

Frankfort, Kentucky  
Application for Minor Modification of FM Translator W294BG  
On Channel 294  
by  
Eastern Kentucky University

Exhibit 17  
Nonionizing Radiofrequency Radiation Analysis

November 2009

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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 Eastern Kentucky University, 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 provides details of the Compliance with Electromagnetic Exposure Limits for the proposed modified translator W294BG to serve Frankfort, Kentucky. The facility requires calculations which are beyond the scope of the worksheets for FCC Form 349. This proposal was studied under the procedures in FCC Bulletin OET-65<sup>1</sup> to determine compliance.

### Calculations

The facilities proposed herein will result in RF density at two meters above roof level, under the worst case assumptions of OET 65, of 0.97 mW/cm<sup>2</sup>.

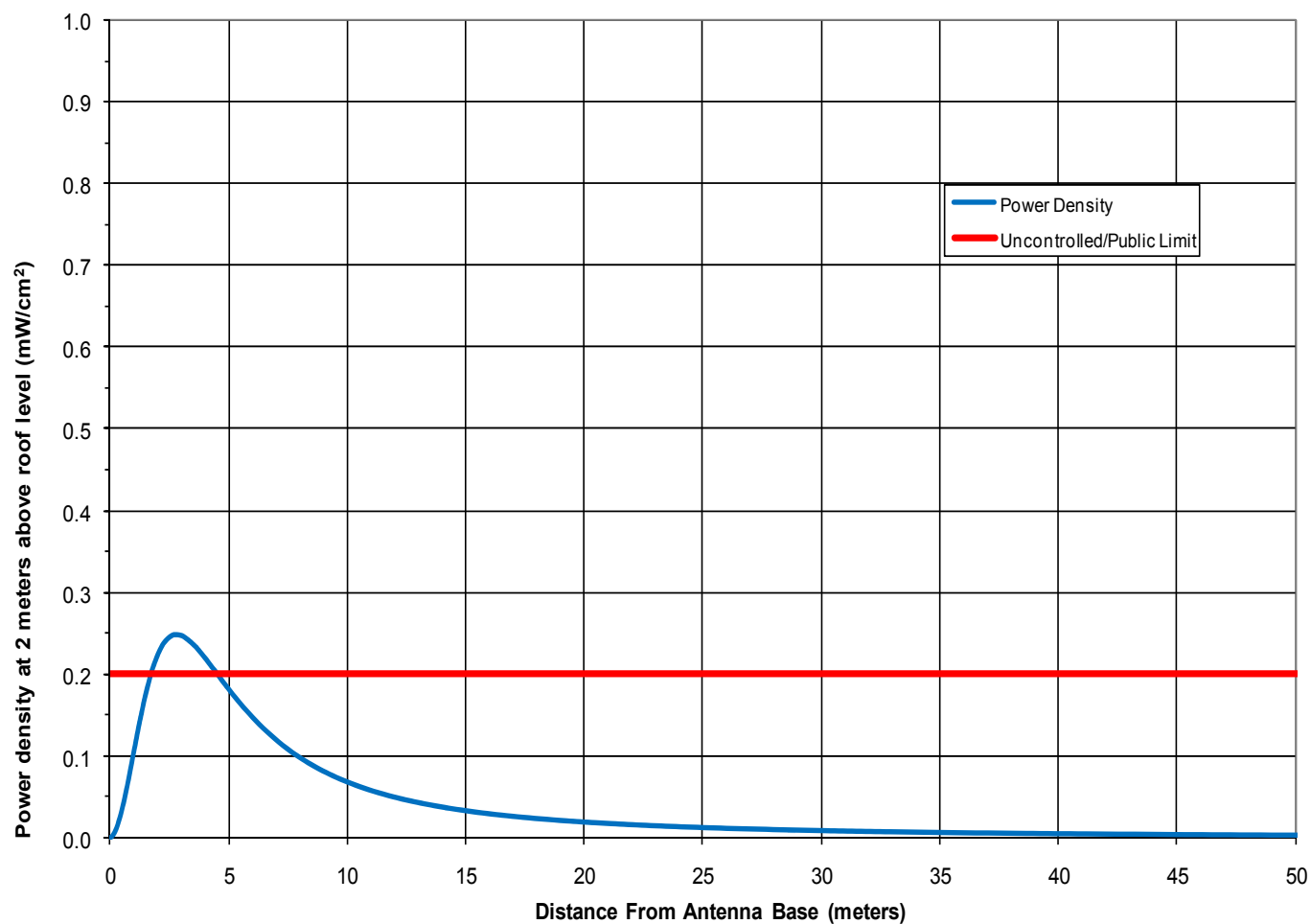
The proposed antenna, a Shively 6812-1, will have less downward radiation than the worst case assumptions of OET 65. The antenna was studied using the manufacturer's elevation model. The power density was plotted at one degree (1°) vertical elevation increments. A plot of the predicted power density with respect to distance from the base of the antenna is included as Figure 1. Using free space path loss, there is an area from 1.8 meters to 4.4 meters from the base of the antenna where the power density exceeds the maximum permitted for uncontrolled/public exposure.

The antenna is mounted above a stair tower on the roof of a building. Access to the roof is restricted by a locked door. EKU will post signs on the interior and exterior of the door describing the nature of the hazard and providing instructions for turning off the translator and disabling it during periods when personnel must be on the roof for maintenance.

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<sup>1</sup> 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.

As required for all broadcast facilities by §1.1307(b), the subject 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, and the computer program FM Model developed by the Environmental Protection Administration.

**Vertical Plot of Power Density**

**Figure 1: Nonionizing Radiofrequency Radiation**