

**April 2013
KWHL(FM) Channel 293C1
Anchorage, AK
RF Exposure Study**

Facilities Proposed

The proposed operation will be on Channel 293C1 (106.5 MHz) with an effective radiated power of 100 kilowatts. Operation is proposed with an 8-element circularly-polarized omni-directional antenna which will replace the existing directional KWHL antenna. The FCC Antenna Structure Registration Number for the tower is 1063079.

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.

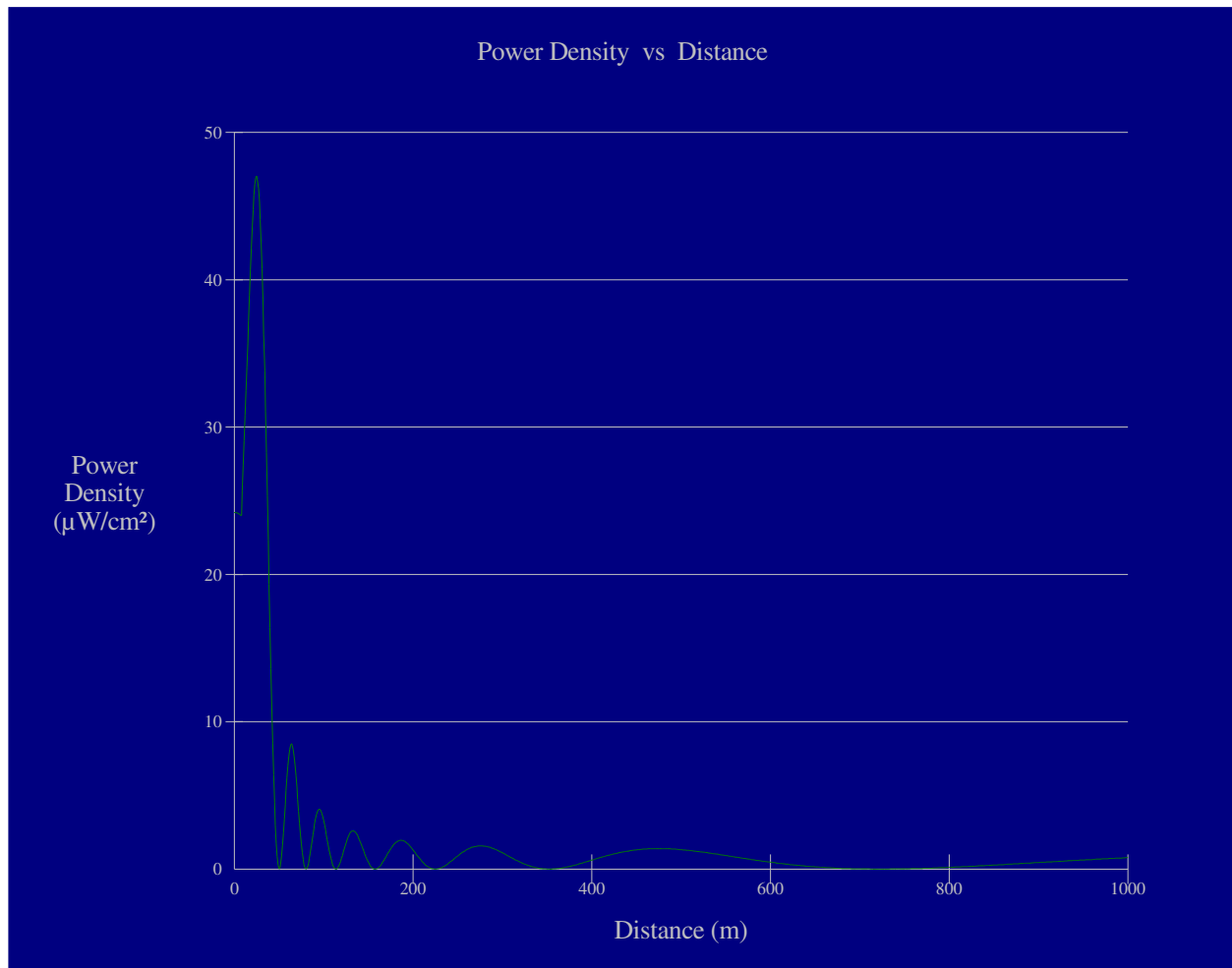
Ground level power densities have been calculated for locations extending from the base of the tower to a distance of 1000 meters. Values past this point are increasingly negligible.

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 "rototiller" antenna proposed for use. The highest calculated ground level power density occurs at a distance of 25 meters from the base of the antenna support structure. At this point the power density is calculated to be 47.0 $\mu W/cm^2$.

Four other full-power FM stations (KAKL, KEAG, KDBZ, and KBRJ) operate from towers on this transmitter site. Simple summation of the calculated maxima from each of these stations would

produce a result which exceeds the FCC standard for uncontrolled environments. However the maxima from the several stations are not likely to all coincide, and so the site is believed to be in compliance. If required by the FCC, the licensee will perform post-construction measurements in order to ensure compliance.

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

KWHL 293C1 Anchorage

Antenna Type: ERI "rototiller"
No. of Elements: 8
Element Spacing: 1.0 wavelength

Distance: 1000 meters
Horizontal ERP: 100 kW
Vertical ERP: 100 kW

Antenna Height: 93 meters AGL

Maximum Calculated Power Density is $47.0 \mu\text{W}/\text{cm}^2$ at 25 meters from the antenna structure.

Hatfield & Dawson Consulting Engineers