

**June 2010**  
**WTPT Channel 227C**  
**Forest City, NC**  
**NIER Analysis**

**Facilities Proposed**

The proposed operation will be on Channel 227C (93.3 MHz) with a maximum lobe effective radiated power of 100 kilowatts. Operation is proposed with a 6-element circularly-polarized directional antenna which will be side-mounted on a new tower to be located atop Hogback Mountain.

While the proposed coordinates are identical to that of the WSPA-FM licensed operation at this site, WTPT will be constructed on a new tower a short distance away from WSPA-FM, but at the same whole-number coordinates.

While the proposed WTPT coordinates and antenna height are identical to that of the WSPA-FM construction permit at this site, the two stations will not share an antenna. The two antennas would be located in the same aperture on the tower, and construction of the two stations (which are commonly-owned) would be coordinated. The antenna pattern studies for WTPT would account for the presence of the WSPA-FM antenna in the aperture.

The FCC Antenna Structure Registration Number for the tower is 1256982.

**NIER Calculations**

Study of the area within 1000 meters of the proposed site reveals no likely sources of non-ionizing radiation other than this proposal, WFBC (auxiliary), WSPA-FM, and WSPA-DT.

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 WTPT antenna system assume a Type 6 element pattern, which is the element pattern for the Shively antenna proposed for use. The highest calculated ground level power density occurs at a distance of 25 meters from the base of the antenna support structure. At this point the power density is calculated to be 65.6  $\mu\text{W}/\text{cm}^2$ , which is 7.0% of 1000  $\mu\text{W}/\text{cm}^2$  (the FCC standard for controlled environments at FM frequencies).

Calculations of the power density produced by WTPT and the other stations at this transmitter site are summarized in the following table:

Call	Avg or Peak ERP Antenna Model	Relative Field	Height AGL	Calculated Max Exposure	Controlled FCC Limit	% of Limit
WTPT 227C	100 kW avg SHI 6810 series 6 bay full wave	FMMModel	74 m	65.6 $\mu\text{W}/\text{cm}^2$	1000 $\mu\text{W}/\text{cm}^2$	6.6%
WSPA-FM 255C	License 100 kW avg ERI rototiller 6 bay full wave	FMMModel	43 m	271.3 $\mu\text{W}/\text{cm}^2$	1000 $\mu\text{W}/\text{cm}^2$	27.1%
	CP 100 kW avg SHI 6810 series 6 bay full wave	FMMModel	74 m	65.6 $\mu\text{W}/\text{cm}^2$		or 6.6%
	Aux License 50 kW avg ERI rototiller 6 bay half wave	FMMModel	26 m	65.4 $\mu\text{W}/\text{cm}^2$		or 6.5%
	Aux CP 25 kW avg SHI 6810 series 2 bay full wave	FMMModel	58 m	69.8 $\mu\text{W}/\text{cm}^2$		or 7.0%

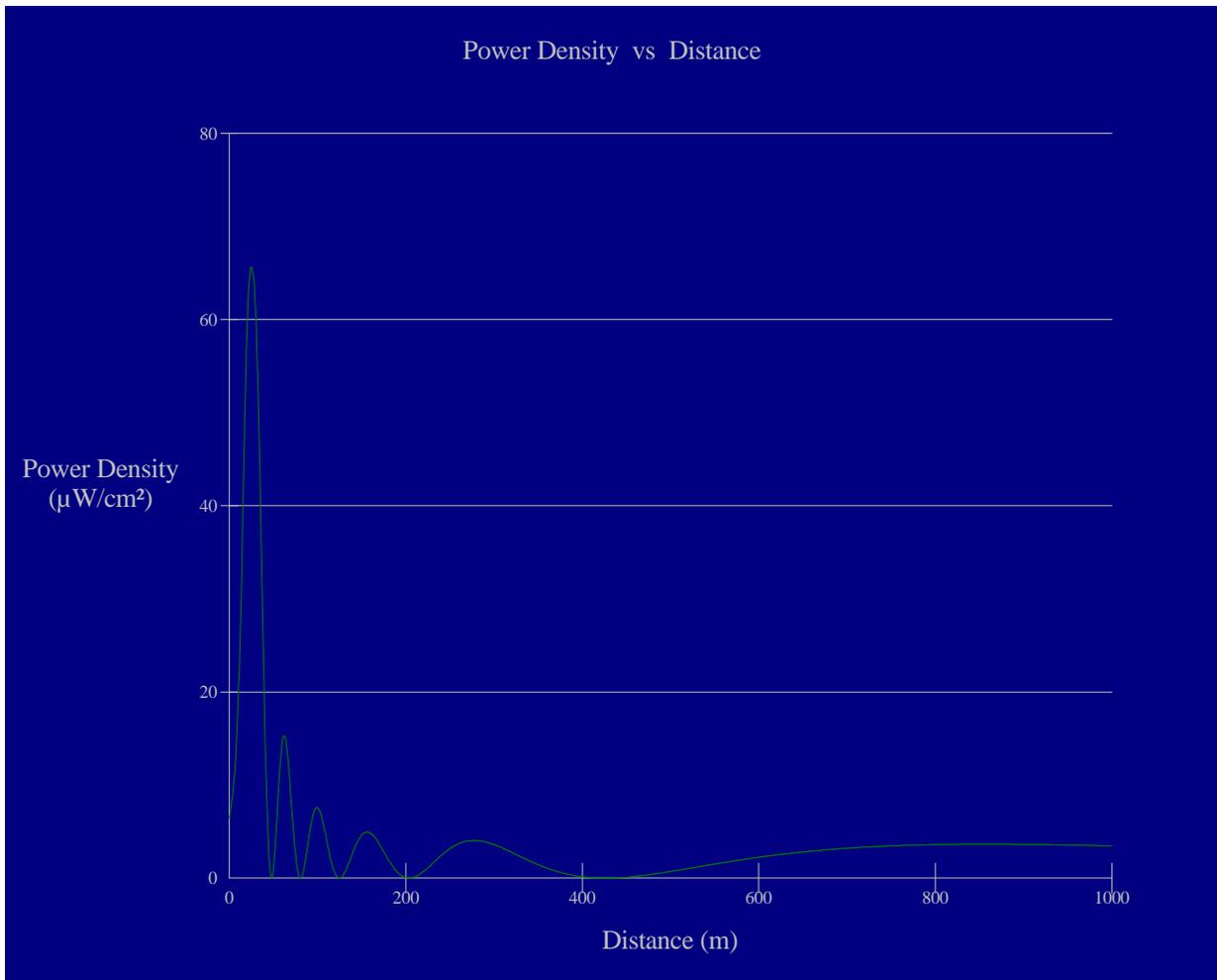
WFBC-FM 229C	Aux License 1.7 kW avg SHI 6810 series 3-bay full wave	FMMModel 30 m	13.6 $\mu\text{W}/\text{cm}^2$	1000 $\mu\text{W}/\text{cm}^2$	1.4%
WSPA-DT Ch 7	25.7 kW avg DIE THV-10A7/VP-R O4	0.200 128 m	2.2 $\mu\text{W}/\text{cm}^2$	1000 $\mu\text{W}/\text{cm}^2$	0.2%

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation of WTPT and the present operations of WFBC-FM (auxiliary), WSPA-FM, and WSPA-DT (were their maxima to coincide, which they do not) is 35.3% of the FCC standard for controlled environments.

According to information provided by the WTPT licensee (which is also the licensee of WSPA-FM at this transmitter site), Hogback Mountain is a controlled access site, on a remote mountaintop with no public access permitted. On the access road there are multiple locked fences and locked gates which are posted with RFR warning signs.

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, 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.



**Ground-Level NIER**

**OET FMModel**

**WTPT 227C Forest City**

Antenna Type: Shively 6810-6R-DA

No. of Elements: 6

Element Spacing: 1.0 wavelength

Distance: 1000 meters

Horizontal ERP: 100 kW

Vertical ERP: 100 kW

Antenna Height: 74 meters AGL

Maximum Power Density is 65.6 :  $\text{W}/\text{cm}^2$  at 25 meters from the antenna structure.