

**September 2021**  
**KMRE-LP Channel 272L1**  
**Bellingham, Washington**  
**RF Exposure Study**

The power density calculations shown below were made using the techniques outlined in OET Bulletin No. 65. "Ground level" calculations in this report have been made at a reference height of 2 meters above ground to provide a worst-case estimate of exposure for persons standing on the ground in the vicinity of the tower. The equation shown below was used to calculate the ground level power density figures from each antenna.

$$S(\mu W / cm^2) = \frac{33.40981 \times AdjERP(Watts)}{D^2}$$

Where: *AdjERP(Watts)* is the maximum lobe effective radiated power times the element pattern factor times the array pattern factor.

*D* is the distance in meters from the center of radiation to the calculation point.

### **Ground Level Exposure**

Calculations of the power density produced by the KMRE-LP antenna system have been made using the appropriate element pattern for the OMB MP-1 antenna. The highest calculated ground level power density from KMRE-LP alone occurs at a distance of 10 meters from the base of the antenna support structure. At this point the power density is calculated to be 3.1  $\mu W/cm^2$ , which is 1.6% of 200  $\mu W/cm^2$  (the FCC standard for uncontrolled environments).

These calculations show that the maximum calculated power density produced at two meters above ground level by KMRE-LP alone is less than 5% of the applicable FCC exposure limit at all locations between 1 and 500 meters from the base of the antenna support structure. Section 1.1307 of the Commission's Rules exempts applications for new facilities or modifications to existing facilities from the requirement of preparing an environmental assessment when the calculated emissions from the applicant's proposed facility are predicted to be less than 5% of the applicable FCC exposure limit. Therefore, the proposed facility is in compliance with Section 1.1301 *et seq* and no further analysis of RF exposure at this site is required in this application.

## **Rooftop Level Exposure**

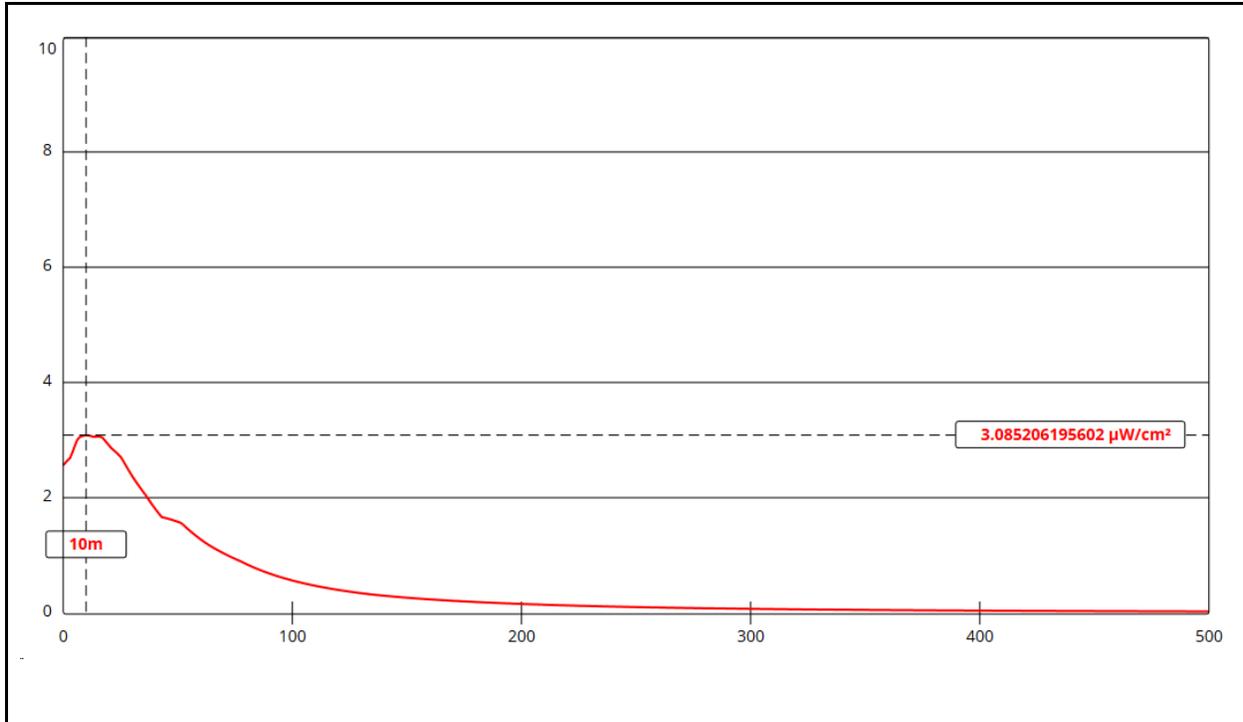
The KMRE-LP antenna is installed on a tower section extending above a building rooftop. The tower is attached to the elevator penthouse, and the antenna is installed 12.1 meters above the main building rooftop. The antenna for KZAX-LP is also located this site, and is installed at 9.1 meters above the main building rooftop.

Calculations of the rooftop-level power density produced by the KMRE-LP antenna system have been made using the appropriate element pattern for the OMB MP-1 antenna. The highest calculated rooftop level power density occurs at a distance of 3 meters from the base of the antenna support structure. At this point the power density is calculated to be  $39.4 \mu\text{W}/\text{cm}^2$ .

Calculations of the rooftop-level power density produced by the KZAX-LP antenna system have been made using the appropriate element pattern for the Telwave TFC2K antenna. The highest calculated rooftop level power density occurs at a distance of 7 meters from the base of the antenna support structure. At this point the power density is calculated to be  $36.3 \mu\text{W}/\text{cm}^2$ .

These calculations show that the maximum calculated power density produced at two meters above rooftop level by the operations of KMRE-LP and KZAX-LP (were their maxima to coincide) is  $75.7 \mu\text{W}/\text{cm}^2$ , which is 37.9% of  $200 \mu\text{W}/\text{cm}^2$  (the FCC standard for uncontrolled environments).

The permittee/licensee in coordination with other users of the site must reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency exposure in excess of FCC guidelines.



**Ground-Level RF Exposure**

**OET FMModel**

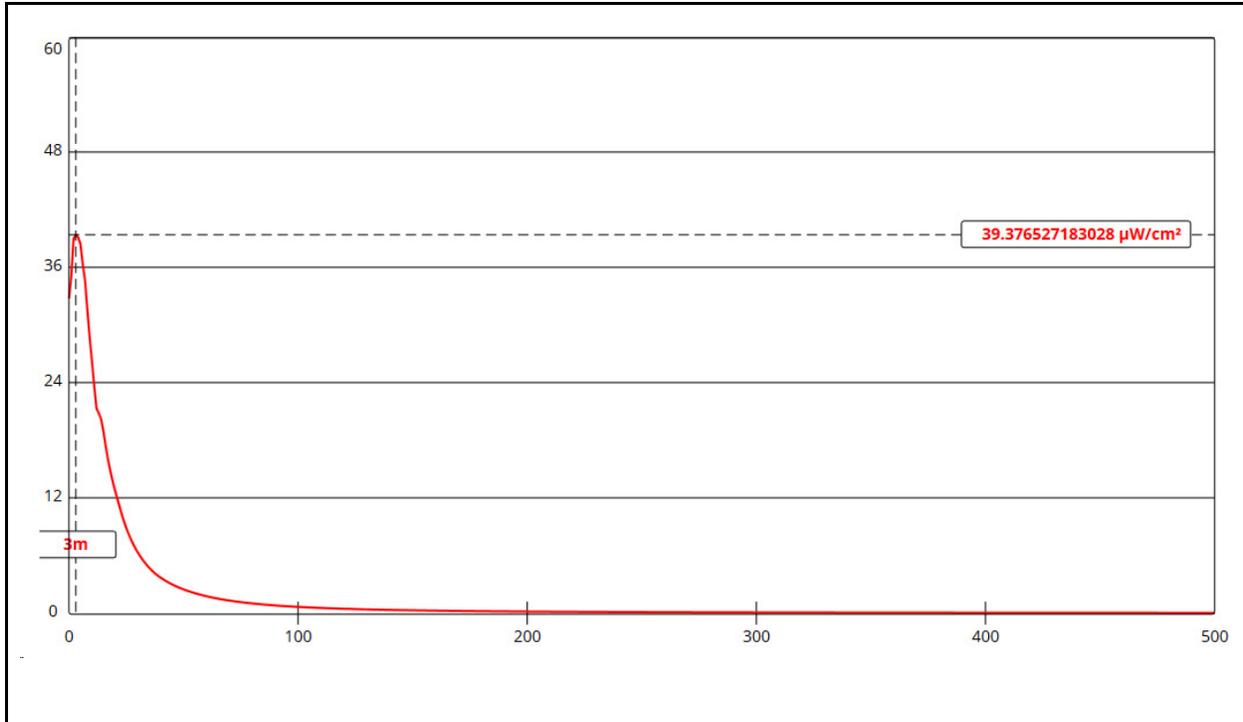
**KMRE-LP 272L1 Bellingham**

Antenna Type: OMB MP-1 (Type 1)  
 No. of Elements: 1  
 Element Spacing: 1.0 wavelength

Distance: 500 meters  
 Horizontal ERP: 100 W  
 Vertical ERP: 100 W

Antenna Height: 38.1 meters AGL

Maximum Calculated Power Density is 3.1 μW/cm<sup>2</sup> at 10 meters from the antenna structure.



**Rooftop-Level RF Exposure**

**OET FMModel**

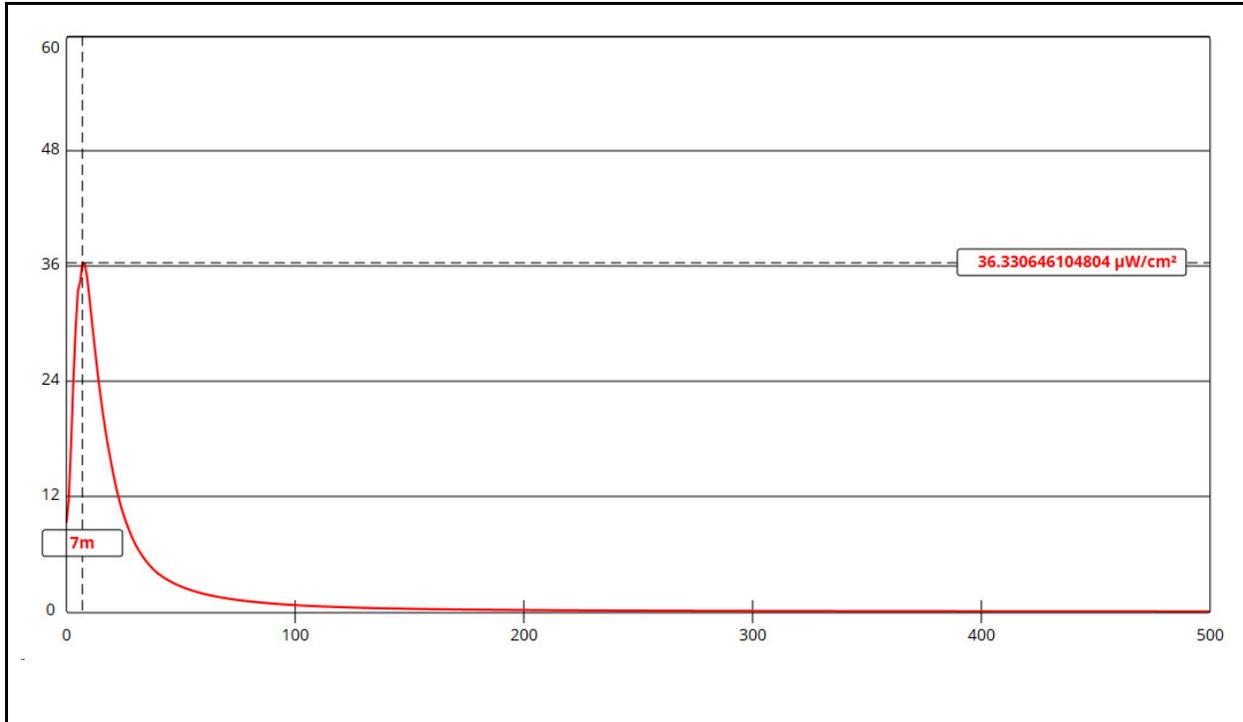
**KMRE-LP 272L1 Bellingham**

Antenna Type: OMB MP-1 (Type 1)  
 No. of Elements: 1  
 Element Spacing: 1.0 wavelength

Distance: 500 meters  
 Horizontal ERP: 100 W  
 Vertical ERP: 100 W

Antenna Height: 12.1 meters above the rooftop

Maximum Calculated Power Density is 39.4 μW/cm<sup>2</sup> at 3 meters from the antenna structure.



**Rooftop-Level RF Exposure**

**OET FMModel**

**KZAX-LP 235L1 Bellingham**

Antenna Type: Telwave TFC2K (Type 2)  
 No. of Elements: 1  
 Element Spacing: 1.0 wavelength

Distance: 500 meters  
 Horizontal ERP: 100 W  
 Vertical ERP: 100 W

Antenna Height: 9.1 meters above the rooftop

Maximum Calculated Power Density is 36.3 μW/cm<sup>2</sup> at 7 meters from the antenna structure.