

**January 2014**  
**KGZG-FM Auxiliary Antenna**  
**Newport, Washington Channel 283C1**  
**RF Exposure Study**

**Facilities Proposed**

The proposed auxiliary operation will be on Channel 283D (104.5 MHz) with an effective radiated power of 150 watts. Operation is proposed with an antenna to be mounted on an existing tower.

The antenna support structure does not exceed 200 feet above ground and does not require notification to the Federal Aviation Administration. Therefore, this structure does not require an Antenna Structure Registration Number.

**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.

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

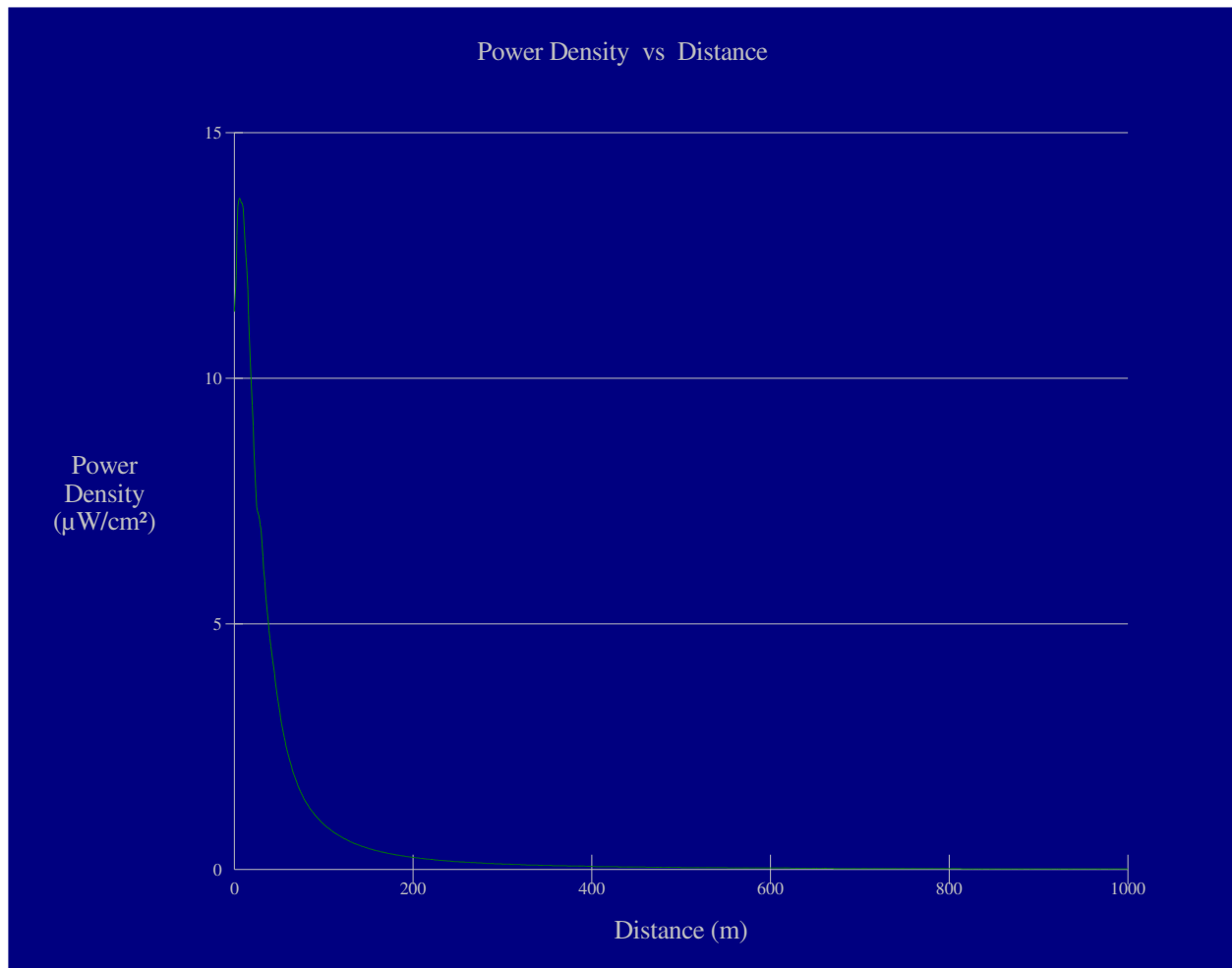
Where: *AdjERP(Watts)* is the maximum lobe effective radiated power times the element pattern factor times the array pattern factor.

*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 auxiliary antenna system have been made using the "worst case" element pattern. Under this worst-case assumption, the highest calculated ground level power density from the auxiliary occurs at a distance of 6 meters from the base of the antenna support structure. At this point the power density is calculated to be 13.7  $\mu W/cm^2$ , which is 6.9% 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.



### Ground-Level RF Exposure

OET FMModel

#### KGZG-FM Auxiliary Antenna

Antenna Type: Nicom BKG77-1 (ring stub element model assumed)

No. of Elements: 1

Element Spacing: dna

Distance: 1000 meters

Horizontal ERP: 150 W

Vertical ERP: 150 W

Antenna Height: 23 meters AGL

Maximum Calculated Power Density is  $13.7 \mu\text{W}/\text{cm}^2$  at 6 meters from the antenna structure.

Hatfield & Dawson Consulting Engineers