

Kinston, North Carolina  
Application for New FM Translator  
File Number BNPFT-20030317JQD  
On Channel 224  
by  
Conner Media Corporation

Exhibit 17  
Nonionizing Radiofrequency Radiation Analysis

March 2013

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Declaration

I declare, under penalty of perjury, that I am a technical consultant to broadcasting and other communications systems, that I have over twenty-five years of experience in the engineering of broadcast and other communications systems, that I am familiar with the Federal Communications Commission's Rules found in the Code of Federal Regulations Title 47, that I am a Professional Engineer registered in North Carolina, that I have prepared or supervised the preparation of the attached Exhibit 17, Nonionizing Radiofrequency Radiation Analysis, for Conner Media Corporation, and that all of the facts therein, except for facts of which the Federal Communications Commission may take official notice, are true to the best of my knowledge and belief.



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### Narrative

This Exhibit supports a long form application for a new FM translator, tech box file number BNPFT-20030317JQD, CDBS application ID 630357, for Kinston, North Carolina. Translator 630357 is proposed on the tower of WLNK (AM), Kinston, North Carolina. Also located on the tower is WZUP, La Grange, North Carolina. This Exhibit shows that the proposed operation is in compliance with nonionizing electromagnetic radiation regulations.

### FM Radiofrequency Calculations

Power density calculations were made using the procedures outlined in OET Bulletin No. 65<sup>11</sup>. Calculations are based on an elevation two (2) meters above ground level to show protection to a person standing at ground level. The following power density equation is used:

$$S(\text{mW}/\text{cm}^2) = \frac{334.098 \times \text{ERP}_{\text{adj}}(\text{Watts})}{D^2}$$

Where:  $\text{ERP}_{\text{adj}}(\text{Watts})$  is the maximum Effective Radiated Power (Horizontally polarized plus vertically polarized, if applicable) times the vertical elevation pattern factor for the elevation in question

D is the distance in centimeters from the antenna radiation center to the calculation point

### Radiofrequency Radiation Evaluation

The proposed 630357 facilities, when evaluated under worst case methods in OET-65, will create 0.0027 mW/cm<sup>2</sup> two meters above ground level. A single bay Shively 6812-1

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<sup>11</sup> Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields, OET Bulletin 65, Edition 97-01, August 1997.

antenna is proposed which reduces the power density at ground level to a peak value of 0.0007 mW/cm<sup>2</sup> at 108 meters from the tower base. This is less than 1% of the maximum permitted 0.20 mW/cm<sup>2</sup> for general population/uncontrolled exposure. This level is de minimis. Nonetheless, the remaining facilities at the site are described below.

The licensed WZUP facilities, when evaluated under worst case methods in OET-65, will create 0.23 mW/cm<sup>2</sup> two meters above ground level. A 4 bay full wave spaced Shively 6813-4 antenna is proposed which reduces the power density at ground level. Using the equation above, the peak power density is 0.046 mW/cm<sup>2</sup> at 38 meters from the base of the tower. This is less than 24% of the maximum permitted 0.20 mW/cm<sup>2</sup> for general population/uncontrolled exposure.

WLNR is licensed on 1230 kHz with 1,000 watts and a tower which is 131.9 electrical degrees or 0.366 wavelength tall. Using the methods in OST-65, the required fence distance is 1.47 meters or 4 foot 10 inches. The actual fence is more than 5 feet from the active components of the tower at its closest approach. The site is therefore more protective than the minimum for the AM station. The tower site is fenced with a locked gate, and the facility is marked with signs indicating the presence of non-ionizing RF radiation. The site use agreement with other users of the site includes provisions to prevent excess exposure to maintenance workers on the tower. The agreement includes requirements that the users remove power from antennas when personnel are on the tower in the vicinity of the antenna to avoid exposing workers to non-ionizing radiation.

Figure 1 below shows the power density calculations for the two FM facilities authorized or proposed at the site. As the graph shows, the maximum density for the two FM stations occur at different distances from the tower base. Also, the contribution from each FM station is minimal at the tower base where the power density from AM station is the greatest.

As required for all broadcast facilities by §1.1307(b), the proposed facility complies with the maximum exposure limits in 47 C.F.R. §1.1310 TABLE 1.—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE) both part (A) Limits for

Occupational/Controlled Exposures and part (B) Limits for General Population/Uncontrolled Exposure. The evaluation was conducted using the procedures in OET Bulletin 65, Edition 97-01, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields.

**Figure 1: Power Density Plot for 630357 and WZUP**

