

TELECOMMUNICATIONS ENGINEERING  
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FIELD MEASUREMENTS OF RADIOFREQUENCY ELECTROMAGNETIC POWER DENSITY  
KUEU-FM, LOGAN, UTAH

This office was retained by the University of Utah to measure the ambient radiofrequency electromagnetic field in the vicinity of radio station KUEU-FM, Logan, Utah, and to assess the station's compliance with the Maximum Permissible Exposure ("MPE") standards for human exposure to radiofrequency electromagnetic fields as outlined in FCC Office of Engineering and Technology Bulletin 65, Edition 97-01 and 47CFR1.1310.

KUEU-FM operates with an ERP of 1.5 kilowatts, horizontally polarized, using a Kathrein K 52 34 17 antenna, side mounted at the 13-meter level of an existing antenna support structure

The KUEU-FM antenna support structure is located on Murray Peak, near Wellsville, Cache County, Utah. Access to the site by the general public is restricted by a locked gate approximately one and one-half miles from the site. However, because the site may be reached by foot, it is to be considered accessible to the general public. The site is located on a local promontory. There are no significant rises in terrain in the near vicinity. The point of closest approach to the antenna is directly beneath it.

The antenna tower and equipment building are enclosed in a secure fenced and locked compound. There are two towers on the site. The KUEU antenna is mounted on the westmost tower. Access to the roof of the equipment building is via two permanently installed ladders.

Because areas outside of the fenced compound are accessible to the general public, the General Public/Uncontrolled MPE standard applies in these areas. Because access to areas within the fenced compound, the equipment building and its roof are restricted to authorized personnel only, the Occupational/Controlled MPE standard applies in these areas.

Measurements were made on the morning of 13 October 2018, using a Narda Model 8715 (S/N 19006) Electromagnetic Radiation Monitor coupled to E-Field Probe Model A8742D (S/N 02204), in current calibration. This probe has a frequency response that is shaped to the ANSI C95.1-1991 Occupational/Controlled MPE standard and reads directly in percent of standard. At the frequencies of interest in these measurements, the General Public/Uncontrolled MPE standard is equal to one fifth of the Occupational/Controlled MPE standard. Fields reported with reference to the General Public/Uncontrolled standard were calculated from measurements made relative to the Occupational/Controlled MPE standard by dividing by five.

The measurement protocols outlined in ANSI/IEEE Standards C95.1-1991 and C95.3-1991 were followed. No measurements were made closer than 20 cm to conducting surfaces and all measurements were spatially averaged over a volume representing the volume occupied by an adult male.

At the time these measurements were made, KUEU was operating at its full licensed power.

For measurements outside of the fenced compound, a series of three radials, centered on the tower, were traversed to a distance of 50 meters or until impeded by terrain. Measurements were made along these radials and the points of peak radiofrequency power density noted. The operator then returned to each of these points and made a series of four spatially averaged measurements at each point. In an effort to average out the field perturbing effect of the operator, each successive measurement of the four was made with the operator's body rotated 90° around the measurement point from the previous measurement.

The highest power density outside of the fenced compound occurs along an azimuth of 60°, true, at a point approximately 20 meters removed from the antenna support structure. The spatially averaged radiofrequency electromagnetic power density at this point is equal to 50% of the General Public/Uncontrolled MPE standard.

Measurements made at ground level inside of the fenced compound and inside the equipment building were well below the General Public/Uncontrolled MPE standard.

Additional measurements were made on the roof of the equipment building. The highest radiofrequency electromagnetic power density was found at a point approximately 2 meters from the SE and 3 meters from the NW sides of the building. The spatially averaged power density at this point is approximately 49% of the General Public/Uncontrolled MPE standard.

8" x 12" blue warning signs have been attached to the compound fence adjacent to the entry gate as well as adjacent to each of the roof access ladders. These signs warn the public that the radiofrequency electromagnetic field beyond the sign may exceed the General Public/Uncontrolled MPE standard. Additionally, "Yellow RF Tower Caution" signs have been attached to the base of each tower and to each tower at roof level.

It is my belief that KUEU-FM is in complete compliance with the provisions of 47CFR1.1307 as regards human exposure to radiofrequency electromagnetic fields.

I, Gray Frierson Haertig, hereby affirm that:

I have been retained by the University of Utah, to prepare this report and make the underlying measurements;

I am principal of Gray Frierson Haertig & Assoc.;

I have a particular interest and expertise in the measurement and assessment of radiofrequency electromagnetic fields;

This report and its underlying measurements have been prepared by myself;

All statements made herein are true to the best of my knowledge and reflect the actual facts of the matter;

I am a broadcast engineer of 52 years' experience and;

My credentials are a matter of record with the Commission.

Respectfully submitted this 29<sup>th</sup> day of November,

  
ELECTRONIC SIGNATURE  
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Gray Frierson Haertig