Engineering Statement

PanAmSat Licensee Corp. ("PanAmSat") proposes to operate its Galaxy 12 spacecraft from 129° W.L. From this orbital location, Galaxy 12 will utilize the 5925 – 6425 MHz and 3700 – 4200 MHz frequency bands.

Galaxy 12 is currently authorized to operate from 122.9º W.L. (see FCC File No.: SAT-MOD-20080630-00133). PanAmSat now proposes to relocate Galaxy 12 from 122.9º W.L. to 129º W.L., where it will replace the existing Galaxy 27 spacecraft[1]. Subject to receipt of FCC approval, Galaxy 27 will be moved to another orbital location.

To take the impact of this proposed change in orbital location into account, this engineering statement updates, as appropriate, the following technical information that PanAmSat had previously submitted in its SAT-AMD-20021107-0023, SAT-MOD-20050815-00159, SAT-MOD-20051206-00262 and SAT-MOD-20080630-00133 filings: 1) frequency plan, 2) gain contours, (3) power flux density levels, (4) link budget and interference analysis and (5) orbital debris mitigation plan.

Frequency Plan

The Galaxy 12 frequency and beam switching plan are provided in Exhibits 1A and 1B. From the 129° W.L. orbital location, the primary channel configuration (as designated in Exhibit 1A) will be implemented on Galaxy 12.

Gain Contours

The coverage patterns for Galaxy 12 operating from the proposed 129° W.L. orbital location are provided in Exhibits 2A through 2J.

Power Flux Density ("PFD") Levels

The power flux density limits for space stations are specified in section 25.208 of the Commission's rules. In the 3700 – 4200 MHz band, the maximum PFD level at the Earth's surface produced by Galaxy 12 was calculated for a 36 MHz digital carrier (having an occupied bandwidth of 30.133 MHz) and a 36 MHz analog TV/FM carrier, which typically generate the highest PFD levels. The power flux density level for the Galaxy 12 telemetry carriers was also calculated. The results are provided in Exhibit 3

[1] Galaxy 27 is licensed to PanAmSat's sister company Intelsat North America LLC.

and show that the downlink power flux density levels of the Galaxy 12 carriers do not exceed limits specified in section 25.208 of the Commission's rules.

Link Budget and Interference Analysis

Link analysis for Galaxy 12 was conducted for a number of representative carriers. For the analysis, it was assumed that the nearest satellites to Galaxy 12 were a hypothetical satellite operating from 127° W.L. and a hypothetical satellite operating from 131° W.L. The hypothetical satellites were assumed to have the same operational parameters as Galaxy 12.

At C-band, the uplink power density of the emissions to each of the hypothetical satellites was assumed to be -38.7 dBW/Hz, the maximum level specified in section 25.212(d) of the Commission's rules for digital C-band carriers. 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) of the FCC 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) Degradation due to rain was not considered, given that rain (attenuation) effects are insignificant at C-band.

The impact of the TV/FM carriers from the adjacent satellites at 127° W.L. and 131° W.L on the transmissions of Galaxy 12 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.

The results of the C-band analyses are shown in Exhibit 4 and demonstrate that operation of the Galaxy 12 satellite from 129º W.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 4 comply with the FCC limits contained in section 25.212(d) of the Commission's rules.

Adjacent Satellite Link Analysis

The impact of the Galaxy 12 emissions on the transmissions of adjacent satellites was not analyzed. This is due to PanAmSat's intent to limit the power level of Galaxy 12 transmissions to those levels contained in section 25.212(d) of the FCC rules. In those cases where PanAmSat may require to transmit carriers with power levels in excess of those in 25.212(d), it will coordinate its emissions so as to limit the level interference that is mutually caused and received by Galaxy 12 and adjacent satellites operating from 127º W.L and/or 131º W.L.

Schedule S Submission

PanAmSat is providing a Schedule S with its application. The Schedule S contains only: (1) those Galaxy 12 data items that have changed from those that were shown in the Schedule S for SAT-MOD-20080630-00133; and (2) data items whose inclusion was required in order for the software application to function properly.

Orbital Debris Mitigation Plan

PanAmSat 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.

Orbital Debris Mitigation Plan: 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.

Orbital Debris Mitigation Plan: Minimizing Accidental Explosions

PanAmSat 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, PanAmSat will, with the exception of the oxidizer tanks, 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.

As explained in PanAmSat's filing SAT-MOD-20080630-00133, upon completion of the Galaxy 12 orbit raising maneuver, the oxidizer tanks are isolated from both the Liquid Apogee Motor ("LAE") and Dual Mode Thrusters ("DMTs"). Typically, some residual oxidizer remains in the tank following the isolation. It is anticipated that less than 11 kilograms of oxidizer is carried throughout the mission (less than 2.5% fill fraction). Accordingly, PanAmSat requests waiver of the provisions of section 25.283(c) of the Commission's rules.

Venting both fuel and pressurant through thrusters at the end of the mission minimizes the risk of reaction between fuel and oxidizer. Also, oxidizer remaining in the propellant manifolds between the pyro valves and the LAE/DMT thrusters will be expelled at the end of life by performing an engine pulsing maneuver. The risk of an explosive reaction is further reduced by isolating the oxidizer tanks from the remainder of the propulsion system. In the addition, at the worst case end of life temperature, with a 2.5% fill fraction, the pressure in the oxidizer tank will not exceed its burst pressure.

Accordingly, PanAmSat requests that the waiver of Section 25.283(c) of the Commission's rules previously granted to the Galaxy 12 spacecraft for operation at 122.9º W.L. continue to apply at the 129.0º W.L. location.

<u>Orbital Debris Mitigation Plan: Safe Flight Profiles</u>

PanAmSat 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.

Taking into account that Galaxy 27 will be moved from 129º W.L. before the arrival of Galaxy 12 at this orbital location and the discussion below, it is concluded that Galaxy 12 will not be located at the same orbital location as another satellite or at an orbital location that has an overlapping stationkeeping volume with another satellite.

PanAmSat is not aware of any other FCC licensed system, or any other system applied for and under consideration by the FCC, having an overlapping stationkeeping volume with Galaxy 12. PanAmSat is also not aware of any space network with an overlapping stationkeeping volume with Galaxy 12 that is the subject of an ITU filing and that is either in orbit or progressing towards launch.

It is noted that Canada has ITU filings for a number of space networks at 129º W.L. There is currently only one Canadian satellite, CIEL-2, which operates at the nominal orbital location of 129º W.L. However, the actual orbital location of CIEL-2 is 128.8º W.L, and as best as can be determined, the position of this spacecraft is maintained to within ±0.05º of this orbital location. Consequently, there would be no overlap of the stationkeeping volumes of Galaxy 12 and CIEL-2.

Orbital Debris Mitigation Plan: Post Mission Disposal

At the end of the mission, PanAmSat intends to dispose of the spacecraft by moving it to a minimum altitude of 300 kilometers above the geostationary arc. This exceeds the minimum altitude established by the IADC formula. PanAmSat has reserved 6.8 kilograms of fuel for this purpose. The reserved fuel figure will be provided for in the propellant budget. To calculate this figure, the "rocket equation" was used, taking into account the expected mass of the satellite at the end of life and the required delta-velocity to achieve the desired orbit. PanAmSat has assessed the fuel gauging uncertainty and has provided an adequate margin of fuel reserve to address the assessed uncertainty in remaining propellant.

In calculating the disposal orbit, PanAmSat has used simplifying assumptions as permitted under the Commission's Orbital Debris Report and Order. For reference, the effective area to mass ratios (Cr*A/M) of the Galaxy 12 spacecraft is 0.03 m^2/kg, resulting in a minimum perigee disposal altitude under the IADC formula of at most 238.2 kilometers above the geostationary arc, which is lower than the 300 kilometer above geostationary disposal altitude specified by PanAmSat in this filing. Accordingly, the Galaxy 12 planned disposal orbit complies with the FCC's rules.

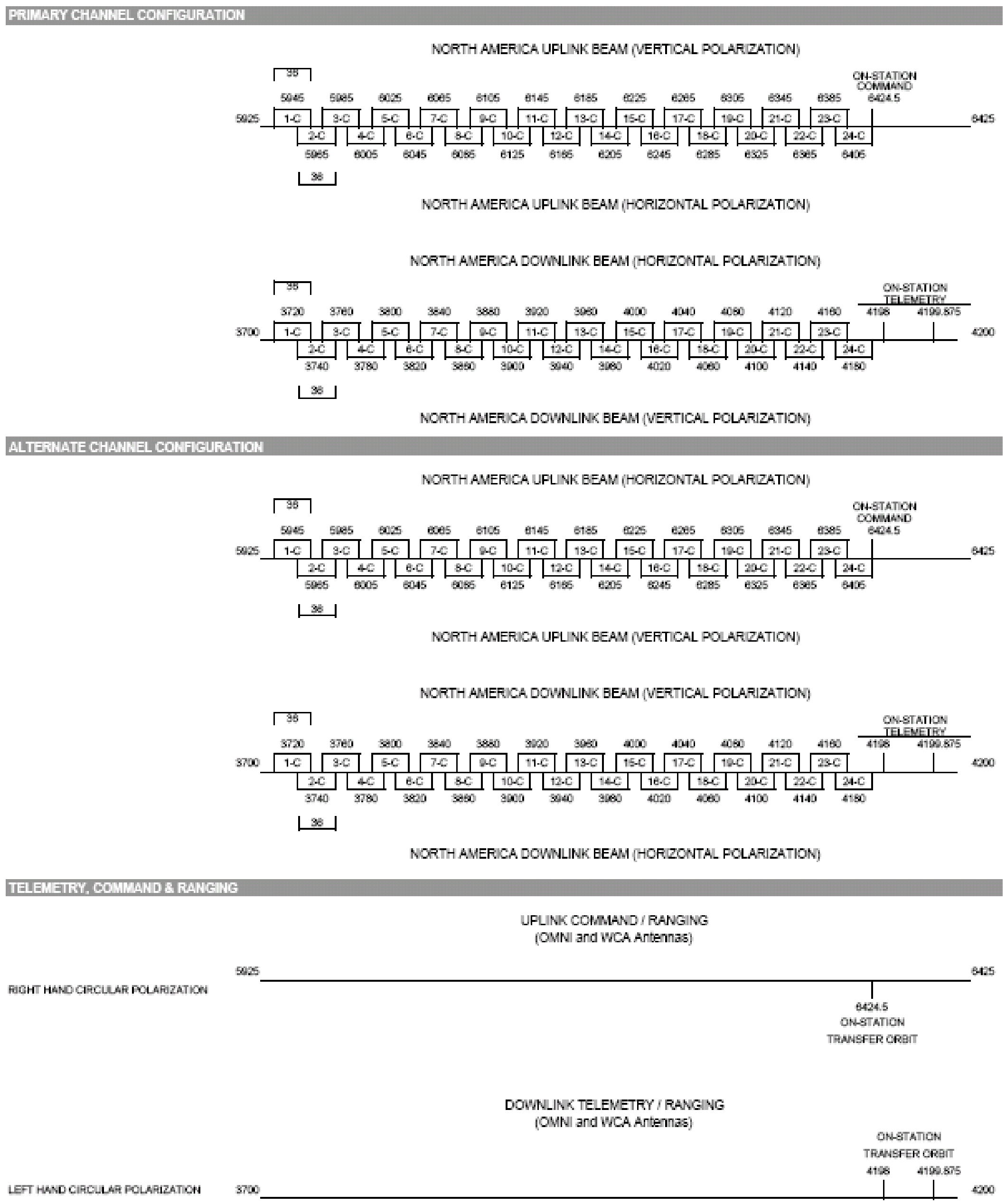
Certification Statement

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/ Jose Albuquerque	January 20, 2010
Jose Albuquerque Intelsat Corporation Senior Director, Regulatory Engineering	Date

Exhibit 1A: Frequency Plan

EXHIBIT 2A. FREQUENCY PLAN



Notes :

1) All frequencies are in megahertz.

2) The above payload channel connection plan is switchable in polarization. Accordingly, the horizontally polarized uplink and downlink channels can be switched to operate with vertical polarization, and the vertically polarized uplink and downlink channels can be switched to operate with horizontal polarization.

Exhibit 1B: Frequency Plan (continued)

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)
1C	CONUS	Vertical	5945	1C	CONUS	Horizontal	3720	36	132.8
3C	CONUS	Vertical	5985	3C	CONUS	Horizontal	3760	36	132.8
5C	CONUS	Vertical	6025	5C	CONUS	Horizontal	3800	36	132.8
7C	CONUS	Vertical	6065	7C	CONUS	Horizontal	3840	36	132.8
9C	CONUS	Vertical	6105	9C	CONUS	Horizontal	3880	36	132.8
11C	CONUS	Vertical	6145	11C	CONUS	Horizontal	3920	36	132.8
13C	CONUS	Vertical	6185	13C	CONUS	Horizontal	3960	36	132.8
15C	CONUS	Vertical	6225	15C	CONUS	Horizontal	4000	36	132.8
17C	CONUS	Vertical	6265	17C	CONUS	Horizontal	4040	36	132.8
19C	CONUS	Vertical	6305	19C	CONUS	Horizontal	4080	36	132.8
21C	CONUS	Vertical	6345	21C	CONUS	Horizontal	4120	36	132.8
23C	CONUS	Vertical	6385	23C	CONUS	Horizontal	4160	36	132.8
2C	CONUS	Horizontal	5965	2C	CONUS	Vertical	3740	36	132.8
4C	CONUS	Horizontal	6005	4C	CONUS	Vertical	3780	36	132.8
6C	CONUS	Horizontal	6045	6C	CONUS	Vertical	3820	36	132.8
8C	CONUS	Horizontal	6085	8C	CONUS	Vertical	3860	36	132.8
10C	CONUS	Horizontal	6125	10C	CONUS	Vertical	3900	36	132.8
12C	CONUS	Horizontal	6165	12C	CONUS	Vertical	3940	36	132.8
14C	CONUS	Horizontal	6205	14C	CONUS	Vertical	3980	36	132.8
16C	CONUS	Horizontal	6245	16C	CONUS	Vertical	4020	36	132.8
18C	CONUS	Horizontal	6285	18C	CONUS	Vertical	4060	36	132.8
20C	CONUS	Horizontal	6325	20C	CONUS	Vertical	4100	36	132.8
22C	CONUS	Horizontal	6365	22C	CONUS	Vertical	4140	36	132.8
24C	CONUS	Horizontal	6405	24C	CONUS	Vertical	4180	36	132.8
Command 1	CONUS	Vertical	6424.5					1.0	
Command 2	GLOBAL	Right Hand Circular	6424.5					1.0	
Command 3	GLOBAL	Right Hand Circular	6424.5					1.0	
				Telemetry 1	CONUS	Horizontal	4198.0	0.5	
				Telemetry 2	CONUS	Horizontal	4199.875	0.5	
				Telemetry 3	GLOBAL	Left Hand Circular	4198.0	0.5	
				Telemetry 4	GLOBAL	Left Hand Circular	4199.875	0.5	
				Telemetry 5	GLOBAL	Left Hand Circular	4198.0	0.5	
				Telemetry 6	GLOBAL	Left Hand Circular	4199.875	0.5	

Exhibit 2A: C-Band Uplink Beam

Beam Polarization: Horizontal

Antenna Gain @ Beam Peak: 30.7 dBi

Beam Peak G/T: 3.5 dB/K

Saturated Flux Density @ Beam Peak G/T: -75.5 to -111.5 dBW/m^2

[Schedule S Beam ID: CHUP]

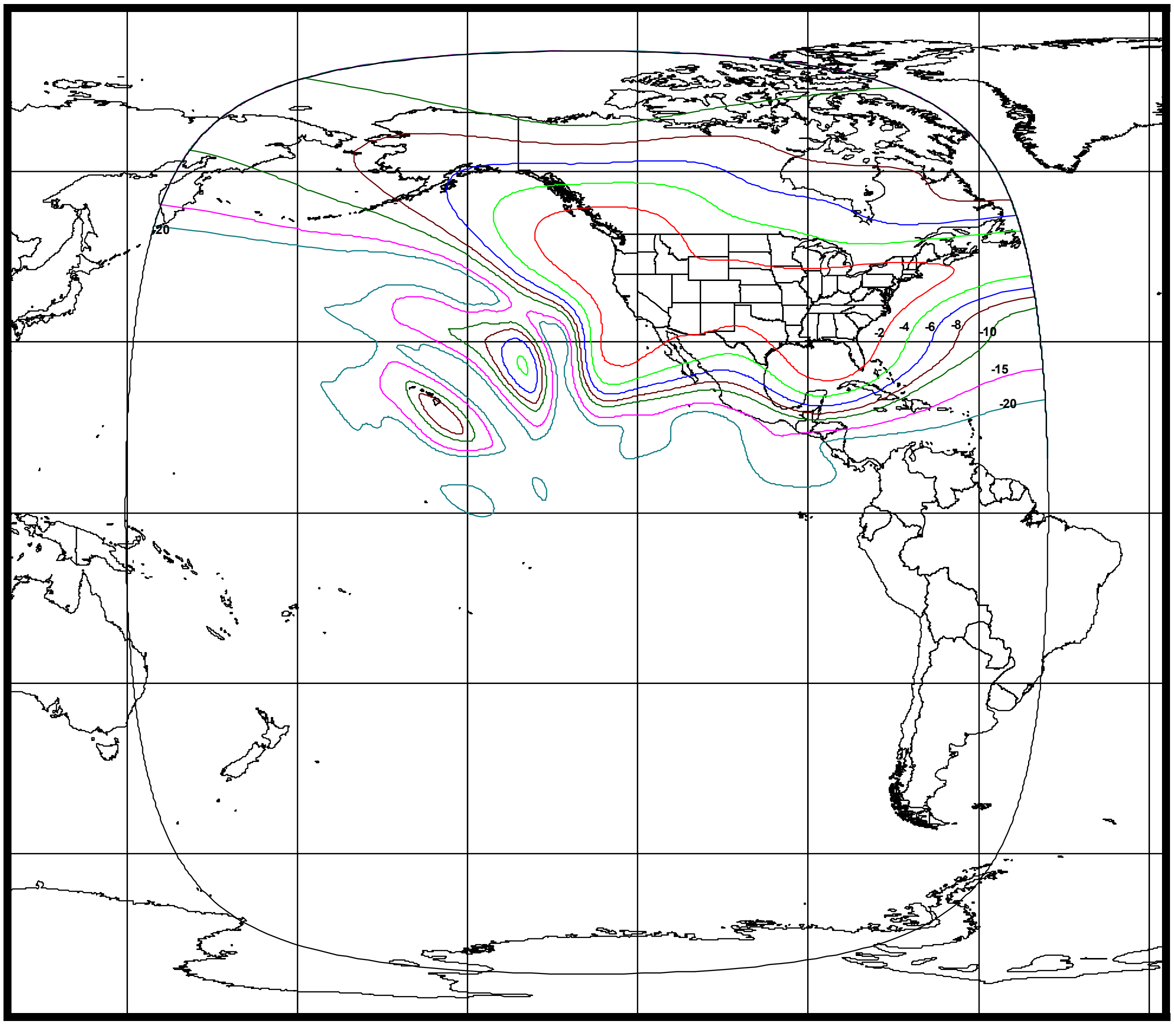


Exhibit 2B: C-Band Uplink Beam

Beam Polarization: Vertical

Antenna Gain @ Beam Peak: 30.7 dBi

Beam Peak G/T: 3.5 dB/K

Saturated Flux Density @ Beam Peak G/T: -75.5 to -111.5 dBW/m^2

[Schedule S Beam ID: CVUP]

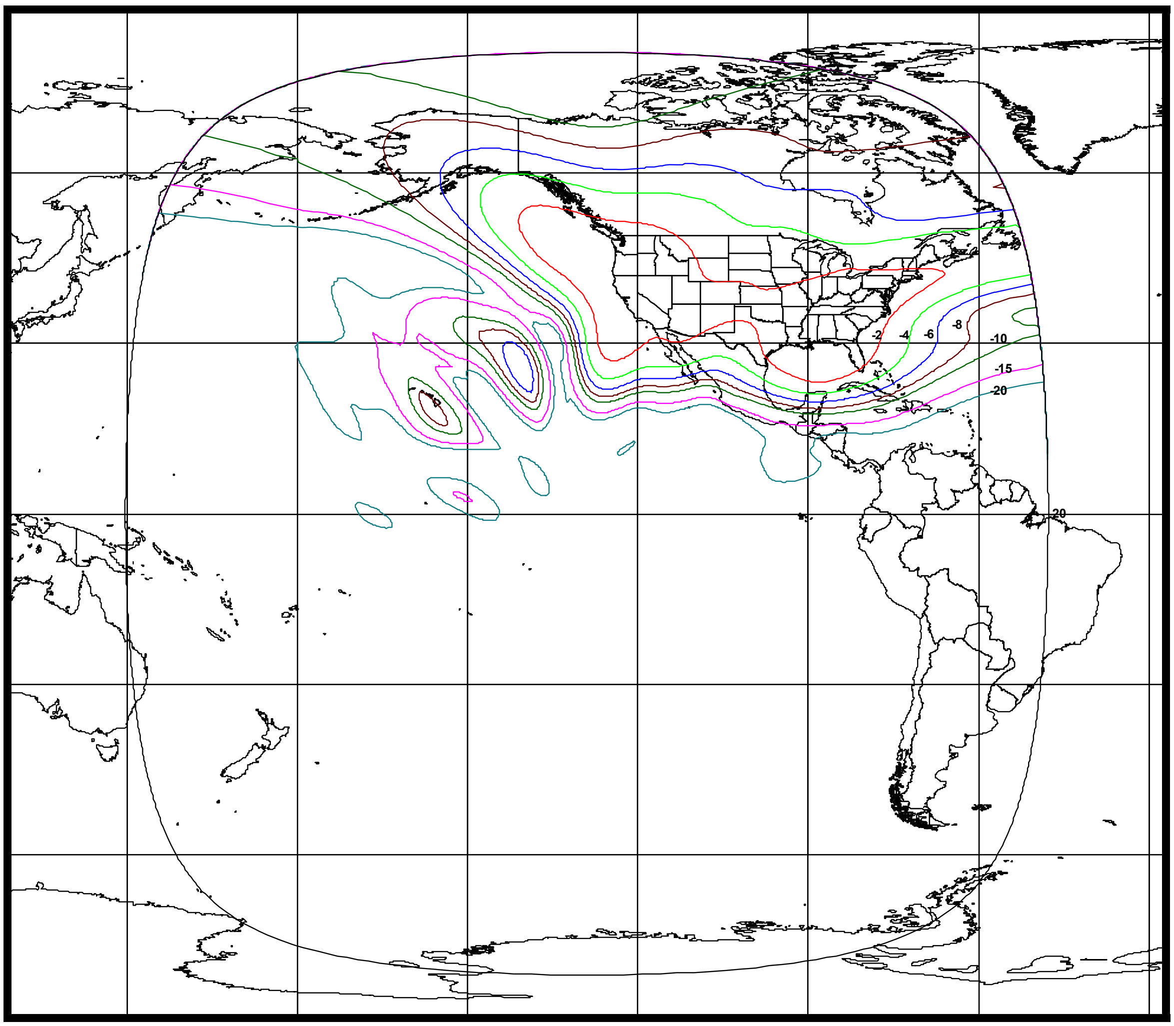


Exhibit 2C: C-Band Downlink Beam

Beam Polarization: Horizontal
Antenna Gain @ Beam Peak: 29.5 dBi
Beam EIRP: 44.2 dBW
[Schedule S Beam ID: CHDN]

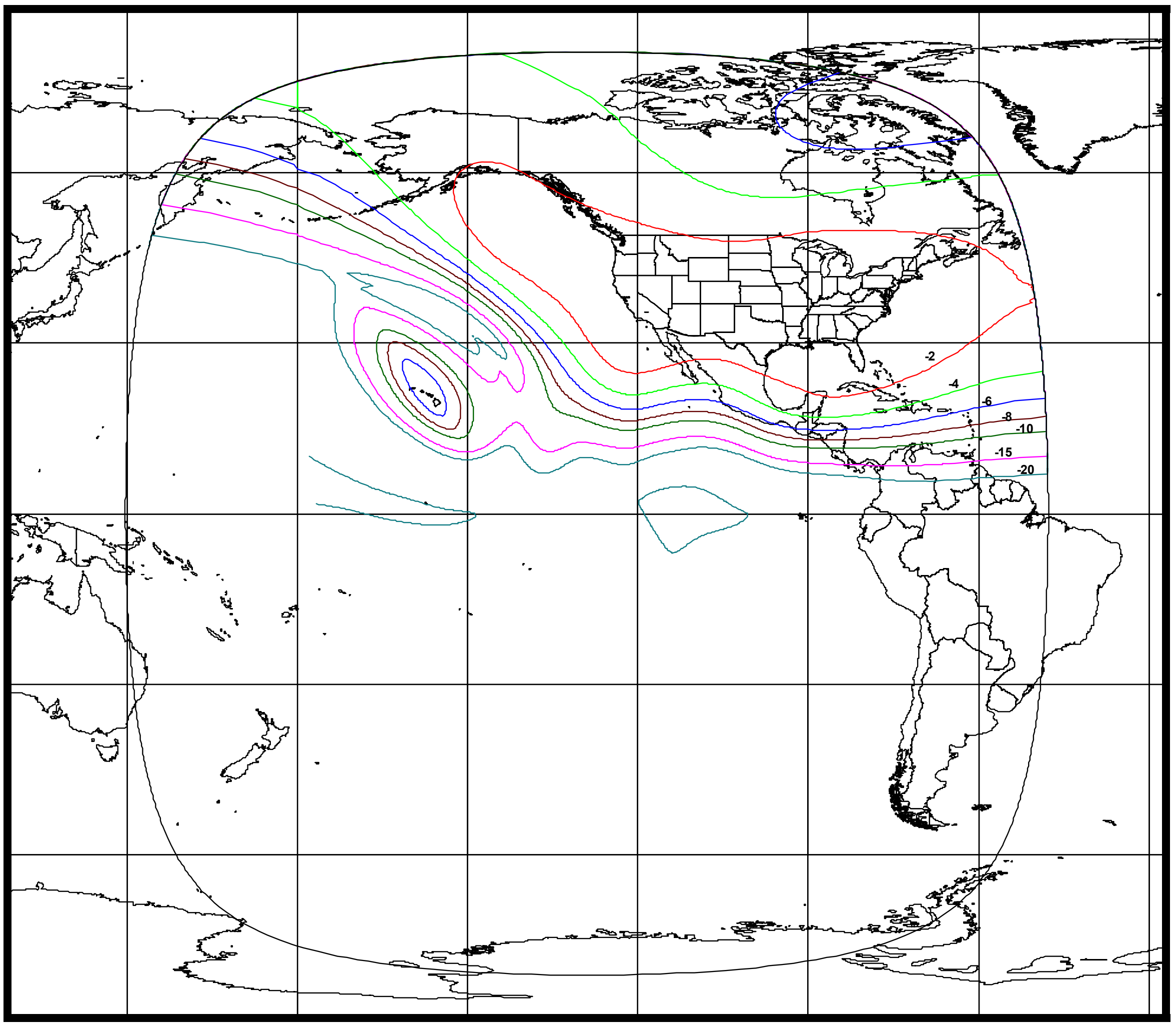


Exhibit 2D: C-Band Downlink Beam

Beam Polarization: Vertical

Antenna Gain @ Beam Peak: 29.5 dBi

Beam EIRP: 44.2 dBW

[Schedule S Beam ID: CVDN]

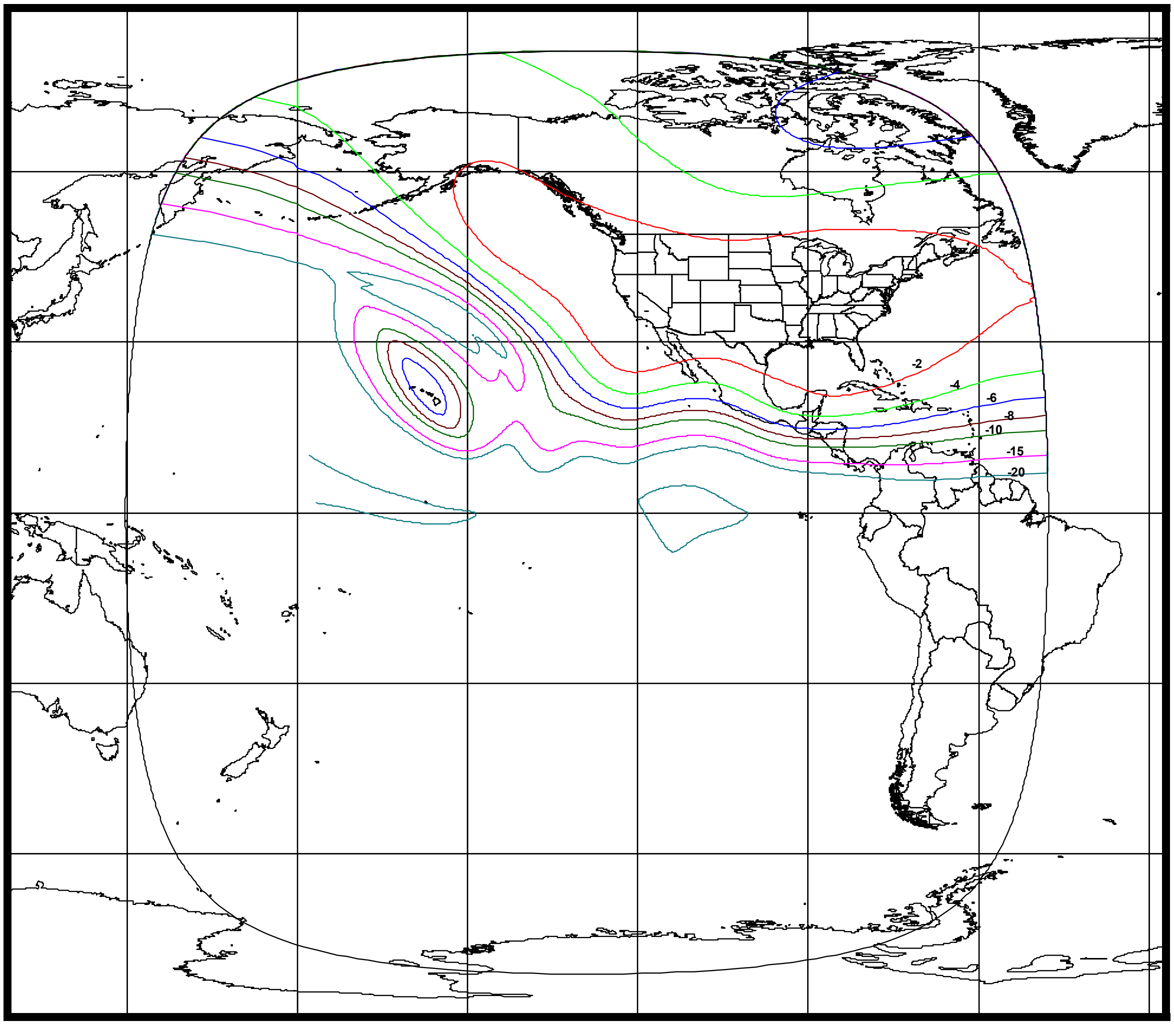


Exhibit 2E: C-Band Command Beam (Omni Antenna)

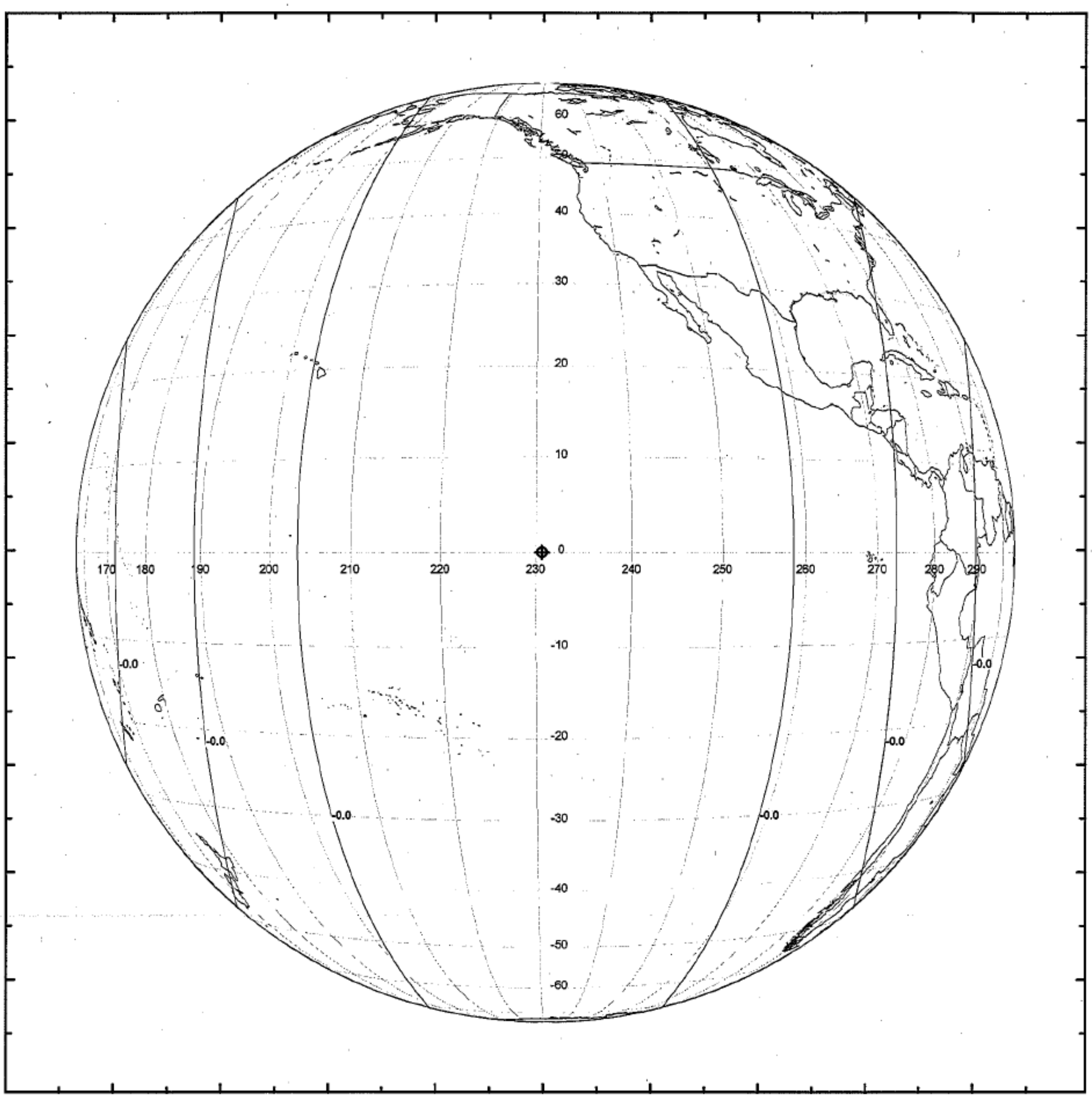
Beam Polarization: Right Hand Circular

Antenna Gain @ Beam Peak: 2.1 dBi

Beam Peak G/T: -25.4 dB/K

Command Threshold Flux Density @ Beam Peak: -87.5 dBW/m^2

[Schedule S Beam ID: OMNC]



Relative Gain Contour Levels Shown: -0.01, -0.02 and -0.03 dB

Exhibit 2F: C-Band Command Beam (WCA Antennas)

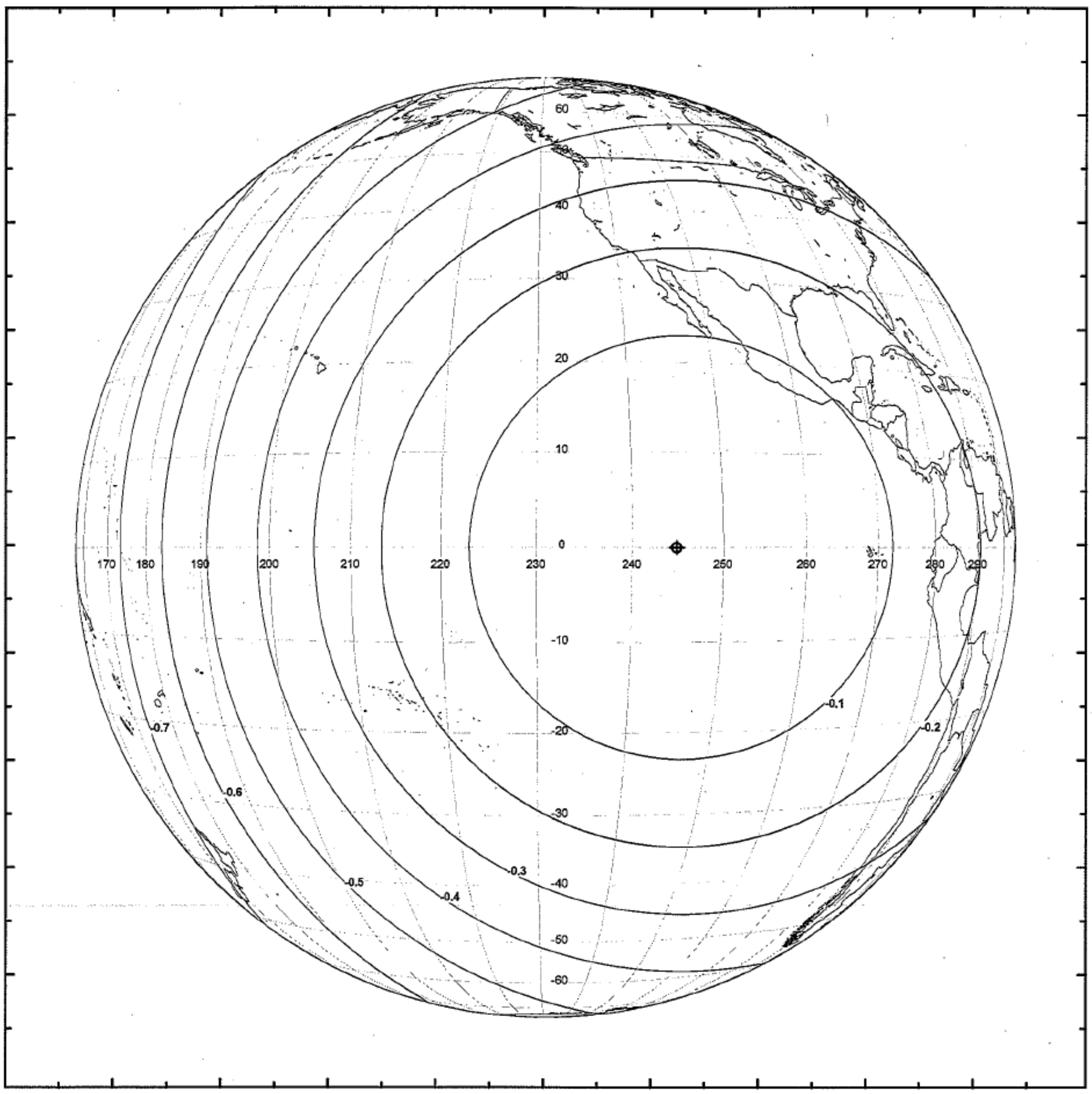
Beam Polarization: Right Hand Circular

Antenna Gain @ Beam Peak: 13.1 dBi

Beam Peak G/T: -14.4 dB/K

Command Threshold Flux Density @ Beam Peak: -94 dBW/m^2

[Schedule S Beam ID: WCAC]



Relative Gain Contour Levels Shown: -0.1, -0.2, -0.3, -0.4, -0.5, -0.6 and -0.7 dB

Exhibit 2G: C-Band Command Beam (Communication Antenna)

Beam Polarization: Vertical

Antenna Gain @ Beam Peak: 30.7 dBi

Beam Peak G/T: -4.5 dB/K

Command Threshold Flux Density @ Beam Peak: -114.7 dBW/m^2

[Schedule S Beam ID: CMDC]

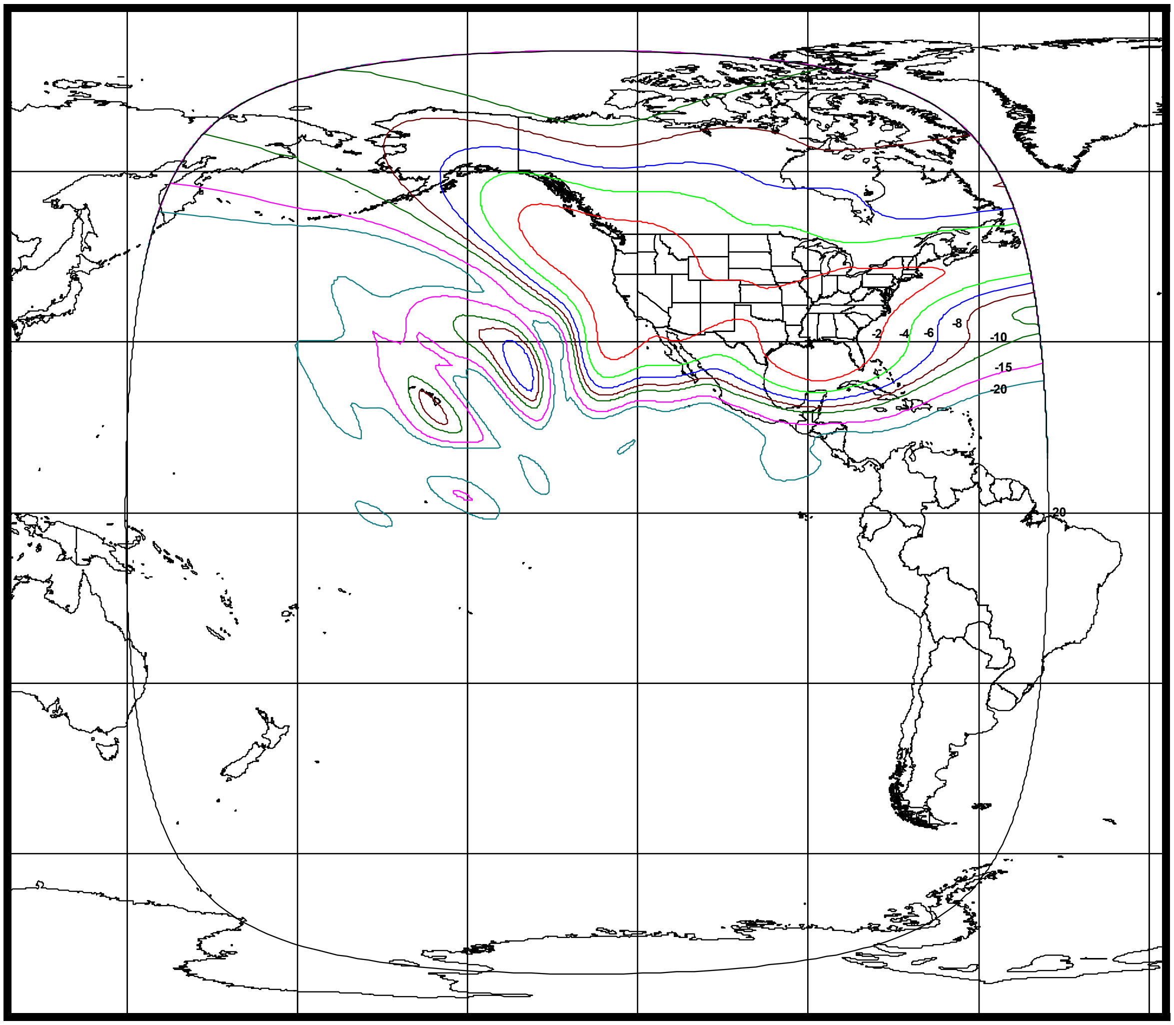
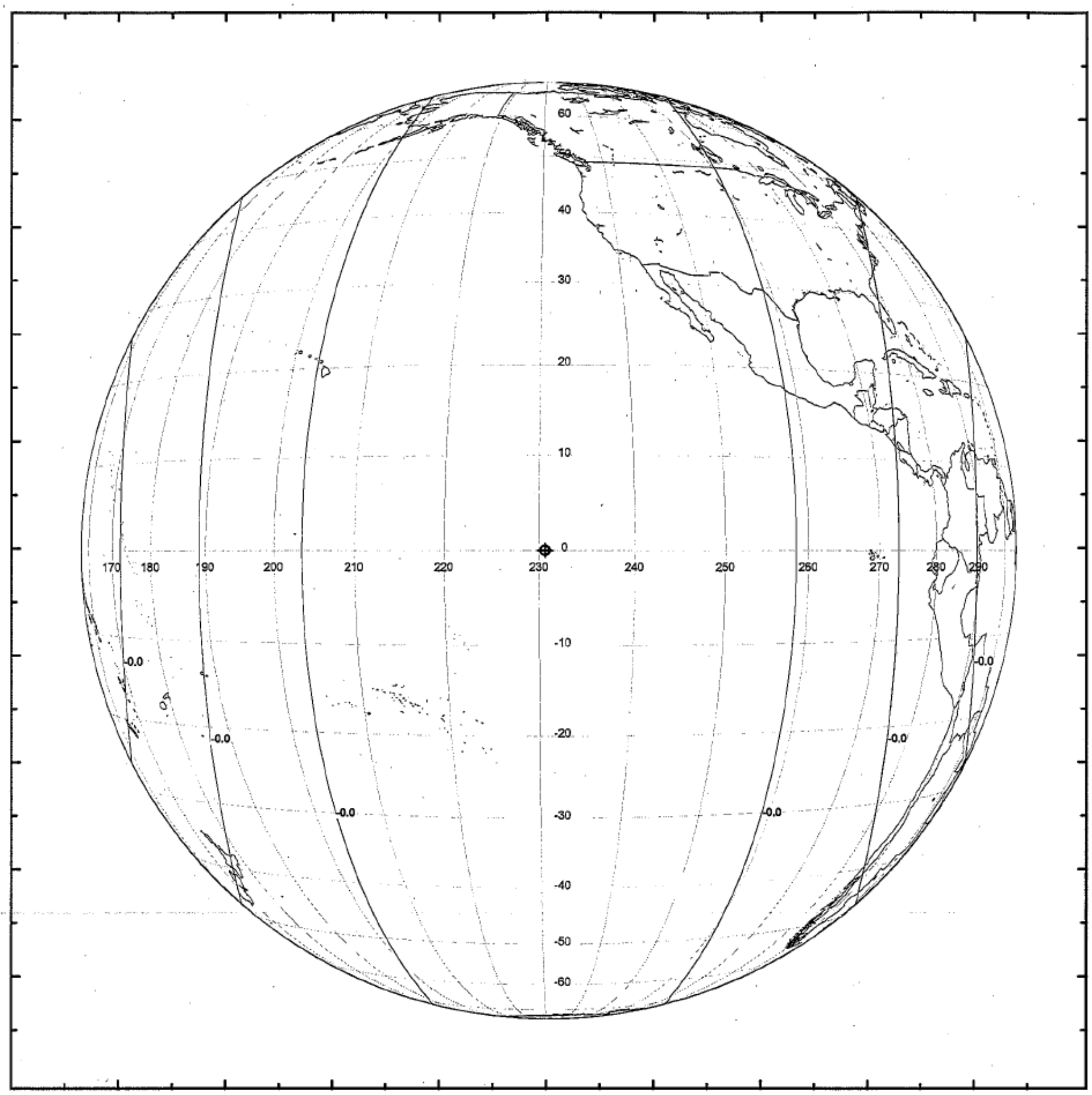


Exhibit 2H: C-Band Telemetry Beam (Omni Antenna)

Beam Polarization: Left Hand Circular
Antenna Gain @ Beam Peak: 2.1 dBi
Beam Peak EIRP: 5.8 dBW
[Schedule S Beam ID: OMNT]



Relative Gain Contour Levels Shown: -0.01, -0.02 and -0.03 dB

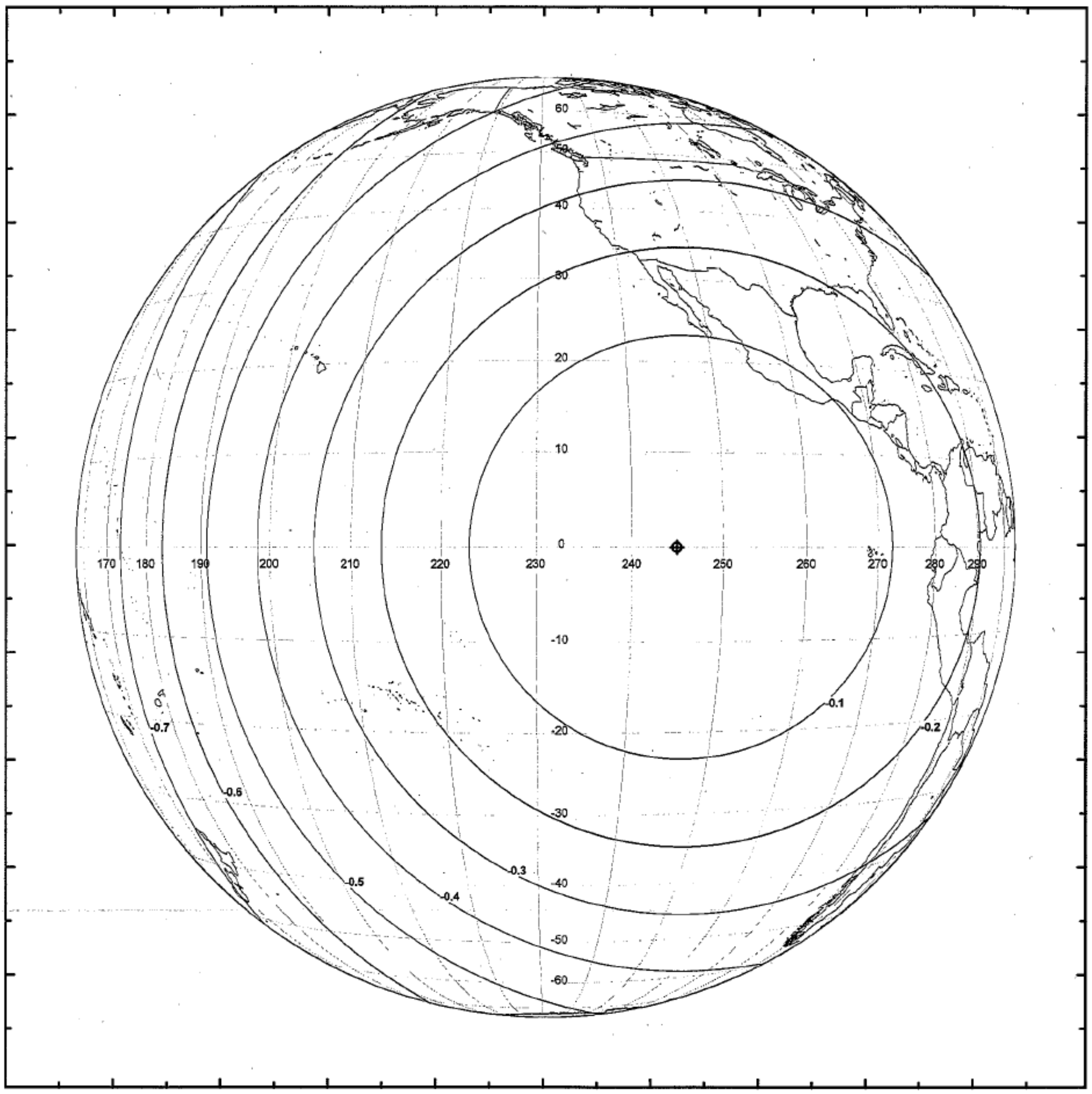
Exhibit 2I: C-Band Telemetry Beam (WCA Antennas)

Beam Polarization: Left Hand Circular

Antenna Gain @ Beam Peak: 13.1 dBi

Beam Peak EIRP: 4.8 dBW

[Schedule S Beam ID: WCAT]



Relative Gain Contour Levels Shown: -0.1, -0.2, -0.3, -0.4, -0.5, -0.6 and -0.7 dB

Exhibit 2J: C-Band Telemetry Beam (Communication Antenna)

Beam Polarization: Horizontal

Antenna Gain @ Beam Peak: 29.5 dBi

Beam Peak EIRP: 20 dBW

[Schedule S Beam ID: TLMT]

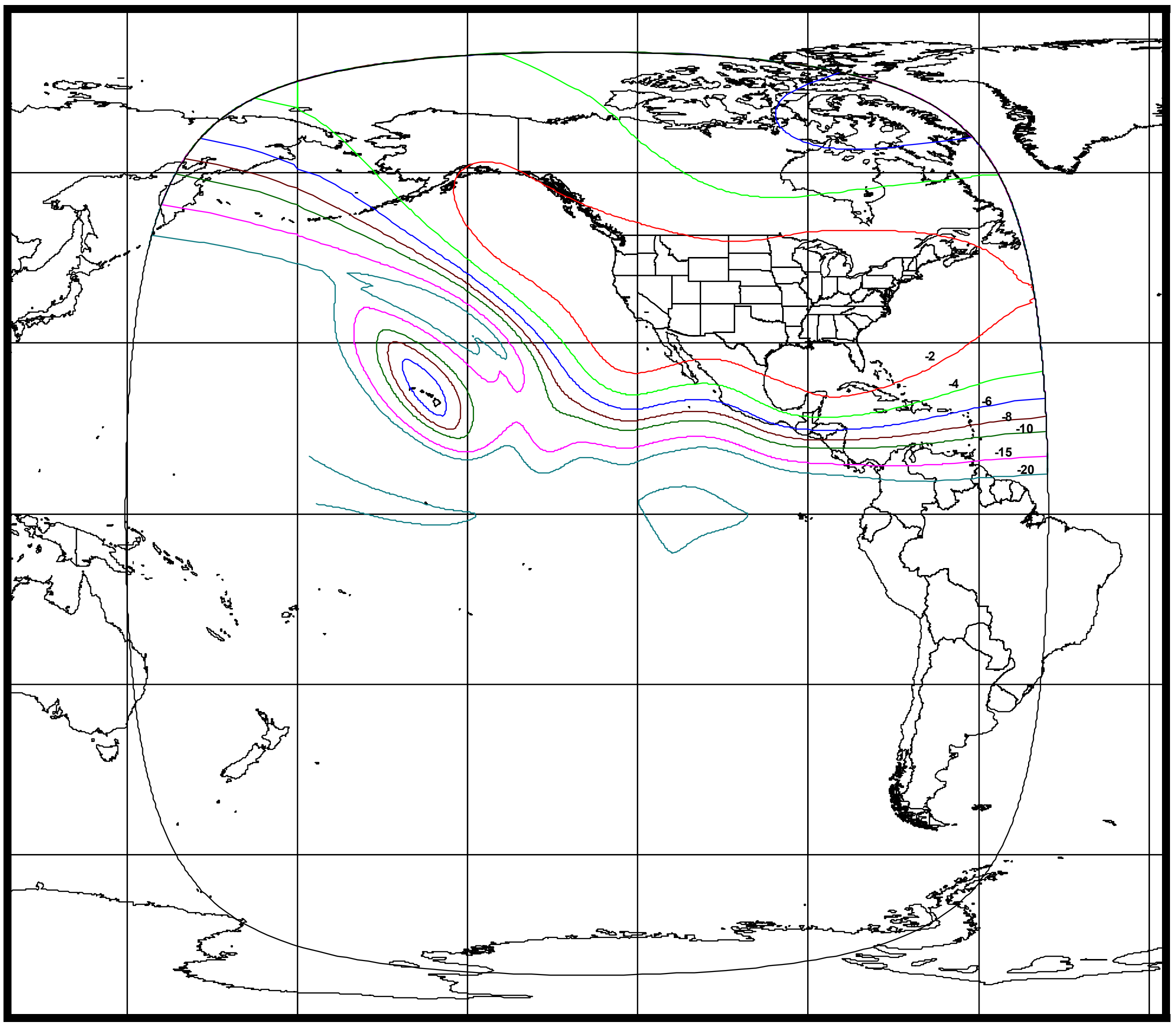


EXHIBIT 3: POWER FLUX DENSITY CALCULATIONS

Digital Carrier (36M0G7W)

Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP (dBW)	44.2	44.2	44.2	44.2	44.2	44.2	44.2
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 PFD (dB/m^2/4kHz)	-158	-157.8	-157.8	-157.6	-157.5	-157.4	-156.6
PFD Limit (dB/m^2/4kHz)	-152	-152	-149.5	-147	-144.5	-142	-142
Margin (dB)	6.0	5.8	8.3	10.6	13.0	15.4	14.6

Analog TV Carrier (36M0F3F)

Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP (dBW)	41.3*	41.3*	*43.7	44.2	44.2	44.2	44.2
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 PFD (dB/m^2/4kHz)	-152.1	-152.0	-149.5	-148.8	-148.7	-148.6	-147.9
PFD Limit (dB/m^2/4kHz)	-152	-152	-149.5	-147	-144.5	-142	-142
Margin (dB)	0.1	0.0	0.0	1.8	4.2	6.6	5.9

* 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.

Telemetry (OMNI Antenna)

Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP (dBW)	5.8	5.8	5.8	5.8	5.8	5.8	5.8
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 PFD (dB/m^2/4kHz)	-175.6	-175.5	-175.4	-175.2	-175.1	-175.0	-174.2
PFD Limit (dB/m^2/4kHz)	-152	-152	-149.5	-147	-144.5	-142	-142
Margin (dB)	23.6	23.5	25.9	28.2	30.6	33.0	32.2

Telemetry (Wide Coverage Antenna)

Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP (dBW)	4.8	4.8	4.8	4.8	4.8	4.8	4.8
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 PFD (dB/m^2/4kHz)	-176.6	-176.5	-176.4	-176.2	-176.1	-176.0	-175.2
PFD Limit (dB/m^2/4kHz)	-152	-152	-149.5	-147	-144.5	-142	-142
Margin (dB)	24.6	24.5	26.9	29.2	31.6	34.0	33.2

Telemetry (Communication Antenna)

Elevation Angle (degrees)	0	5	10	15	20	25	90
Assumed EIRP (dBW)	20	20	20	20	20	20	20
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 PFD (dB/m^2/4kHz)	-161.4	-161.3	-161.2	-161.0	-160.9	-160.8	-160.0
PFD Limit (dB/m^2/4kHz)	-152	-152	-149.5	-147	-144.5	-142	-142
Margin (dB)	9.4	9.3	11.7	14.0	16.4	18.8	18.0

EXHIBIT 4: GALAXY 12 LINK BUDGETS

UPLINK BEAM INFORMATION				
Uplink Beam Name	CONUS	CONUS	CONUS	CONUS
Uplink Frequency (GHz)	6.175	6.175	6.175	6.175
Uplink Beam Polarization	LINEAR	LINEAR	LINEAR	LINEAR
Uplink Relative Contour Level (dB)	-4.0	-4.0	-4.0	-4.0
Uplink Contour G/T (dB/K)	-.5	-.5	-.5	-.5
Uplink SFD (dBW/m2)	-82.5	-89.5	-91.5	-91.5
DOWNLINK BEAM INFORMATION				
Downlink Beam Name	CONUS	CONUS	CONUS	CONUS
Downlink Frequency (GHz)	3.950	3.950	3.950	3.950
Downlink Beam Polarization	LINEAR	LINEAR	LINEAR	LINEAR
Downlink Relative Contour Level (dB)	-4.0	-4.0	-4.0	-4.0
Downlink Contour EIRP (dBW)	40.2	40.2	40.2	40.2
ADJACENT SATELLITE 1				
Satellite 1 Orbital Location	127.0W	127.0W	127.0W	127.0W
Uplink Power Density (dBW/Hz)	-38.7	-38.7	-38.7	-38.7
Uplink Polarization Advantage (dB)	0.0	0.0	0.0	0.0
Downlink EIRP Density (dBW/Hz)	-34.6	-34.6	-34.6	-34.6
Downlink Polarization Advantage (dB)	0.0	0.0	0.0	0.0
ADJACENT SATELLITE 2	SAT-2	SAT-2	SAT-2	SAT-2
Satellite 1 Orbital Location	131.0W	131.0W	131.0W	131.0W
Uplink Power Density (dBW/Hz)	-38.7	-38.7	-38.7	-38.7
Uplink Polarization Advantage (dB)	0.0	0.0	0.0	0.0
Downlink EIRP Density (dBW/Hz)	-34.6	-34.6	-34.6	-34.6
Downlink Polarization Advantage (dB)	0.0	0.0	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)	10.0	3.4	3.9	3.0
UPLINK EARTH STATION				
Earth Station Diameter (meters)	13.0	6.1	6.1	6.1
Earth Station Gain (dBi)	56.4	49.4	49.4	49.4
Earth Station Elevation Angle	20	20	20	20
DOWNLINK EARTH STATION				
Earth Station Diameter (meters)	3.5	2.4	3.0	3.0
Earth Station Gain (dBi)	41.1	38.1	39.7	39.7
Earth Station G/T (dB/K)	21.0	17.4	19.2	19.2
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)	80.4	73.4	62.4	42.0
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)	-.5	-.5	-.5	-.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)	32.7	26.5	22.0	21.1
DOWNLINK PERFORMANCE				
Downlink EIRP per Carrier (dBW)	40.2	40.2	32.7	12.3
Antenna Pointing Error (dB)	-.5	-.5	-.5	-.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)	21.0	17.4	19.2	19.2
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)	17.4	14.6	15.3	14.5
COMPOSITE LINK PERFORMANCE				
C/N Uplink (dB)	32.7	26.5	22.0	21.1
C/N Downlink (dB)	17.4	14.6	15.3	14.5
C/I Intermodulation (dB)	N/A	N/A	20.5	19.6
C/I Uplink Co-Channel (dB)*	24.0	24.0	25.4	25.1
C/I Downlink Co-Channel (dB)*	24.0	24.0	25.4	25.1
C/I Uplink Adjacent Satellite 1 (dB)	21.5	15.3	10.8	9.9
C/I Downlink Adjacent Satellite 1 (dB)	15.6	6.2	10.2	9.3
C/I Uplink Adjacent Satellite 2 (dB)	21.5	15.3	10.8	9.9
C/I Downlink Adjacent Satellite 2 (dB)	20.3	15.6	18.9	18.0
C/(N+I) Composite (dB)	11.1	4.3	4.9	4.0
Required System Margin (dB)	-1.0	-1.0	-1.0	-1.0
Net C/(N+I) Composite (dB)	10.1	3.3	3.9	3.0
Minimum Required C/N (dB)	-10.0	-3.4	-3.9	-3.0
Excess Link Margin (dB)	.1	0.0	0.0	0.0
Number of Carriers	1	1.0	2.5	277.2
CARRIER DENSITY LEVELS				
Uplink Power Density (dBW/Hz)	-42.0	-50.8	-55.3	-56.2
Downlink EIRP Density At Beam Peak (dBW/Hz)	-21.8	-30.6	-31.6	-32.5