35 5 20 Clear Sky 79 4 -200 2 0 0 -7 5 228 6 -75 6 24 7 25 3 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 0 228 6 -75 6 17 0 X/A 27 3 18 5 21 9 18 5	33 0 20 Clear Sky 69 4 -200 2 0 0 -7 5 228 6 -74 8 15 5 -196 3 0 0 33 0 228 6 -74 8 15 3 15 5 15 3 N/A 27 3 27 3 9 3 20 1 9 3	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 17 4 -0 5 -196 3 0 0 33 0 228 6 -68 3 13 9 16 0 13 9 21 8 27 3 27 3 9 8 18 7 9 8	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -3 0 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 0 228 6 -48 8 13 0 228 6 -48 8 13 0 228 6 -47 5 -196 3 0 0 33 0 228 6 -48 8 13 0 228 6 -47 5 -196 3 0 0 33 0 228 6 -48 8 15 1 -3 0 -20 2 -196 3 0 0 33 0 228 6 -48 8 15 1 -3 0 -20 2 -196 3 0 0 33 0 228 6 -48 8 13 0 -20 2 -196 3 0 0 33 0 228 6 -48 8 13 0 -20 2 -196 3 0 0 -20 2 -196 3 0 0 -20 2 -196 3 0 0 -20 2 -196 3 0 0 -20 2 -20 2 -196 3 0 0 -228 6 -48 8 13 0 -228 6 -48 8 13 0 -27 5 -27 5 -27 5 -27 5 -27 5 -196 3 0 0 -27 5 -27 6 -28 6 -48 8 -13 0 -27 5 -27 6 -27 5 -27 6 -27 5 -196 3 0 0 -27 0 -2	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 16 7 10 8 N/A 27 0 27 0 10 5 14 8 10 5
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/(N-H) Composite (dB)	35 5 20 Clear Sky 79 4 -200 2 0 0 -7 5 228 6 -75 6 24 7 -05 -196 3 0 0 35 5 228 6 -75 6 17 0 -75 6 17 0 -75 6 17 0 N/A 27 3 27 3 18 5 21 9 18 5 22 6 -11 7	33 0 20 Clear Sky 69 4 -200 2 0 0 -7 5 228 6 -74 8 15 5 -196 3 0 0 33 0 228 6 -74 8 15 5 -196 3 0 0 33 0 228 6 -74 8 15 5 -195 3 N/A 27 3 27 3 9 3 20 9 5 0	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 17 4 -0 5 -196 3 0 0 33 0 228 6 -68 3 13 9 21 8 27 3 27 3 9 8 18 7 9 8 19 5 5 1	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -3 0 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 0 228 6 -48 8 13 0 228 6 -48 8 13 0 228 6 -48 8 13 0 229 27 0 27 0 27 0 9 0 17 8 9 0 18 6 -42 4 2	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 N/A 27 0 27 0 10 5 14 8 10 5 16 7 4 7
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(Vh-I) Composite (dB) Required System Margin (dB) Net C/(N+1) Composite (dB) Minimum Required C/N (dB)	35 5 20 Clear Sky 79 4 -200 2 0 0 -7 5 228 6 -75 6 24 7 25 3 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 0 35 5 228 6 -75 6 17 0 24 7 17 0 N/A 27 3 27 3 27 3 18 5 21 9 18 5 22 6 -11 7 -1 0 10 7 -10 0	33 0 20 Clear Sky 69 4 -200 2 0 0 -7 5 228 6 -74 8 15 5 -196 3 0 0 33 0 228 6 -74 8 15 3 0 0 33 0 228 6 -74 8 15 3 N/A 27 3 9 3 20 1 9 3 20 9 5 0 -1 0 4 0 -3 4	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 17 4 -0 5 -196 3 0 0 33 0 228 6 -68 3 13 9 16 0 13 9 21 8 27 3 27 3 9 8 18 7 9 8 19 5 -10 4 1 -3 9	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -3 0 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 0 -0 5 -196 3 0 0 33 0 227 0 27 0 27 0 9 0 17 8 9 0 18 6 -10 3 2 -10 -10 -10 -10 -10 -10 -10 -10	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 N/A 27 0 27 0 10 5 14 8 10 5 16 7 -10 3 7 -3 4
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Dowalink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink BERP per Carrier (dBW) Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Downlink (dB) C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB)	355 20 Clear Sky 794 -2002 00 -75 2286 -756 247 253 -05 -1963 00 355 2286 -756 170 247 170 N/A 273 273 185 219 185 226 -117 -100 107 -100 07	33 0 20 Clear Sky 69 4 -200 2 0 0 -7 5 228 6 -74 8 15 5 -196 3 0 0 33 0 228 6 -74 8 15 5 -196 3 0 0 33 0 228 6 -74 8 15 5 15 3 N/A 27 3 27 3 9 3 20 1 9 3 20 9 5 0 -1 0 4 0 -3 4 0 6	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 17 4 -0 5 -196 3 0 0 33 0 228 6 -68 3 13 9 21 8 27 3 27 3 27 3 9 8 18 7 9 8 18 7 9 8 19 5 5 1 -1 0 4 1 -3 9 0 2	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -3 0 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 0 227 0 9 0 17 8 9 0 17 8 9 0 17 8 9 0 18 6 -4 -4 -4 -4 -4 -4 -4 -4 -4 -4	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 N/A 27 0 27 0 16 7 10 8 N/A 27 0 27 0 16 7 16 7 10 8 N/A 27 0 27 0 16 7 16 7 16 7 16 7 10 8 N/A 27 0 27 0 16 7 16 7 16 7 10 8 N/A 27 0 27 0 16 7 16 7 16 7 10 8 N/A 27 0 27 0 16 7 16 7 16 7 10 8 N/A 27 0 27 0
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+T) Composite (dB) Required System Margin (dB) Number of Carriers	35 5 20 Clear Sky 79 4 -200 2 0 0 -7 5 228 6 -75 6 24 7 25 3 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 0 35 5 228 6 -75 6 17 0 24 7 17 0 N/A 27 3 27 3 27 3 18 5 21 9 18 5 22 6 -11 7 -1 0 10 7 -10 0	33 0 20 Clear Sky 69 4 -200 2 0 0 -7 5 228 6 -74 8 15 5 -196 3 0 0 33 0 228 6 -74 8 15 3 0 0 33 0 228 6 -74 8 15 3 N/A 27 3 9 3 20 1 9 3 20 9 5 0 -1 0 4 0 -3 4	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 17 4 -0 5 -196 3 0 0 33 0 228 6 -68 3 13 9 16 0 13 9 21 8 27 3 27 3 9 8 18 7 9 8 19 5 -10 4 1 -3 9	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -3 0 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 0 -0 5 -196 3 0 0 33 0 227 0 27 0 27 0 9 0 17 8 9 0 18 6 -10 3 2 -10 -10 -10 -10 -10 -10 -10 -10	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 N/A 27 0 27 0 10 5 14 8 10 5 16 7 -10 5 14 7 -1 0 3 7 -3 4
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+1) Composite (dB) Net C/(N+1) Composite (dB) Number of Carriers CARRIER DENSITY LEVELS	35 5 20 Clear Sky 79 4 -200 2 0 0 -7 5 228 6 -75 6 24 7 25 3 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 0 228 6 -75 6 17 0 X/A 27 3 18 5 21 9 18 5 22 6 -10 7 -10 0 10 7 -10 0 0 7 2 2	33 0 20 Clear Sky 69 4 -200 2 0 0 -7 5 228 6 -74 8 15 5 25 3 -0 5 -196 3 0 0 33 0 228 6 -74 8 15 3 0 228 6 -74 8 15 3 N/A 27 3 27 3 9 3 20 1 9 3 20 9 50 -10 4 0 -3 4 0 6 2	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 17 4 -0 5 -196 3 0 0 33 0 228 6 -68 3 13 9 21 8 27 3 27 3 9 8 18 7 9 8 19 5 -10 4 1 -3 9 0 2 7	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -3 0 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 0 228 6 -49 3 0 0 33 0 228 6 -49 8 13 0 20 9 27 0 9 0 17 8 9 0 18 6 -40 3 2 -10 3 2 -10 3 -10 3 -10 3 -10 3 -10 3 -10 3 -10 -20 9 -27 0 -27 0 -2	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 N/A 27 0 27 0 10 5 14 8 10 5 16 7 -10 37 -3 4 0 3 1 -10 -10 -10 -10 -10 -10 -10
Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constaut(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constaut(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constaut(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N-H) Composite (dB) Required System Margin (dB) Number of Carriers	355 20 Clear Sky 794 -2002 00 -75 2286 -756 247 253 -05 -1963 00 355 2286 -756 170 247 170 N/A 273 273 185 219 185 226 -117 -100 107 -100 07	33 0 20 Clear Sky 69 4 -200 2 0 0 -7 5 228 6 -74 8 15 5 -196 3 0 0 33 0 228 6 -74 8 15 5 -196 3 0 0 33 0 228 6 -74 8 15 5 15 3 N/A 27 3 27 3 9 3 20 1 9 3 20 9 5 0 -1 0 4 0 -3 4 0 6	33 0 20 Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 17 4 -0 5 -196 3 0 0 33 0 228 6 -68 3 13 9 21 8 27 3 27 3 27 3 9 8 18 7 9 8 18 7 9 8 19 5 5 1 -1 0 4 1 -3 9 0 2	33 0 20 Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -3 0 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 0 227 0 9 0 17 8 9 0 17 8 9 0 17 8 9 0 18 6 -4 -4 -4 -4 -4 -4 -4 -4 -4 -4	26 2 20 Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 N/A 27 0 27 0 16 7 10 8 N/A 27 0 27 0 16 7 16 7 10 8 N/A 27 0 27 0 16 7 16 7 16 7 16 7 10 8 N/A 27 0 27 0 16 7 16 7 16 7 10 8 N/A 27 0 27 0 16 7 16 7 16 7 10 8 N/A 27 0 27 0 16 7 16 7 16 7 10 8 N/A 27 0 27 0

Exhibit 6-9: 31.0° E.L. C-Band Hemi Uplink/Global Downlink

UPLINK BEAM INFORMATION Uplink Beam Name	HEMI	HEMI	HEMI	HEMI
Uplink Frequency (GHz)	6175	6175	6 175	6 175
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Uplink Relative Contour Level (dB)	-6	-6	-6	-6
Uplink Contour G/T (dB/K)	-7 5	-75	-75	-75
Uplink SFD (dBW/m2)	- <mark>83</mark> 0	-89 0	-84 0	-84 0
Rain Rate (mm/hr)	42	42	42	42
DOWNLINK BEAM INFORMATION				
Downlink Beam Name	GLOBAL	GLOBAL	GLOBAL	GLOBAL
Downlink Frequency (GHz)	3 95	3 95	3 95	3 95
Downlink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Downlink Relative Contour Level (dB) Downlink Contour EIRP (dBW)	-4 27 6	-4 27 6	-4 27 6	-4 27 6
Rain Rate (mm/hr)	42	42	42	42
ADJACENT SATELLITE 1	42	42	42	42
Satellite 1 Orbital Location	33 0E	33 0E	33 0E	33 OE
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0
ADJACENT SATELLITE 2				
Satellite 1 Orbital Location	29 0E	29 0E	29 0E	29 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0
CARRIER INFORMATION	36M0F3F	36M0G7W	10M3G7W	100KG7W
Carrier ID Carrier Modulation	36M0F3F TV/FM	36M0G/W QPSK	QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	1 V/FM 4	N/A	N/A	N/A
Information Rate(kbps)	4 N/A	24575	6000	64
Code Rate	N/A N/A	1/2x188/204	1/2x188/204	1/2x239/256
Occupied Bandwidth(kHz)	36000	30133	6771 1	75.4
Allocated Bandwidth(kHz)	36000	36000	10300	100
Minimum C/N, Clear Sky (dB)	10	3 36	3 87	2 99
Minimum C/N, Rain (dB)	10	3 36	3 57	2 79
UPLINK EARTH STATION				
Earth Station Diameter (meters)	13 0	70	24	24
Earth Station Gain (dBi)	56 4	51 0	41 9	41 9
Earth Station Elevation Angle	20	20	20	20
DOWNLINK EARTH STATION				
Earth Station Diameter (meters)	18 3	70	13 1	13 1
Earth Station Gain (dBi)	56 0	47.5	53 5	53 5
Earth Station G/T (dB/K) Earth Station Elevation Angle	35 5	26 6 20	33 0 20	33 0 20
LINK FADE TYPE	Clear Sky	Clear Sky	Clear Sky	Clear Sky
UPLINK PERFORMANCE	Cical Sky	Cical Sky	Cical Sky	Cical Sky
Uplink Earth Station EIRP (dBW)	79 9	73 9	65 1	44 3
Uplink Path Loss, Clear Sky (dB)	-200 2	-200 2	-200 2	-200 2
Uplink Rain Attenuation	0 0	00	0 0	0 0
Satellite G/T(dB/K)	-75	-75	-75	-75
Boltzman Constant(dBW/K-Hz)	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8
Uplink C/N(dB)	25 2	20 0	177	16 5
DOWNLINK PERFORMANCE	00.4	22.4	10.0	2.0
Downlink EIRP per Carrier (dBW)	27 6	276	18.8	-20
Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB)	-0 5	-0 5	-0 5	-0 5 -196 3
Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation	-196 3 0 0	-196 3 0 0	-196 3 0 0	-196 3
Earth Station G/T (dB/K)	35.5	26 6	33 0	33 0
Boltzman Constant(dBW / K - Hz)	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8
Downlink C / N(dB)	19 3	11 2	153	14 0
COMPOSITE LINK PERFORMANCE				
C/N Uplink (dB)	25 2	20 0	177	16 5
C/N Downlink (dB)	19 3	11 2	153	14 0
C/I Intermodulation (dB)	N/A	N/A	196	183
C/I Uplink Co-Channel (dB)*	27 0	270	277	270
C/I Downlink Co-Channel (dB)*	27 0	27 0	27 7	270
C/I Uplink Adjacent Satellite 1 (dB)	190	13 8	11.5	103
C/I Downlink Adjacent Satellite 1 (dB)	18 2	100	140	12.8
C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB)	190	13 8	11 5	103
On Downlink Aujacent Satemie 2 (0B)	18 8	11 6	14 9	13 6
C/(N+I) Composite (dB)	11 4	47	56	44
Required System Margin (dB)	-10	-10	-10	-10
Net C/(N+I) Composite (dB)	10 4	37	46	34
	-10 0	-34	-39	-30
Minimum Required C/N (dB)		03	07	04
Minimum Required C/N (dB) Excess Link Margin (dB)	04	0.5		
	04	1	3	360
Excess Link Margin (dB)				360
Excess Link Margin (dB) Number of Carriers				360 -46 3

Exhibit 6-10: 31.0° E.L. C-Band Hemi Uplink/C-Band Spot Downlink

UPLINK BEAM INFORMATION				
Uplink Beam Name	HEMI	HEMI	HEMI	HEMI
Uplink Frequency (GHz) Uplink Beam Polarization	6 175 CIRCULAR	6 175 CIRCULAR	6 175 CIRCULAR	6 175 CIRCULAE
Uplink Relative Contour Level (dB)	-6	-6	-6	-6
Uplink Contour G/T (dB/K)	-7.5	-75	-75	-75
Uplink SFD (dBW/m2)	-85 0	-89 0	-84 0	-84 0
Rain Rate (mm/hr)	42	42	42	42
DOWNLINK BEAM INFORMATION				
Downlink Beam Name	CSPOT	CSPOT	CSPOT	CSPOT
Downlink Frequency (GHz)	3 95	3 95	3 95	3 95
Downlink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAI
Downlink Relative Contour Level (dB)	-4	-4	-4	-4
Downlink Contour EIRP (dBW)	34 6	34 6	34 6	34 6
Rain Rate (mm/hr)	42	42	42	42
ADJACENT SATELLITE 1				
Satellite 1 Orbital Location	33 OE	33 0E	33 0E	33 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	-32 0	0 -32 0	0 -32 0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0 0
Downlink Polarization Advantage (dB)	U	U	U	U
ADJACENT SATELLITE 2	20.05	20.0E	20.0E	20.05
Satellite 1 Orbital Location	29 0E -38 7	29 0E -38 7	29 0E -38 7	29 0E -38 7
Uplink Power Density (dBW/Hz) Uplink Polarization Advantage (dB)	-38 /	-38 /	-38 /	-38 /
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0
Downlink EIRP Density (dB W/Hz) Downlink Polarization Advantage (dB)	-32 0	-32 0	-32 0	-32 0
CARRIER INFORMATION	v	0	0	v
Carrier ID	36M0F3F	36M0G7W	10M3G7W	100KG7W
Carrier Modulation	TV/FM	QPSK	QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	4	N/A	N/A	N/A
Information Rate(kbps)	4 N/A	24575	6000	64
Code Rate	N/A N/A	1/2x188/204	1/2x188/204	1/2x239/25
Occupied Bandwidth(kHz)	36000	30133	6771 1	75.4
Allocated Bandwidth(kHz)	36000	36000	10300	100
Minimum C/N, Clear Sky (dB)	10	3 36	3 87	2 99
Minimum C/N, Rain (dB)	10	3 36	3 57	2 79
UPLINK EARTH STATION			5.5.	2.15
Earth Station Diameter (meters)	10 0	70	24	24
Earth Station Gain (dBi)	54 1	51	41 9	41 9
Earth Station Elevation Angle	20	20	20	20
DOWNLINK EARTH STATION				
Earth Station Diameter (meters)	11 0	37	61	61
Earth Station Gain (dBi)	51 9	41 2	46 5	46 5
Earth Station G/T (dB/K)	31 0	20 9	26 2	26 2
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)	77 9	73 9	65 6	44 8
Uplink Path Loss, Clear Sky (dB)	-200 2	-200 2	-200 2	-200 2
Uplink Rain Attenuation	0.0	0.0	0.0	0.0
Satellite G/T(dB/K)	-75	-75	-75	-75
Boltzman Constant(dBW/K-Hz)	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8
Uplink C/N(dB)	23 2	20 0	18 2	170
DOWNLINK PERFORMANCE	24.6	24.6	36.3	
Downlink EIRP per Carrier (dBW)	34.6	34.6	263	55
Antenna Pointing Error (dB)	-0 5	-0 5	-0 5	-0 5
Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation	-196 3 0 0	-196 3 0 0	-196 3 0 0	-196 3 0 0
Earth Station G/T (dB/K)	31 0	20.9	26 2	26 2
Boltzman Constant(dB/K)	228 6	20 9	20 2 228 6	20 2
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8
Downlink C / N(dB)	21 8	-/4 8	-08 5	-48 8
COMPOSITE LINK PERFORMANCE	21 0	12.5	100	14 /
C/N Uplink (dB)	23 2	20 0	18 2	170
C/N Downlink (dB)	23 2	12.5	16 0	147
C/I Intermodulation (dB)	N/A	N/A	181	16 8
C/I Uplink Co-Channel (dB)*	27 0	27.0	277	27 0
C/I Downlink Co-Channel (dB)*	27 0	27 0	277	27 0
C/I Uplink Adjacent Satellite 1 (dB)	17 0	13 8	12 0	10.8
C/I Downlink Adjacent Satellite 1 (dB)	20.9	99	14 0	12.8
C/I Uplink Adjacent Satellite 2 (dB)	170	13 8	12 0	10.8
C/I Downlink Adjacent Satellite 2 (dB)	21 9	12.9	15.9	14 6
C/(N+I) Composite (dB)	11 6	51	60	48
	-10	-10	-10	-10
		41	50	38
Required System Margin (dB)				
Required System Margin (dB) Net C/(N+I) Composite (dB)	10 6		-39	-30
Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB)	10 6 -10 0	-3 4	-39 11	-30 08
Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB)	10 6	-34 07	11	08
Required System Margin (dB) Net C/(N+1) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers	10 6 -10 0 0 6	-3 4		
Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB)	10 6 -10 0 0 6	-34 07	11	08

Exhibit 6-11: 31.0° E.L. C-Band Zone Uplink/Zone Downlink

THE INT BEAM INFORMATION					
UPLINK BEAM INFORMATION Uplink Beam Name	ZONE	ZONE	ZONE	ZONE	ZONE
Uplink Frequency (GHz)	6 175	6 175	6 175	6 175	6 175
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Uplink Relative Contour Level (dB)	-6	-6	-6	-6	-6
Uplink Contour G/T (dB/K) Uplink SFD (dBW/m2)	-56 -739	-5 6 -89 0	-5 6 -80 9	-5 6 -80 9	-56 -869
Rain Rate (mm/hr)	-73 9	-89 0	-80 9	-80 9 42	-80 9 42
DOWNLINK BEAM INFORMATION	72	72	72	72	72
Downlink Beam Name	ZONE	ZONE	ZONE	ZONE	ZONE
Downlink Frequency (GHz)	3 95	3 95	3 95	3 95	3 95
Downlink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Downlink Relative Contour Level (dB)	-6	-6 30 9	-6 30 9	-6 30 9	-6 30 9
Downlink Contour EIRP (dBW) Rain Rate (mm/hr)	30 9 42	42	42	42	42
ADJACENT SATELLITE 1	72	42	42	42	72
Satellite 1 Orbital Location	33 0E	33 0E	33 0E	33 0E	33 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-38 0	-38 0	-38 0	-38 0	-38 0
Downlink Polarization Advantage (dB) ADJACENT SATELLITE 2	0	0	0	0	0
Satellite 1 Orbital Location	29 0E	29 0E	29 0E	29 0E	29 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
CARRIER INFORMATION	20.0000	20.000	101 (2007)	100120011	273 (0.007)
Carrier ID Carrier Modulation	36M0F3F TV/FM	36M0G7W QPSK	10M3G7W QPSK	100KG7W QPSK	77M0G7W QPSK
Peak to Peak Bandwidth of EDS (MHz)	1V/FM 4	QPSK N/A	N/A	N/A	QPSK N/A
Information Rate(kbps)	N/A	24575	6000	64	52563
Code Rate	N/A	1/2x188/204	1/2x188/204	1/2x239/256	1/2x188/204
Occupied Bandwidth(kHz)	36000	30133	6771 1	75 4	64451
Allocated Bandwidth(kHz)	36000	36000	10300	100	77000
Minimum C/N, Clear Sky (dB)	10	3 36	3 87	2 99	3 36
Minimum C/N, Rain (dB) UPLINK EARTH STATION	10	3 36	3 57	2 79	3 36
Earth Station Diameter (meters)	110	45	24	24	152
Earth Station Gain (dBi)	55.4	46 5	41 9	41 9	58.4
Earth Station Elevation Angle	20	20	20	20	20
DOWNLINK EARTH STATION					
Earth Station Diameter (meters)	183	13 1	15.2	15.2	61
Earth Station Gain (dBi)	56 0	53 5	55 0	55 0	46 5
Earth Station Gain (dBi) Earth Station G/T (dB/K)	56 0 35 5	53 5 33 0	55 0 34 5	55 0 34 5	46 5 26 2
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle	56 0	53 5	55 0	55 0	46 5
Earth Station Gain (dBi) Earth Station G/T (dB/K)	56 0 35 5 20	53 5 33 0 20	55 0 34 5 20	55 0 34 5 20	46 5 26 2 20
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW)	56 0 35 5 20 Clear Sky 78 5	53 5 33 0 20 Clear Sky 69 5	55 0 34 5 20 Clear Sky 63 5	55 0 34 5 20 Clear Sky 43 1	46 5 26 2 20 Clear Sky 76 0
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2	53 5 33 0 20 Clear Sky 69 5 -200 2	55 0 34 5 20 Clear Sky 63 5 -200 2	55 0 34 5 20 Clear Sky 43 1 -200 2	46 5 26 2 20 Clear Sky 76 0 -200 2
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0	53 5 33 0 20 Clear Sky 69 5 -200 2 0 0	55 0 34 5 20 Clear Sky 63 5 -200 2 0 0	55 0 34 5 20 Clear Sky 43 1 -200 2 0 0	46 5 26 2 20 Clear Sky 76 0 -200 2 0 0
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rath Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6	53 5 33 0 20 Clear Sky 69 5 -200 2 0 0 -5 6	55 0 34 5 20 Clear Sky 63 5 -200 2 0 0 -5 6	55 0 34 5 20 Clear Sky 43 1 -200 2 0 0 -5 6	46 5 26 2 20 Clear Sky 76 0 -200 2 0 0 -5 6
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rath Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6	53 5 33 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6	55 0 34 5 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6	55 0 34 5 20 Clear Sky 43 1 -200 2 0 0	46 5 26 2 20 Clear Sky 76 0 -200 2 0 0
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rath Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6	53 5 33 0 20 Clear Sky 69 5 -200 2 0 0 -5 6	55 0 34 5 20 Clear Sky 63 5 -200 2 0 0 -5 6	55 0 34 5 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6	46 5 26 2 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7	53 5 33 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5	55 0 34 5 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0	55 0 34 5 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1	46 5 26 2 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 3	53 5 33 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 3	55 0 34 5 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 17 4	55 0 34 5 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -3 0	46 5 26 2 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 30 9
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 3 -0 5	53 5 33 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 3 -0 5	55 0 34 5 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 17 4 -0 5	55 0 34 5 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -3 0 -0 5	46 5 26 2 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 30 9 -0 5
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle UPLINK FERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) Downlink PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 3 -0 5 -196 3	53 5 33 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 3 -0 5 -196 3	55 0 34 5 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 17 4 -0 5 -196 3	55 0 34 5 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -3 0 -0 5 -196 3	46 5 26 2 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 30 9 -0 5 -196 3
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 3 -0 5	53 5 33 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 3 -0 5	55 0 34 5 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 17 4 -0 5	55 0 34 5 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -3 0 -0 5	46 5 26 2 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 30 9 -0 5
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 3 -0 5 -196 3 0 0	53 5 33 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 3 -0 5 -196 3 0 0	55 0 34 5 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 17 4 -0 5 -196 3 0 0	55 0 34 5 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -3 0 -0 5 -196 3 0 0	46 5 26 2 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 30 9 -0 5 -196 3 0 0
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Elevation Angle UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 3 -0 5 -196 3 0 0 35 5 228 6 -75 6	53 5 33 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 3 -0 5 -196 3 0 0 33 0 228 6 -74 8	55 0 34 5 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 17 4 -0 5 -196 3 0 0 34 5 228 6 -68 3	55 0 34 5 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -3 0 -0 5 -196 3 0 0 34 5 228 6 -48 8	46 5 26 2 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle UPLINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Brin Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 3 -0 5 -196 3 0 0 35 5 228 6	53 5 33 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 3 -0 5 -196 3 0 0 33 0 228 6	55 0 34 5 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 17 4 -0 5 -196 3 0 0 34 5 228 6	55 0 34 5 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -3 0 -0 5 -196 3 0 0 34 5 228 6	46 5 26 2 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 30 9 -0 5 -196 3 0 0 26 2 228 6
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rant Attenuation Satellite G/T (dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) Corrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) ComPOSITE LINK PERFORMANCE	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 3 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 0	53 5 33 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 3 -0 5 -196 3 0 0 33 0 228 6 -74 8 15 3	55 0 34 5 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 17 4 -0 5 -196 3 0 0 34 5 228 6 -68 3 15 4	55 0 34 5 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -3 0 -0 5 -196 3 0 0 34 5 228 6 -48 8 14 5	46 5 26 2 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Path Loss, Clear Sky (dB) Downlink Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 3 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 0 25 7	53 5 33 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 3 -0 5 -196 3 0 0 33 0 228 6 -74 8 15 3 17 5	55 0 34 5 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 17 4 -0 5 -196 3 0 0 34 5 228 6 -68 3 15 4 18 0	55 0 34 5 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -3 0 -0 5 -196 3 0 0 34 5 228 6 -48 8 14 5 17 1	46 5 26 2 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 20 7
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station C/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink CN(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) C/N Uplink (dB) C/N Uplink (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 3 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 0 25 7 17 0	53 5 33 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 3 -0 5 -196 3 0 0 33 0 228 6 -74 8 15 3 17 5 15 3	55 0 34 5 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 17 4 -0 5 -196 3 0 0 34 5 228 6 -68 3 15 4 18 0 15 4	55 0 34 5 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -3 0 -0 5 -196 3 0 0 34 5 228 6 -48 8 14 5 17 1 14 5	46 5 26 2 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 20 7 10 8
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station C/T (dB/K) Earth Station Ellevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 3 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 0 25 7	53 5 33 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 3 -0 5 -196 3 0 0 33 0 228 6 -74 8 15 3 17 5	55 0 34 5 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 17 4 -0 5 -196 3 0 0 34 5 228 6 -68 3 15 4 18 0	55 0 34 5 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -3 0 -0 5 -196 3 0 0 34 5 228 6 -48 8 14 5 17 1	46 5 26 2 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 20 7
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DownLink PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Uplink (dB) C/I Intermodulation (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 -05 -196 3 0 0 35 5 228 6 -75 6 17 0 25 7 17 0 N/A	53 5 33 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 -196 3 0 0 33 0 228 6 -74 8 15 3 17 5 15 3 N/A	55 0 34 5 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 17 4 -0 5 -196 3 0 0 34 5 228 6 -68 3 15 4 18 0 15 4 21 8	55 0 34 5 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -3 0 -0 5 -196 3 0 0 34 5 228 6 -48 8 14 5 17 1 14 5 20 9	46 5 26 2 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 20 7 10 8 N/A
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Elvation Angle UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T (dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 3 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 0 25 7 17 0 N/A 27 3 27 3 17 6	53 5 33 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 3 -0 5 -196 3 0 0 33 0 228 6 -74 8 15 3 N/A 27 3 27 3 9 4	55 0 34 5 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 17 4 -0 5 -196 3 0 0 34 5 228 6 -68 3 15 4 15 4 18 0 15 4 27 3 27 3 9 9	55 0 34 5 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -3 0 -0 5 -196 3 0 0 34 5 228 6 -48 8 14 5 -17 1 14 5 20 9 27 0 27 0 9 1	46 5 26 2 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 0 20 7 10 8 N/A 27 0 27 0 12 6
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 3 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 0 N/A 27 3 27 3 17 6 21 9	53 5 33 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 -196 3 0 0 33 0 228 6 -74 8 15 3 -195 3 -195 3 N/A 27 3 9 4 20 1	55 0 34 5 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 17 4 -0 5 -196 3 0 0 34 5 228 6 -68 3 15 4 15 4 21 8 27 3 27 3 9 9 20 2	55 0 34 5 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -3 0 -0 5 -196 3 0 0 -34 5 228 6 -48 8 14 5 -17 1 14 5 20 9 27 0 27 0 9 1 19 4	46 5 26 2 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 N/A 27 0 27 0 12 6 14 8
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 -205 -196 3 0 0 35 5 228 6 -75 6 17 0 N/A 27 3 17 6 21 9 17 6	53 5 33 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 3 -0 5 -196 3 0 0 33 0 228 6 -74 8 15 3 N/A 27 3 9 4 20 1 9 4	55 0 34 5 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 17 4 -0 5 -196 3 0 0 34 5 228 6 -68 3 15 4 18 0 15 4 21 8 27 3 9 9 20 2 9 9	55 0 34 5 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -3 0 -0 5 -196 3 0 0 34 5 228 6 -48 8 14 5 20 9 27 0 27 0 9 1 19 4 9 1	46 5 26 2 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 20 7 10 8 N/A 27 0 27 0 12 6 14 8 12 6
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 3 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 0 N/A 27 3 27 3 17 6 21 9	53 5 33 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 -196 3 0 0 33 0 228 6 -74 8 15 3 17 5 15 3 N/A 27 3 9 4 20 1	55 0 34 5 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 17 4 -0 5 -196 3 0 0 34 5 228 6 -68 3 15 4 15 4 21 8 27 3 27 3 9 9 20 2	55 0 34 5 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -3 0 -0 5 -196 3 0 0 34 5 228 6 -48 8 14 5 20 9 27 0 27 0 9 1 19 4	46 5 26 2 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 N/A 27 0 27 0 12 6 14 8
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Ellevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rath Loss, Clear Sky (dB) Uplink Rath Attenuation Satellite G/T (dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Ratin Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE CONPOSITE LINK PERFORMANCE C/N Downlink (dB) C/I Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 3 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 0 25 7 17 0 N/A 27 3 27 3 17 6 21 9 17 6 22 6	53 5 33 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 3 -0 5 -196 3 0 0 33 0 228 6 -74 8 15 3 17 5 15 3 N/A 27 3 9 4 20 1 9 4 20 9	55 0 34 5 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 17 4 -0 5 -196 3 0 0 34 5 228 6 -68 3 15 4 18 0 15 4 21 8 27 3 9 9 20 2 9 9 21 0	55 0 34 5 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -3 0 -0 5 -196 3 0 0 34 5 228 6 -48 8 14 5 20 9 27 0 27 0 9 1 20 1	46 5 26 2 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 0 0 26 2 228 6 -78 1 10 8 N/A 27 0 27 0 12 6 14 8 12 6 16 7
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Elevation Angle UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Intermodulation (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 3 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 0 N/A 27 3 17 6 21 9 17 6	53 5 33 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 3 -0 5 -196 3 0 0 33 0 228 6 -74 8 15 3 N/A 27 3 9 4 20 1 9 4	55 0 34 5 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 17 4 -0 5 -196 3 0 0 34 5 228 6 -68 3 15 4 18 0 15 4 21 8 27 3 9 9 20 2 9 9	55 0 34 5 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -3 0 -0 5 -196 3 0 0 34 5 228 6 -48 8 14 5 20 9 27 0 27 0 9 1 19 4 9 1	46 5 26 2 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 20 7 10 8 N/A 27 0 27 0 12 6 14 8 12 6
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Ellevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rath Loss, Clear Sky (dB) Uplink Rath Attenuation Satellite G/T (dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Ratin Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE CONPOSITE LINK PERFORMANCE C/N Downlink (dB) C/I Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 -05 -196 3 0 0 35 5 228 6 -75 6 17 0 N/A 27 3 27 3 17 6 21 9 17 6 22 6 11 4	53 5 33 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 3 -0 5 -196 3 0 0 33 0 228 6 -74 8 15 3 N/A 27 3 9 4 20 1 9 4 20 9 5 2	55 0 34 5 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 17 4 -0 5 -196 3 0 0 34 5 228 6 -68 3 15 4 21 8 27 3 27 3 27 3 27 3 27 3 27 3 29 9 20 2 9 9 20 1 0 5 6	55 0 34 5 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -3 0 -0 5 -196 3 0 0 34 5 228 6 -48 8 14 5 20 9 27 0 27 0 9 1 19 4 9 1 20 1	46 5 26 2 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 N/A 20 7 10 8 N/A 27 0 27 0 12 6 14 8 12 6 16 7 5 9
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Ellevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rath Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(V+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 3 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 0 25 7 17 0 25 7 17 0 25 7 17 0 25 7 17 0 25 7 17 0 25 7 17 0 25 7 17 0 17 0 22 6 11 4 -1 0 10 4 -10 0	53 5 33 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 3 -0 5 -196 3 0 0 33 0 228 6 -74 8 15 3 17 5 15 3 N/A 27 3 9 4 20 9 5 2 -1 0 4 2 -3 4	55 0 34 5 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 17 4 -0 5 -196 3 0 0 34 5 228 6 -68 3 15 4 18 0 15 4 21 8 27 3 9 9 20 0 2 9 9 21 0 5 6 -1 0 4 6 -3 9	55 0 34 5 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -3 0 -0 5 -196 3 0 0 34 5 228 6 -48 8 14 5 20 9 27 0 27 0 27 0 9 1 20 1 4 7 -1 0 3 7 -3 0	46 5 26 2 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 20 7 10 8 N/A 27 0 27 0 12 6 14 8 12 6 16 7 5 9 -1 0
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Ellevation Angle UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 3 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 0 N/A 27 3 27 3 27 3 17 6 22 6 11 4 -1 0 0 0 0 4	53 5 33 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 3 -0 5 -196 3 0 0 33 0 228 6 -74 8 15 3 N/A 273 9 4 20 1 9 4 20 9 5 2 -1 0 4 2 -3 4 0 8	55 0 34 5 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 17 4 -0 5 -196 3 0 0 34 5 228 6 -68 3 15 4 18 0 15 4 21 8 27 3 27 3 9 9 20 2 9 9 21 0 5 6 -1 0 4 6 -3 9 0 7	55 0 34 5 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -3 0 -0 5 -196 3 0 0 34 5 228 6 -48 8 14 5 20 9 27 0 27 0 27 0 9 1 19 4 9 1 20 1 4 7 -1 0 3 7 -3 0 0 7	46 5 26 2 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 N/A 20 7 10 8 N/A 27 0 27 0 12 6 14 8 12 6 16 7 5 9 -1 0 4 9 -3 4 1 5
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Ellevation Angle UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink CN(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Number of Carriers	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 3 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 0 25 7 17 0 25 7 17 0 25 7 17 0 25 7 17 0 25 7 17 0 25 7 17 0 25 7 17 0 17 0 22 6 11 4 -1 0 10 4 -10 0	53 5 33 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 3 -0 5 -196 3 0 0 33 0 228 6 -74 8 15 3 17 5 15 3 N/A 27 3 9 4 20 9 5 2 -1 0 4 2 -3 4	55 0 34 5 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 17 4 -0 5 -196 3 0 0 34 5 228 6 -68 3 15 4 18 0 15 4 21 8 27 3 9 9 20 0 2 9 9 21 0 5 6 -1 0 4 6 -3 9	55 0 34 5 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -3 0 -0 5 -196 3 0 0 34 5 228 6 -48 8 14 5 20 9 27 0 27 0 27 0 9 1 20 1 4 7 -1 0 3 7 -3 0	46 5 26 2 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 N/A 20 7 10 8 N/A 27 0 27 0 12 6 14 8 12 6 16 7 -10 4 9 -3 4
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Ellevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rath Station EIRP (dBW) Uplink Rath Attenuation Satellite G/T (dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) ComPOSITE LINK PERFORMANCE ComPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(I Downlink Adjacent Satellite 2 (dB) C/(I +I) Composite (dB) Required System Margin (dB) Number of Carriers CARRIER DENSITY LEVELS	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 3 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 0 25 7 17 0 N/A 27 3 27 3 27 3 17 6 22 6 11 4 -10 0 4 2	53 5 33 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 3 -0 5 -196 3 0 0 33 0 228 6 -74 8 15 3 17 5 15 3 N/A 27 3 9 4 20 1 9 4 20 9 5 2 -1 0 4 2 -3 4 0 8 2	55 0 34 5 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 17 4 -0 5 -196 3 0 0 34 5 228 6 -68 3 15 4 18 0 15 4 21 8 27 3 27 3 27 3 9 9 21 0 5 6 -1 0 4 6 -3 9 0 7 7	55 0 34 5 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -3 0 -0 5 -196 3 0 0 34 5 228 6 -48 8 14 5 20 9 27 0 27 0 27 0 9 1 20 1 47 -1 0 3 7 -3 0 0 7 770	46 5 26 2 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 N/A 27 0 27 0 12 6 14 8 12 6 16 7 5 9 -1 0 4 9 -3 4 15 0
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Elevation Angle UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Number of Carriers	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 3 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 0 N/A 27 3 27 3 27 3 17 6 22 6 11 4 -1 0 0 0 0 4	53 5 33 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 3 -0 5 -196 3 0 0 33 0 228 6 -74 8 15 3 N/A 273 9 4 20 1 9 4 20 9 5 2 -1 0 4 2 -3 4 0 8	55 0 34 5 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 17 4 -0 5 -196 3 0 0 34 5 228 6 -68 3 15 4 18 0 15 4 21 8 27 3 27 3 9 9 20 2 9 9 21 0 5 6 -1 0 4 6 -3 9 0 7	55 0 34 5 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -3 0 -0 5 -196 3 0 0 34 5 228 6 -48 8 14 5 20 9 27 0 27 0 27 0 9 1 19 4 9 1 20 1 4 7 -1 0 3 7 -3 0 0 7	46 5 26 2 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 30 9 -0 5 -196 3 0 0 26 2 228 6 -78 1 10 8 N/A 20 7 10 8 N/A 27 0 27 0 12 6 14 8 12 6 16 7 5 9 -1 0 4 9 -3 4 1 5

Exhibit 6-12: 31.0° E.L. C-Band Zone Uplink/Hemi Downlink

		1			
UPLINK BEAM INFORMATION Uplink Beam Name	ZONE	ZONE	ZONE	ZONE	ZONE
Uplink Frequency (GHz)	6175	6175	6175	6175	6 175
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Uplink Relative Contour Level (dB)	-6	-6	-6	-6	-6
Uplink Contour G/T (dB/K)	-56	-56	-56	-56	-56
Uplink SFD (dBW/m2)	-73 9	-82 9	-80 9	-80 9	- <mark>86</mark> 9
Rain Rate (mm/hr)	42	42	42	42	42
DOWNLINK BEAM INFORMATION Downlink Beam Name	HEMI	HEMI	HEMI	HEMI	HEMI
Downlink Beam Name Downlink Frequency (GHz)	3 95	3 95	3 95	3 95	3 95
Downlink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Downlink Relative Contour Level (dB)	-6	-6	-6	-6	-6
Downlink Contour EIRP (dBW)	31 5	31 5	31 5	31 5	31 5
Rain Rate (mm/hr)	42	42	42	42	42
ADJACENT SATELLITE 1					
Satellite 1 Orbital Location	33 0E	33 0E	33 0E	33 0E	33 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB) Downlink EIRP Density (dBW/Hz)	0 -38 0	-38 0	-38 0	0 -38 0	0 -38 0
Downlink Elkr Density (dBw/HZ) Downlink Polarization Advantage (dB)	-380	-380	-380	-380	-38 0
ADJACENT SATELLITE 2	v	v		v	•
Satellite 1 Orbital Location	29 0E	29 0E	29 0E	29 0E	29 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-38 0	-38 0	-38 0	-38 0	-38 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
CARRIER INFORMATION					
Carrier ID	36M0F3F	36M0G7W	10M3G7W	100KG7W	77M0G7W
Carrier Modulation Peok to Peok Pendwidth of EDS (MHz)	TV/FM	QPSK N/A	QPSK N/A	QPSK N/A	QPSK N/A
Peak to Peak Bandwidth of EDS (MHz) Information Rate(kbps)	4 N/A	N/A 24575	N/A 6000	N/A 64	N/A 52563
Code Rate	N/A N/A	1/2x188/204	1/2x188/204	1/2x239/256	1/2x188/204
Occupied Bandwidth(kHz)	36000	30133	6771 1	75.4	64451
Allocated Bandwidth(kHz)	36000	36000	10300	100	77000
Minimum C/N, Clear Sky (dB)	10	3 36	3 87	2 99	3 36
Minimum C/N, Rain (dB)	10	3 36	3 57	2 79	3 36
UPLINK EARTH STATION					
Earth Station Diameter (meters)	100	45	24	24	81
Earth Station Gain (dBi)	541	46 5	41 9	41 9	52 8
Earth Station Elevation Angle DOWNLINK EARTH STATION	20	20	20	20	20
Earth Station Diameter (meters)	18 3	11 0	11 0	13 1	4 5
Earlie Station Diameter (meters)				121	4.5
		51.9	51.9	53.5	43.9
Earth Station Gain (dBi) Earth Station G/T (dB/K)	56 0 35 5	51 9 31 0	51 9 31 0	53 5 33 0	43 9 23 6
Earth Station Gain (dBi)	56 0				
Earth Station Gain (dBi) Earth Station G/T (dB/K)	56 0 35 5	31 0	31 0	33 0	23 6
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE	56 0 35 5 20 Clear Sky	31 0 20 Clear Sky	31 0 20 Clear Sky	33 0 20 Clear Sky	23 6 20 Clear Sky
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW)	56 0 35 5 20 Clear Sky 78 5	31 0 20 Clear Sky 69 5	31 0 20 Clear Sky 63 5	33 0 20 Clear Sky 43 1	23 6 20 Clear Sky 76 0
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2	31 0 20 Clear Sky 69 5 -200 2	31 0 20 Clear Sky 63 5 -200 2	33 0 20 Clear Sky 43 1 -200 2	23 6 20 Clear Sky 76 0 -200 2
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0	31 0 20 Clear Sky 69 5 -200 2 0 0	31 0 20 Clear Sky 63 5 -200 2 0 0	33 0 20 Clear Sky 43 1 -200 2 0 0	23 6 20 Clear Sky 76 0 -200 2 0 0
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle <u>LINK FADE TYPE</u> UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6	31 0 20 Clear Sky 69 5 -200 2 0 0 -5 6	31 0 20 Clear Sky 63 5 -200 2 0 0 -5 6	33 0 20 Clear Sky 43 1 -200 2 0 0 -5 6	23 6 20 Clear Sky 76 0 -200 2 0 0 -5 6
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0	31 0 20 Clear Sky 69 5 -200 2 0 0	31 0 20 Clear Sky 63 5 -200 2 0 0	33 0 20 Clear Sky 43 1 -200 2 0 0	23 6 20 Clear Sky 76 0 -200 2 0 0
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rath Loss, Clear Sky (dB) Uplink Rath Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6	31 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6	31 0 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6	33 0 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6	23 6 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6	31 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5	31 0 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0	33 0 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1	23 6 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9	31 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9	31 0 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 18 0	33 0 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4	23 6 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5	31 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5	31 0 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5	33 0 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5	23 6 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Elevation Angle UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) Downlink PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3	31 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3	31 0 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -18 0 -0 5 -196 3	33 0 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3	23 6 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Downlink Rath Loss, Clear Sky (dB) Downlink Rath Loss, Clear Sky (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0	31 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0	31 0 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0	33 0 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0	23 6 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0
Earth Station Gain (dBi) Earth Station GIT (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rarth Station EIRP (dBW) Uplink Rarth Station EIRP (dBW) Uplink Carth Station EIRP (dBW) Uplink Carth Station EIRP (dBW) Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5	31 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 -0 5 -0 5 -196 3 0 0 31 0	31 0 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0	33 0 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0	23 6 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station C/T (dB/K) Earth Station Ellevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constaut(dBW / K - Hz)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6	31 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6	31 0 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6	33 0 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6	23 6 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6
Earth Station Gain (dBi) Earth Station GIT (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rarth Station EIRP (dBW) Uplink Rarth Station EIRP (dBW) Uplink Carth Station EIRP (dBW) Uplink Carth Station EIRP (dBW) Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6 -75 6	31 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8	31 0 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3	33 0 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8	23 6 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Elevation Angle UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6	31 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6	31 0 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6	33 0 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6	23 6 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station C/T (dB/K) Earth Station Ellevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rath Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6 -75 6	31 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8	31 0 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3	33 0 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8	23 6 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Ellevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Uplink (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 9 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 6 25 7 17 6	31 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 17 5 13 9	31 0 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -196 3 0 0 31 0 228 6 -68 3 12 5 -8 -8 -8 -8 -8 -8 -8 -20 -5 -196 -20 -196 -20 -100	33 0 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 17 1 13 6	23 6 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station C/T (dB/K) Earth Station Elevation Angle UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Uplink (dB) C/I Intermodulation (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 6 17 6 25 7 17 6 N/A	31 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 N/A	31 0 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -196 3 0 0 31 0 228 6 -68 3 12 5 -18 0 12 5 21 8	33 0 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 17 1 13 6 20 9	23 6 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7 8 8 N/A
Earth Station Gain (dBi) Earth Station GT (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Nownlink (dB) C/I Uplink (dB) C/I Uplink (CB) C/I Uplink CdB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 6 17 6 17 6 N/A 27 3	31 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 N/A 27 3	31 0 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 18 0 12 5 21 8 27 3	33 0 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 228 6 -48 8 13 6 20 9 27 0	23 6 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 -78 1 20 8 8 228 6 -78 1 8 8 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 8 N/A 27 0
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elrevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rarth Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attennation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attennation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink (dB) C/N Uplink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)*	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 6 25 7 17 6 N/A 27 3 27 3	31 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 17 5 13 9 N/A 27 3 27 3	31 0 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 -18 0 12 5 -18 0 12 5 -21 8 27 3 27 3	33 0 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 17 1 13 6 20 9 27 0 27 0	23 6 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7 8 8 N/A 27 0 27 0
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Ellevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite I (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 6 N/A 27 3 27 3 17 6	31 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 17 5 13 9 N/A 27 3 27 3 9 4	31 0 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 -18 0 12 5 21 8 27 3 27 3 9 9	33 0 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -17 1 13 6 20 9 27 0 9 1	23 6 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7 8 8 N/A 27 0 27 0 12 6
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Ellevation Angle UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink Rain Attenuation DownLink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C (MB) C/N Uplink (dB) C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink K-djacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 6 N/A 27 3 17 6 22 5	31 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 N/A 27 3 27 3 9 4 19 0	31 0 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 18 0 12 5 21 8 27 3 27 3 9 9 17 6	33 0 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 17 1 13 6 20 9 27 0 9 1 18 4	23 6 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7 8 8 N/A 27 0 27 0 12 6 12 5
Earth Station Gain (dBi) Earth Station GT (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Nownlink (dB) C/I Uplink (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 6 N/A 27 3 17 6 22 5 17 6	31 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 17 5 13 9 N/A 27 3 27 3 9 4 19 0 9 4	31 0 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -196 3 0 0 31 0 228 6 -68 3 12 5 -196 3 0 0 31 0 228 6 -68 3 12 5 -18 0 12 5 21 8 27 3 27 3 9 9 17 6 9 9	33 0 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -17 1 13 6 20 9 27 0 27 0 9 1 18 4 9 1	23 6 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7 8 8 N/A 27 0 27 0 12 6 12 5 12 6
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Ellevation Angle UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink Rain Attenuation DownLink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C (MB) C/N Uplink (dB) C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink K-djacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 6 N/A 27 3 17 6 22 5	31 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 N/A 27 3 27 3 9 4 19 0	31 0 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 18 0 12 5 21 8 27 3 27 3 9 9 17 6	33 0 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 17 1 13 6 20 9 27 0 9 1 18 4	23 6 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7 8 8 N/A 27 0 27 0 12 6 12 5
Earth Station Gain (dBi) Earth Station GT (dB/K) Earth Station Elevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Nownlink (dB) C/I Uplink (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 6 N/A 27 3 17 6 22 5 17 6	31 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 17 5 13 9 N/A 27 3 27 3 9 4 19 0 9 4	31 0 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -196 3 0 0 31 0 228 6 -68 3 12 5 -196 3 0 0 31 0 228 6 -68 3 12 5 -18 0 12 5 21 8 27 3 27 3 9 9 17 6 9 9	33 0 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -17 1 13 6 20 9 27 0 27 0 9 1 18 4 9 1	23 6 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7 8 8 N/A 27 0 27 0 12 6 12 5 12 6
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Ellevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink CN(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink (dB) C/N Uplink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+1) Composite (dB) Required System Margin (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 6 N/A 27 3 17 6 22 5 17 6 22 5 17 6 22 5 17 6 22 5 17 6 22 5 17 6 23 2	31 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 N/A 27 3 27 3 9 4 19 0 9 4 20 0 -1 0	31 0 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 21 8 27 3 27 3 9 9 17 6 9 9 18 6 -5 0 -1 0	33 0 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 228 6 -48 8 13 6 20 9 27 0 27 0 9 1 18 4 9 1 19 2 -46 -1 0	23 6 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7 8 8 N/A 27 0 12 6 12 5 12 6 15 0 4 7 -1 0
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Ellevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rant Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW /K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Downl	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -05 -196 3 0 0 35 5 228 6 -75 6 17 6 25 7 17 6 25 7 17 6 22 5 17 6 22 5 17 6 23 2 11 6 -10 10 6	31 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 17 5 13 9 N/A 27 3 27 3 9 4 19 0 9 4 20 0 5 0 -1 0 4 0	31 0 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 -18 0 12 5 21 8 27 3 27 3 9 9 17 6 9 9 18 6 -5 0 -1 0 4 0	33 0 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -17 1 13 6 20 9 27 0 27 0 27 0 9 1 18 4 9 1 19 2 -4 6 -1 0 3 6	23 6 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7 8 8 N/A 27 0 27 0 27 0 12 6 12 5 12 6 15 0 4 7 -1 0 3 7
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Ellevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rarth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attennation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attennation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink (dB) C/N Uplink (dB) C/N Downlink (dB) C/I Uplink (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+1) Composite (dB) <tr< td=""><td>56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 6 25 7 17 6 27 3 27 3 17 6 22 5 17 6 23 2 11 6 -1 0 10 6 -10 0</td><td>31 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 17 5 13 9 N/A 27 3 27 3 9 4 19 0 9 4 20 0 -1 0 4 0 -3 4</td><td>31 0 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 -18 0 12 5 21 8 27 3 27 3 9 9 17 6 9 9 18 6 -0 5 0 -1 0 4 0 -3 9</td><td>33 0 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -48 8 13 6 20 9 27 0 27 0 9 1 18 4 9 1 19 2 -10 3 6 -3 0</td><td>23 6 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7 8 8 N/A 27 0 27 0 12 6 12 5 12 6 15 0 -1 4 7 -1 0 3 7 -3 4</td></tr<>	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 6 25 7 17 6 27 3 27 3 17 6 22 5 17 6 23 2 11 6 -1 0 10 6 -10 0	31 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 17 5 13 9 N/A 27 3 27 3 9 4 19 0 9 4 20 0 -1 0 4 0 -3 4	31 0 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 -18 0 12 5 21 8 27 3 27 3 9 9 17 6 9 9 18 6 -0 5 0 -1 0 4 0 -3 9	33 0 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -48 8 13 6 20 9 27 0 27 0 9 1 18 4 9 1 19 2 -10 3 6 -3 0	23 6 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7 8 8 N/A 27 0 27 0 12 6 12 5 12 6 15 0 -1 4 7 -1 0 3 7 -3 4
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Ellevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rath Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rath Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Carl (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Intermodulation (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+T) Composite (dB) Required System Margin (dB)	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 6 25 7 17 6 27 3 27 3 17 6 22 5 17 6 23 2 11 6 -1 0 10 6 -10 0 0 6	31 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 N/A 27 3 27 3 9 4 19 0 9 4 20 0 5 0 -1 0 -	31 0 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 21 8 27 3 27 3 27 3 9 9 17 6 9 9 18 6 -5 0 -1 0 	33 0 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -228 6 -48 8 13 6 -27 0 27 0 9 1 18 4 9 1 19 2 -2 4 6 -1 0 3 6 -3 0 0 6	23 6 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7 8 8 N/A 27 0 27 0 27 0 27 0 12 6 15 5 12 6 15 0 4 7 -1 0 3 7 -3 4 0 3
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Ellevation Angle UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Number of Carriers	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 6 25 7 17 6 27 3 27 3 17 6 22 5 17 6 23 2 11 6 -1 0 10 6 -10 0	31 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 17 5 13 9 N/A 27 3 27 3 9 4 19 0 9 4 20 0 -1 0 4 0 -3 4	31 0 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 -18 0 12 5 21 8 27 3 27 3 9 9 17 6 9 9 18 6 -0 5 0 -1 0 4 0 -3 9	33 0 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -48 8 13 6 20 9 27 0 27 0 9 1 18 4 9 1 19 2 -10 3 6 -3 0	23 6 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7 8 8 N/A 27 0 27 0 12 6 12 5 12 6 15 0 -1 4 7 -1 0 3 7 -3 4
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station Elrevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rarh Attenuation Satellite G/T (dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) Downlink C / N(dB) ComPOSITE LINK PERFORMANCE COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Diermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Net C/(N+I) Composite (dB) Net C/(N+I) Composite (dB) Number of Carriers CARRIER DENSITY LEVELS	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 6 25 7 17 6 22 7 17 6 22 5 17 6 22 5 17 6 23 2 11 6 -10 0 6 2	31 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 N/A 27 3 27 3 9 4 19 0 9 4 20 0 -5 0 -1 0 4 0 -3 4 0 6 2 2 -2 -2 -2 -2 -2 -2 -2 -2	31 0 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 21 8 27 3 27 3 9 9 17 6 9 9 18 6 -5 0 -1 0 4 0 -3 9 0 1 7	33 0 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 20 9 27 0 27 0 9 1 18 4 9 1 18 4 9 1 18 4 9 1 17 1 13 6 20 9 27 0 9 1 18 4 9 1 19 2	23 6 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7 8 8 N/A 27 0 27 0 27 0 12 6 12 5 12 6 15 0 4 7 -1 0 3 7 -3 4 0 3 1
Earth Station Gain (dBi) Earth Station G/T (dB/K) Earth Station G/T (dB/K) Earth Station Ellevation Angle LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N-H) Composite (dB) Required System Margin (dB) Number of Carriers	56 0 35 5 20 Clear Sky 78 5 -200 2 0 0 -5 6 228 6 -75 6 25 7 25 9 -0 5 -196 3 0 0 35 5 228 6 -75 6 17 6 25 7 17 6 27 3 27 3 17 6 22 5 17 6 23 2 11 6 -1 0 10 6 -10 0 0 6	31 0 20 Clear Sky 69 5 -200 2 0 0 -5 6 228 6 -74 8 17 5 25 9 -0 5 -196 3 0 0 31 0 228 6 -74 8 13 9 N/A 27 3 27 3 9 4 19 0 9 4 20 0 5 0 -1 0 -	31 0 20 Clear Sky 63 5 -200 2 0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 21 8 27 3 27 3 27 3 9 9 17 6 9 9 18 6 -5 0 -1 0 	33 0 20 Clear Sky 43 1 -200 2 0 0 -5 6 228 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -228 6 -48 8 13 6 -27 0 27 0 9 1 18 4 9 1 19 2 -2 4 6 -1 0 3 6 -3 0 0 6	23 6 20 Clear Sky 76 0 -200 2 0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7 8 8 N/A 27 0 27 0 27 0 27 0 12 6 15 5 12 6 15 0 4 7 -1 0 3 7 -3 4 0 3

Exhibit 7: Adjacent Satellite 35.0° E.L. Link Budgets

Exhibit 7-1: 35.0° E.L. C-Band Global Uplink/Global Downlink

UPLINK BEAM INFORMATION					
Uplink Beam Name	GLOBAL	GLOBAL	GLOBAL	GLOBAL	GLOBAL
Uplink Frequency (GHz) Uplink Beam Polarization	6 175 CIRCULAR	6 175 CIRCULAR	6 175 CIRCULAR	6 175 CIRCULAR	6 175 CIRCULAR
Uplink Relative Contour Level (dB)	-4	-4	-4	-4	-4
Uplink Contour G/T (dB/K)	-11	-11	-11	-11	-11
Uplink SFD (dBW/m2)	-84 3	-89 3	-81 3	-81 3	-89 3
Rain Rate (mm/hr)	42	42	42	42	42
DOWNLINK BEAM INFORMATION					
Downlink Beam Name	GLOBAL	GLOBAL	GLOBAL	GLOBAL	GLOBAL
Downlink Frequency (GHz)	3 95	3 95	3 95	3 95	3 95
Downlink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Downlink Relative Contour Level (dB)	-4	-4	-4	-4	-4
Downlink Contour EIRP (dBW)	276	276	276	276	276
Rain Rate (mm/hr)	42	42	42	42	42
ADJACENT SATELLITE 1	00.07	22.07	22.07	00.07	22.05
Satellite 1 Orbital Location	33 OE	33 OE	33 OE	33 OE	33 OE
Uplink Power Density (dBW/Hz)	-38 7 0	-38 7 0	-38 7 0	-38 7 0	-38 7
Uplink Polarization Advantage (dB) Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0	-32 0
Downlink Elkr Density (dB w/HZ) Downlink Polarization Advantage (dB)	-32 0	-32 0	-32 0	-32 0	-32 0
ADJACENT SATELLITE 2	v	v	v	v	v
Satellite 1 Orbital Location	37 0E	37 0E	37 0E	37 0E	37 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	-387	0	-38 /	-387	-387
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
CARRIER INFORMATION	1 ·	Ť		-	~
Carrier ID	36M0F3F	36M0G7W	10M3G7W	100KG7W	41M0G7W
Carrier Modulation	TV/FM	QPSK	QPSK	QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	4	N/A	N/A	N/A	N/A
Information Rate(kbps)	N/A	24575	6000	64	31490
Code Rate	N/A	1/2x188/204	1/2x188/204	1/2x239/256	1/2x188/204
Occupied Bandwidth(kHz)	36000	30133	6771 1	75 4	34170
Allocated Bandwidth(kHz)	36000	36000	10300	100	41000
Minimum C/N, Clear Sky (dB)	10	3 36	3 87	2 99	34
Minimum C/N, Rain (dB)	10	3 36	3 57	2 79	34
UPLINK EARTH STATION					
Earth Station Diameter (meters)	13 0	61	30	24	70
Earth Station Gain (dBi)	56 4	49 4	43 2	41 9	51 0
Earth Station Elevation Angle	20	20	20	20	20
DOWNLINK EARTH STATION					
Earth Station Diameter (meters)	18 3	70	110	110	81
Earth Station Gain (dBi)	56 0	47 5	519	519	49 3
Earth Station G/T (dB/K)	35.5	26 6	31 0	31 0	28 4
Earth Station Elevation Angle LINK FADE TYPE	20 Clear Sky	20 Clear Sky	20	20 Clear Sky	20 0
UPLINK PERFORMANCE	Clear Sky	Clear Sky	Clear Sky	Clear Sky	Clear Sky
Uplink Earth Station EIRP (dBW)	78 6	73 6	66 6	46 5	73 6
Uplink Path Loss, Clear Sky (dB)	-200 2	-200 2	-200 2	-200 2	-200 2
Uplink Rain Attenuation	00	0 0	0 0	00	0 0
Satellite G/T(dB/K)	-11 0	-11 0	-11 0	-11 0	-11 0
Boltzman Constant(dBW/K-Hz)	228 6	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8	-75 3
Uplink C/N(dB)	20 4	16 2	157	151	157
DOWNLINK PERFORMANCE					
Downlink EIRP per Carrier (dBW)	276	27 6	17 5	-26	276
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
Downlink Rain Attenuation	0 0	0 0	0 0	0 0	0 0
				31 0	28 4
Earth Station G/T (dB/K)	35 5	26 6	31 0		
Boltzman Constant(dBW / K - Hz)	228 6	228 6	228 6	228 6	228 6
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz)	228 6 -75 6	228 6 -74 8	228 6 -68 3	228 6 -48 8	228 6 -75 3
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB)	228 6	228 6	228 6	228 6	228 6
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE	228 6 -75 6 19 3	228 6 -74 8 11 2	228 6 -68 3 12 0	228 6 -48 8 11 4	228 6 -75 3 12 5
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB)	228 6 -75 6 19 3 20 4	228 6 -74 8 11 2 16 2	228 6 -68 3 12 0 15 7	228 6 -48 8 11 4 15 1	228 6 -75 3 12 5 15 7
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB)	228 6 -75 6 19 3 	228 6 -74 8 11 2 	228 6 -68 3 12 0 	228 6 -48 8 11 4 15 1 11 4	228 6 -75 3 12 5 15 7 12 5
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB)	228 6 -75 6 19 3 20 4 19 3 N/A	228 6 -74 8 11 2 16 2 11 2 N/A	228 6 -68 3 12 0 15 7 12 0 18 9	228 6 -48 8 11 4 15 1 11 4 18 3	228 6 -75 3 12 5 15 7 12 5 N/A
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)*	228 6 -75 6 19 3 20 4 19 3 N/A 27 6	228 6 -74 8 11 2 16 2 11 2 N/A 27 6	228 6 -68 3 12 0 15 7 12 0 18 9 27 0	228 6 -48 8 11 4 15 1 11 4 18 3 27 0	228 6 -75 3 12 5 15 7 12 5 N/A 27 0
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)*	228 6 -75 6 19 3 20 4 19 3 N/A 27 6 27 6	228 6 -74 8 11 2 16 2 11 2 N/A 27 6 27 6	228 6 -68 3 12 0 15 7 12 0 18 9 27 0 27 0	228 6 -48 8 11 4 15 1 11 4 18 3 27 0 27 0	228 6 -75 3 12 5 15 7 12 5 N/A 27 0 27 0
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Downlink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB)	228 6 -75 6 19 3 20 4 19 3 N/A 27 6 27 6 27 6 19 7	228 6 -74 8 11 2 16 2 11 2 N/A 27 6 27 6 15 5	228 6 -68 3 12 0 15 7 12 0 18 9 27 0 27 0 15 0	228 6 -48 8 11 4 15 1 11 4 18 3 27 0 27 0 27 0 14 4	228 6 -75 3 12 5 15 7 12 5 N/A 27 0 27 0 15 0
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Downlink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB)	228 6 -75 6 19 3 20 4 19 3 N/A 27 6 27 6 19 7 18 2	228 6 -74 8 11 2 16 2 11 2 N/A 27 6 27 6 15 5 10 0	228 6 -68 3 12 0 15 7 12 0 18 9 27 0 27 0 15 0 11 1	228 6 -48 8 11 4 15 1 11 4 18 3 27 0 27 0 27 0 14 4 10 5	228 6 -75 3 12 5 15 7 12 5 N/A 27 0 27 0 15 0 11 4
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Downlink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB)	228 6 -75 6 19 3 20 4 19 3 N/A 27 6 27 6 27 6 19 7 18 2 19 7	228 6 -74 8 11 2 16 2 11 2 N/A 27 6 27 6 15 5 10 0 15 5	228 6 -68 3 12 0 15 7 12 0 18 9 27 0 27 0 15 0 11 1 15 0	228 6 -48 8 11 4 15 1 11 4 18 3 27 0 27 0 27 0 14 4 10 5 14 4	228 6 -75 3 12 5 15 7 12 5 N/A 27 0 27 0 15 0 11 4 15 0
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Downlink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB)	228 6 -75 6 19 3 20 4 19 3 N/A 27 6 27 6 19 7 18 2	228 6 -74 8 11 2 16 2 11 2 N/A 27 6 27 6 15 5 10 0	228 6 -68 3 12 0 15 7 12 0 18 9 27 0 27 0 15 0 11 1	228 6 -48 8 11 4 15 1 11 4 18 3 27 0 27 0 27 0 14 4 10 5	228 6 -75 3 12 5 15 7 12 5 N/A 27 0 27 0 15 0 11 4
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB)	228 6 -75 6 19 3 20 4 19 3 N/A 27 6 27 6 27 6 19 7 18 2 19 7 18 8	228 6 -74 8 11 2 16 2 11 2 N/A 27 6 27 6 27 6 15 5 10 0 15 5 11 6	228 6 -68 3 12 0 15 7 12 0 18 9 27 0 27 0 27 0 15 0 11 1 15 0 11 1 12 1	228 6 -48 8 11 4 15 1 11 4 18 3 27 0 27 0 27 0 14 4 10 5 14 4 11 6	228 6 -75 3 12 5 15 7 12 5 N/A 27 0 27 0 27 0 15 0 11 4 15 0 12 7
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Downlink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB)	228 6 -75 6 19 3 20 4 19 3 N/A 27 6 27 6 27 6 19 7 18 2 19 7 18 8 11 3	228 6 -74 8 11 2 16 2 11 2 N/A 27 6 27 6 15 5 10 0 15 5 11 6 4 8	228 6 -68 3 12 0 15 7 12 0 18 9 27 0 27 0 15 0 11 1 15 0 12 1 5 1	228 6 -48 8 11 4 15 1 11 4 18 3 27 0 27 0 27 0 14 4 10 5 14 4 11 6 4 5	228 6 -75 3 12 5 15 7 12 5 N/A 27 0 27 0 27 0 15 0 11 4 15 0 12 7 5 6
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Dplink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB)	228 6 -75 6 19 3 20 4 19 3 N/A 27 6 27 6 19 7 18 2 19 7 18 8 11 3 -1 0	228 6 -74 8 11 2 16 2 11 2 N/A 27 6 27 6 27 6 15 5 10 0 15 5 11 6 4 8 -1 0	228 6 -68 3 12 0 15 7 12 0 18 9 27 0 27 0 15 0 11 1 15 0 12 1 5 1 -1 0	228 6 -48 8 11 4 15 1 11 4 18 3 27 0 27 0 27 0 14 4 10 5 14 4 11 6 4 5 -1 0	228 6 -75 3 12 5 15 7 12 5 N/A 27 0 27 0 15 0 11 4 15 0 12 7 5 6 -1 0
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Downlink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB)	228 6 -75 6 19 3 20 4 19 3 N/A 27 6 27 6 19 7 18 2 19 7 18 2 19 7 18 8 -10 10 3	228 6 -74 8 11 2 16 2 11 2 N/A 27 6 27 6 15 5 10 0 15 5 11 6 4 8 -1 0 3 8	228 6 -68 3 12 0 15 7 12 0 18 9 27 0 27 0 15 0 11 1 15 0 12 1 5 1 -1 0 4 1	228 6 -48 8 11 4 15 1 11 4 18 3 27 0 27 0 27 0 14 4 10 5 14 4 11 6 - 4 5 -1 0 3 5	228 6 -75 3 12 5 15 7 12 5 N/A 27 0 27 0 15 0 11 4 15 0 12 7 5 6 -1 0 4 6
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Downlink (dB) C/I Lintermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB)	228 6 -75 6 19 3 20 4 19 3 N/A 27 6 27 6 27 6 19 7 18 2 19 7 18 8 11 3 -1 0 10 3 -10 0	228 6 -74 8 11 2 16 2 11 2 N/A 27 6 27 6 15 5 10 0 15 5 11 6 4 8 -1 0 3 8 -3 4	228 6 -68 3 12 0 15 7 12 0 18 9 27 0 27 0 15 0 11 1 15 0 12 1 5 1 -1 0 4 1 -3 9	228 6 -48 8 11 4 15 1 11 4 18 3 27 0 27 0 27 0 27 0 14 4 10 5 14 4 11 6 4 5 -1 0 3 5 -3 0	228 6 -75 3 12 5 15 7 12 5 N/A 27 0 27 0 15 0 11 4 15 0 12 7 5 6 -1 0 4 6 -3 4
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Diplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB)	228 6 -75 6 19 3 20 4 19 3 N/A 27 6 27 6 27 6 19 7 18 2 19 7 18 8 	228 6 -74 8 11 2 16 2 11 2 N/A 27 6 27 6 15 5 10 0 15 5 11 6 4 8 -1 0 3 8 -3 4 0 4	228 6 -68 3 12 0 15 7 12 0 18 9 27 0 27 0 15 0 11 1 15 0 11 1 15 0 12 1 5 1 -1 0 4 1 -3 9 0 2	228 6 -48 8 11 4 15 1 11 4 18 3 27 0 27 0 27 0 27 0 14 4 10 5 14 4 10 5 14 4 11 6 4 5 -1 0 3 5 -3 0 0 5	228 6 -75 3 12 5 15 7 12 5 N/A 27 0 27 0 15 0 11 4 15 0 11 4 15 0 12 7 5 6 -1 0 4 6 -3 4 1 2
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Dplink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers	228 6 -75 6 19 3 20 4 19 3 N/A 27 6 27 6 27 6 19 7 18 2 19 7 18 8 11 3 -1 0 10 3 -10 0	228 6 -74 8 11 2 16 2 11 2 N/A 27 6 27 6 15 5 10 0 15 5 11 6 4 8 -1 0 3 8 -3 4	228 6 -68 3 12 0 15 7 12 0 18 9 27 0 27 0 15 0 11 1 15 0 12 1 5 1 -1 0 4 1 -3 9	228 6 -48 8 11 4 15 1 11 4 18 3 27 0 27 0 27 0 27 0 14 4 10 5 14 4 11 6 4 5 -1 0 3 5 -3 0	228 6 -75 3 12 5 15 7 12 5 N/A 27 0 27 0 15 0 11 4 15 0 12 7 5 6 -1 0 4 6 -3 4
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Diplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB)	228 6 -75 6 19 3 20 4 19 3 N/A 27 6 27 6 27 6 19 7 18 2 19 7 18 8 	228 6 -74 8 11 2 16 2 11 2 N/A 27 6 27 6 15 5 10 0 15 5 11 6 4 8 -1 0 3 8 -3 4 0 4	228 6 -68 3 12 0 15 7 12 0 18 9 27 0 27 0 15 0 11 1 15 0 11 1 15 0 12 1 5 1 -1 0 4 1 -3 9 0 2	228 6 -48 8 11 4 15 1 11 4 18 3 27 0 27 0 27 0 27 0 14 4 10 5 14 4 10 5 14 4 11 6 4 5 -1 0 3 5 -3 0 0 5	228 6 -75 3 12 5 15 7 12 5 N/A 27 0 27 0 15 0 11 4 15 0 11 4 15 0 12 7 5 6 -1 0 4 6 -3 4 1 2

Exhibit 7-2: 35.0° E.L. C-Band Global Uplink/C-Band Spot Downlink

UPLINK BEAM INFORMATION					
Uplink Beam Name	GLOBAL	GLOBAL	GLOBAL	GLOBAL	GLOBAL
Uplink Frequency (GHz)	6 175	6 175	6 175	6 175	6 175
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Uplink Relative Contour Level (dB)	-4	-4	-4	-4	-4
Uplink Contour G/T (dB/K)	-11	-11 -89 3	-11	-11	-11
Uplink SFD (dBW/m2) Rain Rate (mm/hr)	-84 3 42	-89 3 42	-84 3 42	-84 3 42	-89 3 42
DOWNLINK BEAM INFORMATION	72	42	42	42	42
Downlink Beam Name	CSPOT	CSPOT	CSPOT	CSPOT	CSPOT
Downlink Frequency (GHz)	3 95	3 95	3 95	3 95	3 95
Downlink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Downlink Relative Contour Level (dB)	-4	-4	-4	-4	-4
Downlink Contour EIRP (dBW) Rain Rate (mm/hr)	34 6 42				
ADJACENT SATELLITE 1	42	42	42	42	42
Satellite 1 Orbital Location	37 0E				
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
ADJACENT SATELLITE 2 Satellite 1 Orbital Location	22.0E	22.0E	22.0E	33 0E	33 0E
Uplink Power Density (dBW/Hz)	33 0E -38 7	33 0E -38 7	33 0E -38 7	-38 7	-38 7
Uplink Power Density (dB w/H2)	-387	-38 /	-387	-38 /	-38 /
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
CARRIER INFORMATION					
Carrier ID	36M0F3F	36M0G7W	10M3G7W	100KG7W	41M0G7W
Carrier Modulation Pools to Pools Pandwidth of EDS (MHz)	TV/FM	QPSK N/A	QPSK N/A	QPSK N/A	QPSK N/A
Peak to Peak Bandwidth of EDS (MHz) Information Rate(kbps)	4 N/A	N/A 24575	N/A 6000	N/A 64	N/A 31490
Code Rate	N/A N/A	1/2x188/204	1/2x188/204	1/2x239/256	1/2x188/204
Occupied Bandwidth(kHz)	36000	30133	6771 1	75.4	34170 0
Allocated Bandwidth(kHz)	36000	36000	10300	100	41000
Minimum C/N, Clear Sky (dB)	10	3 36	39	30	34
Minimum C/N, Rain (dB)	10	3 36	36	28	34
UPLINK EARTH STATION Earth Station Diameter (meters)	11 0	6 1	24	24	70
Earth Station Diameter (meters)	55.4	49.4	41 9	41 9	51 0
Earth Station Elevation Angle	20	20	20	20	20
DOWNLINK EARTH STATION					
Earth Station Diameter (meters)	81	35	61	70	37
Earth Station Gain (dBi)	49 3	41 1	46 5	47 5	41 2
Earth Station G/T (dB/K)	28 4	21 0	26 2	26 6	20.9
Earth Station Elevation Angle LINK FADE TYPE	20 Clear Sky				
UPLINK PERFORMANCE	Cicia Dity	Cical Sky	cical sky	Cical Sky	Cical Dity
Uplink Earth Station EIRP (dBW)	78 6	73 6	64 1	44 0	73 6
Uplink Path Loss, Clear Sky (dB)	-200 2	-200 2	-200 2	-200 2	-200 2
Uplink Rain Attenuation	0 0	0 0	0 0	0 0	0 0
Satellite G/T(dB/K)	-11 0	-11 0	-11 0	-11 0	-11 0
Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz)	228 6 -75 6	228 6 -74 8	228 6 -68 3	228 6 -48 8	228 6 -75 3
Uplink C/N(dB)	204	16 2	13 2	12 6	157
DOWNLINK PERFORMANCE					
Downlink EIRP per Carrier (dBW)	34 6	34 6	25 1	49	34 6
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
Downlink Rain Attenuation Earth Station G/T (dB/K)	0 0 28 4	0 0 21 0	0 0 26 2	0 0 26 6	00 209
Boltzman Constant(dBW / K - Hz)	28 4	228 6	20 2	200	209
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8	-75 3
Downlink C / N(dB)	19 2	12 6	14 7	14 6	12 0
COMPOSITE LINK PERFORMANCE					
C/N Uplink (dB)	204	162	13 2	12 6	157
C/N Downlink (dB)	19.2	12.6	147	14 6	12 0
C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)*	N/A 27 6	N/A 27 6	17 4 27 0	16 8 27 0	N/A 27 0
C/I Downlink Co-Channel (dB)*	276	276	270	270	270
C/I Uplink Adjacent Satellite 1 (dB)	197	15 5	12 5	11 9	150
C/I Downlink Adjacent Satellite 1 (dB)	18 1	81	12 8	13 4	93
C/I Uplink Adjacent Satellite 2 (dB)	19 7	15 5	12 5	11 9	150
C/I Downlink Adjacent Satellite 2 (dB)	19 5	12 9	14 6	14 9	12 4
			5.2		
C/(N+I) Composite (dB) Permined Stratem Margin (dB)	-1 0	4 6 -1 0	52	4 9 -1 0	<u>48</u> -10
Required System Margin (dB) Net C/(N+I) Composite (dB)	-10	36	-10 42	39	-10
Minimum Required C/N (dB)	-10 0	-34	-39	-30	-34
Excess Link Margin (dB)	0 4	0 2	03	09	0 4
Number of Carriers	1	1	4	410	1
CARRIER DENSITY LEVELS					
I I I I D D (IDIU/II)	-52 4	-50 6	-46 1	-46 7	-52 7
Uplink Power Density (dBW/Hz) Downlink EIRP Density At Beam Peak (dBW/Hz)	-37 0	-36 2	-39 3	-39 8	-36 7

Exhibit 7-3: 35.0° E.L. C-Band Global Uplink/Hemi Downlink

THE INT BEAM INTODUCTION				
UPLINK BEAM INFORMATION Uplink Beam Name	GLOBAL	GLOBAL	GLOBAL	GLOBAL
Uplink Frequency (GHz)	6175	6175	6175	6 175
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Uplink Relative Contour Level (dB)	-4	-4	-4	-4
Uplink Contour G/T (dB/K)	-10 9 -83 3	-10 9 -89 3	-10 9 -82 3	-10 9 -82 3
Uplink SFD (dBW/m2) Rain Rate (mm/hr)	-83 3	-89.5	-82 5 42	-82 3 42
DOWNLINK BEAM INFORMATION	42	72	42	72
Downlink Beam Name	Hemi	Hemi	Hemi	Hemi
Downlink Frequency (GHz)	3 95	3 95	3 95	3 95
Downlink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Downlink Relative Contour Level (dB) Downlink Contour EIRP (dBW)	-6 32 5	-6 32 5	-6 32 5	-6 32 5
Rain Rate (mm/hr)	42	42	42	42
ADJACENT SATELLITE 1	12	72	72	72
Satellite 1 Orbital Location	37 0E	37 0E	37 0E	37 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB) ADJACENT SATELLITE 2	0	0	0	0
Satellite 1 Orbital Location	33 OE	33 0E	33 0E	33 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0
CARRIER INFORMATION Carrier ID	36M0F3F	36100-711	101/2070	100KG7W
Carrier ID Carrier Modulation	36M0F3F TV/FM	36M0G7W QPSK	10M3G7W QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	4	N/A	N/A	N/A
Information Rate(kbps)	N/A	24575	6000	64
Code Rate	N/A	1/2x188/204	1/2x188/204	1/2x239/256
Occupied Bandwidth(kHz)	36000	30133	6771 1	75 4
Allocated Bandwidth(kHz)	36000	36000	10300	100
Minimum C/N, Clear Sky (dB) Minimum C/N, Rain (dB)	10	3 36 3 36	3 87 3 57	2 99 2 79
UPLINK EARTH STATION	10	3 30	337	2 19
Earth Station Diameter (meters)	13 0	61	24	24
Earth Station Gain (dBi)	56 4	49 4	41 9	41 9
Earth Station Elevation Angle	20	20	20	20
DOWNLINK EARTH STATION				
Earth Station Diameter (meters) Earth Station Gain (dBi)	<u>11 0</u> 51 9	4 5 43 9	8 1 49 3	8 1 49 3
Earth Station G/I (dB/K)	31 0	23 6	28 4	28 4
Earth Station Elevation Angle	20	20	20 4	20 4
LINK FADE TYPE	Clear Sky	Clear Sky	Clear Sky	Clear Sky
UPLINK PERFORMANCE				
Uplink Earth Station EIRP (dBW)	79 6	73 6	65.8	45 0
Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation	-200 2	-200 2 0 0	-200 2 0 0	-200 2 0 0
Satellite G/T(dB/K)	-11 0	-11 0	-11 0	-11 0
Boltzman Constant(dBW/K-Hz)	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8
Uplink C/N(dB)	21 4	16 2	14 9	13 7
DOWNLINK PERFORMANCE	21.5	21.5	21.7	
Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB)	31 5	31 5 -0 5	-0 5	-0.5
Downlink Path Loss, Clear Sky (dB)	-196 3	-196 3	-196 3	-196 3
Downlink Rain Attenuation	00	00	00	00
Earth Station G/T (dB/K)	31 0	23 6	28 4	28 4
Boltzman Constant(dBW / K - Hz)	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB)	-75 6	-74 8	-68 3	-48 8
COMPOSITE LINK PERFORMANCE	18 7	12 1	13 6	12 3
C/N Uplink (dB)	21 4	16 2	149	13 7
C/N Downlink (dB)	18 7	12 1	13 6	12 3
C/I Intermodulation (dB)	N/A	N/A	22 1	20 9
C/I Uplink Co-Channel (dB)*	27 0	27 0	277	270
C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB)	27 0	27 0	277	270
C/I Downlink Adjacent Satellite I (dB) C/I Downlink Adjacent Satellite 1 (dB)	20 7 17 8	155 98	14 2 12 5	13 0 11 2
C/I Uplink Adjacent Satellite 2 (dB)	20 7	15.5	14 2	13 0
C/I Downlink Adjacent Satellite 2 (dB)	18 8	12 3	13 8	12 6
C/(N+I) Composite (dB)	11 5	51	59	4 6
Required System Margin (dB)	-10	-10	-10	-10
Net C/(N+I) Composite (dB) Minimum Required C/N (dB)	10 5	4 1 -3 4	4 9 -3 9	3 6 -3 0
Minimum Required C/N (dB)	-10 0	-34	-39	-30
Excess Link Margin (dB)		V /	1.0	
Excess Link Margin (dB) Number of Carriers	1	1	3	360
		1	3	360
Number of Carriers		1 -50 6 -37 3	3 -44 4 -40 6	-45 6 -41 9

Exhibit 7-4: 35.0° E.L. C-Band Spot Uplink/C-Band Spot Downlink

THE INT BEAM INFORMATION					
UPLINK BEAM INFORMATION Uplink Beam Name	CSPOT	CSPOT	CSPOT	CSPOT	CSPOT
Uplink Frequency (GHz)	6175	6175	6 175	6175	6175
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Uplink Relative Contour Level (dB)	-4	-4	-4	-4	-4
Uplink Contour G/T (dB/K)	-1	-1	-1	-1	-1
Uplink SFD (dBW/m2)	-88 3	-92 3	-87 3	-87 3	-92 3
Rain Rate (mm/hr)	42	42	42	42	42
DOWNLINK BEAM INFORMATION	CEDOT	CEDOT	CEDOT	CEDOT	CEDOT
Downlink Beam Name Downlink Frequency (GHz)	CSPOT 3 95	CSPOT 3 95	CSPOT 3 95	CSPOT 3 95	CSPOT 3 95
Downlink Frequency (GHZ)	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Downlink Relative Contour Level (dB)	-4	-4	-4	-4	-4
Downlink Contour EIRP (dBW)	34.6	34.6	34.6	34.6	34.6
Rain Rate (mm/hr)	42	42	42	42	42
ADJACENT SATELLITE 1					
Satellite 1 Orbital Location	37 0E	37 0E	37 0E	37 0E	37 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB) ADJACENT SATELLITE 2	0	0	0	0	0
Satellite 1 Orbital Location	33 0E	33 0E	33 0E	33 0E	33 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	-387	-387	-387	-387	-387
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
CARRIER INFORMATION					
Carrier ID	36M0F3F	36M0G7W	10M3G7W	100KG7W	41M0G7W
Carrier Modulation	TV/FM	QPSK	QPSK	QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	4	N/A	N/A	N/A	N/A
Information Rate(kbps)	N/A	24575	6000	64	31490
Code Rate	N/A	1/2x188/204	1/2x188/204	1/2x239/256	1/2x188/204
Occupied Bandwidth(kHz) Allocated Bandwidth(kHz)	36000 36000	30133 36000	6771 1 10300	75 4 100	34170 0 41000
Minimum C/N, Clear Sky (dB)	10 0	3 4	3.9	3.0	34
Minimum C/N, Rain (dB)	10 0	34	36	28	34
UPLINK EARTH STATION					
Earth Station Diameter (meters)	70	4 5	24	24	50
Earth Station Gain (dBi)	51	46 5	41 9	41 9	47 5
Earth Station Elevation Angle	20	20	20	20	20
DOWNLINK EARTH STATION					
Earth Station Diameter (meters)	13 1	37	92	92	45
Earth Station Gain (dBi)	53 5 33 0	41 2 20 9	50 3 29 4	50 3 29 4	43 9 23 6
Earth Station G/T (dB/K) Earth Station Elevation Angle	20	20 9	29 4	29 4	23 0
LINK FADE TYPE	Clear Sky	Clear Sky	Clear Sky	Clear Sky	Clear Sky
UPLINK PERFORMANCE	Cicia Sily	cica suj	cical suj	cica suj	cicia suj
Uplink Earth Station EIRP (dBW)	746	70 6	61 1	41 0	70 6
Uplink Path Loss, Clear Sky (dB)	-200 2	-200 2	-200 2	-200 2	-200 2
Uplink Rain Attenuation	0 0	0 0	0 0	0 0	0 0
Satellite G/T(dB/K)	-1 0	-10	-10	-10	-1 0
Boltzman Constant(dBW/K-Hz)	228 6	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8	-753
Uplink C/N(dB) DOWNLINK PERFORMANCE	26 4	23 2	20 2	19 6	22 7
DownLink PERFORMANCE Downlink EIRP per Carrier (dBW)	34 6	34 6	25 1	49	34 6
Antenna Pointing Error (dB)	-0 5	-05	-0.5	-05	-05
Downlink Path Loss, Clear Sky (dB)	-196 3	-196 3	-196 3	-196 3	-196 3
Downlink Rain Attenuation	0.0	0 0	00	00	0 0
Earth Station G/T (dB/K)	33 0	20 9	29 4	29 4	23 6
Boltzman Constant(dBW / K - Hz)	228 6	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8	-753
Downlink C / N(dB)	23 8	12 5	17 9	17 4	14 7
COMPOSITE LINK PERFORMANCE	26.4	22.2	20.2	10.6	22.2
C/N Uplink (dB) C/N Downlink (dB)	26 4 23 8	23 2 12 5	20 2 17 9	19 6 17 4	22 7 14 7
C/N Downlink (dB) C/I Intermodulation (dB)	23 8 N/A	12.5 N/A	179	1/4	14 / N/A
C/I Uplink Co-Channel (dB)*	27.6	27.6	27 0	27 0	27.0
C/I Downlink Co-Channel (dB)*	276	27 6	27 0	27 0	27 0
C/I Uplink Adjacent Satellite 1 (dB)	157	12.5	95	89	12 0
C/I Downlink Adjacent Satellite 1 (dB)	22 6	99	169	16 3	12 3
C/I Uplink Adjacent Satellite 2 (dB)	157	12 5	95	89	12 0
C/I Downlink Adjacent Satellite 2 (dB)	23 4	12 9	18 2	17 6	14 8
C/(N+I) Composite (dB)	114	48	51	45	58
Required System Margin (dB)	-10	-10	-10	-10	-10
Net C/(N+I) Composite (dB) Minimum Required C/N (dB)	-10 0	38 -34	41 -39	35 -30	4 8 -3 4
Minimum Required C/N (dB) Excess Link Margin (dB)	-10 0 0 4	-34 04	-39	-30	-34 14
Number of Carriers	1	1	4	410	14
	· ·				•
CARRIER DENSITY LEVELS					
CARRIER DENSITY LEVELS Uplink Power Density (dBW/Hz)	-52 0	-50 7	-49 1	-49 7	-52 2
	-52 0 -37 0	-50 7 -36 2	-49 1 -39 3	-49 7 -39 8	-52 2 -36 7

Exhibit 7-5: 35.0° E.L. C-Band Spot Uplink/Global Downlink

UPLINK BEAM INFORMATION Uplink Beam Name Uplink Frequency (GHz) Uplink Relative Contour Level (dB) Uplink Contour G/T (dB/K) Uplink SFD (dBW/m2) Rain Rate (mm/hr) DOWNLINK BEAM INFORMATION Downlink Beam Name Downlink Frequency (GHz)	CSPOT 6 175 CIRCULAR -4 -1	CSPOT 6 175 CIRCULAR -4	CSPOT 6 175 CIRCULAR	CSPOT 6 175 CIRCULAR	CSPOT 6 175 CIRCULAR
Uplink Frequency (GHz) Uplink Beam Polarization Uplink Relative Contour Level (dB) Uplink Contour G/T (dB/K) Uplink SFD (dBW/m2) Rain Rate (mm/hr) DOWNLINK BEAM INFORMATION Downlink Beam Name	6 175 CIRCULAR -4	6 175 CIRCULAR	6 175 CIRCULAR	6 175	6 175
Uplink Beam Polarization Uplink Relative Contour Level (dB) Uplink Contour G/T (dB/K) Uplink SFD (dBW/m2) Rain Rate (nmm/hr) DOWNLINK BEAM INFORMATION Downlink Beam Name	CIRCULAR -4	CIRCULAR	CIRCULAR		
Uplink Contour G/T (dB/K) Uplink SFD (dBW/m2) Rain Rate (mm/hr) DOWNLINK BEAM INFORMATION Downlink Beam Name		-4			UNCOLAR
Uplink SFD (dBW/m2) Rain Rate (mm/hr) DOWNLINK BEAM INFORMATION Downlink Beam Name	-1		-4	-4	-4
Rain Rate (mm/hr) DOWNLINK BEAM INFORMATION Downlink Beam Name	-	-1	-1	-1	-1
DOWNLINK BEAM INFORMATION Downlink Beam Name	-85 3	-92 3	-86 3	-86 3	-92 3
Downlink Beam Name	42	42	42	42	42
	CLODAL	CLODAL	CLODAL	CLODAL	CLODAL
	GLOBAL 3 95	GLOBAL 3 95	GLOBAL 3 95	GLOBAL 3 95	GLOBAL 3 95
Downlink Frequency (GHz) Downlink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Downlink Beative Contour Level (dB)	-4	-4	-4	-4	-4
Downlink Contour EIRP (dBW)	27.6	27.6	27 6	27.6	276
Rain Rate (mm/hr)	42	42	42	42	42
ADJACENT SATELLITE 1					
Satellite 1 Orbital Location	37 0E	37 0E	37 0E	37 0E	37 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
ADJACENT SATELLITE 2	22.05	22.05	22.05	22.05	22.05
Satellite 1 Orbital Location Uplink Power Density (dBW/Hz)	33 0E -38 7	33 0E -38 7	33 0E -38 7	33 0E -38 7	33 0E -38 7
Uplink Power Density (dBW/HZ) Uplink Polarization Advantage (dB)	-38 /	-38 /	-38 /	-38 /	-38 /
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	-32 0	-320	-32 0	-320	-32 0
CARRIER INFORMATION	- V	~	<u> </u>	, v	<u> </u>
Carrier ID	36M0F3F	36M0G7W	10M3G7W	100KG7W	41M0G7W
Carrier Modulation	TV/FM	QPSK	QPSK	QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	4	N/A	N/A	N/A	N/A
Information Rate(kbps)	N/A	24575	6000	64	31490
Code Rate	N/A	1/2x188/204	1/2x188/204	1/2x239/256	1/2x188/204
Occupied Bandwidth(kHz)	36000	30133	6771 1	75 4	34170 0
Allocated Bandwidth(kHz)	36000	36000	10300	100	41000
Minimum C/N, Clear Sky (dB)	10 0	34	39	30	34
Minimum C/N, Rain (dB)	10 0	34	36	28	34
UPLINK EARTH STATION					
Earth Station Diameter (meters)	10 0	46	24	24	46
Earth Station Gain (dBi)	541	46 9	41 9	41 9	46 9
Earth Station Elevation Angle	20	20	20	20	20
DOWNLINK EARTH STATION	18 3	81	18 3	15 2	81
Earth Station Diameter (meters) Earth Station Gain (dBi)	56 0	49.3	56 0	55 0	49.3
Earth Station G/T (dB/K)	35.5	28 4	35.5	34 5	28 4
Earth Station Elevation Angle	20	20 4	20	20	20 4
LINK FADE TYPE	Clear Sky	Clear Sky	Clear Sky	Clear Sky	Clear Sky
UPLINK PERFORMANCE			í í	í í	<u> </u>
Uplink Earth Station EIRP (dBW)	77 6	70 6	61 6	41 5	70 6
Uplink Path Loss, Clear Sky (dB)	-200 2	-200 2	-200 2	-200 2	-200 2
Uplink Rain Attenuation	0 0	00	0 0	0 0	0 0
Satellite G/T(dB/K)	-10	-10	-10	-1 0	-1 0
Boltzman Constant(dBW/K-Hz)	228 6	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8	-75 3
Uplink C/N(dB)	29 4	23 2	20 7	20 1	22 7
DOWNLINK PERFORMANCE	27.6	27.6	17.5	26	27.6
Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB)	27 6 -0 5	27 6 -0 5	17 5 -0 5	-2 6 -0 5	27 6 -0 5
Downlink Path Loss, Clear Sky (dB)	-0.5	-0 5	-196 3	-196 3	-196 3
Downlink Path Loss, Clear Sky (dB)	00	00	00	00	00
Earth Station G/T (dB/K)	35 5	28 4	35 5	34 5	28.4
Boltzman Constant(dBW / K - Hz)	228 6	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8	-75 3
Downlink C / N(dB)	19 3	13 0	16 5	14 9	12 5
COMPOSITE LINK PERFORMANCE					
C/N Uplink (dB)	29 4	23 2	20 7	20 1	22 7
C/N Downlink (dB)	19 3	13 0	16 5	14 9	12 5
C/I Intermodulation (dB)	N/A	N/A	189	18 3	N/A
C/I Uplink Co-Channel (dB)*	27 6	27 6	27 0	27 0	27 0
C/I Downlink Co-Channel (dB)*	276	27 6	27 0	27 0	270
C/I Uplink Adjacent Satellite 1 (dB)	187	12 5	10 0	94	120
C/I Downlink Adjacent Satellite 1 (dB)	18 2	11 9	154	13 8	114
C/I Uplink Adjacent Satellite 2 (dB)	18 7	12 5	100	94	12 0
C/I Downlink Adjacent Satellite 2 (dB)	18 8	13 3	16 0	14 5	127
C/(N+I) Composite (dB)	11 5	55	52	43	50
C/(N+1) Composite (dB) Required System Margin (dB)	-10	-10	-10	-10	-10
Net C/(N+I) Composite (dB)	10 5	4 5	42	33	40
Minimum Required C/N (dB)	-10 0	-34	-39	-30	-34
Excess Link Margin (dB)	0.5	11	03	03	06
Number of Carriers	1	1	4	410	1
I TOMIOCI OI COLLICIO		-	1		
CARRIER DENSITY LEVELS					+
	-52 1	-51 1	-48 6	-49 2	-51 6

Exhibit 7-6: 35.0° E.L. C-Band Spot Uplink/Hemi Downlink

UPLINK BEAM INFORMATION				
Uplink Beam Name	CSPOT	CSPOT	CSPOT	CSPOT
Uplink Frequency (GHz)	6175	6 175	6 175	6 175
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Uplink Relative Contour Level (dB)	-4	-4	-4	-4
Uplink Contour G/T (dB/K) Uplink SFD (dBW/m2)	_0 8 _88 0	-0 8 -93 0	-0 8 -88 0	-0 8 -88 0
Rain Rate (mm/hr)	-88 0	-93 0	-88 0	-88 0
DOWNLINK BEAM INFORMATION	12			12
Downlink Beam Name	HEMI	HEMI	HEMI	HEMI
Downlink Frequency (GHz)	3 95	3 95	3 95	3 95
Downlink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Downlink Relative Contour Level (dB)	-6	-6	-6	-6
Downlink Contour EIRP (dBW) Rain Rate (mm/hr)	32 5 42	32 5 42	32 5 42	32 5 42
ADJACENT SATELLITE 1	42	42	42	42
Satellite 1 Orbital Location	37 0E	37 0E	37 0E	37 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0
ADJACENT SATELLITE 2 Satellite 1 Orbital Location	33 0E	33 0E	33 0E	33 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	-38 /	-387	-387	-387
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0
CARRIER INFORMATION				
Carrier ID	36M0F3F	36M0G7W	10M3G7W	100KG7W
Carrier Modulation	TV/FM	QPSK N/A	QPSK N/A	QPSK N(A
Peak to Peak Bandwidth of EDS (MHz) Information Rate(kbps)	4 N/A	N/A 24575	N/A 6000	N/A 64
Code Rate	N/A N/A	1/2x188/204	1/2x188/204	1/2x239/256
Occupied Bandwidth(kHz)	36000	30133	6771 1	75.4
Allocated Bandwidth(kHz)	36000	36000	10300	100
Minimum C/N, Clear Sky (dB)	10 0	34	39	30
Minimum C/N, Rain (dB)	10 0	34	36	28
UPLINK EARTH STATION				2.1
Earth Station Diameter (meters) Earth Station Gain (dBi)	<u>81</u> 528	4 6 46 9	2 4 41 9	2 4 41 9
Earth Station Claim (dbf) Earth Station Elevation Angle	20 0	20 0	20 0	20 0
DOWNLINK EARTH STATION	200	200	200	200
Earth Station Diameter (meters)	152	4 5	92	11 0
Earth Station Gain (dBi)	55 0	43 9	50 3	51 9
Earth Station G/T (dB/K)	34 5	23 6	29 4	31 0
Earth Station Elevation Angle	20 0	20 0	20 0	20 0
LINK FADE TYPE UPLINK PERFORMANCE	Clear Sky	Clear Sky	Clear Sky	Clear Sky
Uplink Earth Station EIRP (dBW)	74.9	69.9	61 6	40 8
Uplink Path Loss, Clear Sky (dB)	-200 2	-200 2	-200 2	-200 2
Uplink Rain Attenuation	0 0	0 0	0 0	0 0
Satellite G/T(dB/K)	-0 8	-0 8	-0 8	-0 8
Boltzman Constant(dBW/K-Hz)	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8
Uplink C/N(dB) DOWNLINK PERFORMANCE	26 9	22 7	20 9	197
DownLink PERFORMANCE Downlink EIRP per Carrier (dBW)	32 5	32 5	24.2	34
Antenna Pointing Error (dB)	-05	-05	-05	-05
Downlink Path Loss, Clear Sky (dB)	-196 3	-196 3	-196 3	-196 3
Downlink Rain Attenuation	0 0	0 0	0 0	0 0
Earth Station G/T (dB/K)	34 5	23 6	29 4	31 0
Boltzman Constant(dBW / K - Hz)	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8
Downlink C / N(dB) COMPOSITE LINK PERFORMANCE	23 2	13 1	17 1	174
C/N Uplink (dB)	26 9	22 7	20 9	197
C/N Downlink (dB)	23 2	13 1	171	174
C/I Intermodulation (dB)	N/A	N/A	18 1	168
C/I Uplink Co-Channel (dB)*	27 0	27 0	277	27 0
C/I Downlink Co-Channel (dB)*	27 0	270	277	27 0
C/I Uplink Adjacent Satellite 1 (dB)	160	11 8	10 0	88
C/I Downlink Adjacent Satellite 1 (dB)	22 1	10 8	161	165
C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB)	16 0 24 4	11 8 14 9	10 0 18 9	8 8 19 1
or howman ragacent satemic 2 (ub)	244	147	10 7	171
C/(N+I) Composite (dB)	11 5	51	5 5	4 5
Required System Margin (dB)	-10	-10	-10	-10
Net C/(N+I) Composite (dB)	10 5	41	4 5	35
Minimum Required C/N (dB)	-10 0	-3 4	-39	-30
Excess Link Margin (dB)	05	08	06	05
	1	1	3	360
Number of Carriers	-	_		
Number of Carriers CARRIER DENSITY LEVELS Uplink Power Density (dBW/Hz)	-53 5	-51 8	-48 6	-49 8

Exhibit 7-7: 35.0° E.L. C-Band Hemi Uplink/Hemi Downlink

UPLINK BEAM INFORMATION					
Uplink Beam Name	HEMI	HEMI	HEMI	HEMI	HEMI
Uplink Frequency (GHz)	6 175	6 175	6 175	6 175	6 175
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Uplink Relative Contour Level (dB)	-6	-6	-6	-6	-6
Uplink Contour G/T (dB/K) Uplink SFD (dBW/m2)	-7 5 -86 0	-7 5 -88 0	-7 5 -81 0	-7 5 -81 0	-7 5 -89 0
Rain Rate (mm/hr)	-86 0 42	-88 0 42	-810	-81 0 42	-89 0
DOWNLINK BEAM INFORMATION	72	42	42	42	72
Downlink Beam Name	HEMI	HEMI	HEMI	HEMI	HEMI
Downlink Frequency (GHz)	3 95	3 95	3 95	3 95	3 95
Downlink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Downlink Relative Contour Level (dB)	-6 31.5	-6 31 5	-6 31 5	-6 31 5	-6 31 5
Downlink Contour EIRP (dBW) Rain Rate (mm/hr)	42	42	42	42	42
ADJACENT SATELLITE 1	72	42	42	72	72
Satellite 1 Orbital Location	37 0E	37 0E	37 0E	37 0E	37 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-38 0	-38 0	-38 0	-38 0	-38 0
Downlink Polarization Advantage (dB) ADJACENT SATELLITE 2	0	0	0	0	0
Satellite 1 Orbital Location	33 0E	33 0E	33 0E	33 0E	33 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-38 0	-38 0	-38 0	-38 0	-38 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
CARRIER INFORMATION		10.00	101 00 0000	100	
Carrier ID Carrier Modulation	36M0F3F	36M0G7W	10M3G7W	100KG7W	77M0G7W
Carrier Modulation Peak to Peak Bandwidth of EDS (MHz)	TV/FM 4	QPSK N/A	QPSK N/A	QPSK N/A	QPSK N/A
Information Rate(kbps)	4 N/A	24575	6000	64	52563
Code Rate	N/A	1/2x188/204	1/2x188/204	1/2x239/256	1/2x188/204
Occupied Bandwidth(kHz)	36000	30133	6771 1	75 4	64451
Allocated Bandwidth(kHz)	36000	36000	10300	100	77000
Minimum C/N, Clear Sky (dB)	10	3 36	3 87	2 99	3 36
Minimum C/N, Rain (dB)	10	3 36	3 57	2 79	3 36
UPLINK EARTH STATION Earth Station Diameter (meters)	90	4.5	24	24	70
Earth Station Gain (dBi)	53.4	465	41 9	41 9	51 0
Earth Station Elevation Angle	20	20	20	20	20
DOWNLINK EARTH STATION					
Earth Station Diameter (meters)	13 1	70	13 1	13 1	61
Earth Station Gain (dBi)	53 5	47.5	53 5	53 5	46 5
Earth Station G/T (dB/K) Earth Station Elevation Angle	33 0	26 6	33 0 20	33 0 20	26 2
					20
	20 Clear Sky	20 Clear Sky			20 Clear Sky
LINK FADE TYPE UPLINK PERFORMANCE	20 Clear Sky	20 Clear Sky	Clear Sky	Clear Sky	20 Clear Sky
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW)	Clear Sky 76 9	Clear Sky 69 9	Clear Sky 63 4	Clear Sky 43 0	Clear Sky 73 9
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB)	Clear Sky 76 9 -200 2	Clear Sky 69 9 -200 2	Clear Sky 63 4 -200 2	Clear Sky 43 0 -200 2	Clear Sky 73 9 -200 2
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation	Clear Sky 76 9 -200 2 0 0	Clear Sky 69 9 -200 2 0 0	Clear Sky 63 4 -200 2 0 0	Clear Sky 43 0 -200 2 0 0	Clear Sky 73 9 -200 2 0 0
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K)	Clear Sky 76 9 -200 2 0 0 -7 5	Clear Sky 69 9 -200 2 0 0 -7 5	Clear Sky 63 4 -200 2 0 0 -7 5	Clear Sky 43 0 -200 2 0 0 -7 5	Clear Sky 73 9 -200 2 0 0 -7 5
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz)	Clear Sky 76 9 -200 2 0 0 -7 5 228 6	Clear Sky 69 9 -200 2 0 0	Clear Sky 63 4 -200 2 0 0	Clear Sky 43 0 -200 2 0 0	Clear Sky 73 9 -200 2 0 0
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K)	Clear Sky 76 9 -200 2 0 0 -7 5	Clear Sky 69 9 -200 2 0 0 -7 5 228 6	Clear Sky 63 4 -200 2 0 0 -7 5 228 6	Clear Sky 43 0 -200 2 0 0 -7 5 228 6	Clear Sky 73 9 -200 2 0 0 -7 5 228 6
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE	Clear Sky 76 9 -200 2 0 0 -7 5 228 6 -75 6 22 2	Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0	Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0	Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1	Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW)	Clear Sky 76 9 -200 2 0 0 -7 5 228 6 -75 6 22 2 31 5	Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7	Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 	Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4	Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB)	Clear Sky 76 9 -200 2 0 0 -7 5 228 6 -75 6 22 2 31 5 -0 5	Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5	Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 -8 -8 -68 3 -68 3 -68 3 -68 3 -68 3 -68 3 -68 3 -68 - -68 - -78 - -78 - -68 - -68 - -78 - -	Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5	Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB)	Clear Sky 76 9 -200 2 0 0 -7 5 228 6 -75 6 22 2 - 31 5 -0 5 -196 3	Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3	Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 -8 -0 5 -196 3	Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3	Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3
LINK FADE TYPE UPLINK PERFORMANCE Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Downlink Rain Attenuation	Clear Sky 76 9 -200 2 0 0 -7 5 228 6 -75 6 22 2 31 5 -0 5 -196 3 0 0	Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0	Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0	Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0	Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 -0 5 -196 3 0 0
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB)	Clear Sky 76 9 -200 2 0 0 -7 5 228 6 -75 6 22 2 - 31 5 -0 5 -196 3	Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3	Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 -8 -0 5 -196 3	Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3	Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink CN(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K)	Clear Sky 76 9 -200 2 0 0 -7 5 228 6 -75 6 22 2 31 5 -0 5 -196 3 0 0 33 0	Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6	Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0	Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0	Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB)	Clear Sky 76 9 -200 2 0 0 -7 5 228 6 -75 6 22 2 31 5 -0 5 -196 3 0 0 33 0 228 6	Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6	Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 -0 5 -196 3 0 0 33 0 228 6	Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6	Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6
LINK FADE TYPE UPLINK PERFORMANCE Uplink Path Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rin Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE	Clear Sky 76 9 -200 2 0 0 -7 5 228 6 -75 6 22 2 31 5 -0 5 -196 3 0 0 33 0 228 6 -75 6 20 7	Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3	Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5	Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6	Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 -196 3 0 0 26 2 228 6 -78 1 11 4
LINK FADE TYPE UPLINK PERFORMANCE Uplink Parth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attennation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Carl (dBW) Carrier Noise Bandwidth (dB-Hz) Downlink CAR (dBW) Composite LINK PERFORMANCE CONPOSITE LINK PERFORMANCE C/N Uplink (dB)	Clear Sky 76 9 -200 2 0 0 -7 5 228 6 -75 6 22 2 31 5 -0 5 -196 3 0 0 33 0 228 6 -75 6 20 7 22 7 22 2	Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 16 0	Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 16 0	Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -15 1	Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 16 7
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) Compositing Error (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) C/N Uplink (dB) C/N Uplink (dB)	Clear Sky 76 9 -200 2 0 0 -75 228 6 -75 6 22 2 31 5 -0 5 -196 3 0 0 33 0 228 6 -75 6 20 7 22 2 20 7	Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 16 0	Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 -68 3 14 5	Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -5 -195 1 13 6	Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 16 7 11 4
LINK FADE TYPE UPLINK PERFORMANCE Uplink Path Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Uplink (dB) C/I Intermodulation (dB)	Clear Sky 76 9 -200 2 0 0 -7 5 228 6 -75 6 22 2 31 5 -0 5 -196 3 0 0 33 0 228 6 -75 6 20 7 22 7 20 7 N/A	Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 16 0 12 3 N/A	Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 -16 0 -14 5 -21 8	Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -15 1 13 6 20 9	Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 16 7 11 4 N/A
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) Compositing Error (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) C/N Uplink (dB) C/N Uplink (dB)	Clear Sky 76 9 -200 2 0 0 -75 228 6 -75 6 22 2 31 5 -0 5 -196 3 0 0 33 0 228 6 -75 6 20 7 22 2 20 7	Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 16 0	Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 -68 3 14 5	Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -5 -195 1 13 6	Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 16 7 11 4
LINK FADE TYPE UPLINK PERFORMANCE Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Uplink (dB) C/I Dutermodulation (dB) C/I Uplink (cB) C/I Uplink (cB) C/I Uplink (cB) C/I Uplink Co-Channel (dB)*	Clear Sky 76 9 -200 2 0 0 -7 5 228 6 -75 6 22 2 31 5 -0 5 -196 3 0 0 33 0 228 6 -75 6 20 7 22 2 20 7 N/A 30 3	Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 16 0 12 3 N/A 30 3	Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 16 0 14 5 21 8 27 3	Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -13 6 20 9 27 0	Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 -196 3 0 0 26 2 228 6 -78 1 -196 3 0 0 26 2 228 6 -78 1 -11 4 -11 4 N/A 27 0
LINK FADE TYPE UPLINK PERFORMANCE Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink (dB) C/N Uplink (dB) C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB)	Clear Sky 76 9 -200 2 0 0 -75 5 228 6 -75 6 22 2 31 5 -0 5 -196 3 0 0 33 0 228 6 -75 6 20 7 22 2 20 7 N/A 30 3 30 3 16 0 25 5	Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 N/A 30 3 30 3 9 8 17 1	Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 -68 3 14 5 -21 8 27 3 27 3 9 8 19 3	Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 20 9 27 0 27 0 9 0 18 4	Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 11 4 N/A 27 0 27 0 10 5 15 4
LINK FADE TYPE UPLINK PERFORMANCE Uplink Path Loss, Clear Sky (dB) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink C/N(dB) Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C/N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Uplink (dB) C/I Uplink (dB) C/I Uplink (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB)	Clear Sky 76 9 -200 2 0 0 -7 5 228 6 -75 6 22 2 31 5 -0 5 -196 3 0 0 33 0 228 6 -75 6 20 7 20 7 22 7 20 7 N/A 30 3 30 3 16 0 25 5 16 0	Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 16 0 12 3 N/A 30 3 30 3 9 8 17 1 9 8	Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 -196 3 14 5 -196 3 0 0 -28 6 -68 3 14 5 -198 3 -198 3 -1 9 8 -1 9 8 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -	Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -196 3 0 0 33 0 228 6 -48 8 13 6 -20 9 27 0 27 0 27 0 9 0 18 4 9 0	Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 -196 3 0 0 26 2 228 6 -78 1 -196 3 0 0 26 2 228 6 -78 1 11 4 N/A 27 0 27 0 27 0 10 5 15 4 10 5
LINK FADE TYPE UPLINK PERFORMANCE Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB)	Clear Sky 76 9 -200 2 0 0 -75 228 6 -75 6 22 2 31 5 -0 5 -196 3 0 0 33 0 228 6 -75 6 20 7 22 2 20 7 N/A 30 3 30 3 16 0 25 5	Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 N/A 30 3 30 3 9 8 17 1	Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 -68 3 14 5 -21 8 27 3 27 3 9 8 19 3	Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 20 9 27 0 27 0 9 0 18 4	Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 11 4 N/A 27 0 27 0 10 5 15 4
LINK FADE TYPE UPLINK PERFORMANCE Uplink Parth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink CN(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB)	Clear Sky 76 9 -200 2 0 0 -75 228 6 -75 6 22 2 31 5 -05 -196 3 0 0 33 0 228 6 -75 6 20 7 22 2 20 7 N/A 30 3 30 3 16 0 25 5 16 0 26 3	Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 16 0 12 3 N/A 30 3 30 3 9 8 17 1 9 8 18 7	Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 16 0 14 5 21 8 27 3 27 3 9 8 19 3 9 8 20 1	Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 20 9 27 0 27 0 9 0 18 4 9 0 19 2	Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 11 4 16 7 11 4 N/A 27 0 27 0 27 0 10 5 15 4 10 5 17 3
LINK FADE TYPE UPLINK PERFORMANCE Uplink Parth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink C (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB)	Clear Sky 76 9 -200 2 0 0 -75 228 6 -75 6 22 2 31 5 -0 5 -196 3 0 0 33 0 228 6 -75 6 20 7 22 2 20 7 N/A 30 3 30 3 16 0 25 5 16 0 26 3 -11 5	Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 16 0 12 3 N/A 30 3 30 3 9 8 17 1 9 8 18 7 4 8	Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 16 0 14 5 21 8 27 3 27 3 9 8 19 3 9 8 20 1 5 2	Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 20 9 27 0 27 0 27 0 27 0 9 0 18 4 9 0 19 2 4 4	Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 11 4 16 7 11 4 N/A 27 0 27 0 27 0 10 5 15 4 10 5 17 3 4 9
LINK FADE TYPE UPLINK PERFORMANCE Uplink Parth Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink CN(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I NDownlink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB)	Clear Sky 76 9 -200 2 0 0 -75 228 6 -75 6 22 2 31 5 -05 -196 3 0 0 33 0 228 6 -75 6 20 7 22 2 20 7 N/A 30 3 30 3 16 0 25 5 16 0 26 3	Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 16 0 12 3 N/A 30 3 30 3 9 8 17 1 9 8 18 7	Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 16 0 14 5 21 8 27 3 27 3 9 8 19 3 9 8 20 1	Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 20 9 27 0 27 0 9 0 18 4 9 0 19 2	Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 11 4 16 7 11 4 N/A 27 0 27 0 27 0 10 5 15 4 10 5 17 3
LINK FADE TYPE UPLINK PERFORMANCE Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink C/N(dB) Downlink C/N(dB) Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB)	Clear Sky 76 9 -200 2 0 0 -75 228 6 -75 6 22 2 31 5 -0 5 -196 3 0 0 33 0 228 6 -75 6 20 7 22 7 20 7 N/A 30 3 30 3 16 0 25 5 16 0 26 3 -11 5 -1 0	Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 16 0 12 3 N/A 30 3 30 3 9 8 17 1 9 8 18 7 -4 8 -1 0 -4 8 -1 0 -1 -1 0 -1 -1 0 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -	Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 14 5 16 0 14 5 21 8 27 3 27 3 9 8 19 3 9 8 20 1 5 2 -1 0	Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -196 3 0 0 33 0 228 6 -48 8 13 6 -20 9 27 0 27 0 27 0 27 0 9 0 18 4 9 0 19 2 -4 -10 -10 -10 -10 -10 -10 -10 -10	Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 -0 5 -196 3 0 0 26 2 27 8 -196 3 0 0 26 2 27 8 -195 - 11 4 -195 - 11 4 -195 - 11 4 -195 - 11 4 -195 - 11 4 -195 - 15 4 10 5 -17 3 - 4 9 -10 5 -10 5 -10 5 -17 - 10 5 -17 3 - - - - - - - - - - - - -
LINK FADE TYPE UPLINK PERFORMANCE Uplink Parth Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink (dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Required System Margin (dB) Excess Link Margin (dB)	Clear Sky 76 9 -200 2 0 0 -75 228 6 -75 6 22 2 31 5 -05 -196 3 0 0 33 0 228 6 -75 6 20 7 22 2 20 7 N/A 30 3 30 3 16 0 25 5 16 0 26 3 -11 5 -1 0 10 5 -10 0 0 5	Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 16 0 12 3 N/A 30 3 30 3 9 8 17 1 9 8 18 7 - 4 8 -1 0 - 3 8 - - - - - - - - - - - - -	Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 16 0 14 5 21 8 27 3 27 3 9 8 19 3 9 8 19 3 9 8 19 3 9 8 20 1 5 2 -1 0 4 2 -3 9 0 3	Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -28 6 -48 8 13 6 -29 27 0 27 0 27 0 27 0 9 0 18 4 9 0 19 2 	Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 11 4 16 7 11 4 N/A 27 0 27 0 10 5 15 4 10 5 17 3 4 9 -1 0 3 9 -3 4 0 5
LINK FADE TYPE UPLINK PERFORMANCE Uplink Path Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink FIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite	Clear Sky 76 9 -200 2 0 0 -75 228 6 -75 6 22 2 31 5 -05 -196 3 0 0 33 0 228 6 -75 6 20 7 22 2 20 7 N/A 30 3 30 3 16 0 25 5 16 0 26 3 -10 -10 5 -10 0	Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 16 0 12 3 N/A 30 3 30 3 9 8 17 1 9 8 18 7 -10 -10 -10 -10 -10 -10 -10 -10	Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 16 0 14 5 21 8 27 3 27 3 9 8 19 3 9 8 20 1 5 2 -1 0 4 2 -3 9	Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -28 6 -48 8 13 6 -20 9 27 0 27 0 27 0 9 0 18 4 9 0 19 2 -24 -44 -10 -3 4 -3 0	Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 16 7 11 4 N/A 27 0 27 0 10 5 15 4 10 5 17 3 4 9 -1 0 3 9 -3 4
LINK FADE TYPE UPLINK PERFORMANCE Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink C/N(dB) Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Uplink (dB) C/N Uplink (dB) C/I Nownlink C / N(dB) C/I Nownlink (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/IN Uplink Adjacent Satellite 2 (dB)	Clear Sky 76 9 -200 2 0 0 -75 228 6 -75 6 22 2 31 5 -0 5 -196 3 0 0 33 0 228 6 -75 6 20 7 22 2 20 7 N/A 30 3 30 3 16 0 25 5 16 0 26 3 -11 5 -1 0 10 5 -10 0 0 5 1 -1 -10 -10 0 -10 0 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1	Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 16 0 12 3 N/A 30 3 30 3 9 8 17 1 9 8 18 7 4 8 -1 0 3 8 -3 4 0 4 1 1 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2	Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 -196 3 0 0 33 0 228 6 -68 3 14 5 21 8 27 3 27 3 9 8 19 3 9 8 20 1 5 2 -1 0 4 2 -3 9 0 3 7	Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 - 15 1 13 6 20 9 27 0 27 0 9 0 18 4 9 0 19 2 - 44 -1 0 3 4 -3 0 0 4 770	Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 16 7 11 4 N/A 27 0 27 0 10 5 15 4 10 5 17 3 4 9 -1 0 3 9 -3 4 0 5 0
LINK FADE TYPE UPLINK PERFORMANCE Uplink Path Station EIRP (dBW) Uplink Rain Attenuation Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink C/N(dB) Downlink FIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB)	Clear Sky 76 9 -200 2 0 0 -75 228 6 -75 6 22 2 31 5 -05 -196 3 0 0 33 0 228 6 -75 6 20 7 22 2 20 7 N/A 30 3 30 3 16 0 25 5 16 0 26 3 -11 5 -1 0 10 5 -10 0 0 5	Clear Sky 69 9 -200 2 0 0 -7 5 228 6 -74 8 16 0 28 7 -0 5 -196 3 0 0 26 6 228 6 -74 8 12 3 16 0 12 3 N/A 30 3 30 3 9 8 17 1 9 8 18 7 - 4 8 -1 0 - 3 8 - - - - - - - - - - - - -	Clear Sky 63 4 -200 2 0 0 -7 5 228 6 -68 3 16 0 18 0 -0 5 -196 3 0 0 33 0 228 6 -68 3 14 5 16 0 14 5 21 8 27 3 27 3 9 8 19 3 9 8 19 3 9 8 19 3 9 8 20 1 5 2 -1 0 4 2 -3 9 0 3	Clear Sky 43 0 -200 2 0 0 -7 5 228 6 -48 8 15 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 -28 6 -48 8 13 6 -29 27 0 27 0 27 0 27 0 9 0 18 4 9 0 19 2 	Clear Sky 73 9 -200 2 0 0 -7 5 228 6 -78 1 16 7 31 5 -0 5 -196 3 0 0 26 2 228 6 -78 1 11 4 11 4 16 7 11 4 N/A 27 0 27 0 10 5 15 4 10 5 17 3 4 9 -1 0 3 9 -3 4 0 5

Exhibit 7-8: 35.0° E.L. C-Band Hemi Uplink/Zone Downlink

UPLINK BEAM INFORMATION Uplink Beam Name	HEMI	HEMI	HEMI	HEMI	HEMI
Uplink Frequency (GHz)	6175	6175	6175	6175	6 175
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Uplink Relative Contour Level (dB)	-6	-6	-6	-6	-6
Uplink Contour G/T (dB/K)	-75	-75	-75	-75	-75
Uplink SFD (dBW/m2)	-73 0	-83 0	-81 0	-81 0	-89 0
Rain Rate (mm/hr)	42	42	42	42	42
DOWNLINK BEAM INFORMATION					
Downlink Beam Name	ZONE	ZONE	ZONE	ZONE	ZONE
Downlink Frequency (GHz)	3 95	3 95	3 95	3 95	3 95
Downlink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Downlink Relative Contour Level (dB) Downlink Contour EIRP (dBW)	-6 30 9	-6 30 9	-6 30 9	-6 30 9	-6 30 9
Rain Rate (mm/hr)	42	42	42	42	42
ADJACENT SATELLITE 1	42	42	42	42	72
Satellite 1 Orbital Location	37 0E	37 0E	37 0E	37 0E	37 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-38 0	-38 0	-38 0	-38 0	-38 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
ADJACENT SATELLITE 2					
Satellite 1 Orbital Location	33 0E	33 0E	33 OE	33 OE	33 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-38 0	-38 0	-38 0	-38 0	-38 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
CARRIER INFORMATION					
Carrier ID	36M0F3F	36M0G7W	10M3G7W	100KG7W	77M0G7W
Carrier Modulation	TV/FM	QPSK	QPSK	QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	4	N/A	N/A	N/A	N/A
Information Rate(kbps)	N/A	24575	6000	64	52563
Code Rate	N/A 36000	1/2x188/204 30133	1/2x188/204	1/2x239/256	1/2x188/204
Occupied Bandwidth(kHz) Allocated Bandwidth(kHz)	36000	36000	6771 1 10300	75 4	64451 77000
Minimum C/N, Clear Sky (dB)	10	3 36	3 87	2.99	3 36
Minimum C/N, Rain (dB)	10	3 36	3 57	2 79	3 36
UPLINK EARTH STATION	10	5.50	551	217	5.50
Earth Station Diameter (meters)	11 0	45	24	24	70
Earth Station Gain (dBi)	55.4	46 5	41 9	41 9	51.0
Earth Station Elevation Angle	20	20	20	20	20
DOWNLINK EARTH STATION					
Earth Station Diameter (meters)	18 3	13 1	13 1	13 1	61
Earth Station Gain (dBi)	56 0	53 5	53 5	53 5	46 5
Earth Station G/T (dB/K)	35 5	33 0	33 0	33 0	26 2
Earth Station Elevation Angle	20	20	20	20	20
LINK FADE TYPE	Clear Sky	Clear Sky	Clear Sky	Clear Sky	Clear Sky
UPLINK PERFORMANCE					
Uplink Earth Station EIRP (dBW)	79 4	69 4	63 4	43 0	73 9
Uplink Path Loss, Clear Sky (dB)	-200 2	-200 2	-200 2	-200 2	-200 2
Uplink Rain Attenuation	00	-75	-75	-75	<u>00</u> -75
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz)	-7 5 228 6	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8	-78 1
Uplink C/N(dB)	247	15 5	160	151	167
DOWNLINK PERFORMANCE	271		100		107
Downlink EIRP per Carrier (dBW)	25 3	253	174	-30	30 9
Antenna Pointing Error (dB)	-0 5	-0.5	-0.5	-05	-0 5
Downlink Path Loss, Clear Sky (dB)	-196 3	-196 3	-196 3	-196 3	-196 3
Downlink Rain Attenuation	0 0	0.0	0.0	0.0	0 0
Earth Station G/T (dB/K)	35 5	33 0	33 0	33 0	26 2
Boltzman Constant(dBW / K - Hz)	228 6	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8	-78 1
Downlink C / N(dB)	17 0	153	13 9	13 0	10 8
COMPOSITE LINK PERFORMANCE					
C/N Uplink (dB)	24 7	15.5	160	151	167
C/N Downlink (dB)		153	13 9	13 0	10 8
C/I Intermodulation (dB)	170				
	N/A	N/A	21 8	20.9	N/A
C/I Uplink Co-Channel (dB)*	N/A 27 3	N/A 27 3	273	27 0	27 0
C/I Downlink Co-Channel (dB)*	N/A 27 3 27 3	N/A 27 3 27 3	27 3 27 3	27 0 27 0	27 0 27 0
C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB)	N/A 27 3 27 3 18 5	N/A 27 3 27 3 9 3	27 3 27 3 9 8	27 0 27 0 9 0	27 0 27 0 10 5
C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB)	N/A 27 3 27 3 18 5 21 9	N/A 27 3 27 3 9 3 20 1	27 3 27 3 9 8 18 7	27 0 27 0 9 0 17 8	27 0 27 0 10 5 14 8
C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB)	N/A 27 3 27 3 18 5 21 9 18 5	N/A 27 3 27 3 9 3 20 1 9 3	273 273 98 187 98	270 270 90 178 90	27 0 27 0 10 5 14 8 10 5
C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB)	N/A 27 3 27 3 18 5 21 9	N/A 27 3 27 3 9 3 20 1	27 3 27 3 9 8 18 7	27 0 27 0 9 0 17 8	27 0 27 0 10 5 14 8
C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB)	N/A 27 3 27 3 18 5 21 9 18 5 22 6	N/A 27 3 27 3 9 3 20 1 9 3 20 9	27 3 27 3 9 8 18 7 9 8 19 5	27 0 27 0 9 0 17 8 9 0 18 6	27 0 27 0 10 5 14 8 10 5 16 7
C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB)	N/A 273 273 185 219 185 226 117	N/A 273 273 93 201 93 209 50	27 3 27 3 9 8 18 7 9 8 19 5 5 1	27 0 27 0 9 0 17 8 9 0 18 6 4 2	27 0 27 0 10 5 14 8 10 5 16 7 4 7
C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB)	N/A 27 3 27 3 18 5 21 9 18 5 22 6	N/A 27 3 27 3 9 3 20 1 9 3 20 9	27 3 27 3 9 8 18 7 9 8 19 5	27 0 27 0 9 0 17 8 9 0 18 6	27 0 27 0 10 5 14 8 10 5 16 7
C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB)	N/A 273 273 185 219 185 226 117 -10 107	N/A 273 93 201 93 209 50 -10 40	273 273 98 187 98 195 51 -10 41	270 270 90 178 90 186 42 -10 32	270 270 105 148 105 167 47 -10 37
C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB)	N/A 273 273 185 219 185 226 117 -10	N/A 273 273 93 201 93 209 50 -10	273 273 98 187 98 195 51 -10	27 0 27 0 9 0 17 8 9 0 18 6 4 2 -1 0	27 0 27 0 10 5 14 8 10 5 16 7 4 7 -1 0
C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB)	N/A 27 3 27 3 18 5 21 9 18 5 22 6 11 7 -1 0 10 7 -10 0	N/A 273 273 93 201 93 209 50 -10 40 -34	273 273 98 187 98 195 51 -10 41 -39	27 0 27 0 9 0 17 8 9 0 18 6 4 2 -1 0 3 2 -3 0	27 0 27 0 10 5 14 8 10 5 16 7 4 7 -1 0 3 7 -3 4
C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+1) Composite (dB) Required System Margin (dB) Net C/(N+1) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB)	N/A 27 3 27 3 18 5 21 9 18 5 22 6 11 7 -1 0 10 7 -10 0 0 7	N/A 273 273 93 201 93 209 50 -10 40 -34 06	273 273 98 187 98 195 51 -10 41 -39 02	27 0 27 0 9 0 17 8 9 0 18 6 4 2 -1 0 3 2 -3 0 0 2	27 0 27 0 10 5 14 8 10 5 16 7 4 7 -1 0 3 7 -3 4 0 3
C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers	N/A 27 3 27 3 18 5 21 9 18 5 22 6 11 7 -1 0 10 7 -10 0 0 7	N/A 273 273 93 201 93 209 50 -10 40 -34 06	273 273 98 187 98 195 51 -10 41 -39 02	27 0 27 0 9 0 17 8 9 0 18 6 4 2 -1 0 3 2 -3 0 0 2	270 270 105 148 105 167 47 -10 37 -34 03

Exhibit 7-9: 35.0° E.L. C-Band Hemi Uplink/Global Downlink

THE NEW DE AMERICAN				
UPLINK BEAM INFORMATION Uplink Beam Name	HEMI	HEMI	HEMI	HEMI
Uplink Frequency (GHz)	6 175	6 175	6 175	6175
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Uplink Relative Contour Level (dB)	-6	-6	-6	-6
Uplink Contour G/T (dB/K)	-75	-75	-75	-75
Uplink SFD (dBW/m2)	-83 0	-89 0	-84 0	-84 0
Rain Rate (mm/hr)	42	42	42	42
DOWNLINK BEAM INFORMATION				
Downlink Beam Name	GLOBAL	GLOBAL	GLOBAL	GLOBAL
Downlink Frequency (GHz)	3 95 CIDCULLAD	3 95 CIRCIII AR	3 95 CIRCIII AR	3 95
Downlink Beam Polarization Downlink Relative Contour Level (dB)	-4	CIRCULAR -4	CIRCULAR -4	CIRCULAR -4
Downlink Contour EIRP (dBW)	27.6	27.6	27.6	27.6
Rain Rate (mm/hr)	42	42	42	42
ADJACENT SATELLITE 1	72	42	42	42
Satellite 1 Orbital Location	37E	37E	37E	37E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	0
ADJACENT SATELLITE 2				
Satellite 1 Orbital Location	33E	33E	33E	33E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB) CARRIER INFORMATION	0	0	0	0
CARRIER INFORMATION Carrier ID	36M0F3F	36M0G7W	10M3G7W	100KG7W
Carrier ID Carrier Modulation	TV/FM	QPSK	QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	4	N/A	N/A	N/A
Information Rate(kbps)	N/A	24575	6000	64
Code Rate	N/A	1/2x188/204	1/2x188/204	1/2x239/256
Occupied Bandwidth(kHz)	36000	30133	6771 1	754
Allocated Bandwidth(kHz)	36000	36000	10300	100
Minimum C/N, Clear Sky (dB)	10	3 36	3 87	2 99
Minimum C/N, Rain (dB)	10	3 36	3 57	2 79
UPLINK EARTH STATION				
Earth Station Diameter (meters)	13 0	70	24	24
Earth Station Gain (dBi)	56 4	51 0	41 9	41 9
Earth Station Elevation Angle	20	20	20	20
DOWNLINK EARTH STATION	10.2	7.0	12.1	13 1
Earth Station Diameter (meters) Earth Station Gain (dBi)	18 3 56 0	70 475	13 1 53 5	53 5
Earth Station G/T (dB/K)	35 5	26 6	33 0	33 0
Earth Station Elevation Angle	20	200	20	20
LINK FADE TYPE	Clear Sky	Clear Sky	Clear Sky	Clear Sky
UPLINK PERFORMANCE				
Uplink Earth Station EIRP (dBW)	79 9	73 9	65 1	44 3
Uplink Path Loss, Clear Sky (dB)	-200 2	-200 2	-200 2	-200 2
Uplink Rain Attenuation	0 0	00	00	00
Satellite G/T(dB/K)	-75	-75	-75	-75
Boltzman Constant(dBW/K-Hz)	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8
Uplink C/N(dB)	25 2	20 0	177	16 5
DOWNLINK PERFORMANCE	27.6	27.6	10.0	20
Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB)	27 6 -0 5	27 6 -0 5	18 8 -0 5	-2 0 -0 5
Downlink Path Loss, Clear Sky (dB)	-0 5	-0 5	-0 5	-196 3
Downlink Rain Attenuation	00	00	00	00
Earth Station G/T (dB/K)	35 5	26 6	33 0	33 0
Boltzman Constant(dBW / K - Hz)	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8
Downlink C / N(dB)	19 3	11 2	153	14 0
COMPOSITE LINK PERFORMANCE				
C/N Uplink (dB)	25 2	20 0	177	165
C/N Downlink (dB)	19 3	11 2	153	140
C/I Intermodulation (dB)	N/A	N/A	19 6	18 3
C/I Uplink Co-Channel (dB)*	27 0	270	277	270
C/I Downlink Co-Channel (dB)*	27 0	270	277	270
C/I Uplink Adjacent Satellite 1 (dB)	19 0 18 2	13 8 10 0	11 5 14 0	10 3 12 8
C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB)	18 2	13 8	140	12.8
C/I Downlink Adjacent Satellite 2 (dB)	190	11 6	14.9	13 6
S. 2. Swinning radjuccust bateline 2 (ub)	100		177	155
C/(N+I) Composite (dB)	11 4	47	56	44
Required System Margin (dB)	-10	-10	-10	-10
Net C/(N+I) Composite (dB)	10 4	37	46	34
Minimum Required C/N (dB)	-10 0	-34	-39	-30
	0 4	03	07	04
Excess Link Margin (dB)				360
Excess Link Margin (dB) Number of Carriers	1	1	3	500
Number of Carriers CARRIER DENSITY LEVELS	1	1	3	300
Number of Carriers	1 -52 1 -44 0	-51 9 -43 2	-45 1 -45 5	-46 3 -46 8

Exhibit 7-10: 35.0° E.L. C-Band Hemi Uplink/C-Band Spot Downlink

UPLINK BEAM INFORMATION				
Uplink Beam Name	HEMI	HEMI	HEMI	HEMI
Uplink Frequency (GHz) Uplink Beam Polarization	6 175 CIRCULAR	6 175 CIRCULAR	6 175 CIRCULAR	6 175 CIRCULAR
Uplink Relative Contour Level (dB)	-6	-6	-6	-6
Uplink Contour G/T (dB/K)	-75	-75	-75	-75
Uplink SFD (dBW/m2)	-85 0	-89 0	-84 0	-84 0
Rain Rate (mm/hr)	42	42	42	42
DOWNLINK BEAM INFORMATION				
Downlink Beam Name	CSPOT	CSPOT	CSPOT	CSPOT
Downlink Frequency (GHz)	3 95	3 95	3 95	3 95
Downlink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Downlink Relative Contour Level (dB)	-4	-4	-4	-4
Downlink Contour EIRP (dBW)	34 6	34 6	34 6	34 6
Rain Rate (mm/hr)	42	42	42	42
ADJACENT SATELLITE 1	0.775	275	275	275
Satellite 1 Orbital Location	37E -38 7	37E -38 7	37E -38 7	37E
Uplink Power Density (dBW/Hz) Uplink Polarization Advantage (dB)	-38 /	-387	-387	-38 7 0
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	-32 0	-32 0	-32 0	-32 0
ADJACENT SATELLITE 2	v	v	0	v
Satellite 1 Orbital Location	33E	33E	33E	33E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	-387	-387	-387	-387
Downlink EIRP Density (dBW/Hz)	-32 0	-32 0	-32 0	-32 0
Downlink Polarization Advantage (dB)	0	0	0	-52 0
CARRIER INFORMATION				
Carrier ID	36M0F3F	36M0G7W	10M3G7W	100KG7W
Carrier Modulation	TV/FM	QPSK	QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	4	N/A	N/A	N/A
Information Rate(kbps)	N/A	24575	6000	64
Code Rate	N/A	1/2x188/204	1/2x188/204	1/2x239/25
Occupied Bandwidth(kHz)	36000	30133	6771 1	75 4
Allocated Bandwidth(kHz)	36000	36000	10300	100
Minimum C/N, Clear Sky (dB)	10	3 36	3 87	2 99
Minimum C/N, Rain (dB)	10	3 36	3 57	2 79
UPLINK EARTH STATION				
Earth Station Diameter (meters)	10 0	70	24	24
Earth Station Gain (dBi)	54 1	51	41 9	41 9
Earth Station Elevation Angle	20	20	20	20
DOWNLINK EARTH STATION				
Earth Station Diameter (meters)	11 0	37	61	61
Earth Station Gain (dBi)	51 9	41 2	46 5	46 5
Earth Station G/T (dB/K)	31 0	20 9	26 2	26 2
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)	77 9	73 9	65 6	44 8
Uplink Path Loss, Clear Sky (dB)	-200 2	-200 2	-200 2	-200 2
Uplink Rain Attenuation	0 0	0 0	0 0	0 0
Satellite G/T(dB/K)	-75	-75	-75	-75
Boltzman Constant(dBW/K-Hz)	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-74 8	-68 3	-48 8
Uplink C/N(dB)	23 2	20 0	18 2	170
DOWNLINK PERFORMANCE	-			
Downlink EIRP per Carrier (dBW)	34.6	34.6	263	55
Antenna Pointing Error (dB)	-0 5	-0.5	-0.5	-0.5
Downlink Path Loss, Clear Sky (dB)	-196 3	-196 3	-196 3	-196 3
Downlink Rain Attenuation	00	00	00	00
Earth Station G/T (dB/K)	310	20.9	262	26 2
Boltzman Constant(dBW / K - Hz)	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6 21 8	-74 8 12 5	-68 3	-48 8
Downlink C / N(dB) COMPOSITE LINK PERFORMANCE	21 8	12.5	160	147
C/N Uplink (dB)	23 2	20 0	18 2	170
C/N Downlink (dB)	23 2 21 8	12.5	16 0	1/0
C/I Intermodulation (dB)	N/A	N/A	18 1	16 8
C/I Uplink Co-Channel (dB)*	27 0	27.0	277	27 0
C/I Downlink Co-Channel (dB)*	27 0	27 0	277	27 0
C/I Uplink Adjacent Satellite 1 (dB)	17 0	13 8	12 0	10 8
C/I Downlink Adjacent Satellite 1 (dB)	20 9	99	12 0	12.8
C/I Uplink Adjacent Satellite 2 (dB)	17 0	13 8	12 0	12.8
C/I Downlink Adjacent Satellite 2 (dB)	21 9	12.9	15.9	14 6
	217			140
C/(N+I) Composite (dB)	11 6	51	60	48
Required System Margin (dB)	-10	-10	-10	-10
Net C/(N+I) Composite (dB)	10 6	41	50	38
Minimum Required C/N (dB)	-10 0	-34	-39	-30
Excess Link Margin (dB)	0.6	07	11	0.8
Number of Carriers	1	1	3	360
CARRIER DENSITY LEVELS	· ·	-	-	
Uplink Power Density (dBW/Hz)	-51 8	-51 9	-44 6	-45 8

Exhibit 7-11: 35.0° E.L. C-Band Zone Uplink/Zone Downlink

UPLINK BEAM INFORMATION		1			
Uplink Beam Name	ZONE	ZONE	ZONE	ZONE	ZONE
Uplink Frequency (GHz)	6175	6175	6175	6175	6 175
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Uplink Relative Contour Level (dB)	-6	-6	-6	-6	-6
Uplink Contour G/T (dB/K)	-56	-56	-56	-56	-56
Uplink SFD (dBW/m2)	-73 9	-80 9	-80 9	-80 9	-86 9
Rain Rate (mm/hr)	42	42	42	42	42
DOWNLINK BEAM INFORMATION Downlink Beam Name	ZONE	ZONE	ZONE	ZONE	ZONE
Downlink Frequency (GHz)	3.95	3 95	3 95	3.95	3.95
Downlink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Downlink Relative Contour Level (dB)	-6	-6	-6	-6	-6
Downlink Contour EIRP (dBW)	30 9	30 9	30 9	30 9	30 9
Rain Rate (mm/hr)	42	42	42	42	43
ADJACENT SATELLITE 1	27.07		27.07	27.07	27.07
Satellite 1 Orbital Location	37 0E	37 0E	37 0E	37 0E	37 0E
Uplink Power Density (dBW/Hz) Uplink Polarization Advantage (dB)	-38 7	-38 7 0	-38 7 0	-38 7 0	-38 7 0
Downlink EIRP Density (dBW/Hz)	-38 0	-38 0	-38 0	-38 0	-38 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
ADJACENT SATELLITE 2			_		
Satellite 1 Orbital Location	33 0E	33 0E	33 0E	33 OE	33 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB)	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-38 0	-38 0	-38 0	-38 0	-38 0
Downlink Polarization Advantage (dB) CARRIER INFORMATION	0	0	0	0	0
CARRIER INFORMATION Carrier ID	36M0F3F	36M0G7W	10M3G7W	100KG7W	77 M0G 7W
Carrier Modulation	TV/FM	OPSK	OPSK OPSK	QPSK QPSK	OPSK
Peak to Peak Bandwidth of EDS (MHz)	4	N/A	N/A	N/A	N/A
Information Rate(kbps)	N/A	24575	6000	64	52563
Code Rate	N/A	1/2x188/204	1/2x188/204	1/2x239/256	1/2x188/204
Occupied Bandwidth(kHz)	36000	30133	6771 1	75 4	64451
Allocated Bandwidth(kHz)	36000	36000	10300	100	77000
Minimum C/N, Clear Sky (dB)	10	3 36	3 87	2 99	3 36 3 36
Minimum C/N, Rain (dB) UPLINK EARTH STATION	10	3 36	3 57	2 79	3 30
Earth Station Diameter (meters)	11 0	4.5	24	24	15.2
Earth Station Gain (dBi)	55.4	46 5	41 9	41 9	58.4
Earth Station Elevation Angle	20	20	20	20	20
DOWNLINK EARTH STATION					
Earth Station Diameter (meters)	18 3	13 1	152	152	61
Earth Station Gain (dBi)	56 0	53 5	55 0	55 0	46 5
Earth Station G/T (dB/K) Earth Station Elevation Angle	35 5	33 0 20	34 5 20	34 5 20	26 2 20
LINK FADE TYPE	Clear Sky	Clear Sky	Clear Sky	Clear Sky	Clear Sky
UPLINK PERFORMANCE	Cicia Sily		cica suj	Cica Suj	cicia sity
Uplink Earth Station EIRP (dBW)	78 5	69 5	63 5	43 1	760
Uplink Path Loss, Clear Sky (dB)	-200 2	-200 2	-200 2	-200 2	-200 2
Uplink Rain Attenuation	0 0	0 0	0 0	0 0	0 0
Satellite G/T(dB/K)	-56	-56	-56	-56	-56
Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz)	228 6 -75 6	228 6 -74 8	228 6 -68 3	228 6 -48 8	228 6 -78 1
Uplink C/N(dB)	257	17.5	180	171	20 7
DOWNLINK PERFORMANCE	231		100		201
Downlink EIRP per Carrier (dBW)	25 3	253	174	-30	30 9
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
Downlink Rain Attenuation	0.0	0.0	0.0	00	0.0
Earth Station G/T (dB/K) Poltzman Constant(dBW/K, Hz)	35 5	33 0	34 5	34 5	262
Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz)	228 6 -75 6	228 6 -74 8	228 6 -68 3	228 6 -48 8	228 6 -78 1
Downlink C / N(dB)	170	-/4 8	-08 5	-48 8	10.8
COMPOSITE LINK PERFORMANCE					
C/N Uplink (dB)	25 7	175	18 0	171	20 7
C/N Downlink (dB)	170	153	154	14 5	10 8
C/I Intermodulation (dB)	N/A	N/A	21 8	20 9	N/A
C/I Uplink Co-Channel (dB)*	273	273	273	270	270
C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB)	27 3 17 6	27 3 9 4	27 3 9 9	27 0 9 1	27 0 12 6
C/I Downlink Adjacent Satellite 1 (dB)	21.9	201	20 2	194	12 0
C/I Uplink Adjacent Satellite 2 (dB)	176	94	99	91	12 6
C/I Downlink Adjacent Satellite 2 (dB)	22.6	20.9	21 0	201	16 7
C/(N+I) Composite (dB)	11 4	52	56	47	59
		1.0	-10	-10	-1 0
Required System Margin (dB)	-1 0	-10			
Net C/(N+I) Composite (dB)	-1 0 10 4	42	4 6	37	49
Net C/(N+I) Composite (dB) Minimum Required C/N (dB)	-1 0 10 4 -10 0	4 2 -3 4	4 6 -3 9	37 -30	-3 4
Net C/(N+1) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB)	-1 0 10 4 -10 0 0 4	4 2 -3 4 0 8	46 -39 07	37 -30 07	-34 15
Net C/(N+1) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers	-1 0 10 4 -10 0	4 2 -3 4	4 6 -3 9	37 -30	-3 4
Net C/(N+1) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB)	-1 0 10 4 -10 0 0 4	4 2 -3 4 0 8	46 -39 07	37 -30 07	-34 15

Exhibit 7-12: 35.0° E.L. C-Band Zone Uplink/Hemi Downlink

UPLINK BEAM INFORMATION					
Uplink Beam Name	ZONE	ZONE	ZONE	ZONE	ZONE
Uplink Frequency (GHz)	6175	6 175	6 175	6 175	6 175
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Uplink Relative Contour Level (dB)	-6	-6	-6	-6	-6
Uplink Contour G/T (dB/K) Uplink SFD (dBW/m2)	-5 6 -73 9	-5 6 -82 9	-5 6 -80 9	-5 6 -80 9	-5 6 -86 9
Rain Rate (mm/hr)	42	42	42	42	42
DOWNLINK BEAM INFORMATION					
Downlink Beam Name	HEMI	HEMI	HEMI	HEMI	HEMI
Downlink Frequency (GHz)	3 95	3 95	3 95	3 95	3 95
Downlink Beam Polarization Downlink Relative Contour Level (dB)	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR
Downlink Contour EIRP (dBW)	-6 31 5	-6 31 5	-6 31 5	-6 31 5	-6 31 5
Rain Rate (mm/hr)	42	42	42	42	42
ADJACENT SATELLITE 1					
Satellite 1 Orbital Location	37 0E	37 0E	37 0E	37 0E	37 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7 0	-38 7 0	-38 7	-38 7
Uplink Polarization Advantage (dB) Downlink EIRP Density (dBW/Hz)	0 -38 0	-38 0	-38 0	0 -38 0	-38 0
Downlink Polarization Advantage (dB)	0	0	0	0	0
ADJACENT SATELLITE 2					
Satellite 1 Orbital Location	33 0E	33 0E	33 0E	33 0E	33 0E
Uplink Power Density (dBW/Hz)	-38 7	-38 7	-38 7	-38 7	-38 7
Uplink Polarization Advantage (dB) Downlink EIRP Density (dBW/Hz)	0 -38 0	0 -38 0	0 -38 0	0 -38 0	-38 0
Downlink ElkP Density (dBw/Hz) Downlink Polarization Advantage (dB)	-380	-38 0	-38.0	-380	-38 0
CARRIER INFORMATION	Ľ,				-
Carrier ID	36M0F3F	36M0G7W	10M3G7W	100KG7W	77 M0G 7W
Carrier Modulation	TV/FM	QPSK	QPSK	QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	4 N/A	N/A 24575	N/A 6000	N/A 64	N/A 52563
Information Rate(kbps) Code Rate	N/A N/A	24575 1/2x188/204	6000 1/2x188/204	64 1/2x239/256	52563 1/2x188/204
Occupied Bandwidth(kHz)	36000	30133	6771 1	75.4	64451
Allocated Bandwidth(kHz)	36000	36000	10300	100	77000
Minimum C/N, Clear Sky (dB)	10	3 36	3 87	2 99	3 36
Minimum C/N, Rain (dB)	10	3 36	3 57	2 79	3 36
UPLINK EARTH STATION Earth Station Diameter (meters)	10 0	45	24	24	8 1
Earth Station Gain (dBi)	541	46 5	41 9	41 9	52.8
Earth Station Elevation Angle	20	20	20	20	20
DOWNLINK EARTH STATION					
Earth Station Diameter (meters)	183	110	110	13 1	45
Earth Station Gain (dBi) Earth Station G/T (dB/K)	56 0 35 5	51 9 31 0	51 9 31 0	53 5 33 0	43 9 23 6
Earth Station Elevation Angle	20	20	20	20	20
LINK FADE TYPE	Clear Sky	Clear Sky	Clear Sky	Clear Sky	Clear Sky
UPLINK PERFORMANCE					
Uplink Earth Station EIRP (dBW)	78 5 -200 2	69 5 -200 2	63 5 -200 2	43 1	76 0
Uplink Path Loss, Clear Sky (dB) Uplink Rain Attenuation		-200 Z	-200 2		200.2
ophilk Rail Michaldon	0.0	0.0		-200 2	-200 2
Satellite G/T(dB/K)	-56	00	00	-200 2 0 0 -5 6	-200 2 0 0 -5 6
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz)			00	0 0	0 0
Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz)	-5 6 228 6 -75 6	-5 6 228 6 -74 8	0 0 -5 6 228 6 -68 3	0 0 -5 6 228 6 -48 8	0 0 -5 6 228 6 -78 1
Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB)	-5 6 228 6	-5 6 228 6	0 0 -5 6 228 6	0 0 -5 6 228 6	0 0 -5 6 228 6
Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE	-56 2286 -756 257	-5 6 228 6 -74 8 17 5	0 0 -5 6 228 6 -68 3 18 0	0 0 -5 6 228 6 -48 8 17 1	0 0 -5 6 228 6 -78 1 20 7
Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB)	-5 6 228 6 -75 6	-5 6 228 6 -74 8	0 0 -5 6 228 6 -68 3	0 0 -5 6 228 6 -48 8	0 0 -5 6 228 6 -78 1
Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB)	-56 2286 -756 257 259	-56 2286 -748 175 259	0 0 -5 6 228 6 -68 3 18 0 18 0	00 -56 2286 -488 171 -24	00 -56 2286 -781 207 315
Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation	-56 2286 -756 257 -759 -05 -1963 00	-56 2286 -748 175 259 -05 -1963 00	0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0	00 -56 2286 -488 171 -24 -05 -1963 00	00 -56 2286 -781 207 315 -05 -1963 00
Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K)	-56 2286 -756 257 259 -05 -1963 00 355	-56 2286 -748 175 -259 -05 -1963 00 310	0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0	00 -56 2286 -488 171 -24 -05 -1963 00 330	0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6
Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz)	-56 2286 -756 257 -05 -1963 00 355 2286	-56 2286 -748 175 259 -05 -1963 00 310 2286	00 -56 2286 -683 180 -05 -1963 00 310 2286	00 -56 2286 -488 171 -24 -05 -1963 00 330 2286	00 -56 2286 -781 207 315 -05 -1963 00 236 2286
Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz)	-56 2286 -756 257 259 -05 -1963 00 355 2286 -756	-56 2286 -748 175 259 -05 -1963 00 310 2286 -748	0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3	00 -56 2286 -488 171 -24 -05 -1963 00 330 2286 -488	00 -56 2286 -781 207 315 -05 -1963 00 236 2286 -781
Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz)	-56 2286 -756 257 -05 -1963 00 355 2286	-56 2286 -748 175 259 -05 -1963 00 310 2286	00 -56 2286 -683 180 -05 -1963 00 310 2286	00 -56 2286 -488 171 -24 -05 -1963 00 330 2286	00 -56 2286 -781 207 315 -05 -1963 00 236 2286
Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB)	-56 2286 -756 257 259 -05 -1963 00 355 2286 -756 176 257	-56 2286 -748 175 259 -05 -1963 00 310 2286 -748 139	0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 	0 0 -5 6 -48 8 17 1 -2 4 -0 5 -196 3 0 0 33 0 228 6 -48 8 13 6 17 1	00 -56 2286 -781 207 -1963 00 236 2286 -781 88 -781 -88
Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Path Loss, Clear Sky (dB) Downlink Arin Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) CoMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB)	-56 2286 -756 257 -05 -1963 00 355 2286 -756 176 257 176	-56 2286 -748 175 259 -05 -1963 00 310 2286 -748 139 175 139	0 0 -5 6 228 6 -68 3 18 0 -196 3 0 0 31 0 228 6 -68 3 12 5 	00 -56 2286 -488 171 -24 -05 -1963 00 330 2286 -488 136 -171 136	00 -56 2286 -781 207 315 -05 -1963 00 236 2286 -781 88 207 88
Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) C/N Uplink (dB) C/N Uplink (dB) C/I Intermodulation (dB)	-56 2286 -756 257 259 -05 -1963 00 355 2286 -756 176 257 176 N/A	-56 2286 -748 175 259 -05 -1963 00 310 2286 -748 139 175 139 N/A	0 0 -5 6 228 6 -68 3 18 0 -0 5 -196 3 0 0 31 0 228 6 -68 3 12 5 18 0 12 5 21 8	00 -56 2286 -488 171 -24 -05 -1963 00 330 2286 -488 136 171 136 209	0 0 -5 6 228 6 -78 1 20 7 31 5 -0 5 -196 3 0 0 23 6 228 6 -78 1 8 8 20 7 8 8 N/A
Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Uplink (dB) C/I Uplink Co-Channel (dB)*	-56 2286 -756 257 259 -05 -1963 00 355 2286 -756 176 257 176 N/A 273	-56 2286 -748 175 259 -05 -1963 00 310 2286 -748 139 175 139 N/A 273	00 -56 2286 -683 180 -05 -1963 00 310 2286 -683 125 -125 -125 -125 -125 -125 -125 -125 -125 -128 -125 -128 -125 -128 -127 -125 -128 -127 -125 -127 -125 -1	00 -56 2286 -488 171 -24 -05 -1963 00 330 2286 -488 136 -171 136 209 270	00 -56 2286 -781 207 -1963 00 236 2286 -781 88 -207 88 -207 88 -207 88 -207 -88 -207 -88 -207 -88 -207 -270
Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) C/N Uplink (dB) C/N Uplink (dB) C/I Intermodulation (dB)	-56 2286 -756 257 259 -05 -1963 00 355 2286 -756 176 257 176 N/A 273 273	-56 2286 -748 175 259 -05 -1963 00 310 2286 -748 139 175 139 N/A	00 -56 2286 -683 180 -05 -1963 00 310 2286 -683 125 -180 125 -195 -1963 -05 -1963 -2286 -683 -125 -	00 -56 2286 -488 171 -24 -05 -1963 00 330 2286 -488 136 171 136 209 270 270	00 -56 2286 -781 207 -1963 00 236 2286 -781 88 207 88 207 88 N/A 270 270
Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)*	-56 2286 -756 257 259 -05 -1963 00 355 2286 -756 176 257 176 N/A 273	-56 2286 -748 175 259 -05 -1963 00 310 2286 -748 139 175 139 N/A 273 273	00 -56 2286 -683 180 -05 -1963 00 310 2286 -683 125 -125 -125 -125 -125 -125 -125 -125 -125 -128 -125 -128 -125 -128 -127 -125 -128 -127 -125 -127 -125 -1	00 -56 2286 -488 171 -24 -05 -1963 00 330 2286 -488 136 -171 136 209 270	00 -56 2286 -781 207 -1963 00 236 2286 -781 88 -207 88 -207 88 -207 88 -207 -88 -207 -88 -207 -88 -207 -270
Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) C/N Uplink (dB) C/I Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB)	-56 2286 -756 257 259 -05 -1963 00 355 2286 -756 176 -756 176 N/A 273 273 273 176 N/A	-56 2286 -748 175 259 -05 -1963 00 310 2286 -748 139 175 139 N/A 273 273 273 273 94 190 94	00 -56 2286 -683 180 -05 -1963 00 310 2286 -683 125 -180 125 -1963 00 310 2286 -683 125 -1963 -1963 -05 -1963 -1963 00 -1963 -1963 00 -1963 -1975 -1963 -1963 -1975 -1963 -1963 -1975 -1963 -1975 -1975 -1963 -1975 -1963 -1975	00 -56 2286 -488 171 -24 -05 -1963 00 330 2286 -488 136 -171 136 209 270 270 91 184 91	00 -56 2286 -781 207 -1963 00 236 2286 -781 88 -781 88 -207 88 N/A 270 270 270 126 125 126
Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB)	-56 2286 -756 257 259 -05 -1963 00 355 2286 -756 176 257 176 N/A 273 273 176 225	-56 2286 -748 175 259 -05 -1963 00 310 2286 -748 139 175 139 N/A 273 273 94 190	00 -56 2286 -683 180 -05 -1963 00 310 2286 -683 125 -180 125 218 273 273 99 176	00 -56 2286 -488 171 -24 -05 -1963 00 330 2286 -488 136 171 136 209 270 91 184	00 -56 2286 -781 207 315 -05 -1963 00 236 2286 -781 88 207 88 N/A 270 270 126 125
Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB)	-56 2286 -756 257 259 -05 -1963 00 355 2286 -756 176 257 176 257 176 N/A 273 273 273 176 225 176 225	-56 2286 -748 175 259 -05 -1963 00 310 2286 -748 139 175 139 N/A 273 273 94 190 94 200	00 -56 2286 -683 180 -05 -1963 00 310 2286 -683 125 -180 125 -195 -1963 00 310 2286 -683 125 -180 -285 -1963 -1963 -05 -1963 -1963 -05 -1963 -1975 -1963 -1975 -1963 -1975 -1963 -1975	00 -56 2286 -488 171 -24 -05 -1963 00 330 2286 -488 136 171 136 209 270 270 270 91 184 91 192	00 -56 2286 -781 207
Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB)	-56 2286 -756 257 257 -05 -1963 00 355 2286 -756 176 257 176 257 176 N/A 273 273 176 225 176 225 176 232	-56 2286 -748 175 259 -05 -1963 00 310 2286 -748 139 175 139 N/A 273 273 94 190 94 200	00 -56 2286 -683 180 -05 -1963 00 310 2286 -683 125 -180 125 -198 -05 -1963 00 310 2286 -683 125 -198 -683 -125 -118 -125 -118 -125 -118 -125 -118 -125 -118 -125 -118 -125 -118 -125 -118 -125 -118 -125 -117 -125 -127 -127 -127 -127 -127 -127 -127 -127 -127 -125 -177 -125 -177 -176 -99 -176 -99 -176 -99 -176 -99 -1886 -176 -57 -57 -57 -57 -57 -57 -57 -57	00 -56 2286 -488 171 -24 -05 -1963 00 330 2286 -488 136 -171 136 209 270 270 91 184 91 192 	00 -56 2286 -781 207 315 -05 -1963 00 236 2286 -781 88 -781 88 -781 88 -781 -88 -781 -207 -88 -781 -207 -270 -270 -270 -126 -125 -126 -150 -270 -270 -270 -270 -270 -270 -270 -27
Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB)	-56 2286 -756 257 259 -05 -1963 00 355 2286 -756 176 257 176 257 176 N/A 273 273 273 176 225 176 225	-56 2286 -748 175 259 -05 -1963 00 310 2286 -748 139 175 139 N/A 273 273 94 190 94 200	00 -56 2286 -683 180 -05 -1963 00 310 2286 -683 125 -180 125 -195 -1963 00 310 2286 -683 125 -180 -285 -1963 -1963 -05 -1963 -1963 -05 -1963 -1975 -1963 -1975 -1963 -1975 -1963 -1975	00 -56 2286 -488 171 -24 -05 -1963 00 330 2286 -488 136 171 136 209 270 270 270 91 184 91 192	00 -56 2286 -781 207
Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+1) Composite (dB) Minimum Required C/N (dB)	-56 2286 -756 257 259 -05 -1963 00 355 2286 -756 176 257 176 N/A 273 273 176 225 176 225 176 232	-56 2286 -748 175 259 -05 -1963 00 310 2286 -748 139 175 139 N/A 273 273 94 190 94 200 50 -10 40 -34	00 -56 2286 -683 180 -05 -1963 00 310 2286 -683 125 -180 125 218 273 273 99 176 99 186 -50 -10 -40 -40 -39	00 -56 2286 -488 171 -24 -05 -1963 00 330 2286 -488 136 -171 136 209 270 270 91 184 91 192 	00 -56 2286 -781 207 315 -05 -1963 00 236 2286 -781 88 207 88 N/A 270 270 126 125 126 150 47 -10
Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink (dB) C/N Uplink (dB) C/N Uplink (dB) C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB)	-56 2286 -756 257 257 259 -05 -1963 00 355 2286 -756 176 257 176 257 176 N/A 273 273 176 225 176 232 232 116 -10 106 -100 06	-56 2286 -748 175 259 -05 -1963 00 310 2286 -748 139 175 139 N/A 273 273 94 190 94 200 94 200 50 -10 40 -34 06	00 -56 2286 -683 180 -05 -1963 00 310 2286 -683 125 -180 125 218 273 273 99 176 99 186 -50 -10 -40 -39 01	00 -56 2286 -488 171 -24 -05 -1963 00 330 2286 -488 136 -488 136 -171 136 209 270 270 91 184 91 192 	00 -56 2286 -781 207
Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Required System Margin (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Mumber of Carriers	-56 2286 -756 257 259 -05 -1963 00 355 2286 -756 176 176 257 176 N/A 273 273 273 176 225 176 225 176 -225 176 232	-56 2286 -748 175 259 -05 -1963 00 310 2286 -748 139 175 139 N/A 273 273 94 190 94 200 50 -10 40 -34	00 -56 2286 -683 180 -05 -1963 00 310 2286 -683 125 -180 125 218 273 273 99 176 99 186 -50 -10 -40 -40 -39	00 -56 2286 -488 171 -24 -05 -1963 00 330 2286 -488 136 -171 136 209 270 270 270 270 91 184 91 192 -10 -10 -36 -30	00 -56 2286 -781 207 -1963 00 236 -286 -781 88 -781 88 -781 88 -781 207 88 N/A 270 270 126 125 126 150 -196 37 -34
Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink CN(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+1) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers CARRIER DENSITY LEVELS	-56 2286 -756 257 259 -05 -1963 00 355 2286 -756 176 257 176 N/A 273 273 176 225 176 225 176 232 -116 -10 106 -100 06 2	-56 2286 -748 175 259 -05 -1963 00 310 2286 -748 139 175 139 N/A 273 273 273 273 273 273 273 273 273 273	00 -56 2286 -683 180 -05 -1963 00 310 2286 -683 125 -1963 00 310 2286 -683 125 -1963 00 310 2286 -683 125 -1963 00 310 -286 -683 -1963 00 -1963 00 -1963 00 -1963 00 -1963 00 -1963 00 -1963 00 -1963 00 -1963 00 -1963 00 -1963 00 -1963 00 -1963 00 -1963 00 -1963 00 -1963 -1963 00 -1963 -106 -106 -107	00 -56 2286 -488 171 -24 -05 -1963 00 330 2286 -488 136 -171 136 209 270 270 270 91 184 91 192 -46 -10 36 -30 06 770	00 -56 2286 -781 207 -1963 00 236 2286 -781 88 -207 88 N/A 270 270 126 125 126 150 -47 -10 -37 -34 03 0 0 0 0 0 0 0 0 0 0 0 0 0
Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink (dB) C/N Downlink (dB) C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers	-56 2286 -756 257 257 259 -05 -1963 00 355 2286 -756 176 257 176 257 176 N/A 273 273 176 225 176 232 232 116 -10 106 -100 06	-56 2286 -748 175 259 -05 -1963 00 310 2286 -748 139 175 139 N/A 273 273 94 190 94 200 94 200 50 -10 40 -34 06	00 -56 2286 -683 180 -05 -1963 00 310 2286 -683 125 -180 125 218 273 273 99 176 99 186 -50 -10 -40 -39 01	00 -56 2286 -488 171 -24 -05 -1963 00 330 2286 -488 136 -488 136 -171 136 209 270 270 91 184 91 192 	00 -56 2286 -781 207

Exhibit 7-13: 35.0° E.L. Ku-Band

THE INVERTANT INFORMATION							
UPLINK BEAM INFORMATION Uplink Beam Name	KUSPOT	KUSPOT	KUSPOT	KUSPOT	KUSPOT	KUSPOT	KUSPOT
Uplink Frequency (GHz)	14 25	14 25	14 25	14 25	14 25	14 25	14 25
Uplink Beam Polarization	LINEAR	LINEAR	LINEAR	LINEAR	LINEAR	LINEAR	LINEAR
Uplink Relative Contour Level (dB)	-4	-4	-4	-4	-4	-4	-4
Uplink Contour G/T (dB/K)	58	58	58	58	58	58	58
Uplink SFD (dBW/m2)	-80 2	-89 2	-84 2	-84 2	-84 2	-84 2	-89 2
Rain Rate (mm/hr)	42	42	42	42	42	42	42
DOWNLINK BEAM INFORMATION							
Downlink Beam Name	KUSPOT	KUSPOT	KUSPOT	KUSPOT	KUSPOT	KUSPOT	KUSPOT
Downlink Frequency (GHz) Downlink Beam Polarization	11 95 LINEAR	11 95 LINEAR	11 95 LINEAR	11 95 LINEAR	11 95 LINEAR	11 95 LINEAR	11 95 LINEAR
Downlink Beam Folarization Downlink Relative Contour Level (dB)	-4	-4	-4	-4	-4	-4	-4
Downlink Contour EIRP (dBW)	43 7	43 7	43 7	43 7	43 7	43 7	43 7
Rain Rate (mm/hr)	42	42	42	42	42	42	42
ADJACENT SATELLITE 1				.2			.~
Satellite 1 Orbital Location	33 0E	33 OE	33 0E	33 0E	33 0E	33 0E	33 0E
Uplink Power Density (dBW/Hz)	-45	-45	-45	-45	-45	-45	-45
Uplink Polarization Advantage (dB)	0	0	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-20 0	-20 0	-20 0	-20 0	-20 0	-20 0	-20 0
Downlink Polarization Advantage (dB)	0	0	0	0	0	0	0
ADJACENT SATELLITE 2							
Satellite 1 Orbital Location	37 0E	37 0E	37 0E	37 0E	37 0E	37 0E	37 0E
Uplink Power Density (dBW/Hz)	-45	-45	-45	-45	-45	-45	-45
Uplink Polarization Advantage (dB)	0	0	0	0	0	0	0
Downlink EIRP Density (dBW/Hz) Downlink Polarization Advantage (dB)	-20 0 0	-20 0 0	-20 0 0	-20 0 0	-20 0 0	-20 0 0	-20 0 0
CARRIER INFORMATION	v	0	v	0	v	0	v
Carrier ID	36M0F3F	77M0G7W	10M3G7W	100KG7W	1M45G7W	400KG7W	112M0G7W
Carrier Modulation	TV/FM	QPSK	QPSK	QPSK	BPSK	BPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	4	N/A	N/A	N/A	N/A	N/A	N/A
Information Rate(kbps)	N/A	52563	6000	64	512	128	86015
Code Rate	N/A	1/2x188/204	1/2x188/204	1/2x239/256	R1/2	R1/2	1/2x188/204
Occupied Bandwidth(kHz)	36000	64451	6771 1	75 4	1229	307	93335
Allocated Bandwidth(kHz)	36000	77000	10300	100	1450	400	112
Minimum C/N, Clear Sky (dB)	10 0	34	39	30	34	34	34
Minimum C/N, Rain (dB)	10 0	34	36	28	27	27	34
UPLINK EARTH STATION	24	24	1.0	1.0	1.0	1.0	2.0
Earth Station Diameter (meters) Earth Station Gain (dBi)	2 4	2 4 49	1 8 46 4	1 8 46 4	1 8 46 4	1 8 46 4	3 0 49 7
Earth Station Claim (dBf)	20	20	20	20	20	20	20
DOWNLINK EARTH STATION	20	20	20	20	20	20	20
Earth Station Diameter (meters)	11 0	24	61	61	61	61	30
Earth Station Gain (dBi)	60 4	47 5	55 5	55 5	55 5	55 5	49 2
Earth Station G/T (dB/K)	38 0	25 0	33 1	33 1	33 1	33 1	267
Earth Station Elevation Angle	20	20	20	20	20	20	20
LINK FADE TYPE	Clear Sky	Clear Sky	Clear Sky	Clear Sky	Clear Sky	Clear Sky	Clear Sky
UPLINK PERFORMANCE	72.2	72.7	(0.2	20.7	51.2	45.7	72.7
Uplink Earth Station EIRP (dBW) Uplink Path Loss, Clear Sky (dB)	-207 5	73 7 -207 5	60 2 -207 5	39 7 -207 5	51 3 -207 5	45 7 -207 5	73 7 -207 5
Uplink Rain Attenuation	00	00	00	00	00	00	00
Satellite G/T(dB/K)	58	58	58	58	58	58	58
Boltzman Constant(dBW/K-Hz)	228 6	228 6	228 6	228 6	228 6	228 6	228 6
Carrier Noise Bandwidth (dB-Hz)	-75 6	-78 1	-68 3	-48 8	-60 9	-54.9	-79 7
Uplink C/N(dB)	26 6	22 5	18 8	179	174	178	20 9
DOWNLINK PERFORMANCE							
Downlink EIRP per Carrier (dBW)	38 2	43 7	30 2	0.7	21.2		
Antenna Pointing Error (dB)				9 7	21 3	157	43 7
	-0 5	-0 5	-0 5	-0 5	-0 5	-0 5	-0 5
Downlink Path Loss, Clear Sky (dB)	-0 5 -205 9	-0 5 -205 9	-0 5 -205 9	-0 5 -205 9	-0 5 -205 9	-0 5 -205 9	-0 5 -205 9
Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation	-0 5 -205 9 0 0	-0 5 -205 9 0 0	-0 5 -205 9 0 0	-0 5 -205 9 0 0	-0 5 -205 9 0	-0 5 -205 9 0	-0 5 -205 9 0
Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K)	-0 5 -205 9 0 0 38 0	-0 5 -205 9 0 0 25 0	-0 5 -205 9 0 0 33 1	-0 5 -205 9 0 0 33 1	-0 5 -205 9 0 33 1	-0 5 -205 9 0 33 1	-0 5 -205 9 0 26 7
Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz)	-05 -2059 00 380 2286	-0 5 -205 9 0 0 25 0 228 6	-0 5 -205 9 0 0 33 1 228 6	-0 5 -205 9 0 0 33 1 228 6	-0 5 -205 9 0 33 1 228 6	-0 5 -205 9 0 33 1 228 6	-0 5 -205 9 0 26 7 228 6
Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz)	-0 5 -205 9 0 0 38 0 228 6 -75 6	-0 5 -205 9 0 0 25 0 228 6 -78 1	-0 5 -205 9 0 0 33 1 228 6 -68 3	-0 5 -205 9 0 0 33 1 228 6 -48 8	-0 5 -205 9 0 33 1 228 6 -60 9	-0 5 -205 9 0 33 1 228 6 -54 9	-05 -2059 0 267 2286 -797
Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz)	-05 -2059 00 380 2286	-0 5 -205 9 0 0 25 0 228 6	-0 5 -205 9 0 0 33 1 228 6	-0 5 -205 9 0 0 33 1 228 6	-0 5 -205 9 0 33 1 228 6	-0 5 -205 9 0 33 1 228 6	-0 5 -205 9 0 26 7 228 6
Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB)	-0 5 -205 9 0 0 38 0 228 6 -75 6	-0 5 -205 9 0 0 25 0 228 6 -78 1	-0 5 -205 9 0 0 33 1 228 6 -68 3	-0 5 -205 9 0 0 33 1 228 6 -48 8	-0 5 -205 9 0 33 1 228 6 -60 9	-0 5 -205 9 0 33 1 228 6 -54 9	-05 -2059 0 267 2286 -797
Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB)	-05 -2059 00 380 2286 -756 228	-05 -2059 00 250 2286 -781 127	-05 -2059 00 331 2286 -683 171	-05 -2059 00 331 2286 -488 162	-0 5 -205 9 0 33 1 228 6 -60 9 15 7	-05 -2059 0 331 2286 -549 161	-05 -2059 0 267 2286 -797 128
Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Intermodulation (dB)	-05 -2059 00 380 2286 -756 228 -236 228 -236 228 N/A	-05 -2059 00 250 2286 -781 127 225 127 N/A	-05 -2059 00 331 2286 -683 171 188 171 190	-05 -2059 00 331 2286 -488 162 179 162 180	-05 -2059 0 331 2286 -609 157 174 157 175	-05 -2059 0 331 2286 -549 161 178 161 179	-05 -2059 0 267 2286 -797 128 -797 128 -799 128 -799
Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dB/K) - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Uplink (dB) C/I Uplink Co-Channel (dB)*	-05 -2059 00 380 2286 -756 228 228 236 228 236 228 N/A 289	-05 -2059 00 250 2286 -781 127 225 127 N/A 286	-05 -2059 00 331 2286 -683 171 188 171 188 171 190 274	-05 -2059 00 331 2286 -488 162 179 162 180 270	-05 -2059 0 331 2286 -609 157 174 157 175 270	-05 -2059 0 331 2286 -549 161 178 161 179 270	-05 -2059 0 267 2286 -797 128 209 128 N/A 270
Downlink Path Loss, Clear Sky (dB) Downlink Rain Attennation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)*	-05 -2059 00 380 2286 -756 228 236 228 236 228 N/A 289 289 289	-05 -2059 00 2286 -781 127 225 127 N/A 286 286	-05 -2059 00 331 2286 -683 171 188 171 190 274 274	-05 -2059 00 331 2286 -488 162 179 162 180 270 270	-05 -2059 0 331 2286 -609 157 	-05 -2059 0 331 2286 -549 161 178 161 179 270 270	-05 -2059 0 267 2286 -797 128 209 128 N/A 270 270
Downlink Path Loss, Clear Sky (dB) Downlink Rain Attennation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB)	-05 -2059 00 380 2286 -756 228 236 228 236 228 N/A 289 289 196	-05 -2059 00 250 2286 -781 127 225 127 N/A 286 286 186	-05 -2059 00 331 2286 -683 171 188 171 190 274 274 274 149	-05 -2059 00 331 2286 -488 162 179 162 180 270 270 270 139	-05 -2059 0 331 2286 -609 157 174 157 175 270 270 134	-05 -2059 0 331 2286 -549 161 178 161 178 161 179 270 270 270 139	-05 -2059 0267 2286 -797 128 209 128 N/A 270 270 270 170
Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Uplink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB)	-05 -2059 00 380 2286 -756 228 -756 228 -236 228 N/A 289 289 196 214	-05 -2059 00 250 2286 -781 127 225 127 N/A 286 286 286 186 108	-05 -2059 00 331 2286 -683 171 188 171 190 274 274 274 149 156	-05 -2059 00 331 2286 -488 162 179 162 180 270 270 139 146	-05 -2059 0 331 2286 -609 157 174 157 175 270 270 270 134 141	-05 -2059 0 331 2286 -549 161 178 161 179 270 270 270 139 145	-05 -2059 0267 2286 -797 128 209 128 N/A 270 270 270 170 111
Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dB/K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Uplink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB)	-05 -2059 00 380 2286 -756 228 236 228 236 228 N/A 289 289 196 214 196	-05 -2059 00 250 2286 -781 127 225 127 N/A 286 286 286 186 108 186	-05 -2059 00 331 2286 -683 171 188 171 188 171 190 274 274 274 274 149 156 149	-05 -2059 00 331 2286 -488 162 179 162 180 270 270 270 139 146 139	-05 -2059 0 331 2286 -609 157 174 157 175 270 270 270 134 141 134	-05 -2059 0 331 2286 -549 161 178 161 179 270 270 270 270 139 145 139	-05 -2059 0 267 2286 -797 128 209 128 N/A 270 270 170 170 111
Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB)	-05 -2059 00 380 2286 -756 228 -756 228 -236 228 N/A 289 289 196 214	-05 -2059 00 250 2286 -781 127 225 127 N/A 286 286 286 186 108	-05 -2059 00 331 2286 -683 171 188 171 190 274 274 274 149 156	-05 -2059 00 331 2286 -488 162 179 162 180 270 270 139 146	-05 -2059 0 331 2286 -609 157 174 157 175 270 270 270 134 141	-05 -2059 0 331 2286 -549 161 178 161 179 270 270 270 139 145	-05 -2059 0 267 2286 -797 128 209 128 N/A 270 270 270 170 111
Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dB/K / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB)	-05 -2059 00 380 2286 -756 228 236 228 N/A 289 289 196 214 196 217	-05 -2059 00 2250 2286 -781 127 225 127 N/A 286 286 286 186 108 186 108 186	-05 -2059 00 331 2286 -683 171 188 171 190 274 274 274 274 149 156 149 162	-05 -2059 00 331 2286 -488 162 179 162 180 270 270 270 139 146 139 152	-05 -2059 0 331 2286 -609 157 174 157 175 270 270 270 134 141 134 147	-05 -2059 0 331 2286 -549 161 178 161 179 270 270 270 270 139 145 139 152	-05 -2059 0 267 2286 -797 128 209 128 N/A 270 270 270 170 111 170 123
Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB)	-05 -2059 00 380 2286 -756 228 236 228 N/A 289 289 289 289 289 196 214 196 217 	-05 -2059 00 250 2286 -781 127 225 127 N/A 286 286 286 186 108 186 108 124 64	-05 -2059 00 331 2286 -683 171 188 171 190 274 274 274 149 156 149 162 78	-05 -2059 00 331 2286 -488 162 179 162 180 270 270 270 139 146 139 152 69	-05 -2059 0 331 2286 -609 157 174 157 175 270 270 270 134 141 134 147 	-05 -2059 0 331 2286 -549 161 178 161 179 270 270 270 139 145 139 152 68	-05 -2059 0 267 2286 -797 128 209 128 N/A 270 270 270 170 111 1 170 123
Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 3 (dB) C/I Downlink Adjacent Satellite 3 (dB)	-05 -2059 00 380 2286 -756 228 236 228 N/A 289 289 196 214 196 217	-05 -2059 00 2250 2286 -781 127 225 127 N/A 286 286 286 186 108 186 108 186	-05 -2059 00 331 2286 -683 171 188 171 190 274 274 274 274 149 156 149 162 78 -10	-05 -2059 00 331 2286 -488 162 179 162 180 270 270 270 139 146 139 152	-05 -2059 0 331 2286 -609 157 174 157 175 270 270 270 134 141 134 147	-05 -2059 0 331 2286 -549 161 178 161 179 270 270 270 270 139 145 139 152 68 -10	-05 -2059 0 267 2286 -797 128 209 128 N/A 270 270 270 170 111 170 1123
Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Uplink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB)	-05 -2059 00 380 2286 -756 228 236 228 236 228 N/A 289 289 289 196 214 196 214 196 217 -10	-05 -2059 00 250 2286 -781 127 225 127 N/A 286 286 286 186 108 186 108 186 124 -70	-05 -2059 00 331 2286 -683 171 188 171 190 274 274 274 149 156 149 162 78	-05 -2059 00 331 2286 -488 162 179 162 180 270 270 139 146 139 152 69 -10	-05 -2059 0 331 2286 -609 157 174 157 175 270 270 270 134 141 134 147 	-05 -2059 0 331 2286 -549 161 178 161 179 270 270 270 139 145 139 152 68	-05 -2059 0 267 2286 -797 128 209 128 N/A 270 270 270 170 111 170 111 170 123 62 -10
Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB)	-05 -2059 00 380 2286 -756 228 236 228 236 228 N/A 289 289 196 214 196 217 -10 122	-05 -2059 00 250 2286 -781 127 225 127 N/A 286 286 286 186 108 186 108 186 124 -70 54	-05 -2059 00 331 2286 -683 171 188 171 190 274 274 274 274 274 149 156 149 162 78 -10 68	-05 -2059 00 331 2286 -488 162 179 162 180 270 270 270 270 139 146 139 152 69 -10 59	-05 -2059 0 331 2286 -609 157 174 157 175 270 270 270 134 141 134 147 64 -10 54	-05 -2059 0 331 2286 -549 161 178 161 179 270 270 270 270 139 145 139 152 68 -10 58	-05 -2059 0 267 2286 -797 128 209 128 N/A 270 270 170 170 170 111 170 123 62 -10 52
Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dB/K) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB)	-05 -2059 00 380 2286 -756 228 236 228 236 228 N/A 289 289 196 214 196 217 -10 132 -10 122 -100	-05 -2059 00 2250 2286 -781 127 225 127 N/A 286 286 186 108 186 108 186 124 -70 54 -34	-05 -2059 00 331 2286 -683 171 188 171 190 274 274 274 274 149 156 149 162 78 -10 68 -39	-05 -2059 00 331 2286 -488 162 179 162 180 270 270 270 270 139 146 139 152 59 -30	-05 -2059 0 331 2286 -609 157 174 157 175 270 270 270 270 134 141 134 147 -10 54 -34	-05 -2059 0 331 2286 -549 161 178 161 179 270 270 270 270 270 139 145 139 152 68 -10 58 -34	-05 -2059 0 267 2286 -797 128 209 128 N/A 270 270 270 170 111 170 1123 62 -10 52 -34
Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers CARRIER DENSITY LEVELS	-05 -2059 00 380 2286 -756 228 236 228 N/A 289 289 289 196 214 196 214 196 217 -10 122 -100 122 2	-05 -2059 00 250 2286 -781 127 225 127 N/A 286 286 286 186 108 186 108 186 124 -10 54 -34 20 1	-05 -2059 00 331 2286 -683 171 188 171 190 274 274 274 274 149 156 149 162 78 -10 68 -39 29 10	-05 -2059 00 331 2286 -488 162 179 162 180 270 270 139 146 139 152 69 -10 59 -30 29 1120	-05 -2059 0 331 2286 -609 157 174 157 175 270 270 270 270 134 141 134 141 134 147 -10 54 -34 20 77	-05 -2059 0 331 2286 -549 161 178 161 179 270 270 270 270 139 145 139 145 139 152 68 -10 58 -34 24 280	-05 -2059 0 267 2286 -797 128 209 128 N/A 270 270 270 170 111 170 111 170 123 62 -10 52 -34 18 1
Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Downlink (C-Channel (dB)* C/I Downlink Co-Channel (dB)* C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers	-05 -2059 00 380 2286 -756 228 236 228 N/A 289 289 196 214 196 217 -10 122 -100 222	-05 -2059 00 2250 2286 -781 127 N/A 225 127 N/A 286 286 186 108 186 124 	-05 -2059 00 331 2286 -683 171 188 171 190 274 274 274 274 149 156 149 162 78 -10 68 -39 29	-05 -2059 00 331 2286 -488 162 179 162 180 270 270 270 270 139 146 139 146 139 152 	-05 -2059 0 331 2286 -609 157 174 157 175 270 270 270 134 141 134 141 134 147 64 -10 54 -34 20	-05 -2059 0 331 2286 -549 161 178 161 179 270 270 270 139 145 139 145 139 152 68 -10 58 -34 24	-05 -2059 0 267 2286 -797 128 209 128 N/A 270 270 270 170 111 111 170 123 62 -10 52 -34 18

Exhibit 8: Adjacent Satellite 31.5°E.L. Link Budgets

Exhibit 8-1: Astra 1G 31.5 °E.L. 12.5 – 12.75 GHz Downlink

Spin Denser KUSPOT KU	UPLINK BEAM INFORMATION							
Update National Intervel (M) LINELAX LINELAX <thlinelax< th=""> LINELAX <thline< td=""><td></td><td>KUSPOT</td><td></td><td></td><td>KUSPOT</td><td>KUSPOT</td><td></td><td>KUSPOT</td></thline<></thlinelax<>		KUSPOT			KUSPOT	KUSPOT		KUSPOT
Cincle Enter Constructer (dB) 4								
Spin Construction 5 8								
Ban Bar (mich) 42 43 1157 <								
DOWNLANK RFAU PROGRATION C <thc< th=""> C C C</thc<>	Uplink SFD (dBW/m2)							
Densitial Angenery (HA) EXISPOT KUSPOT	```````````````````````````````	42	42	42	42	42	42	42
Densitia Frequency GRb 11 95 11 95 11 95 11 95 11 95 11 95 11 95 Dovelada Been Mentandon DERAR LINEAR		KUSPOT	KUSPOT	KUSPOT	KUSPOT	KUSPOT	KUSPOT	KUSPOT
Downlaw Eductor Coston Level (#) -4								
Demine Caston EBT (BP) 48 48 48 48 48 48 48 Bit Re (mon) 42 43 44 44 44 44 44 44 44 44 44								
Bain Res (mark) 42 43 43 43 43 43 43 44 44 44 45 45 44 44 44 44 44 44 44 44 44 45 44 44 45								
DADACTY SATELITE Construct of the set								
Uptale Neurone Density (dBW12h) 445 450								12
Update Potenzine Advantage (a)) 0 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>								
Deschaft EBP Denary (dBV/th) 200								
Dowalia Polarization Advantage (dB) 0 0 0 0 0 0 0 0 Stanifier Orbital Location 29 SE 21 A 21		-		-				
Sandlin Oxidal Costion 29 5E 45 46 4								
Update Neurone Outsolver, Method 4.5 <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>								
Update Sharando Advanage (dB) 0								
Downlaid ERP Density (diff) -214 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>								
Downlame (a) 0 0 0 0 0 0 0 Carrier Modulation 33MBF3 22MBG7W 10MBG7W 100KG7W M0KG7W 33MBG7W Carrier Modulation TV/FM OPSK MPSK MPSK MPSK MSK WSK								
Camer D 33M073 20M0G7W 10M0G7W 10M0G7W <th< td=""><td>Downlink Polarization Advantage (dB)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>	Downlink Polarization Advantage (dB)							
Camer Modulation TV/FM OPSK OPSK OPSK DPSK DPSK <thdpsk< th=""> DPSK DPSK<td></td><td>222 (2222)</td><td>271 (0 0 0 0 0 0</td><td>101000</td><td>100000000</td><td>1) (15 0 0 0 0</td><td>10000 00000</td><td>222 60 0000</td></thdpsk<>		222 (2222)	271 (0 0 0 0 0 0	101000	100000000	1) (15 0 0 0 0	10000 00000	222 60 0000
Peak Data Bandwidth (EDS) (MED) 4 Ñ/A Ñ/A N/A N/A N/A Code Rate N/A 1123182/000 122029 31/7 27362 Code Rate N/A 112183/24 172182/04 172182/04 12293 31/7 27362 Allocated Bandwidth(Hz) 33000 22000 16701 154 429 40 334 356								
Information Rate(dpg) N/A 18432 6000 64 512 128 23343 Occeptable Bandwick(Hz) 33000 22600 67711 17.4 12.29 307 27502 Micrated Bandwick(Hz) 33000 22600 67711 17.4 12.29 307 27502 Minamu CN, Cher Syr (db) 100 3.4 3.9 3.0 3.4 3.4 3.4 3.4 Minamu CN, Ran (db) 100 3.4 3.6 2.2 7 7 3.4 Minamu CN, Ran (db) 100 3.4 3.6 2.2 7 2.7 3.4 Minamu CN, Ran (db) 0.0 3.4 3.6 2.2 2.0								
Coccept Bandwolft(Els) 33000 22000 67711 7.7 12.29 307 22202 Minamun CN, Clex Sky (db) 100 3.4 3.9 3.0 3.4 3.4 3.4 Minamun CN, Clex Sky (db) 100 3.4 3.5 2.8 2.7 2.7 3.4 UPLINK RATH STATION - </td <td>Information Rate(kbps)</td> <td></td> <td></td> <td>6000</td> <td></td> <td></td> <td></td> <td></td>	Information Rate(kbps)			6000				
Allocate Bandworkfichty) 33000 27000 10300 100 1400 3400 33000 Minimum CN, Rain (B) 100 34 35 28 27 27 3.4 Minimum CN, Rain (B) 100 34 35 28 27 27 3.4 Earth Station Diameter (inter) 24 2.4 12 12 12 12 24 24 29 421 424 424 424 424 424 424 424 424 424 424 424 424 42								
Minimun CN, Cher, Say (db) 100 34 39 30 34 34 34 UPLINK EARTH STATION -								
Minimum CA, Pain (dB) 100 34 36 28 27 27 34 Earth Station Dimeter (netron) 24 24 12 12 12 12 24 Earth Station Gau(Bb) 490 460 429 429 429 429 429 429 429 429 429 429 429 429 429 420 20								
Earth Station Diameter (unsers) 24 24 12 14 13								
Tarth Station Gain (dB). 490 490 429 429 429 429 490 Earth Station Gain (dB). 0 20 20 20 20 20 20 DOWNLINK EARTI STATION - <t< td=""><td>UPLINK EARTH STATION</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	UPLINK EARTH STATION							
Jank Sation Elevation Apple 20 24 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>								
DOWNLINK LARTH STATION								
Bards Station Dameter (nuclers) 110 2.4 30 2.4 2.5 4.6 2.5 4.6 2.5 4.6 2.5 2.5 2.5 2.5 2.5 2.6 6.6 7.6 7.6 7.6 7.6 7.6 7.6 7.6 7.6 7.6 7.6 7		20	20	20	20	20	20	20
Tearth Station GT (dB/K) 38 0 25 0 25 7 25 0 25 0 25 0 25 0 Larth Station EURY Context Clear Sky								
Earth Station Elevation Angle 20 20 20 20 20 20 LINK FERORMANCE Clear Sky								
LTNK F ADE TYPE Clear Sky								
Upink Earth Station EIR? (dBW) 72.3 67.8 99.9 40.4 52.5 46.5 68.6 Upink Earth Station S. Clear Sky (dB) 207.5 208.6 226.5 20.5 9. 20.5 9. 20.5 9. 20.5 9.								
Upink Path Loss, Clear Skr (dB) -207 5 -208 5 208 5 208 5 208 5 208 5 208 6 228 6								
Uptime Rain Atternation 00 00 00 00 00 00 00 Satellite G/T(dB/K) 58 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>								
Safelite G/T(dB/K) 58 58 58 58 58 58 Boltzman Constant(dBW/K-Hz) 228 6 228 5 0.0 5 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>								
Carrier Noise Bandwidth (dB-Hz) -75 2 -75 3 -68 3 -48 8 -60 9 -54 9 -74 4 Uplink C/N(dB) 240 21 2 18 5 18 6 18 5 11 8 5 21 1 DownLink PERFORMANCE								
Uplank C/N(dB) 240 212 185 186 185 185 211 DownLink RP per Carrier (dBW) 446 421 382 187 308 248 429 Antenan Pointing Error (dB) -05	``````````````````````````````````````			228 6	228 6	228.6		220 6
DOWNLINK PERFORMANCE								
Downlink EIRP per Carrier (dBW) 44 6 42 1 38 2 18 7 30 8 24 8 42 9 Antenna Pointing Error (dB) -05	United (/N(dD)					-60 9	-54 9	-74 4
Antenna Pointing Error (dB) .05 .05 .05 .05 .05 .05 .05 Downlink Path Loss, Clear Sky (dB) .205 9 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td>-60 9</td> <td>-54 9</td> <td>-74 4</td>						-60 9	-54 9	-74 4
Downlink Rain Attenuation 00 00 00 00 00 00 00 00 00 00 Earth Station G/T (dB/K) 380 250 267 250 256 228 228 6 228 212 185 186 185 185 211 CM ONT MARK MdB NAA NA NA NA NA NA 174 174 174 NA NA	DOWNLINK PERFORMANCE	24 0	21 2	18 5	18 6	-60 9 18 5	-54 9 18 5	-74 4 21 1
Earth Station G/T (dB/K) 38 0 25 0 26 7 25 0 25 0 25 0 25 0 Boltzman Constant(dBW / K - Hz) 228 6 264 26 15 7 18 8 17 1 17 0 17 0 15 6 C/I Uplink Co-Channel (dB)* 23 6 22 0 25 8 26 4 26 8 26 4 21 9 21 9 27 1 0 17 4 17 4 17 4 17 4 17 4 17 4 17 4 17 4 17 4 17 4	DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB)	24 0 44 6 -0 5	21 2 42 1 -0 5	18 5 38 2 -0 5	18 6 18 7 -0 5	-60 9 18 5 30 8 -0 5	-54 9 18 5 24 8 -0 5	-74 4 21 1 42 9 -0 5
Boltzman Constant(dBW / K - Hz) 228 6	DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB)	24 0 44 6 -0 5 -205 9	21 2 42 1 -0 5 -205 9	18 5 38 2 -0 5 -205 9	18 6 18 7 -0 5 -205 9	-60 9 18 5 30 8 -0 5 -205 9	-54 9 18 5 24 8 -0 5 -205 9	-74 4 21 1 42 9 -0 5 -205 9
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation	24 0 44 6 -0 5 -205 9 0 0	21 2 42 1 -0 5 -205 9 0 0	18 5 38 2 -0 5 -205 9 0 0	18 6 18 7 -0 5 -205 9 0 0	-60 9 18 5 30 8 -0 5 -205 9 0 0	-54 9 18 5 24 8 -0 5 -205 9 0 0	-74 4 21 1 42 9 -0 5 -205 9 0 0
COMPOSITE LINK PERFORMANCE 240 212 185 186 185 185 211 C/N Uplink (dB) 240 212 185 186 185 185 211 C/N Downlink (dB) 296 157 188 171 170 170 156 C/I Uplink Co-Channel (dB)* 236 220 258 264 268 264 219 C/I Downlink Co-Channel (dB)* 236 220 258 264 268 264 219 C/I Dplink Adjacent Satellite 1 (dB) 168 139 113 113 113 113 139 C/I Uplink Adjacent Satellite 1 (dB) 248 101 134 115 115 101 C/I Uplink Adjacent Satellite 2 (dB) 201 173 146 146 146 146 146 C/I Downlink Adjacent Satellite 2 (dB) 131 65 67 60 60 64 172 C/I Downlink Adjacent Satellite 2 (dB) 131 65 67 50	DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K)	24 0 44 6 -0 5 -205 9 0 0 38 0	21 2 42 1 -0 5 -205 9 0 0 25 0	18 5 38 2 -0 5 -205 9 0 0 26 7	18 6 18 7 -0 5 -205 9 0 0 25 0	-60 9 18 5 30 8 -0 5 -205 9 0 0 25 0	-54 9 18 5 -0 5 -205 9 0 0 25 0	-74 4 21 1 42 9 -0 5 -205 9 0 0 25 0
C/N Uplink (dB) 240 212 185 186 185 185 211 C/N Downlink (dB) 296 157 188 171 170 170 156 C/I Uplink Co-Channel (dB)* N/A N/A 174 174 174 174 N/A C/I Uplink Co-Channel (dB)* 236 220 258 264 268 264 219 C/I Uplink Adjacent Satellite 1 (dB) 168 139 113 113 113 113 139 C/I Uplink Adjacent Satellite 1 (dB) 248 101 134 115 115 101 C/I Uplink Adjacent Satellite 2 (dB) 201 173 146 146 146 146 172 C/I Uplink Adjacent Satellite 2 (dB) 201 173 146 146 146 172 C/I Uplink Adjacent Satellite 2 (dB) 131 65 67 60 60 64 167 C/(N+I) Composite (dB) 131 65 57 50 50 54	DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz)	24 0 44 6 -0 5 -205 9 0 0 38 0 228 6 -75 6	21 2 42 1 -0 5 -205 9 0 0 25 0 228 6 -73 5	18 5 -0 5 -0 5 -205 9 0 0 26 7 228 6 -68 3	18 6 18 7 -0 5 -205 9 0 0 25 0 228 6 -48 8	-60 9 18 5 -0 5 -205 9 0 0 25 0 228 6 -60 9	-54 9 18 5 24 8 -0 5 -205 9 0 0 25 0 228 6 -54 9	-74 4 21 1 42 9 -0 5 -205 9 0 0 25 0 228 6 -74 4
C/N Downlink (dB) 29 6 15 7 18 8 17 1 17 0 17 0 15 6 C/I Intermodulation (dB) N/A N/A N/A 17 4 17 4 17 4 17 4 N/A C/I Uplink Co-Channel (dB)* 23 6 22 0 25 8 26 4 26 8 26 4 21 9 C/I Downlink Co-Channel (dB)* 23 6 22 0 25 8 26 4 26 8 26 4 21 9 C/I Uplink Adjacent Satellite 1 (dB) 16 8 13 9 11 3	DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB)	24 0 44 6 -0 5 -205 9 0 0 38 0 228 6 -75 6	21 2 42 1 -0 5 -205 9 0 0 25 0 228 6 -73 5	18 5 -0 5 -0 5 -205 9 0 0 26 7 228 6 -68 3	18 6 18 7 -0 5 -205 9 0 0 25 0 228 6 -48 8	-60 9 18 5 -0 5 -205 9 0 0 25 0 228 6 -60 9	-54 9 18 5 24 8 -0 5 -205 9 0 0 25 0 228 6 -54 9	-74 4 21 1 42 9 -0 5 -205 9 0 0 25 0 228 6 -74 4
C/I Intermodulation (dB) N/A N/A N/A 174 174 174 174 N/A C/I Uplink Co-Channel (dB)* 236 220 258 264 268 264 219 C/I Downlink Co-Channel (dB)* 236 220 258 264 268 264 219 C/I Downlink Adjacent Satellite 1 (dB) 168 139 113 113 113 113 113 139 115 101 C/I Dymlink Adjacent Satellite 1 (dB) 248 101 134 115 115 101 177 C/I Dymlink Adjacent Satellite 2 (dB) 201 173 146 146 146 146 172 C/I Downlink Adjacent Satellite 2 (dB) 299 167 196 181 180 181 167 C/(N+I) Composite (dB) 131 65 67 60 60 64 46 Required System Margin (dB) -10 -10 -10 -10 -10 -10 -10 -10 -10	DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE	24 0 44 6 -0 5 -205 9 0 0 38 0 228 6 -75 6 29 6	21 2 42 1 -0 5 -205 9 0 0 25 0 228 6 -73 5 15 7	18 5 38 2 -0 5 -205 9 0 0 26 7 228 6 -68 3 18 8	18 6 18 7 -0 5 -205 9 0 0 25 0 228 6 -48 8 17 1	-60 9 18 5 30 8 -0 5 -205 9 0 0 25 0 228 6 -60 9 17 0	-54 9 18 5 24 8 -0 5 -205 9 0 0 25 0 228 6 -54 9 17 0	-74 4 21 1 42 9 -0 5 -205 9 0 0 25 0 228 6 -74 4 15 6
C/I Downlink Co-Channel (dB)* 23 6 22 0 25 8 26 4 26 8 26 4 21 9 C/I Uplink Adjacent Satellite 1 (dB) 16 8 13 9 11 3 11 3 11 3 11 3 13 9 C/I Downlink Adjacent Satellite 1 (dB) 24 8 10 1 13 4 11 5 11 5 11 5 10 1 C/I Downlink Adjacent Satellite 2 (dB) 20 1 17 3 14 6 14 6 14 6 14 6 17 2 C/I Downlink Adjacent Satellite 2 (dB) 20 1 17 3 14 6 14 6 14 6 14 6 17 2 C/I Downlink Adjacent Satellite 2 (dB) 29 9 16 7 19 6 18 1 18 0 18 1 16 7 C/I Downlink Adjacent Satellite 2 (dB) 13 1 6 5 6 7 6 0 6 0 6 4 Required System Margin (dB) -10	DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB)	24 0 44 6 -0 5 -205 9 0 0 38 0 228 6 -75 6 29 6 -24 0	21 2 42 1 -0 5 -205 9 0 0 25 0 228 6 -73 5 15 7 21 2	18 5 38 2 -0 5 -205 9 0 0 26 7 228 6 -68 3 18 8 18 5	18 6 18 7 -0 5 -205 9 0 0 228 6 -48 8 17 1 18 6	-60 9 18 5 30 8 -0 5 -205 9 0 0 25 0 228 6 -60 9 17 0 18 5	-54 9 18 5 24 8 -0 5 -205 9 0 0 25 0 228 6 -54 9 17 0 18 5	-74 4 21 1 42 9 -0 5 -205 9 0 0 25 0 228 6 -74 4 15 6 21 1
C/I Uplink Adjacent Satellite 1 (dB) 168 139 113 <th13< th=""> 113 113</th13<>	DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Intermodulation (dB)	24 0 44 6 -0 5 -205 9 0 0 38 0 228 6 -75 6 29 6 24 0 29 6 N/A	21 2 42 1 -0 5 -205 9 0 0 228 6 -73 5 15 7 21 2 15 7 N/A	18 5 38 2 -0 5 -205 9 0 0 26 7 228 6 -68 3 18 8 18 5 18 8 17 4	186 187 -05 -2059 00 250 2286 -488 171 186 171 174	-60 9 18 5 -0 5 -205 9 0 0 25 0 228 6 -60 9 17 0 18 5 17 0 17 4	-54 9 18 5 24 8 -0 5 -205 9 0 0 25 0 228 6 -54 9 17 0 18 5 17 0 17 4	-74 4 21 1 42 9 -0 5 -205 9 0 0 25 0 228 6 -74 4 15 6 21 1 15 6 N/A
C/I Downlink Adjacent Satellite 1 (dB) 24.8 10.1 13.4 11.5 11.5 11.5 10.1 C/I Uplink Adjacent Satellite 2 (dB) 20.1 17.3 14.6 14.6 14.6 14.6 14.6 14.6 14.6 14.6 17.2 C/I Downlink Adjacent Satellite 2 (dB) 29.9 16.7 19.6 18.1 18.0 18.1 16.7 C/I Downlink Adjacent Satellite 2 (dB) 29.9 16.7 19.6 18.1 18.0 18.1 16.7 C/I Downlink Adjacent Satellite 2 (dB) 13.1 6.5 6.7 6.0 6.0 6.4 Required System Margin (dB) -10 <	DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)*	24 0 44 6 -0 5 -205 9 0 0 38 0 228 6 -75 6 29 6 -29 6 N/A 23 6	21 2 42 1 -0 5 -205 9 0 0 228 6 -73 5 15 7 21 2 15 7 N/A 22 0	185 382 -05 -2059 00 267 2286 -683 188 185 188 174 258	186 187 -05 -2059 00 2286 -488 171 186 171 174 264	-60 9 18 5 -0 5 -205 9 0 0 25 0 228 6 -60 9 17 0 18 5 17 0 17 4 26 8	-54 9 18 5 24 8 -0 5 -205 9 0 0 25 0 228 6 -54 9 17 0 18 5 17 0 17 4 26 4	-74 4 21 1 42 9 -0 5 -205 9 0 0 228 6 -74 4 15 6 21 1 15 6 N/A 21 9
C/I Uplink Adjacent Satellite 2 (dB) 201 173 146 146 146 146 172 C/I Downlink Adjacent Satellite 2 (dB) 299 167 196 181 180 181 167 C/(N+I) Composite (dB) 131 65 67 60 60 64 Required System Margin (dB) -10 -10 -10 -10 -10 -10 Net C/(N+I) Composite (dB) 121 55 57 50 50 54 Minimum Required C/N (dB) -100 -34 -39 -30 -34 -34 Excess Link Margin (dB) 21 21 18 20 16 16 20 Number of Carriers 1 1 3 330 22 82 1 Uplink Power Density (dBW/Hz) -51 9 -54 7 -51 3 -51 3 -51 3 -51 3 -51 3 -51 3 -51 3	DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink (dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)*	24 0 44 6 -0 5 -205 9 0 0 38 0 228 6 -75 6 29 6 24 0 29 6 N/A 23 6 23 6	21 2 42 1 -0 5 -205 9 0 0 25 0 228 6 -73 5 15 7 21 2 15 7 N/A 22 0 22 0	18 5 38 2 -0 5 -205 9 0 0 26 7 228 6 -68 3 18 8 18 5 18 8 17 4 25 8 25 8	18 6 18 7 -0 5 -205 9 0 0 25 0 228 6 -48 8 17 1 18 6 17 1 17 4 26 4 26 4	-60 9 18 5 30 8 -0 5 -205 9 0 0 25 0 228 6 -60 9 17 0 18 5 17 0 17 4 26 8 26 8	-54 9 18 5 24 8 -0 5 -205 9 0 0 25 0 228 6 -54 9 17 0 18 5 17 0 17 4 26 4 26 4	-74 4 21 1 42 9 -0 5 -205 9 0 0 25 0 228 6 -74 4 15 6 N/A 21 9 21 9
C/(N+1) Composite (dB) 131 65 67 60 60 64 Required System Margin (dB) -10	DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB)	24 0 44 6 -0 5 -205 9 0 0 38 0 228 6 -75 6 29 6 24 0 29 6 N/A 23 6 23 6 16 8	21 2 42 1 -0 5 -205 9 0 0 25 0 228 6 -73 5 15 7 21 2 15 7 N/A 22 0 22 0 13 9	18 5 38 2 -0 5 -205 9 0 0 26 7 228 6 -68 3 18 5 18 8 17 4 25 8 11 3	18 6 18 7 -0 5 -205 9 0 0 25 0 228 6 -48 8 17 1 18 6 17 1 18 6 17 1 26 4 26 4 11 3	-60 9 18 5 -0 5 -205 9 0 0 25 0 228 6 -60 9 17 0 18 5 17 0 17 4 26 8 26 8 11 3	-54 9 18 5 24 8 -0 5 -205 9 0 0 25 0 228 6 -54 9 17 0 18 5 17 0 17 4 26 4 26 4 11 3	-74 4 21 1 42 9 -0 5 -205 9 0 0 25 0 228 6 -74 4 15 6 N/A 21 9 21 9 13 9
Required System Margin (dB) -10<	DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB)	24 0 44 6 -0 5 -205 9 0 0 38 0 228 6 -75 6 29 6 24 0 29 6 N/A 23 6 23 6 16 8 24 8	21 2 42 1 -0 5 -205 9 0 0 25 0 228 6 -73 5 15 7 21 2 15 7 N/A 22 0 13 9 10 1	18 5 38 2 -05 -205 9 00 26 7 228 6 -68 3 18 5 18 8 17 4 25 8 11 3 13 4	186 187 -05 -2059 00 250 2286 -488 171 186 171 174 264 264 113 115	-60 9 18 5 -0 5 -205 9 0 0 25 0 228 6 -60 9 17 0 18 5 17 0 17 4 26 8 26 8 11 3 11 5	-54 9 18 5 24 8 -0 5 -205 9 0 0 25 0 228 6 -54 9 17 0 18 5 17 0 17 4 26 4 26 4 11 3 11 5	-74 4 21 1 42 9 -0 5 -205 9 0 0 25 0 228 6 -74 4 15 6 21 1 15 6 N/A 21 9 21 9 13 9 10 1
Required System Margin (dB) -10<	DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB)	24 0 44 6 -0 5 -205 9 0 0 38 0 228 6 -75 6 29 6 29 6 N/A 23 6 23 6 16 8 24 8 20 1	21 2 42 1 -0 5 -205 9 0 0 228 6 -73 5 15 7 21 2 15 7 N/A 22 0 22 0 13 9 10 1 17 3	18 5 38 2 -0 5 -205 9 0 0 26 7 228 6 -68 3 18 5 18 8 17 4 25 8 25 8 11 3 13 4 14 6	186 187 -05 -2059 00 250 2286 -488 171 1866 171 174 264 264 113 115 146	-60 9 18 5 -0 5 -205 9 0 0 25 0 228 6 -60 9 17 0 -17 0 18 5 17 0 17 4 26 8 26 8 11 3 11 5 14 6	-54 9 18 5 24 8 -0 5 -205 9 0 0 25 0 228 6 -54 9 17 0 18 5 17 0 17 4 26 4 26 4 26 4 11 3 11 5 14 6	-74 4 21 1 42 9 -0 5 -205 9 0 0 25 0 228 6 -74 4 15 6 21 1 15 6 N/A 21 9 21 9 21 9 13 9 10 1 17 2
Net C/(N+1) Composite (dB) 121 55 57 50 50 50 54 Minimum Required C/N (dB) -100 -34 -39 -30 -34 -34 -34 Excess Link Margin (dB) 21 21 18 20 16 16 20 Number of Carriers 1 1 3 330 22 82 1 Uplink Power Density (dBW/Hz) -519 -547 -513	DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Co-Channel (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB)	24 0 44 6 -0 5 -205 9 0 0 38 0 228 6 -75 6 29 6 N/A 23 6 23 6 16 8 24 8 20 1 29 9	21 2 42 1 -0 5 -205 9 0 0 25 0 228 6 -73 5 15 7 21 2 15 7 N/A 22 0 22 0 13 9 10 1 17 3 16 7	18 5 38 2 -0 5 -205 9 0 0 26 7 228 6 -68 3 18 8 17 4 25 8 25 8 11 3 13 4 14 6 19 6	18 6 18 7 -0 5 -205 9 0 0 25 0 228 6 -48 8 17 1 18 6 17 1 26 4 26 4 11 3 11 5 14 6 18 1	-60 9 18 5 30 8 -0 5 -205 9 0 0 25 0 228 6 -60 9 17 0 18 5 17 0 17 4 26 8 26 8 11 3 11 5 14 6 18 0	-54 9 18 5 24 8 -0 5 -205 9 0 0 25 0 228 6 -54 9 17 0 18 5 17 0 17 4 26 4 26 4 26 4 11 3 11 5 14 6 18 1	-74 4 21 1 42 9 -05 -205 9 0 0 25 0 228 6 -74 4 15 6 N/A 21 9 21 9 21 9 13 9 10 1 17 2 16 7
Minimum Required C/N (dB) -10 0 -3 4 -3 9 -3 0 -3 4 -3 4 -3 4 Excess Link Margin (dB) 21 21 1 8 2 0 1 6 1 6 2 0 Number of Carriers 1 1 3 330 22 82 1 CARRER DENSITY LEVELS - - - - - - 51 3 - 51 3 - 51 3 - 54 8	DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink (dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB)	24 0 44 6 -0 5 -205 9 0 0 38 0 228 6 -75 6 29 6 24 0 29 6 N/A 23 6 23 6 16 8 24 8 20 1 29 9 13 1	21 2 42 1 -0 5 -205 9 0 0 25 0 228 6 -73 5 15 7 21 2 15 7 N/A 22 0 13 9 10 1 17 3 16 7 6 5	18 5 38 2 -05 -205 9 00 26 7 228 6 -68 3 18 5 18 8 17 4 25 8 11 3 13 4 14 6 19 6 6 7	186 187 -05 -2059 00 250 2286 -488 171 186 171 186 171 186 171 186 171 186 171 186 171 186 171 174 264 113 115 146 181 60	-60 9 18 5 -0 5 -205 9 0 0 25 0 228 6 -60 9 17 0 17 4 26 8 26 8 11 3 11 5 14 6 18 0 -60	-54 9 18 5 24 8 -0 5 -205 9 0 0 25 0 228 6 -54 9 17 0 18 5 17 0 17 4 26 4 26 4 11 3 11 5 14 6 18 1 6 0	-74 4 21 1 42 9 -0 5 -205 9 0 0 25 0 228 6 -74 4 15 6 N/A 21 9 21 9 13 9 10 1 17 2 16 7 6 4
Number of Carriers 1 1 3 330 22 82 1 CARRIER DENSITY LEVELS -51.9 -54.7 -51.3 -51.3 -51.3 -51.3 -51.3 -51.3 -54.8	DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+1) Composite (dB) Required System Margin (dB)	24 0 44 6 -0 5 -205 9 0 0 38 0 228 6 -75 6 29 6 29 6 N/A 23 6 23 6 16 8 24 8 20 1 29 9 13 1 -1 0	21 2 42 1 -0 5 -205 9 0 0 25 0 228 6 -73 5 15 7 21 2 15 7 N/A 22 0 22 0 13 9 10 1 17 3 16 7 -6 5 -1 0	18 5 38 2 -05 -205 9 00 26 7 228 6 -68 3 18 5 18 8 17 4 25 8 25 8 11 3 13 4 14 6 19 6 -7 -1 0	186 187 -05 -2059 00 250 2286 -488 171 1866 171 264 264 113 115 146 181 60 -10	-60 9 18 5 -0 5 -205 9 0 0 25 0 228 6 -60 9 17 0 18 5 17 0 17 4 26 8 26 8 11 3 11 5 14 6 18 0 -60 -1 0	-54 9 18 5 24 8 -0 5 -205 9 0 0 25 0 228 6 -54 9 17 0 18 5 17 0 17 4 26 4 26 4 11 3 11 5 14 6 18 1 6 0 -1 0	-74 4 21 1 42 9 -0 5 -205 9 0 0 25 0 228 6 -74 4 15 6 21 1 15 6 N/A 21 9 21 9 13 9 10 1 17 2 16 7 6 4 -1 0
CARRIER DENSITY LEVELS	DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB)	24 0 44 6 -0 5 -205 9 0 0 38 0 228 6 -75 6 29 6 24 0 29 6 N/A 23 6 16 8 24 8 20 1 29 9 -10 12 1 -10 0	21 2 42 1 -0 5 -205 9 0 0 228 6 -73 5 15 7 21 2 15 7 N/A 22 0 22 0 13 9 10 1 17 3 16 7 -1 0 5 5 -3 4	18 5 38 2 -0 5 -205 9 0 0 26 7 228 6 -68 3 18 8 17 4 25 8 25 8 13 4 14 6 19 6 6 7 -1 0 5 7 -3 9	186 187 -05 -2059 00 2286 -488 171 1866 171 1866 171 1866 171 186 171 64 264 264 264 264 113 115 146 181 60 -10 50 -30	-60 9 18 5 -0 5 -205 9 0 0 25 0 228 6 -60 9 17 0 18 5 17 0 17 4 26 8 26 8 11 3 11 5 14 6 18 0 -60 -1 0 5 0 -3 4	-54 9 18 5 24 8 -0 5 -205 9 0 0 25 0 228 6 -54 9 17 0 18 5 17 0 17 4 26 4 26 4 26 4 11 3 11 5 14 6 18 1 6 0 -1 0 5 0 -3 4	-74 4 21 1 42 9 -05 -205 9 0 0 25 0 25 0 228 6 -74 4 15 6 N/A 21 9 21 9 21 9 13 9 10 1 17 2 16 7 -6 4 -1 0 5 4 -3 4
Uplink Power Density (dBW/Hz) -51 9 -54 7 -51 3 -51 3 -51 3 -51 3 -51 3 -54 8	DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+1) Composite (dB) Required System Margin (dB) Net C/(N+1) Composite (dB) Minimum Required C/N (dB)	24 0 44 6 -0 5 -205 9 0 0 38 0 228 6 -75 6 29 6 N/A 23 6 23 6 16 8 24 8 20 1 29 9 	21 2 42 1 -0 5 -205 9 0 0 25 0 228 6 -73 5 15 7 21 2 15 7 N/A 22 0 22 0 13 9 10 1 17 3 16 7 -6 5 -1 0 5 5 -3 4 2 1	18 5 38 2 -0 5 -205 9 0 0 26 7 228 6 -68 3 18 8 17 4 25 8 25 8 11 3 13 4 14 6 19 6 67 -10 57 -3 9 1 8	186 187 -05 -2059 00 250 2286 -488 171 186 171 174 264 113 115 146 181 60 -10 50 -30 20	-60 9 18 5 -0 5 -205 9 0 0 25 0 228 6 -60 9 17 0 18 5 17 0 17 4 26 8 26 8 11 3 11 5 14 6 18 0 -60 -1 0 5 0 -3 4 16	-54 9 18 5 24 8 -0 5 -205 9 0 0 25 0 228 6 -54 9 17 0 18 5 17 0 17 4 26 4 26 4 26 4 11 3 11 5 14 6 18 1 6 0 -1 0 5 0 -3 4 1 6	-74 4 21 1 42 9 -05 -205 9 0 0 25 0 228 6 -74 4 15 6 N/A 21 9 21 9 13 9 10 1 17 2 16 7 6 4 -1 0 5 4 -3 4 2 0
	DOWNLINK PERFORMANCE Dowalink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Dowalink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+1) Composite (dB) Required System Margin (dB) Net C/(N+1) Composite (dB) Met C/(N+1) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers	24 0 44 6 -0 5 -205 9 0 0 38 0 228 6 -75 6 29 6 N/A 23 6 23 6 16 8 24 8 20 1 29 9 	21 2 42 1 -0 5 -205 9 0 0 25 0 228 6 -73 5 15 7 21 2 15 7 N/A 22 0 22 0 13 9 10 1 17 3 16 7 -6 5 -1 0 5 5 -3 4 2 1	18 5 38 2 -0 5 -205 9 0 0 26 7 228 6 -68 3 18 8 17 4 25 8 25 8 11 3 13 4 14 6 19 6 67 -10 57 -3 9 1 8	186 187 -05 -2059 00 250 2286 -488 171 186 171 174 264 113 115 146 181 60 -10 50 -30 20	-60 9 18 5 -0 5 -205 9 0 0 25 0 228 6 -60 9 17 0 18 5 17 0 17 4 26 8 26 8 11 3 11 5 14 6 18 0 -60 -1 0 5 0 -3 4 16	-54 9 18 5 24 8 -0 5 -205 9 0 0 25 0 228 6 -54 9 17 0 18 5 17 0 17 4 26 4 26 4 26 4 11 3 11 5 14 6 18 1 6 0 -1 0 5 0 -3 4 1 6	-74 4 21 1 42 9 -05 -205 9 0 0 25 0 228 6 -74 4 15 6 N/A 21 9 21 9 13 9 10 1 17 2 16 7 6 4 -1 0 5 4 -3 4 2 0
	DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Intermodulation (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers CARRIER DENSITY LEVELS	24 0 44 6 -0 5 -205 9 0 0 38 0 228 6 -75 6 29 6 29 6 N/A 23 6 23 6 16 8 24 8 20 1 29 9 -10 12 1 -10 0 2 1 1	21 2 42 1 -0 5 -205 9 0 0 25 0 228 6 -73 5 15 7 21 2 15 7 N/A 22 0 22 0 13 9 10 1 17 3 16 7 -6 5 -1 0 5 5 -3 4 2 1 1	18 5 38 2 -0 5 -205 9 0 0 26 7 228 6 -68 3 18 5 18 8 17 4 25 8 25 8 11 3 13 4 14 6 19 6 6 7 -1 0 5 7 -3 9 1 8 3	186 187 -05 -2059 00 250 2286 -488 171 1866 171 1866 171 1866 171 1866 171 174 264 264 264 264 1315 146 181 60 -10 50 -30 20 330	-60 9 18 5 -0 5 -205 9 0 0 25 0 228 6 -60 9 17 0 18 5 17 0 17 4 26 8 26 8 11 3 11 5 14 6 18 0 -60 -1 0 5 0 -3 4 16 22	-54 9 18 5 24 8 -0 5 -205 9 0 0 25 0 228 6 -54 9 17 0 18 5 17 0 17 4 26 4 26 4 26 4 11 3 11 5 14 6 18 1 6 0 -1 0 5 0 -3 4 16 82	-74 4 21 1 42 9 -05 -205 9 0 0 25 0 228 6 -74 4 15 6 21 1 15 6 N/A 21 9 21 9 13 9 10 1 17 2 16 7 6 4 -1 0 5 4 -3 4 2 0 1

Exhibit 8-2: Hypothetical 31.5 ° E.L. 10.95-11.2 &11.45-11.7 GHz

UPLINK BEAM INFORMATION Uplink Beam Name	KUSPOT	KUSPOT	KUSPOT	KUSPOT	KUSPOT	KUSPOT	KUSPOT
Uplink Frequency (GHz)	14 25	14 25	14 25	14 25	14 25	14 25	14 25
Uplink Beam Polarization	LINEAR	LINEAR	LINEAR	LINEAR	LINEAR	LINEAR	LINEAR
Uplink Relative Contour Level (dB)	-4	-4	-4	-4	-4	-4	-4
Uplink Contour G/T (dB/K)	58	58	58	58	58	58	58
Uplink SFD (dBW/m2)	-77 2	-89.2	-83 2	-83 2	-83 2	-83 2	-89.2
Rain Rate (mm/hr)	42	42	42	42	42	42	42
DOWNLINK BEAM INFORMATION	.~					.2	
Downlink Beam Name	KUSPOT	KUSPOT	KUSPOT	KUSPOT	KUSPOT	KUSPOT	KUSPOT
Downlink Frequency (GHz)	11 95	11 95	11 95	11 95	11 95	11 95	11 95
Downlink Beam Polarization	LINEAR	LINEAR	LINEAR	LINEAR	LINEAR	LINEAR	LINEAR
Downlink Relative Contour Level (dB)	-4	-4	-4	-4	-4	-4	-4
Downlink Contour EIRP (dBW)	43 7	43 7	43 7	43 7	43 7	43 7	437
Rain Rate (mm/hr)	42	42	42	42	42	42	42
ADJACENT SATELLITE 1							
Satellite 1 Orbital Location	33 0E	33 OE	33 OE	33 OE	33 0E	33 0E	33 0E
Uplink Power Density (dBW/Hz)	-45	-45	-45	-45	-45	-45	-45
Uplink Polarization Advantage (dB)	0	0	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-20 0	-20 0	-20 0	-20 0	-20 0	-20 0	-20 0
Downlink Polarization Advantage (dB)	0	0	0	0	0	0	0
ADJACENT SATELLITE 2							
Satellite 1 Orbital Location	29 5E	29 5E	29 5E	29 5E	29 5E	29 5E	29 5E
Uplink Power Density (dBW/Hz)	-45	-45	-45	-45	-45	-45	-45
Uplink Polarization Advantage (dB)	0	0	0	0	0	0	0
Downlink EIRP Density (dBW/Hz)	-20 0	-20 0	-20 0	-20 0	-20 0	-20 0	-20 0
Downlink Polarization Advantage (dB)	0	0	0	0	0	0	0
CARRIER INFORMATION							
Carrier ID	36M0F3F	77M0G7W	10M3G7W	100KG7W	1M45G7W	400KG7W	112M0G7W
Carrier Modulation	TV/FM	QPSK	QPSK	QPSK	BPSK	BPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	4	N/A	N/A	N/A	N/A	N/A	N/A
Information Rate(kbps)	N/A	52563	6000	64	512	128	86015
Code Rate	N/A	1/2x188/204	1/2x188/204	1/2x239/256	R1/2	R1/2	1/2x188/204
Occupied Bandwidth(kHz)	36000	64451	6771 1	75 4	1229	307	93335
Allocated Bandwidth(kHz)	36000	77000	10300	100	1450	400	112
Minimum C/N, Clear Sky (dB)	10	3 36	3 87	2 99	34	34	34
Minimum C/N, Rain (dB)	10	3 36	3 57	2 79	27	27	34
UPLINK EARTH STATION							
Earth Station Diameter (meters)	37	24	18	18	18	18	30
Earth Station Gain (dBi)	52 7	49	46 4	46 4	46 4	46 4	49 7
Earth Station Elevation Angle	20	20	20	20	20	20	20
DOWNLINK EARTH STATION							
Earth Station Diameter (meters)	11 0	30	61	70	70	70	37
Earth Station Gain (dBi)	60 4	49 2	55 5	57 0	570	57 0	51 1
Earth Station G/T (dB/K)	38 0	26 7	33 1	34 6	34 6	34 6	28 6
Earth Station Elevation Angle	20	20	20	20	20	20	20
LINK FADE TYPE	Clear Sky	Clear Sky	Clear Sky	Clear Sky	Clear Sky	Clear Sky	Clear Sky
UPLINK PERFORMANCE				10.7			
Uplink Earth Station EIRP (dBW)	75.2	73 7	61 2	40 7	52.3	46 7	73 7
Uplink Path Loss, Clear Sky (dB)	-207 5 0 0	-207 5 0 0	-207 5	-207 5 0 0	-207 5	-207 5	-207 5
Uplink Rain Attenuation							
			0.0		00	0.0	00
Satellite G/T(dB/K)	58	58	58	58	58	58	58
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz)	5 8 228 6	5 8 228 6	5 8 228 6	5 8 228 6	5 8 228 6	5 8 228 6	5 8 228 6
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz)	5 8 228 6 -75 6	5 8 228 6 -78 1	5 8 228 6 -68 3	5 8 228 6 -48 8	5 8 228 6 -60 9	5 8 228 6 -54 9	5 8 228 6 -79 7
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB)	5 8 228 6	5 8 228 6	5 8 228 6	5 8 228 6	5 8 228 6	5 8 228 6	5 8 228 6
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE	5 8 228 6 -75 6 26 6	5 8 228 6 -78 1 22 5	5 8 228 6 -68 3 19 8	5 8 228 6 -48 8 18 9	5 8 228 6 -60 9 18 4	5 8 228 6 -54 9 18 8	5 8 228 6 -79 7 20 9
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW)	5 8 228 6 -75 6 26 6 	5 8 228 6 -78 1 22 5 43 7	5 8 228 6 -68 3 19 8 30 2	58 2286 -488 189 97	5 8 228 6 -60 9 18 4 21 3	5 8 228 6 -54 9 18 8 15 7	5 8 228 6 -79 7 20 9 43 7
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB)	5 8 228 6 -75 6 26 6 	5 8 228 6 -78 1 22 5 43 7 -0 5	5 8 228 6 -68 3 19 8 -0 5	5 8 228 6 -48 8 18 9 9 7 -0 5	5 8 228 6 -60 9 18 4 21 3 -0 5	5 8 228 6 -54 9 18 8 15 7 -0 5	5 8 228 6 -79 7 20 9 43 7 -0 5
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB)	5 8 228 6 -75 6 26 6 	5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9	5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9	5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9	5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9	5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9	5 8 228 6 -79 7 20 9 43 7 -0 5 -205 9
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation	58 2286 -756 266 	5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0	5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0	58 2286 -488 189 97 -05 -2059 00	5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0	58 2286 -549 188 157 -05 -2059 0	5 8 228 6 -79 7 20 9
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attennation Earth Station G/T (dB/K)	5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0	5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7	5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1	5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 34 6	5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6	5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 34 6	5 8 228 6 -79 7 20 9 43 7 -0 5 -205 9 0 28 6
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz)	5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6	5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6	5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6	5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 34 6 228 6	5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6	5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 34 6 228 6	5 8 228 6 -79 7 20 9 43 7 -0 5 -205 9 0 28 6 228 6
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz)	5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6	5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -78 1	5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3	5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 34 6 228 6 -48 8	5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9	5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 34 6 228 6 -54 9	5 8 228 6 -79 7 20 9 43 7 -0 5 -205 9 0 28 6 228 6 -79 7
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB)	5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6	5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6	5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6	5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 34 6 228 6	5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6	5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 34 6 228 6	5 8 228 6 -79 7 20 9 43 7 -0 5 -205 9 0 28 6 228 6
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE	5 8 228 6 -75 6 26 6 38 2 -05 -205 9 0 0 38 0 228 6 -75 6 -22 8	5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4	5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1	5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 34 6 228 6 -48 8 17 7	5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2	5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 34 6 228 6 -54 9 17 6	5 8 228 6 -79 7 20 9 43 7 -0 5 -205 9 0 28 6 228 6 -79 7 14 7
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attennation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB)	5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6 22 8 26 6	5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 22 5	5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1 19 8	5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 34 6 228 6 -48 8 17 7 18 9	5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 18 4	5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 34 6 228 6 -54 9 17 6 18 8	5 8 228 6 -79 7 20 9 43 7 -0 5 -205 9 0 28 6 228 6 -79 7 14 7 20 9
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Dpink (dB)	5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6 22 8 26 6 22 8	5 8 228 6 -78 1 22 5 -33 7 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 22 5 14 4	5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1 19 8 17 1	5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 34 6 228 6 -48 8 17 7 18 9 17 7	5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 18 4 17 2	5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 34 6 228 6 -54 9 17 6 18 8 17 6	5 8 228 6 -79 7 20 9 43 7 -0 5 -205 9 0 28 6 228 6 -79 7 14 7 20 9 14 7
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) C/N Uplink (dB) C/N Uplink (dB) C/I Intermodulation (dB)	5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6 22 8 26 6 22 8 N/A	5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 22 5 14 4 N/A	5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1 19 8 17 1 19 0	5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 34 6 228 6 -48 8 17 7 18 9 17 7 18 9	5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 18 4 17 2 17 5	5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 34 6 228 6 -54 9 17 6 18 8 17 6 17 9	5 8 228 6 -79 7 20 9 43 7 -0 5 -205 9 0 28 6 228 6 -79 7 14 7 20 9 14 7 N/A
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N IDewnlink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)*	5 8 228 6 -75 6 26 6 -25 9 0 0 38 0 228 6 -75 6 22 8 -25 9 0 0 38 0 228 6 -75 6 22 8 N/A 28 9	5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 22 5 14 4 N/A 28 6	5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1 19 8 17 1 19 9 27 4	5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 34 6 228 6 -48 8 17 7 18 9 17 7 18 0 27 0	5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 18 4 17 2 17 5 27 0	5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 34 6 228 6 -54 9 17 6 18 8 17 6 17 9 27 0	5 8 228 6 -79 7 20 9 43 7 -05 -205 9 0 28 6 228 6 -79 7 14 7 14 7 14 7 N/A 27 0
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attennation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)*	5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6 22 8 22 8 26 6 22 8 N/A 28 9 28 9	5 8 228 6 -78 1 22 5 -78 1 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 -78 1 14 4 -22 5 14 4 N/A 28 6 28 6 -28 6	5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1 19 8 17 1 19 8 17 1 19 0 27 4 27 4	5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 34 6 228 6 -48 8 17 7 18 9 17 7 18 0 27 0 27 0	5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 18 4 17 2 18 4 17 5 27 0 27 0	5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 34 6 228 6 -54 9 17 6 18 8 17 6 17 9 27 0 27 0	5 8 228 6 -79 7 20 9 43 7 -0 5 -205 9 0 28 6 228 6 -79 7 14 7 20 9 14 7 N/A 27 0 27 0
Satellite G/T(dB/K) Boltzman Constant(dBW/KHz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK FERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attennation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Intermodulation (dB)* C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB)	5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6 22 8 22 8 26 6 22 8 N/A 28 9 28 9 19 3	5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 22 5 14 4 N/A 28 6 28 6 15 3	5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1 19 8 17 1 19 8 17 1 19 0 27 4 27 4 12 6	5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 34 6 228 6 -48 8 17 7 18 9 17 7 18 9 17 7 18 0 27 0 27 0 11 6	5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 18 4 17 2 17 5 27 0 27 0 11 1	5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 34 6 228 6 -54 9 17 6 18 8 17 6 17 9 27 0 27 0 11 5	5 8 228 6 -79 7 20 9 43 7 -0 5 -205 9 0 28 6 228 6 -79 7 14 7 20 9 14 7 N/A 27 0 27 0 13 7
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB)	5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6 22 8 26 6 22 8 N/A 28 9 28 9 28 9 19 3 18 0	5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 22 5 14 4 N/A 28 6 28 6 15 3 9 1	5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1 19 8 17 1 19 8 17 1 19 9 27 4 27 4 12 6 12 2	5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 34 6 228 6 -48 8 17 7 18 9 17 7 18 9 17 7 18 0 27 0 21 6 12 8	5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 18 4 17 2 17 5 27 0 27 0 11 1 12 3	5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 34 6 228 6 -54 9 17 6 17 9 27 0 27 0 21 5 12 7	5 8 228 6 -79 7 20 9 43 7 -0 5 -205 9 0 28 6 228 6 -79 7 14 7 14 7 20 9 14 7 N/A 27 0 27 0 13 7 9 6
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB)	5 8 228 6 -75 6 26 6 38 2 -05 -205 9 0 0 38 0 228 6 -75 6 22 8 22 8 22 8 N/A 28 9 28 9 19 3 18 0 22 6	5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 22 5 14 4 N/A 28 6 28 6 15 3 9 1 18 6	5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3 167 1 17 1 19 8 17 1 19 9 27 4 27 4 12 6 12 2 15 9	5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 34 6 228 6 -48 8 17 7 18 9 17 7 18 0 27 0 27 0 27 0 11 6 12 8 14 9	5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 17 2 17 5 27 0 27 0 27 0 11 1 12 3 14 4	5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 34 6 228 6 -54 9 17 6 17 6 17 9 27 0 27 0 27 0 11 5 12 7 14 9	5 8 228 6 -79 7 20 9 43 7 -05 -205 9 0 28 6 228 6 -79 7 14 7 14 7 14 7 14 7 N/A 27 0 27 0 13 7 9 6 17 0
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Downlink Adjacent Satellite 1 (dB)	5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6 22 8 26 6 22 8 N/A 28 9 28 9 28 9 19 3 18 0	5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 22 5 14 4 N/A 28 6 28 6 15 3 9 1	5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1 19 8 17 1 19 8 17 1 19 9 27 4 27 4 12 6 12 2	5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 34 6 228 6 -48 8 17 7 18 9 17 7 18 9 17 7 18 0 27 0 21 6 12 8	5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 18 4 17 2 17 5 27 0 27 0 11 1 12 3	5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 34 6 228 6 -54 9 17 6 17 9 27 0 27 0 21 5 12 7	5 8 228 6 -79 7 20 9 43 7 -0 5 -205 9 0 28 6 228 6 -79 7 14 7 14 7 20 9 14 7 N/A 27 0 27 0 13 7 9 6
Satellite G/T(dB/K) Boltzman Constant(dBW/KHz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attennation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Nownlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB)	5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6 22 8 26 6 22 8 N/A 28 9 28 9 28 9 19 3 18 0 22 6 21 7	5 8 228 6 -78 1 22 5 -78 1 22 5 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 -78 1 14 4 -78 1 14 4 -78 1 22 5 -78 1 14 4 -78 1 -78 1 -28 6 -78 1 -78 5 -78 1 -20 5 -20 5 -20 5 -20 5 -20 5 -78 1 -20 5 -20 5 -22 8 -78 1 -14 4 -22 5 -28 6 -15 -20 5 -28 6 -78 1 -14 4 -28 6 -28 6 -15 -20 5 -28 6 -78 1 -14 4 -28 6 -28 6 -15 -20 5 -28 6 -15 -20 5 -28 6 -28 6 -15 -20 5 -28 6 -15 -20 5 -28 6 -15 -20 5 -28 6 -15 -20 5 -16 -20 5 -17 -20 5 -28 6 -16 -20 5 -28 6 -15 -20 5 -15 -20 5 -15 -20 5 -15 -20 5 -14 4 -15 -20 5 -15 -20 5 -15 -20 5 -14 -20 5 -14 -20 5 -15 -20 -20 5 -15 -20 -20 5 -15 -20 -20 -20 5 -15 -20 -20 -20 -20 -20 -20 -20 -20 -20 -20	5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1 19 8 17 1 19 8 17 1 19 9 27 4 27 4 12 6 12 2 15 9 16 2	5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 34 6 228 6 -48 8 17 7 18 9 17 7 18 9 17 7 18 0 27 0 27 0 27 0 11 6 12 8 14 9 16 7	5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 18 4 17 2 17 5 27 0 27 0 11 1 12 3 14 4 16 2	5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 34 6 228 6 -54 9 17 6 18 8 17 6 17 9 27 0 27 0 27 0 27 0 11 5 12 7 14 9 16 6	5 8 228 6 -79 7 20 9 43 7 -0 5 -205 9 0 28 6 228 6 -79 7 14 7 20 9 14 7 N/A 27 0 27 0 13 7 9 6 17 0 14 1
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK FERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Intermodulation (dB) C/I Downlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB)	5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6 22 8 N/A 28 9 28 9 28 9 19 3 18 0 22 6 21 7 13 0	5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 22 5 14 4 N/A 28 6 28 6 15 3 9 1 18 6 13 9 6 0	5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1 19 8 17 1 19 8 17 1 19 9 27 4 27 4 12 6 12 2 15 9 16 2 6 7	5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 34 6 228 6 -48 8 17 7 18 9 17 7 18 9 17 7 18 0 27 0 27 0 11 6 12 8 14 9 16 7 6 5	5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 18 4 17 2 17 5 27 0 27 0 11 1 12 3 14 4 16 2 6 0	5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 34 6 228 6 -54 9 17 6 18 8 17 6 17 9 27 0 27 0 11 5 12 7 14 9 16 6 6 4	5 8 228 6 -79 7 20 9 43 7 -0 5 -205 9 0 28 6 228 6 -79 7 14 7 20 9 14 7 N/A 27 0 13 7 9 6 17 0 14 1 5 9
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Downlink C / N(dB) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Downlink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB)	5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6 22 8 N/A 28 9 28 9 28 9 28 9 19 3 18 0 22 6 21 7 13 0 -1 0	5 8 228 6 -78 1 22 5 -78 1 22 5 -05 -205 9 0 0 26 7 228 6 -78 1 14 4 -22 5 14 4 N/A 28 6 28 6 15 3 9 1 18 6 13 9 -6 -1 0 -1 0	5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1 19 8 17 1 19 8 17 1 19 9 27 4 27 4 12 2 15 9 16 2 6 7 -1 0	5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 34 6 228 6 -48 8 17 7 18 9 17 7 18 9 17 7 18 0 27 0 27 0 11 6 12 8 14 9 16 7 	5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 18 4 17 2 17 5 27 0 27 0 11 1 12 3 14 4 16 2 6 0 -1 0	5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 34 6 228 6 -54 9 17 6 17 9 27 0 27 0 27 0 11 5 12 7 14 9 16 6 6 4 -1 0	5 8 228 6 -79 7 20 9 43 7 -0 5 -205 9 0 28 6 228 6 -79 7 14 7 14 7 20 9 14 7 N/A 27 0 27 0 13 7 9 6 17 0 14 1 5 9 -1 0
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink (JB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB)	5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6 22 8 26 6 22 8 N/A 28 9 28 9 19 3 18 0 22 6 21 7 -10 13 0 -10 12 0	5 8 228 6 -78 1 22 5 -78 1 22 5 -05 -205 9 0 0 26 7 228 6 -78 1 14 4 -78 1 14 4 -78 1 14 4 -78 1 14 4 -78 1 14 4 -78 1 -22 5 14 4 N/A 28 6 28 6 28 6 15 3 9 1 18 6 13 9 -6 0 -1 0 5 0	5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1 19 9 17 1 19 9 27 4 27 4 12 2 15 9 16 2 6 7 -1 0 5 7	58 2286 -488 189 97 -05 -2059 00 346 2286 -488 177 189 177 180 270 270 270 116 128 149 167 65 -10 55	5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 18 4 17 2 17 5 27 0 27 0 11 1 12 3 14 4 16 2 6 0 -1 0 5 0	5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 34 6 228 6 -54 9 17 6 178 1770 270 270 270 12 7 14 9 16 6 -10 5 4	5 8 228 6 -79 7 20 9 43 7 -0 5 -205 9 0 28 6 -298 6 -298 6 -298 6 -79 7 14 7 14 7 14 7 N/A 27 0 27 0 13 7 9 6 17 0 14 1 5 9 -1 0 4 9
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attennation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C/ N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Minimum Required C/N (dB)	5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6 22 8 22 8 N/A 28 9 28 9 19 3 18 0 22 6 21 7 -1 0 -1 0 -1 0 -1 0 -1 0	5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 22 5 14 4 N/A 22 5 14 4 N/A 28 6 28 6 15 3 9 1 18 6 13 9 -10 5 0 -3 4	5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1 19 8 17 1 19 8 17 1 19 9 17 1 19 0 27 4 27 4 12 6 12 2 15 9 16 2 -6 7 -1 0 5 7 -3 9	5 8 228 6 -48 8 18 9 9 7 -05 -205 9 0 0 34 6 228 6 -48 8 17 7 18 9 17 7 18 0 27 0 27 0 27 0 11 6 12 8 14 9 16 7 -1 0 5 5 -3 0	5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 18 4 17 2 18 4 17 2 18 4 17 5 27 0 27 0 11 1 12 3 14 4 16 2 6 0 -1 0 5 0 -3 4	5 8 228 6 -54 9 18 8 15 7 -05 -205 9 0 34 6 228 6 -54 9 17 6 18 8 17 6 27 0 27 0 27 0 11 5 12 7 14 9 16 6 6 4 -1 0 5 4 -3 4	5 8 228 6 -79 7 20 9 43 7 -0 5 -205 9 0 28 6 228 6 -79 7 14 7 14 7 20 9 14 7 N/A 27 0 27 0 13 7 9 6 17 0 14 1 5 9 -1 0 4 9 -3 4
Satellite G/T(dB/K) Boltzman Constant(dBW/KHz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attennation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Nownlink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/I Downlink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+1) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB)	5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6 22 8 26 6 22 8 N/A 28 9 28 9 19 3 18 0 22 6 21 7 13 0 -1 0 12 0 -10 0 2 0	5 8 228 6 -78 1 22 5 -78 1 22 5 -78 1 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 -78 1 -78 1 -78 1 -78 5 -78 1 -78 1 -78 5 -78 1 -78 1 -78 5 -78 1 -78 5 -78 1 -78 1 -78 5 -78 1 -78 5 -78 1 -78 1 -78 5 -78 1 -78 1 -78 5 -78 1 -78 5 -78 1 -78 5 -78 5 -78 1 -78 5 -78 5 -7	5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1 19 8 17 1 19 8 17 1 19 9 27 4 27 4 12 6 12 2 15 9 16 2 6 7 -1 0 5 7 -3 9 1 8	5 8 228 6 -48 8 18 9 9 7 -05 -205 9 0 0 34 6 228 6 -48 8 177 18 9 177 18 0 27 0 11 6 12 8 14 9 16 7 6 5 -1 0 5 5 -3 0 2 5	5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 16 2 6 0 -1 0 5 0 -3 4 1 6	5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 34 6 228 6 -54 9 17 6 18 8 17 6 27 0 27 0 27 0 11 5 12 7 14 9 16 6 6 4 -1 0 5 4 -3 4 2 0	5 8 228 6 -79 7 20 9 43 7 -0 5 -205 9 0 28 6 228 6 -79 7 14 7 20 9 14 7 N/A 27 0 27 0 13 7 9 6 17 0 14 1 -5 -10 4 9 -3 4 1 5
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Intermodulation (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Required System Margin (dB) Number of Carriers	5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6 22 8 22 8 26 6 22 8 N/A 28 9 28 9 19 3 18 0 22 6 21 7 -1 0 -1 0 -1 0 -1 0 -1 0 -1 0	5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 22 5 14 4 N/A 22 5 14 4 N/A 28 6 28 6 15 3 9 1 18 6 13 9 -10 5 0 -3 4	5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1 19 8 17 1 19 8 17 1 19 9 17 1 19 0 27 4 27 4 12 6 12 2 15 9 16 2 -6 7 -1 0 5 7 -3 9	5 8 228 6 -48 8 18 9 9 7 -05 -205 9 0 0 34 6 228 6 -48 8 17 7 18 9 17 7 18 0 27 0 27 0 27 0 11 6 12 8 14 9 16 7 -1 0 5 5 -3 0	5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 18 4 17 2 17 5 27 0 27 0 11 1 12 3 14 4 16 2 -60 -1 0 5 0 -3 4	5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 34 6 228 6 -54 9 17 6 18 8 17 6 27 0 27 0 27 0 11 5 12 7 14 9 16 6 6 4 -1 0 5 4 -3 4	5 8 228 6 -79 7 20 9 43 7 -0 5 -205 9 0 28 6 228 6 -79 7 14 7 14 7 20 9 14 7 N/A 27 0 27 0 13 7 9 6 17 0 14 1 5 9 -1 0 4 9 -3 4
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/N Downlink (dB) C/N Uplink (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) C/(N+1) Composite (dB) Required System Margin (dB) Net C/(N+1) Composite (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Number of Carriers CARRIER DENSITY LEVELS	5 8 228 6 -75 6 26 6 38 2 -05 -205 9 0 0 38 0 228 6 -75 6 22 8 22 8 22 8 N/A 28 9 28 9 19 3 18 0 22 6 21 7 -10 -10 12 0 -10 0 2 0 2	5 8 228 6 -78 1 22 5 43 7 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 22 5 14 4 N/A 28 6 28 6 15 3 9 1 18 6 13 9 6 0 -1 0 5 0 -3 4 1 6 1	5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1 19 8 17 1 19 8 17 1 19 9 27 4 27 4 12 2 15 9 16 2 6 7 -1 0 5 7 -3 9 1 8 10	5 8 228 6 -48 8 18 9 9 7 -0 5 -205 9 0 0 34 6 228 6 -48 8 17 7 18 9 17 7 18 0 27 0 27 0 11 6 12 8 14 9 16 7 6 5 -1 0 5 5 -3 0 2 5 1120	5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 18 4 17 2 17 5 27 0 27 0 11 1 12 3 14 4 16 2 6 0 -1 0 5 0 -3 4 16 77	5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 34 6 228 6 -54 9 17 6 17 6 17 9 27 0 27 0 27 0 11 5 12 7 14 9 16 6 64 -1 0 5 4 -3 4 2 0 280	5 8 228 6 -79 7 20 9 43 7 -05 -205 9 0 28 6 -29 6 -79 7 14 7 14 7 14 7 N/A 27 0 27 0 13 7 9 6 17 0 14 1 5 9 -1 0 4 9 -3 4 1 5 1
Satellite G/T(dB/K) Boltzman Constant(dBW/K-Hz) Carrier Noise Bandwidth (dB-Hz) Uplink C/N(dB) DOWNLINK PERFORMANCE Downlink EIRP per Carrier (dBW) Antenna Pointing Error (dB) Downlink Path Loss, Clear Sky (dB) Downlink Rain Attenuation Earth Station G/T (dB/K) Boltzman Constant(dBW / K - Hz) Carrier Noise Bandwidth (dB-Hz) Downlink C / N(dB) COMPOSITE LINK PERFORMANCE C/N Uplink (dB) C/I Uplink Co-Channel (dB)* C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 1 (dB) C/I Uplink Adjacent Satellite 2 (dB) C/(N+I) Composite (dB) Required System Margin (dB) Net C/(N+I) Composite (dB) Required System Margin (dB) Minimum Required C/N (dB) Excess Link Margin (dB) Mumber of Carriers	5 8 228 6 -75 6 26 6 38 2 -0 5 -205 9 0 0 38 0 228 6 -75 6 22 8 26 6 22 8 N/A 28 9 28 9 19 3 18 0 22 6 21 7 13 0 -1 0 12 0 -10 0 2 0	5 8 228 6 -78 1 22 5 -78 1 22 5 -78 1 -0 5 -205 9 0 0 26 7 228 6 -78 1 14 4 -78 1 -78 1 -78 1 -78 5 -78 1 -78 1 -78 5 -78 1 -78 1 -78 5 -78 1 -78 5 -78 1 -78 1 -78 5 -78 1 -78 5 -78 1 -78 1 -78 5 -78 1 -78 1 -78 5 -78 1 -78 5 -78 1 -78 5 -78 5 -78 1 -78 5 -78 5 -7	5 8 228 6 -68 3 19 8 30 2 -0 5 -205 9 0 0 33 1 228 6 -68 3 17 1 19 8 17 1 19 8 17 1 19 9 27 4 27 4 12 6 12 2 15 9 16 2 6 7 -1 0 5 7 -3 9 1 8	5 8 228 6 -48 8 18 9 9 7 -05 -205 9 0 0 34 6 228 6 -48 8 177 18 9 177 18 0 27 0 11 6 12 8 14 9 16 7 6 5 -1 0 5 5 -3 0 2 5	5 8 228 6 -60 9 18 4 21 3 -0 5 -205 9 0 34 6 228 6 -60 9 17 2 18 4 17 2 18 4 17 2 18 4 17 2 18 4 16 2 6 0 -1 0 5 0 -3 4	5 8 228 6 -54 9 18 8 15 7 -0 5 -205 9 0 34 6 228 6 -54 9 17 6 18 8 17 6 27 0 27 0 27 0 11 5 12 7 14 9 16 6 6 4 -1 0 5 4 -3 4 2 0	5 8 228 6 -79 7 20 9 43 7 -0 5 -205 9 0 28 6 228 6 -79 7 14 7 20 9 14 7 N/A 27 0 27 0 13 7 9 6 17 0 14 1 -5 -1 0 4 9 -1 0 -1 0 -3 4 1 5