

RADIOFREQUENCY ELECTROMAGNETIC FIELD STUDIES

FOR

UNIVERSITY OF SOUTHERN CALIFORNIA

LICENSEE OF

KFAC, CH204B, 88.7 MHz

AT

GILBRALTAR PEAK - A MULTI-USER SITE

SEPTEMBER 2003

**BY :
BEEM CO.
ARCADIA, CA
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ENGINEERING STATEMENT OF JOEL T. SAXBERG

This engineering statement was prepared on behalf of the University of Southern California, licensee of FM station KFAC, CH204B, 88.7 MHz, Santa Barbara, California.

LOCATION- Gibraltar Peak

On September 17, 2003 Radiofrequency Electromagnetic Field measurements were made around the KFAC transmitting antenna located on Gibraltar Peak, near Santa Barbara, California. Radiofrequency Electromagnetic Field measurements were made by myself, Joel T. Saxberg.

MULTI-USER SITE --

This site is a multi-user site, consisting of six FM stations, TV and numerous Land mobile installations. Many antennas have been abandoned or damaged by the elements and it was not possible to determine, at a glance, if some of the land mobile and general communication systems were operable or not. This site is posted and fenced with a locked gate. It is accessible only to authorized personnel. The KFAC antenna is mounted on its own support structure, which is a wood telephone pole. The highest radiofrequency electromagnetic fields around the KFAC site occurred below the KFAC antenna. KFAC contributes approximately one-half of the power density values below their support structure. This was verified by turning off the KFAC transmitter while observing the readings on the Electromagnetic Survey meter. There are four FM transmit antennas in the immediate vicinity of the KFAC antenna. Three are single element ERI rototiller models, and a four- element, one-wavelength spaced ERI rototiller model is used by KFAC.

MEASURING EQUIPMENT -

NARDA Electromagnetic Survey Meter

Model 8718-10, s/n 01559, calibrated 3/15/00

Model 8732 H-field probe, s/n 06012, calibrated 3/23/00

Model 8742 E-field probe, s/n 03004, calibrated 3/28/00

MEASUREMENTS METHOD –

Initially, a survey of the site was conducted with the Survey meter set to read and hold instantaneous peaks. Where instantaneous readings indicated levels near MPE values, spatial averaging techniques were used. In all cases, spatial averaging was substantially less than instantaneous peak readings. A shaped "E" field probe was initially used to survey the site followed with a shaped "H" field probe. There are small "hot spots" below the KFAC antenna where the power density as measured by spatial averaging techniques exceeds the occupational limit by approximately 20%. A personal protection monitor was worn when taking readings around the site set to alarm at 0.2 mW/cm^2 . This monitor did not trigger at any location except going down the hill from the KFAC transmitter building towards its antenna support structure. These hot spots were pointed out to Mr. Pablo Garcia, KFAC Chief Engineer and special signs will be posted noting this area, with a warning not to remain in this area.

FINDINGS-

One location was found inside the fenced area that exceeded 1.0 mW/cm^2 . Since this location is inside a locked transmitter compound it is believed that those entering this area would be familiar with radiofrequency energy and, in general, this area would normally be considered a "controlled" area. The spot that exceeded the occupational level was under the KFAC support structure and this area will be marked with warning signs. The highest readings, "E" or "H" values occurred in the immediate vicinity of the KFAC tower below the FM antenna.

CORRECTIVE ACTIONS-

Areas inside the fence are considered "controlled" or occupational areas and those entering should be trained in RF Exposure Safety. For those occasions when it is necessary for untrained personnel to work at the site, KFAC will be contacted and the station will operate at reduced power levels. In situations when it is necessary for untrained personnel, such as air conditioning repairmen, general contractors and roofers, to work within the fenced area, they will be escorted to the site and KFAC will reduce power, as necessary, to insure those personnel are not exposed to RF power densities in excess of guideline levels. The area was checked with the KFAC transmitter shut off which resulted in a 50% reduction of the fields below the tower. Other FM broadcasters will also need to reduce power to insure that untrained personnel working under the KFAC tower are not exposed to MPE levels for the general public in excess of FCC guidelines.

COMMENTS AND SUGGESTIONS – The building restrictions limiting tower heights on Gibraltar Peak making compliance with ANSI guideline limits more difficult. It is readily understood that mounting transmit antennas higher greatly reduces the power density levels below them.

Changing the KFAC antenna to a reduced wavelength spaced model would assist in lowering the fields below it. Other site users, instead of using a single element radiator, should consider a minimum of two one-half wavelength spaced radiators to reduce their downward radiation fields.

ENGINEERING CERTIFICATION

JOEL T. SAXBERG deposes and says:

- 1. That he is President of Broadcast Engineering and Equipment Maintenance Company, "BEEM CO.", radio engineering consultants. BEEM CO. maintains offices at: 2322 S. Second Avenue, Arcadia, CA 91006. Telephone (626) 446-3468**
- 2. That he was graduated from California State University at Los Angeles, February 1966, with a Bachelor of Science degree in Electronic Engineering. He received a MS degree in Electronic Engineering Technology in August 1996.**
- 3. That he has submitted many applications to the Federal Communications Commission for broadcast and auxiliary broadcast construction permits and licenses.**
- 4. That his experience in broadcast engineering is a matter of record and he has spent over thirty years working in the field of radio engineering.**
- 5. That the attached engineering exhibit(s) and report(s) were prepared by him or under his direction and supervision. That he believes the facts stated therein to be both true and accurate. Statements that are based on information supplied by others are also believed to be true and accurate.**
- 6. That he has performed field work on AM and FM broadcast transmitting systems throughout this country and continues to provide technical consulting services on a daily basis to broadcasters.**
- 7. That he declares under penalty of perjury the foregoing is true and correct.**

Executed on - 9/19/03

- Joel T. Saxberg

Joel T. Saxberg