

Environmental Effects

The facility is located at the apex of a hill in unoccupied mountainous terrain. The closest rise in terrain is 31 meters which is 542 meters east of the site. The closest residence is 2.88 km east of the site, at an elevation 200 meters lower than the base of the tower. There are other significant emitters of radio frequency energy in the area. The transmitter and tower site are enclosed with a locked fence. The site is located on a private communications site. Access to the site is available only to authorized technical and maintenance personnel by the unimproved private road with a locked gate 1.5 km from the site.

The applicant's proposed K210AE's side-mounted Scala Yagi antennas with 0.50 kW H and 0.50 kW V. at 30 m and 31 m respectively AGL. Per the manufacturer's published specifications, the relative field at 90 degrees is less than 0.1 or .05 kW for the Horizontal antenna and is less than 0.1 or .05 kW for the Vertical antenna. By reference to Table 1 of the Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65 Supplement A, Evaluating Compliance With FCC Guidelines For Human Exposure to Radio Frequency Electromagnetic Fields, using equation #9 in Section 2, Prediction Methods, the calculated power density at ground level using the combined ERP with the antenna's field factor and an AGL of 30 m will be less than 3.5 $\mu\text{W}/\text{cm}^2$, or 1.8% of the general population/uncontrolled exposure limit of 200 $\mu\text{W}/\text{cm}^2$ and 0.4% of the occupational/controlled exposure limit of 1,000 $\mu\text{W}/\text{cm}$ for FM broadcast frequencies.

Also on the same tower is K237CO's side-mounted Scala Yagi antennas with 0.051 kW H CP at 20 m AGL. Per the manufacturer's published specifications, the relative field at 90 degrees is 0.23 or .0117 kW. The maximum RF exposure will be less than 8.35 $\mu\text{W}/\text{cm}^2$, or 4.18% of the general population/uncontrolled exposure limit of 200 $\mu\text{W}/\text{cm}^2$ and 0.84 % of the occupational/controlled exposure limit of 1,000 $\mu\text{W}/\text{cm}$ for FM broadcast frequencies.

Also on the same tower is KWSU-DT's top-mounted channel 10 antenna with 35 kW ERP H at 73 m AGL. By reference to Table 1 of the Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65 Supplement A, Evaluating Compliance With FCC Guidelines For Human Exposure to Radio Frequency Electromagnetic Fields, using equation #2 in Section 3, Television Broadcast Stations, the calculated power density at ground level for a "bat wing" antenna with a relative field factor of 0.2 is 8.8 $\mu\text{W}/\text{cm}^2$, or 4.4% of the general population/uncontrolled exposure limit of 200 $\mu\text{W}/\text{cm}^2$ and 0.9% of the occupational/controlled exposure limit of 1,000 $\mu\text{W}/\text{cm}$ for TV channel 3 broadcast frequencies.

At a site 90 meters to the east is KQPT-TV's channel 24 side-mounted antenna with 29.2 kW ERP H Visual and 2.92 kW aural at 23 m AGL. By reference to Table 1 of the Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65 Supplement A, Evaluating Compliance With FCC Guidelines For Human Exposure to Radio Frequency Electromagnetic Fields, using equation #2 in Section 3, Television Broadcast Stations, the calculated power density at ground level for the Dielectric Digital antenna with a relative field factor of 0.2 is 0.6 $\mu\text{W}/\text{cm}^2$ at he applicants tower, or 0.02% of the general population/uncontrolled exposure limit of 353 $\mu\text{W}/\text{cm}^2$ and 0.00003% of the occupational/controlled exposure limit of 1,767 $\mu\text{W}/\text{cm}$ for channel 24.

At the same site 90 meters to the east is KRAO-FM's side mounted FM antenna with 2.2 kW ERP CP at 21 m AGL. Page three of this Exhibit is a printout from the Commission's FM Model for Windows software for KCLK-FM's FM antenna. As shown, at ground level RF exposure will be less than 10 $\mu\text{W}/\text{cm}^2$, or 5% of the general population/uncontrolled exposure limit of 200 $\mu\text{W}/\text{cm}^2$ and 1% of the occupational/controlled exposure limit of 1,000 $\mu\text{W}/\text{cm}^2$ for FM broadcast frequencies.

By adding the exposure results for all of the stations at and near the site, the total exposure can be determined. Even though the maximum exposure from all of the stations probably will never be this high in any one spot, this figure is used as a worst-case maximum. The total of the general population/uncontrolled exposure values is 15.4% and the total of the occupational/controlled exposure values is 3.14%.

This is *prima facie* evidence of compliance with the MPE requirements in the frequency ranges in use at this site, as regards to occupational exposure at or near ground levels. Because of the large margin of safety, the applicant does not believe that on-site measurements of the radio frequency power density are necessary.

The applicant is cognizant of its responsibility to protect those workers whose duties require that they be in the vicinity of the antenna from exposure to radio frequency fields in excess of those outlined above. To that end, signage is posted at the site warning all workers of the potential for harmful exposure and directing them to contact the responsible person at the proposed broadcast station. That person will ascertain whether the worker will be in areas where there is an exposure hazard, and if so, arrange to shut down the transmitter. It will be assumed that an exposure hazard may exist on the antenna support structure at elevations above 10 meters, AGL.

For these reasons, the applicant believes that a Commission grant of this renewal would not have a significant environmental effect.

KRAO-FM

