

THOMAS M. ECKELS, PE  
STEPHEN S. LOCKWOOD, PE  
DAVID J. PINION, PE  
ERIK C. SWANSON, PE

THOMAS S. GORTON, PE  
MICHAEL H. MEHIGAN, PE

JAMES B. HATFIELD, PE  
BENJAMIN F. DAWSON III, PE  
CONSULTANTS

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  
(1942-2009)  
PAUL W. LEONARD, PE  
(1925-2011)

**Engineering Statement  
Auxiliary Antenna for KSCI  
Channel 18 at Los Angeles, CA  
February 2018**

**Auxiliary Antenna Application**

This Engineering Statement has been prepared on behalf of NRJ TV License Co, LLC, licensee of digital television station KSCI at Los Angeles, California, to request authorization for a new auxiliary antenna.

**Contour Compliance**

The attached contour map demonstrates that the proposed auxiliary noise limited contour is completely contained within the licensed KSCI noise limited contour. It should be noted that this auxiliary contour was calculated by checking the “**Use Real Elevation Patterns**” box in the “**FCC Contours**” section of the TVStudy parameters file.

It is understood that TVStudy does not, by default, derive an azimuth pattern based on radial HAAT values and radio horizon depression angles unless mechanical beam tilt is proposed. Nevertheless, we request that Commission staff calculate the auxiliary contour using the “**Use Real Elevation Patterns**” option in this case. While the proposed facility does not utilize mechanical beam tilt, the fact that this antenna utilizes 2 degrees of electrical beam tilt does have an influence on the derived antenna pattern, particularly in the region to the northwest of the tower site. The complete elevation pattern for the antenna has been uploaded as a part of this application, in order to facilitate this analysis.

**Facilities Proposed**

The proposed operation will be on Channel 18 with a maximum lobe effective radiated power of 125 kilowatts (H pol). The auxiliary antenna will be located on an existing tower at the Mount Wilson

communications site, with FCC Antenna Structure Registration Number 1221073. This tower is colloquially referred to as "Tower 5" of the towers at Mount Wilson which are owned by American Tower Corporation.

### **RF Exposure Calculations**

OET Bulletin 65 Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields (Edition 97-01) states in part that:

When performing an evaluation for compliance with the FCC's RF guidelines all significant contributors to the ambient RF environment should be considered. . . For purposes of such consideration, significance can be taken to mean any transmitter producing more than 5% of the applicable exposure limit (in terms of power density or the square of the electric or magnetic field strength) at accessible locations.

As will be demonstrated below, the proposed operation will produce less than 5% of the applicable exposure limit for both controlled and uncontrolled environments. Thus, the proposed facility is categorically excluded from the requirement of further study. Therefore, pursuant to §1.1307(b)(3) of the Commission's Rules no calculations are required for the other FM and TV facilities in the vicinity, and precise calculations are made only with regard to the levels from this proposal.

The power density calculations shown below were made using the techniques outlined in OET Bulletin No. 65. "Ground level" calculations in this report have been made at a reference height of 2 meters above ground to provide a worst-case estimate of exposure for persons standing on the ground in the vicinity of the tower. The equation shown below was used to calculate the ground level power density figures from each antenna.

$$S(\mu W / cm^2) = \frac{33.40981 \times AdjERP(Watts)}{D^2}$$

Where: *AdjERP(Watts)* is the maximum lobe effective radiated power times the element pattern factor times the array pattern factor.

*D* is the distance in meters from the center of radiation to the calculation point.

Power density levels produced by the proposed facility were calculated for an elevation of 2 meters above ground (60 meters below the antenna radiation center). The worst case power density levels occur at depression angles between 45 and 90 degrees below the horizontal. The calculations in this report assume a worst-case relative field value of 0.099 at these angles, based on the

manufacturer's vertical plane pattern for the horizontally-polarized ERI model AL12M-18-PM antenna proposed in this application. This relative field value yields a worst-case adjusted average effective radiated power of 1225 watts at depression angles between 45 and 90 degrees below the horizontal. Assuming this power and the shortest distance between the antenna radiation center and 2 meters above ground level (i.e. straight down), the highest calculated power density from the proposed antenna alone occurs at the base of the antenna support structure. At this point the power density is calculated to be  $11.4 \mu\text{W}/\text{cm}^2$ , which is 3.5% of  $329 \mu\text{W}/\text{cm}^2$  (the FCC maximum for uncontrolled environments at the Channel 18 frequency).

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation alone is less than 5% of the applicable FCC exposure limit at all locations between 1 and 500 meters from the base of the antenna support structure. Section 1.1307(b)(3) of the Commission's Rules excludes applications for new facilities or modifications to existing facilities from the requirement of preparing an environmental assessment when the calculated emissions from the applicants proposed facility are predicted to be less than 5% of the applicable FCC exposure limit. Therefore, the proposed facility is in compliance with Section 1.1301 et seq and no further analysis of RF exposure at this site is required in this application.

Pursuant to OET Bulletin No. 65, all station personnel and contractors are required to follow appropriate safety procedures before any work is commenced on the antenna tower, including reduction in power or discontinuance of operation before any maintenance work is undertaken. The permittee/licensee in coordination with other users of the site must reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency exposure in excess of FCC guidelines.

