

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
DIRECTV Enterprises, LLC)	File Nos. SAT-LOA-20060908-00100
Application for Authorization to Launch and)	SAT-AMD-20080114-00014
Operate DIRECTV RB-2, a Satellite in the)	SAT-AMD-20080321-00077
17/24 GHz Broadcasting Satellite Service)	
at the 102.825° W.L. Orbital location)	Call Sign: S2712

ORDER AND AUTHORIZATION

Adopted: July 27, 2009

Released: July 28, 2009

By the Acting Chief, International Bureau:

I. INTRODUCTION

1. With this Order, we grant DIRECTV Enterprises, LLC (DIRECTV) authority to construct, launch and operate a 17/24 GHz Broadcasting-Satellite Service (BSS) space station at the 102.825° W.L. orbital location, which is offset 0.175 degrees from the 103° W.L. orbital location specified in Appendix F to the *17/24 GHz BSS Report and Order*, at a reduced power and without full interference protection.¹ DIRECTV is authorized to operate in the 17.3-17.7 GHz (space-to-Earth) and the 24.75-25.15 GHz (Earth-to-space) frequency bands as specified in this Order. We also find that DIRECTV's application is substantially complete and was appropriately accepted for filing and placed on public notice, contrary to arguments made by Spectrum Five LLC (Spectrum Five). We believe that grant of this application will stimulate competition in the United States and provide consumers more alternatives in choosing communications services.

II. BACKGROUND

2. *17/24 GHz BSS Service Rules Proceeding*. In May 2007, the Commission released a Report and Order adopting processing and service rules for the 17/24 GHz BSS. The *17/24 GHz BSS Report and Order* included a framework in which 17/24 GHz BSS space stations would operate at orbital locations spaced at four-degree intervals, as set forth in Appendix F to the order (hereafter known as Appendix F locations). The Commission decided to apply the first-come, first-served licensing process to applications in this service.² In addition, the Commission adopted geographic service rules to require licensees to provide service to Alaska and Hawaii, and prescribed a minimum antenna diameter and antenna

¹ For a complete explanation of the rules and policies regarding the spacing framework and interference protections in the 17/24 GHz BSS Band, *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, IB Docket No. 06-123, *Report and Order and Further Notice of Proposed Rulemaking*, IB Docket No 06-123, 22 FCC Rcd 8842 (2007) (*17/24 GHz BSS Report and Order*), *petitions for reconsideration pending*; *Order on Reconsideration*, 22 FCC Rcd 17951 (2007) (*Order on Reconsideration*), *petitions for reconsideration pending*.

² *See* Amendment of the Commission's Space Station Licensing Rules and Policies, *First Report and Order and Further Notice of Proposed Rulemaking*, IB Docket No. 02-34, 18 FCC Rcd 10760 (2003) (*Space Station Reform Order*).

performance standards. Further, the Commission established limits for uplink and downlink power levels to minimize the possibility of harmful interference, and stipulated criteria to facilitate sharing in the 17.3-17.8 GHz and 24.75-25.25 GHz bands. At the same time, the Commission issued a *Further Notice of Proposed Rulemaking* seeking comment on coordination parameters relating to space-path and ground-path interference in the 17.3-17.8 GHz band.³ In September 2007, the Commission released an *Order on Reconsideration, sua sponte*, providing space station operators additional flexibility to operate full power satellites at orbital locations offset by up to one degree from an Appendix F location, if there are no licensed or prior-filed applications for 17/24 GHz BSS space stations less than four degrees away from the proposed offset space station.⁴

3. *Application Processing.* At the time the Commission issued its *17/24 GHz BSS Report and Order*, there were 22 pending applications for 17/24 GHz BSS space station authorizations.⁵ To implement its decisions, the Commission directed the International Bureau to release a public notice after the rules became effective, establishing a deadline for applicants to amend pending applications to conform to the newly-adopted rules. The 17/24 GHz BSS rules, as modified by the *Order on Reconsideration*, became effective on November 23, 2007.⁶ The Bureau released a *Public Notice* on December 5, 2007, with instructions for filing conforming amendments.⁷

4. *DIRECTV Application.* DIRECTV originally filed an application in 2006, seeking to provide 17/24 GHz BSS from the 102.8° W.L. orbital location. In its conforming amendment, DIRECTV modified its request, and now seeks authority to operate at the 102.825° W.L. orbital location. DIRECTV states that this space station will enhance its ability to provide video services to its subscribers by augmenting its capabilities and enhancing its ability to respond to its customers' changing needs. The application, as amended, was placed on public notice as accepted for filing on July 2, 2008.⁸ Ciel Satellite Limited Partnership (Ciel) and SES Americom Inc. (SES Americom) filed comments on the application on August 1, 2008. In their comments, Ciel and SES Americom ask the Commission to place

³ The *17/24 GHz BSS Further Notice of Proposed Rulemaking*, 22 FCC Rcd at 8902 (para. 148 *et seq.*). We note that authorizations for systems in the 17/24 GHz BSS band may be subject to conditions adopted as a result of the Further Notice of Proposed Rulemaking. The 17 GHz band is known as the "reverse band" because the BSS downlink is conducted in the same frequency band as the service uplink for the Direct Broadcast Satellite (DBS) service. Specifically, the 17.3-17.8 GHz frequency band is allocated for BSS in the space-to-Earth direction, which is co-primary with DBS feeder links in the Earth-to-space direction.

⁴ 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, *Order on Reconsideration*, IB Docket No. 06-123, 22 FCC Rcd 17951 (2007) (*Order on Reconsideration*), *petitions for reconsideration pending*.

⁵ *17/24 GHz BSS Report and Order* at Appendix E.

⁶ 72 Fed. Reg. 60272 (Oct. 24, 2007).

⁷ International Bureau Establishes Deadline for Amendments to Pending 17/24 GHz BSS Applications, *Public Notice*, Report No. SPB-223, DA 07-4895 (December 5, 2007). The *ex parte* status of the applications was made permit-but-disclose on June 15, 2007. Policy Branch Information, Actions Taken, *Public Notice*, DA 07-2652, Report No. SAT-00451 (rel. June 15, 2007).

⁸ Policy Branch Information, Satellite Space Applications Accepted for Filing, *Public Notice*, Report No. SAT-00535 (rel. July 2, 2008); Policy Branch Information, Satellite Space Applications Accepted for Filing, *Public Notice*, Report No. SAT-00537 (rel. July 11, 2008) (corrections).

additional conditions relating to DIRECTV's international coordination responsibilities on any license.⁹ No petitions to deny were filed.

5. *Spectrum Five's Challenge to DIRECTV's Application.* On November 19, 2008, Spectrum Five filed a petition for declaratory ruling to serve the market in the United States through a 17/24 GHz BSS Netherlands-authorized satellite at the 103.15° W.L. orbital location, which is offset 0.15 degree from the 103° W.L. orbital location, at reduced power and with reduced interference protection.¹⁰ In its petition for market access, Spectrum Five argues that DIRECTV's application at the 102.825° W.L. orbital location must be dismissed or denied as defective because it exceeds the Commission's power flux density (PFD) limits.¹¹ In particular, Spectrum Five asserts that DIRECTV improperly relied on weather and atmospheric conditions in calculating that its PFD met the power limits in Section 25.208(w) of the Commission's rules.¹² Based on this allegation, Spectrum Five contends that DIRECTV's application must be dismissed or denied, at which point Spectrum Five claims its application would be first in the application processing queue for the 17/24 GHz BSS frequencies at the 103° W.L. Appendix F orbital location and its related offsets. Spectrum Five continued to raise questions concerning different aspects of DIRECTV's PFD demonstration in a series of *ex parte* meetings at the Commission, subsequent to its November 19, 2008 filing.¹³ DIRECTV filed an *ex parte* letter addressing Spectrum Five's questions.¹⁴

⁹ In a comment filed on all pending 17/24 GHz BSS applications, including its own applications, Pegasus Development DBS Corporation (Pegasus) sought a "clarification" regarding Commission policies relating to Section 25.158(c) (prohibition on transfer of place in application queue) and Section 25.165 (bond requirement). The issues raised by Pegasus are not relevant to the processing of this application, but, instead, relate to a request to assign an application to Pegasus to DIRECTV Enterprises, LLC (DIRECTV). IBFS File No. SAT-AMD-20080916-00188. Accordingly, we will not address Pegasus's comment in this Order. These comments will be addressed in our decision on that assignment application.

¹⁰ Spectrum Five LLC, Petition for Declaratory Ruling to Serve the U.S. Market from the 103.15° W.L. Orbital Location in the 17/24 Broadcasting Satellite Service Band, IBFS File No. SAT-LOI-20081119-00217, Call Sign: S2778 (Spectrum Five 103° W.L. PDR).

¹¹ Spectrum Five 103° W.L. PDR Legal Narrative at 3-11. Spectrum Five also raised this argument with respect to a DIRECTV application for a satellite license at the 118.4° W.L. orbital location, but DIRECTV later withdrew that application. Spectrum Five LLC, Petition for Declaratory Ruling to Serve the U.S. Market from the 119.0° W.L. Orbital Location in the 17/24 Broadcasting Satellite Service Band, IBFS File No. SAT-LOI-20080910-00178 (Spectrum Five 119° W.L. PDR). See Policy Branch Information, Actions Taken, *Public Notice*, DA 08-2699, Report No. SAT-00569 (rel. Dec. 12, 2008).

¹² 47 C.F.R. § 25.208(w).

¹³ November 20, 2008 letter from Todd M. Stansbury, Counsel to Spectrum Five, LLC, to Marlene Dortch, Secretary, Federal Communications Commission referencing IBFS files associated with Call Signs S2768, S2773, S2777, and S2778 (Spectrum Five's own application files) (reporting Nov. 19, 2008 David Wilson meeting with Chairman Kevin Martin and Charles Mathias to discuss Spectrum Five petitions at the 119° W.L. and 103° W.L. orbital locations); December 3, 2008 letter from Todd M. Stansbury, Counsel to Spectrum Five, LLC, to Marlene Dortch, Secretary, Federal Communications Commission referencing IBFS files associated with Call Signs S2768, S2773, S2777, and S2778 (Spectrum Five's own application files) (reporting Dec. 1 and Dec. 2, 2008 David Wilson meetings with Charles Mathias); December 4, 2008 letter from Howard W. Waltzman, Counsel to Spectrum Five, LLC, to Marlene Dortch, Secretary, Federal Communications Commission referencing IBFS files associated with Call Signs S2768, S2773, S2777, and S2778 (Spectrum Five's own application files) (reporting Dec. 3 2008 David Wilson and Howard Waltzman meeting with Charles Mathias, legal advisor to Chairman Martin, to discuss Spectrum Five petitions at the 119° W.L. and 103° W.L. orbital locations); December 17, 2008 letter from Earl Comstock to Marlene Dortch, Secretary, Federal Communications Commission referencing IBFS files associated with Call Signs S2768, S2773, S2777, and S2778 (Spectrum Five's own application files) (reporting Dec. 16, 2008 David Wilson and Earl Comstock meeting with Commissioner McDowell and staff to discuss Spectrum Five petitions at the 119° W.L. and 103° W.L. orbital locations); December 19, 2008 letter from Howard W. Waltzman, Counsel to Spectrum Five, LLC to Marlene Dortch, Secretary, Federal Communications Commission referencing

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6. *Dismissal Order and Set-Aside Order.* On January 16, 2009, the International Bureau issued a declaratory ruling finding that the DIRECTV application at the 102.825° W.L. orbital was defective and must be dismissed.¹⁵ However, on February 9, 2009, the International Bureau, on its own motion, set aside the January 16 declaratory ruling to give the Bureau an opportunity to compile a more detailed record in this proceeding and to consider the application more fully.¹⁶ In the *Set-Aside Order*, the Bureau stated that a January 12, 2008 letter from Spectrum Five referencing DIRECTV's application and served on counsel for DIRECTV would be considered an informal objection to DIRECTV's application under Section 25.154(b) of the Commission's rules.¹⁷ Consistent with Section 25.154(c) of the Commission's rules, the Bureau explained that DIRECTV could file a response to this informal objection and that Spectrum Five could file a reply.¹⁸ Both did so.¹⁹

III. DISCUSSION

7. In the *17/24 GHz BSS Report and Order*, the Commission adopted a "first-come, first-served" procedure for 17/24 GHz BSS applications.²⁰ Under this approach, when an application is filed, it is reviewed by Commission staff to determine if is "substantially complete." As will be discussed in more detail below, a substantially complete application is an application that is complete in substance, providing all the information required in the application form.²¹ Further, the application cannot be defective under the Commission's rules. In other words, the application must be complete with respect to answers to questions and informational showings, and must be free of internal inconsistencies.²² If it is

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IBFS files associated with Call Sign S2712 (DIRECTV's application) (letter requesting that the Commission dismiss the DIRECTV application at the nominal 103° W.L. orbital location) (December 19 Spectrum Five Letter); January 12, 2009 letter from Howard W. Waltzman, Counsel to Spectrum Five, LLC to Marlene Dortch, Secretary, Federal Communications Commission referencing IBFS files associated with Call Signs S2712 (DIRECTV's application) and S2778 and S2777 (Spectrum Five applications) (reporting Jan. 9, 2009 meeting of David Wilson and Tom Sharon of Spectrum Five, and Howard Waltzman, counsel to Spectrum Five, with International Bureau officials).

¹⁴ December 8, 2008 letter from William M. Wiltshire, Counsel for DIRECTV Enterprises, LLC to Marlene H. Dortch, Secretary, Federal Communications Commission referencing IBFS files associated with Call Sign 2712 (reporting Dec. 5, 2008 Stacy Fuller and David Pattilo of DIRECTV, and William Wiltshire, Counsel for DIRECTV meeting with International Bureau staff to discuss DIRECTV's application at the 103° W.L. orbital location) (December 8 DIRECTV Letter).

¹⁵ DIRECTV Enterprises, LLC Application for 17/24 GHz BSS Satellite at 102.825° W.L., *Declaratory Ruling*, DA 09-87, 24 FCC Rcd 423 (Int'l Bur. 2009).

¹⁶ DIRECTV Enterprises, LLC Application for 17/24 GHz BSS Satellite at 102.825° W.L., *Order*, DA 09-204, 24 FCC Rcd 1343 (Int'l Bur. 2009) (*Set-Aside Order*).

¹⁷ 47 C.F.R. § 25.154(b).

¹⁸ *Set-Aside Order*, 24 FCC Rcd at 1343.

¹⁹ February 19, 2009 Letter from William M. Wiltshire, Counsel for DIRECTV Enterprises, LLC, to Marlene H. Dortch, Secretary, Federal Communications Commission; February 25, 2009 Letter from Howard W. Waltzman, Counsel to Spectrum Five LLC, to Marlene H. Dortch, Secretary, Federal Communications Commission (February 25 Spectrum Five Reply Letter). The parties have filed numerous *ex parte* statements in this proceeding and their positions have shifted over time. We view the January 12 Spectrum Five Letter, the February 19 DIRECTV Response Letter, and the February 25 Spectrum Five Reply Letter as the parties' final positions.

²⁰ *Space Station Reform Order*, 18 FCC Rcd at 10804-18 (paras. 108-50).

²¹ See Amendment of the Commission's Space Station Licensing Rules and Policies, *Notice of Proposed Rulemaking*, IB Docket No. 02-34, 17 FCC Rcd 3847, 3875-76 (para. 84) (2002) (*Space Station Reform NPRM*).

²² 47 C.F.R. § 25.112(a)(1).

determined to be substantially complete, the application will be accepted for filing and placed on public notice.²³ If the application is not substantially complete, the application may be dismissed.²⁴

8. For applications that have been accepted for filing under the first-come, first-served approach, an application may be granted, after the public comment period has expired, if the applicant meets the standards set forth in Section 25.156(a), and if the proposed space station will not cause harmful interference to a previously licensed space station, or to a space station proposed in a previously filed application.²⁵ The standards in Section 25.156(a) measure whether the applicant is legally, technically and otherwise qualified, and whether the proposed facilities and operations comply with all applicable rules, regulations and policies, and, in light of those assessments, whether grant of the application will serve the public interest, convenience and necessity.²⁶ In the *17/24 GHz BSS Report and Order*, the Commission decided to treat all pending 17/24 GHz BSS applications, as amended on or before the February deadline, as “simultaneously filed” for purposes of first-come, first-served processing. We review DIRECTV’s application on this basis.

9. Because Spectrum Five has raised a question as to whether DIRECTV’s application is substantially complete with respect to the PFD demonstration, we first address this issue. To this end, we review the Commission’s power flux-density limit rules for the 17/24 GHz BSS, and the requirement for demonstrating compliance with those limits. We then review and analyze the demonstration made in DIRECTV’s application, and the concerns raised by Spectrum Five related to that demonstration. Next, we consider Spectrum Five’s assertion that the alleged defects of the demonstration require the dismissal or denial of DIRECTV’s application. Finally, having found that DIRECTV’s application is substantially complete and not subject to dismissal, we consider DIRECTV’s legal and technical qualifications to hold a license in the 17/24 GHz BSS.

A. Power Flux-Density Demonstration

10. All space stations authorized to provide service in the United States must meet power flux-density (PFD) limits as specified for their respective frequency bands. In this case, the PFD limits are designed to protect against unforeseen levels of adjacent satellite interference and to obviate the need for time-consuming coordination among co-frequency networks.²⁷ In the *17/24 GHz BSS Report and Order*, the Commission adopted a four-region, graduated PFD plan. In adopting this requirement, the Commission sought to facilitate intra-service operations by establishing a relatively homogeneous transmitting environment that could accommodate both wide-area beams and spot beam operations.²⁸ As the Commission noted in the *17/24 GHz BSS NPRM*, the downlink power levels transmitted by adjacent co-frequency space stations, combined with the sidelobe performance characteristics of the receiving earth station antenna, determine the carrier-to-interference ratio that an operator experiences at the receive antenna as a result of adjacent satellite interference.²⁹ In adopting PFD limits for 17/24 GHz BSS space

²³ In placing an application on public notice as accepted for filing, the Commission reserves the right to return any application if, upon further examination, it is determined the application is not in conformance with the Commission's rules or its policies.

²⁴ We note, however, that the rules also provide that the Commission may, on its own motion, waive or allow an exception to a rule, in order to consider an application that is otherwise defective. 47 C.F.R. § 25.112(b)(2).

²⁵ 47 C.F.R. § 25.156(a) and 47 C.F.R. § 25.158(b)(3).

²⁶ 47 C.F.R. § 25.156(a).

²⁷ *17/24 GHz BSS Report and Order*, 22 FCC Rcd at 8882 (para. 98).

²⁸ *17/24 GHz BSS Report and Order*, 22 FCC Rcd at 8884 (para. 102).

stations, the Commission stated that it wished to protect more vulnerable wide-area beam receivers from adjacent satellite downlink interference, while permitting licensees the flexibility to achieve the power and spectral efficiencies attainable with spot beam transmissions.³⁰

11. The downlink power limits for BSS operations in the 17.3-17.7 GHz frequency band³¹ are implemented by a combination of the informational requirements for space station applications and the power flux density limits on the operations of a space station.³² The Part 25 rules require space station applicants to provide certain specified information in their applications. In particular, Section 25.114(d)(15) provides that each applicant for a 17/24 GHz BSS space station license shall include “a demonstration that the proposed space station will comply with the power flux density limits set forth in §25.208(w) of this part” as an attachment to its application.³³ Section 25.114(d)(15) does not, however, specify the format or contents of such a demonstration.

12. Section 25.208 sets forth power flux density limits for many satellite communications services. Subsection 25.208(w) describes the PFD limits that apply for 17/24 GHz BSS space stations. Specifically, Section 25.208(w) states that “[t]he power flux density at the Earth's surface produced by emissions from a 17/24 GHz BSS space station operating in the 17.3–17.7 GHz band for all conditions, including clear sky, and for all methods of modulation shall not exceed the regional power flux density levels defined below.”³⁴ The rule then specifies a list of PFD levels in four different geographic regions of the country. We note that clear sky conditions cause less signal attenuation than do other atmospheric conditions, such as rain and clouds. Assuming that the power levels of a space station remain the same, the PFD measured at the earth’s surface will be higher under clear sky conditions than when rain or clouds are present.

13. *DIRECTV’s PFD Demonstration.* In its application, DIRECTV provided a demonstration, consistent with Section 25.114(d)(5), that its proposed space station complies with the PFD limits set forth in Section 25.208(w). In its analysis, DIRECTV begins with the equivalent isotropically radiated power (EIRP) of its proposed satellite, subtracts the spreading loss in the direction of maximum gain, subtracts atmospheric attenuation (at 17.5 GHz) and subtracts a bandwidth correction factor, resulting in a calculation of the maximum PFD per megahertz at the Earth’s surface.³⁵ As calculated by DIRECTV, the

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²⁹ The 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, *Notice of Proposed Rulemaking*, IB Docket No. 06-123, 21 FCC Rcd 7426, 7452 (para. 53) (2006) (*17/24 GHz BSS NPRM*).

³⁰ *17/24 GHz BSS Report and Order*, 22 FCC Rcd at 8884 (para. 101).

³¹ As explained in footnote 3 above, the 17.3-17.8 GHz band is the downlink band for this service. Thus, PFD limits at the earth’s surface would only apply to the space-to-Earth downlink. The 17.7-17.8 GHz portion of the band is allocated for international use only and thus would not downlink in the United States. The PFD limit for that portion of the band is covered elsewhere in our rules and is not at issue in this case because DIRECTV did not seek authority to operate in the 17.7-17.8 GHz portion of the band.

³² 47 C.F.R. §§ 25.114 and 25.208, respectively.

³³ 47 C.F.R. § 25.114(d)(15)(i).

³⁴ 47 C.F.R. § 25.208(w).

³⁵ IBFS File No. SAT-AMD-20080114-00014. (DIRECTV Conforming Amendment) at 12. The EIRP of the proposed DIRECTV satellite is 63.0 dBW per 36 MHz channel. DIRECTV’s PFD calculation is: 63.0 dBW/36MHz – 162.4(dB-m²) – 1.1 dB (atmospheric) – 10log(36) = -116.1dBW/m²/MHz.

proposed space station would operate at least 1.1 dB less than the maximum allowed in the Section 25.208(w) regional PFD limits.³⁶

14. DIRECTV's calculation assumed clear sky conditions and included an atmospheric attenuation factor of 1.1 dB that included clouds. In a December 8, 2008 *ex parte* letter, DIRECTV explained that it had concluded that cloud attenuation would not be appropriate for use in a clear sky demonstration.³⁷ At the same time, DIRECTV stated that two other atmospheric attenuation components, signal absorption in atmospheric gas and scintillation, are losses that exist in clear sky conditions and are therefore appropriate factors in a clear sky demonstration. With cloud attenuation removed, DIRECTV's revised calculation still demonstrates a PFD that is less than the maximum power allowed under the regional PFD limits in Section 25.208(w).³⁸

15. *Spectrum Five's Concerns with DIRECTV's PFD Demonstration.* Spectrum Five maintains that DIRECTV's application should be dismissed because the PFD demonstration is defective.³⁹ Spectrum Five claims that link budgets calculate the maximum possible atmospheric loss, so as to guarantee that, even in the face of high losses, the signal will remain available. Spectrum Five asserts that "to comply with the Commission's maximum PFD limits, DIRECTV should have calculated the minimum possible atmospheric loss, so as to guarantee that even when losses are slight, the signal at the earth's surface will not be too strong."⁴⁰ Spectrum Five further asserts that because DIRECTV "inappropriately substituted a maximum measure for a minimum measure, its compliance with PFD limits is highly dependent on whether that maximum is reached, which in turn depends on local weather conditions."⁴¹ Spectrum Five provides its own analysis based on the factors it claims are appropriate for the PFD calculation. Spectrum Five claims that DIRECTV's methodology would result in the proposed space station exceeding the PFD limits, by one half of a decibel more than is permitted by the rules, 90 percent of the time.⁴² Spectrum Five concludes that DIRECTV's application is defective because it does not comply with the PFD requirements for 17/24 GHz space stations, and should be dismissed without an opportunity to amend the application to bring it into compliance with the rules.⁴³

16. *Evaluation of DIRECTV's PFD Demonstration.* As noted previously, DIRECTV started its PFD demonstration with the EIRP of its space station, subtracted the spreading loss in the direction of maximum gain, subtracted a bandwidth correction factor and subtracted for atmospheric attenuation. Only one of these components of DIRECTV's calculation is disputed: the subtraction for atmospheric attenuation.

³⁶ DIRECTV Conforming Amendment at 13 (citing downlink antenna gain pattern depicted in Figure 7-1 and included in GXT format in the accompanying Schedule S).

³⁷ December 8 DIRECTV Letter. Our license application processing procedures allow the Commission to request from any party, at any time, additional information concerning any application. 47 C.F.R. § 25.111(a). Thus, while DIRECTV supplied additional information in an *ex parte* filing, the Commission could have requested such information to facilitate its processing of DIRECTV's application.

³⁸ Specifically, as revised, DIRECTV's calculation is: $63.0 \text{ dBW}/36\text{MHz} - 162.37(\text{dB}\cdot\text{m}^2) - 0.74 \text{ dB (atmospheric)} - 10\log(36) = -115.67 \text{ dBW}/\text{m}^2/\text{MHz}$. December 8 DIRECTV Letter at 3.

³⁹ February 25 Spectrum Five Letter at 2.

⁴⁰ February 25 Spectrum Five Letter at 3.

⁴¹ February 25 Spectrum Five Letter at 3.

⁴² February 25 Spectrum Five Letter at 3.

⁴³ February 25 Spectrum Five Letter at 9.

17. Neither DIRECTV nor Spectrum Five has been consistent in their arguments as to whether atmospheric attenuation may be considered, and if so, which atmospheric effects may be considered.⁴⁴ Most recently, Spectrum Five appears to concede that some atmospheric effects may be considered and provides its own analysis of which ones would appropriately be used.⁴⁵ When the Commission discussed technical requirements for intra-service 17/24 GHz BSS operations in the *17/24 GHz BSS NPRM*, it proposed to accommodate the highest clear-sky power density levels planned by the applicants.⁴⁶ The Commission explained that the “[t]he ‘clear-sky’ value is taken to be the condition when the intrinsic atmospheric attenuation due to gasses and water vapor are applicable, without additional attenuation due to tropospheric precipitation, such as rain or snow.”⁴⁷ Thus, the Commission intended that the 17/24 GHz BSS PFD demonstrations include some amount of atmospheric loss. This is consistent with the wording of the rule. As noted previously, Section 25.208 contains PFD limits for a number of satellite communications services, including the 17/24 GHz BSS. In those subsections where the Commission seeks to have the PFD limits calculated under “free-space” conditions, the rules explicitly state so.⁴⁸ Free-space conditions are those in which electromagnetic waves do not encounter any attenuation due to atmospheric effects. A PFD demonstration employing free-space conditions is not a realistic measure for signals propagating through the Earth’s atmosphere, although it provides a more easily calculated worst case value. Significantly, the PFD limits for the 17/24 GHz BSS in Section 25.208(w) must be met “for all conditions, including clear sky.” Section 25.208(w) does not mandate a demonstration made under free-space propagation as the rules require for other satellite services.⁴⁹ Instead, PFD demonstrations for the 17/24 GHz BSS may incorporate the atmospheric attenuation that is present in clear sky conditions. DIRECTV provided its PFD demonstration under clear sky conditions. This is consistent with the rule. Further, by providing a calculation including atmospheric effects under a clear sky, DIRECTV established the highest possible PFD at the Earth’s surface that would be produced by its satellite’s actual operations.

18. DIRECTV initially filed a demonstration under clear sky conditions that included an atmospheric attenuation factor of 1.1 dB, including clouds. Spectrum Five raised concerns about the inclusion of clouds as an atmospheric attenuation factor. DIRECTV then determined that including clouds was an error, and subsequently calculated that, if clouds were omitted, its atmospheric attenuation factor would be 0.74 dB, rather than 1.1 dB.⁵⁰ DIRECTV calculates that this 0.74 dB factor results in a

⁴⁴ In November 2008, Spectrum Five asserted that any inclusion of atmospheric loss would be impermissible. Spectrum Five 103° W.L. PDR, Legal Narrative at 9 (“Thus, DIRECTV’s consideration of atmospheric loss in calculating PFD limits is directly contrary to Commission rules and, if permitted, would result in substantial interference to adjacent systems.”). In its petition, Spectrum five also asserted that “Intelsat, who proposes to operate at the adjacent nominal 99.0° W.L. orbital location, calculated PFD limits under clear sky conditions as required by Section 25.208(2) of the Commission’s rules.” Spectrum Five 103° W.L. PDR, Legal Narrative at 10 (citing Intelsat 99° W.L. Amendment Application, Technical Description at 55-57). The assertion is incorrect; Intelsat presented a free-space propagation analysis.

⁴⁵ February 25 Spectrum Five Letter at 4, and at Technical Appendix.

⁴⁶ *17/24 GHz BSS NPRM*, 21 FCC Rcd at 7450 (para. 49).

⁴⁷ *17/24 GHz BSS NPRM*, 21 FCC Rcd at 7450 n.126 (citing Recommendation ITU-R PN.676-1).

⁴⁸ See, e.g. 47 C.F.R. § 25.208(a) (“limits relate to the power flux density which would be obtained under assumed free-space propagation conditions”), note to § 25.208(b) (“limits relate to the power flux density which would be obtained under assumed free-space propagation conditions”), § 25.208(d) (“under assumed free-space propagation conditions”), among other subsections.

⁴⁹ For ease of calculation and demonstration, other 17/24 GHz BSS applicants provided a demonstration using a free-space propagation analysis resulting in PFD demonstration that was more conservative than is required by the rule. While that is perfectly acceptable, it is certainly not required under the rules.

⁵⁰ December 8 DIRECTV Letter at 3.

PFD level of -115.67 dBW/m²/MHz, which is still lower than the -115 dBW/m²/MHz maximum in the rules. We find this a sufficient demonstration that DIRECTV's proposed space station can meet the PFD limits in Section 25.208(w) of the rules. Moreover, if we omit all of the atmospheric attenuation effects associated with water vapor from the PFD analysis, including scintillation effects, as noted by Spectrum Five, the result is 0.07 dB of atmospheric losses solely due to dry air.⁵¹ If we reduced DIRECTV's atmospheric attenuation factor from 0.74 dB to 0.07 dB, for the sake of an analysis approximating extreme clear-sky conditions,⁵² the result would be a PFD level of -115.0 dBW/m²/MHz. This meets the PFD limit in the Commission's rules.

B. Spectrum Five's Challenge to the Sufficiency of DIRECTV's Application

19. Spectrum Five asserts that DIRECTV's application is not substantially complete and must consequently be dismissed as unacceptable for filing. In particular, Spectrum Five argues that DIRECTV's application is defective because its proposed space station would exceed the maximum PFD limits a significant portion of the time.⁵³ As explained above, we have determined that DIRECTV's PFD demonstration does not exceed the maximum PFD limits. Nevertheless, we discuss the application of the substantially complete standard to DIRECTV's application in order to address all issues raised by Spectrum Five.

20. Spectrum Five correctly notes that a crucial element of the Commission's first-come, first-served application processing system is the requirement that applications must be substantially complete when filed. That element, together with other requirements and safeguards, enables the Commission to establish satellite licensees' operating rights clearly and quickly, and as a result, allows licensees to provide service to the public sooner than was possible under our previous licensing procedures.⁵⁴ Spectrum Five also correctly notes that the rules prohibit an applicant from making amendments to cure defective applications.⁵⁵ As the Commission has stated, the policy against accepting applications that do not meet the substantially complete standard is necessary to discourage speculation,⁵⁶ and is needed to ensure that licensees are ready and willing to proceed with their satellite construction plans.⁵⁷

21. The "substantially complete" standard was initially adopted by the International Bureau in 1998 and replaced the prior practice of working with applicants to perfect their applications.⁵⁸ As explained in the *Space Station Reform NPRM*, prior to 1998, space and earth station applications were reviewed to evaluate the completeness, accuracy and/or merits of specific information in an application

⁵¹ February 25 Spectrum Five Letter at Appendix A at 5. *See also* Rec. ITU-R P.676-7, Attenuation due to atmospheric gases, Annex 2 at 18-19.

⁵² This analysis represents an extreme case in which there is no water vapor whatsoever in the atmosphere, a condition which never exists. In its February 25, 2009 Reply Letter, Spectrum Five states that a minimum water vapor attenuation term of 0.06 dB for Miami is appropriate, resulting in a total gaseous loss (including dry air and minimal amounts of water vapor) of 0.13 dB.

⁵³ February 25 Spectrum Five Letter at 10.

⁵⁴ February 25 Spectrum Five Letter at 8-9. *See Space Station Reform Order*, 18 FCC Rcd at 10852 (para. 244).

⁵⁵ December 19 Spectrum Five Letter at 7 (citing Section 25.116(b)(5), which states that "amendments to defective space station applications ... will not be considered").

⁵⁶ *Space Station Reform Order*, 18 FCC Rcd at 10852 (para. 244).

⁵⁷ *Space Station Reform Order*, 18 FCC Rcd at 10805-06 (para. 112).

⁵⁸ International Bureau to Streamline Satellite and Earth Station Processing, *Public Notice*, SPB-140 (rel. Oct. 28, 1998) (1998 Streamlining Public Notice).

prior to accepting the application for filing and placing it on public notice.⁵⁹ This practice often resulted in delays and inefficiencies. To improve the efficiency of the licensing process, the International Bureau moved in 1998 to a practice of reviewing applications to determine whether they are “acceptable for filing,” that is, whether they include all the information required by the Commission’s rules. Under the new approach, an application that was not substantially complete would be dismissed as unacceptable for filing.⁶⁰ An application that was substantially complete would be placed on public notice regardless of whether it could ultimately be granted, with appropriate conditions, on the merits. In the *Space Station Reform Order*, the Commission decided to continue to require applications to be “substantially complete” when filed.⁶¹ Section 25.112(a) of the Commission’s rules codifies this standard.⁶²

22. In the context of the 17/24 GHz BSS proceeding, the Commission emphasized that it would require applications to be substantially complete, consistent with the requirements of Section 25.112. The Commission specified that, to be substantially complete, a 17/24 GHz BSS satellite application must include a complete Form 312, including Schedule S, and all the information required by Section 25.114(d) of the Commission’s rules.⁶³ Notably, the Commission’s discussion of the substantially complete standard has never indicated that an application must be perfect in all respects or have no error. It was never intended that any single error in the information required, no matter how minor, would be the basis for dismissal of the application.⁶⁴

23. Spectrum Five’s interpretation of the substantially complete standard for review of an application appears to conflate the completeness review with the substantive review of an application on the merits. Thus, according to Spectrum Five, if the Commission concludes that an application does not comply with a substantive rule, it should be dismissed out of hand, without regard to the materiality or magnitude of the non-compliance. This is not the case. The substantially complete requirement is meant

⁵⁹ *Space Station Reform NPRM*, 17 FCC Rcd at 3875 n.103.

⁶⁰ The International Bureau explained that it would “no longer evaluate the accuracy of, the merits of, or the particular problems associated with specific information contained in any application prior to placing it on Public Notice.” *1998 Streamlining Public Notice*.

⁶¹ *Space Station Reform Order*, 18 FCC Rcd at 10852 (para. 244). In the *Space Station Reform NPRM*, the Commission explicitly stated that it did not intend to propose a letter-perfect standard. *Space Station Reform NPRM*, 17 FCC Rcd at 3875 n.104 (citing *Salzer v. FCC*, 778 F.2d 869 (D.C. Cir. 1985) (appellate court found that the Commission cannot reasonably expect applications to be letter-perfect when its instructions for those applications are ambiguous)).

⁶² In pertinent part, Section 25.112(a) of the Commission’s rules provides that an application will be unacceptable for filing if “[t]he application is defective with respect to completeness of answers to questions, informational showings, internal inconsistencies, execution, or other matters of a formal character;” or “[t]he application does not substantially comply with the Commission’s rules, regulations, specific requests for additional information, or other requirements.” 47 C.F.R. § 25.112(a). An example of a defective space station application is where an applicant makes inconsistent frequency assignment requests in different portions of its application so that it is impossible to determine precisely which frequency assignments the applicant is seeking. EchoStar Satellite LLC, Application for Authority to Construct, Launch and Operate a Geostationary Satellite in the Fixed Satellite Service Using the Extended Ku-Band Frequencies at the 101° W.L. Orbital Location, *Order on Reconsideration*, 19 FCC Rcd 24953 (2004). Another example is when an application wholly fails to provide a technical showing required under the Commission’s rules. Letter to Todd M. Stansbury, Esq., Counsel for Spectrum Five LLC, from Fern J. Jarmulnek, Deputy Chief, Satellite Division, 20 FCC Rcd 3451 (2005) (petition did not include all the information required under Section 25.114(d)(13)(i)).

⁶³ *17/24 GHz BSS Report and Order*, 22 FCC Rcd at 8851 (para 16).

⁶⁴ EchoStar Satellite LLC Application for Authority to Construct, Launch, and Operate a Geostationary Satellite in the Fixed Satellite Service Using the Extended Ku-Band Frequencies at the 101° W.L. Orbital Location, *Order on Reconsideration*, 19 FCC Rcd 24953, 24957 (para. 10) (Int’l Bur. 2004).

to ensure that a full and complete application is filed that appropriately allows for public comment on the merits of the application and provides Commission staff with sufficient information to make a decision on the application's merits. It was never intended to be a forum for reviewing the ultimate merits of an application.

24. Moreover, the assessment that an application is substantially complete does not mean that the Commission has no technical concerns regarding an application. For example, when reviewing the merits of one of Intelsat North America LLC's (Intelsat) 17/24 GHz BSS space station applications after it was accepted for filing, the Bureau determined that a slight change was required in Intelsat's methodology for calculating its power levels. Specifically, in the interference analysis showing required by Section 25.140(b) of the Commission rules, Intelsat calculated its required PFD reduction based upon the geocentric angular separation between its proposed orbital location and the nearest adjacent Appendix F location.⁶⁵ We found, however, that because the consumer antennas in this service will be located on the Earth's surface, topocentric angular separations should be used in making the PFD reduction calculations.⁶⁶ The technical information provided by Intelsat was sufficient for independent PFD analysis by Commission staff. Accordingly, we conditioned Intelsat's license on a reduction in PFD corresponding to the result of the methodology developed by the Commission.⁶⁷ This change in methodology for calculating operations did not undermine the prior determination that Intelsat's application was substantially complete when filed nor did it require dismissal or denial of the application.

25. In this case, DIRECTV's application included a Form 312, including the required Schedule S, and provided all information required under Section 25.114(d), including the demonstration of compliance with the PFD limits of Section 25.208(w). Accordingly, we find that DIRECTV's application was substantially complete and the application was appropriately accepted for filing and placed on public notice.

C. License Qualifications

26. In the *17/24 GHz BSS Report and Order*, the Commission adopted the "first-come, first-served" procedure for 17/24 GHz BSS applications.⁶⁸ Under this approach, an application will be granted if the applicant meets the standards set forth in Section 25.156(a), and if the proposed space station will not cause harmful interference to a previously licensed space station.⁶⁹ The standards in Section 25.156(a) measure whether the applicant is legally, technically and otherwise qualified, and whether the proposed facilities and operations comply with all applicable rules, regulations and policies, and, in light of those assessments, whether grant of the application will serve the public interest, convenience and necessity.⁷⁰ We review DIRECTV's application on that basis.

⁶⁵ Intelsat North America LLC, *Order and Authorization*, DA 09-1132 at para.10 (rel. May 26, 2009) (*Intelsat Authorization Order*). The geocentric angular separation between two satellite orbital locations in geostationary orbit is the angle between the two orbital locations as measured with respect to the center of the Earth.

⁶⁶ The topocentric angular separation between two satellite orbital locations in geostationary orbit is the angle between the two orbital locations as measured with respect to an earth station located on the surface of the Earth. Topocentric angular separation is usually larger than geocentric angular separation do to the difference in distance from the center of the Earth to the satellite as opposed to the distance to the satellite from the surface of the Earth, as well as the earth station's latitudinal and longitudinal position on the Earth's surface.

⁶⁷ *Intelsat Authorization Order* at para. 11.

⁶⁸ See *Space Station Reform Order*, 18 FCC Rcd at 10804-18 (paras. 108-50).

⁶⁹ 47 C.F.R. § 25.156(a) and 47 C.F.R. § 25.158(b)(3).

⁷⁰ 47 C.F.R. § 25.156(a).

1. Legal Qualifications

27. DIRECTV holds numerous Commission satellite licenses. No party has questioned its legal qualifications to construct, launch and operate a new satellite space station. Accordingly, we find that DIRECTV is legally qualified to hold a 17/24 GHz BSS satellite license.

2. Financial Qualifications

28. In the *Space Station Reform Order*, the Commission eliminated prior financial requirements rules and replaced them with a bond requirement.⁷¹ The bond requirement is intended to ensure that licensees are financially able and committed to implementing their licensed systems in a timely manner. Under this requirement, any entity awarded a space station license must execute a bond payable to the United States Treasury within 30 days of the license grant. The bond is payable upon failure to meet any implementation milestone in the license, unless adequate justification for extending that milestone is provided.⁷² Licensees may reduce the amount of the bond upon meeting each milestone.⁷³ Licenses are conditioned upon the licensee complying with the bond requirement.

3. Technical Qualifications

29. The Commission's space station licensing policy for the 17/24 GHz BSS is predicated upon four-degree orbital spacing between geostationary space stations. The 17/24 GHz BSS service rules allow space station operators to operate full-power space stations at orbital locations offset by up to one degree from an Appendix F location, in cases where there are no licensed or prior-filed applications for 17/24 GHz BSS space stations less than four degrees away from the proposed offset space station. DIRECTV proposes to operate at the 102.825° W.L. orbital location, which is offset by 0.175 degrees from the Appendix F location at 103° W.L.

30. DIRECTV provided an interference analysis as required by Section 25.140(b)(4)(iii) of the Commission's rules, demonstrating that its proposed space station will not cause more interference to adjacent 17/24 GHz BSS satellite networks operating in compliance with the technical requirements of this rule than if its space station were located at the 103° W.L. Appendix F orbital location.⁷⁴ To ensure that the DIRECTV RB-2 space station will not cause more interference to other co-frequency adjacent space stations, DIRECTV calculates that its proposed offset results in 0.5 dB less discrimination, based on the reduction of topocentric angle and the assumption of a 45 cm receive antenna that meets the reference antenna pattern of Section 25.224.⁷⁵ DIRECTV properly used topocentric angular separation, the angle between the two orbital locations as measured with respect to an earth station located on the surface of the Earth, in making the PFD reduction calculations.

31. We calculated the Section 25.224 antenna gains based on the topocentric angles between DIRECTV's requested orbital location of 102.825° W.L. and the 99° W.L. Appendix F orbital location. We also calculated the antenna gains based on the topocentric angles between the 99° W.L. Appendix F orbital location and the 103° W.L. Appendix F orbital location. Subtracting the second set of location-dependent antenna gain values from the first set, we find that the maximum potential PFD levels that could be provided from the 102.825° W.L. offset orbital location range from 0.47 dB to 0.51 dB less than

⁷¹ *Space Station Reform Order*, 18 FCC Rcd at 10825 (para. 167); 47 C.F.R. § 25.165 (bond rule).

⁷² *Space Station Reform Order*, 18 FCC Rcd at 10826 (para. 170).

⁷³ *Space Station Reform Order*, 18 FCC Rcd at 10826-27 (para. 172).

⁷⁴ 47 C.F.R. § 25.140(b)(4)(iii). DIRECTV Amendment at 12-13 and n. 11.

⁷⁵ DIRECTV Amendment at 12-13 and n. 11.

those specified in Section 25.208(w), depending on the location on the surface of the Earth from which the angles between the orbital locations are measured.⁷⁶ Accordingly, we will condition DIRECTV's license for the DIRECTV RB-2 space station on a reduction in PFD corresponding to the methodology described above. In no case shall the PFD levels for the DIRECTV RB-2 space station exceed the lower of this calculated power or the power levels stated in its application. In addition, as discussed above, we find that DIRECTV has demonstrated that its proposed space station meets the PFD limits in Section 25.208(w) of the rules.

D. Coordination Obligations

32. In its comments, SES Americom requests that certain conditions relating to International Telecommunication Union procedures be included in each 17/24 GHz BSS authorization.⁷⁷ Most of the conditions sought by SES Americom are already included in the standard licensing condition drawn from Section 25.111(b) of the Commission's rules.⁷⁸ In addition, SES Americom requests that we place a customer notification requirement on 17/24 GHz BSS space station operators that would require operators to inform their customers that space station operations may need to be modified or terminated to effect coordination of frequency assignments with other licensing Administrations.⁷⁹ We see no compelling reason to impose such a condition on this authorization at this time.⁸⁰

IV. CONCLUSION AND ORDERING CLAUSES

33. Upon review of DIRECTV Enterprises, LLC's application as amended, File Nos. SAT-LOA-20060908-00100, SAT-AMD-20080114-00014, and SAT-AMD-20080321-00077 (Call Sign 2712), we find that DIRECTV Enterprises, LLC is qualified to be a Commission licensee, and find that, pursuant to

⁷⁶ The PFD reduction required for DIRECTV's 17/24 GHz BSS space station at each location on the surface of the Earth should be calculated according to the following procedure:

- a. Set the angle ' ϕ ' in the equations of Section 25.224(a)(1) to the topocentric angle between the 99° W.L. and 103° W.L. orbital locations, as measured at the earth station, and calculate the antenna gain $G_{CO1}(\phi)$ in dBi;
- b. Set the angle ' ϕ ' in the equations of Section 25.224(a)(1) to the topocentric angle between the 99° W.L. and 102.825° W.L. orbital locations, as measured at the earth station, and calculate the antenna gain $G_{CO2}(\phi)$ in dBi; and
- c. Perform the subtraction $G_{CO2}(\phi) - G_{CO1}(\phi)$. The result is the required PFD reduction in dB.

For the purposes of this calculation, the antenna diameter 'D' should be assumed to be 0.45 meters, which is the minimum-diameter antenna for which 17/24 GHz licensees may claim protection from interference, according to Section 25.224(a), the wavelength ' λ ' should be assumed to be 0.017131 meters, corresponding to a frequency of 17.5 gigahertz, and the value of ' η ' can be assumed to be 0.65, as stated in Section 25.224.

⁷⁷ Comments of SES Americom, Inc. (filed August 1, 2008).

⁷⁸ 47 C.F.R. § 25.111(b) ("Applicants, permittees and licensees of radio stations governed by this part shall provide the Commission with all information it requires for the Advance Publication, Coordination and Notification of frequency assignments pursuant to the International Radio Regulations. No protection from interference caused by radio stations authorized by other Administrations is guaranteed unless coordination 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 with other Administrations.") The standard licensing condition is included below in the Ordering Clauses.

⁷⁹ Comments of SES Americom at 5.

⁸⁰ We rejected a similar request in the *Intelsat Authorization Order*. That order provides further background on the international coordination procedures.

Section 309 of the Communications Act of 1934 as amended, 47 U.S.C. §309, grant of the application, as amended, will serve the public interest, convenience, and necessity.

34. Accordingly, IT IS ORDERED, that DIRECTV Enterprises, LLC is authorized to construct, launch and operate the DIRECTV RB-2 space station at the 102.825° 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. DIRECTV Enterprises LLC may operate its DIRECTV RB-2 space station up to PFD levels reduced from those specified in Section 25.208 (w) of the Commission's rules in accordance with the following calculation methodology: For a given location on the surface of the Earth at which the required pfd reduction value needs to be determined, calculate the topocentric angular separation ' ϕ ' of the 103 W.L. and 99° W.L. geostationary orbital locations, and the corresponding off-axis gain $G_{CO1}(\phi)$ of the antenna specified in Section 25.224(a)(1) of the Commission's rules at that angular separation. For the same location on the surface of the Earth, also calculate the topocentric angular separation of the 102.825° W.L. and 99° W.L. geostationary orbital locations, and the gain of the antenna ' $G_{CO2}(\phi)$ ' specified in Section 25.224(a)(1) of the Commission's rules at that angular separation. Then, perform the subtraction $G_{CO2}(\phi) - G_{CO1}(\phi)$ (with assumptions prescribed in this Order, above). The result is the required reduction in PFD from the value specified in Section 25.208(w). The PFD levels of DIRECTV Enterprises, LLC's space station transmissions shall not exceed the lower of this calculated power or the power levels stated in its application, and shall meet the reduced PFD limits under all atmospheric conditions.

35. DIRECTV Enterprises, LLC shall maintain its 17/24 GHz BSS space station within an east/west longitudinal station-keeping tolerance of ± 0.05 degrees of the assigned 102.825° W.L. orbital location.

36. DIRECTV Enterprises, LLC, when designing its system, is required to take into consideration the geographic service requirements of Section 25.225 of the Commission's rules, 47 C.F.R. § 25.225.

37. DIRECTV Enterprises, LLC's 17/24 GHz BSS space station at the 102.825° W.L. orbital location 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 within one year (July 27, 2010);
- b. Complete the Critical Design Review within two years (July 27, 2011);
- c. Commence construction within three years (July 27, 2012);
- d. Launch and begin operations within five years (July 27, 2014); and
- 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), within 30 days of the date of this grant (August 26, 2009).

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

38. DIRECTV Enterprises, LLC must complete coordination of the physical operations of the space station with operators of space stations with overlapping station-keeping volumes within two years and two months of grant of this authorization. Failure to meet this condition shall render this authorization null and void. DIRECTV Enterprises, LLC shall notify the Chief, Satellite Division, in writing, that coordination of the physical operations of the space station has been completed with operators of space stations with overlapping station-keeping volumes within ten business days of completion of such coordination.

39. DIRECTV Enterprises, LLC shall file, within ten business days of completion of Critical Design Review, a revised statement detailing the post-mission disposal plans for the space station at end of life, including the quantity of fuel that will be reserved for post mission disposal maneuvers. The

statement must disclose the altitude selected for a post-mission disposal orbit and demonstrate that the perigee altitude for a post-mission disposal orbit meets the requirements of Section 25.283(a) of the Commission's rules governing end-of-life disposal of geostationary satellite orbit space stations.

40. This authorization and all conditions contained herein are subject to the outcome of the Commission's rulemaking in IB Docket No. 06-123 and any requirements subsequently adopted therein.

41. DIRECTV Enterprises, LLC shall prepare all necessary information that may be required for submission to the International Telecommunication Union (ITU) to initiate and complete the advance publication, international coordination, due diligence, and notification procedures for this space station, in accordance with the ITU Radio Regulations. DIRECTV Enterprises, LLC shall be held responsible for all cost recovery fees associated with these ITU filings. 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 with other Administrations.

42. The license term for this 17/24 GHz BSS space station, Call Sign S2712, is 15 years, and will begin to run on the date that DIRECTV Enterprises, LLC certifies to the Commission that the satellite has been successfully placed into orbit and its operation fully conforms to the terms and conditions of this authorization. DIRECTV Enterprises, LLC shall file this certification with the Chief, Satellite Division, International Bureau, within ten business days of the space station being put into operation.

43. On June 30 of each year, DIRECTV Enterprises, LLC shall file a report with the International Bureau and the Commission's Columbia Operations Center in Columbia, Maryland, containing the information current as of May 31 of that year pursuant to Section 25.210(l) of the Commission's rules, 47 C.F.R. § 25.210(l).

44. DIRECTV Enterprises, LLC is afforded 30 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.

45. 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.

FEDERAL COMMUNICATIONS COMMISSION

John V. Giusti
Acting Chief
International Bureau