See also:
SAT-AMD-20050103-00001
SAT-AMD-20041119-00209

GRANTED
International Bureau

File # SAT-LOA-20040909-00168
with attached Conditions
Call Sign S2640 Grant Date 3/8/2005
(or other identifier)
Term Dates
From See Conditions To: See Conditions

Approved by OMB
3060-0678

Approved: Chief Satellite
Robert L. Nelson Engineering Branch

Date & Time Filed: Sep 9 2004 2:39:11:146PM
File Number: SAT-RPL-20040909-00168
Callsign/Satellite ID: S2640

APPLICATION FOR SATELLITE SPACE STATION AUTHORIZATIONS FCC 312 MAIN FORM FOR OFFICIAL USE ONLY	FCC Use Only

APPLICANT INFORMATION

Enter a description of this application to identify it on the main menu:
Application for DIRECTV 11 at 99 WL

1-8. Legal Name of Applicant

Name:	The DIRECTV Group, Inc.	Phone Number:	310-964-0725
DBA Name:		Fax Number:	310-964-0843
Street:	2250 E. Imperial Highway	E-Mail:	
City:	El Segundo	State:	CA
Country:	USA	Zipcode:	90245 -
Attention:			

Attachment
Conditions of Authorization
March 8, 2005

1. DIRECTV Group, Inc.'s ("DIRECTV") application, SAT-LOA-20040909-00168, Call Sign S2640, as amended by SAT-AMD-20041119-00209 and SAT-AMD-20050103-00001 IS GRANTED. Accordingly, DIRECTV is authorized to launch and operate its DIRECTV-11 Ka-band satellite at the 99.2° W.L. orbit location, in the 18.3-18.8 GHz (space-to-Earth), 28.35-28.6 GHz (Earth-to-space) and 29.25-29.5 GHz (Earth-to-space) frequency bands in accordance with the terms, conditions, and technical specifications set forth in its application, this Attachment, and the Federal Communications Commission's ("Commission") Rules.

2. DIRECTV-11 must be constructed, launched, and placed into operation in accordance with the technical parameters and terms and conditions of this authorization by these specified time periods following the date of authorization:

    a. Execute a binding contract for construction by 3/8/2006
    b. Complete the Critical Design Review by 3/8/2007
    c. Commence construction by 3/8/2008
    d. Launch and begin operations by 3/8/2010
    e. DIRECTV must file a bond with the Commission in the amount of $3 million, pursuant to the procedures set forth in Public Notice, DA 03-2602, 18 FCC Rcd 16283 (2003), as revised by Amendment of the Commission's Space Station Licensing Rules and Policies, *First Order on Reconsideration and Fifth Report and Order*, FCC 04-147 19 FCC Rcd. 12637 (2004), within 30 days of the date of this grant..

    Failure to meet any of these dates shall render this authorization null and void.

3. DIRECTV's request for a waiver of the cross-polarization isolation requirements, contained in Section 25.210(i) of the Commission's rules is GRANTED. Section 25.210(i) of the Commission's rules require the ratio of the on-axis co-polar gain to the cross-polar gain of the antenna in the assigned frequency band be at least 30 dB within its primary coverage area.[1] The DIRECTV-11 antennas have been designed to meet a minimum cross-polarization requirement of 27 dB. DIRECTV states that its cross-polarization interference is an intra-system design issue that does not affect inter-system coordination and therefore will not affect other Ka-band satellite systems. DIRECTV plans to employ digital modulation with forward error correction coding on both polarization senses to reduce system sensitivity to cross-polarization interference. In addition polarization isolation, directivity and antenna implementation losses have also been optimized for best performance. Based on DIRECTV's representations that it is using digital, rather than analog modulation, and that other Ka-band satellite systems will

[1] 47 C.F.R. § 25.210(i).

not be affected by its operation, we find that it is in the public interest to waive Section 25.210(i).[2] We find that this grant is consistent with previous Commission actions.[3]

4. We GRANT DIRECTV's request for waiver of Sections S6,[4] S7,[5] S10[6] and S13[7] of Schedule S. DIRECTV has provided representative data for the beams stating that the beams have essentially identical electrical parameters. In addition DIRECTV has provided a matrix of connectivity that allows derivation of the transponder combinations. Considering the complexity of the DIRECTV-11 satellite design, the amount of information that would need to be provided in these Sections of the Schedule S Form would be extensive and, in many ways, redundant. The information provided by DIRECTV in its Schedule S Form and application is sufficient for us to determine whether the system meets the Commission's technical requirements. We find that this grant is consistent with previous Commission actions.[8]

5. DIRECTV shall prepare the necessary information, as may be required, for submission to the ITU to initiate and complete the advance publication, international coordination, due diligence, and notification process of this space station, in accordance with the ITU Radio Regulations. DIRECTV shall be held responsible for all cost recovery fees associated with these ITU filings. We also note that no protection from interference caused by radio stations authorized by other administrations is guaranteed unless coordination and notification procedures are timely completed or, with respect to individual administrations, by successfully completing coordination agreements. Any radio station authorization for which coordination has not been completed may be subject to additional terms and conditions as required to effect coordination of the frequency assignments of other administrations. *See* 47 C.F.R. § 25.111(b).

6. DIRECTV must coordinate its downlink operations for the specific frequencies authorized in the 18.3-18.8 GHz band with U.S. Government systems, including Government operations to earth stations in foreign countries, in accordance with footnote US334 to the Table of Frequency Allocations, 47 C.F.R. § 2.106.

7. DIRECTV must conduct its operations pursuant to this authorization in a manner consistent with the power flux-density requirements of footnote US255 to the Table of Frequency Allocations, 47 C.F.R. § 2.106, 47 C.F.R. § 25.138(a)(6), and 47 C.F.R. § 25.208, of the Commission's Rules.

8. The license term for the DIRECTV-11 satellite, Call Sign S2640, is fifteen years and will begin to run on the date that DIRECTV certifies to the Commission that the satellite has

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[2] 47 C.F.R. § 25.210(i).

[3] *See, e.g.*, New Skies Satellites, N.V., Petition for Declaratory Ruling, *Order*, 17 FCC Rcd 10369 at para. 19 (2002) and SES Americom, Inc., Application to Launch and Operate the Americom-23 hybrid C/Ku/Extended Ku-Band Satellite, File No. SAT-LOA-20031218-00358, granted July 13, 2004.

[4] This section contains information regarding service areas for the satellite system.

[5] This section contains information regarding space station antenna beam characteristics for each beam of a satellite system.

[6] This section contains information regarding space station transponders.

[7] This section contains information regarding typical emissions.

[8] *See* DIRECTV Group, Inc. SAT-MOD-20040614-00113, *Grant Stamp* November 4, 2004

been successfully placed into orbit and its operation fully conforms to the terms and conditions of this authorization.

9. DIRECTV is afforded thirty days from the date of release of this grant and authorization to decline this authorization as conditioned. Failure to respond within this period will constitute formal acceptance of the authorization as conditioned.

10. This grant is issued pursuant to Section 0.261 of the Commission's rules on delegated authority, 47 C.F.R. § 0.261, and is effective upon release. Petitions for reconsideration under Section 1.106 or applications for review under Section 1.115 of the Commission's rules, 47 C.F.R. §§ 1.106, 1.115, may be filed within 30 days of the date of the public notice indicating that this action was taken.

9–16. Name of Contact Representative (If other than applicant)

Name:	William M. Wiltshire	Phone Number:	202−730−1350
Company:	Harris, Wiltshire & Grannis LLP	Fax Number:	202−730−1301
Street:	1200 Eighteenth Street, NW	E–Mail:	
City:	Washington	State:	DC
Country:	USA	Zipcode:	20036 –
Contact Title:	Legal Counsel	Relationship:	Same

CLASSIFICATION OF FILING

17. Choose the buttonnext to the classification that applies to thisfiling for both questions a. and b. Choose only one for 17a and only one for 17b.

a.

(N/A) a1. Earth Station

◉ a2. Space Station

b.

○ b1. Application for License of New Station

(N/A) b2. Application for Registration of New Domestic Receive–Only Station

(N/A) b3. Amendment to a Pending Application

(N/A) b4. Modification of License or Registration

(N/A) b5. Assignment of License or Registration

(N/A) b6. Transfer of Control of License or Registration

(N/A) b7. Notification of Minor Modification

(N/A) 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. Replacement Satellite Application – no new frequency bands

○ b11. Replacement Satellite Application – new frequency bands (Not eligible for streamlined processing)

○ b12. Petition for Declaratory Ruling to be Added to the Permitted List

(N/A) b13. Other (Please specify)

17c. Is a fee submitted with this application?

◉ If Yes, complete and attach FCC Form 159.

If No, indicate reason for fee exemption (see 47 C.F.R.Section 1.1114).

○ Governmental Entity ○ Noncommercial educational licensee

○ Other(please explain):

17c. Fee Classification BNY – Space Station (Geostationary)	Number of Satellite: 0

18. If this filing is in reference to an existing station, enter:

(a) Call sign of station:
Not Applicable

19. If this filing is an amendment to a pending application enter:

(a) Date pending application was filed:

Not Applicable

(b) File number of pending application:

Not Applicable

TYPE OF SERVICE

20. NATURE OF SERVICE: This filing is for an authorization to provide or use the following type(s) of service(s): Select all that apply:

- [x] a. Fixed Satellite
- [ ] b. Mobile Satellite
- [ ] c. Radiodetermination Satellite
- [ ] d. Earth Exploration Satellite
- [x] e. Direct to Home Fixed Satellite
- [ ] f. Digital Audio Radio Service
- [ ] g. Other (please specify)

21. STATUS: Choose thebutton next to the applicable status. Choose only one.	22. If earth station applicant, check all that apply.
○ Common Carrier ◉ Non-Common Carrier	Not Applicable

23. If applicant is providng INTERNATIONAL COMMON CARRIER service, see instructions regarding Sec. 214 filings. Choose one.Are these facilities:

○ Connected to a Public Switched Network ○ Not connected to a Public Switched Network ◉ N/A

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)
- [x] c.Other (Please specify upper and lower frequencies in MHz.)

Frequency Lower: 18300 Frequency Upper: 29500 (Please specify additional frequencies in an attachment)

TYPE OF STATION

25. CLASS OF STATION: Choose the button next to the class of station that applies. Choose only one.

(N/A) a. Fixed Earth Station
(N/A) b. Temporary–Fixed Earth Station
(N/A) c. 12/14 GHz VSAT Network
(N/A) d. Mobile Earth Station
(●) e. Geostationary Space Station.
( ) f. Non–Geostationary Space Station
( ) g. Other (please specify)

26. TYPE OF EARTH STATION FACILITY: Not Applicable

PURPOSE OF MODIFICATION

27. The purpose of this proposed modification is to: (Place an "X" in the box(es) next to all that apply.) Not Applicable

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 1.1307? 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 for new transmitting facilities, major modifications, or major amendments. ( ) Yes (●) No

ALIEN OWNERSHIP

Earth station applicants not proposing to provide broadcast, common carrier, aeronautical en route or aeronautical fixed radio station services are not required to respond to Items 30–34.

29. Is the applicant a foreign government or the representative of any foreign government?	○ Yes ◉ No ○ N/A
30. Is the applicant an alien or the representative of an alien?	○ Yes ◉ No ○ N/A
31. Is the applicant a corporation organized under the laws of any foreign government?	○ Yes ◉ No ○ N/A
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 ○ N/A
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 ○ N/A
34. If any answer to questions 29, 30, 31, 32 and/or 33 is Yes, attach as an exhibit an identification of the aliens or foreign entities, their nationality, their relationship to the applicant, and the percentage of stock they own or vote.	Exhibit 34

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 Exhibit 35
36. Has the applicant or any party to this application or amendment 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 explination of circumstances.	○ Yes ◉ No
37. Has the applicant, or any party to this application or amendment, 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 explination of 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 attemptiing 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 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 exhinit, 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, address, and citizenship of those stockholders owning a 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.	Exhibit 40
41. By checking Yes, the undersigned certifies, that neither 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?	

43. Description. (Summarize the nature of the application and the services to be provided). (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.)

Applicant requests that the Commission authorize the launch and operation of a geostationary Ka-band satellite at the nominal 99 degrees WL orbital location, where it will be collocated with, and serve as a partial replacement for, the SPACEWAY 2 satellite. For additional detail regarding this request, see Exhibit 43.

Exhibit 43

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): (Choose the button next to applicable response.)

- ○ Individual
- ○ Unincorporated Association
- ○ Partnership
- ◉ Corporation
- ○ Governmental Entity
- ○ Other (please specify)

45. Name of Person Signing	46. Title of Person Signing
Romulo Pontual	Exec. VP & Chief Technology Officer

47. Please supply any need attachments.		
1: Exhibit 24	2:	3:

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).

Completed Schedule S

FCC NOTICE REQUIRED BY THE PAPERWORK REDUCTION ACT

The public reporting for this collection of information is estimated to average 2 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the required data, and completing and reviewing the collection of information. If you have any comments on this burden estimate, or how we can improve the collection and reduce the burden it causes you, please write to the Federal Communications Commission, AMD–PERM, Paperwork Reduction Project (3060–0678), Washington, DC 20554. We will also accept your comments regarding the Paperwork Reduction Act aspects of this collection via the Internet if you send them to jboley@fcc.gov. PLEASE DO NOT SEND COMPLETED FORMS TO THIS ADDRESS.

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THE FOREGOING NOTICE IS REQUIRED BY THE PAPERWORK REDUCTION ACT OF 1995, PUBLIC LAW 104–13, OCTOBER 1, 1995, 44 U.S.C. SECTION 3507.

EXHIBIT 35

FCC Form 312: Response to Question 35
Waiver Requests

Partial Waiver of Section 25.210(i)
30 dB Cross-Polarization Requirement

Section 25.210(i) of the Commission's rules requires space station antennas in the Fixed-Satellite Service to be designed to meet a cross-polarization isolation of 30 dB within the primary coverage area of the antenna. The DIRECTV 11 transmit and receive antennas (both spot and CONUS) have a design requirement to meet a minimum cross-polarization isolation of 27 dB.

Cross-polarization interference can result from either ground terminal or spacecraft polarization imperfections, or from atmospheric effects such as rain. While the DIRECTV 11 satellite antenna beam design does not specify a minimum 30 dB cross-polarization over the entire coverage area as required by Section 25.210(i), cross-polarization interference is an intra-system design issue and does not affect inter-system coordination. Use in the DIRECTV 11 system of digital modulation with forward error correction coding on both polarization senses reduces the system sensitivity to cross-polarization interference. Specifically, polarization isolation, directivity and antenna implementation losses have been jointly optimized to yield the best overall performance. The expected level of cross-polarization isolation and resulting cross-polarization interference accounts for a small fraction of the overall total link noise. DIRECTV designed its satellite in light of all of these factors, and has concluded that a minimum isolation of 27 dB is more than sufficient to avoid excessive levels of intra-system interference.

Accordingly, DIRECTV requests a waiver of the 30 dB cross-polarization isolation requirement of Section 25.210(i).

Partial Waiver of Section S6 of Schedule S
Service Area

Section S6 of Schedule S calls for information on the Service Areas of the proposed satellite system. These Service Areas are then tied to specific satellite antenna beams in the next section of Schedule S, and so this request for Service Area information has been interpreted as the "service area for each beam of the satellite system."

The DIRECTV 11 system generates, in part, 49 specific non-overlapping transmit spot beams with essentially identical electrical parameters. Because they are non-overlapping, these spot beams each serve a unique "service area." A complete listing of each and every one of these 49 service area IDs has not been included in Section 6. Instead, a

representative set of service areas, including 3 typical sample spot beams, has been included.

In addition, while DIRECTV 11 will include 6 receive communications beams, the exact location of only two of these six beams is known at this time. Therefore, only the two known uplink service areas have been included in the response to Section 6 of Schedule S.

Accordingly, DIRECTV requests a partial waiver to the extent that it has provided representative service areas rather than every service area in response to Section S6 of Schedule S.

Partial Waiver of Section S7 of Schedule S
Space Station Antenna Beam Characteristics

Section S7 of Schedule S calls for information on the Space Station Antenna Beam Characteristics of each beam of the satellite. Much of the information called for in this Section of Schedule S has been provided; however, there are certain characteristics for which it is not possible, or practicable, for DIRECTV to respond directly to Schedule S. Given the large number of spot beams that are part of the DIRECTV 11 satellite (*see also* Partial Waiver for Section 6 of Schedule S), separate entries for each spot beam have not been listed in this Section. Instead, three representative spot beams have been included. The technical characteristics of the remaining beams are essentially identical to the three typical beams included in response to this Section of Schedule S. In addition, only two of the six final uplink beam locations are known at this time (*see also* Partial Waiver for Section 6 of Schedule S). Therefore, the technical characteristics of only two uplink beams are included in Section S7. However, given that the antennas for the other four locations will be identical to those for the two locations included, the technical parameters will also be essentially identical.

Accordingly, DIRECTV requests a partial waiver to the extent it has provided representative beam characteristics rather than the characteristics of every beam.

Partial Waiver of Section S10 of Schedule S
Space Station Transponders

Section S10 of Schedule S calls for information on each Space Station Transponder. In this Section, a "transponder" is defined as a connection between a receive channel (*i.e.*, center frequency, bandwidth, and polarization) in a given beam and a transmit channel in a given beam. Considering the overall design of the DIRECTV 11 spacecraft, DIRECTV asks for a partial waiver of this Section as discussed below.

Section S10 calls for a complete listing of all "transponders" supported by the spacecraft. The DIRECTV 11 satellite receives channels in six possible uplink beams and retransmits these channels in either a national beam, or one of 49 different spot beams. The "transponders" for all national channels have been defined in this Section, as have the

transponders for the TT&C. As explained in the partial waiver request for Sections S6 and S7 of Schedule S, not all uplink and downlink beams have been defined in the Schedule. As a consequence of this, a complete listing of spot transponders cannot be included in the Schedule. What has been listed are representative examples of possible spot beam transponders. Note that these representative examples include the list of transponders for which the downlink beams have been included in Schedule S. Also note that the corresponding uplink beam for these transponders has not been included in the Schedule S (*see also* Partial Waiver request for Sections S6 ands S7 of Schedule S), and so this column of Section S10 is left blank. Finally note that, while this information has not been included in the Schedule S, a complete listing of spot transponders can be derived from the spot connectivity matrix included in the narrative part of this application.

Partial Waiver of Section S13 of Schedule S
Typical Emissions

Section S13 of Schedule S calls for information on typical emissions. The first item called for is the listing of all transponders in which a given emission may be transmitted. As is explained in the request for Partial Waiver of Section S10, not all of the possible spot transponders associated with DIRECTV 11 have been listed in response to Section S10. As such, a complete listing of all possible spot transponders in which a given emission designator could be transmitted cannot be listed in Section S13. Accordingly, DIRECTV requests a partial waiver to the extent it has provided representative sample transponders for each typical emission rather than every such transponder.

EXHIBIT 43

FCC Form 312: Response to Question 43

APPLICATION FOR AUTHORIZATION TO LAUNCH AND OPERATE DIRECTV 11, A PARTIAL REPLACEMENT SATELLITE

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

Application of	)	
THE DIRECTV GROUP, INC.	)	Call Sign: S2133
For Authorization to Launch and Operate DIRECTV 11, a Partial Replacement Ka-Band Satellite, at 99° W.L.	)	File No. SAT-RPL-_____

APPLICATION FOR AUTHORIZATION TO LAUNCH AND OPERATE DIRECTV 11, A PARTIAL REPLACEMENT SATELLITE

William M. Wiltshire
Michael D. Nilsson
Fred B. Campbell

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202-730-1301 fax

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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

Application of	)	
THE DIRECTV GROUP, INC.	)	Call Sign: S2133
For Authorization to Launch and Operate DIRECTV 11, a Partial Replacement Ka-Band Satellite, at 99° W.L.	)	File No. SAT-RPL-_____

APPLICATION FOR AUTHORITY TO LAUNCH AND OPERATE DIRECTV 11, A PARTIAL REPLACEMENT SATELLITE

Ten years ago, DIRECTV introduced American television viewers to the nation's first all-digital multichannel video programming service. Today, The DIRECTV Group, Inc. ("DIRECTV") seeks authority to launch and operate the infrastructure necessary to achieve a quantum leap in the amount of high definition ("HD") digital television programming – including local broadcast stations in HD – available on its Direct Broadcast Satellite ("DBS") service. With these assets, DIRECTV intends to maintain its leadership position as an innovator in the digital revolution and to help promote the nation's transition from analog to HD television.

DIRECTV hereby requests that the Commission authorize the launch and operation of a geostationary Ka-band satellite at the nominal 99° W.L. orbital location, where it will be collocated with, and serve as a partial replacement for, the SPACEWAY

2 satellite.[1] Specifically, DIRECTV has contracted with Boeing Satellite Systems ("Boeing") for construction of DIRECTV 11, a spacecraft that will operate using half of the Ka-band spectrum licensed to DIRECTV at the 99° W.L. slot. Combined with its twin, DIRECTV 10 operating at 103° W.L.,[2] this satellite will give DIRECTV the ability to retransmit the signals of over 1000 local broadcast stations in HD format – serving over 90% of U.S. households – as well as over 150 channels of national HD programming. This satellite will also be capable of supporting the backhaul mission of that portion of the SPACEWAY satellite it is replacing. Grant of this application will promote the HDTV transition, enable DIRECTV to maintain its position as the leader in digital home video entertainment and innovation, and enhance DIRECTV's ability to continue to offer U.S. consumers a powerful alternative to the services of incumbent cable operators.

Consistent with Commission rules,[3] DIRECTV intends to begin construction of this satellite, at its own risk, pending Commission action on this request in order to complete construction and launch DIRECTV 11 in 2006. Accordingly, DIRECTV requests that the Commission grant this application as expeditiously as possible.

I. BACKGROUND

In May 1997, as part of the first Ka-band satellite processing round, the Commission authorized DIRECTV's predecessor in interest, Hughes Communications Galaxy, Inc. ("Hughes"), to launch and operate a GSO satellite system to provide Fixed-

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1 DIRECTV's application for minor modification of its Ka-band license at 99° W.L. to conform to the characteristics of the SPACEWAY 2 satellite currently under construction is pending in FCC File No. SAT-MOD-20040614-00113.

2 DIRECTV is filing a separate application for the DIRECTV 10 satellite.

3 47 C.F.R. § 25.113(f).

Satellite Service.[4] Hughes proposed to use its system "to offer services such as direct-to-home services and high speed personal computer access to the Internet and on-line services, telephony, narrow-band data, high-speed data, videoconferencing, [and] high capacity two-way communications."[5] Among other things, Hughes received authority to operate two Ka-band spacecraft at the 99° W.L. orbital location. Through two *pro forma* authorizations, the license was eventually assigned from Hughes to DIRECTV.[6]

DIRECTV has a number of Ka-band spacecraft currently under construction by Boeing, one of which is named SPACEWAY 2 and has been designated for use at 99° W.L.[7] DIRECTV intends to launch SPACEWAY 2 in early 2005. That spacecraft can operate over the entire 1000 MHz of uplink and downlink Ka-band spectrum licensed to DIRECTV at this slot. In this application, DIRECTV seeks to launch DIRECTV 11, which will also be constructed by Boeing, to be collocated with SPACEWAY 2 and operate on half of the available Ka-band frequencies – specifically, the 18.3-18.8 GHz downlink and the 28.35-28.6/29.25-29.5 GHz uplink bands (the "B-Band"). Operating in tandem at this slot, the two spacecraft will better enable DIRECTV to meet the needs of multichannel video programming viewers throughout the United States.

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4 *See Hughes Communications Galaxy, Inc.*, 13 FCC Rcd. 1351 (Int'l Bur. 1997), *modified*, 16 FCC Rcd. 2470 (Int'l Bur. 2001), *further modified*, 16 FCC Rcd. 12627 (Int'l Bur. 2001). Hughes was initially authorized to operate in the 28.35-28.6/29.25-30.0 GHz bands for uplinks and in the 19.7-20.2 GHz band for downlinks.

5 *Id.* at 1352.

6 In April 2002, the Commission authorized the *pro forma* assignment of this license from Hughes to Hughes Network Systems, Inc. ("HNS"). *See* FCC File No. SAT-ASG-20011204-00110. In May 2004, the Commission authorized the *pro forma* assignment of this license from HNS to DIRECTV. *See* FCC File No. SAT-ASG-20040520-00101.

7 DIRECTV's subsidiary, DIRECTV Enterprises, LLC, also has a hybrid BSS/Ka-band satellite under construction by Space Systems/Loral, which has been designated for launch to the 101° W.L. orbital location, that is scheduled to be launched by June 2005. The Loral spacecraft and three other Boeing spacecraft are the subjects of separate applications. Boeing will also build two spacecraft for ground spares.

II. GRANT OF THIS APPLICATION WOULD SERVE THE PUBLIC INTEREST

HD is the wave of the future for television. As Chairman Powell has stated,

> My sense is high definition is more of a "killer app" than anyone truly understood or maybe even still fully appreciates because I think high definition is revolutionizing consumer entertainment in more ways than just simply the prettier pictures of content. . . . We're really changing our perspective of where we might expect to see television and expect to be entertained, informed or educated. And I think high definition is just the ticket to the digitalization of the future for video content providers in a way that's really going to change the patterns of consumer behavior.[8]

Continuing its tradition as a leader in innovative digital television services, DIRECTV intends not just to ride this wave, but to help accelerate its arrival and augment its impact for American consumers.

DIRECTV 11 – along with DIRECTV 10, a companion satellite that will operate in the Ka-band at the nominal 103° W.L. orbital location – will be among the largest and most powerful commercial Ka-band spacecraft ever launched. It will be used to dramatically expand DIRECTV's capability to provide HD services to American consumers. DIRECTV 11 will use a national coverage beam to provide robust coverage to all 50 states, providing the same variety of national HD programming to viewers in Alaska and Hawaii as it provides to the mainland. The satellite will also support 49 spot beams carrying local-into-local HD programming, including beams covering Alaska and Hawaii. Upon the successful launch of DIRECTV's Ka-band satellites, subscribers will be able to view all of the standard definition ("SD") digital television services they currently receive from DIRECTV, as well as (1) over 150 national channels of HD programming, and (2) for over 90% of U.S. households, local broadcast stations in HD. The DIRECTV 11 satellite will also be capable of supporting the backhaul mission of

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8 Remarks of Michael K. Powell at the NCTA Convention, May 4, 2004, at p. 2 (*available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-247937A1.pdf).

that portion of the SPACEWAY satellite it is replacing.

Once DIRECTV 11 reaches its orbital location, the B-Band payload on SPACEWAY 2 will no longer be used. The SPACEWAY 2 B-Band payload was designed to support DIRECTV's provision of SD local-into-local services by backhauling broadcast signals from local markets to DIRECTV's uplink centers. However, the Commission revised its rules to allow blanket licensing in the B-Band in 2002 and upheld that revision earlier this year.[9] Taking advantage of this new opportunity, DIRECTV 11 has been designed to optimize use of the B-Band for the provision of video services directly to subscribers, in addition to continuing to provide backhaul services. The satellite is fully compliant with Commission rules relating to Ka-band blanket earth station licensing.[10] Collocation of DIRECTV 11 and SPACEWAY 2 will enhance the capabilities of the spacecraft operating under DIRECTV's authorization at this orbital location.

The Commission is to be commended for unlocking the potential benefits of valuable spectrum resources in the B-Band. Prior to 2002, less than half of the B-Band downlink spectrum was available for use by blanket-licensed earth stations. However, as confirmed earlier this year, the Commission has now extended blanket licensing to the entire 500 MHz of downlink spectrum available to Ka-band satellite operators in the B-Band. By doing so, the Commission greatly expanded the commercial possibilities for use of this spectrum for a consumer-oriented MVPD service. DIRECTV will use the

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9 *See Redesignation of the 17.7-19.7 GHz Frequency Band, Blanket Licensing of Satellite Earth Stations in the 17.7-20.2 GHz and 27.5-20.0 GHz Frequency Bands, and the Allocation of Additional Spectrum in the 17.3-17.8 and 24.75-25.25 GHz Frequency Bands for Broadcast Satellite Service Use*, 17 FCC Rcd. 24248, 24257-58 (2002), *recon. denied*, 19 FCC Rcd. 10783 (2004).

10 *See* 47 U.S.C. §§ 25.138, 25.208.

proposed DIRECTV 11 spacecraft to deliver on that promise by taking the amount of HD programming available to American consumers to a whole new level.

By granting this application, the Commission will enable DIRECTV to lead the transition from analog to HD television services, including local HD programming. This capability will allow DIRECTV to continue its leadership in digital entertainment and innovation and further enhance DIRECTV's ability to compete with incumbent cable operators to provide the best possible programming service to American consumers. For the foregoing reasons, DIRECTV respectfully submits that grant of this application would serve the public interest and requests that the Commission act expeditiously so that DIRECTV can proceed to complete construction and launch DIRECTV 11 as early as 2006.

III. INFORMATION REQUIRED UNDER SEC. 25.114 OF THE COMMISSION'S RULES

1. Name, Address, and Telephone Number of Applicant

The DIRECTV Group, Inc.
2250 East Imperial Highway
El Segundo, CA 90245
(310) 964-0700

2. Name, Address, and Telephone Number of Counsel

William M. Wiltshire
Harris, Wiltshire & Grannis LLP
1200 Eighteenth Street, N.W.
Washington, DC 20036
(202) 730-1300

3. Type of Authorization Requested

DIRECTV hereby applies for authority to launch and operate DIRECTV 11, a satellite that will serve as a partial replacement for, and be collocated with, another DIRECTV satellite (SPACEWAY 2) at the nominal 99° W.L. orbital location.

4. General Description of Overall System Facilities, Operations and Services

DIRECTV 11 will consist of a geostationary satellite located at the nominal 99° W.L. orbital location and associated ground station equipment. DIRECTV 11 is designed to provide DTH service in the FSS Ka-band (18.3-18.8 GHz (space-to-earth) and 28.35-28.6 GHz and 29.25-29.5 GHz (Earth-to-space)), and can also support backhaul functions. The on-station Telemetry, Tracking and Control ("TT&C") functions will be provided at the edges of these same frequency bands.

The DIRECTV 11 satellite is capable of supporting 14 Ka-band transponders (7 LHCP and 7 RHCP) providing coverage via a national beam and 10 Ka-band transponders (5 LHCP and 5 RHCP) providing coverage via 49 spot beams. The national coverage beam is designed to provide coverage to all 50 states (CONUS, Alaska and Hawaii) and will carry national HD programming material. The spot beams are designed to maximize the percentage of the U.S. population that is covered and will carry HD local-into-local programming material. All national programming material will be distributed from the DIRECTV broadcast center in Los Angeles, CA, whereas local programming material will be collected at six strategically located collection sites (including the DIRECTV Los Angeles, CA and Castle Rock, CO broadcast centers ("LABC" and "CRBC," respectively)) and distributed from broadcast facilities at these six sites. Using this combination of uplink facilities, the DIRECTV 11 system, operating in concert DIRECTV's other Ka-band assets, will be capable of transmitting over 150 national channels of HD programming and over 1000 HD local broadcast stations to over 90% of U.S. households.

5. Operational Characteristics

5.1 Frequency and Polarization Plan

Figure 5-1 shows the frequency and polarization plan of the DIRECTV 11 satellite, including the on-station and transfer orbit TT&C (shown as discrete arrows at the edges of the uplink/downlink bands). The emission designator for transmissions in the uplink and downlink will be 36M0G7W. The allocated bandwidth for this emission is 36 MHz.

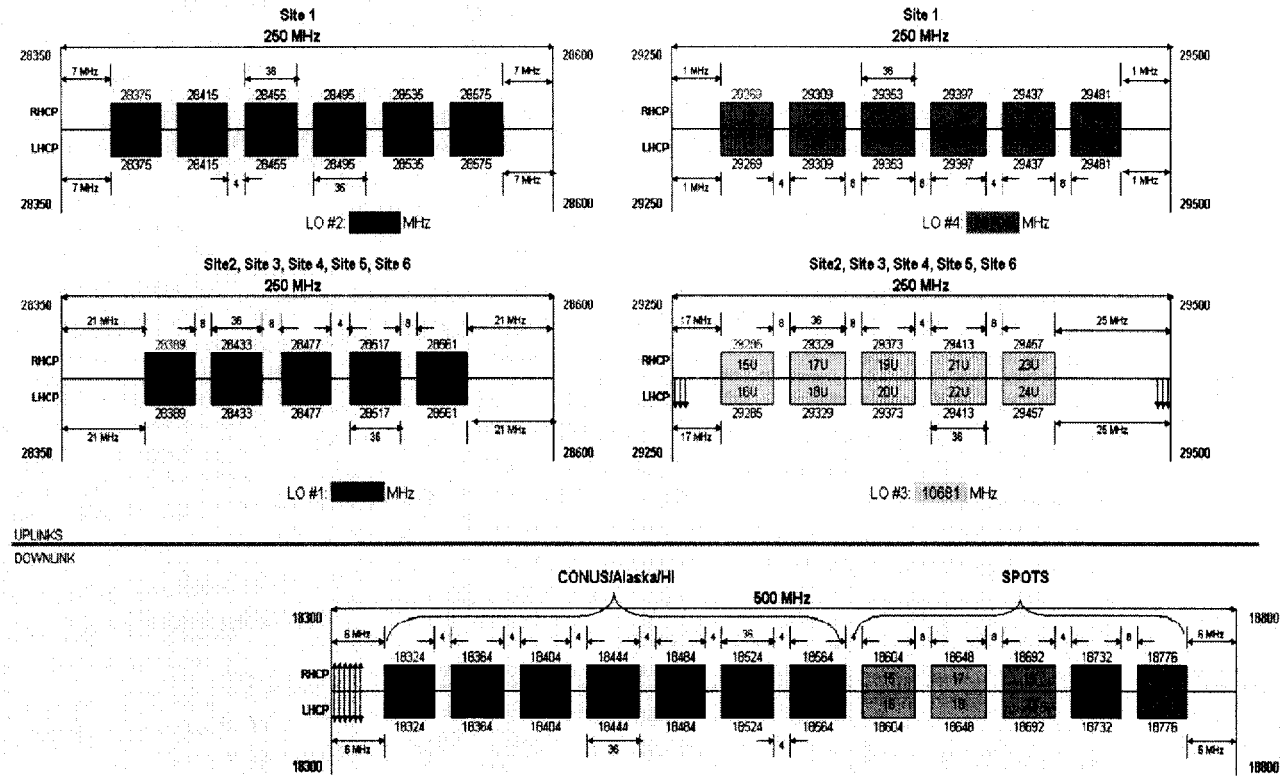

Figure 5-1. DIRECTV 11 Frequency and Polarization Plan

The interconnection capability of the DIRECTV 11 national coverage transponders is shown in Table 5-1 and for the spot transponders is shown in Appendix A, Table A-1. Table 5-1 illustrates the connection of each national programming uplink

channel to its corresponding downlink channel. Appendix A, Table A-1 shows the spot beam uplink and downlink channel connectivity. This table includes the uplink site and channel designation and polarization for each uplink channel and illustrates how each uplink channel is connected to a given channel and polarization in a specific downlink beam transmitted by a given downlink antenna. Details of this arrangement are discussed further in Sections 5.2.1 and 5.2.2. Note that the uplink and downlink channels are being re-used multiple times among the various uplink broadcast sites (S1 to S6) and downlink antennas/spot beams.

Uplink Channel	Frequency (MHz)	Uplink Polarization	Downlink Channel	Frequency (kHz)	Downlink Polarization
1	28375	LHCP	1	18324	LHCP
2	28375	RHCP	2	18324	RHCP
3	28415	LHCP	3	18364	LHCP
4	28415	RHCP	4	18364	RHCP
5	28455	LHCP	5	18404	LHCP
6	28455	RHCP	6	18404	RHCP
7	28495	LHCP	7	18444	LHCP
8	28495	RHCP	8	18444	RHCP
9	28535	LHCP	9	18484	LHCP
10	28535	RHCP	10	18484	RHCP
11	28575	LHCP	11	18524	LHCP
12	28575	RHCP	12	18524	RHCP
13	29269	LHCP	13	18564	LHCP
14	29269	RHCP	14	18564	RHCP

Table 5-1. DIRECTV 11 National Coverage Uplink/Downlink Interconnection Capability

5.2 Communications Payload

5.2.1 Uplink Transmissions

As can be seen from Figure 5-1 and Table 5-1, the first twelve of fourteen transponders that support national coverage are frequency translated from the 28.35-28.6 GHz receive band by 10051 MHz for re-transmission in the lower portion of the 18.3-18.8 GHz downlink band. The thirteenth and fourteenth national coverage transponders are frequency translated from the lower portion of the 29.25-29.5 GHz receive band by

10705 MHz for re-transmission just above the other twelve national channels in the 18.3-18.8 GHz band. All of these channels are to be uplinked from the LABC.

The 28.35-28.6 GHz uplink band is also re-used multiple times through transmissions from a number of strategically located, and geographically separated, regional aggregation broadcast sites (*i.e.*, sites S1 to S6). The transmissions from each of these regional broadcast sites will carry a unique mix of HD local broadcast programming information and these uplink transmissions will be connected to the appropriate downlink spot beams as detailed in Figure 5-1 and Appendix A, Table A-1. In addition, the remaining ten transponders of the 29.25-29.5 GHz band will carry local-into-local HD programming. Like the 28.35-28.6 GHz band, the 29.25-29.5 GHz band will be re-used multiple times through transmissions from the LABC as well as strategically located, and geographically separated, regional aggregation sites.

Each of the transponders on DIRECTV 11 is 36 MHz wide and is filtered by the input multiplexers and channel filters. Filtered signals are amplified by individual channel amplifiers with selectable fixed/automatic level control ("ALC") operating modes prior to final amplification in the TWTA. ALC is the normal mode of operation for all channels and this mode has a minimum input dynamic range of 19 dB and a commandable output power range of 15 dB for spot channels, 13 dB for CONUS+Alaska, and 7 dB for Hawaii. The ALC output level can be set using a step size of 0.5 dB. The fixed gain mode of operation has 19 dB of gain step attenuation, settable in approximately 1 dB steps.

The maximum expected G/T performance for DIRECTV 11 for the antennas directed towards the various uplink site locations is 18 dB/K. Note that this G/T value is for beam peak, and the beam pointing will be optimized to place each broadcast site at or

near beam peak. Also note that the exact locations for all but the LABC and CRBC sites have not yet been finalized. Finally, note that this value of G/T will decrease, dB-for-dB, as the uplink location moves away from beam peak.

The DIRECTV 11 feeder uplink beams will employ receive channel filters to limit the bandwidth of the received signals. A simulated response of a representative input channel filter has been calculated and Figure 5-2 shows the normalized predicted rejection and insertion loss for such a typical input channel filter.

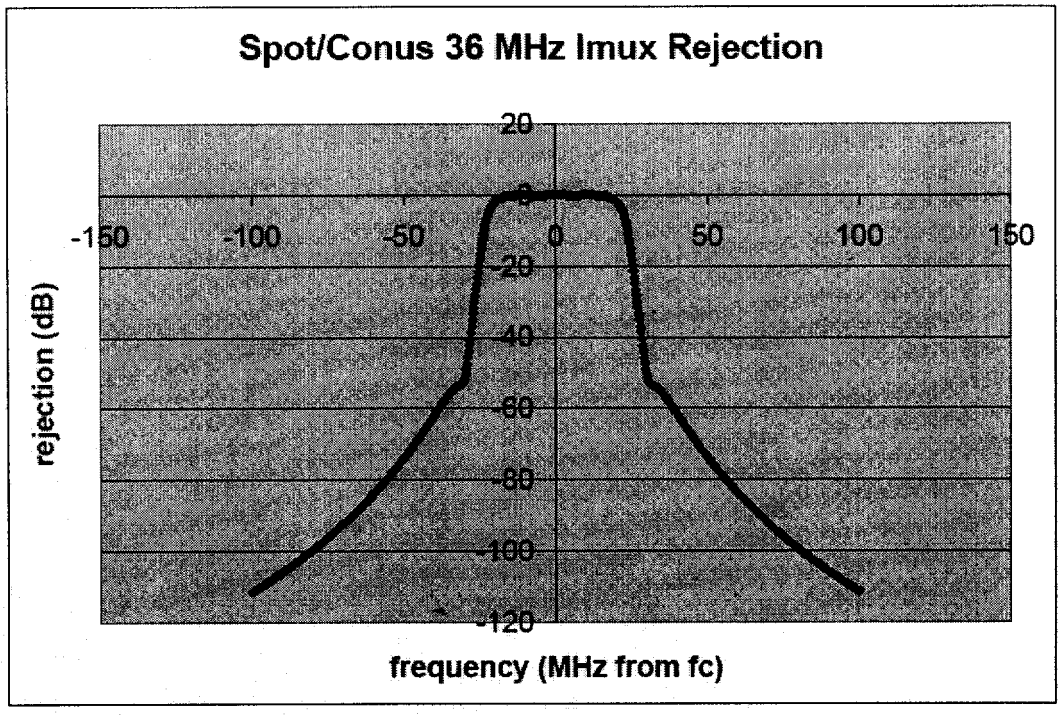

Figure 5-2. Response Characteristic of Typical DIRECTV 11 National and Spot Input Channel Filter

5.2.2 Downlink Transmissions

The national coverage downlink beam uses dual combined output amplifiers (TWTAs) with a per amplifier output power of 130 Watts (*i.e.*, 260 Watts combined). The spot downlink beams use single amplifier TWTAs with an output power of 70 Watts.

The resultant output power from each of these two types of amplifier assemblies is shown in Table 5-2.

Mode of Operation	Transmit Output Power (dBW)	Output Losses (dB)	Transmit Antenna Gain (dBi) Peak	Peak EIRP (dBW)
National Beam	24.2	2.0	36.1	58.3
Spot Beam	14.3	2.9	48.1	59.5

Table 5-2. Transmit Power for National and Spot Beam Output Amplifiers

The output filtering for the national and spot beams is performed by a variety of filters. For the national beam, two different types of filters are used. Each national channel is individually filtered with a 36 MHz channel filter, the simulated response of which is shown as Figure 5-3. In addition, the ensemble of seven adjacent national transponders is filtered with a wideband filter, with a simulated response shown as Figure 5-4.

In light of the assortment of channel combinations supported by the spot beams (*see* Appendix A, Table A-1), a variety of output filters are employed for these beams. The determination of which filter type to use on a particular beam is driven by overall network design considerations. The simulated performance for the output filter types used on the DIRECTV 11 spot beams is shown in Figures 5-3, 5-5 and 5-6. Figure 5-3 illustrates an individual channel filter response, whereas Figures 5-5 and 5-6 show the filter response for an ensemble of output channels.

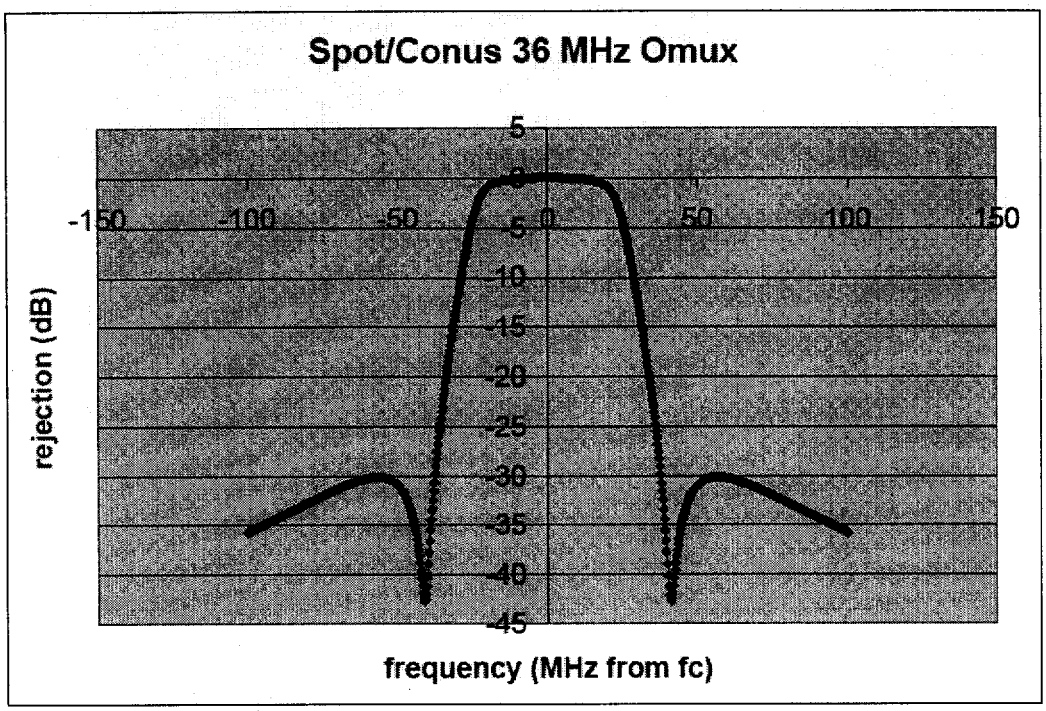

Figure 5-3. Response Characteristic of Typical DIRECTV 11 National and Spot Beam Output Channel Filter

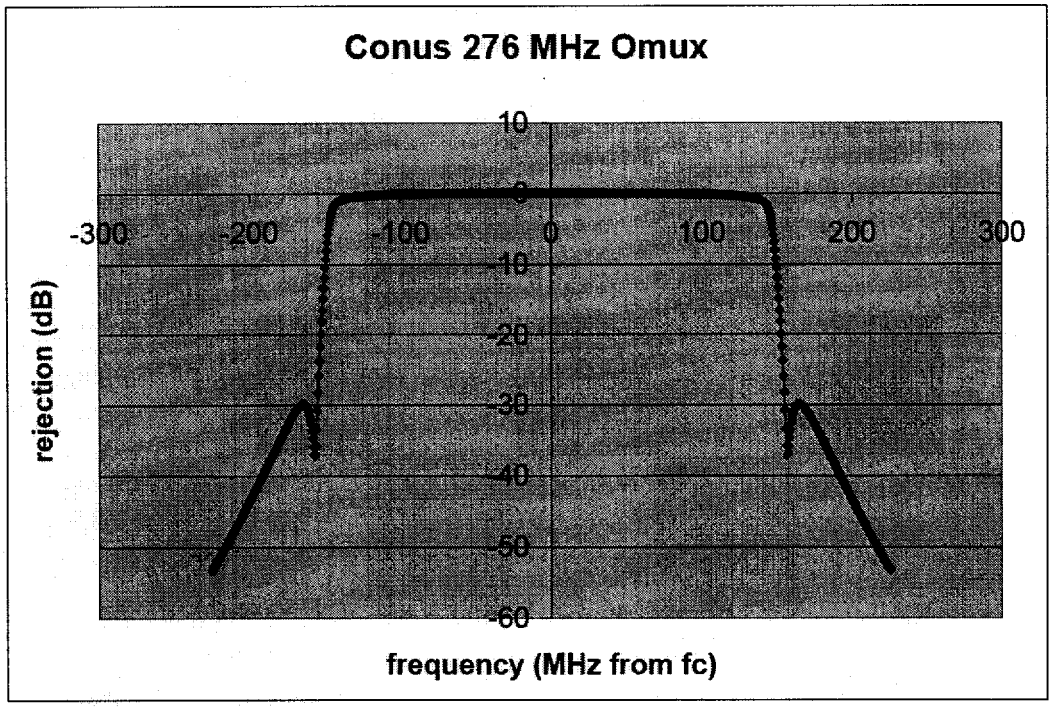

Figure 5-4. Overall Response Characteristic DIRECTV 11 National Beam Output Filter

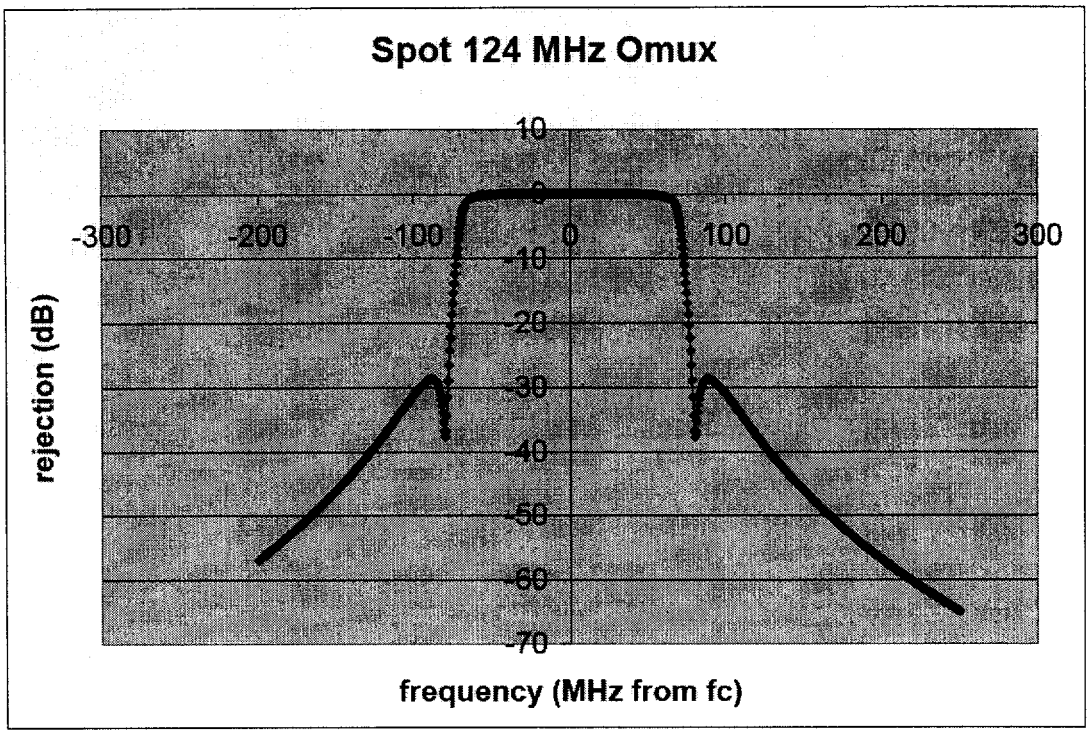

Figure 5-5. DIRECTV 11 Spot Beam 124 MHz Output Filter Response Characteristic

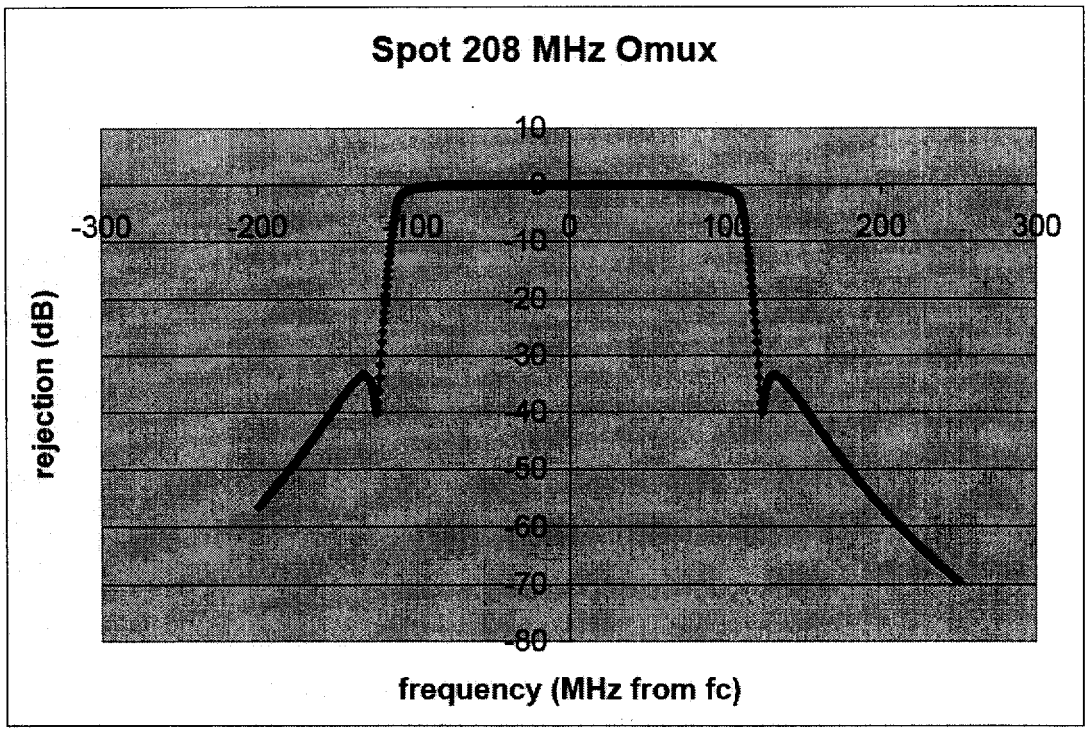

Figure 5-6. DIRECTV 11 Spot Beam 208 MHz Output Filter Response Characteristic

5.3 TT&C Subsystem

The TT&C subsystem provides redundant telemetry, tracking, and command channels for the spacecraft. The principal functions of the subsystem are:

1. Reception and amplification of the radio frequency command uplinks and demodulation of baseband for subsequent signal processing and command distribution.
2. Modulation, up-conversion, amplification, and transmission of all telemetry data.
3. Reception and retransmission of ground-station-generated ranging signals.

The subsystem is configurable to accommodate the unique requirements of pre-launch, orbit raising, and on-station synchronous orbit operations. DIRECTV has contracted for three satellites of the type described in this application, and the exact launch order and orbital positioning of each of these satellites has not yet been determined. Accordingly, DIRECTV requests authority to operate on any one of these three sets of TT&C frequencies.[11] The command and telemetry frequencies for these three satellites will be as shown in Table 5-3 below for the spacecraft during transfer orbit and on station operations.

Spacecraft	**Transfer Orbit Cmd Freqs (MHz)**		**On Station Cmd Freqs (MHz)**		**Telemetry Transmit Freqs (MHz)**	
	Pipes (fwd/Aft)	Bicone	Nominal	Backup	Tm 1	Tm 2
1	29,251	29,493	29,493	29,251	18,300.25	18,300.75
2	29,253	29,495	29,495	29,253	18,301.25	18,301.75
3	29,255	29,497	29,497	29,255	18,302.25	18,302.75

Table 5-3. DIRECTV 11 Command and Telemetry Frequencies

11 DIRECTV will specify the particular set of TT&C frequencies to be used once the final launch sequence is determined. The third spacecraft under construction is currently anticipated to be a ground spare.

The command and telemetry antenna polarizations will be as shown in Table 5-4 below:

Antenna	Polarization
On-Station Telemetery Antenna	LHCP
On-Station Command Antenna	LHCP
Fwd/Aft Pipes	RHCP
Bicone	RHCP

Table 5-4. Command and Telemetry Antenna Polarization

The minimum cross-polarization isolation for the on-station command and telemetry antennas will be 27 dB.

The telemetry and command link performance is summarized in the link budget analysis in Appendix D. The antenna patterns for the TT&C subsystem are discussed in Section 7.3. The emission designators associated with the TT&C subsystem are 1M30F9D for command and 106KG9D for telemetry, with associated allocated bandwidths of 1.3 MHz and 106 kHz for each of these emissions, respectively.

6. Orbital Locations

The DIRECTV 11 satellite will operate in conjunction with the SPACEWAY 2 satellite at the nominal 99° W.L. orbital location. DIRECTV is already authorized to operate over the 18.3-18.8 GHz (space-to-Earth) and 28.35-28.6 GHz and 29.25-29.5 GHz (Earth-to-space) frequency bands at that location.

7. Predicted Spacecraft Antenna Gain Contours

7.1 Uplink Beams

The satellite will receive communications signals from the DIRECTV broadcast centers in Castle Rock, CO and Los Angeles, CA and from four other strategically placed uplink sites across the U.S. in the 28.35-28.6 GHz and 29.25-29.5 GHz frequency bands using both RHCP and LHCP (*see also* Section 5.1). Typical receive antenna gain contours for the LABC and CRBC sites are shown in Appendix C as Figures C-1 and C-2. Note that DIRECTV is still in the process of finalizing the precise location of the

remaining four uplink sites and, as such, the antenna patterns for these sites cannot be provided at this time. However, the satellite receive antennas that will support these other uplink sites will be of the same design as those for LABC and CRBC, and therefore the antenna gain patterns for these other sites will be quite similar to those shown in Appendix C. All uplink beams will have a minimum cross-polarization isolation of 27 dB.

7.2 Downlink Beams

The national coverage beam for DIRECTV 11 will cover CONUS, Alaska, and Hawaii using both RHCP and LHCP. The transmit antenna gain contour for the CONUS plus Alaska portion of this antenna beam is shown in Appendix C as Figure C-3. In addition to this national coverage beam, DIRECTV 11 has 49 spot beams that will carry local-into-local HD programming material. These 49 spot beams are transmitted by essentially identical transmit horns focused on 4 identical reflectors and hence all spot beams will have essentially the same characteristics. As such, a representative coverage pattern for a typical spot beam is shown in Appendix C as Figure C-4. All downlink beams will have a minimum cross-polarization isolation of 27 dB. (*See also* discussion in Section 5.1.)

7.3 TT&C Beams

During transfer orbit, signals commanding the satellite will be received via a wide angle coverage antenna, capable of supporting command operation in all mission phases including attitude anomalies. The command antenna coverage will be ± 20 degrees about the spacecraft spin axis during transfer orbit and ± 40 degrees about the spacecraft z-axis in both forward and aft directions. A representation of the antenna patterns for these wide area coverage antennas is shown in Appendix C, Figure C-5. Normal on-station

command of the satellite will be achieved through the beacon track array and the on-station telemetry will be transmitted via the CONUS coverage antenna. The coverage patterns for these antennas are shown in Appendix C as Figures C-6 and C-3, respectively. On-station contingency command and telemetry of the satellite will be achieved through the wide-angle omni antenna, bicone and pipes as discussed above.

8. Service Description, Link Description and Performance Analysis, Earth Station Parameters

8.1 Service Description

As discussed more fully in Section II of this application, DIRECTV will use the DIRECTV 11 satellite to transmit HD digital video and audio entertainment, and educational and informational programming, including the HD signals of local broadcast stations, to customers throughout the United States who will receive this programming using small dish antennas. The satellite will also be capable of supporting the backhaul mission of that portion of the SPACEWAY satellite DIRECTV 11 is replacing.

8.2 Link Performance

Representative link budgets are shown in Appendix B as Tables B-1a through B-3a. The budgets shown in Tables B-1a and B-2a are for the DTH case and assume a receive antenna size of 65 cm and also include the interference contribution for adjacent satellite interference from neighboring Ka-band satellites nominally spaced two degrees away. Table B-1a applies to the case of the national coverage beam and Table B-2a to the case of a typical spot beam. Note that an availability of 99.7% has been assumed for both of these budgets. The budget shown in Table B-3a applies to the case of DIRECTV 11 backhaul service. Note that an availability of 99.9% has been assumed for this budget.

Representative link budgets for the telemetry and command links are shown in Appendix D as Tables D-1 and D-2, respectively.

8.3 Earth Station Parameters

There are essentially three types of earth stations that can be used with the DIRECTV 11 satellite – feeder-link earth stations, subscriber terminals, and backhaul stations. The feeder-link stations are relatively large transmit antennas, typically 8 to 9.1 meters, that track the satellite electronically and are used for transmitting national and local-into-local HD programming material from the DIRECTV broadcast sites to the satellite. The subscriber terminals are effectively 65 cm receive antennas that are installed at the customers' premises and have fixed pointing, which is optimized at installation. The backhaul stations are medium size (approximately 3.5 meter) earth stations that would be used for transporting program material back the DIRECTV broadcast centers.

9. Satellite Orbit Characteristics

The DIRECTV 11 satellite will be maintained in synchronous orbit at its nominal orbital location with a North-to-South drift tolerance of ± 0.05 degrees and an East-to-West drift tolerance of ± 0.05 degrees. The antenna axis attitude will be maintained so as to keep the beam pointing error to within ± 0.1 degrees.

10. Power Flux Density

The national and spot downlink beams of DIRECTV 11 will be operated so as to generate a maximum downlink EIRP of 58.3 and 59.5 dBW per 36 MHz channel, respectively, and to thereby comply with the Ka-Band blanket licensing coordination threshold of –118 dBW/m^2/MHz. Operation with this EIRP complies with the Commission's requirements as is demonstrated by virtue of the fact that, for a 36 MHz digital carrier, a satellite downlink EIRP of 59.5 dBW results in a maximum PFD of -118 dBW/m^2/MHz on the surface of the Earth (*i.e.*, 59.5 dBW – 162 dBm^2 – 10*log (36)

dBMHz). In all cases the upper bound on system and individual link availability is determined by –118 dBW/m^2/MHz, *i.e.* the downlink PFD coordination threshold established in Section 25.138 of the Commission's rules.

The satellite will also comply with the downlink PFD limits established in Section 25.208 of the Commission's rules, which are as follows:

- -115 dB (W/m^2) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;
- -115 + 0.5 (d-5) dB (W/m^2) in any 1 MHz band for angles of arrival d (in degrees) between 5 and 25 degrees above the horizontal plane; and
- -105 dB (W/m^2) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

The simple analysis above illustrates that the DIRECTV 11 operations will result in a PFD on the surface of the Earth that is within the Commission's requirements.

11. Arrangement for tracking, telemetry, and control

DIRECTV has not yet made final arrangements for control and operations of the DIRECTV 11 satellite. DIRECTV currently controls its existing operational DIRECTV satellites through contractual relationships with entities specializing in such operations. DIRECTV will evaluate its options and take all necessary steps to ensure that proper arrangements are in place, well before satellite launch, to control the DIRECTV 11 satellite through its launch and transfer orbit phase and into and during the operational lifetime phase of the satellite mission, including post-operation disposal.

12. Physical Characteristics of the Space Station

Table 12-1 summarizes the key spacecraft characteristics.

DIRECTV 11	
Spacecraft:	Boeing 702
Launch: **Vehicle** **Site**	 Compatible with Sea Launch, Proton, Arianespace, and Atlas launch vehicles TBD
Orbital slot:	99 degrees West longitude (nominal)
Estimated Operational life:	15 years

PAYLOAD	
Ka-band:	18.3-18.8 GHz (space-to-Earth), 28.35-28.6 and 29.25-29.5 GHz (Earth-to-space)

POWER	
Solar Array:	Two solar wings. Each wing with six panels
Array Power Available	16900W (worst case EOL @ equinox)
Payload Load	14330W (worst case EOL @ equinox)
Bus Load	1800W including battery charge power(worst case EOL @ equinox)
Total Load	16130W (worst case EOL @ equinox)
Batteries:	One 59-cell NiH_2 battery
Depth of Discharge (%):	79.5%

DIMENSIONS	
In-orbit:	47.9 m long, solar arrays 8.2 m wide, antennas/radiators 7.3 m tall, antenna
Stowed:	H: 7.3 m W: 3.8 m L: 3.4 m
Mass: **At Launch** **In-orbit (beginning of life)** **End of life**	 5996 kg 3822 kg 3556 kg (dry)

ANTENNAS
Receive – One 1.6 m Single Offset Antenna Transmit – Two 2.8m Gregorian Antennas Four 1.8 m Single Offset Antennas

Table 12-1. Summary of DIRECTV 11 Characteristics

13. Spacecraft Bus Subsystem

The spacecraft, part of Boeing Satellite Systems' 702 bus series, encompasses the following design elements.

1. A rectangular structure that houses internal electronic equipment and externally supports communication antennas on the earth-facing side (Ka-band transmit antenna), east side (Ka-band transmit antenna), and west side (Ka-band transmit/receive antenna) of the spacecraft.

2. A six-panel deployable solar array. The six panels are populated with Triple Junction Galium Arsenide (GaAs) solar cells. For eclipse operation, power is stored in one 59-cell, 328-Ah nickel-hydrogen (NiH_2) battery.

3. The bi-propellant propulsion subsystem is used for transfer orbit operations. Propellants for the integrated bipropellant propulsion system are stored in four large tanks located in the bus tank cavity. Pressure to the system is provided by two cylindrical helium-filled pressurant tanks also located in the tank cavity. The 4 axial and 4 east-west attitude control thrusters are mounted on the four corners on the aft side of the satellite. The main satellite thruster is mounted on the aft side of the satellite pointing in the anti-Earth direction. The bipropellant reaction control system incorporates integral latch valves and thruster valves for maximum reliability.

4. The xenon ion propulsion subsystem (XIPS) is used for orbit raising, station-keeping, momentum management, and de-orbit operations. Xenon is stored in two cylindrical tanks in the bus tank cavity. The flow of xenon is controlled to the thrusters by a series of filters, regulators, and latch valves. The four 25 cm xenon thrusters are mounted on gimbaled platforms on the aft side of the satellite. The thruster placement allows XIPS to meet all post-transfer orbit maneuver requirements.

5. The Orbital Maneuver Lifetime (OML) of 15 years is achieved on Proton M/Breeze M, Sea Launch, Ariane V, and Atlas V launch vehicles.

Figure 13-1 shows the on-orbit configuration.

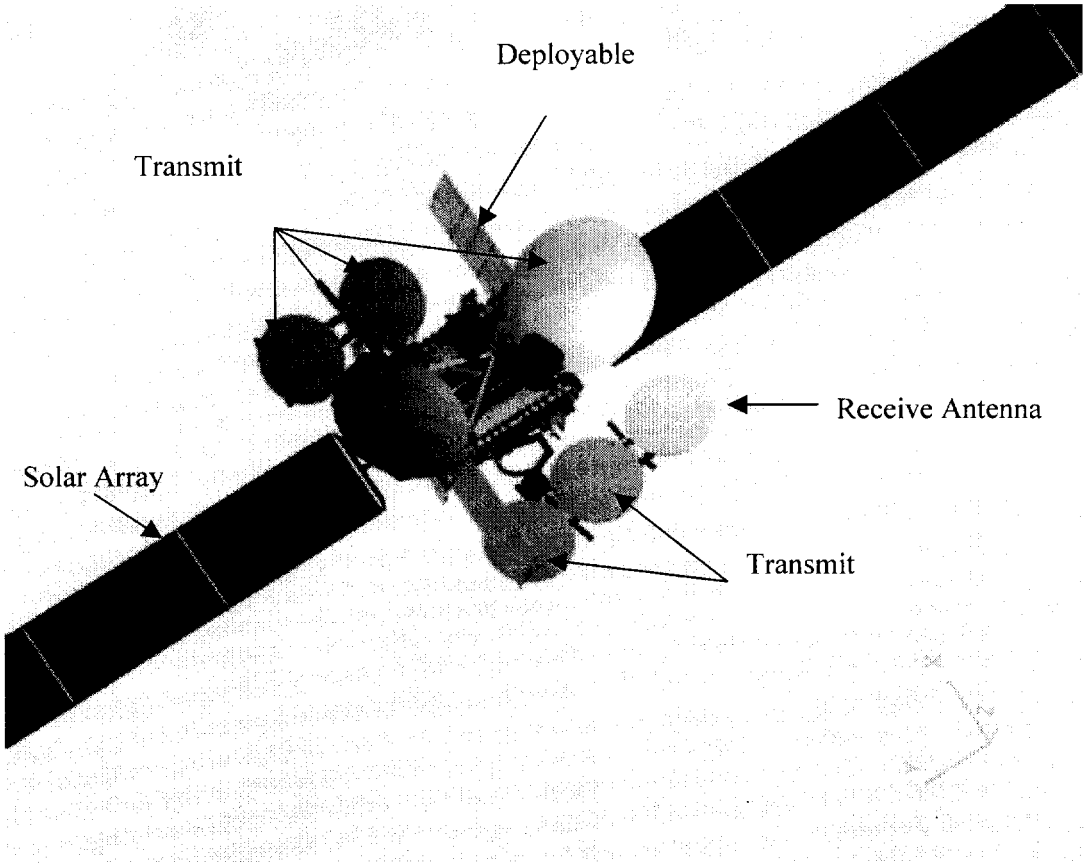

Figure 13-1. On-Orbit Configuration of DIRECTV 11

14. Common Carrier Status

DIRECTV intends to operate DIRECTV 11 on a non-broadcast, non-common carrier basis. DIRECTV may sell and/or lease a portion of its capacity on a non-common carrier basis for complementary business purposes.

15. Schedule

DIRECTV anticipates that Boeing will complete construction of DIRECTV 11 in late 2006 and that the satellite may be launched as early as late 2006.

16. Public interest Considerations

See Section II above.

17. Interference Analysis

The Tables included in Appendix B demonstrate that the DIRECTV 11 satellite design described in this application operates without exceeding the limits set by the Commission's two-degree spacing policy and implementing rules. Accordingly, the proposed DIRECTV 11 satellite will remain in compliance with the relevant technical rules established by the Commission.

At Ka-band, in order to achieve maximum compatibility between diverse networks, the Commission established coordination thresholds for earth station EIRP off-axis levels and spacecraft downlink PFD in the *18 GHz Order*.[12] These operational thresholds are the outcome of the blanket licensing parameters coordinated by industry for Ka-band earth terminals. This DIRECTV 11 proposal is fully compatible with this aspect of the *18 GHz Order*. For U.S. service from 99° WL, the system complies with the established -118 dBW/m^2/MHz PFD threshold, as well as the PFD limitations established in Section 25.208 of the Commission's rules.

The interference studies that are included in this application are performed in conjunction with the end-to-end link performance analyses. Abbreviated link budgets including both uplink and downlink are presented in Appendix B. In each case, the analysis includes the aggregate effects of adjacent satellite interference in evaluating whether the system will operate at acceptable C/(N+I) thresholds.

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12 *Redesignation of the 17.7-19.7 GHz Frequency Band, Blanket Licensing of Satellite Earth Station in the 17.7-20.2 GHz and 27.5-30.0 GHz Frequency Bands, and the Allocation of additional Spectrum in the 17.3-17.8 GHz and 24.75-25.25 GHz Frequency Bands for Broadcast Satellite Service Use*, 15 FCC Rcd. 13430 (2000) ("18 GHz Order").

To properly account for all interference from adjacent operating satellite systems, aggregate interference from earth terminals and satellites associated with pairs of satellites at 2, 4, 6, and 8 degrees of orbit separation were included. The budgets use a level of assumed interference that accounts for the maximum level permissible under the off-axis coordination and downlink PFD threshold directives. On the downlink, the adjacent pairs of satellites at 2, 4, 6, and 8 degrees of orbit separation are each assumed to produce co-coverage interference at a level equivalent to that of the PFD coordination threshold value of -118 dBW/m^2/MHz. This analysis is included separately as Tables B-1b through B-3b for each individual link budget. The uplink adjacent satellite interference analysis is common to all three link budgets, and this analysis is shown as Table B-4. The aggregate adjacent system interference that results from these assumptions is included in the link budget Tables B-1a through B-3a. The DIRECTV 11 transmit earth station off-axis EIRP compliance is demonstrated through the calculations included in Table B-5.

18. Orbital Debris Mitigation

On June 21, 2004 the Commission adopted an order establishing new orbital debris mitigation requirements for satellite applications.[13] Those rules have not yet gone into effect,[14] and DIRECTV is not now in a position to provide all of the information required under the new regime. However, DIRECTV can state as follows.

To control orbital debris, DIRECTV will use a design for its satellite and launch vehicle that minimizes the amount of debris released during normal operations. To ensure that its satellite does not become a source of orbital debris, DIRECTV will

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13 See Mitigation of Orbital Debris, 19 FCC Rcd. 11567 (2004).

14 *See* 47 C.F.R. § 1.427 (rules may be made effective no earlier than 30 days after publication in the Federal Register, absent an explicit finding of good cause for earlier effective date).

conduct an analysis to ensure that the probability of collision with any known space-borne objects during its normal operation lifetime is minimal. DIRECTV will also conduct an analysis that demonstrates that no realistic failure modes exist or can lead to an accidental explosion during normal operations or before completion of post-operations disposal. At the end of the operational life of the satellite, DIRECTV will maneuver its spacecraft to a storage orbit with a perigee altitude above its normal operational orbit. DIRECTV will use a maneuver strategy that reduces the risk of leaving any of its spacecraft near an operational orbit. After the spacecraft reaches its final disposal orbit, all on-board sources of stored energy will be depleted or safely secured.

DIRECTV will supplement this information as necessary to comply with the Commission's new orbital debris disclosure rules after they become effective.

IV. CONCLUSION

In summary, the satellite proposed in this application will provide DIRECTV with a highly capable spacecraft that will support a quantum leap in the availability of high quality HD multichannel video programming for millions of Americans as early as 2006. This new capability will advance the HDTV transition, provide better local-into-local signals, and enhance DIRECTV's ability to offer a powerful alternative to incumbent cable operators. Due to the advanced design of the proposed satellite, DIRECTV will be able to provide these benefits without the allocation of any additional spectrum or orbital locations. For these reasons, DIRECTV submits that the proposed satellite will serve the public interest and respectfully requests that the Commission expeditiously grant this application.

Respectfully submitted,

THE DIRECTV GROUP, INC.

By: \s\
Romulo Pontual
Executive Vice President and Chief
Technology Officer

ENGINEERING CERTIFICATION

The undersigned hereby certifies to the Federal Communications Commission as follows:

(i) He is the technically qualified person responsible for the engineering information contained in the foregoing Application,

(ii) He is familiar with Part 25 of the Commission's Rules, and

(iii) He has either prepared or reviewed the engineering information contained in the foregoing Application, and it is complete and accurate to the best of his knowledge and belief.

Signed:

/s/

Jack Wengryniuk
Senior Director
DIRECTV Operations, Inc.

September 9, 2004
Date

APPENDIX A

DIRECTV 11 SPOT BEAM CONNECTIVITY

TABLE A-1 DIRECTV 11 Spot Beam Connectivity

Uplink Parameters				Downlink Parameters			
U/L Site	U/L Ch	U/L Pol		Ant ID	Spot Beam	D/L Ch	D/L Pol
S2	16L	L		1	1	16	L
S2	19L	R		1	1	19	R
S2	20L	L		1	1	20	L
S4	16L	L		1	3	16	L
S4	19L	R		1	3	19	R
S4	20L	L		1	3	20	L
S5	16L	L		1	4	16	L
S5	19L	R		1	4	19	R
S5	20L	L		1	4	20	L
S6	16L	L		1	5	16	L
S6	19L	R		1	5	19	R
S6	20L	L		1	5	20	L
S2	16U	L		1	6	16	L
S2	19U	R		1	6	19	R
S2	20U	L		1	6	20	L
S3	16U	L		1	7	16	L
S3	19U	R		1	7	19	R
S3	20U	L		1	7	20	L
S3	16L	L		1	8	16	L
S3	19L	R		1	8	19	R
S3	20L	L		1	8	20	L
S4	16U	L		1	9	16	L
S4	19U	R		1	9	19	R
S4	20U	L		1	9	20	L
S5	16U	L		1	10	16	L
S5	20U	L		1	10	20	L
S6	16U	L		1	11	16	L
S6	19U	R		1	11	19	R
S6	20U	L		1	11	20	L
S1	16	L		1	12	16	L
S1	19	R		1	12	19	R
S1	20	L		1	12	20	L
S2	15L	R		2	1	15	R
S2	23L	R		2	1	23	R
S2	24L	L		2	1	24	L
S3	15L	R		2	3	15	R
S3	23L	R		2	3	23	R
S3	24L	L		2	3	24	L
S5	15L	R		2	4	15	R
S5	23L	R		2	4	23	R

Uplink Parameters				Downlink Parameters			
U/L Site	U/L Ch	U/L Pol		Ant ID	Spot Beam	D/L Ch	D/L Pol
S5	24L	L		2	4	24	L
S6	15L	R		2	6	15	R
S6	23L	R		2	6	23	R
S6	24L	L		2	6	24	L
S2	15U	R		2	7	15	R
S2	23U	R		2	7	23	R
S2	24U	L		2	7	24	L
S4	15L	R		2	8	15	R
S4	23L	R		2	8	23	R
S4	24L	L		2	8	24	L
S4	15U	R		2	9	15	R
S4	23U	R		2	9	23	R
S4	24U	L		2	9	24	L
S6	15U	R		2	10	15	R
S6	23U	R		2	10	23	R
S6	24U	L		2	10	24	L
S1	15	R		2	12	15	R
S1	23	R		2	12	23	R
S1	24	L		2	12	24	L
S3	15L	R		2	13	15	R
S3	23L	R		2	13	23	R
S3	24L	L		2	13	24	L
S2	17L	R		3	1	17	R
S2	18L	L		3	1	18	L
S3	17L	R		3	2	17	R
S3	18L	L		3	2	18	L
S4	17L	R		3	3	17	R
S4	18L	L		3	3	18	L
S5	17L	R		3	4	17	R
S5	18L	L		3	4	18	L
S6	17L	R		3	5	17	R
S6	18L	L		3	5	18	L
S2	17U	R		3	6	17	R
S2	18U	L		3	6	18	L
S3	17U	R		3	7	17	R
S3	18U	L		3	7	18	L
S4	17U	R		3	8	17	R
S4	18U	L		3	8	18	L
S5	17U	R		3	9	17	R
S5	18U	L		3	9	18	L
S6	17U	R		3	10	17	R
S6	18U	L		3	10	18	L
S1	17	R		3	11	17	R

Uplink Parameters				Downlink Parameters			
U/L Site	U/L Ch	U/L Pol		Ant ID	Spot Beam	D/L Ch	D/L Pol
S1	18	L		3	11	18	L
S2	21L	R		4	1	21	R
S2	22L	L		4	1	22	L
S3	21L	R		4	2	21	R
S3	22L	L		4	2	22	L
S4	21L	R		4	3	21	R
S4	22L	L		4	3	22	L
S5	21L	R		4	4	21	R
S5	22L	L		4	4	22	L
S6	21L	R		4	5	21	R
S6	22L	L		4	5	22	L
S2	21U	R		4	6	21	R
S2	22U	L		4	6	22	L
S3	21U	R		4	7	21	R
S3	22U	L		4	7	22	L
S4	21U	R		4	8	21	R
S1	21	R		4	9	21	R
S1	22	L		4	9	22	L
S5	21U	R		4	11	21	R
S5	22U	L		4	11	22	L
S6	21U	R		4	13	21	R
S6	22U	L		4	13	22	L

APPENDIX B

DIRECTV 11 LINK BUDGET ANALYSIS

DIRECTV 11 at 99W	National - WDC	Clear Sky	Rain Dn
Uplink C/N (thermal), dB	Transmit power, dBW	7.6	12.6
Los Angeles	Transmit losses, dB	-2.0	-2.0
	Ground antenna gain, dB	66.3	66.3
	Antenna pointing loss, dB	-0.5	-0.5
	Free space loss, dB	-213.2	-213.2
	Atmospheric loss, dB	-1.1	-1.1
	Uplink rain loss, dB	0.0	-5.0
	Satellite G/T, dB/K	18.0	18.0
	Bandwidth, dB-Hz	-74.8	-74.8
	Boltzmann's constant, dBW/Hz K	228.6	228.6
Total Uplink C/N		**28.9**	**28.9**
Downlink C/N (thermal),dB	Satellite EIRP, dBW/36 MHz	54.3	54.3
Washington, DC	Free space loss, dB	-209.4	-209.4
	Atmospheric loss, dB	-1.0	-1.0
	Downlink rain loss, dB (99.7% Avail.)	0.0	-3.8
	Rain temp increase, dB	0.0	-3.1
	Rcv. antenna pointing loss, dB	-1.0	-1.0
	Antenna wetting + noise increase, dB	0.0	-1.0
	Ground G/T, dB/K	18.4	18.4
	Bandwidth, dB-Hz	-74.8	-74.8
	Boltzmann's constant, dBW/Hz K	228.6	228.6
Total Downlink C/N		**15.1**	**7.3**
		Clear Sky	**Rain Dn**
Totals	Uplink C/N (thermal), dB	28.9	28.9
	Downlink C/N (thermal), dB	15.1	7.3
	Total inter and intra-system C/I, dB (incl. x-pol, ASI, ACI, ABI, TX E/S)	**9.5**	**9.5**
	Total C/(N+I), dB	**8.4**	**5.2**
	Required C/(N+I), dB (includes implementation margin)	**5.2**	**5.2**
	Margin, dB	**3.2**	**0.02**

Table B-1a. DIRECTV 11 Link Budget – National Coverage

Orbital Separation, deg.	Rcv. antenna off-axis disc., dB	Delta EIRP, dB	Clear Sky S/E C/I, dB	Two Sat. C/I, dB
2.0	20.0	-5.2	14.8	11.8
4.0	26.9	-5.2	21.7	18.7
6.0	31.3	-5.2	26.1	23.1
8.0	34.4	-5.2	29.2	26.2
Aggregate				**10.6**

Table B-1b. DIRECTV 11 Downlink Adjacent Satellite Interference Analysis for National Coverage

DIRECTV 11 at 99W	Spot - Colo Spgs	Clear Sky	Rain Dn
Uplink C/N (thermal), dB	Transmit power, dBW	7.6	12.6
Los Angeles	Transmit losses, dB	-2.0	-2.0
	Ground antenna gain, dB	66.3	66.3
	Antenna pointing loss, dB	-0.5	-0.5
	Free space loss, dB	-213.2	-213.2
	Atmospheric loss, dB	-1.1	-1.1
	Uplink rain loss, dB	0.0	-5.0
	Satellite G/T, dB/K	18.0	18.0
	Bandwidth, dB-Hz	-74.8	-74.8
	Boltzmann's constant, dBW/Hz K	228.6	228.6
Total Uplink C/N		**28.9**	**28.9**
Downlink C/N (thermal),dB	Satellite EIRP, dBW/36 MHz	56.5	56.5
Colorado Springs	Free space loss, dB	-209.3	-209.3
	Atmospheric loss, dB	-1.0	-1.0
	Downlink rain loss, dB (99.7% Avail.)	0.0	-1.9
	Rain temp increase, dB	0.0	-2.1
	Rcv. antenna pointing loss, dB	-1.0	-1.0
	Antenna wetting + noise increase, dB	0.0	-1.0
	Ground G/T, dB/K	18.4	18.4
	Bandwidth, dB-Hz	-74.8	-74.8
	Boltzmann's constant, dBW/Hz K	228.6	228.6
Total Downlink C/N		**17.4**	**12.4**
		Clear Sky	**Rain Dn**
Totals	Uplink C/N (thermal), dB	28.9	28.9
	Downlink C/N (thermal), dB	17.4	12.4
	Total inter and intra-system C/I, dB (incl. x-pol, ASI, ACI, ABI, TX E/S)	**9.3**	**9.3**
	Total C/(N+I), dB	**8.7**	**7.6**
	Required C/(N+I), dB (includes implementation margin)	**4.4**	**4.4**
	Margin, dB	**4.3**	**3.2**

Table B-2a. DIRECTV 11 Link Budget – Spot Coverage

Orbital Separation, deg.	Rcv. antenna off-axis disc., dB	Delta EIRP, dB	Clear Sky S/E C/I, dB	Two Sat. C/I, dB
2.0	20.00	-3.0	17.0	14.0
4.0	26.90	-3.0	23.9	20.9
6.0	31.30	-3.0	28.3	25.3
8.0	34.40	-3.0	31.4	28.4
Aggregate				**12.8**

Table B-2b. DIRECTV 11 Downlink Adjacent Satellite Interference Analysis for Spot Coverage

DIRECTV 11 at 99W (Backhaul)	National - LA-CRK Backhaul	Clear Sky	Rain Dn
Uplink C/N (thermal), dB	Transmit power, dBW	7.6	12.6
Los Angeles	Transmit losses, dB	-2.0	-2.0
	Ground antenna gain, dB	66.3	66.3
	Antenna pointing loss, dB	-0.5	-0.5
	Free space loss, dB	-213.2	-213.2
	Atmospheric loss, dB	-1.1	-1.1
	Uplink rain loss, dB	0.0	-5.0
	Satellite G/T, dB/K	18.0	18.0
	Bandwidth, dB-Hz	-74.8	-74.8
	Boltzmann's constant, dBW/Hz K	228.6	228.6
Total Uplink C/N		**28.9**	**28.9**
Downlink C/N (thermal),dB	Satellite EIRP, dBW/36 MHz	50.6	50.6
Castle Rock	Free space loss, dB	-209.3	-209.3
	Atmospheric loss, dB	-1.0	-1.0
	Downlink rain loss, dB (99.9% Avail.)	0.0	-10.2
	Rain temp increase, dB	0.0	-3.9
	Rcv. antenna pointing loss, dB	-1.0	-1.0
	Antenna wetting + noise increase, dB	0.0	-1.0
	Ground G/T, dB/K	32.4	32.4
	Bandwidth, dB-Hz	-74.8	-74.8
	Boltzmann's constant, dBW/Hz K	228.6	228.6
Total Downlink C/N		**25.5**	**10.4**
		Clear Sky	**Rain Dn**
Totals	Uplink C/N (thermal), dB	28.9	28.9
	Downlink C/N (thermal), dB	25.5	10.4
	Total inter and intra-system C/I, dB (incl. x-pol, ASI, ACI, ABI, TX E/S)	**15.0**	**15.0**
	Total C/(N+I), dB	**14.4**	**9.0**
	Required C/(N+I), dB (includes implementation margin)	**5.2**	**5.2**
	Margin, dB	**9.2**	**3.8**

Figure B-3a. DIRECTV 11 Link Budget – Backhaul Link

Orbital Separation, deg.	Rcv. antenna off-axis disc., dB	Delta EIRP, dB	Clear Sky S/E C/I, dB	Two Sat. C/I, dB
2.0	34.0	-8.9	25.1	22.1
4.0	41.5	-8.9	32.6	29.6
6.0	45.9	-8.9	37.0	34.0
8.0	49.1	-8.9	40.2	37.2
Aggregate				**21.0**

Table B-3b. DIRECTV 11 Downlink Adjacent Satellite Interference Analysis for Backhaul Link

Orbital Separation, deg.	Allowable EIRP in 40 kHz, dBW	Allowable EIRP in xpndr BW, dBW	Wanted EIRP, dBW	Delta Ant. Gain, dB	C/I, dB
2.0	11.0	40.5	71.4	0.0	30.9
4.0	3.4	33.0	71.4	0.0	38.4
6.0	-1.0	28.6	71.4	0.0	42.8
8.0	-2.6	26.9	71.4	0.0	44.5
Aggregate					**26.8**

Table B4. DIRECTV 11 Uplink Adjacent Satellite Interference Analysis

Max TX power = 5.6 dBW/36 MHz = -23.9 dBW/40 kHz				
Feeder-link antenna conforms to §25.209				
Degrees off-axis	**§25.209 Allowable Antenna Gain, dB**	**Max DIRECTV 11 Feeder-Link EIRP, dBW/40 kHz**	**§25.138 Allowable Off-Axis EIRP, dBW/40 kHz**	**Margin, dB**
2.0	21.5	-2.4	11.0	13.4
4.0	13.9	-10.0	3.4	13.4
6.0	9.5	-14.4	-1.0	13.4
8.0	6.4	-17.5	-2.6	14.9

Table B5. DIRECTV 11 Transmit Earth Station Off-Axis EIRP Compliance

APPENDIX C

Antenna Beam Contours

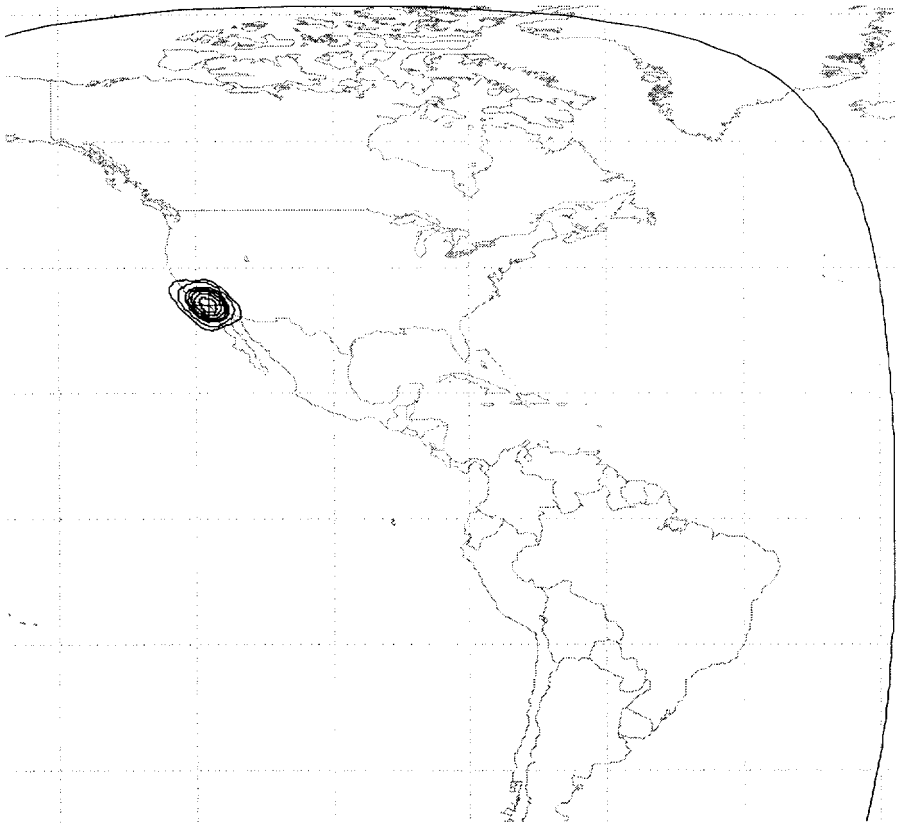

Figure C-1. DIRECTV 11 Los Angeles Broadcast Center Uplink Beam

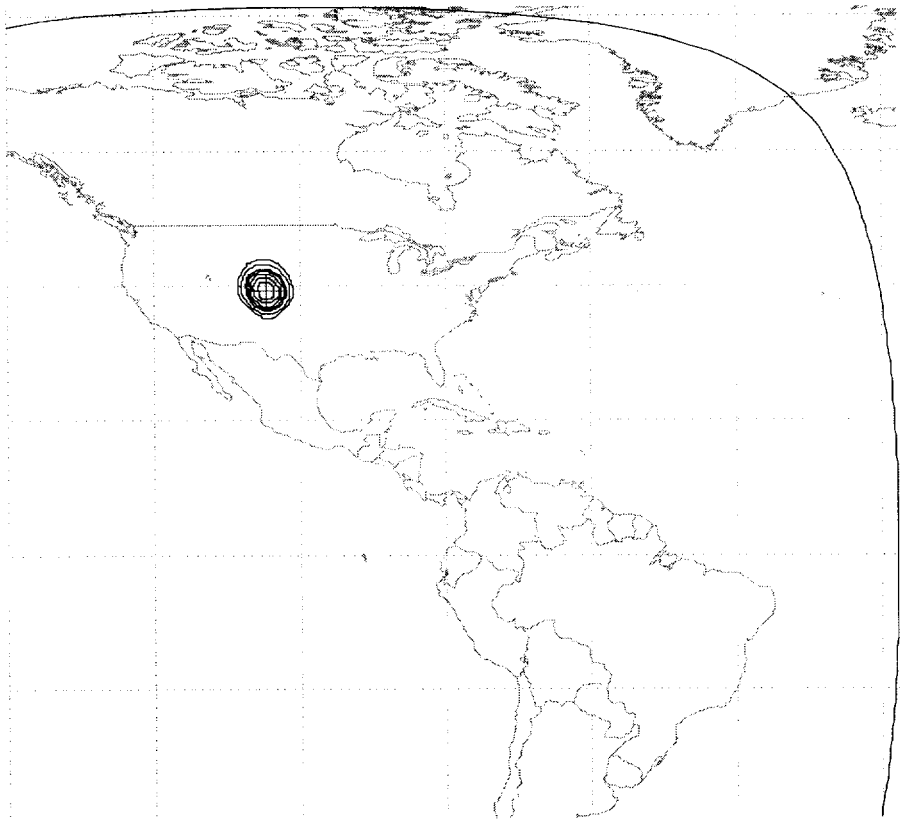

Figure C-2. DIRECTV 11 Castle Rock Broadcast Center Uplink Beam

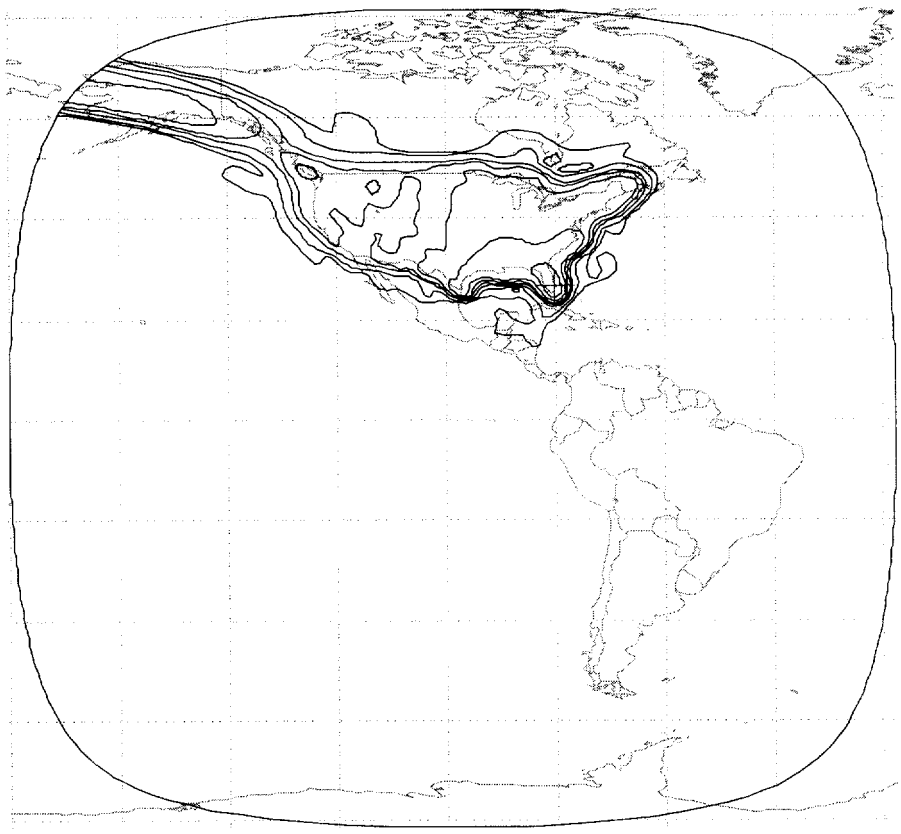

Figure C-3. DIRECTV 11 National Coverage and Telemetry Beam
(Note: Hawaii coverage not shown)

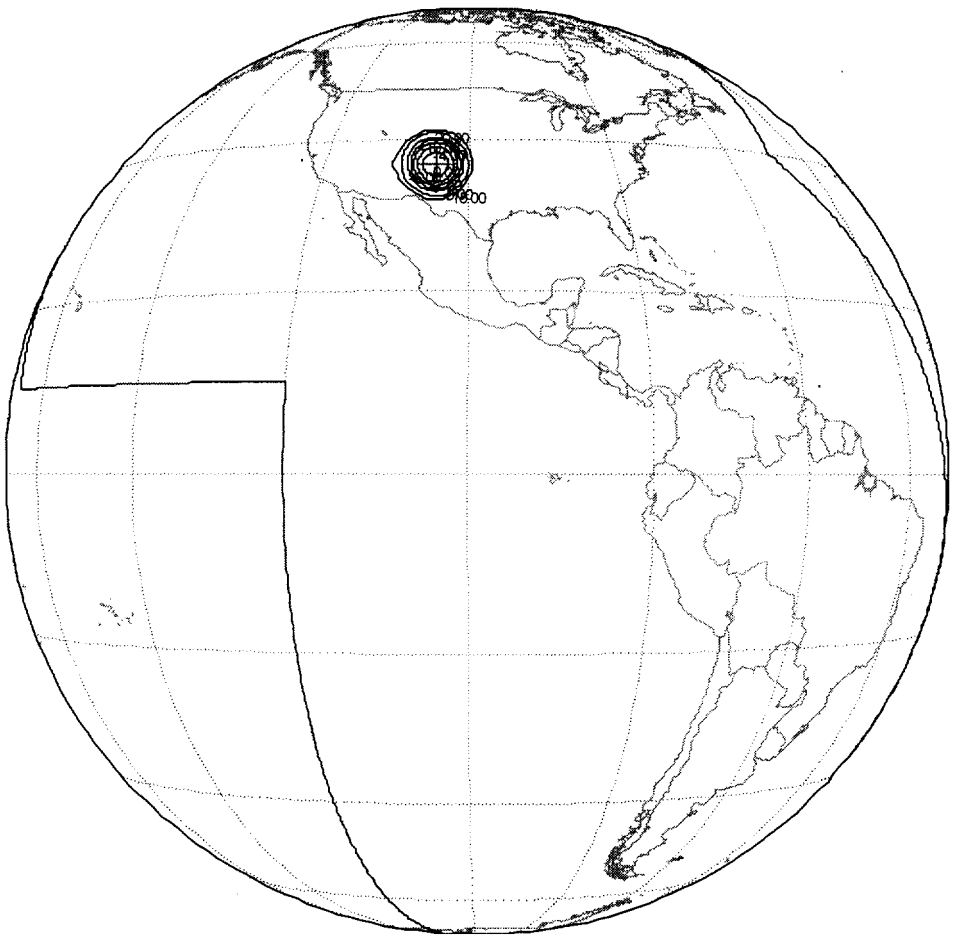

Figure C-4. DIRECTV 11 Typical Spot Beam

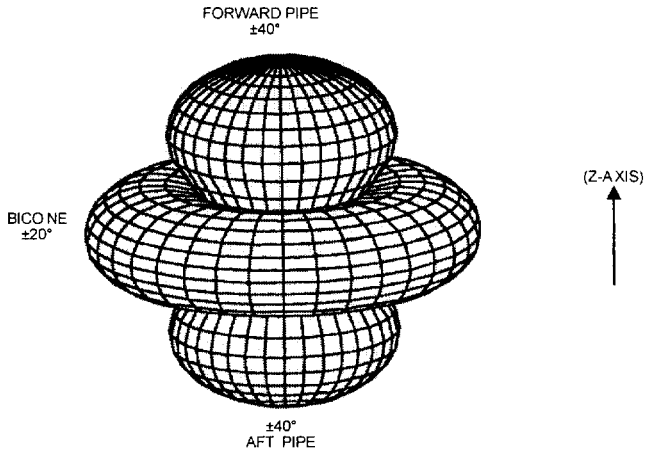

Figure C-5. DIRECTV 11 Wide Beam TT&C Antenna Coverage

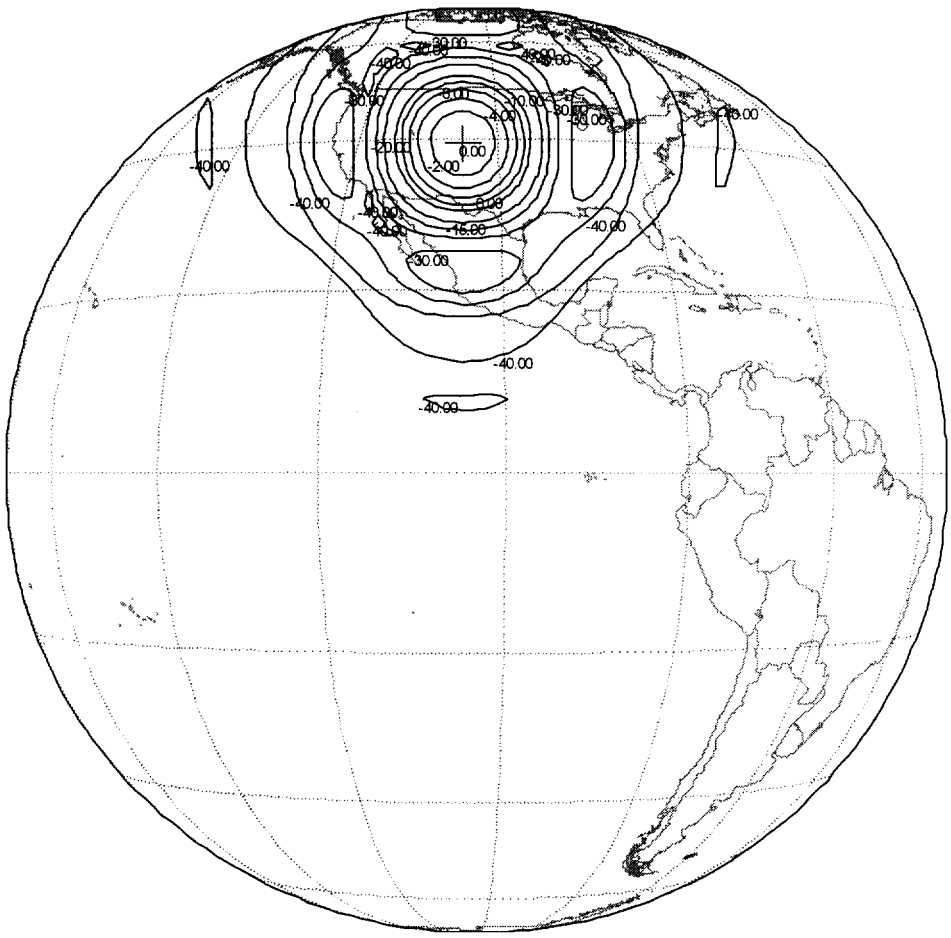

Figure C-6. DIRECTV 11 On-Station Command Antenna Coverage

APPENDIX D

TT&C Link Budgets

TELEMETRY LINK BUDGET (CO SCF - On Station)

	Units	TM Horn		Forward Pipe		Aft Pipe		Bicone	
SATELLITE PARAMETERS									
Orbit Longitude	deg E	-99		-99		-99		-99	
Orbit inclination	deg	0		0		0		0	
Satellite altitude	km	35,787		35,787		35,787		35,787	
Orbit Type		GEO		GEO		GEO		GEO	
Geostationary Altitude	km	35787		35787		35787		35787	
Supersynch Altitude	km	43122		43122		43122		43122	
Specific Altitude	km	42,000		42,000		42,000		42,000	
GROUND PARAMETERS									
Site		**Castle Rock Colorado**		**Castle Rock Colorado**		**Castle Rock Colorado**		**Castle Rock Colorado**	
Latitude	deg N	39.28		39.28		39.28		39.28	
Longitude	deg E	-104.81		-104.81		-104.81		-104.81	
Altitude	km	2.096		2.096		2.096		2.096	
Rain Rate		34.03		34.03		34.03		34.03	
Relative Humidity	%	35.0		35.0		35.0		35.0	
Surface Temp	°C	25		25		25		25	
Frequency	GHz	18.30		18.30		18.30		18.30	
Polarization		Circular		Circular		Circular		Horizontal	
Elevation Angle	degrees	44.1		44.1		44.1		44.1	
Slant Range	km	37473		37473		37473		37473	
LINK ANALYSIS		Rain	Clear	Rain	Clear	Rain	Clear	Rain	Clear
Availability @ EOC	%	99.70		99.70		99.70		99.70	
Available S/C EIRP	dBWi	10.00	10.00	6.00	6.00	6.00	6.00	6.00	6.00
Free Space Loss	dB	-209.17	-209.17	-209.17	-209.17	-209.17	-209.17	-209.17	-209.17
Gaseous Att	dB	-0.29	-0.24	-0.29	-0.24	-0.29	-0.24	-0.29	-0.24
Rain Fade	dB	-1.73		-1.73		-1.73		-1.73	
RIP at SCF antenna	dBWi	-201.18	-199.40	-205.18	-203.40	-205.18	-203.40	-205.18	-203.40
SCF PERFORMANCE									
Receive G/T	dB/K	31.00		31.00		31.00		31.00	
Receiver Temperature	K	417		417		417		417	
Background Clear	K	15		15		15		15	
Background Rain	K	104		104		104		104	
PCM Data Rate	kbps	4		1		1		1	
RIP at SCF Antenna	dBWi	-201.18	-199.40	-205.18	-203.40	-205.18	-203.40	-205.18	-203.40
Polarization Loss	dB	-0.01	-0.01	-0.28	-0.28	-0.28	-0.28	-3.00	-3.00
Ground Station G/T	dB/K	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00
G/T Degradation	dB	-0.81	0.00	-0.81	0.00	-0.81	0.00	-0.81	0.00
Boltzmann's Constant(^-1)	dBW/K/Hz	228.60	228.60	228.60	228.60	228.60	228.60	228.60	228.60
Received C/No	dB Hz	57.59	60.19	53.32	55.92	53.32	55.92	50.60	53.20
Required C/No (single mode)	dB-Hz	50.93	50.93	44.91	44.91	44.91	44.91	44.91	44.91
Required C/No (SIMO mode)	dB-Hz	56.24	56.24	50.22	50.22	50.22	50.22	50.22	50.22
Margin* (single mode)	**dB**	**6.66**	**9.25**	**8.41**	**11.00**	**8.41**	**11.00**	**5.69**	**8.28**
Margin* (SIMO mode)	dB	1.36	3.95	3.11	5.70	3.11	5.70	0.39	2.98
Actual EOC Availability		99.9965		99.9976		99.9976		99.9955	

WITH INTERFERENCE

PCM Data Rate	kbps	4	1	4	1
C/Io	dB-Hz	52.63	52.63	47.63	47.63
Total C/(No+Io)	dB-Hz	51.93	51.93	47.03	47.03
Required C/No (single mode)	dB-Hz	50.93	44.91	50.93	44.91
Required C/No (SIMO mode)	dB-Hz	56.24	50.22	56.24	50.22
Margin* (single mode)	**dB**	**1.00**	**7.02**	**-3.90**	**2.12**
Margin* (SIMO mode)	dB	-4.31	1.71	-9.21	-3.18
Actual EOC Availability (single mode)		99.9820		97.7377	
Actual EOC Availability (SIMO mode)		97.7377		97.7377	

Table D-1. On-Station Telemetry Link Budget

COMMAND LINK BUDGET (CO SCF - On Station NORMAL)

	Units	COMMAND		RANGE		BEACON TRACKING		Comments
SATELLITE PARAMETERS								
Orbit Longitude	deg E	-99		-99		-99		
Orbit inclination	deg	0		0		0		
Satellite altitude	km	35,787		35,787		35,787		
Orbit Type		GEO		GEO		GEO		
Geostationary Altitude	km	35787		35787		35787		
Supersynch Altitude	km	43122		43122		43122		
Specific Altitude	km	20,000		20,000		20,000		
GROUND PARAMETERS								
Site		Castle Rock Colorado		Castle Rock Colorado		Castle Rock Colorado		
Latitude	deg N	39.28		39.28		39.28		
Longitude	deg E	-104.81		-104.81		-104.81		
Altitude	km	2.0962		2.0962		2.0962		
Rain Rate	mm/hr	34.03		34.03		34.03		ITU R 867
CCIR Rain Region		E		E		E		
Relative Humidity	%	35		35		35		
Surface Temp	°C	25		25		25		
Frequency	GHz	29.50		29.50		29.50		
Polarization		C		C		C		
Elevation Angle	degrees	44.1		44.1		44.1		
Slant Range	km	37473		37473		37473		
LINK ANALYSIS		Rain	Clear	Rain	Clear	Rain	Clear	
Availability	%	99.70		99.70		99.70		
SCF EIRP	dBWi	87.60	87.60	87.60	87.60	90.00	90.00	Max EIRP w/ 5.6 m Ant. - 8 m Ant = 90dBW
Free Space Loss	dB	-213.31	-213.31	-213.31	-213.31	-213.31	-213.31	
Gaseous Att	dB	-0.43	-0.37	-0.43	-0.37	-0.43	-0.37	ITU Rec. 676
Rain Fade	dB	-4.54		-4.54		-4.54		ITU 618-7
Polarization Loss	dB	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	
RIP @ Spacecraft	dBWi	-130.70	-126.09	-130.70	-126.09	-128.30	-123.69	
Required RIP	dBWi	-148.85	-148.85	-148.85	-148.85	-130.85	-130.85	
Margin	dB	18.15	22.76	18.15	22.76	2.55	7.16	
Actual Availability	%	99.99		99.98		99.72		

Table D-2. On-Station Command Link Budget

FCC 312 Schedule S	FEDERAL COMMUNICATIONS COMMISSION SATELLITE SPACE STATION AUTHORIZATIONS (Technical and Operational Description)	Page 1: General, Frequency Bands, and GSO Orbit

S1. GENERAL INFORMATION Complete for all satellite applications.

a. Space Station or Satellite Network Name: DIRECTV 11	e. Estimated Date of Placement into Service: 3/30/2007	i Will the space station(s) operate on a Common Carrier Basis: N
b. Construction Commencement Date: 9/1/2004	f. Estimated Lifetime of Satellite(s): 15 Years	j. Number of transponders offered on a common carrier basis: 0
c. Construction Completion Date: 11/30/2006	g. Total Number of Transponders: 24	k. Total Common Carrier Transponder Bandwidth: 0 MHz
d. Estimated Launch Date: 12/20/2006	h. Total Transponder Bandwidth (no. transponders x Bandwidth) 960 MHz	l. Orbit Type: Mark all boxes that apply: ☐ GSO ☐ NGSO

S2. OPERATING FREQUENCY BANDS Identify the frequency range and transmit/receive mode for all frequency bands in which this station will oper
Also indicate the nature of service(s) for each frequency band.

Frequency Band Limits				e. T/R Mode	f. Nature of Service(s): List all that apply to this band
Lower Frequency (_Hz)		Upper Frequency (_Hz)			
a. Numeric	b. Unit (K/M/G)	c. Numeric	d. Unit (K/M/G)		
18.3	G	18.8	G	T	Direct to Home in the Fixed Fixed Satellite Service
28.35	G	28.6	G	R	Fixed Satellite Service
29.25	G	29.5	G	R	Fixed Satellite Service
18.3	G	18.8	G	T	Fixed Satellite Service

S3. ORBITAL INFORMATION FOR GEOSTATIONARY SATELLITES ONLY:

a. Nominal Orbital Longitude (Degrees E/W): 99.05 W	b. Alternate Orbital Longitude (Degrees E/W):		c. Reason for orbital location selection:
Longitudinal Tolerance or E/W Station-Keeping: d. Toward West: 0.05 Degrees e. Toward East: 0.05 Degrees	f. Inclination Excursion or N/S Station-Keeping Tolerance: 0.05 Degrees	Range of orbital are in which adequate service can be provided (Optional): Degrees E/W g. Westernmost: h. Easternmost:	
i. Reason for service are selection (Optional):			

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S4. ORBITAL INFORMATION FOR NON-GEOSTATIONARY SATELLITES ONLY

S4a. Total Number of Satellites in Network or System:

S4b. Total Number of Orbital Planes in Network or System:

S4c. Celestial Reference Body (Earth, Sun, Moon, etc.):

S4d. Orbit Epoch Date:

For each Orbital Plane Provide:

(e) Orbital Plane No.	(f) No. of Satellites in Plane	(g) Inclination Angle (degrees)	(h) Orbital Period (Seconds)	(i) Apogee (km)	(j) Perigee (km)	(k) Right Ascension of the Ascending Node (Deg.)	(l) Argument of Perigee (Degrees)	Active Service Arc Range (Degrees)		
								(m) Begin Angle	(n) End Angle	(o) Other

S5. INITIAL SATELLITE PHASE ANGLE For each satellite in each orbital plane, provide the intital phase angle.

(a) Orbital Plane No.	(b) Satellite Number	(c) Initial Phase Angle (Degrees)

NO NGSO DATA FILED

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S6. SERVICE AREA CHARACTERISTICS for each service area provide:

(a) Service Area ID	(b) Type of Associated Station (Earth or Space)	(c) Service Area Diagram File Name (GXT File)	(d) Service Area Description. Provide list of geographic areas (state postal codes or ITU 3-ltr codes), satellites or Figure No. of Service Area Diagram.
CONUS+	S		CONUS + Alaska
LABC	S		Uplink beam centered on Los Angeles, CA
CRBC	S		Uplink beam centered on Castle Rock, CO
SPOT1	S		Downlink beam centered on New York, NY
SPOT2	S		Downlink beam centered on Minneapolis, MN
SPOT3	S		Downlink beam centered on Colorado Springs, CO
CMD	S		Colorado Springs, CO

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S7. SPACE STATION ANTENNA BEAM CHARACTERISTICS For each antenna beam provide:

(a) Beam ID	(b) T/R Mode	Isotropic Antenna Gain		(e) Pointing Error (Degrees)	(f) Rotational Error (Degrees)	(g) Min. Cross-Polar Isolation (dB)	(h) Polarization Switchable? (Y/N)	(i) Polarization Alignment Rel. Equatorial Plane (Degrees)	(j) Service Area ID	Transmit			Receive				
		(c) Peak (dBi)	(d) Edge (dBi)							(k) Input Losses (dB)	(l) Effective Output Power (W)	(m) Max. EIRP (dBW)	(n) System Noice Temp (k)	(o) G/T Max. Gain Pt.	(p) Min. Saturation Flux Density (dBW/m2)	Input Attenuator (dB)	
																(q) Max. Value	(r) Step Size
UL1	R	47.5	46.5	0.1		27	N		LABC				891	18	-105	19	1
UL2	R	46.5	46.5	0.1		27	N		CRBC				891	18	-105	19	1
DL1	T	36.1	30.1	0.1		27	N		CONUS+	2	260	58.3					
A1B1	T	48.1	45.1	0.1		27	N		SPOT1	2.9	26.9	59.5					
A1B7	T	48.1	45.1	0.1		27	N		SPOT2	2.9	26.9	59.5					
A1B9	T	48.1	45.1	0.1		27	N		SPOT3	2.9	26.9	59.5					
CMD	R	38.5	37.5	0.1		27	N		CMD				17783	-4			

FEDERAL COMMUNICATIONS COMMISSION **Page 5: Beam Diagrams**
SATELLITE SPACE STATION AUTHORIZATIONS
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S8. ANTENNA BEAM DIAGRAMS For each beam pattern provide the reference to the graphic image and numerical data:
Also provide the power flux density levels in each beam that result from the emission with the highest power flux density.

(a) Beam ID	(b) T/R Mode	(c) Co-or Cross Polar Mode ("C" or" X")	(d) GSO Ref. Orbital Longitude (Deg. E/W)	(e) NGSO Antenna Gain Contour Description (Figure/Table/ Exhibit)	(f) GSO Antenna Gain Contour Data (GXT File)	Max. Power Flux Density (dBW/M2/Hz) At Angle of Arrival above horizontal (for emission with highest PFD)				
						(g) 5 Deg	(h) 10 Deg	(i) 15 Deg	(j) 20 Deg	(k) 25 Deg
UL1	R	C	-99		UL-LA (99.0W)_R1.gx					
UL2	R	C	-99		UL-CR (99.0W)_R1.gx					
DL1	T	C	-99		CONUS(99.0W)_R2.g>	-126	-126	-126	-128	-127
A1B1	T	C	-99		A1B1(99.0W)_R1.gxt	-126	-126	-126	-128	-127
A1B7	T	C	-99		A1B7(99.0W)_R1.gxt	-126	-126	-126	-128	-127
A1B9	T	C	-99		A1B9(99.0W).gxt	-126	-126	-126	-128	-127
CMD	R	C	-99		CMD_Beam 99W.gxt					

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S9. SPACE STATION CHANNELS For each frequency channel provide:

(a) Channel No.	(B) Assigned Bandwidth (kHz)	(c) T/R Mode	(d) Center Frequency (MHz)	(e) Polarization (H, V, L, R)	(f) TTC or Comm Channel (T or C)
T0013	36000	T	18564	R	C
T0015	36000	T	18604	R	C
T0013	36000	T	18564	R	C
T0015	36000	T	18604	R	C
T0017	36000	T	18648	R	C
T0019	36000	T	18692	R	C
T0021	36000	T	18732	R	C
T0023	36000	T	18776	R	C
T0002	36000	T	18324	L	C
T0004	36000	T	18364	L	C
T0006	36000	T	18404	L	C
T0008	36000	T	18444	L	C
T0010	36000	T	18484	L	C
T0012	36000	T	18524	L	C
T0014	36000	T	18564	L	C
T0016	36000	T	18604	L	C
T0018	36000	T	18648	L	C
T0020	36000	T	18692	L	C
T0022	36000	T	18732	L	C
T0024	36000	T	18776	L	C
CMD1	1300	R	29493	L	T
CMD1B	1300	R	29251	L	T
CMD2	1300	R	29495	L	T
CMD2B	1300	R	29253	L	T
CMD3	1300	R	29497	L	T
CMD3B	1300	R	29255	L	T
TLM1	106	T	18300.25	L	T
TLM1B	106	T	18300.75	L	T
TLM2	106	T	18301.25	L	T
TLM2B	106	T	18301.75	L	T

S10. SPACE STATION TRANSPONDERS For each transponder provide:

(a) Transponder ID	(b) Transponder Gain (dB)	Receive Band		Transmit Band	
		(c) Channel No.	(d) Beam ID	(e) Channel No.	(f) Beam ID
NAT1	121	R0001	UL1	T0001	DL1
NAT2	121	R0002	UL1	T0002	DL1
NAT3	121	R0003	UL1	T0003	DL1
NAT4	121	R0004	UL1	T0004	DL1
NAT5	121	R0005	UL1	T0005	DL1
NAT6	121	R0006	UL1	T0006	DL1
NAT7	121	R0007	UL1	T0007	DL1
NAT8	121	R0008	UL1	T0008	DL1
NAT9	121	R0009	UL1	T0009	DL1
NAT10	121	R0010	UL1	T0010	DL1
NAT11	121	R0011	UL1	T0011	DL1
NAT12	121	R0012	UL1	T0012	DL1
NAT13	121	R0013	UL1	T0013	DL1
NAT14	121	R0014	UL1	T0014	DL1
LIL1	113	R016L		T0016	A1B1
LIL2	113	R019L		T0019	A1B1
LIL3	113	R020L		T0020	A1B1
LIL4	113	R016U		T0016	A1B7
LIL5	113	R019U		T0019	A1B7
LIL6	113	R020U		T0020	A1B7
LIL7	113	R016U		T0016	A1B9
LIL8	113	R019U		T0019	A1B9
CMD1		CMD1	CMD		
CMD1B		CMD1B	CMD		
CMD2		CMD2	CMD		
CMD2B		CMD2B	CMD		
CMD3		CMD3	CMD		
CMD3B		CMD3B	CMD		
TLM1				TLM1	DL1
TLM1B				TLM1B	DL1

TLM3	106	T	18302.25	L	T
TLM3B	106	T	18302.75	L	T
R0001	36000	R	28375	R	C
R0003	36000	R	28415	R	C
R0005	36000	R	28455	R	C
R0007	36000	R	28495	R	C
R0009	36000	R	28535	R	C
R0011	36000	R	28575	R	C
R0002	36000	R	28375	L	C
R0004	36000	R	28415	L	C
R0006	36000	R	28455	L	C
R0008	36000	R	28495	L	C
R0010	36000	R	28535	L	C
R0012	36000	R	28575	L	C
R0013	36000	R	29269	R	C
R0014	36000	R	29269	L	C
R0015	36000	R	29309	R	C
R0016	36000	R	29309	L	C
R0017	36000	R	29353	R	C
R0018	36000	R	29353	L	C
R0019	36000	R	29397	R	C
R0020	36000	R	29397	L	C
R0021	36000	R	29437	R	C
R0022	36000	R	29437	L	C
R0023	36000	R	29481	R	C
R0024	36000	R	29481	L	C
R015L	36000	R	28389	R	C
R016L	36000	R	28389	L	C
R017L	36000	R	28433	R	C
R018L	36000	R	28433	L	C
R019L	36000	R	28477	R	C
R020L	36000	R	28477	L	C
R021L	36000	R	28517	R	C
R022L	36000	R	28517	L	C
R023L	36000	R	28561	R	C
R024L	36000	R	28561	L	C
R015U	36000	R	29285	R	C
R016U	36000	R	29285	L	C
R017U	36000	R	29329	R	C

TLM2				TLM2	DL1
TLM2B				TLM2B	DL1
TLM3				TLM3	DL1
TLM3B				TLM3B	DL1

R018U	36000	R	29329	L	C
R019U	36000	R	29373	R	C
R020U	36000	R	29373	L	C
R021U	36000	R	29413	R	C
R022U	36000	R	29413	L	C
R023U	36000	R	29457	R	C
R024U	36000	R	29457	L	C
T0001	36000	T	18324	R	C
T0003	36000	T	18364	R	C
T0005	36000	T	18404	R	C
T0007	36000	T	18444	R	C
T0009	36000	T	18484	R	C
T0011	36000	T	18524	R	C

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S11. DIGITAL MODULATION PARAMETERS For each digital emission provide:

(a) Digital Mod. ID	(b) Emission Designator	(c) Assigned Bandwidth (kHz)	(d) No. of Phases	(e)Uncoded Data Rate (kbps)	(f) FEC Error Correction Coding Rate	(g) CDMA Processing Gain (dB)	(h) Total C/N Performance Objective (dB)	(i) Single Entry C/I Objective (dB)
M2	36M0G7W	36000	4	35640	0.594		4.4	17
M3	36M0G7W	36000	4	39675	0.6613		5.2	14.8

FEDERAL COMMUNICATIONS COMMISSION **Page 8: Analog Modulation**
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S12. ANALOG MODULATION PARAMETERS For each analog emission provide:

(a) Analog Mod. ID	(b) Emission Designator	(c) Assigned Bandwidth (kHz)	(d) Signal Type	(e) Channels per Carrier	Multi-channel Telephony				(j) Video Standard NTSC, PAL, etc.	(k) Video Noise-Weighting (dB)	(l) Video and SCPC/FM Modulation Index	(m) SCPC/FM Compander, Preemphasis, and Noise Weighting (dB)	(n) Total C/N Performance Objective (dB)	(o) Single Entry C/I Objective (dB)
					(f) Ave. Companded Talker Level (dBm0)	(g) Bottom Baseband Freq. (MHz)	(h) Top Baseband Freq. (MHz)	(i) RMS Modulation Index						
C1	1M30F9D	1300		1									15	40.4
T1	106KG9D	106		1									14	11.7

FEDERAL COMMUNICATIONS COMMISSION **Page 9: Typical Emissions**
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S13. TYPICAL EMISSIONS For each planned type of emission provide:

Associated Transponder ID Range		Modulation ID		(e) Carriers per Transponder	(f) Carrier Spacing (kHz)	(g)Noise Budget Reference (Table No.)	(h) Energy Dispersal Bandwidth (kHz)	Receive Band (Assoc. Transmit Stn)			Transmit Band (This Space Station)			
(a) Start	(b) End	(c) Digital (Table S11)	(d) Analog (Table S12)					(i)Assoc. Stn. Max. Antenna Gain (dBi)	Assoc. Station Transmit Power (dBW)		EIRP (dBW)		(n) Max. Power Flux Density (dBW/m2/Hz)	(o)Assoc. Stn Rec. G/T (dB/K)
									(j) Min.	(k) Max.	(l) Min.	(m) Max.		
NAT1	NAT14	M3		1				64.3	7.6	12.6	52.2	58.2	-119.3	18.4
LIL1	LIL8	M2		1				64.3	7.6	12.6	56.5	59.5	-118	18.4
CMD1	CMD3B		C1	1				66	21.6	21.6				
TLM1	TLM3B		T1	1							10	10	-152	31

S14. Is the space station(s) controlled and monitored remotely? If Yes, provide the location and telephone number of the TT and C control point(s): Yes

S15. SPACECRAFT PHYSICAL CHARACTERISTICS:

S15a: Mass of spacecraft without fuel (kg): 3556	Spacecraft Dimensions (meters)	Probability of Survival to End of Life (0.0 - 1.0)
S15b. Mass of fuel and disposables at launch (kg): 2440		
S15c. Mass of spacecraft and fuel at launch (kg): 5996	S15f. Length (m): 47.9	S15i. Payload: 0.6
S15d. Mass of fuel, in orbit, at beginning of life (kg): 266	S15g. Width (m): 8.2	S15j. Bus: 0.85
S15e. Deployed Area of Solar Array (square meters): 77	S15h. Height (m): 7.3	S15k. Total: 0.51

S16. SPACECRAFT ELECTRICAL CHARACTERISTICS:

Spacecraft Subsystem	Electrical Power (Watts) At Beginning of Life		Electrical Power (Watts) At End of Life	
	At Equinox	At Solstice	At Equinox	At Solstice
Payload (Watts):	(a): 14330	(f): 14330	(k): 14330	(p): 14330
Bus (Watts):	(b): 1800	(g): 700	(l): 1800	(q): 700
Total (Watts):	(c): 16130	(h): 15030	(m) 16130	(r): 15030
Solar Array (Watts):	(d): 20050	(i): 17900	(n): 16900	(s): 15700
Depth of Battery Discharge (%):	(e) 79.5 %	(j) 0 %	(o) 79.5 %	(t) 0 %

S17. CERTIFICATIONS:

a. Are the power flux density limits of § 25.208 met?:	YES	NO	N/A
b. Are the appropriate service area coverage requirements of § 25.143(b)(ii) and (iii), or § 25.145(c)(1) and (2) met?	YES	NO	N/A
c. Are the frequency tolerances of § 25.202(e) and the out-of-band emission limits of § 25.202(f)(1), (2) and (3) met?	YES	NO	N/A

In addition to the information required in this Form, the space station applicant is required to provide all the information specified in Section 25.114 of the Commission's rules, 47 C.F.R § 25.114.

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ATTORNEYS AT LAW

January 26, 2005

BY HAND DELIVERY

Marlene H. Dortch
Office of the Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: *FCC File Nos. SAT-LOA-20040909-00168 and –00169, SAT-AMD-20050103-00001 and -00002*

Dear Ms. Dortch:

Further to my letter of January 12, 2005, The DIRECTV Group, Inc. ("DIRECTV") wishes to clarify the operation of its beams covering Hawaii on the DIRECTV 10 and DIRECTV 11 satellites. Each of these satellites has a dedicated spot beam covering Hawaii. These spot beams are used for both national and local programming, and as indicated in Table 5.2 of each application, the peak EIRP of these beams is 59.5 dBW. As also indicated in Figure 5-1 of those applications, national programming is provided by 14 Ka-band transponders on each satellite – and the Hawaii spot beams are fed with the same programming from the same uplink transmissions as the beams serving CONUS and Alaska. In addition, two more Ka-band transponders on DIRECTV 11 can be used in the same beam for the retransmission of local broadcast signals to subscribers in Hawaii. The complete beam contours are depicted on the attachment to this letter.

Sincerely yours,

William M. Wiltshire

William M. Wiltshire
Counsel for DIRECTV

cc: Bruce A. Olcott, Esq. (counsel for Hawaii)

DIRECTV 10 and 11 National Beam Coverage