

WTBI
Greenville, South Carolina
Application for Auxiliary Facilities for Noncommercial FM Station
On Channel 218 Class C2
by
Tabernacle Baptist Bible College

Exhibit 24
Compliance with Electromagnetic Exposure Limits

December 2011

© 2011 Tabernacle Baptist Bible College

Timothy L. Warner, Inc.
Post Office Box 8045
Asheville, North Carolina 28814-8045
(828) 258-1238
twarner@tlwinc.net

Table of Contents

Description	Page
Declaration	2
Narrative.....	3
Auxiliary Greenville Calculations.....	3
Additional Facilities at the Site	4
Figure 1: Calculated Nonionizing Electromagnetic Radiofrequency Radiation.....	4

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 24 Compliance with Electromagnetic Exposure Limits for Tabernacle Baptist Bible College, 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.



Timothy L. Warner, P.E.
Post Office Box 8045
Asheville, North Carolina 28801
(828) 258-1238
twarner@tlwinc.net
31 December, 2011

Narrative

This Exhibit provides details of the Compliance with Electromagnetic Exposure Limits for the proposed auxiliary WTBI facilities in Greenville, South Carolina. The facility requires calculations which are beyond the scope of the worksheets for FCC Form 340. This proposal was studied under the procedures in FCC Bulletin OET-65¹ to determine compliance.

It is noted that this exhibit only addresses the potential for radiofrequency electromagnetic field exposure. The proposed antenna support structure is a tower registered through the Antenna Structure Registration system. No ground disturbance is proposed. No change in lighting is proposed. The auxiliary antenna does not propose a significant change in the width of the structure.

Auxiliary Greenville Calculations

The auxiliary facilities, when evaluated under worst case methods in OET-65², would create 0.092 mW/cm² at 2 meters above ground level, which is 46% of the limit for uncontrolled/ general population areas. When the vertical elevation pattern of the antenna, a Shively 6813-3 full wave spaced three bay antenna, is considered, the power density at 2 meters above ground level will be significantly reduced. Using the manufacturer's elevation pattern and the equations in OET-65, the maximum electromagnetic power density is 0.0116 mW/cm² at a distance of 42 meters from the tower base, or 5.8% of the maximum uncontrolled/public exposure. The auxiliary antenna power density is plotted on Figure 1.

¹ Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields, OET Bulletin 65, Edition 97-01, Robert F. Cleveland, Jr., David M. Sylvar, and Jerry L. Ulcek, and Supplement A, Additional Information for Radio and Television Broadcast Stations.

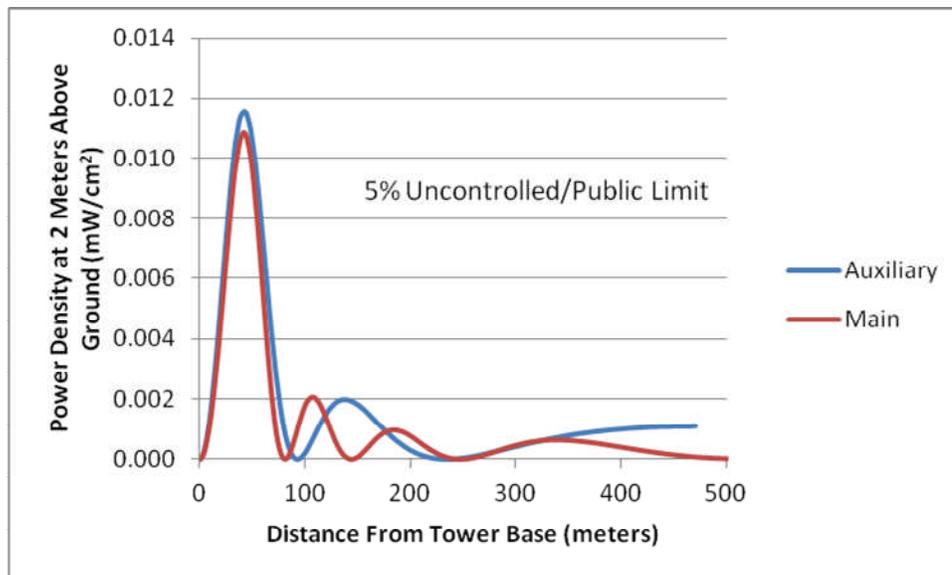
² *ibid.*

Additional Facilities at the Site

In addition to the proposed auxiliary facilities, the WTBI main antenna is located on the tower. The WTBI main antenna, when evaluated under worst case methods in OET-65³, would create 0.129 mW/cm² at 2 meters above ground level, which is 64.5% of the limit for uncontrolled/ general population areas. When the vertical elevation pattern of the antenna, a Shively 6810-5 full wave spaced five bay antenna, is considered, the power density at 2 meters above ground level will be significantly reduced. Using the manufacturer's elevation pattern and the equations in OET-65, the maximum electromagnetic power density is 0.0109 mW/cm² at a distance of 42 meters from the tower base, or 5.5% of the maximum uncontrolled/public exposure. The power density for the main antenna is also plotted on Figure 1.

Note that the two facilities will not operate simultaneously.

Figure 1: Calculated Nonionizing Electromagnetic Radiofrequency Radiation



³ ibid.