

**May 2006**  
**WTSS(FM) 273B Buffalo, NY**  
**Auxiliary Antenna NIER Analysis**

**Facilities Proposed**

The proposed auxiliary antenna operation will be on Channel 273B (102.5 MHz) with an effective radiated power of 110 kilowatts. (WTSS operates as a grandfathered super-power station.) Operation is proposed with a 4-element circularly-polarized antenna. The antenna will be side-mounted on the existing WKBW-TV tower located at 8909 Center Street, Colden, New York.

The FCC Antenna Structure Registration Number for the tower is 1001756.

**NIER 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.

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

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 WTSS auxiliary antenna system assume the appropriate element pattern for the Dielectric DCR-C4 antenna proposed for use. The

highest calculated ground level power density occurs at a distance of 48 meters from the base of the antenna support structure. At this point the power density is calculated to be 46.2  $\mu\text{W}/\text{cm}^2$ , which is 23.1% of 200  $\mu\text{W}/\text{cm}^2$  (the FCC standard for uncontrolled environments).

Calculations for the TV and DTV antennas located on the tower have been made using the worst-case assumption that the stations radiate full-power straight down.

Facility	Power/Height	Antenna	Maximum	Percent of Uncontrolled
WKBW-TV Ch. 7 Main Antenna	97.7 kW peak 317m AGL	Dielectric TUV-32GTH/10HV-R O6/O3	16.5 $\mu\text{W}/\text{cm}^2$	8.3%
WKBW-TV Ch. 7 Auxiliary Antenna	21.4 kW peak 183m AGL	Alford Model 3768 2-bay	10.9 $\mu\text{W}/\text{cm}^2$	5.5%
WKBW-DT Ch. 38	358 kW average 316m AGL	Dielectric TUV-32GTH/10HV-R O6/O3	121 $\mu\text{W}/\text{cm}^2$	29.4%

These calculations show that the worst-case maximum calculated power density produced at two meters above ground level by the proposed operation of WTSS and the present operation of the TV and DTV antennas on this tower (were their maxima to coincide, which they do not) is 61% of the FCC standard for uncontrolled environments. In fact the TV and DTV antennas do not radiate full-power straight down, so the actual ground-level exposure will be much lower than this figure.

Public access to the site is restricted by a locked gate 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,

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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.

Power Density vs Distance

