July 2007
WSSR 244A Joliet, Illinois
NIER Analysis

Facilities Proposed

The proposed operation will be on Channel 244A (96.7 MHz) with an effective radiated power of 3.6 kilowatts. Operation is proposed with a 4-element circularly-polarized half-wavelength-spaced directional antenna, to be installed on an existing tower at Lockport, Illinois.

The FCC Antenna Structure Registration Number for the proposed tower is 1023012. As of this writing, the tower is registered at 102.1 meters AGL, but the tower owner is in receipt of an FAA Determination of No Hazard for a height increase which will accommodate the installation of the pole-mounted antenna proposed herein. We expect the FCC tower registration to be updated in the near future, in all likelihood by the time this application is processed.

NIER Calculations

Study of the area within 1000 meters of the proposed site reveals no other likely sources of non-ionizing radiation. Thus, the ground level NIER values near the base of the proposed structure are believed to be negligible. 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.

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

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.

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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.

"Worst case" calculations of the power density produced by the antenna system have been made using the above formula, presuming that the antenna will radiate 6.2 kilowatts (3.1 kW H + 3.1 kW V) straight down. The results indicate a maximum ground level power density of 18.8 µW/cm², which is 1.9% of 1000 µW/cm^2 (the FCC standard for controlled environments) and 9.4% of 200 µW/cm^2 (the FCC standard for uncontrolled environments). This is a worst-case figure. The actual ground level power densities from the antenna to be used will likely be lower.

Public access to the site is restricted and the antenna tower is posted with warning signs. Pursuant to OET Bulletin No. 65, all station personnel and contractors are required to follow appropriate safety procedures before any work is commenced on the antenna tower, including reduction in power or discontinuance of operation before any maintenance work is undertaken.

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.

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