

## **Radiofrequency Electromagnetic (RF) Measurements**

### **Background**

As the Commission is aware, KLKI has been constructed on an existing communications site shared by a number of other broadcasters. Upon completion of construction in January 2010, an engineer for Educational Media Foundation (EMF), performed RF measurements to evaluate radiofrequency exposure compliance at the KLKI transmitter site. Those measurements revealed an area that exceeded the uncontrolled/public exposure limits of OET-65, with a peak value of 158.45%.

EMF reported these measurements in its covering license application for KLKI filed on January 25, 2010. Thereafter, on January 29, 2010, the Commission denied EMF's request for PTA, due to the potential for human exposure to radiofrequency radiation ("RFR") in excess of applicable safety standards. By its letter, the Commission requested that EMF provide an amendment to the license application to provide documentation of compliance with the Special Operating Conditions in the construction permit related to RFR compliance. The Commission granted an extension of time for EMF to amend and granted EMF's reduced power program test authority request to operate KLKI at 60% of authorized effective radiated power, through September 30, 2010<sup>1</sup>. Accordingly, except for brief test periods performed under controlled circumstances, EMF has been operating KLKI at or below 60% since.

To permanently reduce the RF to acceptable levels, EMF intended to move its antenna to the eastern side of the tower with the expectation that the tower would act as a shield. In cooperation with the landlord and other site tenants, EMF has now completed those changes. Further, unused structures and hardware were removed from the tower to reduce the potential for re-radiation/reflections which could potentially increase the RF levels on the ground. Accordingly, EMF now submits the results of measurements taken following the changes described above.

### **Test Procedures**

On September 22, 2010, David Smith, Engineer for EMF, used EMF's Narda NBM-550 RFR measurement equipment, which uses a EA5091 "shaped probe," to evaluate radiofrequency exposure compliance at the KLKI transmitter site. The meter, serial number B-0755, is due for recalibration on July 21, 2011, and the probe, serial number 01057, is due for recalibration on June 19, 2011.

In performing the measurements, Mr. Smith slowly walked the accessible areas

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<sup>1</sup> EMF requested an extension of time on February 22, 2010, June 1, 2010, July 30, 2010, and September 1, 2010, and the Commission granted the same on March 1, 2010, June 24, 2010, August 2, 2010 and September 2, 2010.

surrounding the tower. Due to severe terrain, it was not possible to safely traverse to 100m in all directions. As he walked, he slowly moved the probe between 2 and 8 feet above ground, and from side to side, seeking, and noting, the highest "overall" readings. Further, the equipment was set to record both GPS position and the RF readings as he moved. In addition, Mr. Smith also investigated areas that appeared to have the potential for higher readings, including the area immediately around the KLKI tower and the areas which were previously found to be over the uncontrolled/public exposure limits of OET-65.

Out of an abundance of caution, Mr. Smith completed two full sets of readings, both with KLKI operational at 100% of its authorized power (30 kilowatts ERP).

### **Discussion**

The highest peak value discovered during the first set of measurements was 63.15% of the uncontrolled/public exposure limits of OET-65. Using the instrument's internal averaging feature resulted in a highest value of 48.81% of the same limit.

The second set of measurements resulted in a highest peak value of 67.05% of the uncontrolled/public exposure limits of OET-65. Again using the instrument's internal averaging feature, the highest value was 49.74% of the same uncontrolled limit.

It is apparent that the relocation of the antenna to the eastern side of the tower, accompanied by the removal of various unused structures/hardware from the tower, has resulted in acceptable RF levels in accessible locations, requiring no fencing or signage in addition to the existing security fence that surrounds the building/tower compound. EMF will continue to cooperate with other users of the site to reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic fields in excess of FCC guidelines.

### **Conclusion**

The measurements indicate that KLKI is now in complete compliance with the uncontrolled/public radiofrequency exposure limits of OET-65. Therefore, EMF respectfully renews its request for full Program Test Authority, and grant of the instant application so that KLKI can commence full-time, full-power operation in service to the public.