
OneWeb

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ONEWEB MODIFICATION REQUEST

Pursuant to Section 25.117 of the Commission's rules,¹ WorldVu Satellites Limited ("OneWeb") respectfully requests authority from the Federal Communications Commission (the "Commission") to modify a single aspect of its blanket license to operate its fixed single parabolic user terminal.² OneWeb requests a slight increase in the Effective Isotropic Radiated Power ("EIRP") level, as detailed in the supporting Form 312 and updated Radiation Hazard Report. All other information remains the same as approved in the Single Parabolic License, and is hereby incorporated by reference.³ Authorization of this increased EIRP will serve the public interest by enabling an even more efficient OneWeb user terminal, providing stronger, more reliable connectivity for OneWeb users across the United States.

¹ 47 C.F.R. § 25.117.

² *WorldVu Satellites Limited*, Radio Station Authorization for Single Parabolic Terminal, SES-LIC-20220801-00883 (Dec. 19, 2022) ("*Single Parabolic License*").

³ See § 25.117(c); *Single Parabolic License*.

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 zones in Sections B below are derived from the respective calculations made in Section A. The results in Sections C illustrate any radiation hazard that may exist for the general public and/or occupationally.

I. Intellian OW50 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	$P_1 =$ Total Antenna Input Power	$P \cdot p$	1	Watts
$\eta =$ <i>Aperture Efficiency</i>	49%	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	$G =$ $4\pi\eta A/\lambda^2$	3088.067087	Linear
$P =$ <i>Transmitter Power Watts</i>	1.5	Watts	Antenna Gain dB	$10\log_{10}(G)$	34.90	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/cm²	<5mW/cm²
1	Power Sub-reflector	$4P_I/a$	104.263	mW/cm²	No	No
2	Antenna Surface	$4P_I/A$	2.682	mW/cm²	No	Yes
3	Main Reflector Ground	P_I/A	0.670	mW/cm²	Yes	Yes
4	$S_{nf} =$ Near-Field Power Density	$4\eta(P_I/A)$	1.322	mW/cm²	No	Yes
5	Transition Max Power Density	$S_{nf} \cdot R_{nf}/R_{nf}$	1.322	mW/cm²	No	Yes
6	Far-Field Max Power Density	$P_I \cdot G/4\pi R^2$	0.566	mW/cm²	Yes	Yes
7	Off-axis Near Field	S_{nf} -20dB	0.01322	mW/cm²	Yes	Yes

C. Results

OneWeb's OW50 Single Parabolic Antenna passes Zones 3, 6, and 7. 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. Occupational personnel will be informed through training and instruction manuals that maintenance on the antenna must be completed with the antenna powered off, and only powered back on when the radome is replaced. Where the antenna fails in Zones 4 and 5 for the general population, OneWeb notes that the general population will not usually have access to the antenna or where it is typically installed. In any event, OneWeb will ensure the following mitigation actions are in place:⁴

- Blue signage with the signal word "NOTICE" and appropriate exposure limit information
- Appropriate training for any occupational personnel with access to the controlled area

⁴ See *Proposed Changes in the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields*, Resolution of Notice of Inquiry, Second Report and Order, Notice of Proposed Rulemaking, and Memorandum Opinion Order, FCC 19-126 (Dec. 4, 2019).