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Engineering Statement
Digital Flash Cut Application for K50CE
Channel 50 at Hood River, OR
July 2011

This Engineering Statement has been prepared on behalf of Rural Oregon Wireless TV, Inc., licensee of TV translator station K50CE at Hood River, Oregon. This material has been prepared in connection with an application for digital flash cut.

I. Allocation 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 SunDTV program from V-Soft Communications and a 1 km grid spacing. The SunDTV program identically duplicates the FCC's OET-69 processing program.

The results of this study indicate that the proposed facility is predicted to cause zero additional interference to any of the listed stations, with the exception of the K51EH digital flash cut CP at The Dalles. Meredith Corporation, the licensee of K51EH, has consented to grant of the instant application.

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

Summary Study

Percent allowed new interference: 0.500
Percent allowed new interference to non Class A LPTV: 2.000
Census data selected 2000
Data Base Selected
./data_files/pt_tvdb.sff
TV INTERFERENCE and SPACING ANALYSIS PROGRAM

Date: 07-25-2011 Time: 12:51:19

Record Selected for Analysis

K50CE USERRECORD-01 HOOD RIVER OR US
Channel 50 ERP 1.2 kW HAAT 349. m RCAMSL 00802 m STRINGENT MASK
Latitude 045-44-31 Longitude 0121-34-43
Status APP Zone 2 Border Site number: 01
Dir Antenna Make usr Model USRPAT01 Beam tilt N Ref Azimuth 120.
Last update Cutoff date Docket
Comments
Applicant

Cell Size for Service Analysis 1.0 km/side

Distance Increments for Longley-Rice Analysis 1.00 km

Not full service station
Service Class = LD
Maximum height/power limits not checked

Site number 1

Azimuth (Deg)	ERP (kW)	HAAT (m)	51.0 dBu F(50,90) (km)
0.0	0.021	61.3	9.2
45.0	0.513	575.8	45.6
90.0	0.793	389.5	43.2
135.0	0.733	526.8	46.9
180.0	1.040	498.4	48.2
225.0	0.080	200.3	22.9
270.0	0.016	289.2	18.7
315.0	0.003	248.6	10.6

Contour Overlap to Proposed Station

Station
K50CE 50 HOOD RIVER OR BLTT20100322ADH

Station inside contour of Digital LPTV station
K50CE 50 HOOD RIVER OR USERRECORD01

Station
K51EH 51 THE DALLES OR BLTTL19931014JG

Station inside contour of Digital LPTV station
K50CE 50 HOOD RIVER OR USERRECORD01

Contour Overlap Evaluation to Proposed Station Complete

NO LANDMOBILE SPACING VIOLATIONS FOUND

Checks to Site Number 01

Proposed facility OK to FCC Monitoring Stations

Proposed facility OK toward West Virginia quiet zone

Proposed facility OK toward Table Mountain

Proposed facility is within the Canadian coordination distance
Distance to border = 309.0km

Proposed facility is beyond the Mexican coordination distance

Proposed station is OK toward AM broadcast stations

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Start of Interference Analysis

Proposed Station

Channel	Call	City/State	ARN
50	K50CE	HOOD RIVER OR	USERRECORD01

Stations Potentially Affected by Proposed Station

Chan	Call	City/State	Dist(km)	Status	Application Ref. No.
35	KORK-CA	PORTLAND OR	93.9	LIC	BLTTA -20070831ACZ
42	KODP-LP	ODELL WA	10.8	CP	BNPTTL -20000831CLQ
43	K43GY	YAKIMA, ETC. WA	121.1	LIC	BLTTL -20040615ACA
47	KUNP-LP	PORTLAND OR	93.8	LIC	BLTTL -20060809ABC
49	K49KT-D	BEND OR	178.1	LIC	BLDTL -20101004AAQ
49	KWVT-LD	SALEM OR	94.4	LIC	BLDTL -20110208ADU
49	NEW	CENTERVILLE WA	52.2	APP	BNPDTL -20100513ADZ
49	KCST-LD	HOQUIAM WA	181.9	CP	BDCCDTL -20061026AEB
49	K49IX-D	PUYALLUP WA	167.6	LIC	BLDTT -20090610ACB
49	KRLB-LD	RICHLAND, ETC WA	182.8	LIC	BLDTL -20090615ADK
49	K49LI-D	ROYAL CITY WA	173.2	CP	BNPDTL -20090825AED
49	K67CD	STEMILT, ECT WA	192.5	CP	BDISDTT -20090716ADD
49	K67CD	STEMILT, ETC. WA	192.5	APP	BSTA -20090717AAL
49	K49GF	YAKIMA, ETC. WA	121.1	LIC	BLTTL -20040616AAK
50	K50FD	BAKER OR	323.5	LIC	BLTT -19970421JE
50	K50FD	BAKER VALLEY OR	323.4	CP	BDFCDTT -20090921ABM
50	KUBN-LP	BEND OR	178.1	APP	BDFCDTL -20060331BDR
50	K50CT-D	COTTAGE GROVE OR	247.0	LIC	BLDTT -20091217AFH
50	K50FW	GRANTS PASS OR	394.3	LIC	BLTTL -20070205ACY
50	K50CE	HOOD RIVER OR	0.0	LIC	BLTT -20100322ADH
50	K50CI	LA GRANDE OR	288.1	LIC	BLTT -19891120JI
50	K50CI	LA GRANDE OR	288.3	CP	BDFCDTT -20090806AAE
50	K50FX	MILTON-FREEWATER OR	257.4	LIC	BLTT -20010621AAM
50	K50FX	MILTON-FREEWATER OR	257.4	CP	BDFCDTT -20090512AAE
50	KUBN-LP	PRINEVILLE-REDMOND OR	178.1	LIC	BLTT -19951019IC
50	K50GG	SALEM OR	148.3	CP	BDFCDTL -20090810ABZ
50	K50GG	SALEM OR	148.3	LIC	BLTTL -20020916ABF
50	K50GG	SALEM OR	148.3	CP	BDFCDTL -20060331BDH
50	KUNS-TV	BELLEVUE WA	218.2	CP	BPCDT -20080620AGX
50	KUNS-TV	BELLEVUE WA	198.2	LIC	BLCDT -20060707ACF
50	K50KK-D	ELLENSBURG WA	154.4	LIC	BLDTT -20090506ACL
50	K50LM-D	SUNNYSIDE WA	131.8	CP	BNPDTL -20090825BIC
51	KOHD	BEND OR	186.0	LIC	BLCDT -20060915AOZ
51	K51FK	NEHALEM, ROCKAWAY OR	182.9	LIC	BLTTL -19990528JF
51	KOXO-CA	NEWBERG OR	93.9	LIC	BLTTA -20070831ADA
51	NEW	PHILOMATH OR	195.5	APP	BNPDTL -20100514AIQ
51	K51FK	ROCKAWAY BEACH OR	183.1	CP	BDFCDTT -20100429AAS

51	K51EH	THE DALLES OR	36.0	LIC	BLTTL	-19931014JG
51	K51EH	THE DALLES OR	36.0	CP	BDFCDTL	-20090810ABW
51	KHPN-LD	WARRENTON OR	175.9	APP	BSTA	-20090427ADA
51	KHPN-LD	WARRENTON OR	175.9	CP	BPTTL	-20090427ACZ
51	KHPN-LD	WARRENTON OR	175.9	LIC	BLDTL	-20110316ABR
51	K51BD	ELLENSBURG WA	154.5	LIC	BLTT	-19900327JE
51	K51KY-D	HERMISTON WA	178.7	CP	BNPDTL	-20090825AFL
51	KIRO-TV	ISSAQUAH WA	198.2	CP	BDRTCDT	-20090909ABL
51	K51DR-D	WENATCHEE WA	203.3	LIC	BLDTT	-20090825BTB
51	K51JG-D	YAKIMA WA	119.4	LIC	BLDTL	-20090914ABX
52	KXPD-LP	EOLA OR	120.0	LIC	BLTTL	-20080122ACK
52	K52CH	MAUPIN OR	74.5	LIC	BLTT	-19980427JD
52	KXPD-LP	SALEM OR	120.0	APP	BSTA	-20061116ADO
54	K54BK	MAUPIN OR	74.5	LIC	BLTT	-19980427JC
58	K58BK	MADRAS & CULVER OR	133.4	LIC	BLTT	-19941014II
58	K58BU	MAUPIN OR	74.5	LIC	BLTT	-19880210IG

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Study of this proposal found the following interference problem(s):

The following station failed the de minimis interference criteria.
50D OR HOOD RIVER USERRECORD01
ERP 1.20 kW HAAT 349.0 m RCAMSL 802.0 m
Antenna usr USRPAT01

Due to interference to the following station and scenario: 1
50N OR HOOD RIVER BLTT 20100322ADH
ERP 1.20 kW HAAT 737.0 m RCAMSL 802.0 m
Antenna CDB 00000000020727

Percent new DTV interference from proposal: 95.7497 BLTT 20100322ADH

The following station failed the de minimis interference criteria.
50D OR HOOD RIVER USERRECORD01
ERP 1.20 kW HAAT 349.0 m RCAMSL 802.0 m
Antenna usr USRPAT01

Due to interference to the following station and scenario: 1
51D OR THE DALLES BDFCDTL 20090810ABW
ERP 2.23 kW HAAT 976.0 m RCAMSL 976.0 m
Antenna CDB 00000000018179

Percent new interference from proposal: 7.5888 to BDFCDTL 20090810ABW

II. NIER Study

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 (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 0.125 at these angles, based on the manufacturer's vertical plane pattern for the horizontally-polarized Kathrein 2X2 broadband antenna array proposed in this application. This relative field value yields a worst-case adjusted average effective radiated power of 18.75 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 1.7 μW/cm², which is 0.4% of 459 μW/cm² (the FCC maximum for uncontrolled environments at the Channel 50 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 non-ionizing radiation 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 radiation in excess of FCC guidelines.

July 25, 2011
Erik C. Swanson, P.E.