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

In the Matter of	)	
	)	
WorldVu Satellites Limited d/b/a OneWeb	)	IBFS File No. SAT-LOI-
Petition for Declaratory Ruling Granting	)	20160428-00041
Access to the U.S. Market for the OneWeb	)	
System	)	

COMMENTS OF VIASAT, INC.

ViaSat, Inc. ("ViaSat") submits these comments on the above-referenced Petition

for Declaratory Ruling filed by WorldVu Satellites Limited d/b/a OneWeb ("OneWeb"), which

seeks U.S. market access for a non-geostationary-orbit ("NGSO") satellite constellation that

would use Ku-band and Ka-band frequencies ("Petition"). The Commission is treating the

Petition as the lead application in an NGSO-like satellite processing round for which other

applications are not due until November 15, 2016.[1]

OneWeb seeks waivers of certain Commission rules, including rules related to: (i)

band splitting among NGSO applicants and (ii) protecting geostationary-orbit ("GSO") satellites

from NGSO interference.[2] As OneWeb itself recognizes, consideration of its waiver requests is

based in part on public interest considerations related to the other NGSO applications expected to

be filed in this processing round.[3] Thus, OneWeb's waiver requests cannot be considered in

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[1]   *See Satellite Policy Branch Information; 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, DA 16-804 (July 15, 2016) ("Public Notice").

[2]   Petition at 16-25.

[3]   *Id.* at 17-18.

isolation. ViaSat therefore requests that the Commission defer consideration of those waiver

requests, and the Petition more broadly, until interested parties have the opportunity to evaluate

in full the operating environment that would result from all of the NGSO systems proposed by

the November 15, 2016 close of the processing round.

BACKGROUND

ViaSat. ViaSat is a leading provider of communications solutions to U.S.

businesses, consumers and government users across a wide range of technologies, including

satellite. ViaSat has made revolutionary advances in the provision of satellite broadband

services based on sophisticated spectrum sharing techniques. Today, ViaSat provides broadband

service using GSO satellites operating in portions of the Ku and Ka bands that OneWeb proposes

to use in its NGSO network. Thus, ViaSat has a keen interest in how OneWeb and other NGSO

operators participating in the pending processing round propose (or will propose) to use such

spectrum and how they will protect current and future GSO operations, as required by

Commission and ITU rules.

OneWeb's Waiver Requests. OneWeb seeks waivers of certain NGSO rules and

requirements, including the following:

- Waiver of Section 25.157(e). OneWeb requests a waiver of the band-

  segmentation procedures set forth in Section 25.157(e), which generally allow an

  authorized NGSO system to use only a portion of available spectrum in order to

  ensure that other NGSO systems—including other systems proposed in the same

  processing round—are accommodated.[4] OneWeb suggests that Section 25.157(e)

  should be waived because OneWeb claims that rule is inconsistent with the

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[4]   47 C.F.R. § 25.157(e).

approach adopted in the *Ku-Band Sharing Order* (in which the Commission

allowed NGSO systems to access all available spectrum sought except during

certain technically defined "in-line" interference events).[5]

- Waiver of Section 25.146(a). OneWeb requests a waiver of Section 25.146(a),

  which requires an applicant to provide the source code for the software used to

  verify compliance with certain Commission and ITU technical limits critical for

  protecting GSO systems from interference (in particular, the interference that will

  be generated by all of the NGSO systems proposed in this processing round).[6]

  OneWeb is relying on commercially available software (*i.e.*, non-ITU-sourced)

  and claims that it is unable to make the source code available.[7]

DISCUSSION

As discussed below, consideration of OneWeb's waiver requests will require not

only an assessment of OneWeb's proposed system, but also a concurrent evaluation of the other

applications submitted in the NGSO processing round.

A.   Waiver of Section 25.157(e)

As to the requested waiver of the band-segmentation procedures set forth in

Section 25.157(e), OneWeb claims that "the public interest would be better served by allowing

OneWeb and other qualified applicants in the same processing round access to the entire

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[5]   *See* Petition at 17-18, *citing Establishment of Policies and Service Rules for the Non-Geostationary Satellite Orbit, Fixed Satellite Service in the Ku-Band*, Report and Order and Further Notice of Proposed Rulemaking, 17 FCC Rcd 7841, at 7850-58, ¶¶ 27-55 (2002) ("*Ku-Band Sharing Order*").

[6]   Petition at 21-23.

[7]   *Id.*

spectrum."[8] While that claim may (or may not) turn out to be true, it surely cannot be evaluated in isolation and without consideration of all of the other NGSO applications that may be filed in this processing round.

OneWeb suggests that Section 25.157(e) should be waived because OneWeb claims that rule is inconsistent with the *Ku-Band Sharing Order*, in which the Commission stated that the "ideal state of operation . . . is that all systems are free to operate in the entire available Ku-Band spectrum."[9] As OneWeb itself acknowledges, the band-segmentation provisions of Section 25.157(e) would come into play only where "*there is not enough spectrum available to accommodate all qualified applicants in a processing round*."[10] One critical question in applying the terms of Section 25.157(e) and the *Ku-Band Sharing Order*, therefore, is the extent to which the available spectrum can accommodate all NGSO systems proposed in this processing round without band segmentation. Answering that question requires understanding the technical parameters of the other NGSO systems proposed in this processing round, so that the frequency and duration of in-line interference events, and the impact of those events on each of the proposed systems, can be evaluated.

Notably, analyzing the factual assumptions underpinning OneWeb's waiver request also would allow an evaluation of the continuing validity of in-line-interference-event assumptions and parameters described in the *Ku-Band Sharing Order* that now are more than a decade old,[11] and which: (i) were based on NGSO systems proposed in the late 1990s;[12] (ii) may

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[8]   *Id.* at 20.

[9]   *Ku-Band Sharing Order*, 17 FCC Rcd at 7852-53, ¶ 39.

[10]   Petition at 17 (emphasis added).

[11]   *Id.* at 17-18.

no longer be appropriate for the NGSO systems being developed in 2016; and (iii) may be inconsistent with the system parameters for which other applicants may wish to seek waivers in this processing round.

For these reasons, among others, the requisite analysis cannot be conducted until the close of the relevant processing round. Moreover, without knowing how many other NGSO systems may be proposed during the processing round, the Commission cannot evaluate whether it must take steps to preserve the spectrum for *future* applicants, consistent with Section 25.157(e)(2).[13]

Significantly, the cases OneWeb cites did not involve a waiver of Section 25.157(e) in the midst of a processing round, but rather involved a waiver of the processing round in its entirety because the Commission decided that the underlying application in each case was "GSO-like" and thus could be processed under the Commission's "first-come" procedures instead.[14] Notably, OneWeb has *not* sought waiver of the Commission's processing round procedures and does not claim that its network is "GSO-like." To the contrary, the Commission already has decided to hold a processing round, and has found that it would serve the public

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[12]   *See, e.g., Ku-Band Sharing Order*, 17 FCC Rcd at 7842, ¶ 4 (basing rules on applications filed in 1998 processing round for NGSO FSS system applications in portions of the Ku band); *The Establishment of Policies and Service Rules for the Non-Geostationary Satellite Orbit, Fixed Satellite Service in the Ka-Band*, Report and Order, 18 FCC Rcd 13338, at 13340, ¶ 7 (2003) (basing rules on applications filed in 1997 processing round for NGSO FSS system applications in the Ka band).

[13]   47 C.F.R. § 25.157(e)(2).

[14]   *See Northrop Grumman Space & Mission Systems Corp.*, 24 FCC Rcd 2330, at ¶ 30 (2009) (noting that Northrop Grumman had "first-in-line" status, obviating the need to consider the potential for interference into other systems); *Space Imaging, LLC*, 20 FCC Rcd 11964, at ¶¶10-11 (2005) (waiving processing round procedures only); *DigitalGlobe, Inc.*, DA 04-2640 (Sep. 30, 2005) (waiving processing round procedures only), each cited in Petition at 18 n.59.

interest to consider other NGSO applications (including a pending application by O3b) alongside

OneWeb's Petition.[15] Moreover, grant of OneWeb's requested waiver could affect consideration

of the applications of other NGSO systems proposed in the processing round. Correspondingly,

the proposals for such other NGSO systems could be relevant to the Commission's assessment of

OneWeb's waiver request. Accordingly, it is appropriate—and necessary—to defer

consideration of that request.

B.   Waiver of Section 25.146(a)

As to the requested waiver of the requirement to submit source code under

Section 25.146(a), OneWeb claims that access to that source code "is not necessary for One Web

to demonstrate, and for the Commission to conclude, that the OneWeb system will not exceed

the applicable EPFD limits . . . ."[16] In OneWeb's view, access to the *executable program* is

sufficient to allow the Commission to check OneWeb's analysis. OneWeb's position ignores

that the Commission has specifically found that access to the *source code* is necessary to verify

that the executable program is functioning properly and in a manner consistent with the

Commission rules, policies, and standards—*e.g.,* by utilizing algorithms reflective of

Commission-approved methodologies. Notably, the Commission has recognized that "potential

inconsistencies" could result where different software packages function differently;[17] the

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[15]   *See generally* Public Notice; *see also id.* at n.5 (O3b's petition for declaratory ruling will
          be considered in this processing round).

[16]   Petition at 23.

[17]   *See Amendment 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*, Third Memorandum Opinion and Order, 18 FCC Rcd 2307, at 2311-
          12, ¶ 18 (2003) ("Providing the source code and the compiled executable program will
          allow the Commission to ensure that the validation EPFD demonstrated complies with
          our rules . . .").

Commission and interested parties cannot control for these inconsistencies without reviewing the underlying source code. For this reason, for the Commission to consider *OneWeb's* waiver request, it is critical to understand what software packages are being used by other applicants in this processing round—and to review the source code for those software packages so as to ascertain, to the extent possible, the likely nature of any inconsistencies.

Similarly, in order to evaluate whether GSO networks are fully protected, the Commission will need to evaluate the aggregate impact into GSO networks of all NGSO systems in the processing round.[18] But it will be difficult, if not impossible, to effectively aggregate that impact across different systems without understanding the differences in the software upon which the underlying applications rely. Indeed, the requisite assessment will likely require an examination of the source code for the software used by OneWeb and by each of the other NGSO applicants in the processing round, or the identification of a similar mechanism for comparing the underlying assumptions—yet another reason why consideration of OneWeb's Petition and the waiver requests set forth therein should not proceed further until after the close of the processing round.

In addition, the reasonableness of OneWeb's waiver request cannot be assessed fully until the close of the processing round. OneWeb maintains that there is good cause for its requested waiver because the source code for the software upon which it relies is proprietary to a third party and therefore cannot be shared with the Commission.[19] Although ViaSat is skeptical of this justification—no one compelled OneWeb to use that third-party software, and no one

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[18]   *See, e.g.*, Letter from Jose P. Albuquerque, FCC, to Kalpak S. Gude, OneWeb, Re: WorldVu Satellites Limited, d/b/a OneWeb, IBFS File No. SAT-LOI-20160428-00041, at 2 (June 10, 2016).

[19]   Petition at 22.

precluded OneWeb from obtaining the necessary consent to submit the underlying source code to the Commission prior to filing its Petition—the reasonableness of OneWeb's actions ultimately should be evaluated in light of whether other applicants are able to effectively utilize software the source code for which can be shared with the Commission as required by Commission rules, or whether a similar mechanism exists that achieves the same purpose as access to the source code. ViaSat is aware of ITU software under development for *single entry* (not aggregate[20]) EPFD compliance, but the software has not yet been finalized and may not address the requirements that the Commission has established.[21]

CONCLUSION

A full and complete analysis of the public interest considerations relevant to OneWeb's waiver requests requires concurrent consideration of each other NGSO application that may be filed in this processing round, particularly given the complexity of the shared spectrum environment inherent in the operations of multiple NGSO and GSO systems in the same spectrum. ViaSat therefore urges the Commission to defer further consideration of the OneWeb waiver requests (and its underlying Petition) and afford interested parties the opportunity to provide comment after the close of the processing round. To the extent necessary, ViaSat respectfully requests that the Commission waive the comment filing deadlines established in the July 15, 2016 public notice in this proceeding to allow such further comments to be considered.

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[20]   The aggregate in this case is the total EPFD of multiple operating NGSO systems.

[21]   *See* International Telecommunication Union, Radiocommunication Bureau, ITU-BR Circular CR/405, *Equivalent power flux-density (EPFD) validation software (Resolution 85 (WRC-03))* (published June 3, 2016).

Respectfully submitted,

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CERTIFICATE OF SERVICE

I, Kayla Ernst, hereby certify that on this 15th day of August, 2016, I served a true copy of the foregoing Comments of ViaSat, Inc. via first-class mail upon the following:

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