

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

THOMAS S. GORTON, 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  
Displacement of KOPB-TV Digital Replacement Translator  
Channel 28 at Portland, OR  
April 2018**

This Engineering Statement has been prepared on behalf of Oregon Public Broadcasting ("OPB"), licensee of digital replacement translator station on Channel 48 at Portland, Oregon (see BLEDT-20121120ACJ). This material has been prepared in connection with a displacement application.

**I. Background**

The translator currently operates on a channel above Channel 36, which will be the highest channel remaining for terrestrial television broadcasting per the results of the 2017 spectrum auction. Accordingly, OPB is filing this displacement application during the Commission's Special Displacement Window, which is scheduled for April 10 to May 15, 2018.

**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 authorized or pending proposed facilities. This study was performed using the Commission's TVStudy software.

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.

Hatfield & Dawson Consulting Engineers

Study created: 2018.04.12 10:18:23

Study build station data: LMS TV 2018-04-11 (111)

Proposal: KOPB-TV D28 LD APP PORTLAND, OR  
File number: PORT-DRT28-3KW  
Facility ID: 50589  
Station data: User record  
Record ID: 586  
Country: U.S.

Build options:

Protect pre-transition records not on baseline channel

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
No	KODT-LP	N14-	TX	LIC	SALT CREEK, OR	BLTTL20050309ACO	76.4 km
Yes	KSLM-LD	D27	LD	LIC	DALLAS, OR	BLDTL20100506AEF	66.8
No	K05KY	D27	LD	CP	LINCOLN CITY, OR	BDISDTL20090729AFB	133.8
No	KBTC-TV	D27	DT	APP	TACOMA, WA	BLANK0000035735	199.3
No	KBTC-TV	D27	DT	LIC	TACOMA, WA	BLEDT20130805ACW	199.3
Yes	NEW	D28	LD	APP	: EUGENE, OR	BNPDTL20090825BHT	162.6
Yes	K28FP-D	D28	LD	LIC	ASTORIA, OR	BLDTL20130710ACH	128.3
No	K28MH-D	D28	LD	CP	BEND, OR	BMPDTL20110713ABN	197.5
Yes	NEW	D28	LD	APP	EUGENE, OR	BNPDTL20090825BFA	168.7
No	K51JB-D	D28	LD	APP	FLORENCE, OR	BLANK0000031429	202.2
No	K28GD-D	D28	LD	LIC	HEPPNER, ETC., OR	BLDTT20111117ARH	267.4
Yes	K28CQ-D	D28	LD	LIC	HOOD RIVER, OR	BLDTT20120514ACX	91.3
No	K28GG-D	D28	LD	LIC	MEDFORD, OR	BLDTL20130710ACA	354.9
No	K28FT-D	D28	LD	LIC	MILTON-FREEWATER, OR	BLDTT20111206BCR	346.6
No	K42IS-D	D28	LD	APP	POWERS, OR	BLANK0000034555	306.6
Yes	K28IH-D	D28	LD	LIC	RAINIER, OR	BLDTT20091103AAJ	75.7
No	K03BZ	D28	LD	CP	ROGUE RIVER, OR	BLANK0000029596	341.0
No	K28KI-D	D28	LD	LIC	ROSEBURG, OR	BLDTL20130710ACC	255.5
Yes	K28MJ-D	D28	LD	LIC	TILLAMOOK, OR	BLDTT20111209DLD	88.1
No	K28KJ-D	D28	LD	LIC	CHELAN, WA	BLDTL20111012ABP	328.0
No	K28KJ-D	D28	LD	CP	CHELAN, WA	BMPDTT20101012ABD	328.0
No	NEW	D28	LD	APP	ELLENSBURG, WA	BNPDTL20090825AEW	237.1
No	KIRO-TV	D28	LD	LIC	SEATTLE, WA	BLCDT20100429ACW	333.9
No	K28KW-D	D28	LD	LIC	SUNNYSIDE, WA	BLDTL20130719ABV	225.9
No	K29KU-D	D29	LD	CP	BEND, OR	BLANK0000022168	149.2
Yes	KEPB-TV	D29	DT	LIC	EUGENE, OR	BLEDT20050127AHY	168.7
No	K29AZ-D	D29	LD	LIC	NEWPORT, OR	BLDTT20111208ABT	133.8
No	K29IA-D	D29	LD	LIC	CENTRALIA, ETC., WA	BLDTT20090618ABC	121.6
No	K29IB-D	D29	LD	LIC	GRAYS RIVER, ETC., WA	BLDTT20100511ACN	126.4
No	KCYU-LD	D29	LD	APP	YAKIMA, WA	BLANK0000029146	204.5

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D28  
Mask: Stringent  
Latitude: 45 29 24.80 N (NAD83)  
Longitude: 122 41 49.90 W  
Height AMSL: 357.0 m  
HAAT: 0.0 m  
Peak ERP: 3.00 kW  
Antenna: Omnidirectional  
Elev Pattn: Generic  
Elec Tilt: 1.75

50.1 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	3.00 kW	335.0 m	49.7 km
45.0	3.00	324.7	49.1
90.0	3.00	283.0	47.0
135.0	3.00	322.0	49.0
180.0	3.00	242.8	44.9
225.0	3.00	272.0	46.4
270.0	3.00	288.9	47.3
315.0	3.00	141.8	39.0

Hatfield & Dawson Consulting Engineers

Database HAAT does not agree with computed HAAT  
Database HAAT: 0 m    Computed HAAT: 276 m

Distance to Canadian border: 310.6 km

Distance to Mexican border: 1502.5 km

Conditions at FCC monitoring station: Ferndale WA  
Bearing: 1.5 degrees    Distance: 385.3 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:  
Bearing: 106.5 degrees    Distance: 1536.8 km

Study cell size: 1.00 km  
Profile point spacing: 1.00 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

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 (41 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 0.103 at these angles, based on the manufacturer's vertical plane pattern for the ERI model AL8 antenna proposed in this application. This relative field value yields a worst-case adjusted average effective radiated power of 31.8 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  $0.6 \mu\text{W}/\text{cm}^2$ , which is 0.2% of  $369.3 \mu\text{W}/\text{cm}^2$  (the FCC maximum for uncontrolled environments at the Channel 28 frequency).

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.

April 12, 2018

Erik C. Swanson, P.E.