BEFORE THE

Federal Communications Commission

WASHINGTON, D.C. 20554

In re: Application of	)	
	)	
COLUMBIA COMMUNICATIONS CORP.	)	File No. 3-SAT-P/LA-96
	)	
For Authority to Construct, Launch	)	
and Operate a C-Band Satellite	)	
At 47° West Longitude	)	

APPLICATION

COLUMBIA COMMUNICATIONS CORP.

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September 29, 1995

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CROSS-INDEX OF INFORMATION REQUIRED BY 47 C.F.R. § 25.114

Requirement	Section(s)
Section 25.114(b)	
Waiver Pursuant to 47 U.S.C. § 304	X
Section 25.114(c)	
(1) Name and Address of Applicant	I
(2) Inquiries and Correspondence	II
(3) Type of Authorization	Introduction (p. 1)
(4) General Description of Overall System	III
(5) Radio Frequencies and Polarization Plan	Tech. Annex, 3 & Table 1
Satellite Transmit Capability	Tech. Annex, 4 & Table 2
Receive System Noise Temperature	Tech. Annex, 5
Gain-to-Noise Temperature Budget	Tech. Annex, Table 3
Transponder Connectivity	Tech. Annex, 6 & Table 4
Transponder Gain Control & Saturation Flux Density	Tech. Annex, 7
Satellite Transponder Filter Response	Tech. Annex, 8 & Figures 7-9
Emission Designators	Tech. Annex, 10 & Table 5
(6) Orbital Location	Tech. Annex, 1
(7) Predicted Space Station Antenna Gain Contours	Tech. Annex, Figures 1-6
(8) Earth Stations	Tech. Annex, 11

Requirement	Section(s)
(9) Types of Service to be Provided	III, Tech. Annex, 12
Link Budgets	Tech. Annex, 12 & Figures 10-14
(10) Station Keeping	Tech. Annex, 13
(11) Power Flux Density Levels	Tech. Annex, 14
(12) Launch Vehicles	Tech. Annex, 17
(13) TT&C	Tech. Annex, 18
(14) Spacecraft Parameters	Tech. Annex, 19
(15) [Not Applicable]	
(16) System Use	III, IX
(17) Schedule of Estimated Costs	V & Attachment 2
(18) Financial Qualifications	VI
(19) Legal Qualifications	VII & Attachment 3
(20) Regulatory Status	Introduction (p. 1)
(21) Milestones	VIII & Attachment 4
(22) Public Interest Considerations	IX
Applicant's Certification	XI
Engineer's Certification	Tech. Annex

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APPLICATION

Columbia Communications Corporation ("Columbia"), pursuant to Sections 308, 309, and 319 of the Communications Act of 1934, as amended (47 U.S.C. §§ 308, 309, 319), and Section 25.114 of the Commission's Rules, hereby requests authority to construct, launch and operate a new C-Band satellite -- COLUMBIA-ATL-47W -- as part of its separate international communications satellite system. Columbia proposes to operate on a non-common carrier basis. In support of this application, Columbia submits the following information:

I. APPLICANT

Columbia Communications Corporation
1088 Bishop Street
Suite 2912
Honolulu, Hawaii 96813
(808) 523-8100

II. CORRESPONDENCE

Correspondence with respect to this application should be sent to the following person at the above address and telephone number:

Clifford Laughton
Chairman and Chief Executive Officer

with a copy to:

Kenneth Gross, Esq.
General Counsel and Chief Operating Officer
Columbia Communications Corporation
7200 Wisconsin Ave.
Suite 701
Bethesda, Maryland 20814
(301) 907-8800

and to:

Raul R. Rodriguez, Esq.
Leventhal, Senter & Lerman
2000 K Street, N.W.
Suite 600
Washington, D.C. 20006
(202) 429-8970

III. GENERAL DESCRIPTION OF OVERALL SYSTEM

Columbia currently offers video, voice and data communications capability using leased satellite capacity on two Tracking and Data Relay Satellite System ("TDRSS") satellites through an arrangement with the National Aeronautics and Space Administration ("NASA"). The Columbia/TDRSS satellite at 174° W.L. provides service to the Pacific Ocean Region, while the Columbia/TDRSS satellite at

41° W.L. provides service to customers in the Atlantic Ocean Region. Commercial capacity on each satellite is limited to twelve C-band transponders.

Currently, there is substantial demand for satellite services in the Atlantic Ocean Region that Columbia is unable to fill with its limited twelve transponder capacity. Even more significantly, the TDRSS space stations are expected to reach the end of their useful lives shortly after the end of the decade. Launch of an additional Columbia satellite will permit it to continue serving customers now using TDRSS space segment, while at the same time expanding the range and scope of its video, voice and data service capabilities. Indeed, the 47° W.L. orbital location is ideally suited to provide continuity of service to Columbia's existing C-band customers utilizing Columbia/TDRSS capacity at 41° W.L. In addition, the new satellite's design will provide greater performance and capacity than the existing TDRSS satellite.

The COLUMBIA-ATL-47W satellite will have two distinct fixed coverage beams for both uplink and downlink. The West Atlantic beam will cover primarily North and Central America, including the Caribbean region, with secondary coverage of South America. The East Atlantic beam will cover primarily Western Europe and North Africa, with secondary coverage of the remaining visible part of Africa. In addition to the fixed beams, there will be two steerable C-band spot beams with both transmit and receive capability. Each will have the capability to be pointed independently at any visible area of the Earth, subject to coordination constraints. These steerable beams will provide enhanced coverage capability and allow for service to meet unanticipated market demand.

The full technical and operational parameters for the proposed satellite are contained in the Technical Annex, which is Attachment 1 hereto. Columbia intends to file in the near future Appendix 4 information for this proposed satellite required to fulfill U.S. advance publication obligations as a member of the International Telecommunication Union.

IV. COMPATIBILITY/COORDINATION WITH OTHER SYSTEMS

Orion Network Systems, Inc. ("Orion") currently holds an authorization to construct, launch and operate a Ku-Band satellite at 47° W.L. as part of its international satellite system. Because Columbia's satellite at this location will utilize C-Band spectrum, its proposal is compatible with Orion's existing authorization.

Another U.S. C-Band satellite, PAS-1, is currently assigned to the 45° W.L. slot two degrees away from the proposed location for COLUMBIA-ATL-47W. Columbia has designed its satellite to be fully compliant with the FCC's 2° orbital spacing policy, and will coordinate its use with PanAmSat at the earliest opportunity. Columbia is also confident of achieving satisfactory coordination of its proposed satellite with the INTELSAT satellites located three degrees away, at 50° W.L. The details of Columbia's interference analysis are included in Section 20 of the Technical Annex, Attachment 1 hereto.

V. ESTIMATED COSTS OF PROPOSED CONSTRUCTION

Columbia estimates that the total cost of construction, launch, and one year of operation for the proposed satellite at 47° W.L. will be $ 195 million. A further breakdown of these costs is provided in Attachment 2 hereto.

VI. FINANCIAL QUALIFICATIONS

In accordance with the Commission's two-stage financial qualification standard for international satellite systems separate from INTELSAT, Columbia has provided above (see also Attachment 2) the total estimated cost of constructing and launching its proposed satellite, as well as the projected initial expenses for its operation for one year following launch. See Establishment of Satellite Systems Providing International Communications, 101 F.2d 1046, 1165 (1985). At this time, Columbia is seeking to satisfy only the first stage of the required financial showing; therefore, it is only required to identify the sources or potential sources of funding that it intends to rely upon. Id.

Consistent with this requirement, Columbia intends to procure the required capital for its new Atlantic satellite through an appropriate combination of debt and equity financing, as well as through advance sale or lease of transponder capacity to its existing customers. Under Commission decisions applying this standard, this demonstration is sufficient for Columbia to receive a conditional authorization. See Orion Satellite Corp., DA 95-2027, slip op. at ¶¶ 5 & 7 (released September 25, 1995) (granting Orion a conditional license based upon its identification of start-up costs for the satellite and potential sources of capital to finance these costs). Following completion of the consultation process under Article XIV(d) of the INTELSAT Convention, Columbia will make the second-stage showing of current financial capability to construct, launch and operate the satellite.

VII. LEGAL QUALIFICATIONS

Columbia's Common Carrier and Satellite Radio Licensee Qualification Report (FCC Form 430) is Attachment 3 hereto.

VIII. DATES BY WHICH SIGNIFICANT MILESTONES ARE LIKELY TO BE ACHIEVED

A schedule of milestones for completion of various stages in the construction, launch and operation of the COLUMBIA-ATL-47W satellite system is Attachment 4 hereto.

IX. PUBLIC INTEREST CONSIDERATIONS SUPPORT GRANT OF THIS APPLICATION

A. Columbia Has A Near-Term Need For Access To Additional Space Segment

As indicated above, Columbia is currently providing needed space segment services to satellite customers in the Atlantic Ocean Region, but the TDRSS satellite on which it provides this capacity is nearing the end of its useful life. Accordingly, Columbia will require replacement capacity in order to continue providing service into the next decade. In addition, the larger capacity available to it through construction of its own satellite will permit it to significantly expand its service offerings, and thereby enhance competition in the market for international satellite services. Due to this manifest need for additional space segment capacity to permit Columbia to continue to serve its existing base of customers, grant of this application is in the public interest.

B. The Commission Should Waive, Or Lift Entirely, The Freeze On Atlantic Ocean Region Satellite Applications

Because Columbia's application would serve the public interest by maintaining the availability of sufficient Atlantic Ocean Region space segment capacity, it is appropriate for the Commission to waive the decade-old freeze on applications for Atlantic Ocean Region orbital locations between 30° W.L. and 60° W.L. -- in the event that it does not choose to lift the freeze entirely.

The freeze was initiated on May 31, 1985 in order to facilitate orderly licensing, international technical consultations and coordination, and the development of a regulatory structure to govern international satellite systems separate from INTELSAT. See Processing of Pending Applications for Space Stations to Provide International Communications Service, FCC 85-296, slip op. at 2 (released June 6, 1985). Since that time, the necessary regulatory structure has been established, licensing procedures have been implemented, space station authorizations have been granted, several international coordinations have been successfully concluded, and three U.S. companies, including Columbia, have been authorized to provide international satellite services. The private international satellite industry as a whole is now well on its way to maturity, and there is no apparent need to constrain the ability of existing or potential licensees to apply for new satellite facilities.

Indeed, at the time it adopted the freeze, the Commission implied that it was motivated by the particular circumstances of that time, and that it would "not bar favorable action on additional applications for new satellites in the future . . ." Id. Consistent with this approach, several applications have been accepted for filing in

recent years despite the existence of the freeze. First, Columbia's existing authorization to use the TDRSS satellite at 41° W.L. was accepted and processed to grant pursuant to a waiver of the freeze. See Columbia Communications Corporation, 7 FCC Rcd 122, 123 (1991). Second, the application of PanAmSat Corporation for authority to construct, launch and operate PAS-9 at 58° W.L. (File No. CSS-94-015) was immediately placed on Public Notice last June despite the fact that the freeze remains nominally in effect. See Public Notice, Report No. I-6995 (released June 29, 1994).

Columbia believes that the Commission acted properly in accepting PanAmSat's application, and should follow the same course here. Even if there remains some justification for maintaining restrictions on applications for Atlantic satellites, it should not preclude Columbia from securing an authorization necessary for it to continue providing service to its existing satellite customers in this region. Accordingly, to the extent required, Columbia requests a waiver of the 1985 freeze on Atlantic Ocean Region satellite applications.

X. WAIVER OF CLAIM TO SPECTRUM

Pursuant to Section 304 of the Communications Act (47 U.S.C. § 304), Columbia 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.

XI. CERTIFICATION

The undersigned certifies individually and for Columbia that the statements made in this application are true, and correct to the best of his knowledge and belief, and are made in good faith.

The undersigned also certifies that neither Columbia nor any party to this application is subject to denial of federal benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. § 862.

Respectfully submitted,

COLUMBIA COMMUNICATIONS CORPORATION

September 29, 1995

By: _____
Kenneth Gross
Chief Operating Officer

ATTACHMENT 1
TECHNICAL ANNEX

Technical Annex

1. ORBITAL LOCATION

The orbit location of the COLUMBIA-ATL-47W satellite will be 47°W longitude. This orbit location will provide continuity of service to many of COLUMBIA's existing customers who are already utilizing the COLUMBIA/TDRS satellite capacity at 41°W, while providing wider satellite coverage and improved satellite receive and transmit performance for operation with smaller earth stations.

The use of the 47°W orbit location, in some of the frequency bands requested, is also compatible with the US government's existing USASAT-25E filing at the ITU, which defines a satellite with technical characteristics similar to those of the COLUMBIA-ATL-47W satellite described here. In the event that COLUMBIA is granted a license by the FCC to construct and launch this satellite, COLUMBIA will work with the FCC staff in the subsequent international coordination of this orbit location.

The COLUMBIA-ATL-47W satellite will be located 2° away from another US satellite system, PanAmSat, at 45°W. COLUMBIA has designed its COLUMBIA-ATL-47W satellite and the carriers it intends to use with this satellite, to be compatible with the FCC's 2° orbital spacing policy, and will coordinate such usage with PanAmSat at the earliest opportunity.

COLUMBIA is also confident of achieving satisfactory coordination of its COLUMBIA-ATL-47W satellite with Intelsat satellites at 50°W, which are located 3° away.

2. SATELLITE COVERAGE

The COLUMBIA-ATL-47W satellite provides two distinct fixed coverage beams for both uplink and downlink. Each of these coverage beams provides high performance to its primary service area with additional controlled spillover creating a secondary service area where service to larger earth stations may be provided.

The West-Atlantic fixed beam covers primarily North and Central America, including the Caribbean region, with secondary coverage also in South America. The East-Atlantic beam covers primarily Western Europe and North Africa, with secondary coverage of the remaining visible part of Africa.

In addition to the fixed beams, there are two steerable spot beams (designated as "S1" and "S2"), with both receive and transmit capability, which can be independently pointed to any part of the visible Earth, and which provide

improved satellite performance to meet unforeseen market demand in new geographic areas.

3. FREQUENCY AND POLARIZATION PLAN

The COLUMBIA-ATL-47W satellite supports a total of 44 transponders, 32 of which are 54 MHz usable bandwidth and 12 of which are 92 MHz usable bandwidth.

The frequency bands employed consist of the following:

(a) The conventional FSS frequency ranges of 5.925-6.425 GHz uplink and 3.700-4.200 GHz downlink. Thirty-two transponders are used within these frequency ranges.

(b) The extended C-band frequency range of 6.425-6.725 GHz uplink and 3.400-3.700 GHz downlink. Note that usage of the downlink portion of this band within the USA is limited to only 3.600-3.700 GHz, according to the FCC's table of frequency allocations, and only then under certain conditions, as addressed in section 3.2 below. The uplink portion of the band is also subject to coordination constraints. Twelve transponders are used within these frequency ranges.

Four-fold re-use of all the frequency bands is achieved, for both uplink and downlink, by means of orthogonal linear polarization and spatial re-use between the East-Atlantic and West-Atlantic beams and between the steerable spot beams (requiring them to be pointed in sufficiently diverse directions to obtain the required spatial isolation). In total this provides a transmission bandwidth, taking into account the frequency re-use, of 3200 MHz uplink and 3200 MHz downlink.

The center frequency, polarization and usable bandwidth of the transponders, for both uplink and downlink, are given in Table 1 below. In the conventional C-band frequency range there are 32 active transponders (transponders #1 to #8), each of 54 MHz usable bandwidth, with a transponder center frequency spacing of 60 MHz. In the extended C-band frequency range there are 12 active transponders, (transponders #9 to #11), each of 92 MHz usable bandwidth, with a transponder center frequency spacing of 100 MHz.

TABLE 1 - TRANSPONDER FREQUENCY PLAN

Transponder # (Note 1)	UPLINK		DOWNLINK		Transponder Usable Bandwidth (MHz)
	Center Freq. (GHz)	Pol'n	Center Freq. (GHz)	Pol'n	
1A, 1B 1C, 1D	5965.0	H V	3740.0	V H	54
2A, 2B 2C, 2D	6025.0	H V	3800.0	V H	54
3A, 3B 3C, 3D	6085.0	H V	3860.0	V H	54
4A, 4B 4C, 4D	6145.0	H V	3920.0	V H	54
5A, 5B 5C, 5D	6205.0	H V	3980.0	V H	54
6A, 6B 6C, 6D	6265.0	H V	4040.0	V H	54
7A, 7B 7C, 7D	6325.0	H V	4100.0	V H	54
8A, 8B 8C, 8D	6385.0	H V	4160.0	V H	54
9A, 9B 9C, 9D	6475.0	H V	3450.0	V H	92
10A, 10B 10C, 10D	6575.0	H V	3550.0	V H	92
11A, 11B 11C, 11D	6675.0	H V	3650.0	V H	92

Notes: 1: Re-use creates four transponders per frequency pair, two on each polarization.

Telecommand carriers will be located within the frequency ranges 5.925-5.935 and 6.415-6.425 GHz, with the final selected frequencies being subject to frequency coordination. For normal mode operations, once the spacecraft is at its correct orbit location, the uplink telecommand signals will be received by the West-Atlantic receive beam only to restrict spacecraft control to US located earth stations. During launch and early operations phase (LEOP) and during spacecraft emergencies, the uplink telecommand signals will be received using an omni-directional antenna system on the spacecraft. Telecommand carriers will operate in linear polarization during normal mode operations when received by the West-Atlantic receive beam and circular polarization during LEOP and emergencies when received by the omni-directional antenna system.

Telemetry carriers will be located within the frequency ranges 3.700-3.710 and 4.190-4.200 GHz, again with the final selected frequencies depending on the

outcome of frequency coordination. The telemetry carriers will also be used as beacons for the purpose of earth station alignment, and will be transmitted in all downlink beams during normal mode operations. During LEOP and during spacecraft emergencies, the downlink telemetry signals will be transmitted using an omni-directional antenna system on the spacecraft. Telemetry carriers will also operate in linear polarization during normal mode operations and circular polarization during LEOP and emergencies when transmitted by the omni-directional antenna system.

Special Considerations in the Bands 3.400-3.700 and 6.425-6.725 GHz

The extended C-band frequency ranges defined above have certain restrictions when used in the USA, as defined in the FCC's table of frequency allocations. On the downlink, only the 100 MHz in the frequency range 3.600-3.700 GHz is available in the USA to the Fixed-Satellite Service (FSS), and only then for international inter-continental systems. This allocation is also shared with US government users, and so is subject to coordination with those users prior to use. On the uplink, this full frequency range is available in the USA to the FSS, but is subject to coordination with other co-primary users of the band.

Within these frequency ranges, COLUMBIA will observe all the requirements of the FCC before assigning or transmitting any signals. The individual constraints applying in these uplink and downlink frequency ranges are addressed below.

In the frequency range 3.400-3.700 GHz, COLUMBIA will comply with the FCC table of frequency allocations, and particularly the requirements of US footnote 245, which requires the following:

(a) COLUMBIA will not operate downlinks in the frequency range 3.400-3.600 GHz in the West-Atlantic fixed beam, or in a steerable spot beam when pointed towards US territory. This band will only be used in other parts of the coverage area.

(b) The frequency range 3.600-3.700 GHz is only to be used for international inter-continental systems. COLUMBIA will therefore use this frequency range only for links to the USA from countries on the east side of the Atlantic ocean, or for links which do not downlink into the USA.

(c) Use of this frequency range is subject to case-by-case electromagnetic compatibility analysis. Therefore, in all cases, COLUMBIA will fully coordinate with the US government users before transmitting any signals within this frequency range from any downlink beam of the satellite.

In the frequency range 6.425-6.725 GHz, COLUMBIA will comply with the FCC table of frequency allocations, as follows:

(a) International footnote 809 indicates that this frequency range is also used for passive microwave sensor measurements over the oceans. In order to protect this service, COLUMBIA will not employ any ship-borne transmit antennas that operate within this frequency range.

(b) This frequency range is also shared in the USA, on a primary basis, with the Mobile service, including Auxiliary Broadcast, Cable Television, Domestic Public Fixed and Private Operational Fixed Microwave applications. COLUMBIA will therefore ensure that it coordinates with these other users before transmitting, from earth stations located within the USA, in this frequency range.

Note that the above constraints on these frequency ranges is reflected in the transponder connectivity defined in Table 4 of section 6 below.

4. SATELLITE TRANSMIT CAPABILITY

The satellite is equipped with a total of 44 active solid state power amplifiers (SSPAs), each of 40 Watt saturated output power. There are 12 spare SSPAs, making a total of 56 installed SSPAs. The SSPAs are configured in four separate redundancy rings of 14-for-11. The net loss between the SSPA outputs and the antenna inputs is approximately 1.5 dB.

Figures 1, 2 and 3 show the gain contours of the two fixed satellite transmit antenna beams and the steerable spot beams (S1 and S2), respectively, for both horizontal and vertical polarizations.

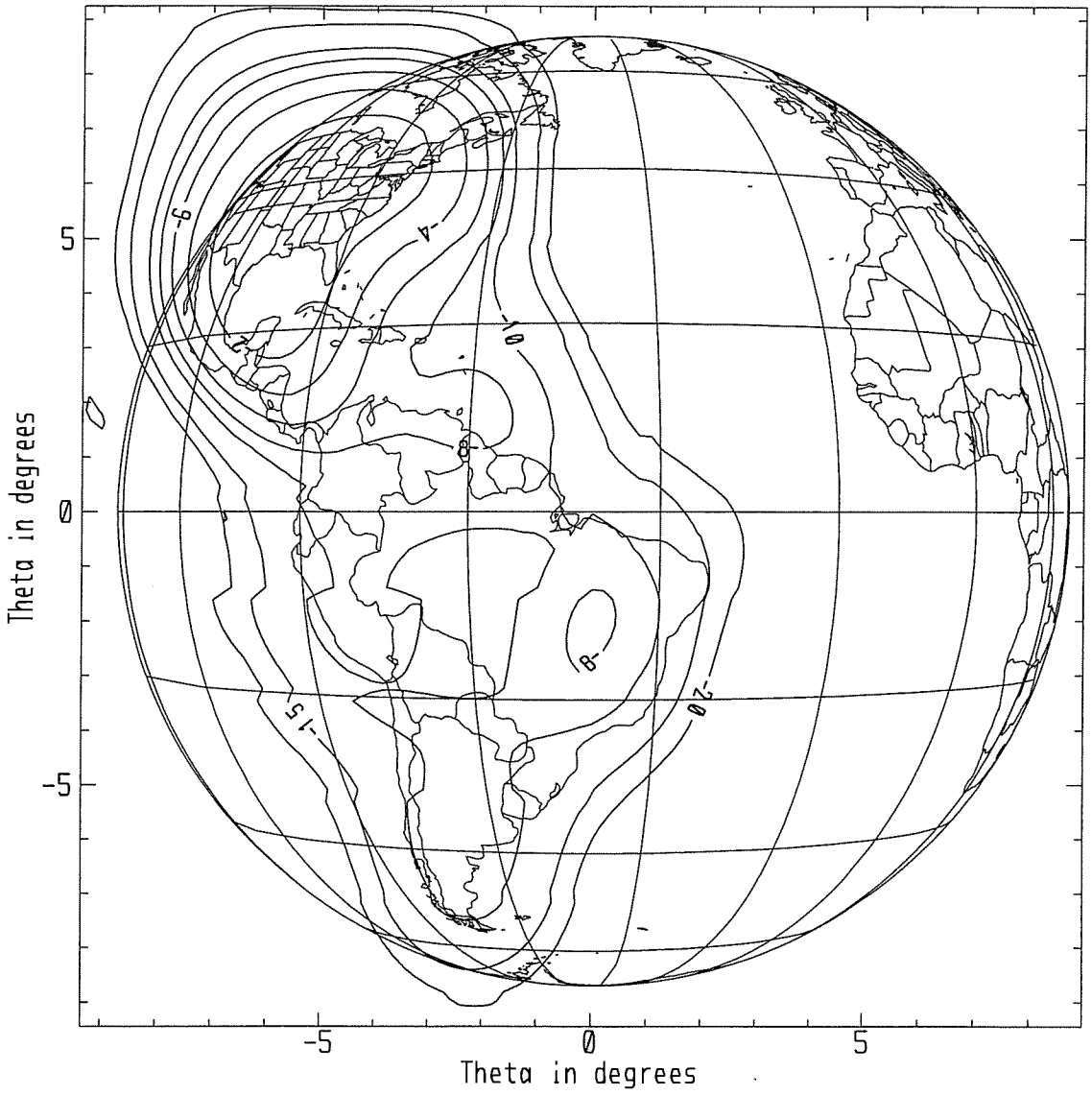
The cross-polar isolation of the satellite transmit antennas exceeds 30 dB within the -6 dB gain contour and 25 dB within the -15 dB gain contour, at all transmit frequencies.

Table 2 summarizes the EIRP budget:

TABLE 2 - SATELLITE TRANSMIT PERFORMANCE

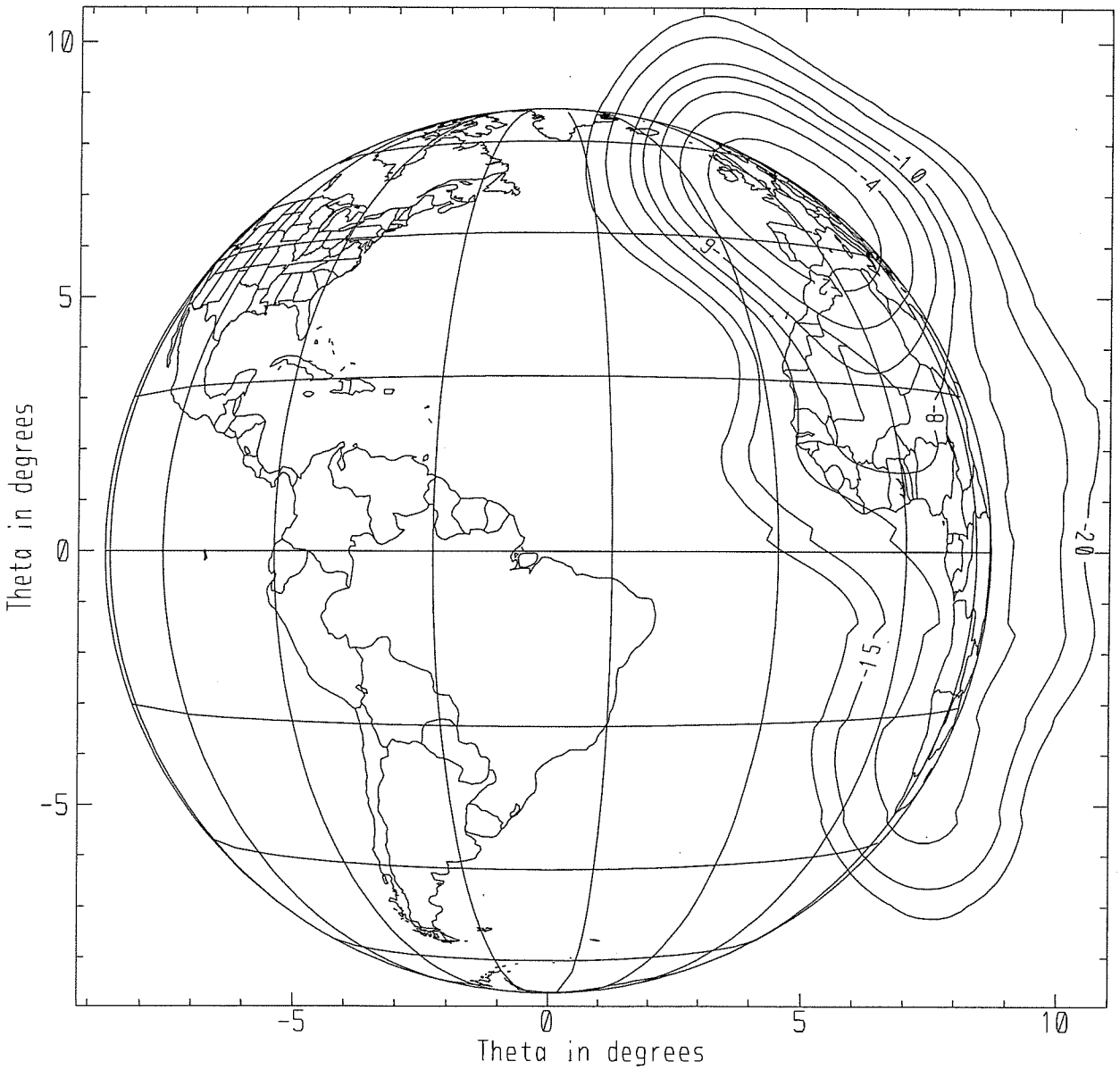
Parameter	Beam Peak	Primary Service Area (-6 dB contour)	Secondary Service Area (-15 dB contour)
West-Atlantic Beam:			
Saturated SSPA O/P Power	+16.0 dBW	+16.0 dBW	+16.0 dBW
Post-SSPA losses	-1.5 dB	-1.5 dB	-1.5 dB
Transmit Antenna Gain	+29.5 dBi	+23.5 dBi	+14.5 dBi
EIRP	+44.0 dBW	+38.0 dBW	+29.0 dBW
East-Atlantic Beam:			
Saturated SSPA O/P Power	+16.0 dBW	+16.0 dBW	+16.0 dBW
Post-SSPA losses	-1.5 dB	-1.5 dB	-1.5 dB
Transmit Antenna Gain	+31.0 dBi	+25.0 dBi	+16.0 dBi
EIRP	+45.5 dBW	+39.5 dBW	+30.5 dBW
Steerable Spot-Beams:			
Saturated SSPA O/P Power	+16.0 dBW	+16.0 dBW	N/A
Post-SSPA losses	-1.5 dB	-1.5 dB	N/A
Transmit Antenna Gain	+29.0 dBi	+23.0 dBi	N/A
EIRP	+43.5 dBW	+37.5 dBW	N/A

FIGURE 1 - SATELLITE TRANSMIT ANTENNA GAIN CONTOURS WEST-ATLANTIC BEAM (V and H Polarization)



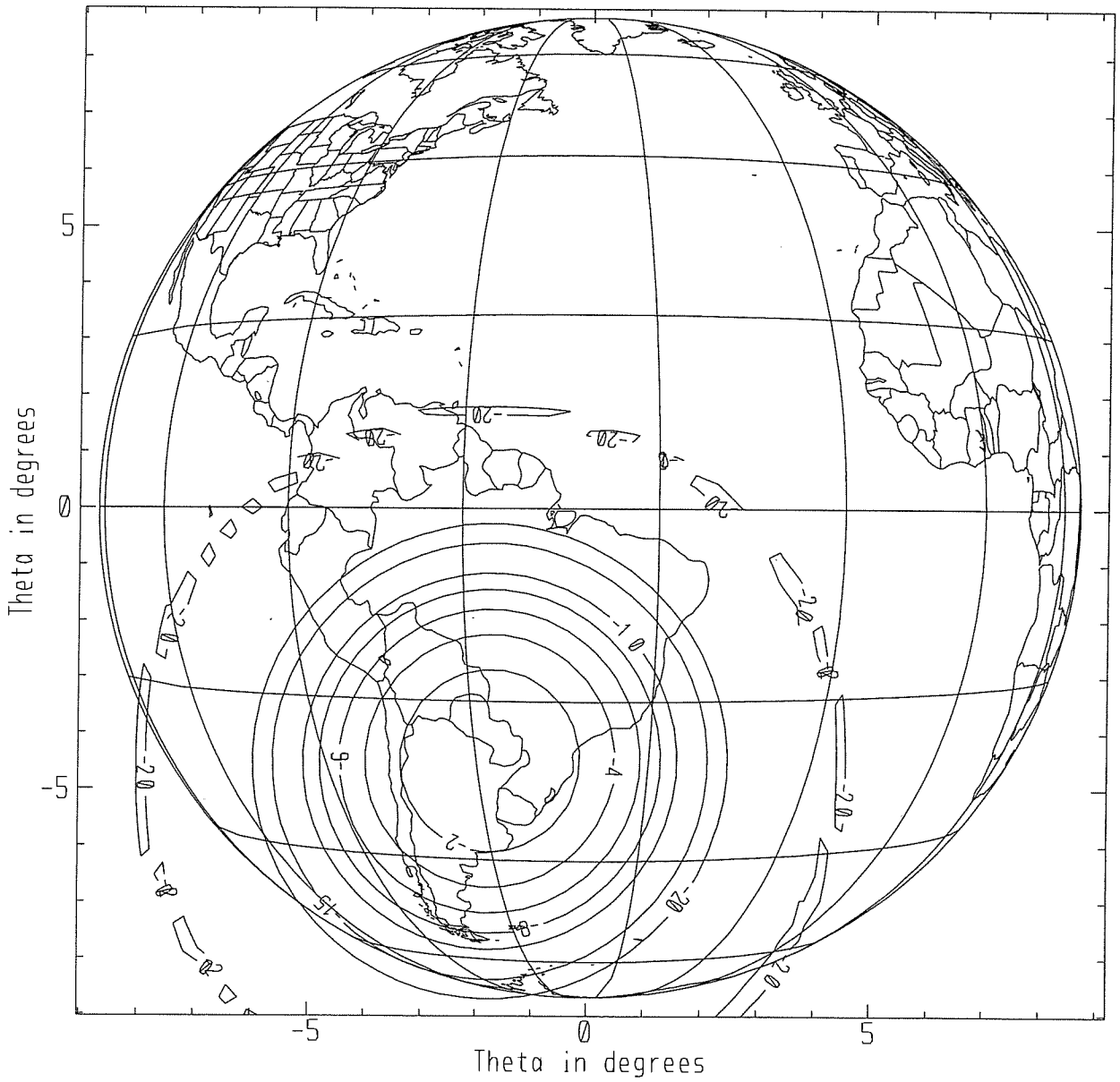
Contours are -2, -4, -6, -8, -10, -15 and -20 dB
relative to peak gain (+29.5 dBi)

FIGURE 2 - SATELLITE TRANSMIT ANTENNA GAIN CONTOURS EAST-ATLANTIC BEAM (V and H Polarization)



Contours are -2, -4, -6, -8, -10, -15 and -20 dB
relative to peak gain (+31.0 dBi)

FIGURE 3 - **SATELLITE TRANSMIT ANTENNA GAIN CONTOURS**
STEERABLE SPOT-BEAMS (S1 and S2)
(V and H Polarization)



Contours are -2, -4, -6, -8, -10, -15 and -20 dB
relative to peak gain (+ 29.0 dBi)

5. SATELLITE RECEIVE CAPABILITY

The satellite receiving system noise temperature is approximately 800 K.

Figures 4, 5 and 6 show the contours of the two fixed satellite receive antenna beams and the two steerable spot beams (S1 and S2), respectively, for both horizontal and vertical polarizations.

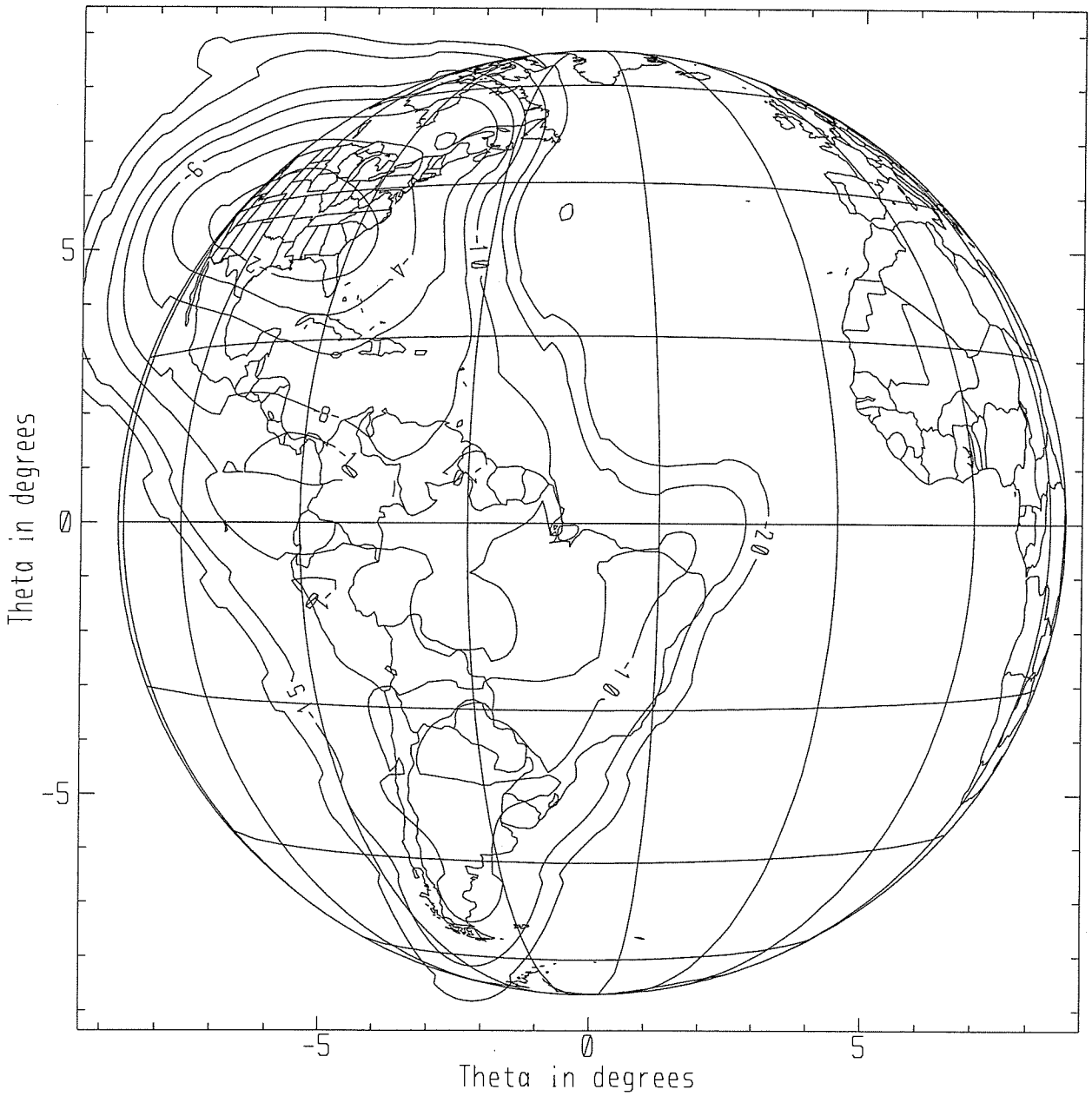
The cross-polar isolation of the satellite receive antennas exceeds 30 dB within the -6 dB gain contour and 25 dB within the -15 dB gain contour, at all receive frequencies.

Table 3 summarizes the Gain to Noise Temperature (G/T) budget:

TABLE 3 - SATELLITE RECEIVE PERFORMANCE

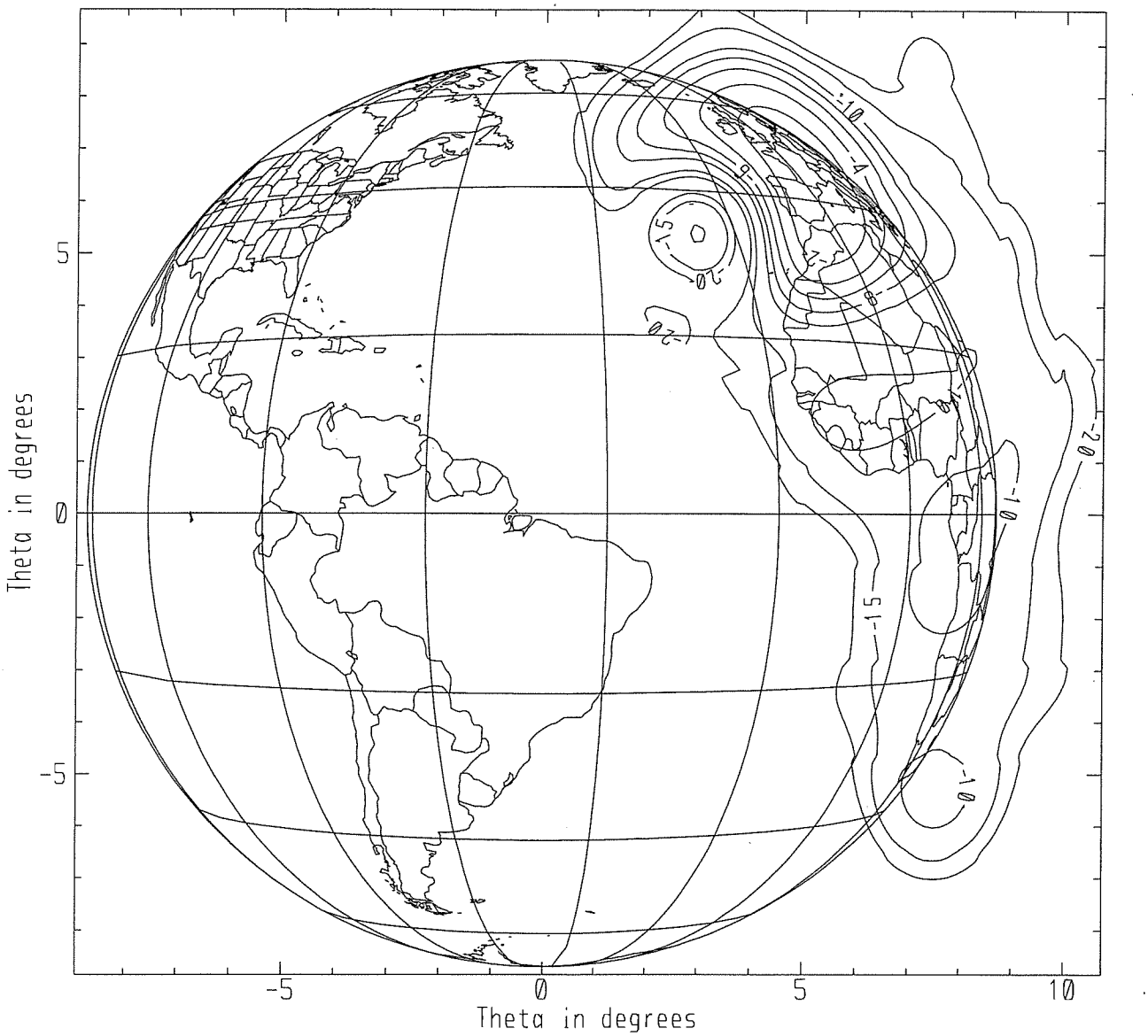
Parameter	Beam Peak	Primary Service Area (-6 dB contour)	Secondary Service Area (-15 dB contour)
West-Atlantic Beam:			
Receive Antenna Gain	+28.0 dBi	+22.0 dBi	+13.0 dBi
Receive System Noise Temperature (800K)	+29.0 dBK	+29.0 dBK	+29.0 dBK
Receive G/T	-1.0 dB/K	-7.0 dB/K	-16.0 dB/K
East-Atlantic Beam:			
Receive Antenna Gain	+30.5 dBi	+24.5 dBi	+15.5 dBi
Receive System Noise Temperature (800K)	+29.0 dBK	+29.0 dBK	+29.0 dBK
Receive G/T	+1.5 dB/K	-4.5 dB/K	-13.5 dB/K
Steerable Spot-Beams:			
Receive Antenna Gain	+33.0 dBi	+27.0 dBi	N/A
Receive System Noise Temperature (800K)	+29.0 dBK	+29.0 dBK	N/A
Receive G/T	+4.0 dB/K	-2.0 dB/K	N/A

FIGURE 4 - SATELLITE RECEIVE ANTENNA GAIN CONTOURS
WEST-ATLANTIC BEAM
(V and H Polarization)



Contours are -2, -4, -6, -8, -10, -15 and -20 dB
relative to peak gain (+28.0 dBi)

FIGURE 5 - SATELLITE RECEIVE ANTENNA GAIN CONTOURS EAST-ATLANTIC BEAM (V and H Polarization)



Contours are -2, -4, -6, -8, -10, -15 and -20 dB
relative to peak gain (+30.5 dBi)