

JAMES B. HATFIELD, PE  
BENJAMIN F. DAWSON III, PE  
THOMAS M. ECKELS, PE  
STEPHEN S. LOCKWOOD, PE  
DAVID J. PINION, PE

PAUL W. LEONARD, PE  
ERIK C. SWANSON, EIT  
THOMAS S. GORTON, PE

HATFIELD & DAWSON  
CONSULTING ELECTRICAL ENGINEERS  
9500 GREENWOOD AVE. N.  
SEATTLE, WASHINGTON 98103

TELEPHONE  
(206) 783-9151  
FACSIMILE  
(206) 789-9834  
E-MAIL  
hatdaw@hatdaw.com

MAURY L. HATFIELD, PE  
CONSULTANT  
Box 1326  
ALICE SPRINGS, NT 5950  
AUSTRALIA

NON-IONIZING ELECTROMAGNETIC FIELD MEASUREMENTS  
NEAR THE KMPS-FM / KJAQ-FM AUXILIARY FACILITY  
ON COUGAR MOUNTAIN  
NEAR SEATTLE, WASHINGTON

PREPARED FOR

**CBS Radio Holdings Inc.**

Licensee of KMPS-FM, 94.1 MHz

SEATTLE, WASHINGTON

May 2006

## **INTRODUCTION**

Hatfield & Dawson Consulting Engineers has been retained by CBS Radio Holdings Inc to evaluate the KMPS-FM auxiliary facility on Cougar Mountain, near Seattle, Washington, for compliance with current Federal Communications Commission (FCC) rules regarding human exposure to radiofrequency (RF) electromagnetic fields (EMFs).

The Cougar Mountain broadcast and telecommunications site is east of downtown Seattle, in King County, Washington. The site has multiple towers that support transmitting antennas for several broadcast and non-broadcast wireless facilities. The KMPS auxiliary facility is the same as the presently licensed KJAQ-FM main facility. Both stations share a common antenna.

The KMPS auxiliary facility utilizes 4-bay antenna with a center of radiation 72 meters above ground. Thus it is unlikely that anyone other than authorized RF workers could approach near enough to the KMPS auxiliary antenna to cause those persons' RF exposure levels to exceed FCC limits.

There appear to be no occupancies, schools or hospitals within several hundred feet of the site.

To verify that the KMPS auxiliary facility, in combination with colocated facilities, is in compliance with FCC rules regarding human exposure to RF fields, I have performed RF exposure measurements at ground locations near the KMPS-FM auxiliary facility on Cougar Mountain to determine the exposure conditions that exist in accessible areas near the auxiliary facility.

## **RECENT MEASUREMENTS OF RF EXPOSURE CONDITIONS AT COUGAR MOUNTAIN**

RF exposure measurements were taken in accessible areas in the immediate vicinity of the KMPS auxiliary facility atop Cougar Mountain. The RF exposure measurements were performed on May 9th 2006 between approximately 11:00 a.m. and noon. The hours of measurement were during midday when RF activity at Cougar Mountain was expected to be at or near its highest level. The transmitters for both KMPS and KJAQ were observed to be operating normally prior to the taking of these measurements.

## **MEASUREMENT EQUIPMENT**

Exposure measurements were made using a Narda model 8718B RF Survey meter with an 8742D shaped isotropic probe. This meter and probe combination is a broadband instrument which measures power densities over a wide spectrum as required by IEEE Standard C95.3-2002, *IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields With Respect to Human Exposure to Such Fields, 100 kHz-300 GHz*.

A NARDA Model 8718B Electromagnetic Radiation Survey Meter (S/N 0001) with a NARDA Model B8742D Isotropic Shaped Electric Field Probe (S/N 05003) was used to make the measurements. The meter and probe were calibrated in June 2005 by the manufacturer. All equipment used for the May 9<sup>th</sup> measurements has been factory-calibrated within one year of the measurements.

The NARDA B8742D probe provides an output proportional to the FCC general public (Uncontrolled Environment) maximum permissible exposure (MPE) over a frequency range from 300 kHz to 3.0 GHz. The measurement range of the probe is 0.6 to 600% of the general public standard. The isotropic response of the NARDA B8742D probe is +/-0.75dB.

The meter/probe combination is sensitive to all RF signals in the frequency range of 300 kHz to 3.0 GHz. Therefore the recent exposure measurements at Cougar Mountain included RF signals over a wide frequency range. Thus RF signals from all of the significant Cougar Mountain broadcast and non-broadcast facilities were accounted for in the measurement process.

## **RF EXPOSURE MEASUREMENT METHODOLOGY**

Measurement procedures were performed in accordance with methods described in OET Bulletin 65, August 1997, *“Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields,”* IEEE Standard C95.3-2002, *“IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields With Respect to Human Exposure to Such Fields, 100 kHz-300 GHz,”* and NCRP Report No. 119, *“A Practical Guide to the Determination of Human Exposure to Radiofrequency Fields.”*

During the measurement period, the publicly accessible areas in the immediate vicinity of the KMPS auxiliary tower were scanned with the measurement probe over an area equivalent to that of the human body (one by two meters).

At the locations of the highest RF exposure readings, the probe was moved from close to ground level up to a height of approximately 2 meters (6' 7"). During this procedure, the "Spatial Averaging" feature of the survey meter was activated to capture both peak and spatially averaged RF exposure levels simultaneously.

Peak exposure measurements are quicker and easier to obtain, but they overstate exposure conditions. Spatially averaged measurements are more time-consuming, but they yield a more accurate representation of human exposure conditions, and they are in accordance with IEEE Standard C95.3-2002. Thus an efficient measurement procedure calls for the use of spatial averaging only at those locations where peak measurements indicate the highest exposure conditions.

**CONTRIBUTION OF KMPS AUXILIARY FACILITY TO RF EXPOSURE ENVIRONMENT**

Two small areas were found where RF exposure limits exceed the standard for areas accessible to the public. Both of these areas were near two of the three guy wire anchors, and the area where the standard is exceeded is limited to within 5 feet of one of the guy wire anchors, and 10 feet of the other. Both of these areas are fenced and posted with warning signs.

**CONCLUSION**

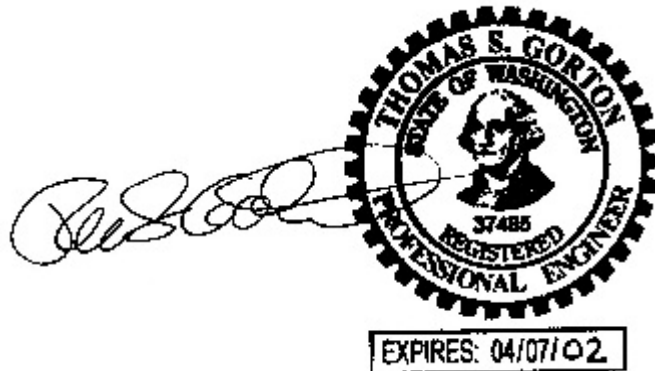
Based on my measurements, the KMPS-FM auxiliary facility at Cougar Mountain, when operating in common with KJAQ-FM with both stations operating at 25 kW transmitter power, will comply with current FCC rules regarding human exposure to radiofrequency electromagnetic fields.

This conclusion is based solely on the comparison of predicted and measured RF conditions in specific areas with the corresponding safe exposure limits set forth in the FCC rules. The FCC exposure limits are based on recommendations by federal and private entities with the appropriate expertise in human safety issues.

**QUALIFICATIONS**

I am an experienced radio engineer whose qualifications are a matter of record with the Federal Communications Commission. I am an engineer in the firm of Hatfield & Dawson Consulting Engineers and I am registered as a Professional Engineer in the States of Washington and Oregon and I hold an FCC General Radiotelephone Operator License PG-13-10466. All representations contained herein are true to the best of my knowledge.

May 15, 2006



Thomas S. Gorton P.E.