

**May 2015**  
**KBBD(FM) Channel 280C1**  
**Spokane, Washington**  
**RF Exposure Study**

**Facilities Proposed**

The proposed operation will be on Channel 280C1 (103.9 MHz) with an effective radiated power of 34 kilowatts. Operation is proposed with the existing 5-element circularly-polarized omni-directional antenna, which is installed on an existing tower with FCC Antenna Structure Registration Number 1033014.

The tower owner is filing a Form 7460-1 with the Federal Aviation Administration to correct the tower coordinates. Upon receipt of the FAA's determination of no hazard, an update to the FCC Antenna Structure Registration for the tower will be filed on Form 854.

**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.

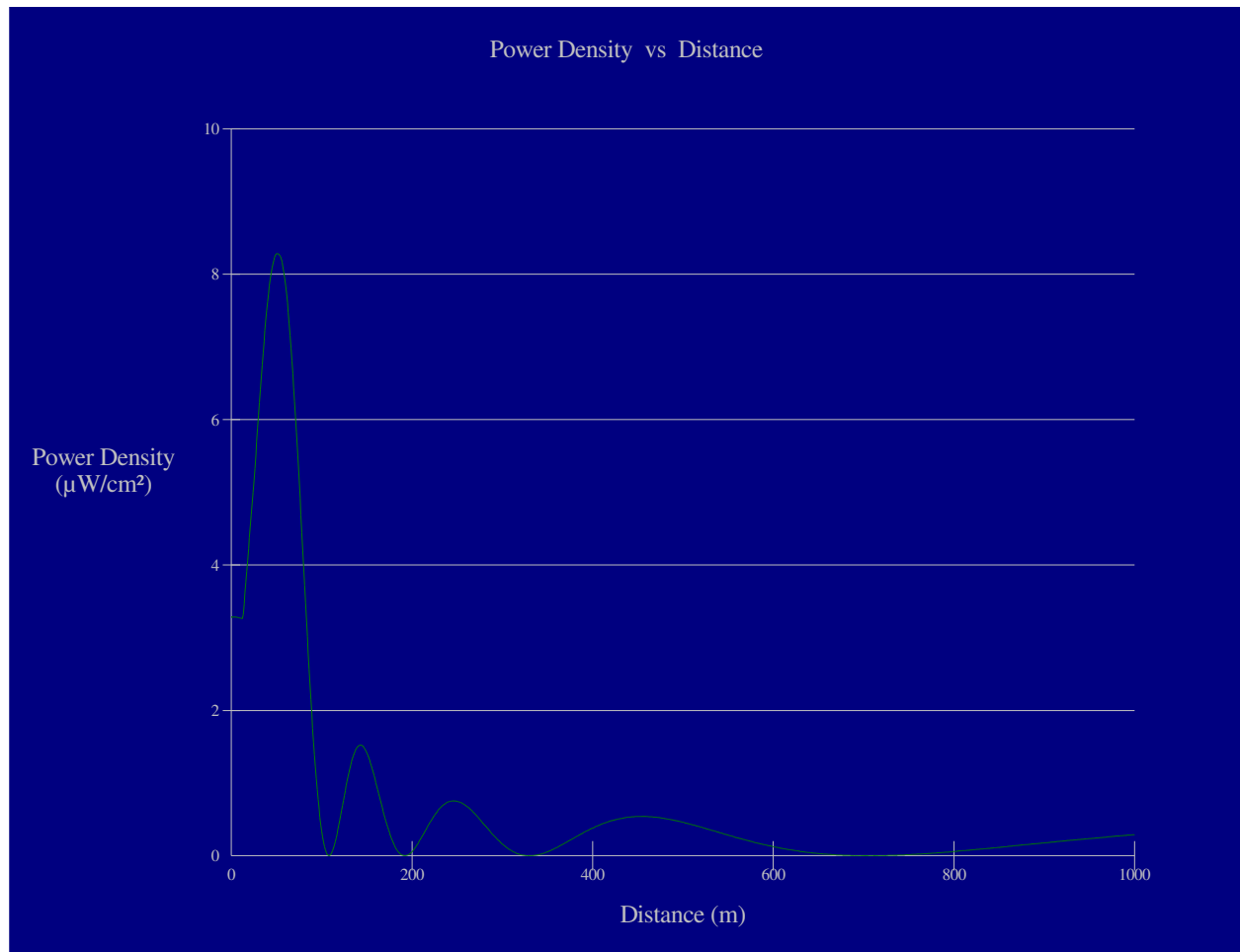
Ground level power densities have been calculated for locations extending from the base of the tower to a distance of 1000 meters. Values past this point are increasingly negligible.

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 SHPX-5AE antenna proposed for use. The highest calculated ground level power density occurs at a distance of 51 meters from the base

of the antenna support structure. At this point the power density is calculated to be  $8.3 \mu\text{W}/\text{cm}^2$ , which is 4.1% of  $200 \mu\text{W}/\text{cm}^2$  (the FCC standard for uncontrolled environments).

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation of KBBD alone is less than 5% of the applicable FCC exposure limit at all locations between 1 and 1000 meters from the base of the antenna support structure. Section 1.1307(b)(3) of the Commission's Rules excludes applications for new facilities or modifications to existing facilities from the requirement of preparing an environmental assessment when the calculated emissions from the applicant's proposed facility are predicted to be less than 5% of the applicable FCC exposure limit. Therefore, the proposed facility is in compliance with Section 1.1301 *et seq* and no further analysis of RF exposure at this site is required in this application.

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

### KBBD 280C1 Spokane

Antenna Type: ERI SHPX-5AE "rototiller"

No. of Elements: 5

Element Spacing: 1.0 wavelength

Distance: 1000 meters

Horizontal ERP: 34 kW

Vertical ERP: 34 kW

Antenna Height: 146 meters AGL

Maximum Calculated Power Density is 8.3  $\mu\text{W}/\text{cm}^2$  at 51 meters from the antenna structure.

Hatfield & Dawson Consulting Engineers