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**Engineering Statement
Digital Flash Cut Application for K36GU
Channel 36 at Rockaway, OR
September 2009**

This Engineering Statement has been prepared on behalf of Rural Oregon Wireless TV, Inc., licensee of TV translator station K36GU at Rockaway Beach, 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: 09-14-2009 Time: 14:28:27

Record Selected for Analysis

K36GU USERRECORD-01 ROCKAWAY & VICINITY OR US
Channel 36 ERP 0.71 kW HAAT 397. m RCAMSL 00493 m STRINGENT MASK
Latitude 045-44-38 Longitude 0123-56-23
Status APP Zone 2 Border
Dir Antenna Make usr Model USRPAT01 Beam tilt N Ref Azimuth 160.
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	0.003	302.9	11.6
45.0	0.002	266.3	9.9
90.0	0.012	309.7	17.9
135.0	0.432	341.2	37.7
180.0	0.525	484.3	43.5
225.0	0.028	493.0	26.6
270.0	0.002	493.0	13.3
315.0	0.000	486.8	6.5

Contour Overlap to Proposed Station

Station
KORS-CA 36 SALEM OR BLTTA20020722ABK causes

Contour overlap to Digital LPTV station
K36GU 36 ROCKAWAY & VICINITY OR USERRECORD01
Required D/U ratio: 2.0

Station
KEVE-LP 36 LONGVIEW WA BLTT19931202IF causes

Contour overlap to Digital LPTV station
K36GU 36 ROCKAWAY & VICINITY OR USERRECORD01
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 = 277.2km

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
36	K36GU	ROCKAWAY & VICINITY OR	USERRECORD01

Stations Potentially Affected by Proposed Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
35	K56DL	FLORENCE OR	198.9	CP	BDISTT	-20051128AKY
35	K56DL	FLORENCE OR	198.9	CP	BDFCDTT	-20090202CCW
35	K35HU	GRAYS RIVER, ETC. OR	85.2	LIC	BLTT	-20061018ABS
35	KORK-CA	PORTLAND OR	96.0	LIC	BLTTA	-20070831ACZ
35	K35CR	TILLAMOOK, ETC. OR	60.6	CP	BDFCDTL	-20090810ABV
35	K35CR	TILLAMOOK-LINCOLN CI OR	60.6	LIC	BLTTL	-19940829IB
36	K36HM-D	FORT DICK CA	403.5	LIC	BLDTT	-20090810ACY
36	NEW	CHEMULT OR	330.8	APP	BDCCDTT	-20061030ABI
36	K36BX	COOS BAY OR	262.0	LIC	BLTT	-19890512IG
36	KXOR-LP	EUGENE OR	204.1	LIC	BLTTL	-20020806AAT
36	K36HL	GRANTS PASS OR	374.1	LIC	BLTT	-20051110AED
36	K36FG	HOOD RIVER, ETC. OR	183.1	CP	BDFCDTT	-20081022AAT
36	K36FG	HOOD RIVER, ETC. OR	183.1	LIC	BLTT	-20080528AAS
36	NEW	MEDFORD OR	373.2	APP	BNPDTL	-20090825BFO
36	K36DP	PENDLETON, ETC. OR	366.7	LIC	BLTT	-19950512IH
36	K66AZ	PRINEVILLE OR	275.6	CP	BDISTTL	-20060329AGX
36	NEW	ROSEBURG OR	285.9	APP	BNPDTL	-20090825BHJ
36	KORS-CA	SALEM OR	104.9	LIC	BLTTA	-20020722ABK
36	KEVE-LP	LONGVIEW WA	95.7	LIC	BLTT	-19931202IF
36	KEVE-LP	LONGVIEW WA	96.1	CP	BDFCDTT	-20060328AJU
36	KBWU-LD	RICHLAND, ET AL WA	374.0	APP	BSTA	-20070516AAW
36	KBWU-LD	RICHLAND, ETC., WA	372.7	CP	BPDTL	-20090324AAG
36	KBWU-LD	RICHLAND, ETC., WA	374.0	LIC	BLDTL	-20080701AEM
36	KEVE-LP	VANCOUVER WA	96.0	CP	BDFCDTL	-20090130ACF
36	KEVE-LP	VANCOUVER WA	96.0	APP	BMPDTL	-20090909ACF
36	NEW	WENATCHEE WA	343.4	APP	BNPDTL	-20090903AAX
36	KCWK-LD	YAKIMA WA	278.3	CP	BDCCDTT	-20061030ATA
38	K38JK	EUGENE OR	195.5	LIC	BLTTL	-20090602AAU
38	K53EI	HOOD RIVER OR	183.1	CP	BDISTT	-20070822ABB
38	K38CZ	LINCOLN CITY/NEWPORT OR	110.1	LIC	BLTT	-19940131JG
38	KKEI-CA	PORTLAND OR	96.0	LIC	BLTTA	-20070831ADB
38	K38KU-D	SWEET HOME OR	133.3	CP	BNPTTL	-20000829ANO
38	K38GS	GRAYS RIVER, LEBAM WA	85.2	LIC	BLTT	-20040412ACX
40	K58CW	FLORENCE OR	198.9	CP	BDISTT	-20051128AKH
40	K40AM	HOOD RIVER, ETC. OR	183.0	LIC	BLTT	-19940505JE
40	K40EG	TILLAMOOK OR	60.6	LIC	BLTT	-19960130JA
43	K60DQ	FLORENCE OR	198.9	CP	BDISTT	-20051128ALH

43	K43EJ	TILLAMOOK OR	60.6	LIC	BLTT	-19940610IK
44	K44HM	RAINIER OR	96.1	LIC	BLTT	-20070209ABN
44	K44AV	ROCKAWAY OR	0.0	LIC	BLTT	-20030610AAH

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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.

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

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 (3 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 2X1KBBU broadband antenna array proposed in this application. This relative field value yields a worst-case adjusted average effective radiated power of 11 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 40.8 $\mu\text{W}/\text{cm}^2$, which is 10.1% of 403 $\mu\text{W}/\text{cm}^2$ (the FCC maximum for uncontrolled environments at the Channel 36 frequency).

Calculations of the power density produced by K36GU and the other stations at this transmitter site are summarized in the following table:

Call	Avg or Peak ERP Antenna Model	Relative Field	Height AGL	Calculated Max Exposure	Gen Pub FCC Limit	% of Limit
K36GU-D	0.710 kW avg KAT 2X1KBBU	0.125	5 m	40.8 $\mu\text{W}/\text{cm}^2$	403 $\mu\text{W}/\text{cm}^2$	10.1%

K20HT	0.407 kW peak KAT 2X1KBBU	0.125	5 m	11.8 $\mu\text{W}/\text{cm}^2$	339 $\mu\text{W}/\text{cm}^2$	3.5%
K41GG	0.521 kW peak KAT 2X1KBBU	0.125	5 m	15.1 $\mu\text{W}/\text{cm}^2$	423 $\mu\text{W}/\text{cm}^2$	3.6%
K44AV	0.523 kW peak KAT 2X1KBBU	0.125	5 m	15.2 $\mu\text{W}/\text{cm}^2$	435 $\mu\text{W}/\text{cm}^2$	3.5%
K47CD	0.533 kW peak KAT 2X1KBBU	0.125	5 m	15.5 $\mu\text{W}/\text{cm}^2$	447 $\mu\text{W}/\text{cm}^2$	3.5%

Nearby FM translator K291BI operates with an ERP of less than 100 Watts and is therefore excluded from this study.

(For TV translators, the relative field value indicated is the maximum value which occurs at 45 degrees or more below the horizontal, based on the manufacturer's vertical plane pattern. The resulting adjusted ERP value is assumed to be radiated straight down to a point 2 meters above ground level at the base of the tower.)

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation of K36GU and the present operation of the other facilities at this site (were their maxima to coincide, which they do not) is 24.2% of the FCC standard for uncontrolled environments.

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.

September 14, 2009

Erik C. Swanson, P.E.