

**March 2012**  
**KWXS(FM) Channel 299C2**  
**Prineville, Oregon**  
**RF Exposure Study**

**Facilities Proposed**

The proposed operation will be on Channel 299C2 (107.7 MHz) with an effective radiated power of 2.5 kilowatts. Operation is proposed with a 4-bay omnidirectional antenna which will be mounted on an existing tower with ASR #1222113.

**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 KWXS antenna system assume a Type 6 element pattern, which is the appropriate element pattern for the Shively antenna proposed for use. The highest calculated ground level power density from KWXS occurs at a distance of 7 meters from the base of the antenna support structure. At this point the power density is calculated to be 47.8  $\mu W/cm^2$ , which is 23.9% of the FCC standard for uncontrolled environments.

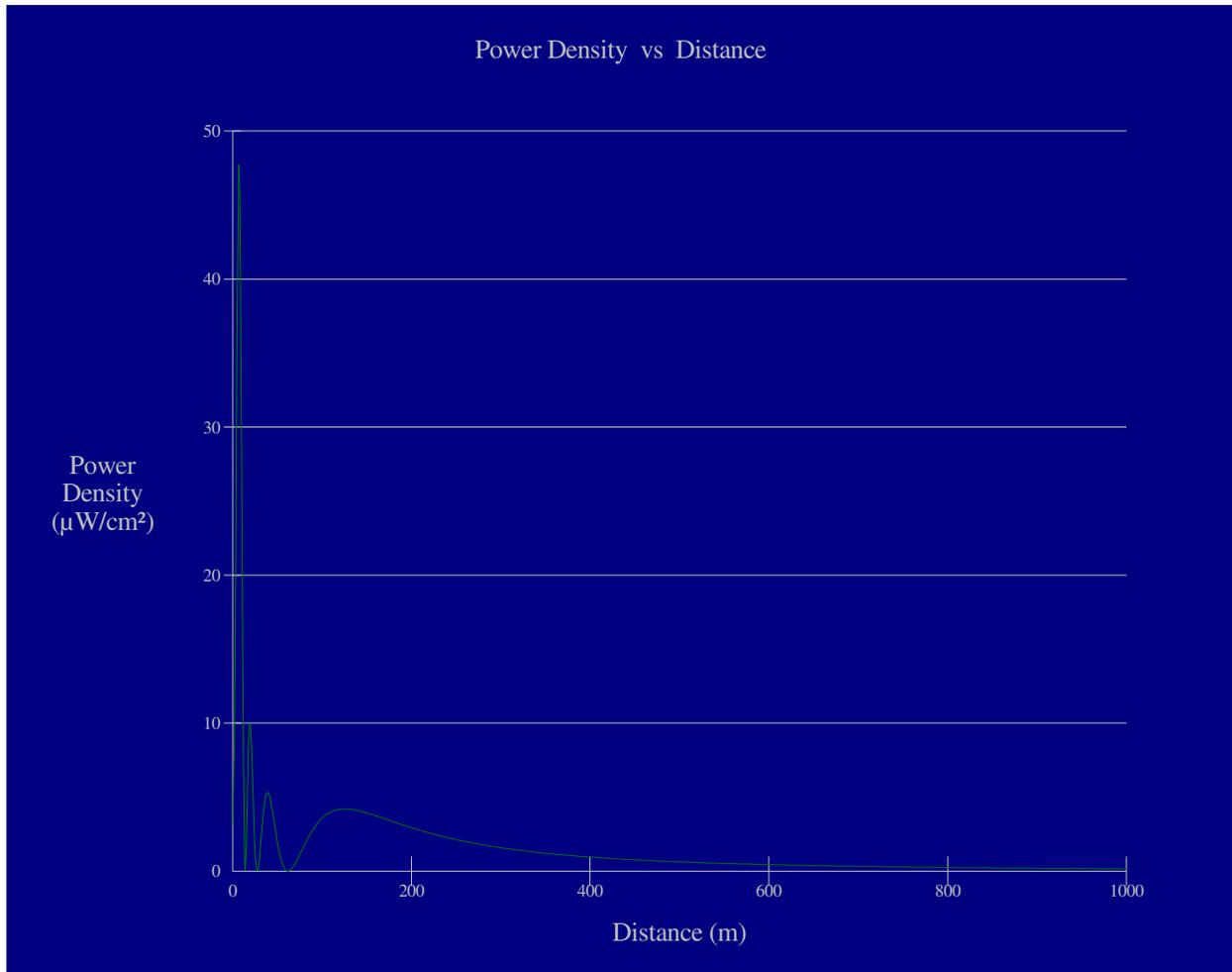
Calculations of the power density produced by KWXS and the other stations at this transmitter site are summarized in the following table:

| Call                           | Avg or Peak ERP<br>Antenna Model                | Relative<br>Field | Height<br>AGL | Calculated Max<br>Exposure     | Gen Pop<br>FCC Limit          | % of Limit |
|--------------------------------|---|-------------------|---------------|--------------------------------|-------------------------------|------------|
| KWXS<br>299C2                  | 2.500 kW avg<br>Shively 6810<br>4-bay full-wave | FMMModel          | 18 m          | 47.8 $\mu\text{W}/\text{cm}^2$ | 200 $\mu\text{W}/\text{cm}^2$ | 23.9%      |
| K291BL<br>CP                   | 0.060 kW avg<br>V only<br>dipole assumed        | FMMModel          | 24 m          | 3.9 $\mu\text{W}/\text{cm}^2$  | 200 $\mu\text{W}/\text{cm}^2$ | 2.0%       |
| K28MH-D<br>CP                  | 0.120 kW avg<br>antenna unknown                 | 0.500<br>assumed  | 24 m          | 2.1 $\mu\text{W}/\text{cm}^2$  | 369 $\mu\text{W}/\text{cm}^2$ | 0.6%       |
| K29CI                          | 25 kW peak<br>Bogner B16UQ                      | 0.200             | 31 m          | 19.9 $\mu\text{W}/\text{cm}^2$ | 373 $\mu\text{W}/\text{cm}^2$ | 5.3%       |
| K31CR-D                        | 15 kW avg<br>Bogner B16UQ                       | 0.200             | 31 m          | 23.8 $\mu\text{W}/\text{cm}^2$ | 381 $\mu\text{W}/\text{cm}^2$ | 6.2%       |
| K36KT-D                        | 15 kW avg<br>And ALP-8M1-OC-<br>36              | 0.263             | 37 m          | 28.3 $\mu\text{W}/\text{cm}^2$ | 401 $\mu\text{W}/\text{cm}^2$ | 7.1%       |
| KUBN-LP<br>Ch 43<br>Digital CP | 0.650 kW avg<br>DIE DLP-8M                      | 0.100             | 21 m          | 0.6 $\mu\text{W}/\text{cm}^2$  | 429 $\mu\text{W}/\text{cm}^2$ | 0.1%       |
| Ch 50<br>Analog Lic            | 11.7 kW peak<br>ALP8L1                          | 0.263             | 21 m          | 37.4 $\mu\text{W}/\text{cm}^2$ | 457 $\mu\text{W}/\text{cm}^2$ | 8.2%       |
| K49KT-D                        | 5 kW avg<br>antenna unknown                     | 0.200             | 24 m          | 13.8 $\mu\text{W}/\text{cm}^2$ | 453 $\mu\text{W}/\text{cm}^2$ | 3.0%       |

(For TV translators, the relative field value indicated is the maximum value which occurs at 45 degrees or more below the horizontal, based on the manufacturer's vertical plane pattern. The resulting adjusted ERP value is assumed to be radiated straight down to a point 2 meters above ground level at the base of the tower.)

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation of KWXS and the present operation of the other stations authorized at this site (were their maxima to coincide, which they do not) is 56% of 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 RF exposure in excess of FCC guidelines.



### Ground-Level RF Exposure

OET FMModel

#### KWXS 299C2 Prineville

Antenna Type: Shively 6810 series

No. of Elements: 4

Element Spacing: 1.0 wavelength

Distance: 1000 meters

Horizontal ERP: 2.5 kW

Vertical ERP: 2.5 kW

Antenna Height: 18 meters AGL

Maximum Calculated Power Density is  $47.8 \mu\text{W}/\text{cm}^2$  at 7 meters from the antenna structure.