

TELECOMMUNICATIONS ENGINEERING
GRAY FRIERSON HAERTIG & ASSOC.
820 NORTH RIVER STREET, SUITE 100
PORTLAND, OREGON 97227
503-282-2989

ELECTRONIC MAIL
gfh@haertig.com

17 August 2011

FIELD MEASUREMENTS OF RADIOFREQUENCY ELECTROMAGNETIC POWER DENSITY
KUST-FM, MOAB, UTAH

This office was retained by Utah State University to measure the ambient radiofrequency electromagnetic field in the vicinity of radio station KUST-FM, Moab, 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. Measurement of these fields is stipulated as a condition in construction permit BNPED-20071018AMT.

KUST-FM operates with an ERP of 2.0 kilowatts, circularly polarized, using a Shively 6810-4R/SS.5 antenna, side mounted at the 21 meter level of an existing antenna support structure. This antenna is shared with KZMU, Moab, Utah. Additionally, the antenna of KCYN, Moab, Utah, is located 30 meters AGL on the same structure. KZMU operates with an ERP of 400 watts and KCYN at 29 KW.

At the time these measurements were made, KUST and KZMU were operating at their respective licensed powers and KCYN was operating at 50% of its licensed power due to equipment problems. In analyzing the measurements made herein, the conservative assumption is made that the radiofrequency power density would be double that measured were KCYN to be operating at full licensed power.

The KUST-FM antenna support structure is located on Forest Service property in the Bald Mesa Electronic Site, Grand County, Utah. Access to the site by the general public

is restricted by a locked gate approximately one mile from the site. However, because the site may be reached by foot, it is to be considered accessible to the general public. The local terrain is gently sloping to level. The point of closest approach to the antenna is directly beneath it.

Measurements were made 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. For simplicity's sake, all radio frequency power densities are reported as percent of the General Public/Uncontrolled MPE standard in this report.

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.

A series of three radials, centered on the tower, were traversed to a distance of 100 meters. 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 densities were found approximately 12 meters from the base of the KUST tower. The highest measured spatially averaged radiofrequency electromagnetic power densities in these areas were typically on the order of 65% of the General Public/Uncontrolled MPE standard. Adjusting for KCYN's reduced power, this translates to 130% of standard. At no place did the adjusted field approach or exceed

the Occupational/Controlled MPE standard.

At no point greater than 15 meters from the base of the tower did the adjusted field exceed 100% of the General Public/Uncontrolled MPE standard.

With KCYN operating at 50% power, the General Public/Uncontrolled MPE standard was not exceeded at any point.

It is my recommendation that a series of 12" x 18" warning signs be erected at a distance no less than 18 Meters from the base of the KUST tower and that no two signs be greater than 9 meters apart. At least one sign should be placed immediately adjacent to the access drive to the site. The signs should be attached to permanently-installed steel posts driven into the ground. The center of the signs should be between 54" and 78" above ground level.

The signs should warn the public that the radiofrequency electromagnetic field beyond the signs may exceed the General Public/Uncontrolled MPE standard. The "Blue Notice" signs manufactured by Richard Tell Associates and sold at www.radhaz.com, are suitable for this purpose. Additionally, one of the "Yellow RF Tower Caution" signs should be attached to the base of the tower and one of the "RF Site Guidelines" placards should be attached to the door of the equipment building.

With the fencing and signage specified above in place, it is my belief that KUST-FM will be 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 Utah State University, 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 46 years experience and;

My credentials are a matter of record with the Commission.

Respectfully submitted this 17th day of August 2011,


ELECTRONIC SIGNATURE
Gray Frierson Haertig