

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

In the Matter of the Application of)
EchoStar Satellite)
Operating Corporation) File Nos.: SAT-MOD-20060830-00092
) SAT-STA-20050608-00116
Application for Authority to)
Operate the EchoStar 9 Satellite) Call Sign: S2179
in the Lower 500 MHz Portion)
of the Ka-band Frequencies)
at the 121° W.L. Orbital Location)

ORDER AND AUTHORIZATION

Adopted: December 22, 2006

Released: December 22, 2006

By the Chief, Satellite Division, International Bureau:

I. INTRODUCTION

1. By this Order, we authorize EchoStar Satellite Operating Corporation (EchoStar) to operate the EchoStar 9 satellite in 400 megahertz of additional Ka-band spectrum at the 121° W.L. orbital location. Specifically, we authorize EchoStar to operate EchoStar 9 in the 18.3-18.5 GHz, 18.6-18.8 GHz, 28.4-28.6 GHz, and 29.3-29.5 GHz frequencies, in addition to the previously authorized 29.5-30.0 GHz and 19.7-20.2 GHz frequencies. We also grant EchoStar’s request for waivers of two of the Commission’s rules. Finally, we dismiss EchoStar’s pending application for special temporary authority as moot.¹

II. BACKGROUND

2. The EchoStar 9 satellite, a hybrid Ku-/Ka-band satellite, was launched in 2003 and is currently located at the 121° W.L. orbital location.² EchoStar 9 is authorized to operate in the “upper” half of the 1000 megahertz of Ka-band spectrum (“upper Ka-band”) allocated in both transmission directions to the Fixed-Satellite Service (FSS). When the “lower Ka-band” became available for

¹ See IBFS File No. SAT-STA-20050608-00116.

² 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, Order and Authorization, 20 FCC Rcd 942 (2005); EchoStar Satellite Corporation, Order and Authorization, 18 FCC Rcd 15862 (2003) (granting EchoStar’s request to modify its Fixed-Satellite Service (FSS) Ka-band license at 121° W.L. to permit hybrid Ka-/Ku-band operations); EchoStar Satellite Corporation, Order and Authorization, 13 FCC Rcd 5664 (1996) (granting EchoStar’s application to launch and operate a FSS satellite in the Ka-band at the 121° W.L. orbital location).

reassignment, EchoStar filed a modification application³ to add these frequencies to its license for a next-generation Ku-/Ka-band satellite which is scheduled for launch in 2009 and will be located at the 121° W.L. orbital location. The Commission granted this modification application in August 2005.⁴ On August 30, 2006, EchoStar filed the instant application to add 400 MHz of the lower Ka-band frequencies⁵ to an existing payload on its EchoStar 9 satellite.⁶ The application was placed on public notice as accepted for filing on September 29, 2006.⁷ In addition, EchoStar seeks waivers of Sections 25.210(d) and 25.210(i) of the Commission's rules. No comments were filed.

III. DISCUSSION

A. Full Frequency Reuse

3. Section 25.210(d) of the Commission's rules requires that all FSS space stations employ state-of-the-art full-frequency reuse either through the use of orthogonal polarizations within the same beam and/or through the use of spatially independent beams.⁸ According to EchoStar, the EchoStar 9 satellite is able to achieve full-frequency reuse in the uplinks for Channels A and B in the upper 500 megahertz of the Ka-band, but not in Channels C and D in the lower 500 megahertz of the Ka-band.⁹ EchoStar contends that grant of this waiver is in the public interest because it would allow EchoStar to use 400 megahertz of spectrum that otherwise will not be used until EchoStar launches its next-generation Ku-/Ka-band satellite in 2009.¹⁰

4. The Commission may waive a rule for good cause shown.¹¹ Waiver is appropriate 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.¹² Generally, the Commission may grant a waiver of its rules in a particular case if the relief requested would not undermine the policy objective of the rule in question and would otherwise serve the public interest.¹³

5. The full-frequency reuse requirements were designed to ensure that satellites maximize the use of their transponder capacity to the benefit of the public.¹⁴ The Commission has waived these

³ See IBFS File No. SAT-MOD-20050617-00127.

⁴ See EchoStar Satellite LLC, Grant Stamp, IBFS File No. SAT-MOD-20050617-00127 (August 15, 2005).

⁵ Specifically, these frequencies are 18.3-18.5 GHz, 18.6-18.8 GHz, 28.4-28.6 GHz, and 29.3-29.5 GHz.

⁶ IBFS File No. SAT-MOD-20060830-00092 (Application).

⁷ See International Bureau, Policy Branch Information: Satellite Space Applications Accepted for Filing, *Public Notice*, Report No. SAT-00390 (rel. September 29, 2006).

⁸ 47 C.F.R. § 25.210(d).

⁹ EchoStar Application at 5.

¹⁰ *Id.* at 3-4.

¹¹ 47 C.F.R. § 1.3.

¹² *Northeast Cellular Telephone Co. v. FCC*, 897 F.2d 1166 (D.C. Cir. 1990).

¹³ *WAIT Radio v. FCC*, 418 F.2d 1153 (D.C. Cir. 1969); *Dominion Video Satellite, Inc., Order and Authorization*, 14 FCC Rcd 8182 (1999).

¹⁴ *Licensing of Space Stations in the Domestic Fixed-Satellite Service and Related Revisions of Part 25 of the Rules and Regulations, Report and Order*, 54 RR 2d 577, 598, para. 70 (1983). See also *Systematics General Corporation, Memorandum Opinion and Order*, 103 FCC Rcd 2d 879, 881, para. 6 (1985).

requirements where doing so would allow for the use of satellite capacity that would not otherwise be used, and as long as such use does not preclude a satellite which is capable of full-frequency reuse from operating.¹⁵ We agree with EchoStar that granting this waiver will allow EchoStar to provide service using 400 megahertz of spectrum that will not otherwise be used until EchoStar launches its authorized next-generation Ku-/Ka-band satellite. We therefore find that it is in the public interest to waive Section 25.210(d) of our rules. As a condition of the waiver, however, EchoStar shall claim no more protection against interference to its operations from other licensed radiocommunication systems operating in accordance with the Commission's rules than if it was able to achieve full-frequency reuse in all of its transmissions.

B. Cross-Polarization Isolation

6. Section 25.210(i) of the Commission's rules requires space station antennas in the FSS to be designed to meet a cross-polarization isolation of 30 dB within the primary coverage area of the antenna.¹⁶ EchoStar states that the EchoStar 9 satellite's antennas are designed to meet a cross-polarization isolation of 22 dB for the downlink bands and 20 dB for the uplink bands.¹⁷

7. Section 25.210(i)'s cross-polarization isolation requirement facilitates two-degree orbital spacing between geostationary satellites, which is a cornerstone of the Commission's satellite licensing policies.¹⁸ This policy permits the maximum use of the geostationary orbit. The Commission, however, adopted the cross-polarization isolation requirement in an environment where satellites were predominantly using analog transmissions. Along with the C-band analog video frequency plan of Section 25.211(a)¹⁹ and the polarization switchability requirement of Section 25.210(c)²⁰, the cross-polarization requirement serves to minimize the interference between adjacent satellites when both are carrying analog video signals with highly peaked spectra. In addition, the cross polarization requirement serves to limit the level of self-interference, thus assuring that operators do not allocate an inordinate proportion of the interference budget to themselves. In this context, it is worth noting that the cross polarization performance of the satellite receive antenna has no effect on the interference into other systems. Also, in a two-degree spacing environment, the cross-polarization performance of the downlink satellite antenna has only a second-order effect on the interference into the neighboring system.²¹ Since

¹⁵ See, e.g., Systematics General Corporation, *Order and Authorization*, 2 FCC Rcd 7550 (1987) (authorizing the TDRS-1 and TDRS-3 satellites, which did not meet the full frequency reuse requirement, to provide service from the 41° W.L. and 62° W.L. orbit locations until those locations were ready to be occupied by compliant satellites). See also Columbia Communications Corporation, *Memorandum Opinion, Order, and Authorization*, 7 FCC Rcd 122, 123, para. 15 (1991).

¹⁶ 47 C.F.R. § 25.219(i).

¹⁷ EchoStar Application at 5.

¹⁸ See Application of New Skies Satellites, N.V. for Authorization to Access the U.S. Market, *Order and Authorization*, 14 FCC Rcd 13003, 13037 at para. 75 (1999).

¹⁹ 47 C.F.R. § 25.211(a).

²⁰ 47 C.F.R. § 25.210(c).

²¹ The impact of the satellite downlink antenna cross polarization performance is to raise slightly the interference level into the downlink of the victim satellite's wanted polarization. Thus, the neighboring victim satellite would receive a co-polar interfering signal in its wanted polarization at a level defined by its co-polar earth station sidelobe performance. In addition, in the same polarization, it would receive a much lower interfering signal whose level is defined by the interfering satellite's downlink cross-polarization performance. If the satellite antenna met the 30 dB requirement of 25.210(i) and if it transmitted at the same level in both polarizations, this cross-polar contribution would increase the co-polar interference level by one part per thousand. This increase would correspond to a

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the EchoStar 9 system uses only digital transmissions, its antennas' non-compliance with our analog cross-polarization isolation requirement should have only a negligible increase in interference to adjacent satellites.

8. We therefore find that it is in the public interest to waive Section 25.210(i) of the Commission's rules. As a condition of the waiver, however, EchoStar shall claim no more protection from interference from other licensed radiocommunication systems operating in accordance with the Commission's rules than if its antennas were in compliance with Section 25.210(i) of our rules.

C. Coordination with Government Operations

9. Ka-band space systems operating in the 18.3-18.8 and 19.7-20.2 GHz bands are required to coordinate with Federal FSS systems, both geostationary and non-geostationary, in accordance with footnote US334 to the U.S. Table of Frequency Allocations.²² Accordingly, EchoStar's Ka-band authorization is conditioned on this coordination requirement.²³

D. Application for Special Temporary Authority

10. In June 2005, EchoStar filed an application seeking special temporary authority to operate in the same frequencies for which it is being given authority to operate herein.²⁴ Because we are granting authority to EchoStar to operate in these frequencies on a regular basis, we dismiss the application for special temporary authority as moot.

IV. CONCLUSION AND ORDERING CLAUSES

11. Accordingly, IT IS ORDERED that the modification application, File No. SAT-MOD-20060830-00092, IS GRANTED and EchoStar Satellite Operating Corporation IS AUTHORIZED to operate the EchoStar 9 satellite in the 18.3-18.5 GHz, 18.6-18.8 GHz, 19.7-20.2 GHz, 28.4-28.6 GHz, and 29.3-30.0 GHz frequency bands at the 121° W.L. orbital location.

12. IT IS FURTHER ORDERED that, pursuant Section 1.3 of the Commission's rules, 47 C.F.R. § 1.3, the request of EchoStar Satellite Operating Corporation for a waiver of Section 25.210(d) of the Commission's rules, 47 C.F.R. § 25.210(d), IS GRANTED, with the condition that the EchoStar 9 satellite shall claim no more protection against interference to its operations from other licensed radiocommunication systems operating in accordance with the Commission's rules than if it was able to achieve full-frequency reuse in all of its transmissions.

13. IT IS FURTHER ORDERED that, pursuant Section 1.3 of the Commission's rules, 47 C.F.R. § 1.3, the request of EchoStar Satellite Operating Corporation for a waiver of Section 25.210(i) of

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decrease in carrier-to-interference ratio (C/I) into the adjacent satellite's downlink signal of 0.004 dB. With the EchoStar-9's downlink antenna cross-polarization isolation of 22 dB, cross-polar interference contribution would increase to about six parts per thousand, and represent a C/I decrease of 0.03 dB. This level of increased interference resulting from the satellite downlink antenna's non-compliance remains negligible relative to the main interfering signal.

²² See also 47 C.F.R. § 2.106.

²³ A licensee may initiate coordination under US334 by submitting a letter request to the Commission.

²⁴ See International Bureau, Satellite Division, Policy Branch Information: Satellite Space Applications Accepted for Filing, *Public Notice*, Report No. SAT-00299, rel. June 17, 2005; IBFS File No. SAT-STA-20050608-00116..

the Commission's rules, 47 C.F.R. § 25.210(i), IS GRANTED, with the condition that the EchoStar 9 satellite shall claim no more protection against interference to its operations from other licensed radiocommunication systems operating in accordance with the Commission's rules than if its antennas were in compliance with Section 25.210(i).

14. IT IS FURTHER ORDERED that, before operating in the authorized frequency bands 18.3-18.5 GHz and 18.6-18.8 GHz, EchoStar must coordinate its downlink operations with U.S. Government systems, including Government operations to earth stations in foreign countries, operating in the 17.8-20.2 GHz band, in accordance with footnote US334 to the Table of Frequency Allocations, 47 C.F.R. § 2.106.

15. IT IS FURTHER ORDERED that EchoStar must conduct its operations pursuant to this authorization in a manner consistent with the power flux-density requirements of footnote US255 to the Table of Frequency Allocations, 47 C.F.R. § 2.106, and Sections 25.138(a)(6) and 25.208 of the Commission's rules, 47 C.F.R. §§ 25.138(a)(6), 25.208.

16. IT IS FURTHER ORDERED that the application for special temporary authority filed by EchoStar on June 8, 2006, IBFS File No. SAT-STA-20050608-00116, IS DISMISSED as moot.

17. EchoStar has thirty days from the date of this grant to decline the authorization as conditioned. Failure to respond within this period will constitute formal acceptance of the authorization as conditioned.

18. All other terms and condition in the license for EchoStar 9, Call Sign S2179, as modified by subsequent Commission action, remain in effect. *See* IBFS File No. SAT-MOD-20010608-00055.

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

FEDERAL COMMUNICATIONS COMMISSION

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