

COMPLIANCE WITH RADIOFREQUENCY RADIATION GUIDELINES

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

The proposed WCMW-DT antenna is a Dielectric Model TFU-18JSC-R C170. The antenna is replacing the one currently being used by the licensed digital operation of WCMW-DT on Channel 21. The application requests a change in frequency to Channel 20 in accordance with the FCC Repack plan. ***Since the proposed system will require no significant physical modifications to the tower, no additional environmental studies or alteration of the existing Antenna Structure Registration data will be required.***

The antenna is mounted with its center of radiation 117 meters above ground, making it 115 meters above an observer on the ground, who is assumed to be 2 meters tall. A maximum effective radiated power of 68.3 kW (68,300 watts) has been assigned using horizontal polarization.

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. With the proposed antenna mounted 115 meters above an observer on the ground, the depression angle at this distance is 20.1°. Below this angle, data from the antenna manufacturer for this exact antenna indicates a maximum relative field value of 0.134 at a depression angle of 52.0°. However, to assure a truly “worst case” scenario, a relative field of 0.15 has been assumed for F in this study. Using an ERP = 68,300 watts and setting R = 115 meters, the above formula computes a worst case S of 3.881 $\mu\text{W}/\text{cm}^2$.

At Channel 20, 506-512 MHz, the limit for human exposure to non-ionizing radiofrequency radiation for areas that can be accessed by the general public is found by dividing the channel center frequency, 509 MHz, by 1500. This yields a value of 0.3393 mW/cm^2 or 339.3 $\mu\text{W}/\text{cm}^2$. The limit for areas classed as occupational exposure is five times this value or 1,696.5 $\mu\text{W}/\text{cm}^2$.

As noted above, the worst case exposure to any person on the ground is 3.881 $\mu\text{W}/\text{cm}^2$. This represents 1.1% of the general public limit and 0.23% 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 WCMW-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 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.