

## COMPLIANCE WITH RADIOFREQUENCY RADIATION GUIDELINES

The firm of Munn-Reese has been retained to prepare this study showing compliance with the current FCC guidelines for exposure to non-ionizing radiofrequency radiation for the proposed installation of W29EL-D on the WFYI-TV tower. The station is located at a multiple use site with other authorized facilities.

W29EL-D requests operation on Channel 29, 560-566 MHz, using an ERI Model AL8O-29-PME-SP antenna with an effective radiated power of 3.2 kW horizontal polarization and 1.12 kW vertical polarization. The antenna will be mounted with its center of radiation 238.1 meters above ground, making it 236.1 meters above an observer on the ground, who is assumed to be 2 meters tall.

Equation 10 of OET Bulletin No. 65 can be used to predict the potential exposure to radiofrequency radiation for human observers on the ground as indicated by total power density expressed in units of  $\mu\text{W}/\text{cm}^2$ . This equation states:

$$S = \frac{33.4(F^2)ERP}{R^2}$$

where: S = Total Power Density in units of  $\mu\text{W}/\text{cm}^2$   
 F = Relative Field of Pattern  
 ERP = Effective Radiated Power in Watts  
 R = Distance in Meters

The standard procedure for RF exposure studies considers all locations within 315 meters of the base of the supporting structure. The depression angle at this distance is  $53.1^\circ$ . The manufacturer has supplied a tabulation of the relative field for the vertical plane pattern, and at  $59^\circ$ , the pattern reaches its maximum value below the depression angle of  $53.1^\circ$ . At  $59^\circ$  the tabulation lists a relative field value of 0.135. Given these parameters, the maximum predicted exposure attributable to W29EL-D for observers near the base of the supporting structure is  $0.0472 \mu\text{W}/\text{cm}^2$ .

At Channel 29, the limit for exposure to the general public in units of  $\text{mW}/\text{cm}^2$  is found by dividing the frequency in MHz by 1500. For Channel 29 this is equal to  $0.3753 \text{ mW}/\text{cm}^2$  or  $375.3 \mu\text{W}/\text{cm}^2$ . Thus, the exposure attributable to W29EL-D is 0.01 % of the controlled limit. The limit for the less restrictive occupational exposure level at this frequency is five times the general exposure limit, therefore, the exposure attributable to W29EL-D would be 0.0025 % of the uncontrolled limit.

Chapter 47 of the Code of Federal Regulations, §1.1307(b)(5)(i) states: *"In general, when the exposure limits specified in [§ 1.1310 of this part](#) are exceeded in an accessible area due to the emissions from multiple fixed RF sources, actions necessary to bring the area into compliance or preparation of an Environmental Assessment (EA) as specified in [§ 1.1311 of this part](#) are the shared responsibility of all licensees whose RF sources produce, at the area in*

*question, levels that exceed 5% of the applicable exposure limit proportional to power. However, a licensee demonstrating that its facility was not the most recently modified or newly-constructed facility at the site establishes a rebuttable presumption that such licensee should not be liable in an enforcement proceeding relating to the period of non-compliance. Field strengths must be squared to be proportional to SAR or power density. Specifically, these compliance requirements apply if the square of the electric or magnetic field strength exposure level applicable to a particular RF source exceeds 5% of the square of the electric or magnetic field strength limit at the area in question where the levels due to multiple fixed RF sources exceed the exposure limit. Site owners and managers are expected to allow applicants and licensees to take reasonable steps to comply with the requirements contained in [paragraph \(b\)\(1\)](#) of this section and, where feasible, should encourage co-location of RF sources and common solutions for controlling access to areas where the RF exposure limits contained in [§ 1.1310 of this part](#) might be exceeded. Applicants and licensees are required to share technical information necessary to ensure joint compliance with the exposure limits, including informing other licensees at a site in question of evaluations indicating possible non-compliance with the exposure limits.”*

Should the level of radiofrequency radiation at this multiple use site ever exceed the FCC guidelines, the proposed W29EL-D facility is categorically exempt from responsibility for bringing the shared transmitter site into compliance because its contribution is less than 5.0 % of the applicable limit.

The facility is properly marked with signs, and entry is restricted by means of fencing with locked doors and/or gates. Any other means as may be required to protect employees and the general public will be employed. In the event work would be required in proximity to the antenna such that the person or persons working in the area would potentially be exposed to fields in excess of the guidelines, the station will cooperate with other licensees at the site to reduce power or cease operation during the critical period.