

Cokesbury, South Carolina  
Application for New Noncommercial FM Station  
On Channel 220 Class C3  
by  
Spirit Broadcasting Group, Inc.

Exhibit 22  
Compliance with Electromagnetic Exposure Limits

September 2010

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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 22 Compliance with Electromagnetic Exposure Limits for Spirit Broadcasting Group, Inc., 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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24 September 2010

### Narrative

This Exhibit provides details of the Compliance with Electromagnetic Exposure Limits for the proposed new station to serve Cokesbury, 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-65<sup>1</sup> to determine compliance.

It is noted that this exhibit only addresses the potential for radiofrequency electromagnetic field exposure. The structure proposed for this station was constructed prior to March 16, 2001.

### Cokesbury Calculations

The Cokesbury facilities, when evaluated under worst case methods in OET-65<sup>2</sup>, would create 0.33 mW/cm<sup>2</sup> at 2 meters above ground level, which exceeds the limit for uncontrolled/public exposure, although it is 33% of the occupational/controlled limit. When the vertical elevation pattern of the antenna, a Shively 6814-2 full wave spaced antenna, is considered, the power density at ground level will be significantly reduced. Using the manufacturer's elevation pattern and the equations in OET-65, the maximum electromagnetic power density is 0.053 mW/cm<sup>2</sup> at a distance of 57 meters from the tower base, or 26% of the maximum uncontrolled/public exposure. The exposure was also calculated using the computer program FM Model<sup>3</sup> which calculates the maximum field at 2 meters above ground to be 0.046 mW/cm<sup>2</sup> at 45.6 meters from the tower base, or 23% of the maximum public exposure. The power density calculated by FM Model is plotted in this Exhibit.

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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.

<sup>2</sup> *ibid.*

<sup>3</sup> FM Model for Windows, version 2.10 Beta, March 22, 1995, Office of Engineering and Technology, Spectrum Engineering, Telecommunications Analysis Branch, Michael R. Davis

Figure 1: FM Model Output  
WKRI Omnidirectional Modification  
24 September 2010

## Power Density vs Distance

