

FIGURE 44**COMPLIANCE WITH RADIOFREQUENCY RADIATION GUIDELINES**

The proposed KNLC-DT installation will be co-located with other broadcast facilities. The site will, therefore, be considered a “multiple use” site.

The proposed KNLC-DT antenna will be a Model ATS12X4 manufactured by Antenna Concepts Inc. The antenna will be mounted with its center of radiation 307.5 meters above ground, making it 305.5 meters above an observer on the ground, who is assumed to be 2 meters tall. A maximum effective radiated power of 900 kW (900,000 watts) has been proposed. The addition of this antenna will not require any alteration of the Antenna Structure Registration data for this site.

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 44.1° . The antenna manufacturer has supplied a complete tabulation of the relative field for the vertical plane pattern, and the relative field values are less than 0.100 below this angle. Solving the above equation with these values gives a power density of $3.22 \mu\text{W}/\text{cm}^2$.

KNLC-DT will operate on Channel 14 with a center frequency of 473 MHz. The maximum permitted exposure level for areas accessible by the general public is found by dividing the center frequency by 1500. The calculated maximum permitted power density is $0.3153 \text{ mW}/\text{cm}^2$ or $315.3 \mu\text{W}/\text{cm}^2$. Occupational exposure levels are five times this value or $1,577 \mu\text{W}/\text{cm}^2$.

The calculated power density of $3.22 \mu\text{W}/\text{cm}^2$ represents a location directly beneath the antenna, which would be the shortest possible distance to the antenna for an observer located on the ground. Thus, this value represents a worst-case scenario. However, this maximum value is only 1.02 % of the exposure limit for the general public and 0.20 % of the occupational limit.

Chapter 47 of the Code of Federal Regulations, §1.1307(b)(3) states: *“In general, when the guidelines specified in §1.1310 are exceeded in an accessible area due to the emissions from multiple fixed transmitters, actions necessary to bring the area into compliance are the shared responsibility of all licensees whose transmitters produce, at the area in question, power density levels that exceed 5% of the power density exposure limit applicable to their particular transmitter or field strength levels that, when squared, exceed 5% of the square of the electric or magnetic field strength limit applicable to their particular transmitter. Owners of transmitter sites are expected to allow applicants and licensees to take reasonable steps to comply with the requirements contained in §1.1307(b) and, where feasible, should encourage co-location of transmitters and common solutions for controlling access to areas where the RF exposure limits contained in §1.1310 might be exceeded.”* Should the level of radiofrequency radiation at the proposed multiple use site ever exceed the FCC guidelines, the proposed KNLC-DT 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 will be properly marked with signs, and entry will be 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.