

August 23, 2019

BY ELECTRONIC FILING

Marlene H. Dortch
Secretary
Federal Communications Commission
445 Twelfth Street, S.W.
Washington, DC 20554

Re: *WorldVu Satellites Limited, IBFS File Nos. SES-LIC-20180604-01028,
SES-LIC-20180727-02075, and SES-LIC-20180727-02076*

Dear Ms. Dortch:

WorldVu Satellites Limited (“OneWeb”) has filed the above referenced earth station applications seeking authority to provide Ka-band gateway connectivity to OneWeb’s non-geostationary orbit (“NGSO”) satellite system from sites in Alaska, Florida, and Connecticut, respectively. In each application, OneWeb proposes to operate its earth station at minimum elevation angles below the 15-degree minimum previously provided to the Commission in connection with OneWeb’s market access application.¹

Attached hereto are comments filed by Space Exploration Holdings, LLC (“SpaceX”) on another Ka-band gateway application in which OneWeb proposed a similar departure from the previously submitted minimum elevation angle. The concerns raised in that filing are equally applicable to these applications. Accordingly, for the reasons stated in those comments, the Commission must require OneWeb to supplement the record with analyses of operations down to its newly-proposed minimum elevation angles to show whether it can still comply with Commission requirements and that this proposed change will not materially alter the currently authorized interference environment with other terrestrial, geostationary orbit (“GSO”), or NGSO satellite operators.

Sincerely,



William M. Wiltshire
Counsel to SpaceX

Attachment

cc: Brian Weimer
Mariah Shuman

¹ See Petition for Declaratory Ruling, Technical Narrative, Annex 2 at A2-3, A2-5, and A2-10, IBFS File No. SAT-LOI-20160428-00041 (Apr. 28, 2016).

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

Application of)	
)	
WORLDVU SATELLITES LIMITED)	IBFS File No. SES-LIC-20190422-00538
)	
For Gateway Earth Station Authorization)	
)	

COMMENTS OF SPACE EXPLORATION HOLDINGS, LLC

Space Exploration Holdings, LLC (“SpaceX”) files these comments in response to the above referenced application of WorldVu Satellites Limited (“OneWeb”) for authority to operate twenty technically identical 3.5-meter antennas in Santa Paula, CA to provide Ka-band gateway connectivity to OneWeb’s non-geostationary orbit (“NGSO”) satellite system.¹ SpaceX focuses here on a single aspect of OneWeb’s application that is a cause for concern – its intention to operate with a minimum elevation angle as low as five degrees.² As discussed below, such operations are inconsistent with the parameters OneWeb has previously provided to the Commission, and thus were not included in past analyses of the potential impact of OneWeb’s NGSO system on other spectrum users. Accordingly, the Commission must require OneWeb to supplement the record with analyses of operations down to a five-degree minimum elevation angle to show whether it can still comply with Commission requirements and that this proposed change will not materially alter the currently authorized interference environment with other terrestrial, geostationary orbit (“GSO”), or NGSO satellite operators.

¹ See Narrative Statement, IBFS File No. SES-LIC-20190422-00538 (Apr. 22, 2019) (“OneWeb Application”).

² See, e.g., *id.* at 8.

BACKGROUND

In 2016, OneWeb sought U.S. market access for its proposed NGSO system of 720 low-Earth orbit (“LEO”) satellites operating in Ku- and Ka-band spectrum,³ initiating an NGSO processing round.⁴ In 2017, the Commission granted OneWeb’s market access request.⁵ Since that time, the Commission has granted several additional applications from the NGSO processing round, including a license granted to SpaceX.⁶

In its Market Access Petition, OneWeb submitted several technical analyses to demonstrate its compliance with certain operational limits imposed by the Commission to protect other spectrum users. Of most relevance to this proceeding, OneWeb provided analyses of its Ka-band gateway operations to show compliance with the applicable equivalent power flux-density (“EPFD”) limits adopted to protect GSO satellites systems.⁷ Consistent with the operational parameters submitted by OneWeb, those analyses specifically assumed a minimum earth station elevation angle of 15 degrees.⁸ But the Ka-band gateway earth station that OneWeb currently proposes for Santa Paula, CA would operate at elevation angles as low as five degrees.⁹

³ See Petition for Declaratory Ruling, IBFS File No. SAT-LOI-20160428-00041 (Apr. 28, 2016) (“OneWeb Market Access Petition”).

⁴ See Public Notice, “OneWeb Petition Accepted for Filing; 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,” 31 FCC Rcd. 7666 (IB 2016).

⁵ See *WorldVu Satellites Limited*, 32 FCC Rcd. 5366 (2017) (“*OneWeb Authorization*”).

⁶ See *Space Exploration Holdings, LLC*, 33 FCC Rcd. 3391 (2018). The Commission subsequently approved a modification of that license. See *Space Exploration Holdings, LLC*, 34 FCC Rcd. 2526 (IB 2019).

⁷ See OneWeb Market Access Petition, Technical Narrative at Annex 2.

⁸ See, e.g., *id.* at A2-3, A2-5, and A2-10.

⁹ See OneWeb Application at 8, 17. SpaceX notes that OneWeb has filed applications for three other Ka-band gateway earth stations that would operate at elevation angles lower than 15 degrees. See IBFS File Nos. SES-LIC-20180604-01082, SES-LIC-20180727-02075 and -02076. Accordingly, SpaceX is filing a copy of these comments to note its concerns in those other application proceedings as well.

In its current earth station application, OneWeb has not submitted any updated EPFD analysis to account for the much lower minimum elevation angle. Nor has it presented any demonstration that this modification will not result in an increase in interference to other NGSO systems that also operate in the Ka-band.

DISCUSSION

OneWeb proposed an NGSO satellite system that included Ka-band gateway earth stations operating at a minimum elevation angle of 15 degrees. In making its market access determination, the Commission evaluated technical compatibility studies based on that parameter. Yet now, OneWeb seeks authority to operate at elevation angles as low as 5 degrees. Doing so will enable its earth stations to communicate with more satellites in the OneWeb constellation from each gateway site – but will also potentially bring significantly more NGSO and GSO satellites into its field of operations.

OneWeb has not submitted any technical analysis to the Commission showing that it can comply with the applicable EPFD limits when operating its gateways down to 5 degrees elevation. Accordingly, the Commission must require OneWeb to submit an EPFD analysis that takes this proposed operational change into consideration and shows that its NGSO system can still satisfy the applicable limits when operating at such a low elevation angle. By requiring this showing, the Commission will be able to ensure that the operations OneWeb proposes in this application are consistent with its obligations to protect GSO satellites in the band.

But GSO systems are not the only ones potentially affected by the low-angle operations OneWeb proposes here. Other Ka-band NGSO systems also face the prospect of additional in-line interference events arising in the areas between 5 and 15 degrees of elevation from OneWeb's gateway site. Although proposed as part of an earth station application, operating at a much lower

angle than described in the space station application granted by the Commission would implicitly change the parameters of that authorization as well. The Commission should allow such a de facto modification only if OneWeb can demonstrate that the proposed change does not present any significant interference problems and is otherwise consistent with Commission policies.¹⁰ Such a demonstration can ensure that the Commission does not unintentionally authorize OneWeb to operate in a manner that would compromise the services available from other NGSO systems and ultimately harm service and competition for consumers.

CONCLUSION

In this proceeding, OneWeb proposes to operate in a manner not contemplated in its NGSO space station application. As a result, OneWeb has never presented to the Commission the analyses necessary to ensure that its operations will not harm other spectrum users, or at least that the proposed reduction in minimum elevation angle will not result in more interference than what is currently authorized. The Commission must require OneWeb to submit such technical analyses for the record and provide an opportunity for all interested parties to evaluate them before it can act on this application.

¹⁰ See *Teledesic LLC*, 14 FCC Rcd. 2261, ¶ 5 (IB 1999).

Respectfully submitted,

SPACE EXPLORATION HOLDINGS, LLC

By: /s/ Patricia Cooper

Patricia Cooper
Vice President of Satellite Government
Affairs
David Goldman
Director of Satellite Policy

William M. Wiltshire
Paul Caritj
HARRIS, WILTSHIRE & GRANNIS LLP
1919 M Street, N.W.
Suite 800
Washington, DC 20036
202-730-1300 tel
202-730-1301 fax

Counsel to SpaceX

SPACE EXPLORATION TECHNOLOGIES CORP.
1155 F Street, NW
Suite 475
Washington, DC 20004
202-649-2700 tel
202-649-2701 fax

August 23, 2019

CERTIFICATE OF SERVICE

I hereby certify that, on this 23rd day of August, 2019, a copy of the foregoing pleading was served via First Class mail upon:

Brian Weimer
Sheppard Mullin Richter & Hampton LLP
2099 Pennsylvania Avenue, N.W.
Suite 100
Washington, DC 20006

Mariah Shuman
Head of Regulatory Affairs, Americas
WorldVu Satellites Limited
1785 Greensboro Station Place
Tower 3, Floor 8
McLean, VA 22102

/s/ Samuel D. Sperling
Samuel D. Sperling