SES-LIC-20040210-00282

FCC 312
Main Form

Approved by OMB 3060-0678

Est. Avg.Burden Hours Per Response: 11 Hrs.

FEDERAL COMMUNICATIONS COMMISSION

APPLICATION FOR SATELLITE SPACE AND EARTH STATION AUTHORIZATIONS

FCC Use Only
File Number:
Call Sign: E040105
Fee Number:

APPLICANT INFORMATION

1. Legal Name of Applicant: Loral SpaceCom Corporation (Debtor In Posession)	2. Voice Telephone Number: 908-470-2342
3. Other Name Used for Doing Business (if any): Loral Skynet	4. Fax Telephone Number: 908-470-2453
5. Mailing Street Address or P.O. Box: **P.O. Box 7018 500 Hills Drive** ATTENTION:	6. City: BEDMINSTER 7. State / Country (if not U.S.A.): USA 8. Zip Code: 07921-7018
9. Name of Contact Representative (If other than applicant): STANLEY EDINGER	10. Voice Telephone Number: 908470-2342
11. Firm or Company Name: LORAL SKYNET	12. Fax Telephone Number: 908-470-2453
13. Mailing Street Address or P.O. Box: 7018 500 Hills Drive ATTENTION: STANLEY EDINGER	14. City: BEDMINSTER 15. State / Country (if not U.S.A): NJ 16. Zip Code: 07921-7018

Satellite and Telecommunications Divis... International Bureau

CLASSIFICATION OF FILING

17. Place an "X" in the box next to the classification that applies to this filing for both questions a. and b. Mark only one box for 17a and only one box for 17b.

a1. [X] Earth Station
a2. [ ] Space Station

b1. [X] Application for License of New Station
b2. [ ] Application for Registration of New Domestic Receive-Only Station
b3. [ ] Amendment to a Pending Application
b4. [ ] Modification of License or Registration
b5. [ ] Assignment of License or Registration
b6. [ ] Transfer of Control of License or Registration
b7. [ ] Notification of Minor Modification
b8. [ ] Application for License of New Receive-Only Station Using Non-U.S. Licensed Satellite
b9. [ ] Letter of Intent to Use Non-U.S. Licensed Satellite to Provide Service in the United States
b10. [ ] Other (Please Specify):

18. If this filing is in reference to an existing station, enter: Call sign of station:	19. If this filing is an amendment to a pending application enter: (a) Date pending application was filed: (b) File number of pending application:

TYPE OF SERVICE

20. NATURE OF SERVICE: This filing is for an authorization to provide or use the following type(s) of service(s): Place an "X" in the box(es) next to all that apply.

☒ a. Fixed Satellite ☐ c. Radiodetermination Satellite ☐ e. Direct to Home Fixed Satellite
☐ b. Mobile Satellite ☐ d. Earth Exploration Satellite ☐ f. Digital Audio Radio Service ☒ g. Other (please specify) TT&C

21. STATUS: Place an "X" in the box next to the applicable status. Mark only one box.

☐ a. Common Carrier ☒ b. Non-Common Carrier

22. If earth station applicant, place an "X" in the box(es) next to all that apply.

☒ a. Using U.S. licensed satellites ☒ b. Using Non-U.S. licensed satellites

23. If applicant is providing INTERNATIONAL COMMON CARRIER service, see instructions regarding Sec. 214 filings. Mark only one box. Are these facilities:

☐ a. Connected to the Public Switched Network ☒ b. Not connected to the Public Switched Network

24. FREQUENCY BAND(S): Place an "X" in the box(es) next to all applicable frequency band(s).

☐ a. C-Band (4/6 GHz)
☒ b. Ku-Band (12/14 GHz) ☐ c. Other (Please specify)

TYPE OF STATION

25. CLASS OF STATION: Place an "X" in the box next to the class of station that applies. Mark only one box.

☒ a. Fixed Earth Station ☐ b. Temporary-Fixed Earth Station ☐ c. 12/14 GHz VSAT Network ☐ d. Mobile Earth Station ☐ e. Space Station ☐ f. Other (Specify)

If space station applicant, go to Question 27.

26. TYPE OF EARTH STATION FACILITY Mark only one box.

☒ a. Transmit/Receive ☐ b. Transmit-Only ☐ c. Receive-Only

PURPOSE OF MODIFICATION OR AMENDMENT

27. The purpose of this proposed modification or amendment is to: Place an "X" in the box(es) next to all that apply.

☐ a -- authorization to add new emission designator and related service
☐ b -- authorization to change emission designator and related service
☐ c -- authorization to increase EIRP and EIRP density
☐ d -- authorization to replace antenna
☐ e -- authorization to add antenna
☐ f -- authorization to relocate fixed station
☐ g -- authorization to change assigned frequency(ies)
☐ h -- authorization to add Points of Communication (satellites & countries)
☐ i -- authorization to change Points of Communication (satellites & countries)
☐ j -- authorization for facilities for which environmental assessment and radiation hazard reporting is required
☐ k - Other (Please Specify)

ENVIRONMENTAL POLICY

28 Would a Commission grant of any proposal in this application or amendment have a significant environmental impact as defined by 47 CFR 1.307? ☐ YES ☒ NO

If YES, submit the statement as required by Sections 1.1308 and 1.1311 of the Commission's rules, 47 C.F.R §§ 1.1308 and 1.1311, as an exhibit to this application.

A Radiation Hazard Study must accompany all applications as an exhibit for new transmitting facilities, major modifications, or major amendments. Refer to OET Bulletin 65. **See Exhibit B**

ALIEN OWNERSHIP

29. Is the applicant a foreign government or the representative of any foreign government?	☐ YES	☒ NO
30. Is the applicant an alien or the representative of an alien?	☐ YES	☒ NO
31. Is the applicant a corporation organized under the laws of any foreign government?	☐ YES	☒ NO
32. Is the applicant a corporation of which more than one-fifth of the capital stock is owned of record or voted by aliens or their representatives or by a foreign government or representative thereof or by any corporation organized under the laws of a foreign country?	☐ YES	☒ NO
33. Is the applicant a corporation directly or indirectly controlled by any other corporation of which more than one-fourth of the capital stock is owned of record or voted by aliens, their representatives, or by a foreign government or representative thereof or by any corporation organized under the laws of a foreign country?	☒ YES	☐ NO
34. If any answer to questions 29, 30, 31, 32 and/or 33 is Yes, attach as an exhibit, the identification of the aliens or foreign entities, their nationality, their relationship to the applicant, and the percentage of stock they own or vote. SEE EXHIBIT C		

BASIC QUALIFICATIONS

35. Does the applicant request any waivers or exemptions from any of the Commission's Rules? If Yes, attach as an exhibit, copies of the requests for waivers or exceptions with supporting documents.	☐ YES	☒ NO
36. Has the applicant or any party to this application had any FCC station authorization or license revoked or had any application for an initial, modification or renewal of FCC station authorization, license, or construction permit denied by the Commission? If Yes, attach as an exhibit, an explanation of the circumstances.	☐ YES	☒ NO
37. Has the applicant, or any party to this application, or any party directly or indirectly controlling the applicant ever been convicted of a felony by any state or federal court? If Yes, attach as an exhibit, an explanation of the circumstances.	☐ YES	☒ NO
38. Has any court finally adjudged the applicant, or any person directly or indirectly controlling the applicant, guilty of unlawfully monopolizing or attempting unlawfully to monopolize radio communication, directly or indirectly, through control of manufacture or sale of radio apparatus, exclusive traffic arrangement or any other means or unfair methods of competition? If Yes, attach as an exhibit, an explanation of the circumstances.	☐ YES	☒ NO
39. Is the applicant, or any person directly or indirectly controlling the applicant, currently a party in any pending matter referred to in the preceding two items? If Yes, attach as an exhibit, an explanation of the circumstances.	☐ YES	☒ NO
40. If the applicant is a corporation and is applying for a space station license, attach as an exhibit the names, addresses, and citizenship of those stockholders owning of record and/or voting 10 percent or more of the Filer's voting stock and the percentages so held. In the case of fiduciary control, indicate the beneficiary(ies) or class of beneficiaries. Also list the names and addresses of the officers and directors of the Filer.		
41. By checking Yes, the undersigned certifies, that neither the applicant nor any other party to the application is subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Act of 1988, 21 U.S.C. Section 862, because of a conviction for possession or distribution of a controlled substance. See 47 CFR 1.2002(b) for the meaning of "party to the application" for these purposes.	☒ YES	☐ NO
42a. Does the applicant intend to use a non-U.S. licensed satellite to provide service in the United States? If yes, answer 42b and attach an exhibit providing the information specified in 47 C.F.R. § 25.137, as appropriate. If no, proceed to question 43.	☒ YES	☐ NO
42b. What administration has licensed or is in the process of licensing the space station? If no license will be issued, what administration has coordinated or is in the process of coordinating the space station? SPAIN		

43. Description. (Summarize the nature of the application and the services to be provided). Application to construct and operate a new Ku- band earth station to be located in Hawley, PA to communicate with Hispasat – 1C located at 30 degrees W.L. The earth station will be used to provide a data communications service delivering remote telemetry and control information from two locations in Spain to Hawley.

Exhibit No.	Identify all exhibits that are attached to this application.
B	Radiation Hazard Study
C	Alien Ownership
D	Technical Satellite Information for Hispasat 1-C

CERTIFICATION

The Applicant waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise, and requests an authorization in accordance with this application. The applicant certifies that grant of this application would not cause the applicant to be in violation of the spectrum aggregation limit in 47 CFR Part 20. All statements made in exhibits are a material part hereof and are incorporated herein as if set out in full in this application. The undersigned, individually and for the applicant, hereby certifies that all statements made in this application and in all attached exhibits are true, complete and correct to the best of his or her knowledge and belief, and are made in good faith.

44. Applicant is a (an): (Place an "X" in the box next to applicable response.)

☐ a. Individual ☐ b. Unincorporated Association ☐ c. Partnership ☒ d. Corporation ☐ e. Governmental Entity ☐ f. Other (Please specify) _____

45. Typed Name of Person Signing	46. Title of Person Signing
Stanley Edinger	Manger Government Relations

47. Signature: Stanley Edinger

48. Date: 2/9/2004

WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. Code, Title 18, Section 1001), AND/OR REVOCATION OF ANY STATION AUTHORIZATION (U.S. Code, Title 47, Section 312(a)(1)), AND/OR FORFEITURE (U.S. Code, Title 47, Section 503).

FCC 312
Schedule B

FEDERAL COMMUNICATIONS COMMISSION
SATELLITE EARTH STATION AUTHORIZATIONS
(Technical and Operational Description)

(Place an "X" in one of the blocks below)

☒ License of New Station ☐ Registration of New Domestic Receive-Only Station ☐ Amendment to a Pending Application ☐ Modification of License/Registration ☐ Notification of Minor Modification

B1. Location of Earth Station Site. If temporary fixed, mobile, or VSAT remote facility, specify area of operation and point of contact. If VSAT hub station, give its location. For VSAT networks attach individual Schedule B, Page 1 sheets for each hub station and each remote station. Individually provide the Location, Points of communications, and Destination Points for each hub and remote station.

B1a. Station Call Sign	B1b. Site identifier (HUB. REMOTE, etc.)	B1c. Telephone Number	B1j. Geographic Coordinates Deg. - Min Sec. NIS, - E/W	B1k. Lat./Lon. Coordinates are:
	HAWLEY24KU-HISP-C	570-226-6620	Lat. 41 27 51.0 N Lon. 75 07 46.8 W	☐ NAD-27 ☒ NAD-83

B1d. Street Address of Station or Area of Operation	B1e. Name of Contact Person
RR #1 Box 672 Satellite Road	Station Manager

B1c City	B1g. County	B1h. State	B1i. Zip Code	B1l. Site Elevation (AMSL)
Hawley	Pike	PA	18428	354 meters

B2. Points of Communications: List the names and orbit locations of all satellites with which this earth station will communicate. The entry "ALSAT" is sufficient to identify the names and locations of all satellite facilities licensed by the U.S. All non-U.S. licensed satellites must be listed individually.

Satellite Name and Orbit Location	Satellite Name and Orbit Location	Satellite Name and Orbit Location
"ALSAT"		

B3. Destination points for communications using non-US. licensed satellites. For each non-U.S. licensed satellite facility identified in section B2 above, specify the destination point(s) (countries) where the services will be provided by this earth station via each non-U.S. licensed satellite system. Use additional sheets as needed.

Satellite Name	List of Destination Points
HISPASAT – 1C	SPAIN

FEDERAL COMMUNICATIONS COMMISSION

SATELLITE EARTH STATION AUTHORIZATIONS

FCC Form 312 - Schedule B: (Technical and Operational Description)

B4. **Earth Station Antenna Facilities: Use additional pages as needed.**

(a) Site ID*	(b) Antenna ID**	(c) Quantity	(d) Manufacturer	(e) Model	(f) Antenna Size (meters)	(g) Antenna Gain Transmit and/or Receive (___ dBi at ___ GHz)
HAWLEY24 KU-HISP-C	1	1	Channel Master	243	2.4	TR 49.3dBi @14.24 GHz Rec 47.6 dBi @ 11.95 GHz

B5. **Antenna Heights and Maximum Power Limits: (The corresponding Antenna ID in tables B4 and 5 applies to the same antenna)**

(a) Antenna ID**	(b) Antenna Structure Registration No.	Maximum Antenna Height (c) Above Ground Level (meters)	Maximum Antenna Height (d) Above Men Sea Level (meters)	(e) Building Height Above Ground Level (meters)***	(f) Maximum Antenna Height Above Rooftop (meters)***	(g) Total Input Power, at Antenna flange (Watts)	(h) Total EIRP for all carriers (dBW)
1		3	357	NA	NA	8 Watts	57.8

Notes: * If this is an application for a VSAT network, identify the site (Item B Ib. Schedule B, Page 1) where each antenna is located. Also include this Site-ID on Schedule B. Page 5.

** Identify each antenna in VSAT network or multi-antenna station with a unique identifier. such as HUB, REMOTEI, Al, A2, 10M, 12M, 7M. etc. Use this same antenna ID throughout tables B4, B5, B6, and B7 when referring to the same antenna.

***Attach sketch of site or exemption. See 47 CFR Part 17.

FEDERAL COMMUNICATIONS COMMISSION
SATELLITE EARTH STATION AUTHORIZATIONS
FCC Form 312 - Schedule B: (Technical and Operational Description)

B6. **Frequency Coordination Limits: Use additional pages as needed.**

(a) Antenna ID*	(b) Frequency Limits (MHz)	(c) Range of Satellite Arc Eastern Limit**	(d) Range of Satellite Arc Western Limit**	(e) Antenna Elevation Angle Eastern Limit	(f) Antenna Elevation Angle Western Limit	(g) Earth Station Azimuth Angle Eastern Limit	(h) Earth station Azimuth Angle Western Limit	(i) Maximum EIRP Density toward the Horizon (dBW/4kHz)
1	14000-14500 MHz	10W	133W	9.8	15.1	106.8	247.6	0.45
1	11700-12200 MHz	10W	133W	9.8	15.1	106.8	247.6	NA

Notes: * Provide the ANTENNA-ID from table B4 to identify the antenna to which each frequency band and orbital arc range is associated.
** If operating with geostationary satellites. give the orbital arc limits and the associated elevation and azimuth angles. If operating with non-geostationary satellites, give the notation "NON-GEO" for the satellite arc and give the minimum operational elevation angle and the maximum azimuth angle range.

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B7. **Particulars of Operation (Full particulars are required for each r.f. carrier): Use additional pages as needed.**

(a) Antenna 1D*	(b) Frequency Bands (MHz)	(c) T/R mode **	(d)Antenna Polarization (H,V, L,R)	(e) Emission Designator	(f) Maximum EIRP per Carrier (dBW)	(g)Maximum EIRP Density per Carrier (dBW/4kHz)	(h) Description of Modulation and Services
1	14000-14500 MHz	T	H/V	667KG7W	57.0	34.8	512 Kbps QPSK w R/S
1	11700-12200 MHz	R	H/V	667KG7W	-	-	512 Kbps QPSK w R/S

Notes: * Provide the ANTENNA-ID from table B4 to identify the antenna to which each frequency band and emission is associated. For VSAT networks. include frequencies and emissions for all HUB and REMOTE units.
** Indicate whether the earth station transmits or receives in each frequency band.

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FCC Form 312 - Schedule B: (Technical and Operational Description)

If VSAT Network, provide the SITE-ID) (Item B Ib) of the station that B8-B13 are in response to (HUB, REMOTE I, etc.):_____

B8. If the proposed antenna(s) operate in the Fixed Satellite Service (FSS) with geostationary satellites, do(es) the proposed antenna(s) comply with the antenna pin patterns specified in Section 25.209(a) and (b) as demonstrated by the manufacturer's qualification measurements? If NO, provide as Exhibit H, a technical analysis showing compliance with two-degree spacing policy. ☒ YES ☐ NO

B9. If the proposed antenna(s) do not operate in the Fixed Satellite Service (FSS), or if they operate in the Fixed Satellite Service (FSS) with non-geostationary satellites, do(es) the proposed antenna(s) comply with the antenna gain patterns specified in Section 25.209(a2) and (b) as demonstrated by the manufacturer's qualification measurements? N/A ☐ YES ☐ NO

B 10. Is the facility operated by remote control? If YES, provide the location and telephone number of the control point. ☐ YES ☒ NO

Remote Control Point Location:

B10a Street Address			
B10b. Citv	B10c. County	B10d. State /Country	B10e Zip Code
B10f. Telephone Number	B10g. Call Sign of Control Station		

B I 1. Is frequency coordination required? If YES, attach a frequency coordination report as Exhibit I. ☐ YES ☒ NO

B 12. Is coordination with another country required? If YES, attach the name of die country(ies) and plot of coordination contours as Exhibit J. ☐ YES ☒ NO

B13. FAA Notification - (See 47 CFR Part 17 and 47 CFR Part 25.113(c))

Where FAA notification is required, have you attached a copy of a completed FCC Form 854 And for the FAA's study regarding the potential hazard of the structure to aviation? **N/A** ☐ YES ☐ NO

FAILURE TO COMPLY WITH 47 CFR PARTS 17 AND 25 WILL RESULT IN THE RETURN OF THIS APPLICATION.

EXHIBIT B

EXHIBIT B
Radiation Hazard Study
2.4 meter Ku-Band

INTRODUCTION

The FCC adopted new guidelines and procedures in 1996 for evaluating environmental effects of radio frequency (RF) emissions. In order to provide assistance in determining whether proposed or existing transmitting facilities comply with the new guidelines, the FCC Office of Engineering and Technology revised OET Bulletin 65. The revised version updates limits for Maximum Permissible Exposure (MPE) in terms of electric and magnetic field strength and power density for transmitters operating at frequencies between 300 kHz and 100 GHz. This bulletin was adopted by the FCC in their General Docket No. 97-303 on August 25,1997. In order to comply with the requirements of the Report and Order, calculations to determine the power flux densities in the far field, near field, and reflector regions of the earth station antenna have been made and are contained in this study.

The FCC guidelines incorporate two separate tiers of exposure limits that are dependent on the situation in which the exposure takes place and the status of the individuals who are subject to exposure. The earth station transmitting equipment and antenna are located within a fenced area and not accessible to the general public. Entry is restricted to employees who have been made fully aware of the potential for human exposure and can exercise control over their exposure. Therefore occupational / controlled exposure maximum power density limits are used in this study.

The FCC Office of Engineering and Technology suggests a method for calculating the maximum values of the power densities emanating from an aperture antenna in OET bulletin 65. This method is used to determine the power densities associated with the satellite antenna.

The Loral SKYNET® Hawley PA Ku-Band satellite earth station will be equipped with amplifiers having a maximum output of 8 watts. The transmitter will feed a 2.4 meter antenna via a transmission link having 3 dB loss. The following calculations will be based on a maximum output power at the antenna flange of 4 watts:

Antenna Surface. The maximum power density directly in front of the antenna may be expressed as:

$$S_{surface} = \frac{4P}{A}$$

where: $S_{surface}$ = maximum power density at the antenna surface
P = power fed to the antenna
A = physical area of the aperture antenna

Using the parameters for this antenna:

$S_{surface}$ = 4 (4 Watts) / π (2.4 meters / 2) ^{2}

$S_{surface}$ = 16 Watts / 4.52 m ^{2}

$S_{surface}$ = 3.54 Watts / m ^{2}

$S_{surface}$ = 0.4 mW / cm ^{2}

Near- Field Region. In the near field of the main beam the power density can reach a maximum before it begins to decrease with distance. The extent of the near field can be described by the following equation:

$$R_{nf} = \frac{D^2}{4\lambda}$$

where: R_{nf} = extent of near field
D = maximum diameter
λ = wavelength

Using the parameters for this antenna:

λ = 0.02 meters @ 14500 MHz

R_{nf} = (2.4 meters) ^{2} / 4(0.02 meters)

R_{nf} = 5.76 / .08 meters

R_{nf} = 72 meters

The magnitude of the on axis power density varies according to location in the near field. However, the maximum value of the near field, on axis, power density can be expressed by the following equation:

$$S_{nf} = \frac{16\eta P}{\pi D^2}$$

where: S_{nf} = maximum near field power density
η = aperture efficiency
P = power fed to the antenna
D = antenna diameter

Using the parameters for this antenna:

η = .65
P = 4 Watts
S_{nf} = 16 (.65) (4 Watts) / π (2.4 meters)^2
S_{nf} = 41.6 Watts / 18.1 meter^2
S_{nf} = 2.3 Watts / meter^2
S_{nf} = 0.2 mW / cm^2

Far Field Region. For purposes of evaluating RF exposure, the distance to the beginning of the far field region can be approximated by the following equation:

$$R_{ff} = \frac{0.6D^2}{\lambda}$$

where: R_{ff} = distance to the beginning of far field
D = diameter of antenna
λ = wavelength

Using the parameters for this antenna:
R_{ff} = 0.6 (2.4 meters)^2 / .02 meters
R_{ff} = 173 meters

The power density in the far field region of the antenna pattern decreases inversely as the square of the distance. The power density in the far field region of the radiation pattern can be estimated by the equation:

$$S_{ff} = PG / 4\pi R^2$$

where: S_{ff} = power density (on axis)
P = power fed to antenna
G = power gain of the antenna in the direction of interest
R = distance to the point of interest

Using the parameters for this antenna:

S_{ff} = 4 Watts (49.1dBi) / 4 (π) $(173)^2$

S_{ff} = 325132 / 376099

S_{ff} = .86 Watts / meter^2

S_{ff} = .09 mW / cm^2

Main Reflector - Feed Horn Region

The RF energy radiated from the feed system is confined to a conical shape whose vertex is located at the feed and extends outward to the main reflector surface. The power density at any point in this region is expressed by the equation:

S_{feed} = P/A

Where :

A = Cross section area of the conical region in meter^2

P = Radiated transmitted power in watts

At the sub-reflector surface the power density is:

S_{feed} = P/A = 4 / π $(0.20/2)^2$ = 127 Watts/meter^2

S_{feed} = 13 mW/cm^2

EXHIBIT B
Radiation Hazard Study
2.4 meter Ku-Band

Conclusion

The results of the above calculations are summarized in the following table and in Figure 1.

Region		Power Density	Remarks
Antenna Surface		0.4 mW/cm²	Safe Level
Main Reflector Feed Horn Region		13 mW/cm²	Hazardous
Near Field	< 72 meters	0.2 mW/cm²	Safe Level
Far Field	> 173 meters	0.9 mW/cm²	Safe Level

Results of this hazard study indicate that the 5 mW/cm² MPE limit for Occupational/Controlled Exposure in the 1500 – 100,000 MHz range is not exceeded in areas directly in front of the antenna in the far field. The regions where this limit may be exceeded will be at the antenna the region between the reflector and the feed horn. This area is not readily accessible to personnel and whenever personnel are required to work on the radiating or reflecting parts of the antenna structure, the transmitter will be turned off. Signs to this effect will be posted at the transmitter site. The antenna is surrounded by a fence and unauthorized personnel are prevented access by a locked gate.

Based on this study of predicted radio frequency levels, it is concluded that operation of this satellite earth station meets OET Bulletin 65 maximum permissible exposure limits and that no harmful effects will occur to station personnel or anyone within proximity of the station.

Therefore, in accordance with 47 CFR § 1.1307 (b) of the Commission's Rules, preparation and submission of an Environmental Assessment (EA) is not required.

EXHIBIT B
Radiation Hazard Study
2.4 meter Ku-Band

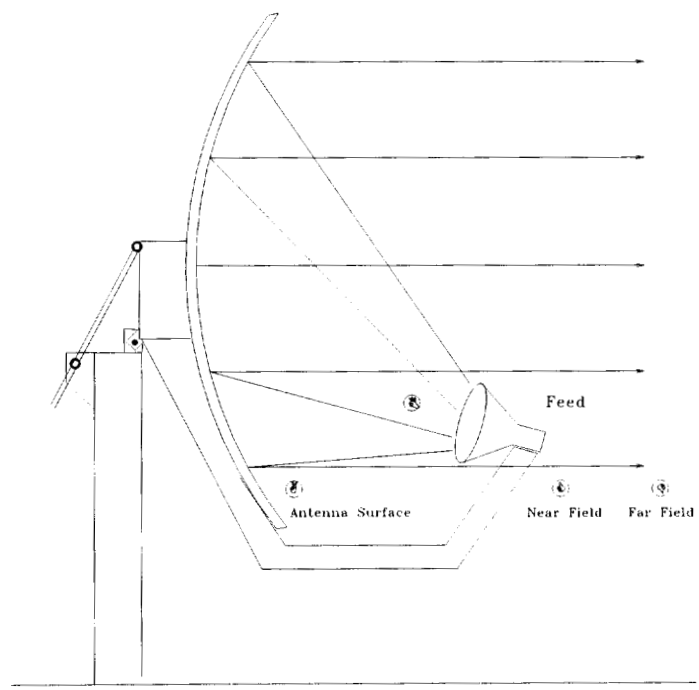

FIGURE 1. Satellite Antenna

EXHIBIT C

FOREIGN OWNERSHIP INFORMATION

Loral SpaceCom Corporation (Debtor-in-Possession), a U.S. corporation, is a wholly owned subsidiary of Loral Space & Communications Corporation (Debtor-in-Possession), also a U.S. corporation. Loral Space & Communications Corporation (Debtor-in-Possession) is wholly owned and controlled by Loral Space & Communications Ltd. (Debtor-in-Possession) ("Loral Ltd. DIP"), a Bermuda company. Loral Ltd. DIP's home market is the United States.[1]

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[1] *See In re* Application of AT&T Corp. and Loral SpaceCom Corporation, *Order and Authorization*, 12 FCC Rcd. 925 at ¶ 9 (1997).

EXHIBIT D

hispasat

acercando culturas

HISPASAT-1C

TECHNICAL INFORMATION

hispasat
acercando culturas

INFORMATION FOR HISPASAT 1C SPACE STATION

(1) Name, address, and telephone number of the owner;

HISPASAT, S.A.
C/ Gobelas, 41
28023-MADRID
TEL: +34 91 710 25 40

(2) General description of overall system facilities, operations and services;

HISPASAT operates a fleet of geostationary communication satellites at 30° W.L. used to provide a wide range of telecommunications services, including routing and DTH delivery of video and audio programs, satellite news gathering, VSAT applications, Internet backbone services, etc. Both within Europe and between Europe and another parts of the worth. HISPASAT was established in 1989. Its first operational satellite was launched in 1992.

(3) a) Radio frequencies and polarization plan (including beacon, telemetry and telecommand functions);

The frequency and polarization plan of the HISPASAT-1C satellite is shown in Figure 1 and recapped in Table 1.

Polarization V and H are orthogonal linear polarizations and are defined as follows:

- Horizontal polarization (H) is defined as being parallel to the equatorial plane.
- Vertical polarization (V) is orthogonal to that of polarization H

The total number of operating transponders in the HISPASAT-1C satellite is 24, which can be selected by ground command.

The following frequencies and polarizations will be used for the telecommand and telemetry and beacon functions:

-Ku band:

TC frequency: 14000.0 MHz , horizontal polarization
TM/Ranging frequency (IBERIA/EUROPE): 12748.25 MHz, horizontal polarization.
Beacon frequency (IBERIA/EUROPE): 11702 MHz, vertical polarization
Beacon frequency (AMERICA): 11702 MHz, horizontal polarization

-S band (emergency):

TC frequency: 2052.0 MHz, Dual RHCP/LHCP polarization
TM frequency: 2228.4163 MHz, Dual RHCP/LHCP polarization

b) Center frequency and polarization of transponders (both receiving and transmitting frequencies); transponder bandwidth;

The receive and transmit center frequencies and polarizations of the 24 transponders are shown in Figure 1 and recapped in Table 1.

The bandwidth of each transponder is 36 MHz

c) Emission designators and allocated bandwidth of emission;

Emission designators: 76K8G1X-- to 36M0G7X--

Allocated bandwidth: 76.8 KHz to 36 MHz

d) Identification of which antenna beams are connected or switchable to each transponder and TT&C function,

The HISPASAT-1C satellite uses fixed receive and transmit beams over Europe (IBERIA/EUROPE beam) and over the Americas (AMERICA beam).

The HISPASAT-1C satellite is able to simultaneously operate within the different coverage zones, which are defined here in.

These coverage zones are:

- IBERIA/EUROPE Coverage, that covers Iberian Peninsula, Balearics, Canaries, Azores/Madeira Islands and most part of Europe and North of Africa

- AMERICA Coverage, that includes a large part of America, from South of Argentina to Canada.

Figure 1 and Table 1 show which receive beam and transmit beam can be connected to each transponder.

Figure 2 and Figure 3 show the coverage of the AMERICA receive beam and the AMERICA transmit beam respectively, as seen from 30° W.L. orbital location.

It is possible by ground command to establish any transponder configuration presented in table 2.

e) Final amplifier output power (identify any net losses between output of final amplifier and input of antenna and specify the maximum EIRP for each antenna beam),

Final amplifier output power: 18,5 dBW (net losses between output of final amplifier and input od antenna: 1,5 dB)

Maximum EIRP at saturation in each transmit beam:

- IBERIA/EUROPE transmit beam: 56 dBW
- AMERICA transmit beam: 50 dBW

Figures 3 and 5 give EIRP contours for IBERIA/EUROPE transmit beam and AMERICA trasnmit beam respectively.

f) Receiving system noise temperature,

446° K (with each receive antenna)

g) Relationship between satellite receive antenna gain patter and gain-to-temperature ratio and saturation flux density for each antenna beam (may be indicated on antenna gain plot),

Figures 2 and 4 give G/T contours for the IBERIA/EUROPE receive beam and the AMERICA receive beam respectively.

Saturation flux density for IBERIA/EUROPE receive beam is:

-(82.0 - X) dBW/m^2 at minimum gain setting (see 5 h below)
-(97.0 - X) dBW/m^2 at maximum gain setting (see 5 h below)

where X is the difference between the G/T peak value and the G/T value in the direction considered

Saturation flux density for AMERICA receive beam is:

-(81.0 - X) dBW/m^2 at minimum gain setting (see 5 h below)
-(96.0 - X) dBW/m^2 at maximum gain setting (see 5 h below)

where X is the difference between the G/T peak value and the G/T value in the direction considered

h) Gain of each transponder channel (between output of receiving antenna and input of transmitting antenna) including any adjustable gain step capabilities,

The gain of each transponder channel, between output of receiving antenna and input of transmitting antenna, will be adjustable by steps lower than 1 dB between a minimum gain of 112 dB and a maximum gain 130 of dB.

i) Predicted receiver and transmitted channel filter response characteristics;

See Tables 3 and 4.

(4) For satellites in geostationary-satellite orbit, orbital location or locations,

The HISPASAT-1C satellite is operated at the 30°W.L. orbital location. Operation of the HISPASAT-1C satellite has been coordinated with United States.

(5) Predicted space station antenna gain contours for each transmit and each receive antenna beam, plotted on an area map at 2dB intervals down to 10 dB below the peak value of the parameter and at 5 dB intervals between 10 dB and 20 dB below the peak value, with the peak value and sense of polarization clearly specified on each plotted contour;

See figures 2, 3, 4 and 5

(6) Description of types of services to be provided, and the areas to be served,

The HISPASAT-1C satellite is used for digital communications services, including video and internet applications, with bit rates ranging from 64 Kbit/s, possibly less, to 45 Mbit/s

The HISPASAT-1C satellite serves Iberian Peninsula, Balearics, Canaries, Azores/Madeira Islands and most part of Europe and North of America as well as a large part of America, from South of Argentina to Canada.

(7) For satellite in geostationary-satellite orbit, accuracy with which the orbital inclination, the antenna axis attitude, and longitudinal drift will be maintained;

The HISPASAT-1C satellite will be maintained at 30º W.L. with an accuracy of +/- 0.07 degree. Its orbital inclination will be maintained within +/- 0.1 degree.

Antenna axis stability: 0.1 degree.

(8) Calculation of power flux density levels within each coverage area and of the energy dispersal, if any, needed for compliance with Sec.25.208;

Power flux density levels will not exceed –152,64 dBW/m^2 per 4 KHz over the U.S. territory.

(9) Arrangement for tracking, telemetry and control;

TTC functions are performed at Arganda (Madrid), Spain (Longitude 3º 22' 40" (E)), Latitude 40º 16' 20" (N))

(10) Physical characteristics of the space station including weight and dimensions of spacecraft, detailed mass (on ground and in-orbit) and power (beginning and end of life) budgets, and estimated operational lifetime and reliability of the space station and the basis for that estimate;

Physical characteristics of the HISPASAT-1C satellite:

Dimensions	stowed:	3.27X2.5X5.1
	deployed:	6.95X28.9X5.1
Mass	on ground	1304 kg
	at launch	3112.5 kg
Power	beginning of life	6.7 kW
	end of life	5.6 kW
Estimated operational lifetime		15Y
Reliability		0.78

(11) Clear and detailed statement of whether the space station is to be operated on a common carrier basis, or whether non-common carrier transactions are proposed. If non-common carrier transactions are proposed, describe the nature of the transactions and specify the number of transponders to be offered on a non-common carrier basis;

The HISPASAT-1C satellite is operated on a non-common carrier basis and all the transponders will be available for use on a non-common carrier basis. HISPASAT leases capacity pursuant to commercial contracts.

It is not HISPASAT's customary practice to hold itself out as a common carrier for hire, and HISPASAT does not intend to make capacity available on a common carrier basis.

(12) Dates by which construction will be commenced and completed, launch date, and estimated date of placement into service;

The HISPASAT-1C satellite was launched on 16th february, 2000 and nowadays is into service.

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	FREQUENCY (MHz)		POLARIZATION		COVERAGE	
TRANSPONDER	UPLINK	DOWNLINK	UPLINK	DOWNLINK	UPLINK	DOWNLINK
41	13020	11731	V	H	IB/EUR	IB/EUR
42	13060	11771	V	H	IB/EUR	IB/EUR
43	13100	11811	V	H	IB/EUR	IB/EUR
44	13140	11851	V	H	IB/EUR	IB/EUR
45	13180	11891	V	H	IB/EUR	IB/EUR
46	13220	11931	V	H	IB/EUR	IB/EUR
47	13020	11731	H	V	IB/EUR	IB/EUR
48	13060	11771	H	V	IB/EUR	IB/EUR
49	13100	11811	H	V	IB/EUR	IB/EUR
50	13140	11851	H	V	IB/EUR	IB/EUR
51	13180	11891	H	V	IB/EUR	IB/EUR
52	13220	11931	H	V	IB/EUR	IB/EUR
53	13772	11972	V	H	IB/EUR IB/EUR AME AME	IBE/EUR AME AME IBE/EUR
54	13812	12012	V	H	IB/EUR IB/EUR AME AME	IBE/EUR AME AME IBE/EUR
55	13852	12052	V	H	IB/EUR IB/EUR AME AME	IBE/EUR AME AME IBE/EUR
56	13892	12092	V	H	IB/EUR IB/EUR AME AME	IBE/EUR AME AME IBE/EUR
57	13772	11972	H	V	IB/EUR IB/EUR AME AME	IBE/EUR AME AME IBE/EUR
58	13812	12012	H	V	IB/EUR IB/EUR AME AME	IBE/EUR AME AME IBE/EUR
59	13852	12052	H	V	IB/EUR IB/EUR AME AME	IBE/EUR AME AME IBE/EUR
60	13892	12092	H	V	IB/EUR IB/EUR AME AME	IBE/EUR AME AME IBE/EUR
61	13932	12132	V	H	IBE/EUR AME	AME AME
62	13972	12172	V	H	IBE/EUR AME	AME AME
63	13932	12132	H	V	IBE/EUR AME	AME AME
64	13972	12172	H	V	IBE/EUR AME	AME AME

Table 1.- Frequency Plan Definition

TRANSPONDER NUMBER	TRANSPONDER SELECTABILITY	
	UPLINK COVERAGE	DOWNLINK COVERAGE
41-52 (12)	IBERIA/EUROPE	IBERIA/EUROPE
53-60 (8)	IBERIA/EUROPE	IBERIA/EUROPE
	IBERIA/EUROPE	AMERICA
	AMERICA	AMERICA
	AMERICA	IBERIA/EUROPE
61-64 (4)	IBERIA/EUROPA	AMERICA
	AMERICA	AMERICA

Table 2.- Transponder interconnectivity

PART OF BAND, fc ± MHz		**10**	**15**	**16.5**	**18**
INPUT SECTION GAIN FLATNESS	dBpp	0.65	0.7	1.2	2.3
TOTAL GAIN FLATNESS	dBpp	0.85	1.3	2.4	4.6
INPUT SECTION GAIN SLOPE	dB/MHz	0.15	0.2	0.5	1.3
TOTAL GAIN SLOPE	dB/MHz	0.25	0.4	1.0	2.9

Table 3.- Amplitude in band response

Frequency Spacing from Fc (± MHz)	**22**	**22.75**	**30**	**35**	**45**
Input Demultiplexer (dB)	18	N/A	35	N/A	40
Output Multiplexer (dB)	11 (5)	18 (9)	25 (20)	N/A (23)	30 (27)

Values in brackets ( ) applies only to end channels

Table 4.- Minimum out of band rejection (dB)

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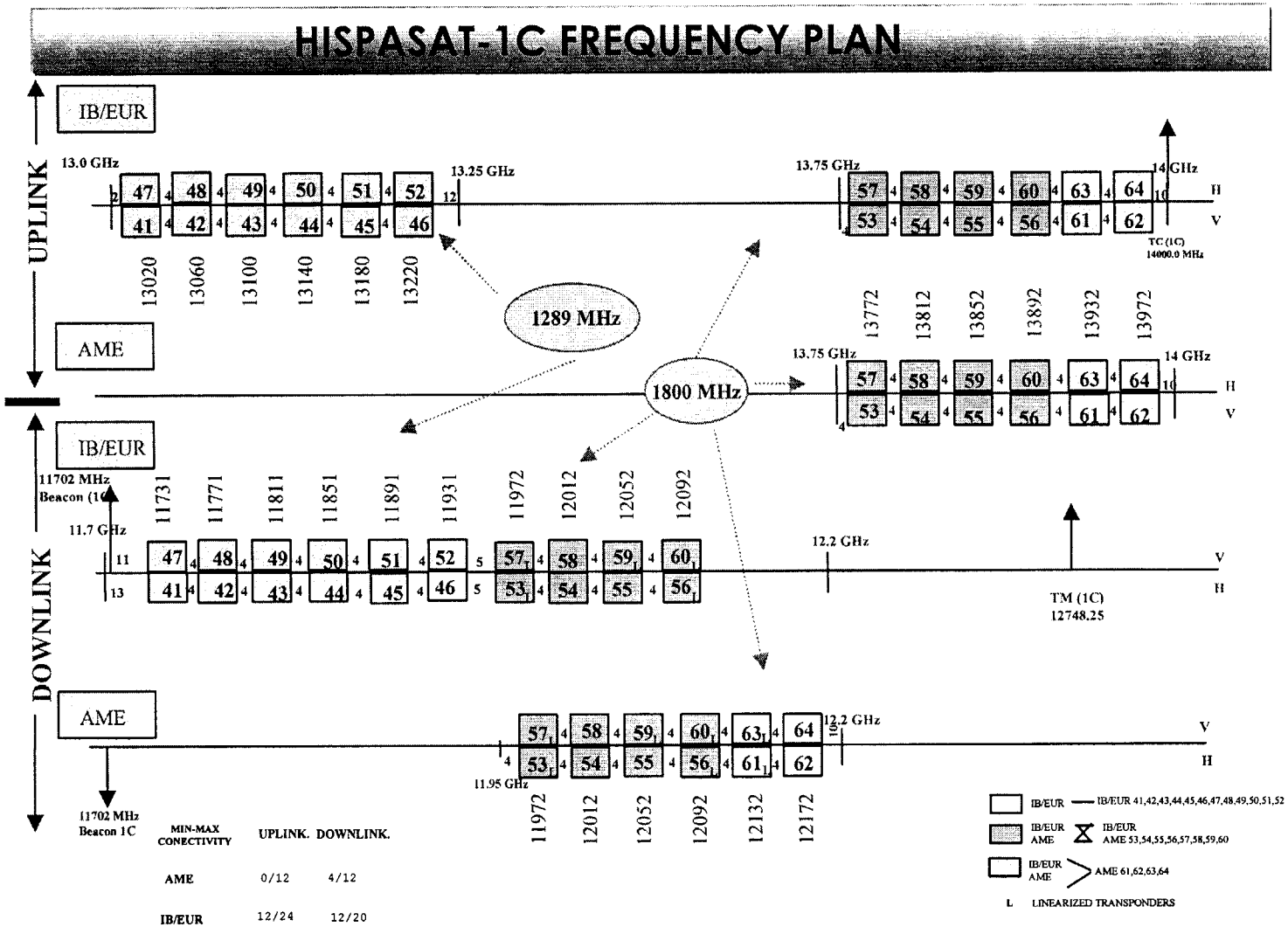

Figure 1.- HISPASAT-1C Frequency Plan

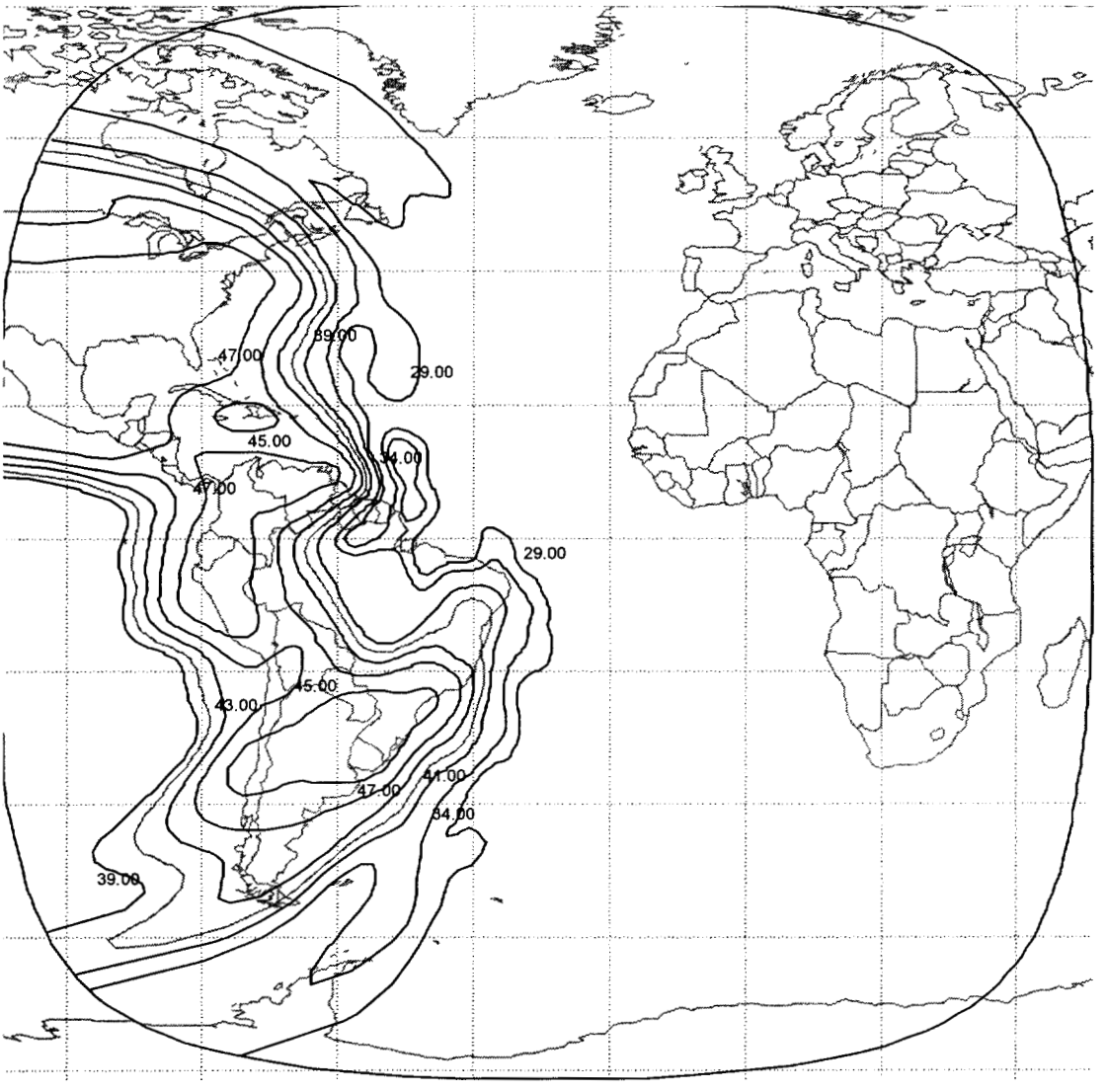

Figure 2.- Illustration of the HISPASAT-1C AMERICA transmit coverage (30°W). EIRP characteristics (dBW)

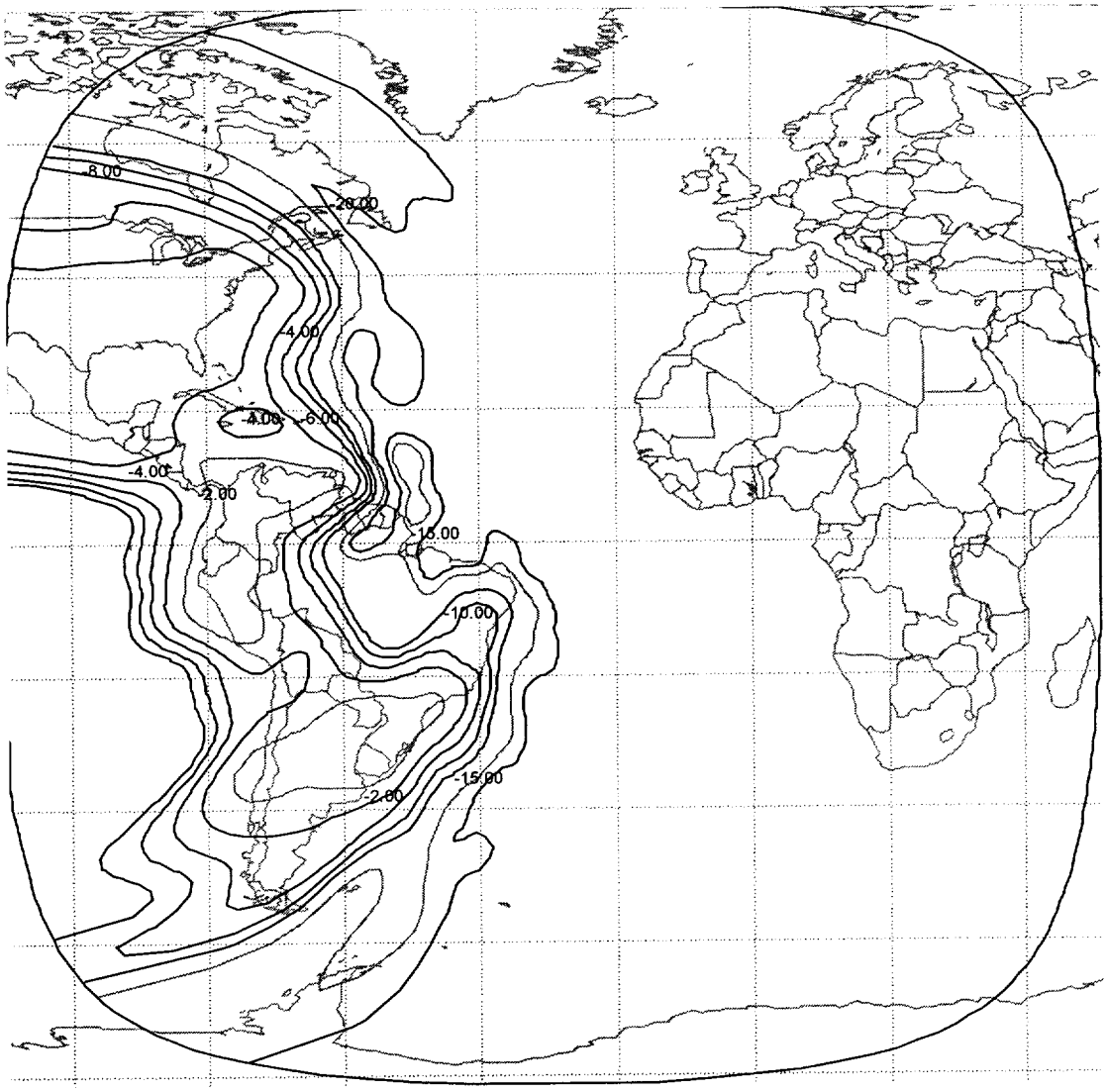

Figure 3.- Illustration of the HISPASAT-1C AMERICA transmit beam. Gain peak 30.7 dBi

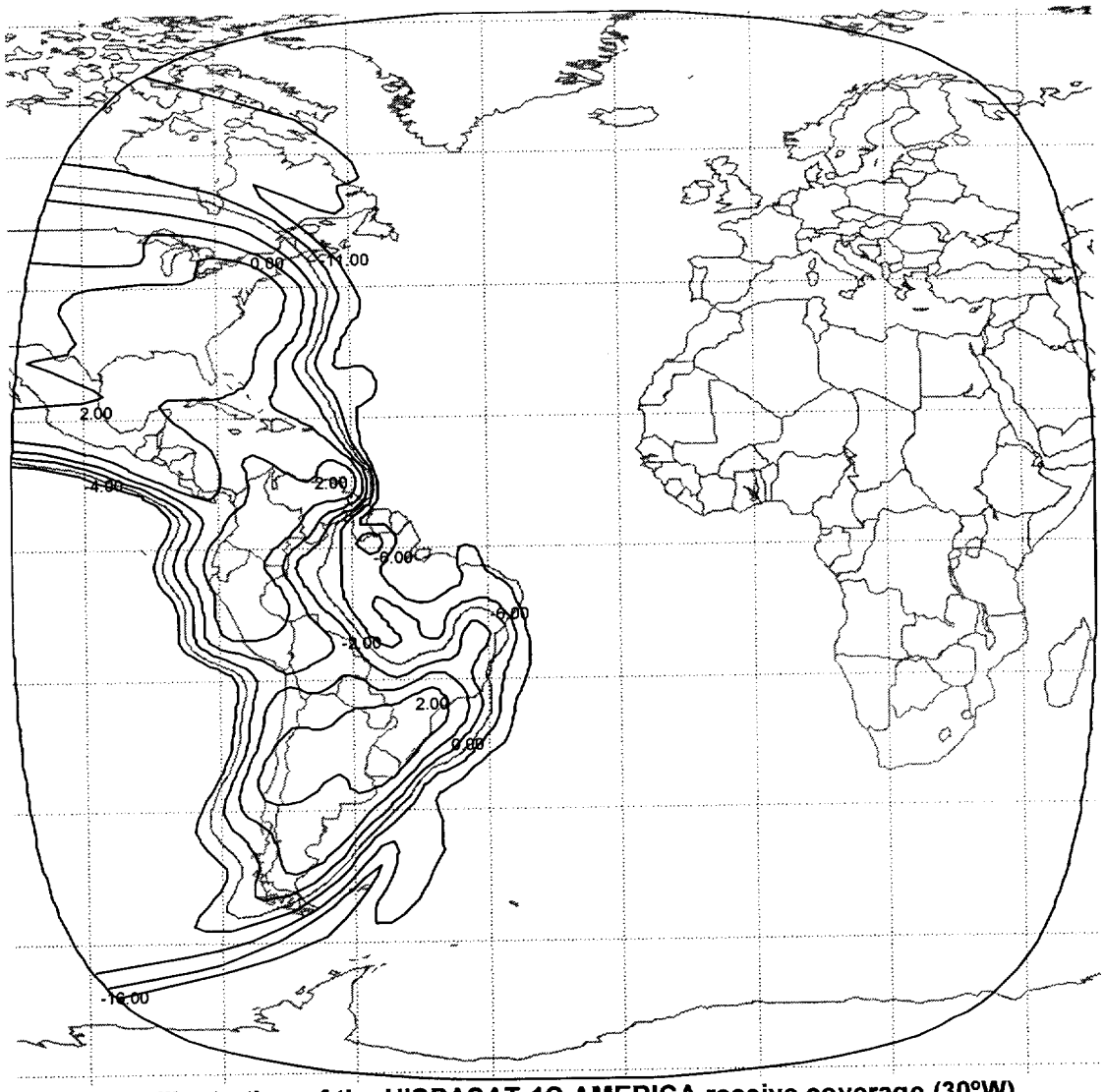

Figure 4.- Illustration of the HISPASAT-1C AMERICA receive coverage (30°W). G/T characteristics (dB/K)

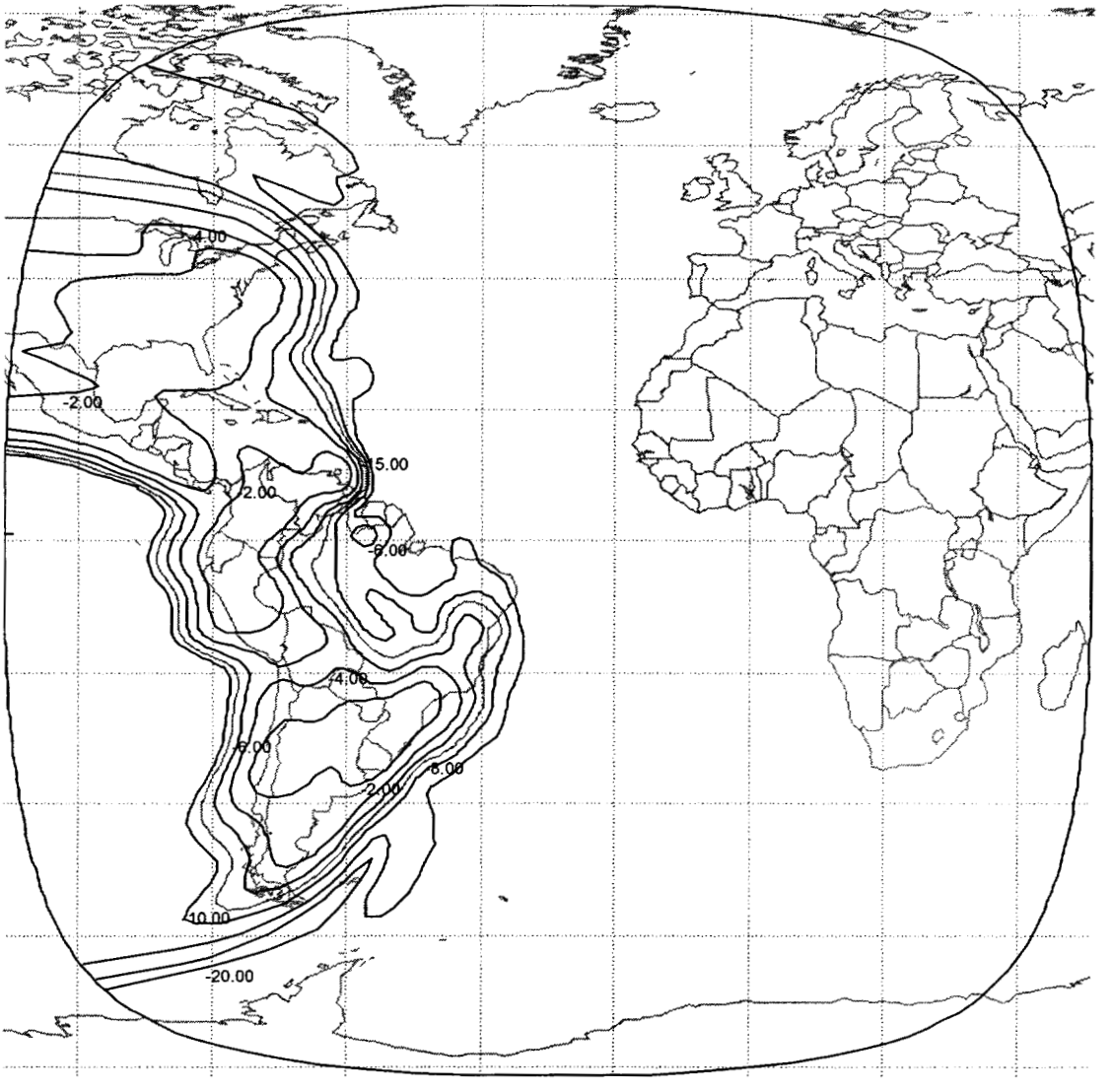

Figure 5.- Illustration of the HISPASAT 1C AMERICA receive beam. Gain peak 38.3 dBi