
OneWeb

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Exhibit A: Narrative Statement

WorldVu Satellites Limited (“OneWeb”) seeks authority from the Federal Communications Commission (the “Commission”) to operate up to 200,000 fixed single parabolic user terminals (“User Terminals”) under a blanket license to communicate with the OneWeb non-geostationary orbit (“NGSO”), fixed-satellite service (“FSS”) system (the “OneWeb System”). In accordance with the terms of OneWeb’s grant of U.S. market access, these User Terminals will operate in the 10.7-12.7 GHz band (downlink) and the 14.0-14.5 GHz band (uplink). Grant of the instant application will serve the public interest, convenience, and necessity. For the reasons set forth herein, OneWeb respectfully requests the expeditious grant of the instant application.

I. Introduction and Overview of Proposed Operations

The OneWeb System is authorized to access the U.S. market in the 10.7-12.7 GHz and 14.0-14.5 GHz frequencies.¹ As of the date of this filing, OneWeb has been granted four gateway earth station licenses in the United States,² and has successfully launched 428 satellites in connection with this grant of market access.³

¹ See *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) (“OneWeb Market Access Grant”). OneWeb also incorporates by reference the OneWeb Market Access grant to demonstrate compliance with the requirements of Section 25.137 of the Commission’s rules for earth station applicants proposing to communicate with non-U.S.-licensed space stations. In addition, OneWeb certifies that it has complied with all applicable Commission requirements for non-U.S.-licensed systems to operate in the United States. See 47 C.F.R. § 25.137(a), (d).

² See *Satellite Communications Services, Actions Taken*, Public Notice, Report No. SES-02408 at 2-3 (rel. Oct. 13, 2021); *Satellite Communications Services, Actions Taken*, Public Notice, Report No. SES-02296 at 4-5 (rel. Aug. 26, 2020); *Satellite Communications Services, Actions Taken*, Public Notice, Report No. SES02217 at 3-4 (rel. Nov. 13, 2019).

³ See *OneWeb Confirms Successful Launch of 34 Satellites, Delivering Ongoing Momentum at the Start of 2022*, ONEWEB (Feb. 10, 2022) <https://oneweb.net/resources/oneweb-confirms-successful-launch-34-satellites-delivering-ongoing-momentum-start-2022>.

Through this application, OneWeb seeks to bolster its connectivity offerings by adding a single parabolic user terminal to those authorized by the Commission.⁴ Authorization for ubiquitous user terminal deployment of this kind will further enable the most efficient provision of OneWeb’s high-speed, low-latency satellite connectivity service to the U.S. consumer. Such authorization is essential to OneWeb’s efforts to expedite the deployment of its satellite-based connectivity service to those U.S. consumers who currently have no or limited access to broadband due to the lack of terrestrial networks in rural and remote locations.

II. Compatibility with Existing Ku-band Allocations and Spectrum Sharing Regulations

The 10.7-12.7 and 14.0-14.5 GHz bands are allocated to the FSS on a primary or co-primary basis, and the Commission’s rules permit blanket licensing of NGSO FSS earth stations in these bands.⁵ OneWeb’s Market Access Grant permits OneWeb to access these frequencies subject to certain conditions.⁶ As a general matter, OneWeb will operate the User Terminals in a manner consistent with these current allocations and regulations concerning Ku-band earth stations. In particular, OneWeb certifies or already has certified it will comply with the following restrictions:

- Equivalent Power Flux-Density Requirements (“EPFD”). To protect geostationary satellite operations in these bands, OneWeb has already certified it will satisfy all applicable obligations under Article 22 and Resolution 76 of the International Telecommunication Union’s (“ITU”) Radio Regulations, currently

⁴ OneWeb currently holds two other user terminal blanket authorizations in the United States. *See Radio Station Authorization*, IBFS File No. SES-LIC-20190930-01237 (Apr. 29, 2021); *Radio Station Authorization*, IBFS File No. SES-LIC-20190930-01217 (Apr. 27, 2021).

⁵ *See* 47 C.F.R. § 2.106; *see also* 47 C.F.R. § 25.115(f)(2).

⁶ OneWeb Market Access Grant at ¶¶ 23(a)-(e); 24(a)-(b).

codified by reference in the Commission’s rules.⁷ As the Commission has noted, “[a]ny NGSO FSS system operating in compliance with these limits is considered as having fulfilled its obligation under Article 22 of the ITU Radio Regulations not to cause unacceptable interference to any GSO network.”⁸

- Power-Flux Density Requirements (“PFD”). OneWeb has certified it will satisfy all applicable obligations under Article 21 of the ITU Radio Regulations and the corresponding PFD limits set forth in Section 25.208 of the Commission’s rules in these bands.⁹
- Coordination with Radio Astronomy Service. OneWeb will also coordinate with the radio astronomy service and observatories, where applicable, prior to commencing operations.¹⁰

OneWeb will otherwise comply with the applicable conditions contained in the OneWeb Market Access Grant and the Commission’s Part 25 rules.¹¹

III. Grant of the Instant Application Will Serve the Public Interest

By granting OneWeb authority to operate these User Terminals in the United States, the Commission will strengthen the ability of the OneWeb system to provide next-generation connectivity service to U.S. consumers on a nationwide basis, including many unserved and

⁷ See *id.* at ¶ 23(b)-(e); see also 47 C.F.R. §§ 25.115(f)(1), 25.146(a)(2) (requiring NGSO FSS earth station applications to contain the required certification regarding EPFD compliance). To clarify the slight discrepancy between the relevant conditions on the OneWeb Market Access Grant and the Commission’s EPFD certification requirement, OneWeb respectfully submitted an EPFD and PFD certification letter earlier this year. See Letter from Brian D. Weimer, Counsel to WorldVu Satellites Limited, to Marlene H. Dortch, Secretary, FCC, IBFS File No. 20160428-00041 (Mar. 14, 2019) (“EPFD/PFD Certification Letter”).

⁸ See *Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and Related Matters*, Report and Order and Further Notice of Proposed Rulemaking, 32 FCC Rcd 7809, 7820 at ¶ 32 (2017) (“NGSO Order”).

⁹ See EPFD/PFD Certification Letter.

¹⁰ See 47 C.F.R. § 2.106, nn. US113, US131, US211, US342; see also OneWeb Market Access Grant at ¶ 24(a)-(b).

¹¹ See OneWeb Market Access Grant, ¶¶ 23-25. Additionally, OneWeb hereby certifies that it is planning to use a contention protocol, and such contention protocol usage will be reasonable. See 47 C.F.R. § 25.115(i).

underserved locations. As OneWeb has emphasized and the Commission has recognized, NGSO-provisioned connectivity will be a critical component of efforts to bridge the digital divide in the United States. OneWeb in particular will be able to provide innovative services and applications to markets that previously were not possible. The expeditious grant of the instant application will contribute to closing the digital divide and allow OneWeb to provide innovative connectivity where terrestrial providers cannot.

APPENDIX 1: RADIATION HAZARD REPORT

In accordance with OET Bulletin 65, this Radiation Hazard Report measured radiation exposure levels in seven zones for two cases—general population and occupational—at the closest point to the uncontrolled area of any testing location and measured at the lowest elevation angle of any testing location. The radiation levels calculated for each zone in Section I(B) and Section is derived from the respective calculations made in Section I(A). The results in Section I(C) for OneWeb’s 9 dB/K Single Parabolic antenna illustrate any radiation hazard that may exist for the general public and/or occupationally will be mitigated by a protective layer covering the antenna.

I. Intellian 9 dB/K Single Parabolic Antenna

A. Defined & Calculated Variables for OET Bulletin 65

Variables	Value	Unit	OET 65 Calculated Variables	Formula	Value	Unit
$D =$ <i>Aperture Diameter</i>	0.53	Meters	$\lambda =$ Wavelength	c/F	0.0210	Meters
$d =$ <i>Subreflector Diameter</i>	0.085	Meters	$P_I =$ Total Antenna Input Power	$P \cdot p$	0.91	Watts
$\eta =$ <i>Aperture Efficiency</i>	60%	Percentage	$A =$ Area of reflector	$\pi(D/2)^2$	0.22062	Meters ²
FCC <i>Designation</i>	Ku	Band	$a =$ area of sub-reflector	$\pi(d/2)^2$	0.00567	Meters ²
$F =$ <i>Frequency</i>	14250	MHz	$G =$ Antenna Gain	$G =$ $4\pi\eta A/\lambda^2$	3758.296658	Linear
$P =$ <i>Transmitter Power Watts</i>	0.91	Watts	Antenna Gain dB	$10\log_{10}(G)$	35.75	dBi
$p =$ <i>Number of Transmitters</i>	1	#	$R_{nf} =$ Near-Field Region	$R_{nf} =$ $D^2/4\lambda$	3.34	Meters
$R_{ua} =$ <i>Closest Point to Uncontrolled Area</i>	0.38	Meters	Transition Region	$>R_{nf} < R_{ff}$	3.34	>Meters
$R_{ua} =$ <i>Elevation angle at closest point</i>	37	Degrees			8.01	<Meters
						8.01
			$R_{ff} =$ Far-Field Region	$R_{ff} =$ $0.6D^2/\lambda$	6.04	Meters AGL

B. Radiation Levels in Each Zone

Radiation Analysis Zone		Formula	Level	Value	Exposure Limits Met	
					General Public	Occupational
					<1mW/cm ²	<5mW/cm ²
1	Power Sub-reflector	$4P_I/a$	64.147	mW/cm ²	No	No
2	Antenna Surface	$4P_I/A$	1.650	mW/cm ²	No	Yes
3	Main Reflector Ground	P_I/A	0.412	mW/cm ²	Yes	Yes
4	$S_{nf} =$ Near-Field Power Density	$4\eta(P_I/A)$	0.990	mW/cm ²	Yes	Yes
5	Transition Max Power Density	$S_{nf} \cdot R_{nf}/R_{nf}$	0.990	mW/cm ²	Yes	Yes
6	Far-Field Max Power Density	$P_I \cdot G/4\pi R^2$	0.424	mW/cm ²	Yes	Yes
7	Off-axis Near Field	$S_{nf}-20dB$	0.00990	mW/cm ²	Yes	Yes

C. Results

OneWeb's 9 dB/K Single Parabolic antenna creates no general population nor occupational radiation hazard. Zones 3 through 7 create no radiation hazard concerns because the radiation levels are below the acceptable exposure limits. Although Zone 1 (Power Sub-reflector) exceeds the acceptable general population and occupational radiation exposure limits and Zone 2 (Antenna Surface) exceeds the acceptable general population radiation exposure limits, there remains no radiation hazard concern because these zones are contained within a protective radome. Accordingly, there is no risk of radiation exposure beyond the acceptable limits.