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Engineering Statement
Displacement of K50CE-D
Channel 26 at Hood River, OR
March 2018

This Engineering Statement has been prepared on behalf of Rural Oregon Wireles Television, Inc. ("ROWT"), licensee of digital TV translator station K50CE-D at Hood River, Oregon. 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, ROWT 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.

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Study created: 2018.03.29 14:35:32

Study build station data: LMS TV 2018-03-28 (108)

    Proposal: K50CE-D D26 LD LIC HOOD RIVER, OR
 File number: HOOD26
 Facility ID: 12436
Station data: User record
   Record ID: 521
     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
Yes  KOIN     D25       DT  CP      PORTLAND, OR                 BLANK0000034802       93.2 km
No   K25GA-D  D25       LD  LIC     REDMOND/PRINEVILLE, OR        BLDTL20130710ACD     153.3
Yes  K25KS-D  D25       LD  LIC     THE DALLES, OR               BLDTT20120405AAO      36.0
No   K25FP-D  D25       LD  LIC     ELLENSBURG, WA               BLDTL20120612ABA     154.4
No   K25CH-D  D25       LD  LIC     NORTH BEND, WA               BLDTL20110815ABG     145.3
No   KZJO     D25       DT  LIC     SEATTLE, WA                  BLCDT20090917AAN     215.6
No   KING-TV  D25       DT  CP      SEATTLE, WA                  BLANK0000034825      218.1
No   K26DB-D  D26       LD  LIC     ASTORIA, OR                  BLANK0000011187      188.9
No   K26DB-D  N26-      TX  LIC     ASTORIA, OR                  BLTT19911016IG       188.9
No   KOHD     D26       LD  CP      BEND, OR                     BDRTCDT20130425AAK   207.8
No   K26KQ-D  D26       LD  LIC     CHRISTMAS VALLEY, OR         BLDTT20120601ACP     270.5
No   K46IP-D  D26       LD  APP     COTTAGE GROVE, OR            BLANK0000029348      247.0
No   K26KL-D  D26       LD  CP      EUGENE, OR                   BNPDTL20090825BHR    219.9
No   K43JY-D  D26       LD  APP     FLORENCE, OR                 BLANK0000031394      279.3
No   K26HO-D  D26       LD  LIC     GLIDE, OR                    BLDTT20101008ABC     288.5
No   K26FQ-D  D26       LD  LIC     JOHN DAY, OR                 BLDTT20110415AAI     251.8
No   K26FV-D  D26       LD  LIC     LA GRANDE, OR                BLDTT20120625ABI     303.3
No   KMVU-DT  D26       DT  LIC     MEDFORD, OR                  BLCDT20090527ABF     394.0
No   KJYY-LD  D26       LD  LIC     PORTLAND, OR                 BLDTL20110705ABF      82.0
No   K40KI-D  D26       LD  APP     POWERS, OR                   BLANK0000034554      371.6
No   K26HS-D  D26       LD  LIC     TILLAMOOK, OR                BLDTL20120621ACL     179.3
No   K26IC-D  D26       LD  LIC     BREMERTON, WA                BLDTT20090403ACD     228.4
No   K38KL-D  D26       LD  APP     ELLENSBURG, WA               BLANK0000031938      154.4
No   K26GV-D  D26       LD  LIC     OMAK,, WA                    BLDTL20110830AAN     346.5
No   K38KK-D  D26       LD  APP     PULLMAN, WA                  BLANK0000040429      360.3
Yes  KNDU     D26       DT  LIC     RICHLAND, WA                 BLCDT20091007ACO     193.5
No   K26IV-D  D26       LD  CP      WENATCHEE, WA                BDCCDTT20061030AGJ   207.2
No   K27DO-D  D27       LD  LIC     BEND, ETC., OR               BLDTL20110324AAR     153.0
No   KSLM-LD  D27       LD  LIC     DALLAS, OR                   BLDTL20100506AEF     148.7
No   K39DM    D27+      LD  APP     ELLENSBURG, WA               BLANK0000028952      154.4
No   KVEW     D27       DT  CP      KENNEWICK, WA                BLANK0000034066      193.4
No   KBTC-TV  D27       DT  APP     TACOMA, WA                   BLANK0000035735      185.1
No   KBTC-TV  D27       DT  LIC     TACOMA, WA                   BLEDT20130805ACW     185.1

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

    Channel: D26
       Mask: Stringent
   Latitude:  45 44 30.40 N (NAD83)
  Longitude: 121 34 47.20 W
Height AMSL: 802.0 m
       HAAT: 0.0 m
   Peak ERP: 1.20 kW
    Antenna: SCA-2X2KBBU (ID 20727) 120.0 deg
Elev Pattrn: Generic

50.0 dBu contour:
Azimuth      ERP       HAAT    Distance
  0.0 deg  0.021 kW    39.0 m    7.7 km
 45.0       0.513     568.0     47.0
 90.0       0.793     378.7     44.3
135.0       0.733     518.7     48.2
180.0       1.04      483.5     49.1
225.0       0.080     181.4     23.2
270.0       0.016     302.6     20.3
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315.0      0.003      255.8      11.5

Database HAAT does not agree with computed HAAT
Database HAAT: 0 m    Computed HAAT: 341 m

Distance to Canadian border: 309.6 km

Distance to Mexican border: 1503.7 km

Conditions at FCC monitoring station: Ferndale WA
Bearing: 348.7 degrees    Distance: 364.7 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 109.3 degrees    Distance: 1462.8 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.
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III. Technical Facility

Continued operation is proposed at the current transmitter site on Underwood Mountain, using a Kathrein 2-level broadband antenna array (2X2KBBU), with an ERP of 1200 watts.

IV. 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 (19 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

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manufacturer's vertical plane pattern for the horizontally-polarized Kathrein 2-level broadband antenna array (2X2KBBU) proposed in this application. This relative field value yields a worst-case adjusted average effective radiated power of 27 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 from the proposed facility is calculated to be 2.5 μW/cm², which is 0.7% of 361.3 μW/cm² (the FCC maximum for uncontrolled environments at the Channel 26 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.

March 29, 2018
Erik C. Swanson, P.E.