January 2019
KQMV(FM) Channel 223C
Bellevue, WA
Engineering STA Request

Background

The main KQMV antenna system on West Tiger Mountain (see BLH-20060824AEA) was severely damaged by an antenna fire on November 8, 2018. Since that time, KQMV has operated with its licensed auxiliary antenna on Cougar Mountain. The auxiliary antenna is located at a lower elevation and is licensed for only 8.4 kW ERP, compared to the main antenna's 60 kW ERP.

In order to better replicate the coverage of the main antenna, the KQMV licensee requests an engineering STA to operate with a temporary multi-user broadband ERI Axiom antenna which will be installed at West Tiger Mountain in the aperture of the damaged (and now dismantled) panel antenna system. Operation with the engineering STA facility will continue until such time as the ERI Axiom antenna must be removed in order to facilitate installation of a permanent replacement main antenna.

Facilities Proposed

The proposed KQMV engineering STA antenna operation will be on Channel 223C (92.5 MHz) with an effective radiated power of 45 kilowatts (75% of the licensed 60 kW ERP). Operation is proposed with an 8-element circularly-polarized omni-directional half-wave-spaced antenna. The antenna will be side-mounted on an existing tower (FCC ASR Number 1056093) located atop West Tiger Mountain.

RF Exposure Calculations

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.

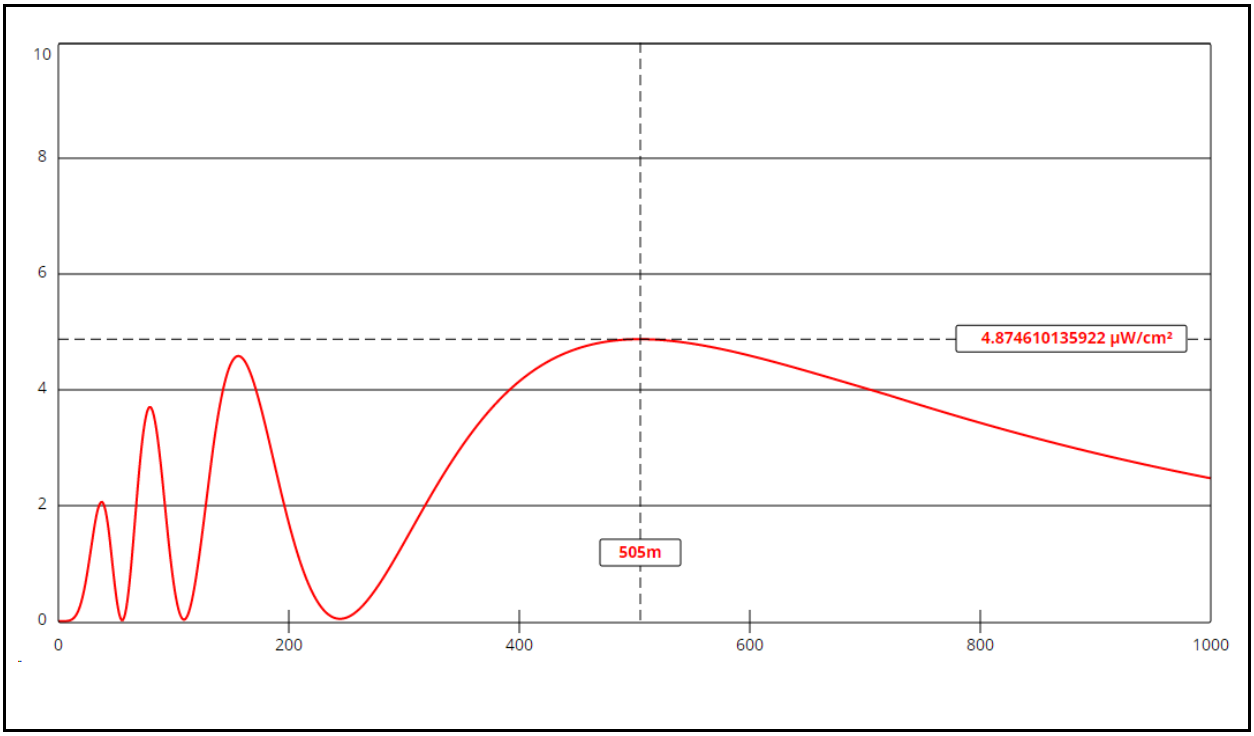
D is the distance in meters from the center of radiation to the calculation point.

Ground level power densities have been calculated for locations extending from the base of the tower to a distance of 1000 meters. Values past this point are increasingly negligible.

Calculations of the power density produced by the proposed antenna system assume a Type 3 element pattern, which is the element pattern for the ERI SHPXA-8BC-HW-SP antenna proposed for use. The highest calculated ground level power density occurs at a distance of 505 meters from the base of the antenna support structure. At this point the power density is calculated to be 4.9 $\mu W/cm^2$, which is 2.5% 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 the proposed STA operation 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(b)(3) of the Commission's Rules excludes 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.

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**

KQMV 223C Engineering STA

Antenna Type:	ERI SHPX-8BC-HW-SP “rototiller” (Type 3)
No. of Elements:	8
Element Spacing:	0.5 wavelength
Distance:	1000 meters
Horizontal ERP:	45 kW
Vertical ERP:	45 kW
Antenna Height:	65 meters AGL

Maximum Calculated Power Density is 4.9 µW/cm^2 at 505 meters from the antenna structure.