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

In the Matter of EchoStar KuX Corporation Application for Authority to Construct, Launch and Operate a Geostationary Satellite Using the Extended Ku-band Frequencies in the Fixed-Satellite Service at the 121° W.L. Orbital Location	)	File No: SAT-LOA-20031215-00355 Call Sign: S2609

Order and Authorization

Adopted: September 30, 2004 **Released: September 30, 2004**

By the Chief, Satellite Division, International Bureau

I. INTRODUCTION

1. In this Order, we grant EchoStar KuX Corporation (EchoStar) authority to construct, launch and operate a geostationary satellite orbit (GSO) satellite in the Fixed-Satellite Service (FSS) using the extended Ku-band frequencies at the 121° W.L. orbital location.[1] We also grant, with certain conditions, EchoStar's associated requests for waivers of rule provisions that restrict use of downlink frequencies in the 10.7-11.7 GHz bands. Grant of this application will stimulate competition in the United States and provide consumers more alternatives in choosing communications providers and services.

II. BACKGROUND

2. EchoStar provides Direct Broadcast Satellite (DBS) satellite services in the multichannel video programming distribution (MVPD) market to over 9 million subscribers. EchoStar and its affiliates currently own and operate eight DBS satellite at various orbital locations. EchoStar has applied for a new satellite, (herein referred to as EchoStar-121W) that will operate at the 121° W.L. orbital location to provide FSS to North and Central America. EchoStar-121W-KuX satellite will supplement and support EchoStar's existing MPVD offerings by providing primarily three types of services: Direct-to Home (DTH) services, including "local-into-local" and High Definition (HD) services, transport of programming to EchoStar's DBS uplink centers, and international DTH, broadband and programming transport services.[2]

3. The proposed satellite will operate with 16 transponders each of 27 megahertz usable

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[1] *See EchoStar KuX Corporation Application for Authority to Construct, Launch and Operate a Geostationary Satellite Using the Extended Ku-band Frequencies in the Fixed-Satellite Service at the 121° W.L. Orbital Location*, File No: SAT-LOA-20031215-0035, filed December 15, 2003, (121W Application). For purposes of this Order, the "extended Ku-band" is 11.45-11.7 GHz in the downlink and 13.75-14.0 GHz in the uplink.

[2] 121W Application at p. 2.

bandwidth. Dual orthogonal polarization will be employed to give full frequency re-use of the uplink and downlink spectrum. All the transponders will use a single broad coverage beam on the downlink and a steerable spot beam on the uplink.[3]

4. On April 23, 2003, the Commission adopted the *First Space Station Reform Order,* substantially revising its satellite licensing process[4] by, among other things, adopting a "first-come, first-served" procedure for applications for satellites operating in geostationary-satellite orbit, such as EchoStar-121W.[5] We placed the application on Public Notice on January 23, 2004 pursuant to the new licensing process.[6] New Skies Satellites N.V. (New Skies) submitted a petition to condition EchoStar's license to reflect New Skies' filing with the International Telecommunication Union (ITU) in the extended Ku-band at the 120.8° W.L. orbital location that had filing-date priority over EchoStar's ITU filing.[7] EchoStar filed an opposition[8] to New Skies' Petition and New Skies filed a reply.[9]

III. DISCUSSION

A. General Requirements

5. In the *First Space Station Reform Order*, the Commission adopted various procedural reforms to expedite the satellite licensing process to ensure that satellite spectrum and orbital resources will be used efficiently, to the benefit of American consumers.[10] In revising the satellite licensing rules, the Commission adopted a "first-come, first-served" procedure for GSO-like systems.[11] Pursuant to Section 25.158(b)(3),[12] a GSO-like satellite license application will be granted only if the applicant meets the standards set forth in Section 25.156(a), and the proposed satellite will not cause harmful interference to a previously licensed satellite. Pursuant to Section 25.156(a), the Commission will grant GSO-like

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3 121W Application. at pp. 2-3.

4 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) (*First Space Station Reform Order).*

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

6 *See* Public Notice, Report No. SAT-00188, rel. January 23, 2004.

7 Petition to Condition filed by New Skies Satellites N.V. on February 23, 2004 (New Skies Petition). Specifically, New Skies requested the following conditions: (1) that EchoStar's license is subject to the ITU process and that EchoStar has no protection from interference unless coordination procedures are timely completed and is encouraged to initiate negotiations with other affected administrations; (2) that in the absence of a coordination agreement, EchoStar must terminate its extended Ku-band operations once a satellite with higher ITU priority is brought into use within 2 degrees of the 121° W.L. orbital location; and (3) that EchoStar must inform its customers of the requirement to cease operations in the extended Ku-band service at the 121° W.L. orbital location if a satellite with higher ITU priority is brought into use within 2 degrees of the 121° W.L. orbital location. *See* New Skies Petition at 6.

8 Opposition to Petition to Condition filed by EchoStar KuX Corp. on March 4, 2004 (EchoStar Opposition). In its Opposition, EchoStar opposes all of New Skies' proposed conditions. EchoStar argues that these additional conditions are unnecessary in light of Commission precedent. It further argues that the third condition that New Skies proposes is "onerous and impractical."

9 Reply Comments filed by New Skies Satellites N.V. on March 15, 2004 (New Skies Reply).

10 *See First Space Station Reform Order*, 18 FCC Rcd at 10776-67 (para. 7).

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

12 47 C.F.R. § 25.158(b)(3).

applications if the Commission finds that the applicant is legally, technically and otherwise qualified, that the proposed facilities and operations comply with all applicable rules, regulations, and policies, and that grant of the application will serve the public interest, convenience and necessity."[13] Accordingly we review EchoStar's application to determine whether EchoStar is legally and technically qualified to hold a satellite license. For reasons discussed below, we find that EchoStar is legally qualified. We also find that EchoStar is technically qualified, in part because it has provided adequate justification for waivers of several technical requirements.

a. INTERNATIONAL COORDINATION

6. In the *First Space Station Reform Report and Order*, the Commission explained that U.S. licenses assigned to a particular orbit location in a first-come, first-served approach take their licenses subject to the outcome of the international coordination process and that the Commission does not guarantee the success of this coordination.[14] The Commission specifically noted that "this may mean that the U.S.-licensee may not be able to operate its system if the coordination cannot be appropriately completed. Indeed, with the first-come, first-served approach, we assign applicants to the orbit location that is requested. Consequently, the applicant assumed the coordination risk when choosing the particular orbit location at the time it submitted its application."[15] As a general practice, U.S. licenses, including the Echostar's authorization here, are conditioned to reflect this Commission policy.[16] Therefore, we find that the conditions proposed by New Skies are partially redundant with our standard condition and otherwise unnecessary in this instance.[17]

B. Legal Qualifications

7. EchoStar states that it holds numerous Commission satellite licenses, and that its legal qualifications are a matter of record before the Commission.[18] We agree with EchoStar on this issue. Moreover, no one has questioned EchoStar's legal qualifications to acquire a new satellite license. Accordingly, we find that EchoStar is legally qualified to hold a satellite license.

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13 47 C.F.R. § 25.156(a).

14 *See First Space Station Reform Order,* 18 FCC Rcd at 10797 (para. 96). *See also* Pegasus Development Corporation, Application for Authority to Construct, Launch, and Operate a Ka-Band Satellite System in the Fixed-Satellite Service, *Order and Authorization*, 16 FCC Rcd 14378, 14386 (para. 24) (Int'l Bur., 2001).

15 *Id.*

16 *See* para. 37, *infra.*

17 New Skies requests us to add conditions similar to the ones it requested, and which we imposed upon Papua New Guinea's Telstar 13, when we added that satellite to the Permitted Space Station List. *See* Loral SpaceCom Corp., Petition for Declaratory Ruling to Add Telstar 13 to the Permitted Space Station List, *Order*, 18 FCC Rcd 16374, 16380-81 (para. 17) (Satellite Div., 2003). (*Telstar 13 Order)* As a preliminary matter, we note that the Telstar 13 conditions are similar to the conditions generally imposed on U.S. licensees. However, because Telestar 13's authorization was issued by Papua New Guinea, we added certain additional conditions to ensure that transmissions to or from earth stations in the United States did not cause harmful interference to a satellite with higher ITU priority or otherwise conflict with coordination agreements between Papua New Guinea and the Netherlands. Because under normal circumstances, the United States does not have access to coordination agreements where the United States is not a party to the agreement, and because the United States does not have jurisdiction to terminate operations over foreign satellites, such as Telstar 13, it was necessary to specify the conditions of Telstar 13's access to the U.S. market. That is not the case here.

18 121W Application at p. 6.

C. Technical Qualifications

1. Two-Degree Spacing

8. The Commission's licensing policy for GSO satellites is predicated upon two-degree orbital spacing between satellites.[19] This policy permits the maximum use of the geostationary-satellite orbit. In its application, EchoStar provides an interference analysis to demonstrate that EchoStar-121W is two-degree compliant, as required by the Commission's rules.[20] EchoStar maintains that since there are currently no satellites adjacent to 121° W.L. orbital location licensed to use the extended Ku-bands within the United States it was necessary for it to make certain assumptions in its interference analysis regarding the transmission parameters of a future adjacent satellite using the extended Ku-bands. We find that this analysis conforms to the interference analysis rule and that EchoStar-121W complies with our two-degree spacing requirements. We also conclude that granting EchoStar's application will not result in harmful interference to any previously licensed satellite.

2. Full Frequency Reuse

9. In the *First Space Station Reform Order*, the Commission extended its full frequency reuse requirements that have been applicable to the "conventional" C-and Ku- bands for more than two decades to include the extended C- and extended Ku-bands.[21] Full frequency reuse doubles the capacity of a space station by requiring operators to use two senses of polarization in each frequency band. The Commission also clarified that in addition to employing vertical and horizontal polarization, licensees could take advantage of newer technology by employing orthogonal-linear polarization or orthogonal circular polarizations with the same beams or the use of spatially independent.[22] EchoStar proposes to operate EchoStar 121W with dual orthogonal-circular polarizations. Consequently, it conforms to the rules as revised.

3. Downlink Operations

a. Downlink to Customer Terminals

10. EchoStar seeks to downlink to customer receive-only earth stations in the 11.45-11.7 GHz frequency bands.[23] The proposed downlink bands are allocated internationally and domestically to terrestrial services and to the FSS on a co-primary basis.[24] However, footnote NG104 of Section 2.106[25]

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19 *See* Licensing Space Stations in the Domestic Fixed-Satellite Service, *Report and Order*, 48 F.R. 40233 (1983).

20 47 C.F.R. §25.140 (b)(2).

21 47 C.F.R. §25.210(f). *See First Space Station Reform Order,* 18 FCC Rcd at 18860 (para. 263).

22 47 C.F.R. §25.210(f).

23 121W Application at p. 8.

24 47 C.F.R. §§2.106 and 25.202(a)(1). Allocation of a given frequency band to a particular service on a primary basis entitles operators to protection against harmful interference from stations of "secondary" services. Further, secondary services cannot claim protection from harmful interference caused by stations of a primary service. *See also* 47 C.F.R. §§2.104(d) and 2.105(c). Co-primary means that both services share the band on an equal basis and both services have equal protection against harmful interference from stations of "secondary" services.

25 47 C.F.R. §2.106 footnote NG104 states "[t]he use of the bands 10.7-11.7 GHz (space-to-Earth) and 12.75-13.25 GHz (Earth-to-space) by the fixed-satellite service in the geostationary-satellite orbit shall be limited to international systems, *i.e.,* other than domestic systems."

and footnote 2 of Section 25.202(a)(1)[26] of the Commission's rules limit FSS operations in these bands to international service only.[27] The Commission found that restricting FSS use of these bands to international systems would limit the number of FSS earth stations with which the co-primary terrestrial wireless fixed-service (FS) would need to coordinate.[28] The Commission subsequently declined to amend Footnote NG104 to exempt NGSO FSS user terminals because that would permit a "ubiquitous deployment" of earth stations that would hamper development of terrestrial services.[29] Accordingly, a satellite may provide downlink service into the United States and its Possessions (US&P) in the 10.95-11.2 GHz and 11.45-11.7 GHz only if the uplink originates outside the US&P.

11. EchoStar requests waivers of footnote NG104 of the U.S. Table of Allocations and footnote 2 of Section 25.202(a)(1) to "the extent necessary," to provide both domestic and international service from the proposed satellite.[30] EchoStar claims that operation of consumer receive-only antennas on an uncoordinated basis will not inhibit or otherwise negatively impact the operations of authorized FS stations in the band.[31] Specifically, EchoStar contends that FS operations will be protected from interference because the satellite downlink will comply with the power flux density limits set out in the Commission's rules.[32] With respect to potential interference from FS transmissions, EchoStar expects that its receive-only earth stations can co-exist with FS stations in most geographic areas of the United States "while maintaining an acceptable quality of service."[33] EchoStar contends that certain mitigating factors, such as buildings, foliage and terrain will naturally block FS signals.[34] EchoStar also proposes to employ interference mitigation techniques, including careful placement of the receiver and/or additional shielding of the receive-only earth stations, in areas where interference from FS transmitting stations is high.[35] Finally, EchoStar states its willingness to accept "any level of interference from FS stations into its earth stations in the extended Ku-band."[36] Thus, according to EchoStar, this would not undermine the underlying policy of footnote NG104, because FS operations will not be negatively impacted by EchoStar's operations.

12. EchoStar expresses its willingness to comply with footnote NG104 and footnote 2 of Section 25.202(a)(1) in the event that the Commission does not grant the requisite waiver requests.[37] In this event, EchoStar states it is prepared to conduct uplink transmissions exclusively from other countries,

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26 47 C.F.R. §25.202(a)(1) footnote 2 states "[u]se of this by geostationary satellite orbit satellite systems in the fixed-satellite service is limited to international systems; *i.e.*, other than domestic systems."

27 *See Satellite Services*, 26 RR 2d 1257, 1263-65 (1973), and *GWARC Inquiry*, 70 FCC 2d 1193, 1252 (1978). *See also* Assignment of Orbital Locations to Space Stations in the Domestic Fixed Satellite Service and the Applications of GE American Communications, Inc., *Order and Authorization*, 15 FCC Rcd 3385 (Sat. & Radiocomm. Div. 1999).

28 *Id.*

29 *Amendments of Parts 2 and 25 of the Commission's Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-Band Frequency Range* (First Report and Order and Further NPRM), FCC 00-418, 16 FCC Rcd 4096, 4111-12 (paras. 29 and 31) (2000) (*Ku-band NGSO FSS Order*).

30 121W Application at p. 8.

31 121W Application at p. 9.

32 *Id.*

33 *Id.*

34 *Id.*

35 *Id.*

36 *Id.*

37 121W Application at p. 10.

thereby operating the system in a manner that would qualify as international service.[38]

13. Section 1.3 of the Commission's rules authorizes the Commission to waive its rules for "good cause shown."[39] Waiver is appropriate only if special circumstances warrant a deviation from the general rule, and such deviation would better serve the public interest than would strict adherence to the general rule.[40] Generally, the Commission may grant a waiver of its rules in a particular case only if the relief requested would not undermine the policy objective of the rule in question and would otherwise serve the public interest.[41] In considering requests for non-conforming spectrum uses, the Commission has indicated that it would generally grant such waivers "when there is little potential for interference into any service authorized under the Table of Frequency Allocations and when the non-conforming operator accepts any interference from authorized services."[42]

14. In this instance, a waiver of footnote NG 104 would not undermine the rule's purpose because it involves only passive receive-only earth stations that are not capable of causing interference into FS stations operating in this band. Further, because, EchoStar has agreed to accept any level of interference from FS stations into its receive-only earth stations' operations in the extended Ku-bands, FS operators will not be required to coordinate their station operations with the EchoStar receive-only earth stations' operations. Under these circumstances, we determine that additional coordination burden would not be placed upon FS operators and that their ability to expand service in the future would not in any manner be restricted. However, we remind EchoStar that it is agreeing to operate its receive antennas in the downlink extended Ku-bands on a non-interference basis relative to FS earth stations. Accordingly, EchoStar shall not claim protection from harmful interference from authorized FS stations to which frequencies are either already assigned, or may be assigned in the future. In addition, we require EchoStar to inform its customers in writing, including any customers receiving end-use service from resellers accessing capacity on EchoStar-121W, of the potential for interference from FS operations in the 11.45-11.7 GHz frequency band.

b. Tracking, Telemetry & Control Operations

15. In addition to the waiver of footnote NG104 for its receive-only earth stations discussed above, EchoStar seeks a waiver of footnote NG104 and footnote 2 of Section 25.202(a)(1) for its Tracking, Telemetry, and Control (TT&C) operations. EchoStar plans to locate its TT&C earth stations in the United States, and to operate its TT&C links at the edges of the extended Ku-bands.[43] Because a single earth station within the United States would both transmit uplink and receive downlink TT&C transmissions in extended Ku-bands, EchoStar's proposed TT&C operations do not comply with footnote NG104. Therefore, EchoStar requests waivers of footnote NG104 and footnote 2 of Section 25.202(a)(1) of the Commission's rules.

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38 121W Application at p. 10.

39 *See* Section 1.3 of the Commission's rules, 47 C.F.R. §1.3. *See also* WAIT Radio v. FCC, 418 F.2d 1153 (D.C. Cir. 1969) (*WAIT Radio)*; Northeast Cellular Tel. Co. v. FCC, 897 F.2d 1166 (D.C. Cir. 1990) (*Northeast Cellular)*.

40 *See Northeast Cellular*, 897 F.2d at 1166.

41 *See WAIT Radio*, 418 F.2d at 1157.

42 *See* Fugro-Chance, Inc., *Order and Authorization*, 10 FCC Rcd 2860 (para. 2) (Int'l Bur., 1995) (authorizing non-conforming MSS in the C-band); *See also* Motorola Satellite Communications, Inc., Application for Modification of License, *Order and Authorization*, 11FCC Rcd 13952, 13956 (para. 11) (Int'l Bur. 1996) (authorizing service to fixed terminals in bands allocated to the mobile-satellite service).

43 121W Application at Attachment A, p. 17.

16. EchoStar argues that the nature of TT&C operations is such that TT&C transmissions must inevitably uplink and downlink from the same earth station. Additionally EchoStar contends that for reliability and cost reasons, the earth station should be located in the United States. EchoStar, further argues that the underlying policy for the rules will not be undermined by granting this request, because the TT&C operations will be primarily be conducted from one (or perhaps a small number of) earth station(s).[44]

17. As noted above, the Commission adopted the footnote NG104 restriction in order to limit the number of earth stations with which the FS applicants would have to coordinate. The Commission has waived this requirement where the number of potential earth stations in a particular service is inherently small. For example, the Commission allowed NGSO FSS gateway stations to provide domestic service in the extended Ku-band because the total number of gateway stations would be relatively small.[45] Additionally, the Commission waived footnote NG104 in order to allow a GSO Mobile Satellite Service (MSS) licensee to use segments of the band for domestic feeder-link transmissions, having concluded that the waiver would not undermine the purpose of the restriction because it merely applied to feeder links for one satellite.[46] The International Bureau also recently granted a waiver of NG104 to an applicant seeking to operate feeder-links for a single satellite with no more than two feeder-link earth stations.[47] The Bureau found that the incremental impact of the licensee's proposed use of the extended Ku-band for feeder-links would not increase the frequency coordination burden on terrestrial wireless services significantly more than the existing permitted use of those bands by an international system.[48]

18. For similar reasons, we grant EchoStar's request for waiver of Footnote NG104 and footnote 2 of Section 25.202(a)(1) for its TT&C operations. We are authorizing EchoStar to operate at most, only one TT&C earth station.[49] This should not significantly increase the coordination burden on FS applicants. Further, TT&C operations will be conducted only at the edges of the service bands. [50] Moreover, we agree with EchoStar that TT&C signals must be transmitted from and received at the same earth station[51] and forcing EchoStar to locate its TT&C earth station outside of the United States would

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44 121W Application at p. 11.

45 Specifically, the Commission noted that most of the parties applying for NGSO FSS authorization in the extended Ku-band were proposing to deploy fewer than five such gateway stations in the United States. *See Ku-band NGSO FSS Order,* 16 FCC Rcd at 4112 (para. 31 and n. 65).

46 *See* Amendment of Parts 2, 22, and 25 of the Commission's Rules to Allocate Spectrum for and to Establish Other Rules and Policies Pertaining to the Use of Radio Frequencies in a Land Mobile Satellite Service for the Provision of Various Common Carrier Services, *Memorandum Opinion, Order, and Authorization*, 4 FCC Rcd 6041, 6081 (para. 70) (1989).

47 *See* Boeing Company, Applications For Modification of Authority For Use of the 1990-2025/2165-2200 MHz and Associated Frequency Bands for a Mobile-Satellite System and Applications For Authority to Launch and Operate a Non-Geosynchronous Medium Earth Orbit Satellite System in the 2 GHz Band Mobile-Satellite Service and in the Aeronautical Radionavigation-Satellite Service, *Order and Authorization*, 18 FCC Rcd 12317, 12322-24 (paras. 14-18) (Int'l Bur. and OET 2003) (*Boeing Order*).

48 *See Boeing Order,* 18 FCC Rcd at 12323 (para. 15).

49 In the Application, EchoStar is not specific regarding the precise number of TT&C earth stations it might require, beyond the one. Accordingly, because EchoStar has not indicated a definite need for more than one TT&C earth station to be located within the United States, this waiver pertains only to a single TT&C earth station. *See* 121W Application at Section VIIB, p. 11. EchoStar will be required to coordinate its proposed TT&C earth station with terrestrial stations pursuant to Section 25.203 of the Commission's rules. *See also* 47 C.F.R. Section §25.203

50 121W Application at Attachment A, p. 14. *See* 47 C.F.R. §25.202(g)

51 121W Application at p. 4.

adversely affect EchoStar's ability to maintain control of the spacecraft. Thus, we grant EchoStar a waiver of NG104 to allow it to provide TT&C to EchoStar-121W from one earth station located in the United States.

19. Additionally, based on our review of the technical information EchoStar's submitted, we conclude that EchoStar complies with Section 25.202(g) of the Commission's rules which requires the frequencies selected for TT&C functions to be at either or both edges of the allocated bands.

4. Coordination with NTIA

20. The 13.75-14.0 GHz band has been allocated domestically and internationally to the fixed-satellite service, subject to restrictions embodied in footnotes to the domestic and international tables of allocations. The 13.75-14.0 GHz band is shared on a primary basis with the Government radiolocation service and with the forward space-to-space and space-to-Earth links of the NASA Tracking and Data Relay Satellite (TDRS) System in the space research service. Consequently, earth stations in the US&P operating with EchoStar-121W will require coordination through the National Telecommunications and Information Administration (NTIA) Interdepartment Radio Advisory Committee's (IRAC) Frequency Assignment Subcommittee (FAS).[52] We have received a letter from the NTIA requesting that we identify this requirement in any grant of authority to operate a satellite in the 13.75-14.0 GHz band.[53]

21. Domestically, footnotes US337, US356, and US357 are applicable.[54] These footnotes place certain restrictions on FSS operations in order to protect government operations in the band, including manned space flight.[55] Internationally, footnotes 5.502 and 5.503 to the International Telecommunication Union (ITU) Radio Regulations place certain similar restrictions on FSS operations.[56] The fundamental difference between the domestic and international footnotes is that the international footnotes permit operation of antennas with diameters as small as 1.2 meters for earth stations of a geostationary FSS network, whereas, the U.S. footnotes require a minimum earth station diameter of 4.5 meters. We require that earth stations in the US&P operate in accordance with the U.S. footnotes US356 and US357. For non-US&P earth stations accessing the EchoStar-121W satellite, we require operation to

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52 *See* Amendment of Parts 2, 25, and 90 of the Commission's Rules to Allocate the 13.75-14.0 GHz Band to the Fixed-Satellite Service, *Report and Order*, ET Docket No. 96-20, 11 FCC Rcd 11951, 11960-61 (para. 20) (1996).

53 *See* Letter from William Hatch, Acting Associate Administrator, Office of Spectrum Management, NTIA, to Roderick Porter, Acting Chief, International Bureau, FCC (dated May 11, 1999).

54 Footnote US337 requires that earth stations operating in the 13.75-13.8 GHz band be coordinated through the National Telecommunications and Information Administration (NTIA) Interdepartment Radio Advisory Committee's Frequency Assignment Subcommittee to minimize interference to the forward space-to-space link of the National Aeronautics and Space Administration Tracking and Data Relay Satellite System. 47 C.F.R. § 2.106 US337.

55 Footnote US356 places a restriction on minimum antenna size of 4.5 meters for earth stations operating in the 13.75-14.0 GHz band and indicates a minimum equivalent isotropically radiated power (e.i.r.p.) that should be used. Footnote US357 limits FSS earth station e.i.r.p. spectral density in the 13.77-13.78 GHz band until those geostationary space stations in the space research service for which advance publication information was received by the ITU prior to 31 January 1992 cease to operate in this band.

56 Footnote 5.502 to the ITU Radio Regulations establishes minimum antenna diameters for earth stations of geostationary and non-geostationary satellite networks, and places certain restrictions on either the minimum equivalent isotropically radiated power (e.i.r.p.) or the power flux density (p.f.d.) levels produced by earth stations operating in the 13.75-14.0 GHz band. Footnote 5.503 limits FSS earth station e.i.r.p. spectral density in the 13.770-13.780 GHz band for earth stations in the FSS operating with geostationary-orbit space stations, until those geostationary space stations in the space research service for which advance publication information was received by the ITU prior to 31 January 1992 cease to operate in this band.

be consistent with the international footnotes.

22. ITU Radio Regulation footnote 5.503A required the fixed-satellite service not to cause harmful interference to non-geostationary space stations in the space research and Earth exploration-satellite services prior to the January 1, 2000 and for some earth stations to accommodate the needs of spaceborne precipitation radars operating in the band 13.793-13.805 GHz.[57] We have received a letter from NTIA noting that NASA's Tropical Rainfall Measuring Mission (TRMM) satellite system radar in the band 13.793-13.805 GHz is still operating.[58] Because TRMM is a highly valuable and visible U.S. asset, with a broad range of international users, NTIA has requested cooperation from the Commission and non-Federal Government entities in providing assistance in reducing interference with the TRMM radar.[59] NTIA notes that it desires that FSS earth stations in the 13.793 - 13.805 GHz frequency band located south of 39° N. and east of 110° W. operate with emission levels below –150 dBW/600 kHz at the TRMM space station receiver. Because this is a request and not a requirement, considering the secondary nature of the TRMM operation, we urge, but do not require, operators of earth stations accessing EchoStar-121W in the 13.75 - 14.0 GHz band to cooperate voluntarily with NASA in order to facilitate continued operation of the TRMM satellite. NTIA also notes that none of the other space-based radar operations covered by 5.503A will seek continued cooperation in this respect.[60]

D. Financial Qualifications

23. In its *First Space Station Licensing Reform Order*, the Commission eliminated the financial requirements then in place and replaced them with a bond requirement.[61] Under this new financial requirement, any entity awarded a license for a GSO satellite must execute a payment bond, payable to the U.S. Treasury, within 30 days of the date of the license grant. The bond is payable upon failure to meet any implementation milestone in the license, where adequate justification for extending that milestone is not provided.[62] Licensees may reduce the amount of the bond upon meeting each milestone.[63] In light of the Commission's recent decision to revise the bond amount to $3 million for geostationary satellite orbit space stations, we will require EchoStar to post a $3 million bond within 30 days of the date of this grant.[64]

E. Orbital Debris Mitigation

24. In its application, EchoStar provides a narrative describing the proposed satellite's debris mitigation design and operational strategies, if any, it will use, as required by Section 25.216(d) of the

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57 Footnote 5.503A was suppressed at WRC-03. It stated that: "Until 1 January 2000, stations in the fixed-satellite service shall not cause harmful interference to non-geostationary space stations in the space research and Earth exploration-satellite services. Additionally, when planning earth stations in the fixed-satellite service to be brought into service between 1 January 2000 and 1 January 2001, in order to accommodate the needs of spaceborne precipitation radars operating in the band 13.793-13.805 GHz, advantage should be taken of the consultation process and the information given in Recommendation ITU-R SA.1071."

58 *See* Letter from Frederick R. Wentland, Acting Associate Administrator, Office of Spectrum Management, NTIA, to Don Abelson, Chief, International Bureau, FCC (dated February 28, 2002).

59 *Id.*

60 *Id.*

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

62 *Id.*

63 *Id.* at 10826-27 (para. 172).

64 Amendment of the Commission's Space Station Licensing Rules and Policies, *First Order on Reconsideration and Fifth Report and Order*, IB Docket No. 02-34, FCC 04-147 (rel. July 7, 2004).

Commission's Rules.[65] EchoStar states in its application that in order to control orbital debris, EchoStar proposes to use a design for its satellite and launch vehicle that will minimize the amount of debris that is released during normal operations. Additionally, EchoStar plans to conduct an analysis to ensure that the probability of collisions with any known space born objects during the satellite's normal operational lifetime is minimal. EchoStar also plans to conduct an analysis that will demonstrate that no realistic failure modes exist or can lead to an accidental explosion during normal operations or before completion of post-operational disposal. Further, EchoStar states that it will maneuver its satellite to a storage orbit with a perigee altitude above its normal operational orbit. EchoStar also states its intent to use a maneuver strategy that reduces the risk of leaving any of part of its spacecraft near an operational orbit. Finally, EchoStar also contends that after the satellite reaches its final disposal orbit, all onboard sources of stored energy will be depleted or safely secured.

F. Milestones

25. In the *First Space Station Reform Order,* the Commission noting that milestones are intended to ensure that licensees provide service to the public in a timely manner, to prevent warehousing of scarce orbit and spectrum resources codified its generic milestone policy in Section 25.164 of its Rules.[66] Consistent with this, we require that EchoStar execute a binding contract for construction within one year of this grant, complete the Critical Design Review within two years, commence physical construction within three years, and launch and begin operations within five years.

IV. CONCLUSION AND ORDERING CLAUSES

26. We find that granting EchoStar's application and associated waiver requests, to the extent provided herein will serve the public interest by providing effective use of the limited spectrum resource.

27. Accordingly, IT IS ORDERED that EchoStar KuX Corporation's application, SAT-LOA-20031215-00355, Call Sign S2609, IS GRANTED and EchoStar KuX Corporation is authorized to construct, launch and operate its EchoStar-121W satellite at 121° W.L., in the 11.45-11.7 GHz and 13.75-14.0 GHz frequency bands, in accordance with the terms, conditions, and technical specifications set forth in its application and this *Order* and *Authorization*.

28. IT IS FURTHER ORDERED that EchoStar KuX Corporation's requests for waivers of NG104 of the U.S. Table of Allocations and footnote 2 of Section 25.202(a)(2), in order to provide domestic service using receive-only earth stations in the 11.45-11.7 GHz bands ARE GRANTED.

29. IT IS FURTHER ORDERED that EchoStar KuX Corporation shall operate its receive-only earth stations in the 11.45-11.7 GHz bands on a non-interference basis relative to FS stations and that EchoStar KuX Corporation shall not claim protection from harmful interference from any authorized FS stations to which frequencies are either already assigned, or may be assigned in the future.

30. IT IS FURTHER ORDERED that EchoStar KuX Corporation is required to inform its customers in writing, including end-users receiving service from resellers accessing capacity on EchoStar 121W, that the service is being provided on an uncoordinated basis, and of the potential for interference from FS operations.

31. IT IS FURTHER ORDERED that EchoStar KuX Corporation's requests for waivers of

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65 121W Application at pp. 12-13. *See* 47 C.F.R. §25.216(d).

66 *See First Space Station Reform Order,* 18 FCC Rcd at 10828 (para. 173).

NG104 of the U.S. Table of Allocations and footnote 2 of Section 25.202(a)(1), in order to permit TT&C from the US&P in the 11.45-11.7 GHz frequency bands ARE GRANTED.

32. IT IS FURTHER ORDERED that the waiver to permit TT&C operations in the 11.45-11.7 GHz frequency bands conditionally granted herein, pertains only to TT&C transmissions between a single GSO satellite at 121° W.L. and a maximum of one fixed earth station within the continental US&P.

33. IT IS FURTHER ORDERED that EchoStar KuX Corporation shall coordinate its potential TT&C earth station operations with terrestrial FS stations in accordance with Section 25.203 of the Commission's rules.

34. IT IS FURTHER ORDERED that in the 13.75-14.0 GHz band, all earth stations in the US&P are required to coordinate through NTIA's Interdepartment Radio Advisory Committee's Frequency Assignment Subcommittee.

35. IT IS FURTHER ORDERED that the operation of the EchoStar-121W satellite network in the 13.75-14.0 GHz band shall be in accordance with footnotes US356 and US357 to 47 C.F.R. § 2.106 in the US&P, and with footnotes 5.502 and 5.503 to the ITU Radio Regulations outside of the US&P.

36. IT IS FURTHER ORDERED that EchoStar-121W must be constructed, launched, and placed into operation in accordance with the technical parameters and terms and conditions of this authorization by these specified time periods following the date of authorization:

a. Execute a binding contract for construction by 9/30/2005;
b. Complete the Critical Design Review by 9/30/2006;
c. Commence construction by 9/30/2007;
d. Launch and begin operations by 9/30/2009;
e. EchoStar KuX Corporation must post a $3 million bond with the Commission, pursuant to the procedures set forth in Public Notice, DA 03-2603, 18 FCC Rcd 16283 (2003), by 10/30/04.

Failure to meet any of these dates shall render this authorization null and void. *See* 47 C.F.R. §§ 25.161 and 25.164.

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

38. IT IS FURTHER ORDERED that the license term for the EchoStar-121W, Call Sign S2609, is fifteen years and will begin to run on the date that EchoStar KuX Corporation 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.

39. IT IS FURTHER ORDERED that EchoStar KuX Corporation shall provide a written statement to the Commission within 60 days of the date of this grant that identifies any known satellites located at, or planned to be located at, EchoStar KuX Corporation's assigned orbital location, or assigned

in the vicinity of that location such that the station-keeping volume of the respective satellites might overlap, and that states the measures that will be taken to prevent in-orbit collisions with such satellites. This statement should address any licensed FCC systems, or any systems applied for and under consideration by the FCC. The statement need not address every filing with the ITU that meets these criteria, but should assess and address any systems reflected in ITU filings that are in operation or that EchoStar KuX Corporation believes may be progressing toward launch, *e.g.*, by the appearance of the system on a launch vehicle manifest. If EchoStar KuX Corporation elects to rely on coordination with other operators to prevent in-orbit collisions, it shall provide a statement as to the manner in which such coordination will be effected.

40. This grant does not in any way constitute an approval of EchoStar KuX Corporation's post-mission disposal plan for EchoStar-121W.

41. EchoStar KuX Corporation is afforded thirty days from the date of adoption 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.

42. This grant is issued pursuant to Section 0.261 of the Commission's rules on delegated authority, 47 C.F.R. § 0.261, and is effective upon adoption. 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

Thomas S. Tycz
Chief,
Satellite Division
International Bureau