

September 2013
KWIK-FM Auxiliary Antenna
Moses Lake, WA
RF Exposure Study

Facilities Proposed

The proposed operation will be on Channel 263C2 (100.5 MHz) with an effective radiated power of 0.800 kilowatts. Operation is proposed with a 2-element circularly-polarized omni-directional antenna mounted on an existing tower with FCC ASR number 1065184. This tower is used by KWIK(AM).

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.

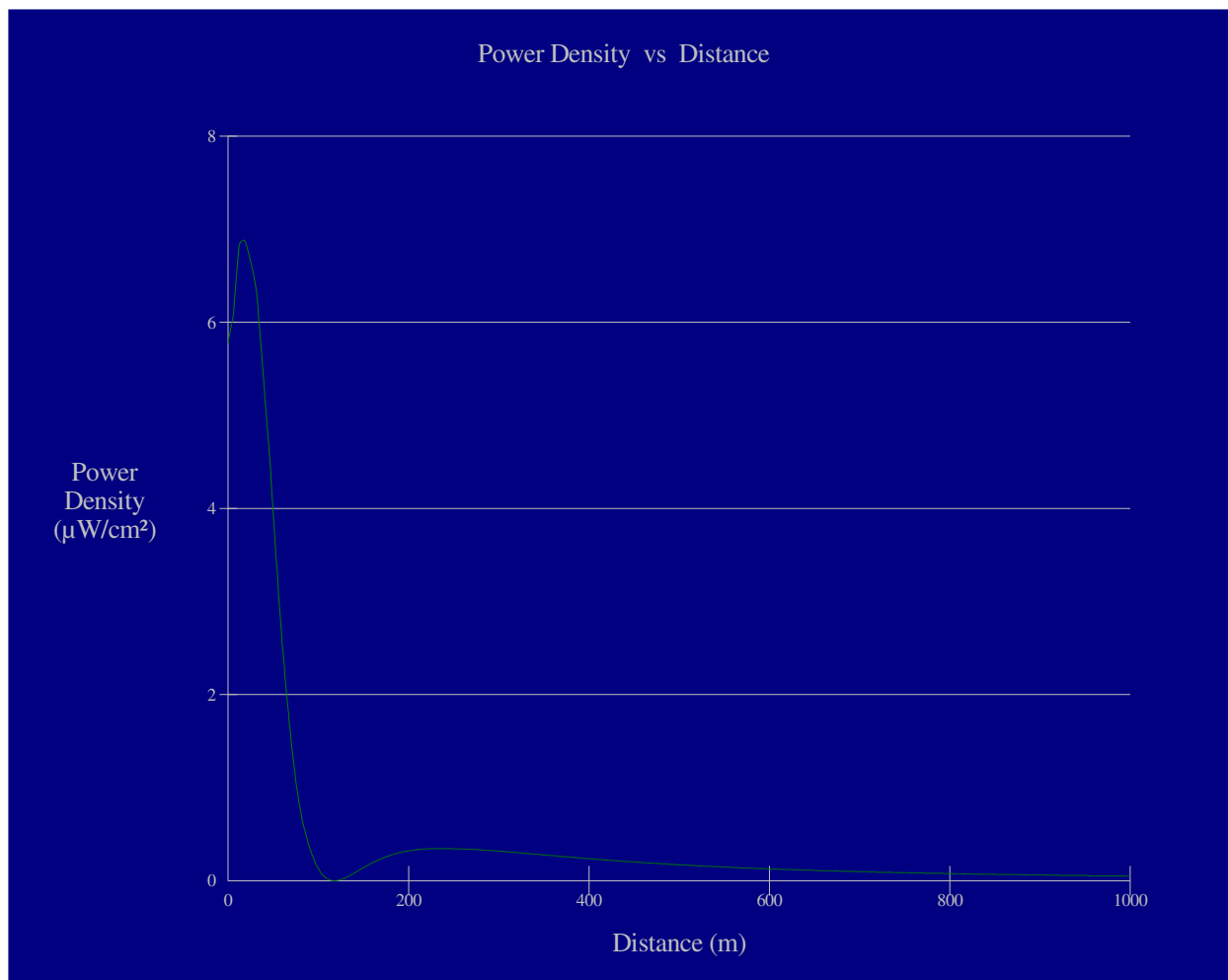
Calculations of the power density produced by the proposed antenna system assume a Type 1 element pattern, which is the "worst case" element pattern in the Commission's FMModel software program. The highest calculated ground level power density occurs at a distance of 17 meters from the base of the antenna support structure. At this point the power density is calculated to be 6.9 $\mu W/cm^2$, which is 3.5% of 200 $\mu W/cm^2$ (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.

KWIK(AM) Tower

The KWIK-FM auxiliary antenna will be installed on Tower #1 of the KWIK(AM) array. KWIK 1020 kHz operates with 2000 watts directional daytime and 440 watts non-directional nighttime. The tower is 90.0 electrical degrees tall, or 25% of the station wavelength. Using Tables 1-4 in OET Bulletin No. 65, the fencing distance requirement for KWIK is 2 meters from the tower base. The tower is fenced to a distance in excess of 2 meters.



Ground-Level RF Exposure

OET FMModel

KWIK-FM Auxiliary

Antenna Type: ERI 100A-2F
No. of Elements: 2
Element Spacing: 1.0 wavelength

Distance: 1000 meters
Horizontal ERP: 800 W
Vertical ERP: 800 W

Antenna Height: 70 meters AGL

Maximum Calculated Power Density is 6.9 $\mu\text{W}/\text{cm}^2$ at 17 meters from the antenna structure.

Hatfield & Dawson Consulting Engineers