

**January 2015  
KWTR(FM) Channel 209C1  
Eldorado, Texas  
RF Exposure Study**

**Facilities Proposed**

The proposed operation will be on Channel 209C1 (89.7 MHz) with an effective radiated power of 75 kilowatts. Operation is proposed with a 12-element circularly-polarized omni-directional antenna which will be side-mounted on a tower with FCC Antenna Structure Registration Number 1041542.

**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.

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

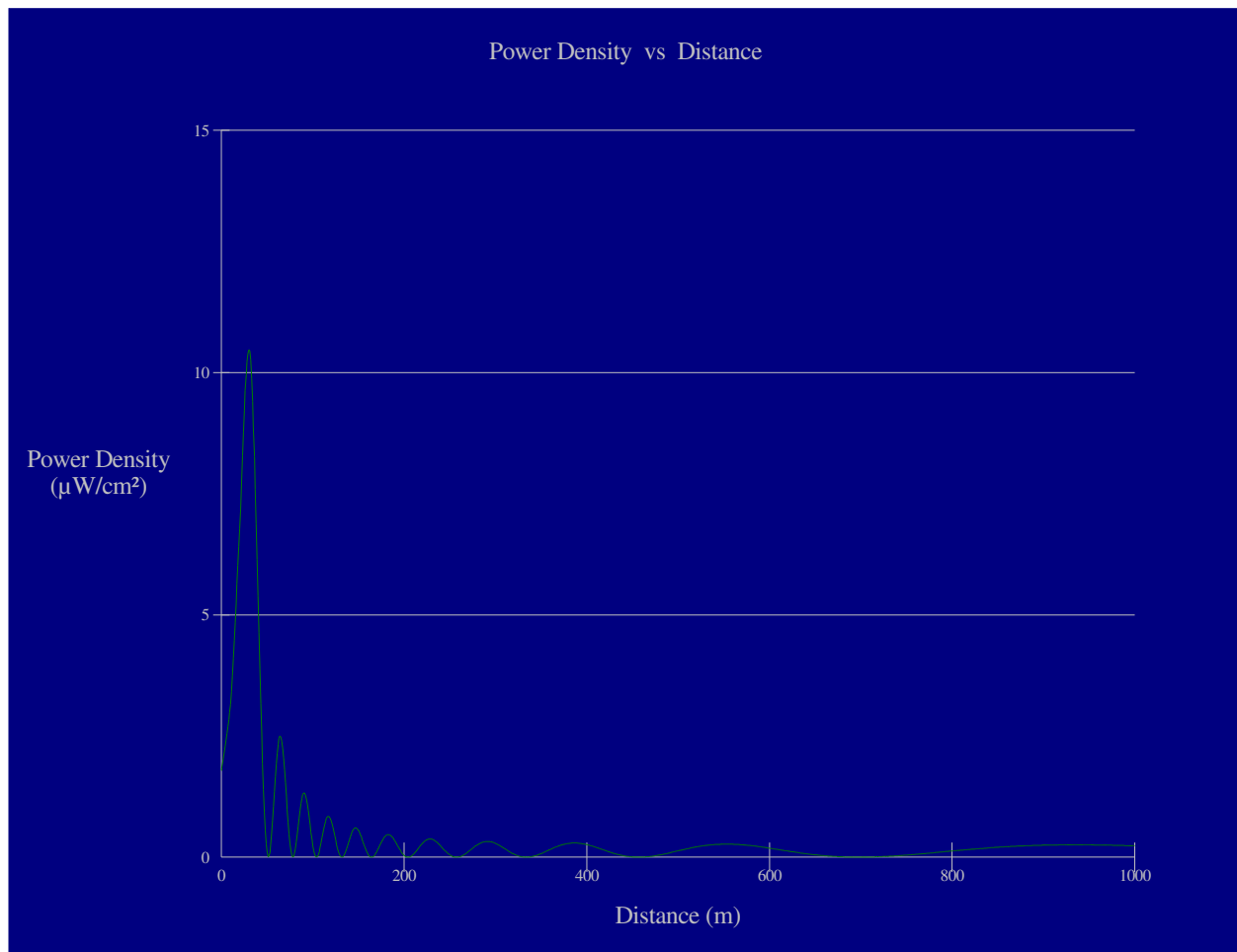
Where: *AdjERP(Watts)* is the maximum lobe effective radiated power times the element pattern factor times the array pattern factor.

*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 6 element pattern, which is the element pattern for the Shively 6813-12 antenna proposed for use. The highest calculated ground level power density occurs at a distance of 30 meters from the base of the antenna support structure. At this point the power density is calculated to be 10.5  $\mu W/cm^2$ , which is 5.3% 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

#### KWTR 209C1 Eldorado

Antenna Type: Shively 6813-12

No. of Elements: 12

Element Spacing: 1.0 wavelength

Distance: 1000 meters

Horizontal ERP: 75 kW

Vertical ERP: 75 kW

Antenna Height: 120 meters AGL

Maximum Calculated Power Density is 10.5  $\mu\text{W}/\text{cm}^2$  at 30 meters from the antenna structure.

Hatfield & Dawson Consulting Engineers