

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

In the Matter of)	
)	
WorldVu Satellites Limited)	IBFS File Nos.: SAT-MPL-20200526-00062
)	and SAT-APL-20210112-00007
)	
Petition for Declaratory Ruling to Modify the U.S.)	Call Sign: S2963
Market Access Grant for the OneWeb Ku-band and)	
Ka-Band NGSO FSS System)	

ORDER AND DECLARATORY RULING

Adopted: September 16, 2022

Released: September 16, 2022

By the Chief, Satellite Division, International Bureau:

I. INTRODUCTION

1. In this Order and Declaratory Ruling, we grant in part and defer in part the petition for declaratory ruling of WorldVu Satellites Limited (OneWeb) to modify its grant of U.S. market access for a 720-satellite constellation authorized by the United Kingdom.¹ We allow OneWeb to access the U.S. market with minor revisions to its satellite architecture. Specifically, OneWeb is approved to operate up to 49 satellites per plane in two orbital planes instead of the previously approved 40 satellites per plane. We defer consideration of the remainder of OneWeb’s Modification Petition. This grant in part will enable OneWeb to begin testing and providing service to the United States with satellites that have already been launched and are now being raised into their final orbital positions.

II. BACKGROUND

2. In April 2016, OneWeb became the first company to seek Commission approval for a new generation non-geostationary satellite orbit (NGSO), fixed-satellite service (FSS) system designed “to provide high-speed, affordable broadband connectivity to anyone, anywhere” in the United States.² OneWeb proposed to operate a constellation of 720 satellites, configured in 18 near-polar orbital planes with 40 satellites per plane, at an approximate altitude of 1200 kilometers and in the frequency bands 10.7-12.7 GHz (space-to- Earth), 14-14.5 GHz (Earth-to-space), 17.8-18.6 GHz (space-to-Earth), 18.8-19.3 GHz (space-to-Earth), 27.5-29.1 GHz (Earth-to-space), and 29.5-30 GHz (Earth-to-space).³

3. The initial OneWeb petition triggered a processing round.⁴ The processing round notice invited additional applications and petitions for declaratory ruling for NGSO-like satellite operation in the

¹ WorldVu Satellites Limited, Modification to OneWeb U.S. Market Access Grant for the OneWeb Ku- and Ka-Band System, IBFS File No. SAT-MPL-20200526-00062 (filed May 26, 2020), amended by WorldVu Satellites Limited, Amendment to Modification Application for U.S. Market Access Grant for the OneWeb Ku- and Ka-Band System, IBFS File No. SAT-APL-20210112-00007 (filed Jan. 12, 2021) (together, Modification Petition).

² *WorldVu Satellites Limited, Petition for a Declaratory Ruling Granting Access to the U.S. Market for the OneWeb NGSO FSS System*, Order and Declaratory Ruling, 32 FCC Rcd 5366, 5366, paras. 1-2 (2017) (*OneWeb Grant*).

³ *Id.* at 5366-67, para. 2.

⁴ *See* 47 CFR § 25.157(c).

frequency bands requested by OneWeb.⁵ The notice announced that applications and petitions filed by the cut-off date of November 15, 2016, would be considered together with the initial OneWeb petition, but that requests filed after that date may not be entitled to shared use of the spectrum with respect to any grant of applications or petitions filed prior to the cut-off date.⁶ Eleven additional applications and petitions were filed in this first processing round.⁷

4. The Commission granted OneWeb's initial market access petition in June 2017.⁸ The grant included a condition requiring OneWeb to share spectrum, on an equal basis, with any NGSO system licensed or granted U.S. market access through the first processing round in accordance with the Commission's rules.⁹

5. In March 2020, a second processing round was opened for the frequency bands included in the *OneWeb Grant*.¹⁰ The second processing round closed May 26, 2020.¹¹ OneWeb initially submitted the Modification Petition within this second processing round window, and later amended it on January 12, 2021.¹²

6. The Modification Petition proposes a revised satellite architecture for the OneWeb NGSO FSS system, to be deployed in what is described as two phases. Phase 1 would consist of 716 satellites, which is a reduction from the previously approved 720 satellites. OneWeb would also reconfigure the deployment of satellites.¹³ Rather than operating 40 satellites per plane in 18 orbital planes at an 87.9° inclination, OneWeb would operate 49 satellites per plane in 12 orbital planes at an 87.9° inclination and 16 satellites per plane in 8 orbital planes at a 55° inclination.¹⁴ OneWeb asks that this reduction and reconfiguration of the already-approved OneWeb system be granted without affecting its spectrum sharing rights based on its participation in the first processing round.¹⁵

7. Phase 2 would represent a significant expansion of the OneWeb system. As originally filed, the phase 2 deployment would increase the total constellation size to 47,844 satellites;¹⁶ however, the amendment reduced this to 6,372 satellites.¹⁷ OneWeb proposes that operation of these satellites be

⁵ *OneWeb Petition Accepted for Filing, IBFS File No. SAT-LOI-20160428-00041; Cut-Off Established for Additional NGSO-Like Satellite Applications or Petitions for Operations in the 10.7-12.7 GHz, 14.0-14.5 GHz, 17.8-18.6 GHz, 18.8-19.3 GHz, 27.5-28.35 GHz, 28.35-29.1 GHz, and 29.5-30.0 GHz Bands*, Public Notice, 31 FCC Red 7666 (IB-SD 2016).

⁶ *Id.* at 7667.

⁷ *OneWeb Grant* at 5367, para. 3.

⁸ *OneWeb Grant*.

⁹ *See id.* at 5377, para. 23k; 47 CFR § 25.261(b)-(d).

¹⁰ *Cut-Off Established for Additional NGSO FSS Applications or Petitions for Operations in the 10.7-12.7 GHz, 12.75-13.25 GHz, 13.8-14.5 GHz, 17.7-18.6 GHz, 18.8-20.2 GHz, and 27.5-30 GHz Bands*, Public Notice, DA 20-325 (IB-SD 2020).

¹¹ *Id.* at 2.

¹² Modification Petition.

¹³ *Id.*, IBFS File No. SAT-APL-20210112-00007, Legal Narrative at 5.

¹⁴ *Id.*

¹⁵ *See id.*, IBFS File No. SAT-MPL-20200526-00062, Legal Narrative at 11-14.

¹⁶ *Id.*, IBFS File No. SAT-MPL-20200526-00062, Legal Narrative at 10.

¹⁷ *Id.*, IBFS File No. SAT-APL-20210112-00007, Legal Narrative at 5.

considered with other NGSO FSS systems filed in the second processing round.¹⁸ In addition to the phased deployments described, OneWeb states in the Modification Petition that iterations of satellites may be augmented by optical inter-satellite links.¹⁹

8. The Modification Petition was placed on public notice on March 18, 2022.²⁰ Comments were submitted by Viasat, Inc. (Viasat), SES Americom, Inc. and O3b Limited (together, SES), and Kuiper Systems LLC (Kuiper).²¹ The National Telecommunications and Information Administration also filed a letter on behalf of the National Aeronautics and Space Administration (NASA) and the National Science Foundation (NSF).²² OneWeb responded to the comments and letter.²³ ViaSat and Kuiper replied to OneWeb's response.²⁴

9. In July 2022, OneWeb requested an expedited, partial grant of the Modification Petition.²⁵ OneWeb states that satellites to be operated in orbital planes 15 and 20 have been launched and are currently being raised into their final configurations.²⁶ OneWeb seeks partial grant of the Modification Petition to allow it to access the U.S. market using up to 49 satellites in each of these planes, instead of the previously approved 40 satellites per plane, as necessary to ensure the on-orbit satellites may begin testing and providing service in the United States as soon as they have reached their final orbital positions.²⁷ On September 14, 2022, OneWeb filed a letter clarifying that the satellites compromising the request for partial grant do not have inter-satellite link capability and stating that OneWeb understands that any Commission action regarding its use of inter-satellite links will be taken at a later date and separately from the request for partial grant with respect to the satellites in two orbital planes.²⁸

10. *National Security, Law Enforcement, Foreign Policy and Trade Policy Review.* On

¹⁸ See *id.*, IBFS File No. SAT-MPL-20200526-00062, Legal Narrative at 14-15; IBFS File No. SAT-APL-20210112-00007, Legal Narrative at 5-7.

¹⁹ *Id.*, IBFS File No. SAT-MPL-20200526-00062, Technical Narrative at 8; Letter from Brian Weimer, Counsel to WorldVu Satellites Limited, to Karl A. Kensinger, Chief, Satellite Division, International Bureau, FCC, at 3 (filed Mar. 7, 2022).

²⁰ *Space Station Applications Accepted for Filing*, Public Notice, Report No. SAT-01618 (IB-SD 2022) (*Public Notice*).

²¹ Comments of Viasat, Inc. (filed Apr. 18, 2022); Comments of SES Americom, Inc. and O3b Limited (filed Apr. 18, 2022); Comments of Kuiper Systems LLC (filed Apr. 18, 2022). In addition, Space Exploration Holdings, LLC filed, and later withdrew, comments and a petition to deny in part. Comments and Petition to Deny in Part of Space Exploration Holdings, LLC (filed Apr. 18, 2022); Letter from David Goldman, Director, Satellite Policy, Space Exploration Technologies Corp. and Kimberly Baum, VP, Spectrum Engineering & Strategy, WorldVu Satellites Limited to Marlene H. Dortch, Secretary, FCC (filed July 21, 2022).

²² Letter from Milton Brown, Chief Counsel (Acting), United States Department of Commerce, National Telecommunications and Information Administration, to Marlene H. Dortch, Secretary, FCC (filed Apr. 22, 2022) (NASA/NSF Letter).

²³ Consolidated Response to Comments of OneWeb (filed May 3, 2022); Letter from Brian D. Weimer, Sheppard, Mullin, Richter & Hampton LLC, to Marlene H. Dortch, Secretary, FCC (filed May 4, 2022).

²⁴ Reply of Viasat, Inc. (filed May 13, 2022); Reply of Kuiper Systems LLC (filed May 13, 2022).

²⁵ Letter from Blake Wiles, Market Access Manager, North America, OneWeb, to Marlene H. Dortch, Secretary, FCC (filed July 28, 2022).

²⁶ *Id.* at 1.

²⁷ *Id.* at 1-2.

²⁸ Letter from Douglas Svor, Sheppard, Mullin, Richter & Hampton LLP, counsel to WorldVu Satellites Limited, to Marlene H. Dortch, Secretary, FCC (filed Sept. 14, 2022).

March 18, 2022, the Modification Petition was referred to the relevant Executive Branch agencies for their views on any national security, law enforcement, foreign policy, or trade policy.²⁹ On March 25, 2022, the Committee for the Assessment of Foreign Participation in the United States Telecommunications Services Sector (Committee) notified the Commission that it was reviewing the Modification Petition for any national security and law enforcement concerns that may be raised by foreign participation in the United States telecommunications services sector and requested that the Commission defer action on the Modification Petition.³⁰ On September 16, 2022, following the clarification by OneWeb that the satellites comprising the request for partial grant do not have inter-satellite link capability, the Satellite Division modified the referral to the relevant Executive Branch agencies to exclude the space stations involved in the request for partial grant because they do not raise the concern that was the basis for the referral.

III. DISCUSSION

11. After review of the record, we conclude that partial grant of the Modification Petition will serve the public interest.³¹ Our public interest analysis considers the effect of the proposed modification on competition in the United States, as well as issues of spectrum availability, eligibility requirements and operating requirements, and national security, law enforcement, foreign policy, and trade.³²

12. This analysis is relatively straightforward with respect to OneWeb's request for an expedited, partial grant. The Commission has already approved OneWeb to provide service in the United States using 720 satellites configured in 18 orbital planes with 40 satellites per plane. Modifying this grant to reflect OneWeb's operations with 49 satellites per plane in two of those orbital planes, without exceeding the total number of previously-approved satellites or changing their operational altitude or other characteristics, will have no material impact on competition in the United States or spectrum availability, and offers no reason to reconsider OneWeb's eligibility qualifications. Below, we briefly discuss OneWeb's operating requirements in the context of issues raised by commenters. We defer consideration of those issues to a future action on the broader Modification Petition. We also explain why a grant in part will have no impact on the ongoing review of any national security, law enforcement, foreign policy, and trade considerations with regard to the Modification Petition.

13. *Processing Round Status.* The International Bureau has approved modifications to NGSO systems, without changing their status in a particular processing round, when the modifications did not present significant interference problems.³³ We have no difficulty concluding that this standard is met by OneWeb's request to operate 49 satellites per plane, instead of 40 satellites per plane, in 2 of the 18 currently approved orbital planes for its constellation. This change reflects a minor adjustment in the OneWeb system, and the change in operations with deployment of additional satellites in those planes will have no significant effect on the interference environment. Indeed, one commenter explicitly recognizes that the proposed phase 1 modifications generally would not present significant interference

²⁹ *Public Notice.*

³⁰ Letter from Megan Fluckiger, Attorney Advisor, Foreign Investment Review Section, National Security Division, U.S. Department of Justice, to Marlene H. Dortch, Secretary, FCC (filed Mar. 25, 2022).

³¹ *Amendment of the Commission's Regulatory Policies to Allow Non-U.S. Licensed Satellites to Provide Domestic and International Service in the United States*, Report and Order, 12 FCC Rcd 24094, 24106, para. 29 (1997).

³² *Id.*

³³ See *Space Exploration Holdings, LLC, Request for Modification of the Authorization for the SpaceX NGSO Satellite System*, Order and Authorization and Order on Reconsideration, 36 FCC Rcd 7995, para. 18 (2021).

problems.³⁴ No commenter argues that phase 1 changes, or any part of them, would present significant interference problems. Accordingly, we conclude that we may grant the proposed modification for an additional nine satellites to be operated in each of planes 15 and 20 within OneWeb's already approved 720-satellite constellation without alteration of the NGSO FSS spectrum sharing status of the constellation.

14. *Operational Issues and Comments.* Commenters raise broader issues regarding the Modification Petition which, for the reasons given below, we conclude are unnecessary to address in this order to grant modified market access to OneWeb reflecting its deployment configuration in two orbital planes.

15. Viasat raises orbital debris and spectrum sharing concerns related specifically to OneWeb's proposed phase 2 constellation expansion, which we will address when we act upon OneWeb's phase 2 request.³⁵ Similarly, the orbital debris and other issues raised by NASA are appropriately considered in the context of OneWeb's proposed phase 2 expansion, rather than the minor reconfiguration of its approved satellites addressed in this order.³⁶ The issues raised by NASA focus on the potential effect on the space environment of the enlarged OneWeb system, numbering 6,372 satellites.³⁷ For example, NASA notes the projected increase in transiting and deorbiting satellites as phase 1 satellites are decommissioned and phase 2 satellites are launched.³⁸ The limited modification granted here will not significantly alter the characteristics of the system from an orbital debris mitigation perspective. NASA's comments regarding potential impacts to optical astronomy also generally concern the phase 2 of deployment.³⁹

16. Kuiper's comments focus on the differing, and related, regulatory treatments of OneWeb's proposed phase 1 and phase 2 satellite operations.⁴⁰ Kuiper requests that the Commission clarify the processing round statuses of OneWeb's phase 1 and phase 2 satellites and whether they will be subject to separate bond and milestone requirements.⁴¹ Kuiper also raises arguments it has made in a pending rulemaking proceeding regarding NGSO FSS spectrum sharing, asking that we sunset interference protections for phase 1 operations and require OneWeb to share certain operational information with other NGSO FSS system operators.⁴² As noted above, partial grant of the Modification Petition to allow OneWeb access to the U.S. market with 49 satellites in two of its approved orbital planes is a minor reconfiguration that will not present significant interference problems; therefore, it will not affect the sharing status of these operations in the first processing round. We do not address OneWeb's phase 2 proposal or the related phase 2 bond and milestone issues. Further, Kuiper's rulemaking-related arguments can be adequately addressed in the context of the ongoing rulemaking proceeding or in connection with a full disposition of the OneWeb's modification request, and our action here is without

³⁴ Kuiper Comments at 3 (“OneWeb’s phased approach separates the segment of the modification that would present significant interference problems, the addition of thousands of satellites (“Phase 2”), from the segment that would not present such problems, the removal of four satellites from and orbital shifting of its already-authorized constellation (“Phase 1”).”).

³⁵ ViaSat Comments; ViaSat Reply.

³⁶ See NASA/NSF Letter. The National Science Foundation “shares the general concerns of NASA, regulators, and satellite operators with respect to orbital debris and congestion.” *Id.*

³⁷ See *id.*

³⁸ *Id.* at 2.

³⁹ *Id.* at 4-5.

⁴⁰ Kuiper Comments; Kuiper Reply.

⁴¹ See Kuiper Comments at 4-6, 9-10.

⁴² Kuiper Comments at 7-12.

prejudice to disposition of those arguments. OneWeb's market access grant remains subject to the outcome of the rulemaking proceeding.

17. Kuiper and SES also seek conditions on OneWeb's market access related to its compliance with Equivalent Power Flux Density (EPFD) limits.⁴³ While we note that OneWeb has reaffirmed that both its phase 1 and phase 2 deployments will comply with the single entry EPFD limits in Article 22 of the ITU Radio Regulations; has provided EPFD analyses for its phase 1 and phase 2 deployments; and has offered to provide EPFD data files to commenters,⁴⁴ this issue is unlikely to be materially affected by the minor reconfiguration requested for immediate action and is most appropriately considered in a future decision on the broader Modification Petition.

18. *National Security, Law Enforcement, Foreign Policy and Trade Policy Issues.* The operations proposed in OneWeb's request for partial grant do not involve any satellites with inter-satellite link capability, and these operations have been excluded from the referral made to the relevant Executive Branch agencies. Further, there is no record evidence of any national security, law enforcement, foreign policy, or trade policy issues involved with the modified orbital architecture in two orbital planes sought in the request for partial grant. We conclude there are no such issues involved in the request for partial grant.

19. The remaining aspects of the Modification Petition are currently under review by the Committee for their views on any national security, law enforcement, foreign policy, or trade policy concerns. The Committee has asked that we defer action on the Modification Petition referred to it pending completion of its review. Accordingly, we defer action on all aspects of the Modification petition that are referred to the Committee and are currently under its review.

IV. CONCLUSION AND ORDERING CLAUSES

20. We conclude that grant in part of the Modification Petition will serve the public interest by enabling OneWeb to begin testing and providing service with satellites in a revised orbital configuration as soon as they have been placed into their final orbital positions.

21. Accordingly, IT IS ORDERED, that the Petition for Declaratory Ruling, as amended, filed by WorldVu Satellites Limited, d/b/a OneWeb, IS GRANTED IN PART and DEFERRED IN PART as described above, pursuant to section 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. § 303(r), and section 25.137(c), (e), and (f) of the Federal Communication Commission's rules, 47 CFR § 25.137(c), (e), (f).

22. IT IS FURTHER ORDERED that the conditions of OneWeb's grant of U.S. market access are modified to reflect that OneWeb may operate up to 49 satellites in each of the orbital planes 15 and 20, as identified in the Schedule S submitted in IBFS File No. SAT-MPL-20200526-00062.

⁴³ Kuiper comments at 10 n.28; SES Comments at 3.

⁴⁴ OneWeb Response at 24, Attach. B.

23. IT IS FURTHER ORDERED that, except as provided in the preceding paragraph, OneWeb must continue to comply with all of the terms and conditions of its original U.S. market access grant, *WorldVu Satellites Limited, Petition for a Declaratory Ruling Granting Access to the U.S. Market for the OneWeb NGSO FSS System*, Order and Declaratory Ruling, 32 FCC Rcd 5366 (2017).

FEDERAL COMMUNICATIONS COMMISSION

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