

**May 2015**  
**KNBQ(FM) Channel 253C2**  
**Central Park, Washington**  
**RF Exposure Study**

**Facilities Proposed**

The proposed operation will be on Channel 253C2 (98.5 MHz) with a maximum lobe effective radiated power of 1.7 kilowatts. Operation is proposed with a 4-bay half-wavelength-spaced directional antenna which will be side-mounted on an existing tower having FCC Antenna Structure Registration Number 1231674.

The space proposed for the KNBQ antenna is the same space currently occupied by a licensed auxiliary antenna for KOMO-FM. The KOMO-FM auxiliary antenna will either be removed or modified to a directional operation diplexed with KNBQ; that decision will be made at a later date.

**RF Exposure Calculations**

OET Bulletin 65 Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields (Edition 97-01) states in part that:

When performing an evaluation for compliance with the FCC's RF guidelines all significant contributors to the ambient RF environment should be considered. . . For purposes of such consideration, significance can be taken to mean any transmitter producing more than 5% of the applicable exposure limit (in terms of power density or the square of the electric or magnetic field strength) at accessible locations.

As will be demonstrated below, the proposed operation of KNBQ will produce less than 5% of the applicable exposure limit for both controlled and uncontrolled environments. Thus, the proposed facility is categorically excluded from the requirement of further study. Therefore, pursuant to §1.1307(b)(3) of the Commission's Rules no calculations are required for the other FM and TV facilities in the vicinity, and precise calculations are made only with regard to the levels from this proposal.

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.

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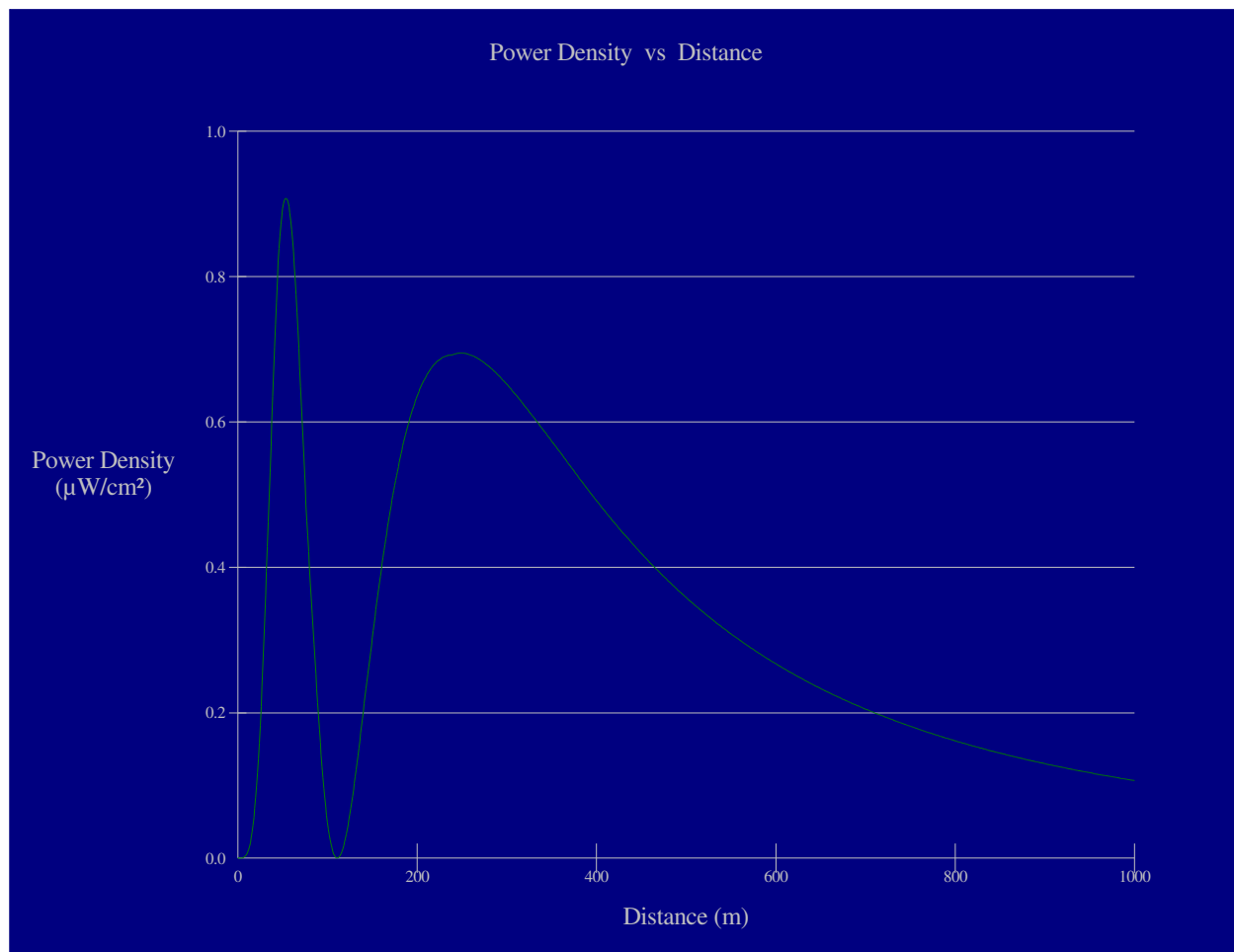
$$S(\mu W / cm^2) = \frac{33.40981 \times AdjERP(Watts)}{D^2}$$

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.

The applicant plans to use a 4-bay half-wavelength-spaced antenna for KNBQ, but has not yet chosen the exact make and model. Calculations of the power density produced by the proposed antenna system therefore assume a Type 1 element pattern, which is the “worst case” element pattern. The highest calculated ground level power density occurs at a distance of 54 meters from the base of the antenna support structure. At this point the power density is calculated to be 0.9  $\mu W/cm^2$ , which is 0.1% of 1000  $\mu W/cm^2$  (the FCC standard for controlled environments) and 0.5% 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 radiation in excess of FCC guidelines.



## Ground-Level RF Exposure

OET FMModel

### KNBQ 253C2 Central Park

Antenna Type: "ring stub" assumed for this study

No. of Elements: 4

Element Spacing: 0.5 wavelength

Distance: 1000 meters

Horizontal ERP: 1.7 kW

Vertical ERP: 1.7 kW

Antenna Height: 66 meters AGL

Maximum Calculated Power Density is  $0.9 \mu\text{W}/\text{cm}^2$  at 54 meters from the antenna structure.

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