

Radiofrequency Electromagnetic Emissions (REE)¹ Measurement Study

Prepared For:

KFRG Auxiliary Site

95.1 mHz.

5 Kw. ERP

Facility ID: 1241

13-57-59, -117-17-16 (NAD 83)

January 17, 2017



Licensee: CBS Radio Stations Inc.

Ste. 920

1900 K Street NW

Washington, DC 20006

Measurements Performed By:

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Remote Possibilities

1046 Corte La Brisa,

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¹ REE - Radiofrequency Electromagnetic Emissions

A. Purpose

The purpose of this Radiofrequency Electromagnetic Emission (REE) study is to demonstrate that the Box Springs transmitter site shared with KOLA for KFRG's Auxiliary use can operate within the safe exposure limits of the rules and regulations of the Federal Communications Commission when the KFRG auxiliary transmission system is on the air per the terms specified on the KFRG Auxiliary site license.² This study includes recommendations to be followed for signage and for Occupational Worker practices. Measurements to assess REE exposure for KFRG were conducted on January 17, 2017 at the Box Springs transmitter and tower site (13-57-59, -117-17-16 (NAD 83) between the hours of 09:30 and 12:00 Pacific Time.

B. Test Equipment Used

A NARDA Model NBM-550 Electromagnetic Monitor, Serial Number E-1035 and a NARDA E field measurement probe, Model EA, 5091, serial number E-1035 were employed to make the measurements. The Model 550 Electromagnetic monitor was calibrated on November 25, 2013. The EA5091 E field probe was calibrated on December 3, 2013.

C. Methods and Observations

After attaching the probe and turning the meter on, the NARDA NBM-550 automatically calibrates itself. Temperature and relative humidity at the time of the measurements were noted. The environmental readings were 65 degrees Fahrenheit and 40% relative humidity at the time the RF field measurements were made. REE E field peak measurements were made with the NARDA probe in various H and L orientations and heights to assure that maximum field readings were observed.

Observations taken at 09:45 hours confirmed that the KFRG-FM auxiliary transmitter was operating at a transmitter (ERP) Effective Radiated Power of 5.0 kW. for the period during which measurements were made per its license. KOLA-FM is authorized for an Effective Radiated Power of 29.3 Kw. and was observed to be operating at it's licensed power. Engineering personnel for KOLA were not present.

1. Site study details:

- a. A grid pattern covering the KOLA /KFRG site and environs was slowly traversed on foot with the NARDA NBM-550 meter set to read instantaneous peaks while moving the probe slowly up and down in various H and V orientations while observing the display. At various times readings were stored.
- b. Readings were conducted both inside and outside the fenced area, on the road leading to the site and on to the American Tower site at the top of the peak, and the surrounding hillside.
- c. Subsequent runs using the NBM-550's Spatial Averaging mode were also made over the property both inside and outside the fenced area and environs.
- d. All peak readings and Spatial Averaging readings were well under both the Public and Occupational exposure limits.
- e. The site is located on a rocky hillside on Box Springs Mountain as shown in an attached photograph. As much of the site and adjacent areas as possible was covered by the survey.

² The permittee/licensee shall, upon completion of construction and during the equipment test period, make proper radiofrequency electromagnetic (RF) field strength measurements throughout the transmitter site area to determine if there are any areas that exceed the FCC guidelines for human exposure to RF fields. If necessary, a fence must be erected at such distances and in such a manner as to prevent the exposure of humans to RF fields in excess of the FCC Guidelines (OET Bulletin No. 65, Edition 97-01, August 1997). The fence must be a type that will preclude casual or inadvertent access, and must include warning signs at appropriate intervals that describe the nature of the hazard. Any areas within the fence found to exceed the recommended guidelines must be clearly marked with appropriate visual warning signs.

- f. While the highest ground level peak and spatial average readings were noted at American Tower site located to the East and above the KOLA/KFRG building, all readings were well below both the Public and Occupational limits.
- g. No readings over 5% of the Occupational Exposure limit were found on or near ground at the University of California site that houses KUCR on 88.3 Mhz. that is located on the West side of the road opposite the KOLA/KFRG building.
- h. A set of peak measurements were made over the KOLA/KFRG site and adjacent areas described before the KFRG transmitter was turned on to determine the ground level REE for KOLA. All Peak readings were well below both Public and Occupational levels.
- i. Highest readings (all well within REE limits) were recorded around the fence surrounding the American Tower site. The ground level elevation of the American Tower site is closer to the center of radiation for both KFRG and KOLA than any other ground points on this part of the site.
- j. Recap of all highest recorded peak and Spatial Average readings:

Reading	FCC96-326.0CC ³	mW/cm ²	Type	Latitude	Longitude
1	10.350%	0.5174	Peak	33.96618	-117.28867
2	7.825%	0.3913	Peak	33.96611	-117.28877
3	13.260%	0.6632	Peak	33.96608	-117.28881
4	1.473%	n/a	Spatial Average	33.96638	-117.28887
5	5.797%	n/a	Spatial Average	33.96607	-117.28889
6	1.473%	n/a	Spatial Average	33.99638	-117.20887
7	11.310%	n/a	Spatial Average	33.96617	-117.28864
8	3.790%	n/a	Spatial Average	33.96641	-117.20876
9	2.492%	n/a	Spatial Average	33.96633	-117.28851
10	5.244%	n/a	Spatial Average	33.96629	-117.28848

2. Non-Occupational Site RFR Considerations

- a. The Public: The Box Springs site is at some distance along an unimproved fire road from the main road and has a locked gate that bars public vehicle access. While hikers can access the area of the site, measured levels are well below both the Public and Occupational limit both inside and outside the locked fence.

D. Conclusions and Recommendations

1. The findings contained in this report are based on the following taken from the FCC's Rules, 47 CFR Part 1.1310 (e):

Radiofrequency exposure limits

(A) Limits for Occupational/Controlled Exposure

(MHz)	V/m	A/m	mW/cm ²	Minutes
0.3-3.0	614	1.63	100 *	6
3.0 – 30	1842/f	4.89/f	900/f ² *	6
30-300	-	-	f/300	6
300-1,500	-	-	f/300	6
1,500 – 100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure

(MHz)	V/m	A/m	mW/cm ²	Minutes
0.3 – 1.34	614	1.63	100 *	30
1.34 – 30	824/f	2.19/f	180/f ² *	30

³ All readings in mW/cm² and percentage refer to Occupational Exposure

30 – 300	27.5	0.073	0.2	30
300 – 1,500	-	-	f/1500	30
1,500 – 100,000	-	-	1	30

f= frequency in mHz

* = Plane-wave equivalent power density

2. Recommended Signage⁴

- a. CATEGORY 2 – BLUE NOTICE SIGNS: Signs and positive access control are already mounted on the building fence. Signage should be mounted on each outside face of the fence in English and Spanish. Signs on the perimeter of the fence must be positioned so any party approaching the fence will be aware of the REE risk.
- b. CATEGORY 3 – YELLOW CAUTION SIGNS: No Yellow Caution signs are needed on the perimeter of the fence.
- c. CATEGORY 4 – WARNING SIGNS: Warning signs are advised for Occupational Personnel who will be climbing the tower.
- d. SUGGESTED ADDITIONAL SIGNAGE⁵: Signs stating that there is an REE Plan for the site, where the plan can be obtained, and emergency 24/7 phone numbers should be affixed on or near the gates for both the KOLA/KFRG site fence, the American Tower site fence, and on the gate for the fence for the University of California building West of the KOLA/KFRG site housing KUCR.

3. Occupational Site Control Recommendations⁶

- a. A written training document for the site based on this report should be prepared. This training document must be given to all site lessees who employ occupational workers and/or escort visitors or inspectors who must enter the fenced area. This document should include procedures for notifying both KOLA and KFRG engineering personnel when the tower has to be climbed to arrange for appropriate power reductions or shut down.
- b. Special signage for the American Tower gate and the University of California KUCR site to the West of the building should also be ordered that clearly indicates that KOLA and KFRG Engineering must be notified when their towers have to be climbed to arrange for appropriate power reductions and/or shut downs.⁷
- c. It is suggested that a certification form be signed by all parties entering the KOLA/KFRG fenced area (employees, contractors, government and other inspectors and visitors) showing that they have been properly REE-trained, understand the training, and will adhere to its restrictions. This training document should be referred to on signage on or near the entrance gate to the Occupational areas for the KOLA/KFRG site, the KUCR site, and the American Tower site.
 - i. It is suggested that one or more personal non-ionizing radiation exposure meters be acquired and placed in a lock box at the site for use by occupational workers and

⁴ Language in this section is based on FCC Report and Order 13-39

⁵ Suitable metal weather-resistant signs with site-specific information such as phone numbers can be obtained from local sources.

⁶ RSI Corporation is an excellent source of appropriate REE hazard signage and information on creating REE Safety plans acceptable to the FCC and OSHA: <http://www.rsicorp.com/products/safety-plan/safetyplandemo.html>

⁷ Since this is an auxiliary site, this recommendation applies more to KOLA than to KFRG

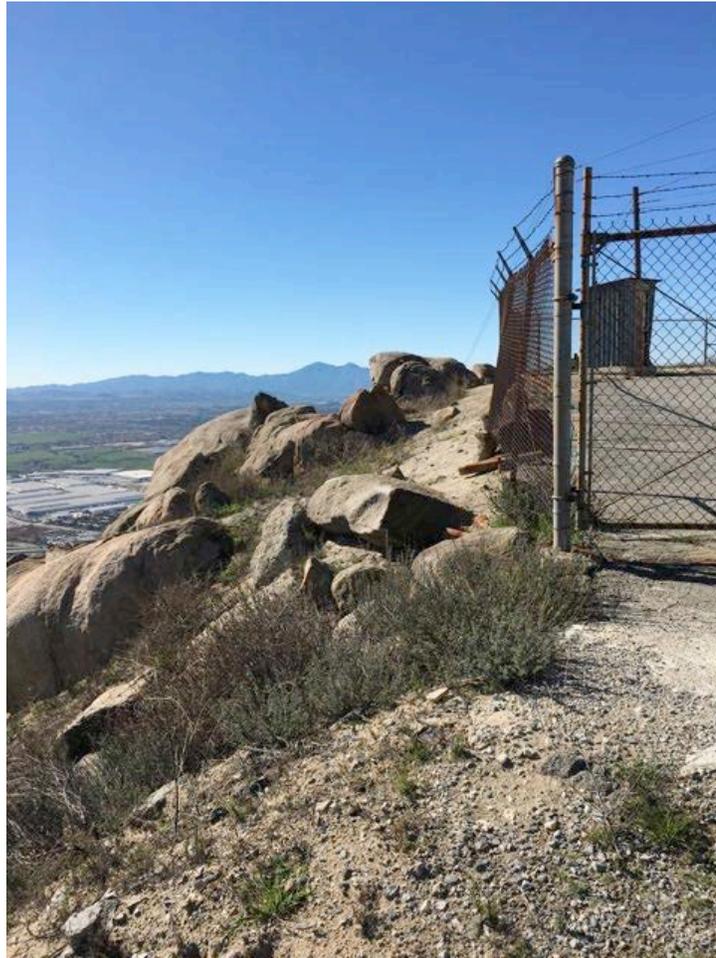
escorted visitors and inspectors when any work is to be done within the fenced area while the FM stations are on the air at the KOLA / KFRG site.

- ii. Unescorted visitors and inspectors should not be allowed inside the fenced areas for all sites covered in this report. One or more signs should be placed on or near the gates to the two off site fenced areas stating that an RFR plan exists for the KOLA/KFRG site and that all occupational workers and others not properly trained should not enter unless properly trained and/or supervised.
- iii. A list of 24/7 contact phone numbers for KOLA/KFRG Engineering should be kept up to date and available to all site lessees who employ occupational workers, others who need to work on the towers, inspect or visit inside the fence, for the American Tower site, and the site along the road

E. Site Photographs



KOLA/KFRG Tower also showing KUCR tower near the center of radiation (COR) for KFRG and close to the COR for KOLA. No ground level REE issues were found.



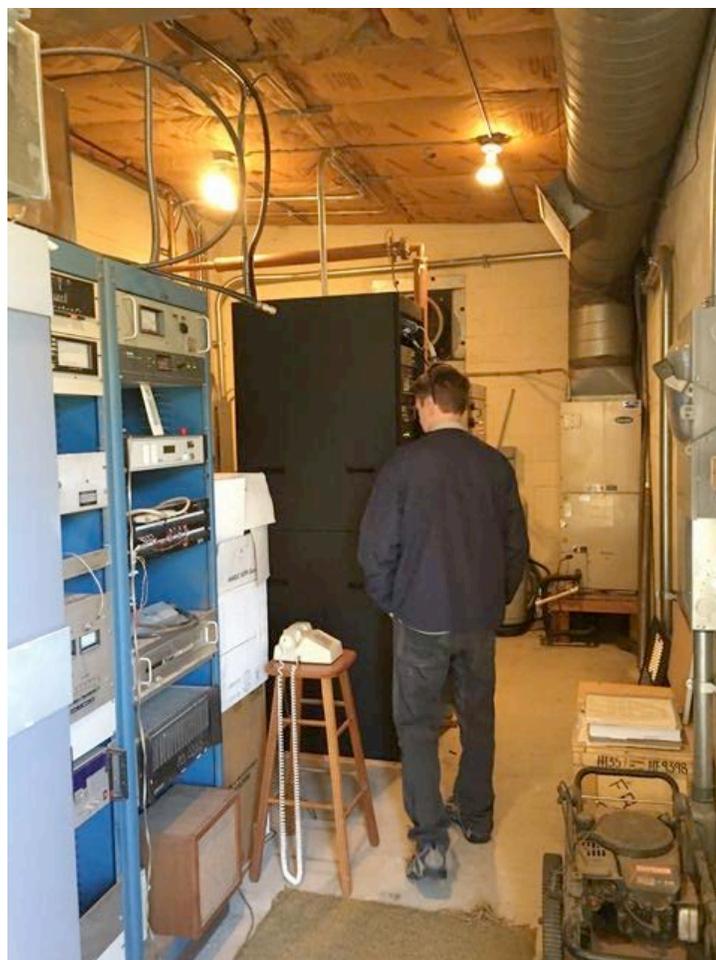
View of West side of American Tower fence where highest ground peak REE readings were recorded



View of road leading to the American Tower site to the South of the KOLA/KFRG tower with other nearby installation for KUCR on the left. No ground level REE issues were discovered during the survey



View of rocky hillside above the KOLA/KFRG site. No ground level REE issues were discovered during the survey



View inside the building housing the KOLA and KFRG transmitters. No REE issues were discovered inside the building during the survey