

July 2008
KFMY Auxiliary Antenna – Channel 249C
Oakville, Washington
NIER Analysis

Facilities Proposed

The proposed auxiliary operation will be on Channel 249C (97.7 MHz) with an effective radiated power of 16.5 kilowatts. Operation is proposed with a 6-element circularly-polarized directional antenna which will be side-mounted on an existing located atop South Mountain. The FCC Antenna Structure Registration Number for the tower is 1247912.

NIER 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.

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

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.

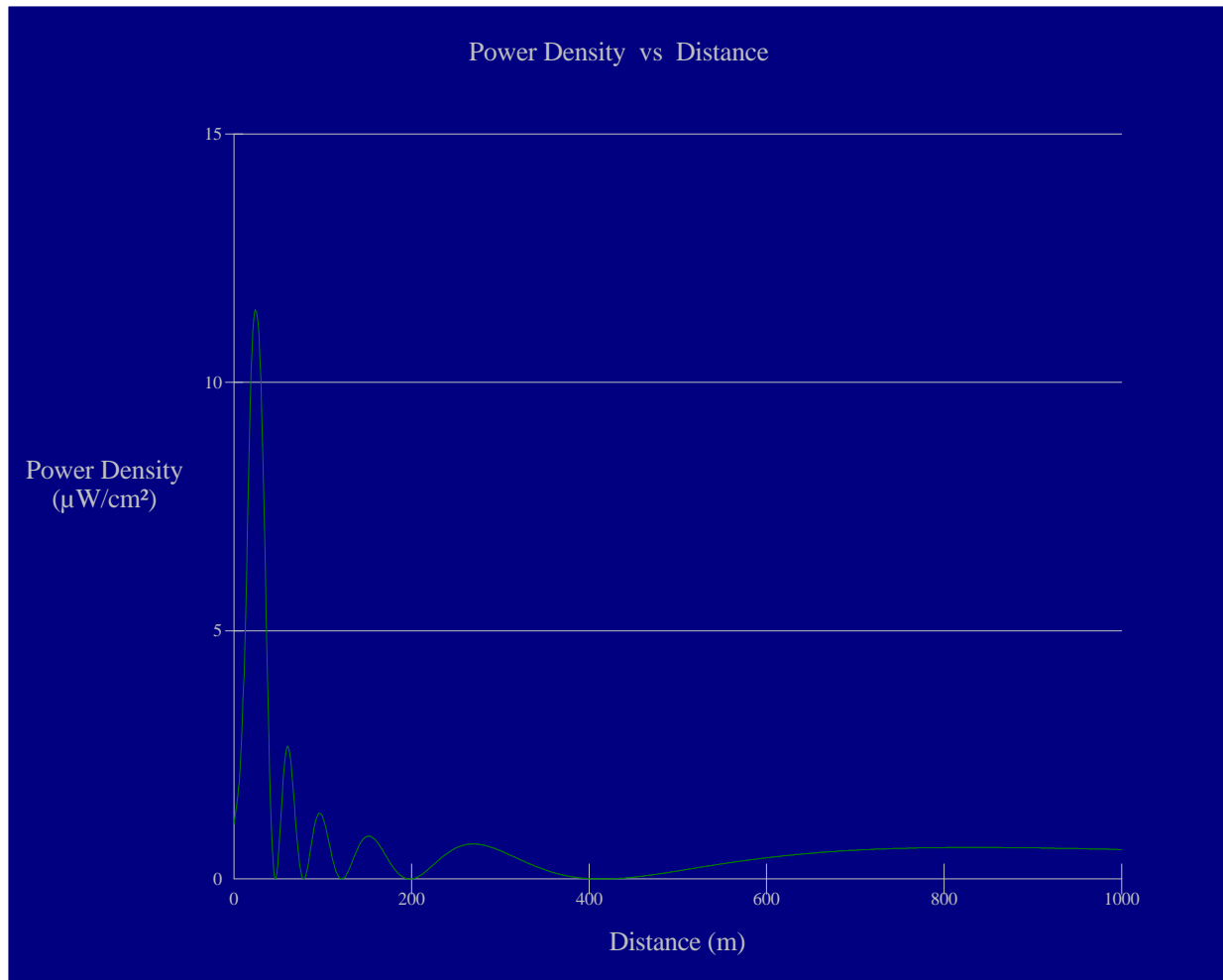
Calculations of the power density produced by the KFMY auxiliary antenna system assume the appropriate element pattern for the Shively 6810 series antenna to be used by the KFMY auxiliary. Ground level power densities have been calculated for locations extending from the base of the tower to a distance of 1000 meters. Values past this point are increasingly negligible.

The highest calculated ground level power density from the KFMY auxiliary occurs at a distance of 24 meters from the base of the antenna support structure. At this point the power density is calculated to be $11.5 \mu\text{W}/\text{cm}^2$.

The highest calculated ground level power density from the co-located KDDS-FM facility occurs at a distance of 24 meters from the base of the antenna support structure. At this point the power density is calculated to be $3.9 \mu\text{W}/\text{cm}^2$.

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation of the KFMY auxiliary and the present operation of KDDS-FM (were their maxima to coincide, which they do not) is $15.4 \mu\text{W}/\text{cm}^2$, which is 1.5% of $1000 \mu\text{W}/\text{cm}^2$ (the FCC standard for controlled environments) and 7.7% 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 radiation in excess of FCC guidelines.



Ground-Level NIER

OET FMModel

KFMY Auxiliary

Antenna Type: Shively 6810 Series

No. of Elements: 6

Element Spacing: 1.0 wavelength

Distance: 1000 meters

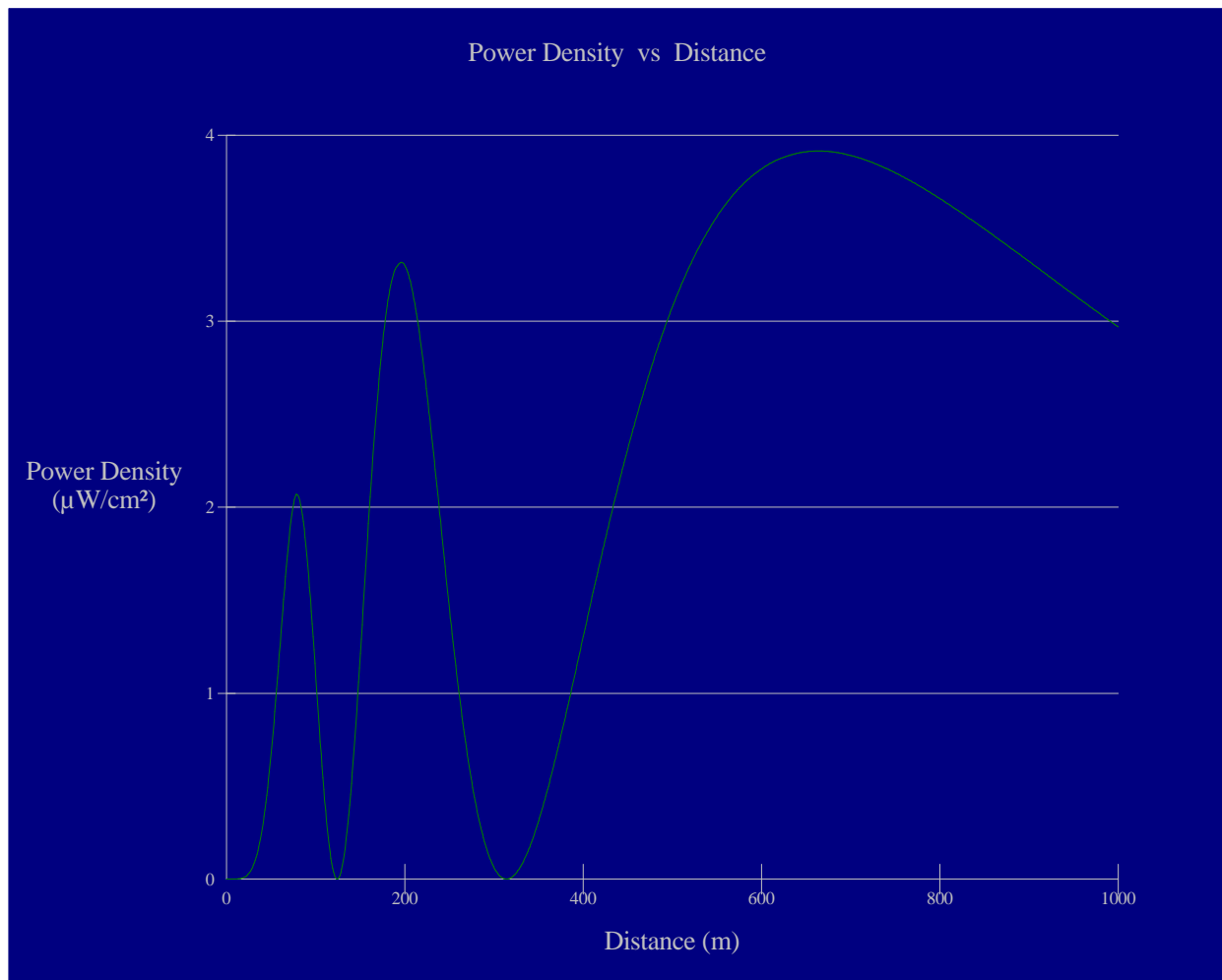
Horizontal ERP: 16 kW

Vertical ERP: 16 kW

Antenna Height: 72 meters AGL

Maximum Power Density is 11.5 : W/cm² at 24 meters from the antenna structure.

Hatfield & Dawson Consulting Engineers



Ground-Level NIER

OET FMModel

KDDS-FM 257C Elma

Antenna Type: ERI MP-6AC-DA-HW

No. of Elements: 6

Element Spacing: 0.5 wavelength

Distance: 1000 meters

Horizontal ERP: 64 kW

Vertical ERP: 64 kW

Antenna Height: 113 meters AGL

Maximum Power Density is 3.9 : W/cm² at 664 meters from the antenna structure.