

3. Facilities Proposed

The proposed operation will be on Channel 275A (102.9 MHz) with an effective radiated power of 4.7 kw. Operation is proposed with the presently licensed WXKE antenna, a 3-element circularly-polarized omni-directional antenna. This antenna is side-mounted on the existing WXKE tower, a uniform cross-section guyed tower located beside US Highway 24 1.7 miles south of Roanoke, IN. The Antenna Structure Registration Number for this tower is 1030930. No modification to the tower or antenna is proposed.

a. NIER Calculations

A study of the Commissions databases reveals no other broadcast facilities within 5 km of the WXKE site. Therefore the background level NIER values near the base of the tower are believed to be negligible.

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 WXKE 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.

The power density calculations shown below were made using the techniques outlined in the EPA report titled: *An Engineering Assessment of the Potential Impact of Federal Radiation Protection Guidance on the AM, FM, and TV Broadcast Services* (Gailey & Tell, April, 1985). All calculations contained herein are based on the measured element patterns for the antenna, and follow the procedure shown in the Gailey and Tell report. The patterns were identified by applying the procedure outlined in the report to the measurement data contained in the report titled: *Element Pattern Measurements on FM Antennas* (EPA-520/ 6-85-107, June 1985).

"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. Equation #1, contained in the Gailey & Tell report and shown below, was used to calculate the ground level power density figures from each FM antenna at incremental distances from the base of its supporting tower.

$$S(\mu\text{W}/\text{cm}^2) = \frac{(\text{Adjusted ERP in Watts}) \times 1.64 \times 2.56 \times 100}{4 \times \pi \times (\text{Distance})^2}$$

Where: Adjusted ERP in Watts is the maximum lobe effective radiated power times the element pattern factor times the array pattern factor.

Distance = Distance in meters from the center of radiation to the calculation point.

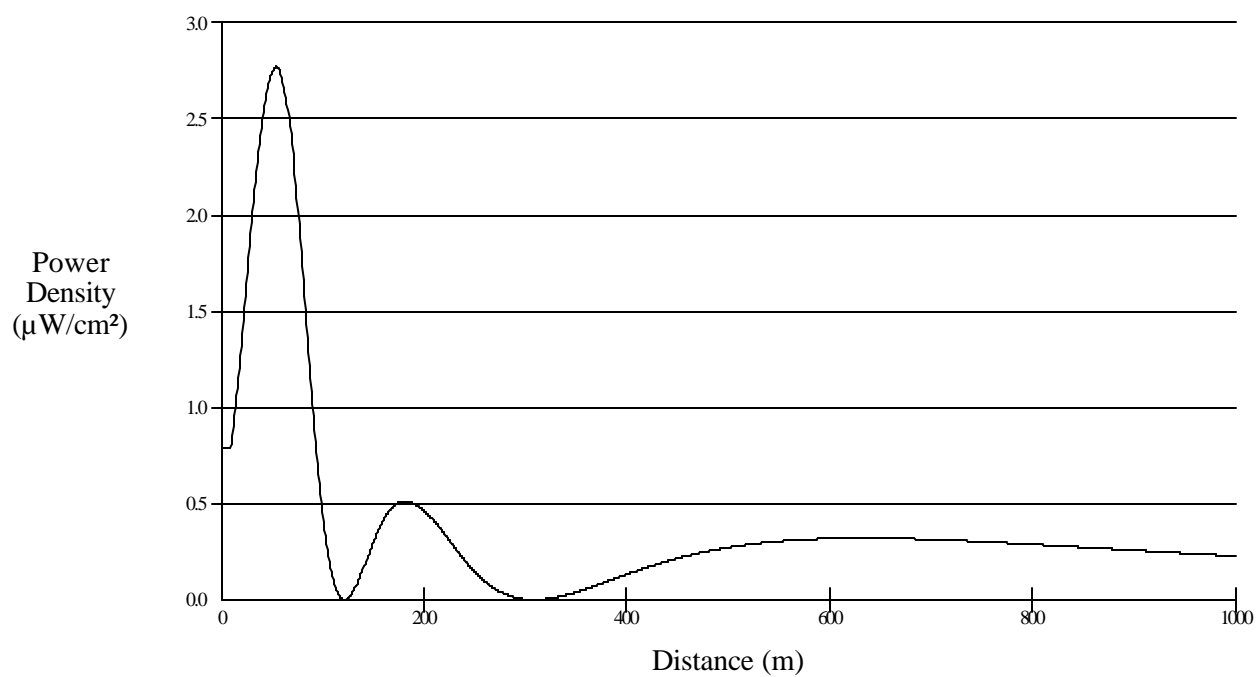
Calculations of the power density produced by the WXKE antenna system assume a Type 3 element pattern, which is the appropriate element pattern for the non-directional ERI rototiller antenna used by WXKE. Ground level power densities have been calculated for locations extending from the base of the tower to a distance of 1000 meters. Values past this point are increasingly negligible.

The highest calculated ground level power density from WXKE occurs at a distance of 55 meters from the base of the antenna support structure. At this point the power density is calculated to be $2.78 \mu\text{W}/\text{cm}^2$, 1.4% 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 WXKE 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 applicants 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 non-ionizing radiation at this site is required in this application.

The licensee must reduce power or cease operation as necessary to protect workers or other persons requiring access to the tower or antenna from radiofrequency radiation in excess of FCC guidelines.

Power Density vs Distance



b. Blanketing Contour

The 115 dBu contour for the proposed facility extends 855 meters from the tower, based on the calculation methodology shown in §73.318 of the Commission's Rules. Some of the area within the blanketing contour is populated. The height of the antenna above ground and its vertical radiation characteristics should mitigate any adverse effects to nearby residents or communication facilities. If such adverse effects occur, the applicant will be responsible for their amelioration as prescribed in §73.318, including receiver-induced intermodulation to facilities in existence or authorized or receivers in use prior to the grant of this application.