

S2711 SAT-MOD-20110727-00135 IB2011003655
DIRECTV Enterprises, LLC
DIRECTV RB-1

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Approved by OMB
3060-0678

File # SAT-MOD-20110727-00135
Call Sign S2711 Grant Date 10/26/11
(or other identifier) Term Dates
From 10/26/11 To:
Approved: Stephen J. Duall
Chief, Satellite Policy Branch



FCC APPLICATION FOR SPACE AND EARTH STATION: MOD OR AMD - MAIN FORM FCC Use Only
FCC 312 MAIN FORM FOR OFFICIAL USE ONLY

APPLICANT INFORMATION

Enter a description of this application to identify it on the main menu:
MOD - S2711 (RB - 1 at 99WL)


1-8. Legal Name of Applicant

Name:	DIRECTV Enterprises, LLC	Phone Number:	301-663-0053
DBA Name:		Fax Number:	240-358-0569
Street:	2230 E. Imperial Hwy CA/LAI/N340	E-Mail:	jwengryniuk@directv.com
City:	El Segundo	State:	CA
Country:	USA	Zipcode:	90245
Attention:	William M Wiltshire Esq		-

Attachment to Grant
DIRECTV Enterprises, LLC
IBFS File No. SAT-MOD-20110727-00135
Call Sign S2711

The application of DIRECTV Enterprises, LLC (DIRECTV) to modify the authorization of its 17/24 GHz Broadcasting Satellite Service space station, DIRECTV RB-1 (Call Sign S2711), is GRANTED. Other than the change in orbital location and a change to its predicted antenna gain contour to include the territory of Puerto Rico in the coverage area of the DIRECTV RB-1 space station, the conditions contained in DIRECTV's prior authorization remain in effect.¹ Accordingly, DIRECTV is authorized to operate the DIRECTV RB-1 space station at the 99.235° W.L. orbital location using the 17.3-17.7 GHz (space-to-Earth) and the 24.75-25.15 GHz (Earth-to-space) frequency bands, at reduced power and without full interference protection. All operations of the DIRECTV RB-1 space station must be in accordance with the technical specifications set forth in its application, the previously authorized technical specifications other than those modified herein, Federal Communications Commission rules, and the additional conditions set forth below.

1. DIRECTV shall maintain the DIRECTV RB-1 space station within an east/west longitudinal station-keeping tolerance of ± 0.05 degrees of the assigned 99.235° W.L. orbital location. Transmissions from the DIRECTV RB-1 space station at this offset orbital location must be reduced from the power flux density levels specified in 47 C.F.R. § 25.208(w) in accordance with the methodology specified in Condition 1 of the attachment to DIRECTV's authorization granted on July 28, 2009.
2. DIRECTV is authorized to modify its predicted antenna gain contour to include the territory of Puerto Rico in the coverage area of the DIRECTV RB-1 space station.
3. DIRECTV has 30 days from the date of this grant to decline this authorization as conditioned. Failure to respond within that period will constitute formal acceptance of the authorization as conditioned.
4. This action is issued pursuant to Section 0.261 of the Commission's rules on delegated authority, 47 C.F.R. § 0.261, and is effective immediately. 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.

 GRANTED * International Bureau *with conditions	File # <u>SAT-MOD-20110727-00135</u>
	Call Sign <u>S2711</u> Grant Date <u>10/26/11</u> (or other identifier)
	Term Dates From <u>10/26/11</u> To: _____
	Approved: <u><i>Stephen J. Duall</i></u> Stephen J. Duall Chief, Satellite Policy Branch

¹ See IBFS File Nos. SAT-LOA-20060908-00099, SAT-AMD-20080114-00013, and SAT-AMD=20080321-00076 (granted July 28, 2009).

9-16. Name of Contact Representative

Name:	William M. Wiltshire	Phone Number:	202-730-1350
Company:	Wiltshire & Grannis LLP	Fax Number:	202-730-1301
Street:	1200 18th Street, NW	E-Mail:	wwiltshire@wiltshiregrannis.com
City:	Washington	State:	DC
Country:	USA	Zipcode:	20036-
Attention:		Relationship:	Legal Counsel

CLASSIFICATION OF FILING

<p>17. Choose the button next to the classification that applies to this filing for both questions a. and b. Choose only one for 17a and only one for 17b.</p> <p><input type="radio"/> a1. Earth Station</p> <p><input checked="" type="radio"/> a2. Space Station</p>	<p>(N/A) b1. Application for License of New Station</p> <p>(N/A) b2. Application for Registration of New Domestic Receive-Only Station</p> <p><input type="radio"/> b3. Amendment to a Pending Application</p> <p><input checked="" type="radio"/> b4. Modification of License or Registration</p> <p>b5. Assignment of License or Registration</p> <p>b6. Transfer of Control of License or Registration</p> <p><input type="radio"/> b7. Notification of Minor Modification</p> <p>(N/A) b8. Application for License of New Receive-Only Station Using Non-U.S. Licensed Satellite</p> <p>(N/A) b9. Letter of Intent to Use Non-U.S. Licensed Satellite to Provide Service in the United States</p> <p>(N/A) b10. Other (Please specify)</p> <p>(N/A) b11. Application for Earth Station to Access a Non-U.S. satellite Not Currently Authorized to Provide the Proposed Service in the Proposed Frequencies in the United States</p> <p>(N/A) b12. Application for Database Entry</p> <p><input type="radio"/> b13. Amendment to a Pending Database Entry Application</p> <p><input type="radio"/> b14. Modification of Database Entry</p>
<p>17c. Is a fee submitted with this application?</p> <p><input checked="" type="radio"/> If Yes, complete and attach FCC Form 159. If No, indicate reason for fee exemption (see 47 C.F.R. Section 1.1114).</p> <p><input type="radio"/> Governmental Entity</p> <p><input type="radio"/> Noncommercial educational licensee</p> <p><input type="radio"/> Other (please explain):</p>	
<p>17d.</p> <p>Fee Classification BFY – Space Station Modification (Geostationary)</p>	

<p>18. If this filing is in reference to an existing station, enter:</p> <p>(a) Call sign of station: S2711</p>	<p>19. If this filing is an amendment to a pending application enter both fields, if this filing is a modification please enter only the file number:</p> <p>(a) Date pending application was filed:</p> <p>(b) File number: SATLOA2006090800099</p>
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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:

a. Fixed Satellite
 b. Mobile Satellite
 c. Radiodetermination Satellite
 d. Earth Exploration Satellite
 e. Direct to Home Fixed Satellite
 f. Digital Audio Radio Service
 g. Other (please specify) 17/24 GHz Broadcasting Satellite Service

21. STATUS: Choose the button next to the applicable status. Choose only one.

Common Carrier Non-Common Carrier

22. If earth station applicant, check all that apply.

Using U.S. licensed satellites
 Using Non-U.S. licensed satellites

23. If applicant is providing 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)

c. Other (Please specify upper and lower frequencies in MHz.) Frequency Upper: 25250 (Please specify additional frequencies in an attachment)

Frequency Lower: 17300

TYPE OF STATION

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

a. Fixed Earth Station

b. Temporary-Fixed Earth Station

c. 12/14 GHz VSAT Network

d. Mobile Earth Station

e. Geostationary Space Station

f. Non-Geostationary Space Station

g. Other (please specify)

26. TYPE OF EARTH STATION FACILITY:

Transmit/Receive Transmit-Only Receive-Only N/A

"For Space Station applications, select N/A."

PURPOSE OF MODIFICATION

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

- a --- authorization to add new emission designator and related service
- b --- authorization to change emission designator and related service
- c --- authorization to increase EIRP and EIRP density
- d --- authorization to replace antenna
- e --- authorization to add antenna
- f --- authorization to relocate fixed station
- g --- authorization to change frequency(ies)
- h --- authorization to add frequency
- i --- authorization to add Points of Communication (satellites & countries)
- j --- authorization to change Points of Communication (satellites & countries)
- k --- authorization for facilities for which environmental assessment and radiation hazard reporting is required
- l --- authorization to change orbit location
- m --- authorization to perform fleet management
- n --- authorization to extend milestones
- o --- Other (Please specify)

ENVIRONMENTAL POLICY

28. Would a Commission grant of any proposal in this application or amendment have a significant environmental impact as defined by 47 CFR 1.1307? 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

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

<p>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?</p>	<p><input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> N/A</p>
<p>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.</p>	

BASIC QUALIFICATIONS

<p>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.</p>	<p><input type="radio"/> Yes <input checked="" type="radio"/> No</p>
<p>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 explanation of circumstances.</p>	<p><input type="radio"/> Yes <input checked="" type="radio"/> No</p>

<p>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 explanation of circumstances.</p>	<p style="text-align: right;"> <input type="radio"/> Yes <input checked="" type="radio"/> No </p>
<p>38. Has any court finally adjudged the applicant, or any person directly or indirectly controlling the applicant, guilty of unlawfully monopolizing or attempting unlawfully to monopolize radio communication, directly or indirectly, through control of manufacture or sale of radio apparatus, exclusive traffic arrangement or any other means or unfair methods of competition? If Yes, attach as an exhibit, an explanation of circumstances</p>	<p style="text-align: right;"> <input type="radio"/> Yes <input checked="" type="radio"/> No </p>
<p>39. Is the applicant, or any person directly or indirectly controlling the applicant, currently a party in any pending matter referred to in the preceding two items? If yes, attach as an exhibit, an explanation of the circumstances.</p>	<p style="text-align: right;"> <input type="radio"/> Yes <input checked="" type="radio"/> No </p>
<p>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.</p>	

<p>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.</p>	<p style="text-align: right;">Yes <input checked="" type="radio"/> No <input type="radio"/></p>
<p>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.</p>	<p style="text-align: right;">Yes <input type="radio"/> No <input checked="" type="radio"/></p>
<p>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?</p>	
<p>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.)</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>DIRECTV Enterprises, LLC requests the modification of its license for a geostationary satellite in the 17/24 GHz BSS (RB-1) authorized to operate at the 99 WL location to expand its coverage to Puerto Rico, slightly modify its orbital location, and provide post-mission disposal information.</p> </div> <p>RB-1 Narrative</p>	

43a. Geographic Service Rule Certification

By selecting A, the undersigned certifies that the applicant is not subject to the geographic service or geographic coverage requirements specified in 47 C.F.R. Part 25.

A

By selecting B, the undersigned certifies that the applicant is subject to the geographic service or geographic coverage requirements specified in 47 C.F.R. Part 25 and will comply with such requirements.

B

By selecting C, the undersigned certifies that the applicant is subject to the geographic service or geographic coverage requirements specified in 47 C.F.R. Part 25 and will not comply with such requirements because it is not feasible as a technical matter to do so, or that, while technically feasible, such services would require so many compromises in satellite design and operation as to make it economically unreasonable. A narrative description and technical analysis demonstrating this claim are attached.

C

CERTIFICATION

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

44. Applicant is a (an): (Choose the button next to applicable response.)

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

45. Name of Person Signing
James Butterworth

→

46. Title of Person Signing
Senior Vice President

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

FCC NOTICE REQUIRED BY THE PAPERWORK REDUCTION ACT

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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.

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

_____)	
<i>Application of</i>)	
)	
DIRECTV ENTERPRISES, LLC)	Call Sign: S2711
)	
For Minor Modification)	File No. _____
of the DIRECTV RB-1 Satellite)	
in the 17/24 GHz Broadcasting)	
Satellite Service at 99° W.L.)	
_____)	

APPLICATION FOR MINOR MODIFICATION

DIRECTV Enterprises, LLC (“DIRECTV”) hereby requests that the Commission modify its license for DIRECTV RB-1, a geostationary satellite in the 17/24 GHz Broadcasting Satellite Service (“BSS”) authorized to operate at the nominal 99° W.L. orbital location.¹ This modification has three aspects. First, DIRECTV proposes to expand the current coverage area of DIRECTV RB-1 to include Puerto Rico. The minor modification to the coverage area of the satellite will enhance DIRECTV’s ability to provide service in this U.S. territory,² but will not create harmful interference to any other satellite system. Second, DIRECTV proposes to slightly modify the exact orbital location of the satellite, which will allow DIRECTV to safely co-locate this satellite with DIRECTV’s existing satellites at this location. Third, DIRECTV provides post-mission disposal plans for this satellite, in

¹ See Grant Stamp, IBFS File Nos. SAT-LOA-20060908-00099, SAT-AMD-20080114-00013, SAT-AMD-20080321-00076 (granted July 28, 2009) (“DRB-1 Authorization”).

² Note that service to Puerto Rico is currently provided by a DIRECTV affiliate, DIRECTV Latin America, using leased satellite capacity.

satisfaction of a condition in its authorization.³ Accordingly, the proposed modification will serve the public interest while having no countervailing effects.

I. CHANGES TO PREVIOUS TECHNICAL INFORMATION

In this Application, DIRECTV seeks neither additional spectrum nor additional orbital resources, but only a slight modification to the coverage area of the satellite to include coverage of the U.S. territory of Puerto Rico, and a slight modification to the exact orbital location (from 99.175° W.L. to 99.235° W.L.) to allow this satellite to be safely co-located with other DIRECTV satellites at this location, consistent with the Commission's rules. In accordance with Section 25.117(d)(1) of the Commission's rules, DIRECTV identifies in this Application, Technical Annex, and associated Schedule S, only those items of information that have changed from its station license and associated application(s). DIRECTV hereby certifies that the remaining information in its station license and associated application(s) has not changed.

Changing the orbital location of DIRECTV RB-1 to 99.235° W.L. will facilitate future operations of this satellite with the two closest satellites, SPACEWAY 2 and DIRECTV 11, both of which are operated by DIRECTV. By slightly repositioning all three of these satellites⁴ and operating them within constrained orbital parameters, DIRECTV will ensure that there is no overlap in stationkeeping volumes among its satellites at this slot. In addition, the only satellite network request for coordination located within ± 0.15 degrees of 99.235° W.L. published by the ITU is that for USASAT-70V, which was submitted to the ITU on behalf of DIRECTV. Accordingly, this slight change in location would complete

³ See DRB-1 Authorization, Condition 7.

⁴ Note that DIRECTV will submit applications requesting to modify the locations of SPACEWAY 2 and DIRECTV 11 at an appropriate time in the future.

physical coordination of the satellite with operators of space stations with potentially overlapping stationkeeping volumes, as required under the DRB-1 Authorization.⁵

In addition to the slight change in orbital location, the only aspect of the satellite's operations that will change as a result of adding this new coverage area is the predicted gain contours and peak EIRP. Accordingly, new contours are included in an accompanying Schedule S, along with any other technical parameters that have changed. In addition, a set of downlink gain contours are included in the Technical Annex attached hereto along with accompanying sample link budgets.

II. POST-MISSION DISPOSAL INFORMATION

Consistent with the requirements of Section 25.283(a) of the Commission's rules, at the end of the operational life of the satellite, DIRECTV will maneuver DIRECTV RB-1 into a disposal orbit with an altitude no less than that calculated using the IADC formula:

$$36,021 \text{ km} + (1000 \cdot C_R \cdot A/m)$$

where C_R is the solar pressure radiation coefficient of the spacecraft, and A/m is the Area to mass ratio, in square meters per kilogram, of the spacecraft. The relevant values for the DIRECTV RB-1 satellite are:

$$C_R = 1.24$$

$$A = 112 \text{ m}^2$$

$$m = 3550 \text{ kg}$$

Inserting these values into the equation yields the following results:

$$36,021 \text{ km} + (1000 \cdot 1.24 \cdot (112/3550)) = 36,060 \text{ km}$$

Since geostationary altitude is generally considered to be 35,786 km,⁶ this yields a desired disposal orbit of at least 274 km above the geostationary arc. DIRECTV intends to boost

⁵ See DRB-1 Authorization, Condition 6.

DIRECTV RB-1 to at least this height, and in fact will target a height of approximately 300 km above geostationary altitude.

DIRECTV currently intends to allocate and reserve approximately 10 kg of propellant for final orbit raising maneuvers to this altitude. This value was determined through a detailed launch vehicle propellant budget analysis. In addition, DIRECTV has assessed fuel gauging uncertainty, and this budgeted propellant provides an adequate margin of fuel reserve to ensure that the disposal orbit will be achieved despite such uncertainty.

III. THE PROPOSED MODIFICATION WOULD SERVE THE PUBLIC INTEREST

DIRECTV is currently authorized to operate its DIRECTV RB-1 satellite at the 99.175° W.L. orbital location and it requests to modify this location by 0.06° to the west (*i.e.*, to 99.235° W.L.). This slight change will ultimately allow DIRECTV to safely co-locate DIRECTV RB-1 with the SPACEWAY 2 and DIRECTV 11 satellites already operating at the nominal 99° W.L. location. In addition to this change, the predicted antenna gain contour submitted in connection with the DIRECTV RB-1 authorization includes coverage of CONUS+Alaska+Hawaii, and DIRECTV requests that it be authorized to add the territory of Puerto Rico to the coverage area of this satellite. This modification will enable DIRECTV or one of its affiliates to enhance the services provided to Puerto Rico significantly, by both increasing the number of channels available and by providing more of those channels in high definition format. As a result, this change will allow DIRECTV to enhance competition, offering Puerto Rican consumers an even more robust multichannel video alternative to incumbent cable systems.

⁶ *Mitigation of Orbital Debris*, 19 FCC Rcd. 11567, ¶ 65 (2004).

Moreover, DIRECTV's proposal will achieve this benefit without causing harmful interference to any other operator. In fact, with the changes proposed for the downlink antenna pattern, the peak EIRP over CONUS will decrease from the previously authorized 63 dBW/36 MHz channel to approximately 58 dBW/36 MHz channel, and the peak EIRP over Puerto Rico will also be approximately 58 dBW. A figure illustrating the downlink antenna gain contours for the proposed revised downlink antenna pattern is shown in the attachment to this application.

The allowable PFD levels in the 17.3-17.7 GHz band are defined in Section 25.208(w) of the Commission's rules on a regional basis for all conditions, including clear sky, and for all methods of modulation as:

- (1) In the region of the contiguous United States, located south of 38° North Latitude and east of 100° West Longitude: -115 dBW/m²/MHz;
- (2) In the region of the contiguous United States, located north of 38° North Latitude and east of 100° West Longitude: -118 dBW/m²/MHz;
- (3) In the region of the contiguous United States, located west of 100° West Longitude: -121 dBW/m²/MHz; and
- (4) For all regions outside of the contiguous United States including Alaska and Hawaii: -115 dBW/m²/MHz.

The maximum CONUS downlink EIRP for the revised DIRECTV RB-1 transmit antenna will be approximately 58.0 dBW/36 MHz channel. DIRECTV calculates the maximum power flux density/MHz on the Earth's surface from this emission as: Max EIRP/channel minus spreading loss in direction of max gain minus bandwidth correction factor, or 58.0 dBW/36MHz - 162.4 (dB-m²) - 10log(36) = -120 dBW/m²/MHz. This maximum would occur at beam peak, over Florida and Puerto Rico, and as can readily be seen from the gain

contours in the attachment, this necessarily means that the revised DIRECTV RB-1 would easily comply with the allowable PFD levels defined in Section 25.208(w), with at least 4 dB of margin throughout the CONUS coverage area. Likewise, since the maximum EIRP of the satellite over Puerto Rico is approximately the same as that over CONUS, the maximum PFD would also be approximately the same and would again easily comply with the requirements of Section 25.208(w).

Because DIRECTV RB-1 will be placed at 99.235° W.L. rather than the Appendix F slot at 99° W.L., there will be 0.235° less spacing between DIRECTV RB-1 and the next closest on-grid location established in the *BSS R&O*.⁷ This slight offset results in approximately 0.7 dB less discrimination from this adjacent location.⁸ The maximum PFD calculated above, which is at least 4 dB less than the maximum allowed in Section 25.208(w)(1), more than accounts for this slight reduction in discrimination from this next closest location as required under Section 25.140(b)(4)(iii). This means that the DIRECTV RB-1 system is necessarily compliant with the PFD levels established in Sections 25.208(w)(1) through (4).

For the foregoing reasons, DIRECTV submits that grant of the proposed minor modification would serve the public interest and respectfully requests that the Commission expeditiously grant this request.

⁷ See *Establishment of Policies and Service Rules for the Broadcasting Satellite Service at the 17.3-17.7 GHz Frequency Band and at the 17.7-17.8 GHz Frequency Band Internationally, and at the 24.75-25.25 GHz Frequency Band for Fixed Satellite Services Providing Feeder Links to the Broadcasting-Satellite Service and for the Satellite Services Operating Bi-directionally in the 17.3-17.8 GHz Frequency Band*, 22 FCC Rcd. 8842, Appendix F (2007) (“*BSS R&O*”).

⁸ This value is based on the reduction of topocentric angle and the assumption of a 45 cm receive antenna that meets the reference antenna pattern of Section 25.224.

ENGINEERING CERTIFICATION

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

- (i) I am the technically qualified person responsible for the engineering information contained in the foregoing Application,
- (ii) I am familiar with Part 25 of the Commission's Rules, and
- (iii) I have either prepared or reviewed the engineering information contained in the foregoing Application, and it is complete and accurate to the best of my knowledge and belief.

Signed:

/s/

Jack Wengryniuk

July 26, 2011

Date

Technical Attachment

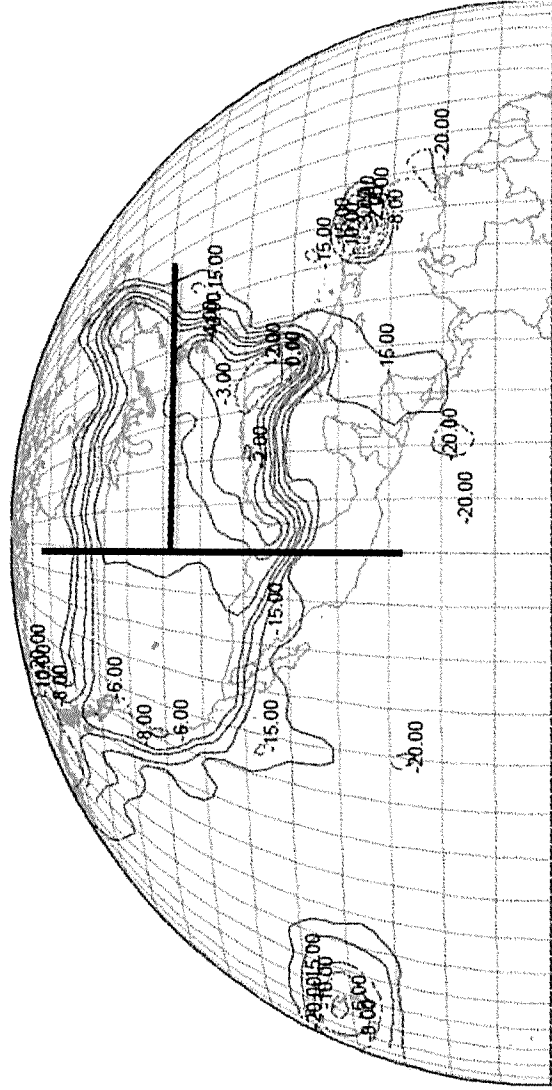


Figure A-1. Downlink Gain Contours for DIRECTV RB-1

Table A-1. DIRECTV RB-1 Link Budget – Downlink to Miami

	Clear Sky	Rain Up and Rain Dn
Uplink		
Transmit power, dBW	12.2	17.2
Transmit losses, dB	1.2	1.2
Ground antenna gain, dB	65.2	65.2
Antenna pointing loss, dB	0.5	0.5
Free space loss, dB	211.5	211.5
Atmospheric loss, dB	1.0	1.0
Uplink rain loss, dB	0.0	5.0
Satellite G/T, dB/K	17.5	17.5
Bandwidth, dB-Hz	74.8	74.8
Boltzmann's constant, dBW/Hz K	-228.6	-228.6
Uplink C/N (thermal) (dB)	34.5	34.5
C/I (x-pol, NPR), dB	25.0	25.0
Total Uplink C/(N+I), (dB)	24.5	24.5
Downlink		
Satellite EIRP, dBW/36 MHz	58.0	58.0
Free space loss, dB	208.7	208.7
Gaseous	0.4	0.4
Cloud	0.6	0.6
Scintillation	0.4	0.4
Downlink rain loss, dB	0.0	5.8
Rain temp increase, dB	0.0	4.0
Rain + Atmos Loss, dB	1.2	6.9
Rcv. antenna pointing loss, dB	1.0	1.0
Antenna wetting + noise increase, dB	0.0	1.0
Ground G/T, dB/K	17.9	17.9
Bandwidth, dB-Hz	74.8	74.8
Boltzmann's constant, dBW/Hz K	-228.6	-228.6
Total Downlink C/N, dB	18.8	8.1
Totals		
Uplink C/N (thermal), dB	24.5	24.5
Downlink C/N (thermal), dB	18.8	8.1
x-pol interference, dB	20.0	20.0
Aggregate C/I from ASI	18.0	18.0
Aggregate C/I from TX E/S	43.2	43.2
Adjacent Channel C/I, dB	25.0	25.0
Co-frequency C/I, dB	99.0	99.0
Total C/(N+I), dB	13.4	7.2
Required C/(N+I), dB	4.7	4.7
Margin, dB	8.7	2.5

Table A-2. DIRECTV RB-1 Link Budget – Downlink to Chicago

	Clear Sky	Rain Up and Rain Dn
Uplink		
Transmit power, dBW	12.2	17.2
Transmit losses, dB	1.2	1.2
Ground antenna gain, dB	65.2	65.2
Antenna pointing loss, dB	0.5	0.5
Free space loss, dB	211.5	211.5
Atmospheric loss, dB	1.0	1.0
Uplink rain loss, dB	0.0	5.0
Satellite G/T, dB/K	17.5	17.5
Bandwidth, dB-Hz	74.8	74.8
Boltzmann's constant, dBW/Hz K	-228.6	-228.6
Uplink C/N (thermal), dB	34.5	34.5
C/I (x-pol, NPR), dB	25.0	25.0
Total Uplink C/(N+I), dB	24.5	24.5
Downlink		
Satellite EIRP, dBW/36 MHz	54.0	54.0
Free space loss, dB	208.8	208.8
Gaseous	0.4	0.4
Cloud	0.7	0.7
Scintillation	0.5	0.5
Downlink rain loss, dB	0.0	2.9
Rain temp increase, dB	0.0	3.3
Rain + Atmos Loss, dB	1.3	4.0
Rcv. antenna pointing loss, dB	1.0	1.0
Antenna wetting + noise increase, dB	0.0	1.0
Ground G/T, dB/K	17.9	17.9
Bandwidth, dB-Hz	74.8	74.8
Boltzmann's constant, dBW/Hz K	-228.6	-228.6
Total Downlink C/N, dB	14.7	7.6
Totals		
Uplink C/N (thermal), dB	24.5	24.5
Downlink C/N (thermal), dB	14.7	7.6
x-pol interference, dB	20.0	20.0
Aggregate C/I from ASI	17.0	17.0
Aggregate C/I from TX E/S	43.2	43.2
Adjacent Channel C/I, dB	25.0	25.0
Co-frequency C/I, dB	99.0	99.0
Total C/(N+I), dB	11.5	6.8
Required C/(N+I), dB	4.7	4.7
Margin, dB	6.8	2.1

Table A-3. DIRECTV RB-1 Link Budget – Downlink to Los Angeles

	Clear Sky	Rain Up and Rain Dn
Uplink		
Transmit power, dBW	12.2	17.2
Transmit losses, dB	1.2	1.2
Ground antenna gain, dB	65.2	65.2
Antenna pointing loss, dB	0.5	0.5
Free space loss, dB	211.5	211.5
Atmospheric loss, dB	1.0	1.0
Uplink rain loss, dB	0.0	5.0
Satellite G/T, dB/K	17.5	17.5
Bandwidth, dB-Hz	74.8	74.8
Boltzmann's constant, dBW/Hz K	-228.6	-228.6
Uplink C/N (thermal), dB	34.5	34.5
C/I (x-pol, NPR), dB	25.0	25.0
Total Uplink C/(N+I), dB	24.5	24.5
Downlink		
Satellite EIRP, dBW/36 MHz	51.0	51.0
Free space loss, dB	208.8	208.8
Gaseous	0.4	0.4
Cloud	0.2	0.2
Scintillation	0.3	0.3
Downlink rain loss, dB	0.0	1.6
Rain temp increase, dB	0.0	2.1
Rain + Atmos Loss, dB	0.8	2.2
Rcv. antenna pointing loss, dB	1.0	1.0
Antenna wetting + noise increase, dB	0.0	1.0
Ground G/T, dB/K	17.9	17.9
Bandwidth, dB-Hz	74.8	74.8
Boltzmann's constant, dBW/Hz K	-228.6	-228.6
Total Downlink C/N, dB	12.2	7.6
Totals		
Uplink C/N (thermal), dB	24.5	24.5
Downlink C/N (thermal), dB	12.2	7.6
x-pol interference, dB	20.0	20.0
Aggregate C/I from ASI	17.0	17.0
Aggregate C/I from TX E/S	43.2	43.2
Adjacent Channel C/I, dB	25.0	25.0
Co-frequency C/I, dB	99.0	99.0
Total C/(N+I), dB	10.1	6.8
Required C/(N+I), dB	4.7	4.7
Margin, dB	5.4	2.1

Table A-4. DIRECTV RB-1 Link Budget – Downlink to Juneau

	Clear Sky	Rain Up and Rain Dn
Uplink		
Transmit power, dBW	12.2	17.2
Transmit losses, dB	1.2	1.2
Ground antenna gain, dB	65.2	65.2
Antenna pointing loss, dB	0.5	0.5
Free space loss, dB	211.5	211.5
Atmospheric loss, dB	1.0	1.0
Uplink rain loss, dB	0.0	5.0
Satellite G/T, dB/K	17.5	17.5
Bandwidth, dB-Hz	74.8	74.8
Boltzmann's constant, dBW/Hz K	-228.6	-228.6
Uplink C/N (thermal), dB	34.5	34.5
C/I (x-pol, NPR), dB	25.0	25.0
Total Uplink C/(N+I), dB	24.5	24.5
Downlink		
Satellite EIRP, dBW/36 MHz	49.5	49.5
Free space loss, dB	209.3	209.3
Gaseous	0.5	0.5
Cloud	0.7	0.7
Scintillation	0.9	0.9
Downlink rain loss, dB	0.0	3.3
Rain temp increase, dB	0.0	3.4
Rain + Atmos Loss, dB	1.6	4.6
Rcv. antenna pointing loss, dB	1.0	1.0
Antenna wetting + noise increase, dB	0.0	1.0
Ground G/T, dB/K	23.2	23.2
Bandwidth, dB-Hz	74.8	74.8
Boltzmann's constant, dBW/Hz K	-228.6	-228.6
Total Downlink C/N, dB	14.6	7.2
Totals		
Uplink C/N (thermal), dB	24.5	24.5
Downlink C/N (thermal), dB	14.6	7.2
x-pol interference, dB	20.0	20.0
Aggregate C/I from ASI	14.8	14.8
Aggregate C/I from TX E/S	43.2	43.2
Adjacent Channel C/I, dB	25.0	25.0
Co-frequency C/I, dB	99.0	99.0
Total C/(N+I), dB	10.7	6.2
Required C/(N+I), dB	4.7	4.7
Margin, dB	6.0	1.5

Table A-5. DIRECTV RB-1 Link Budget – Downlink to San Juan, PR

	Clear Sky	Rain Up and Rain Dn
Uplink		
Transmit power, dBW	12.2	17.2
Transmit losses, dB	1.2	1.2
Ground antenna gain, dB	65.2	65.2
Antenna pointing loss, dB	0.5	0.5
Free space loss, dB	211.5	211.5
Atmospheric loss, dB	1.0	1.0
Uplink rain loss, dB	0.0	5.0
Satellite G/T, dB/K	17.5	17.5
Bandwidth, dB-Hz	74.8	74.8
Boltzmann's constant, dBW/Hz K	-228.6	-228.6
Uplink C/N (thermal), dB	34.5	34.5
C/I (x-pol, NPR), dB	25.0	25.0
Total Uplink C/(N+I), dB	24.5	24.5
Downlink		
Satellite EIRP, dBW/36 MHz	58.0	58.0
Free space loss, dB	208.9	208.9
Gaseous	0.2	0.2
Cloud	0.2	0.2
Scintillation	0.3	0.3
Downlink rain loss, dB	0.0	4.9
Rain temp increase, dB	0.0	3.5
Rain + Atmos Loss, dB	0.6	5.3
Rcv. antenna pointing loss, dB	1.0	1.0
Antenna wetting + noise increase, dB	0.0	1.0
Ground G/T, dB/K	17.9	17.9
Bandwidth, dB-Hz	74.8	74.8
Boltzmann's constant, dBW/Hz K	-228.6	-228.6
Total Downlink C/N, dB	19.3	10.0
Totals		
Uplink C/N (thermal), dB	24.5	24.5
Downlink C/N (thermal), dB	19.3	10.0
x-pol interference, dB	20.0	20.0
Aggregate C/I from ASI	18.0	18.0
Aggregate C/I from TX E/S	43.2	43.2
Adjacent Channel C/I, dB	25.0	25.0
Co-frequency C/I, dB	99.0	99.0
Total C/(N+I), dB	13.5	8.8
Required C/(N+I), dB	4.7	4.7
Margin, dB	8.8	4.1