HATFIELD & DAWSON
CONSULTING ELECTRICAL ENGINEERS
9500 GREENWOOD AVE. N.
SEATTLE, WASHINGTON 98103

BENJAMIN F. DAWSON III, PE
THOMAS M. ECKELS, PE
STEPHEN S. LOCKWOOD, PE
DAVID J. PINION, PE

ERIK C. SWANSON, PE
THOMAS S. GORTON, PE
MICHAEL H. MEHIGAN, EIT

TELEPHONE (206) 783-9151
FACSIMILE (206) 789-9834
E-MAIL hatdaw@hatdaw.com

JAMES B. HATFIELD, PE
PAUL W. LEONARD, PE
CONSULTANTS

MAURY L. HATFIELD, PE
(1942-2009)

Engineering Statement
Digital Displacement Application for K26AY
Channel 48 at Corvallis, OR
March 2010

This Engineering Statement has been prepared on behalf of KING Broadcasting Company, licensee of TV translator station K26AY at Corvallis, Oregon. This material has been prepared in connection with a displacement application to modify this translator to digital Ch 48.

Displacement is requested owing to the fact that it is not possible to propose a digital flash cut for this translator using the existing broadband panel antenna system, without a significant reduction in ERP. Whereas the analog K26AY facility is licensed with 13.8 kW ERP, compliance with the interference protection rules would require that the Ch 26 digital ERP be reduced to a mere 154 watts in order to protect the Ch 27 permit for KSLM-LD at Salem, even when the stringent mask is specified. This 154 watt limit is fully 19.5 below the licensed analog ERP and 13.5 dB below an approximately equivalent digital ERP. Digital displacement to Ch 48 will allow this facility to operate with a digital ERP which will provide service which is equivalent to or greater than the analog facility.

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. (The attached study was performed using an ERP of 11 kW. Operation with the requested 5.5 kW ERP would therefore also be in compliance.)

Summary Study

Census data selected: 2000

Post DTV Transition Database Selected

TV INTERFERENCE and SPACING ANALYSIS PROGRAM

Date: 03-17-2010 Time: 17:30:51

Record Selected for Analysis

K26AY USERRECORD-01 CORVALLIS, ETC. OR US
Channel 48 ERP 11. kW HAAT 322. m RCAMSL 00448 m STRINGENT MASK
Latitude 044-30-18 Longitude 0122-57-32
Status APP Zone 2 Border
Dir Antenna Make usr Model USRPAT01 Beam tilt N Ref Azimuth 0.
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

Facility meets maximum power limit

Azimuth (Deg)	ERP (kW)	HAAT (m)	51.0 dBu F(50,90) (km)
0.0	9.678	368.4	56.5
45.0	8.782	350.1	55.2
90.0	10.694	323.9	54.9
135.0	1.510	133.1	33.8
180.0	0.034	267.2	21.6
225.0	1.510	371.4	46.4
270.0	10.694	381.6	57.7
315.0	8.772	384.0	56.7

Contour Overlap to Proposed Station

Contour Overlap Evaluation to Proposed Station Complete

LANDMOBILE SPACING VIOLATIONS FOUND

NONE

Proposed facility OK to FCC Monitoring Stations

Proposed facility OK toward West Virginia quiet zone

Proposed facility OK toward Table Mountain

Proposed facility is beyond the Canadian coordination distance

Proposed facility is beyond the Mexican coordination distance

Proposed station is OK toward AM broadcast stations

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Start of Interference Analysis

Channel	Proposed Station Call	City/State	ARN
48	K26AY	CORVALLIS, ETC. OR	USERRECORD01

Stations Potentially Affected by Proposed Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
45	K45CV	CORVALLIS OR	0.0	LIC	BLTT	-19930604IG
47	NEW	BEND OR	137.8	APP	BNPTTL	-20000807AEH
47	NEW	BEND OR	141.9	APP	BNPTTL	-20000830ASA
47	NEW	BEND OR	138.0	APP	BNPTTL	-20000810AAY
47	NEW	BEND OR	141.9	APP	BNPTTL	-20000830AIW
47	K47AV	COTTAGE GROVE OR	81.1	CP	BDFCDTT	-20081003AEI
47	K47AV	COTTAGE GROVE OR	81.2	LIC	BLTT	-19860113IE
47	KUNP-LP	PORTLAND OR	114.1	LIC	BLTTL	-20060809ABC
47	K52AK	PRINEVILLE OR	159.2	CP	BDISTT	-20061212ABI
47	K47CD	ROCKAWAY OR	157.7	LIC	BLTT	-20030610AAF
47	K47HT	ROSEBURG OR	148.7	LIC	BLTTL	-20030129ALF
48	K48GO	CAVE JUNCTION OR	256.1	CP	BDFCDTL	-20091029ACJ
48	K48GO	CAVE JUNCTION OR	256.1	LIC	BLTTL	-20030619AAO
48	K48KC-D	COTTAGE GROVE OR	81.1	LIC	BLDTT	-20090330AAO
48	K48GC	FLORENCE OR	107.8	LIC	BLTTA	-20020701AAI
48	K48GC	FLORENCE OR	107.8	CP	BDFCDTL	-20090818AAC
48	K48BS	GLENDALE, ETC. OR	200.2	LIC	BLTT	-19880527ID
48	K48DZ	HERMISTON OR	330.2	LIC	BLTTL	-19980814JD
48	K48DZ	HERMISTON OR	330.2	CP	BDFCDTL	-20090806AAD
48	K48HV	KLAMATH FALLS OR	288.1	CP	BDFCDTL	-20091002ACZ
48	K48HV	KLAMATH FALLS OR	288.1	LIC	BLTTL	-20040826ADX
48	KFBI-LD	MEDFORD OR	245.9	LIC	BLDTL	-20091016ABK
48	K44HM	RAINIER OR	184.5	APP	BDISDTT	-20091013AFF
48	NEW	ROSEBURG OR	148.7	APP	BNPDTL	-20091014AFE
48	K48BL	TERREBONNE-BEND, ETC OR	147.8	LIC	BLTTA	-20010711ABF
48	K48BY	QUINCY WA	396.9	LIC	BLTT	-19870929ID
48	KING-TV	SEATTLE WA	350.7	CP	BPCDT	-20080617AED
48	KING-TV	SEATTLE WA	350.7	LIC	BLCDT	-19981026KE
48	NEW	YAKIMA WA	305.2	APP	BNPDTL	-20090825BIN
49	K28JE	BEND OR	161.2	CP MOD	BMPDTL	-20100211ABQ
49	K49DM-D	COOS BAY OR	164.0	LIC	BLDTL	-20090226AAO
49	KAMK-LP	EUGENE OR	57.1	CP	BDISTTL	-20051230AAL
49	KAMK-LP	EUGENE OR	57.1	CP	BDFCDTL	-20091028ACQ
49	K49FV	ROSEBURG OR	144.1	LIC	BLTT	-20020726ABG
49	KWVT-LP	SALEM OR	114.3	CP	BDISDTL	-20090421AAC
49	NEW	WARM SPRINGS OR	134.7	APP	BNPTTL	-20000831BPV
50	K50CE	HOOD RIVER OR	175.0	CP	BPTT	-20070822AAV
50	K50CE	HOOD RIVER OR	175.2	LIC	BLTT	-19880603IK
50	K50IK	LINCOLN CITY OR	90.5	LIC	BLTT	-20040402ACM
50	KUBN-LP	PRINEVILLE-REDMOND OR	161.2	LIC	BLTT	-19951019IC
50	K50GG	SALEM OR	55.2	LIC	BLTTL	-20020916ABF
51	KMOR-LP	EUGENE OR	57.1	LIC	BLTTL	-19930204IC
51	K51JB-D	FLORENCE OR	107.6	CP	BDISTT	-20051128ALP
51	K51FK	NEHALEM, ROCKAWAY OR	157.3	LIC	BLTTL	-19990528JF
51	KOXO-CA	NEWBERG OR	114.3	LIC	BLTTA	-20070831ADA
51	K51GJ	ROSEBURG OR	148.8	LIC	BLTT	-20040721AMT
51	K51EH	THE DALLES OR	197.2	LIC	BLTTL	-19931014JG
51	KHPN-LP	WARRENTON OR	188.8	APP	BSTA	-20090427ADA
51	KHPN-LP	WARRENTON OR	188.8	CP	BPTTL	-20090427ACZ
52	KXPD-LP	EOLA OR	58.8	LIC	BLTTL	-20080122ACK
52	K52CH	MAUPIN OR	167.9	LIC	BLTT	-19980427JD
52	K52AK	PRINEVILLE, ETC. OR	159.2	LIC	BLTT	-19931021IN
52	KXPD-LP	SALEM OR	58.8	APP	BSTA	-20061116ADO
52	K52ET	TILLAMOOK OR	100.6	LIC	BLTT	-19970124JG

55	K55FM	MYRTLE POINT OR	185.8	LIC	BLTT	-20070412AAE
55	K55FM	MYRTLE POINT, ETC. OR	185.8	APP	BSTA	-20060825ACC
56	K56CD	MAUPIN OR	167.9	LIC	BLTT	-19980427JB

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

NONE.

II. NIER 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.

Calculations of the power density produced by the proposed Corvallis Ch 48 antenna system have been performed using the manufacturer's vertical plane pattern for the 3X3 Kathrein 723147 panel antenna array proposed for use. Power density levels were calculated for an elevation of 2 meters above ground level (22 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 0.1 at these angles. This relative field value yields a worst-case adjusted effective radiated power of 55 Watts at depression angles between 45 and 90 degrees below the horizontal. Assuming this power level and the shortest distance between the antenna radiation center and 2 meters above ground (i.e. straight down), the highest calculated ground level 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 3.8 μW/cm², which is 0.8% of 451 μW/cm² (the FCC standard for uncontrolled environments at the Channel 48 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.

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.

March 19, 2010
Erik C. Swanson, P.E.