

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  
Minor Modification of KDOV-LD  
Channel 18 at Medford, Oregon  
October 2017**

**I. Background**

This Engineering Statement has been prepared on behalf of TheDove Media, Inc. ("TheDove"), licensee of digital LPTV station KDOV-LD at Medford, Oregon. This material has been prepared in connection with an application for minor modification.

**II. Interference Study**

Study has been made of all cochannel and adjacent-channel facilities in the vicinity of the proposed operation, including a detailed Longley-Rice interference study to demonstrate that the proposed operation will not cause interference to any facilities with which contour overlap exists. This study was performed using the Commission's TVStudy software, and incorporates a change in transmitter site, necessary in order to find a viable channel.

The interference study was conducted using a 0.5 kilometer grid, with terrain extracted at 0.2 kilometer intervals.

The results of this study indicate that the proposed facility is predicted to cause zero additional interference to any of the listed stations.

Based on the foregoing interference study, it is believed that the proposed facility can operate without risk of interference to other stations.

Study created: 2017.10.17 12:36:59

Study build station data: LMS TV 2017-10-16 (51)

Proposal: KDOV-LD D18 LD APP MEDFORD, OR  
File number: BALDY18OMNI(1.45KW)  
Facility ID: 129254  
Station data: User record  
Record ID: 256  
Country: U.S.

Build options:  
Protect records not on baseline channel

Stations affected by proposal:

| Call    | Chan | Svc | Status | City, State        | File Number      | Distance |
|---------|------|-----|--------|--------------------|------------------|----------|
| K17EZ-D | D17  | LD  | LIC    | ROGUE RIVER, OR    | BLDTL20110325ABA | 35.8 km  |
| K17EZ-D | D17  | LD  | CP     | ROGUE RIVER, OR    | BPDTL20130325AFT | 49.0     |
| K41KL-D | D18  | LD  | APP    | GLENDALE, ETC., OR | BLANK0000032043  | 60.6     |
| KTVC    | D18  | DT  | LIC    | ROSEBURG, OR       | BLCDT20060721AAR | 114.2    |
| KFBI-LD | D19  | LD  | APP    | MEDFORD, OR        | BLANK0000029258  | 0.1      |
| KPIC    | D19  | DT  | LIC    | ROSEBURG, OR       | BLCDT20120423ABP | 114.2    |

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D18  
Mask: Stringent  
Latitude: 42 17 51.40 N (NAD83)  
Longitude: 122 45 4.10 W  
Height AMSL: 1171.0 m  
HAAT: 0.0 m  
Peak ERP: 1.45 kW  
Antenna: Omnidirectional  
Elev Pattnr: Generic  
Elec Tilt: 2.0

49.1 dBu contour:

| Azimuth | ERP     | HAAT    | Distance |
|---------|---------|---------|----------|
| 0.0 deg | 1.45 kW | 581.5 m | 54.8 km  |
| 45.0    | 1.45    | 350.4   | 47.7     |
| 90.0    | 1.45    | -29.7   | 20.5     |
| 135.0   | 1.45    | 322.2   | 46.2     |
| 180.0   | 1.45    | 310.1   | 45.6     |
| 225.0   | 1.45    | 376.5   | 48.9     |
| 270.0   | 1.45    | 696.7   | 57.0     |
| 315.0   | 1.45    | 696.5   | 57.0     |

Database HAAT does not agree with computed HAAT  
Database HAAT: 0 m Computed HAAT: 413 m

Distance to Canadian border: 661.7 km

Distance to Mexican border: 1174.9 km

Conditions at FCC monitoring station: Livermore CA  
Bearing: 170.2 degrees Distance: 515.3 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:  
Bearing: 93.4 degrees Distance: 1479.3 km

No land mobile station failures found

Proposal is not within the Offshore Radio Service protected area

**Hatfield & Dawson Consulting Engineers**

Study cell size: 0.50 km  
Profile point spacing: 0.20 km

Maximum new IX to full-service and Class A: 0.50%  
Maximum new IX to LPTV: 2.00%

No IX check failures found.

### III. RF Exposure Study

OET Bulletin 65 *Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields* (Edition 97-01) states in pertinent 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 (10 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 0.150 at these angles, based on the

manufacturer's vertical plane pattern for the horizontally-polarized Kathrein model 75010272 antenna proposed in this application. This relative field value yields a worst-case adjusted average effective radiated power of 32.6 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  $10.9 \mu\text{W}/\text{cm}^2$ , which is 3.3% of  $329.3 \mu\text{W}/\text{cm}^2$  (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 1000 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.

October 17, 2017

Erik C. Swanson, P.E.