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**Engineering Statement
Digital Flash Cut Application for K28IH
Channel 28 at Rainier, OR
August 2009**

This Engineering Statement has been prepared on behalf of Rural Oregon Wireless TV, Inc., licensee of TV translator station K28IH at Rainier, 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.

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

Summary Study

Census data selected: 2000

Post DTV Transition Database Selected

TV INTERFERENCE and SPACING ANALYSIS PROGRAM

Date: 08-07-2009 Time: 17:01:47

Record Selected for Analysis

K28IH USERRECORD-06 RAINIER OR US
Channel 28 ERP 0.34 kW HAAT 219. m RCAMSL 00399 m STRINGENT MASK
Latitude 046-09-46 Longitude 0122-51-05
Status APP Zone 2 Border
Dir Antenna Make usr Model USRPAT06 Beam tilt N Ref Azimuth 240.
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	0.001	180.6	7.1
45.0	0.002	58.1	5.1
90.0	0.000	171.2	2.4
135.0	0.001	105.2	5.1
180.0	0.025	287.5	20.7
225.0	0.282	300.1	33.8
270.0	0.167	334.9	32.0
315.0	0.003	311.5	12.0

Contour Overlap to Proposed Station

K28FP Station 28 ASTORIA OR BLTTL19990727JG causes

Contour overlap to Digital LPTV station

K28IH 28 RAINIER OR USERRECORD06
Required D/U ratio: 2.0

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 within the Canadian coordination distance
Distance to border = 234.5km

Proposed facility is beyond the Mexican coordination distance

Proposed station is OK toward AM broadcast stations

Start of Interference Analysis

Channel	Proposed Station Call	City/State	ARN
28	K28IH	RAINIER OR	USERRECORD06

Stations Potentially Affected by Proposed Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
21	K21HG	RAINIER OR	0.0	LIC	BLTT	-20070209ABR
27	K05KY	LINCOLN CITY OR	182.0	APP	BDISDTL	-20090729AFB
27	KSLM-LD	SALEM OR	133.7	APP	BDISDTL	-20090609AAB
27	K15EY	WASCO/HEPPNER OR	143.2	CP	BDISDTT	-20080912AAX
27	KBTC-TV	TACOMA WA	126.7	APP	BPEDT	-20080620ABF
27	KBTC-TV	TACOMA WA	126.7	LIC	BLEDT	-20070918AAN
27	KCWK-LP	YAKIMA WA	184.3	LIC	BLTTL	-20040122ABW
28	K28FP	ASTORIA OR	81.6	CP	BDFCDTL	-20090102ACL
28	K28FP	ASTORIA OR	81.6	LIC	BLTTL	-19990727JG
28	K28JE	BEND OR	263.8	LIC	BLTTL	-20090324ADJ
28	K28JE	BEND OR	253.1	CP	BPTTL	-20090511AZL
28	K28GD	HEPPNER, ETC. OR	295.6	LIC	BLTT	-20020419ABE
28	K28GD	HEPPNER, ETC. OR	295.6	CP	BDFCDTT	-20081022AAO
28	K28CQ	HOOD RIVER OR	108.9	CP	BPTT	-20070822AAQ
28	K28CQ	HOOD RIVER, ETC. OR	108.6	LIC	BLTT	-19890324IE
28	K55GC	MILTON-FREEWATER OR	356.4	APP	BDISDTT	-20090728ADM
28	K25FG	ROSEBURG OR	327.5	CP	BDISDTL	-20090325AMA
28	KOXI-LD	CAMAS WA	71.6	CP	BDCCDTL	-20061025ADJ
28	K64ES	CHELAN WA	281.2	APP	BDISDTT	-20060222ABJ
28	KIRO-TV	MOUNT VERNON WA	261.0	APP	BDRTCT	-20090403ACH
28	K28FT	WALLA WALLA WA	344.4	LIC	BLTTL	-19991018AAC
29	K29AZ	NEWPORT OR	182.1	LIC	BLTT	-20090304AAM
29	K67AD	THE DALLES OR	143.2	CP	BDISTT	-20071121ACT
29	K29IA-D	CENTRALIA, ETC. WA	46.4	LIC	BLDTT	-20090618ABC
29	K63AW	GRAYS RIVER WA	63.0	CP	BDISTT	-20061212ABF
30	KUSE-LP	SEATTLE WA	165.3	CP	BPTTL	-20030221AAF
31	K31HK	RAINIER OR	0.0	LIC	BLTT	-20070502ABR
31	K31HZ	THE DALLES, ETC. OR	143.2	LIC	BLTT	-20070813ADC
31	K59BX	GRAYS RIVER WA	63.0	CP	BDISTT	-20060328AGL
35	K35HU	GRAYS RIVER, ETC. OR	63.0	LIC	BLTT	-20061018ABS
35	KORK-CA	PORTLAND OR	71.6	LIC	BLTTA	-20070831ACZ
35	K35CR	TILLAMOOK-LINCOLN CI OR	126.6	LIC	BLTTL	-19940829IB
36	K36FG	HOOD RIVER, ETC. OR	108.9	LIC	BLTT	-20080528AAS
36	K36GU	ROCKAWAY & VICINITY OR	96.1	LIC	BLTT	-20030610AAE
36	KORS-CA	SALEM OR	133.1	LIC	BLTTA	-20020722ABK
36	KEVE-LP	LONGVIEW WA	0.8	LIC	BLTT	-19931202IF
28	EUG	EUGENE OR	241.1	APP	USERRECORD-03	

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

NONE.

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.

$$S(mW / cm^2) = \frac{33.40981 \times AdjERP(Watts)}{D^2}$$

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 (13 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 0.200 at these angles, based on the manufacturer's vertical plane pattern for the horizontally-polarized Scala 1X1KBBU broadband

antenna array proposed in this application. This relative field value yields a worst-case adjusted average effective radiated power of 13.6 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 $2.7 \mu\text{W}/\text{cm}^2$, which is 0.7% of $371 \mu\text{W}/\text{cm}^2$ (the FCC maximum for uncontrolled environments at the Channel 28 frequency).

These calculations show that the worst-case 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.

August 19, 2009

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