

ENGINEERING STATEMENT
APPLICATION FOR MINOR AMENDMENT TO
DTV CONSTRUCTION PERMIT FOR
TELEVISION TRANSLATOR
K53EI, HOOD RIVER, OREGON
CHANNEL 38 564 WATTS MAX ERP 799 METERS RC/AMSL

APRIL 2010

COHEN, DIPPELL AND EVERIST, P.C.
CONSULTING ENGINEERS
RADIO AND TELEVISION
WASHINGTON, D.C.

COHEN, DIPPELL AND EVERIST, P. C.


City of Washington)
) ss
District of Columbia)

Ross J. Heide, being duly sworn upon his oath, deposes and states that:

He is a graduate of the Massachusetts Institute of Technology in Operations Research and Management Science, a Registered Professional Engineer in the District of Columbia, and employed by Cohen, Dippell and Everist, P.C., Consulting Engineers, Radio - Television, with offices at 1300 L Street, N.W., Suite 1100, Washington, D.C. 20005;

That the attached engineering report was prepared by him or under his supervision and direction and

That the facts stated herein are true of his own knowledge, except such facts as are stated to be on information and belief, and as to such facts he believes them to be true.



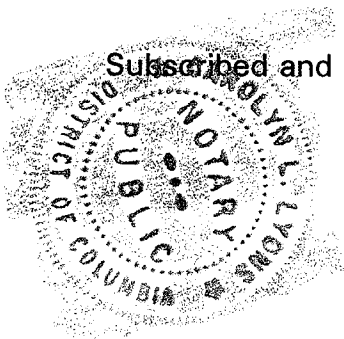
Ross J. Heide
District of Columbia
Professional Engineer
Registration No. PE900748

Subscribed and sworn to before me this 9th day of April, 2010.



Notary Public

My Commission Expires: 2/28/2013



INTRODUCTION

This engineering statement has been prepared on behalf of Rural Oregon Wireless TV, Inc., permittee of digital TV translator K53EI, Channel 38, Hood River, Oregon. This statement supports the permittee's request for minor modification of authorized construction permit ("CP") [FCC File No. BDFCDTL-20090630AFI] for an effective radiated power ("ERP") of 564 watts at a radiation center above mean sea level ("RCAMSL") of 358 meters. The only proposed change is a reduction of ERP and the corresponding transmitter power output ("TPO").

TRANSMITTER SITE

The existing antenna will be utilized and no significant alteration of the tower is proposed. There is no change in transmitter site. The geographic coordinates of the site follow below.

North Latitude: 45° 44' 31"

West Longitude: 121° 34' 43"

NAD-27

ELEVATION DATA

Elevation of site above mean sea level	781 meters (2562.3 feet)
Center of radiation of antenna above ground level	18 meters (59 feet)
Center of radiation of antenna above mean sea level	799 meters (2621.4 feet)

The existing tower is less than 200 feet and does not require an Antenna Structure Registration Number ("ASRN").

EQUIPMENT DATA

Transmitter:	Type-approved, Larcen MXi; 50 W (simple mask) or equivalent
Transmission Line:	Andrew, Type LDF5-50A, 7/8" foam heliax, 21.3 meters (7 feet) with 80.0% efficiency or equivalent [including combiner]
Antenna:	Scala, model 2x2KBBU panel array, directional, with maximum gain of 14.1 and 0° electrical beam tilt

POWER DATA

Transmitter:	50 W	16.99 dBW
Combiner and Transmission Line Efficiency (Loss):	80.0%	(0.969) dB
Input Into Antenna:	40.0 W	16.02 dBW
Antenna Gain:	14.1	11.50 dB
ERP:	564 W	27.51 dBW

As indicated above, the transmitter with typical power output of 50 watts will deliver 40.0 watts to the input of the antenna. The antenna, having a maximum gain of 14.1 and an electrical beam tilt of 0°, will produce maximum ERP of 564 watts. A map providing the protected contour of the proposed facility compared to the currently licensed operation of K53EI has been included as Exhibit E-1 of this report. The antenna elevation pattern and associated

tabulation and the horizontal pattern and accompanying tabulation are on file at the Commission as the currently authorized CP antenna for K53EI with no proposed alterations.

Other Broadcast Facilities

A brief analysis was completed to determine the presence of stations in the vicinity of the K53EI tower using the April 7, 2010 data contained within the Commission's Consolidated Database System ("CDBS"). Within 500 meters of the proposed site, there are no authorized FM radio stations or television stations. Five (5) licensed low-power analog television and television translator stations aside from K53EI were found within 500 meters in addition to seven (7) low-power CP's and applications. There are no AM facilities within 3.2 km of the existing tower. Although no adverse technical affects are expected due to the proposed changes, the licensee will take measures to resolve any problems proven to be related to the changes proposed in this application.

Interference Analysis

A study of predicted interference caused by the proposed K53EI translator operation has been performed using the Longley-Rice program for which the source data has been posted by the Commission on its website at http://www.fcc.gov/oet/dtv/dtv_apps.html. The FCC's FORTRAN-77 code was modified only to the extent necessary (primarily input/output handling) for the program to run on a Microsoft Windows XP/Intel platform. Comparison of service/interference areas and population indicates this model closely matches the FCC's digital low-power TV/translator evaluation program. Best efforts have been made to use data and calculation identical to the FCC's program. The model employs the Longley-Rice propagation

methodology and evaluates in grid cells of approximately 1 sq. km. Using 3-second terrain data sampled approximately every 1.0 km at one-degree azimuth intervals with 2000 census centroids, all studies are based upon data in the current CDBS database update of the FCC's engineering database. A Longley-Rice study was performed with the proposed K53EI digital translator facilities and all relevant stations listed in the FCC database as of April 7, 2010. The study results and the included stations are listed in Table I.

FCC Rule, Section 1.1307

The proposed 564 watt directional operation will utilize a Scala, Model 2x2KBBU antenna (or equivalent) described above with a center of radiation above ground of 18 meters. The proposed antenna is side-mounted on the tower with an overall height of 41 meters above ground.

The proposed operation based upon the current OET Bulletin No. 65, Edition 97-01 dated August 1997 and Supplement A meets the provisions of the FCC radiofrequency field ("RFF") guidelines, and thus, complies with Section 1.1307 of the FCC Rules. The elevation pattern for the Scala antenna shows a maximum relative field of less than 0.23 toward the ground (30° to 90° below the horizontal). Calculation according to OET Bulletin 65 predicts a maximum RFF power density of less than $3.9 \mu\text{W}/\text{cm}^2$, 2 meters above ground or less than 1.0% of the uncontrolled Maximum Permissible Exposure ("MPE") guideline. As this is less than 5% of the MPE, Section 1.1307(b)(3) of the Commission's Rules does not require an RFF assessment of all of the stations in the vicinity.

The RFF contribution is calculated using the following basic formula:

$$S = \frac{33.4(F^2) \text{ Total ERP}}{R^2}$$

where:

S = power density in $\mu\text{W}/\text{cm}^2$

F = relative field factor

Total ERP = ERP Horizontal Polarization + ERP Vertical Polarization

R = RCAGL - 2 meters

ERP = RMS ERP in watts for DTV Stations

ERP = $[0.4 \text{ ERP}_V + \text{ERP}_A]$ for NTSC Stations

ERP_V = peak visual ERP in watts

ERP_A = RMS aural ERP in watts

ERP = ERP (horizontally polarized) + ERP (vertically polarized)

Authorized personnel and rigging contractors will be alerted to the potential zone of high radiation on the tower, and if necessary, the station will operate with reduced power or terminate the operation of the transmitter as appropriate when it is necessary for authorized personnel or contractors to perform work on or near the tower. Workers and the general public, therefore, will not be subjected to RFF levels in excess of the current FCC guidelines.

Environmental Assessment

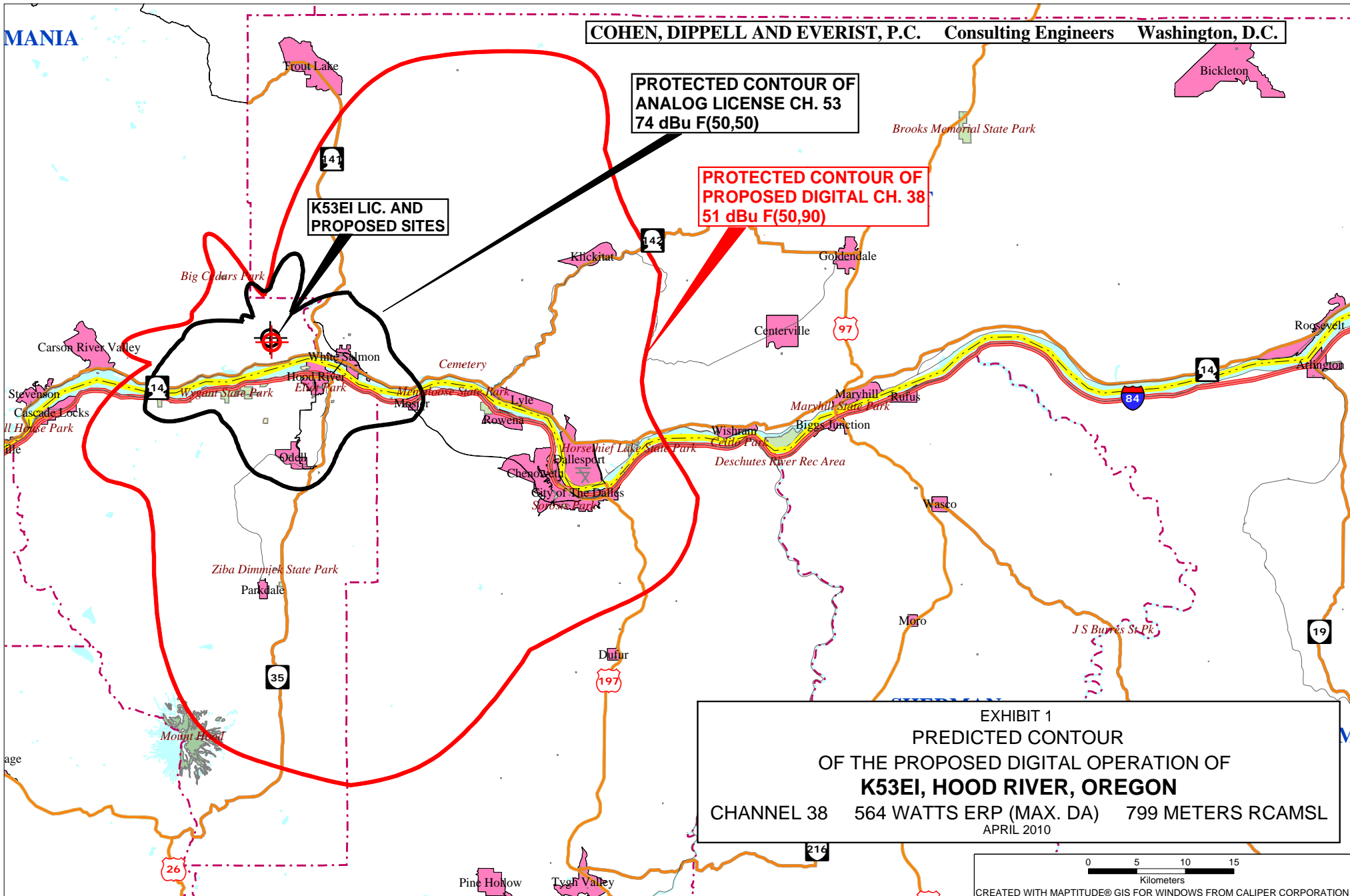
An environmental assessment ("EA") is categorically excluded under Section 1.1306 of the FCC Rules and Regulations as the tower was constructed prior to the requirements specified in WT Docket No. 03-128 and the applicant indicates:

- (a)(1) The existing tower is not located in an officially designated wilderness area.

- (a)(2) The existing tower is not located in an officially designated wildlife preserve.
- (a)(3) The proposed facilities will not affect any listed threatened or endangered species or habitats.
- (a)(3)(ii) The proposed facilities will not jeopardize the continued existence of any proposed endangered or threatened species or likely to result in the destruction or adverse modification of proposed critical habitats.
- (a)(4) The proposed facilities located on a tower which was built prior to the adoption of WT Docket No. 03-128 and is grandfathered and has not affected any known districts, sites, buildings, structures, or objects significant in American history, architecture, archaeology, engineering, or culture.
- (a)(5) The existing tower is not located near any known Indian religious sites.
- (a)(6) The existing tower is not located in a flood plain.
- (a)(7) The installation of the DTV facilities on an existing guyed tower will not involve a significant change in surface features of the ground in the vicinity of the tower.
- (a)(8) It is not proposed to equip the tower with high intensity white lights unless required by the FAA.
- (b) Workers and the general public will not be subjected to RFF levels in excess of the current FCC guidelines contained in OET Bulletin No. 65, Edition 97-01, dated August 1997 and Supplement A.

MANIA

COHEN, DIPPELL AND EVERIST, P.C. Consulting Engineers Washington, D.C.

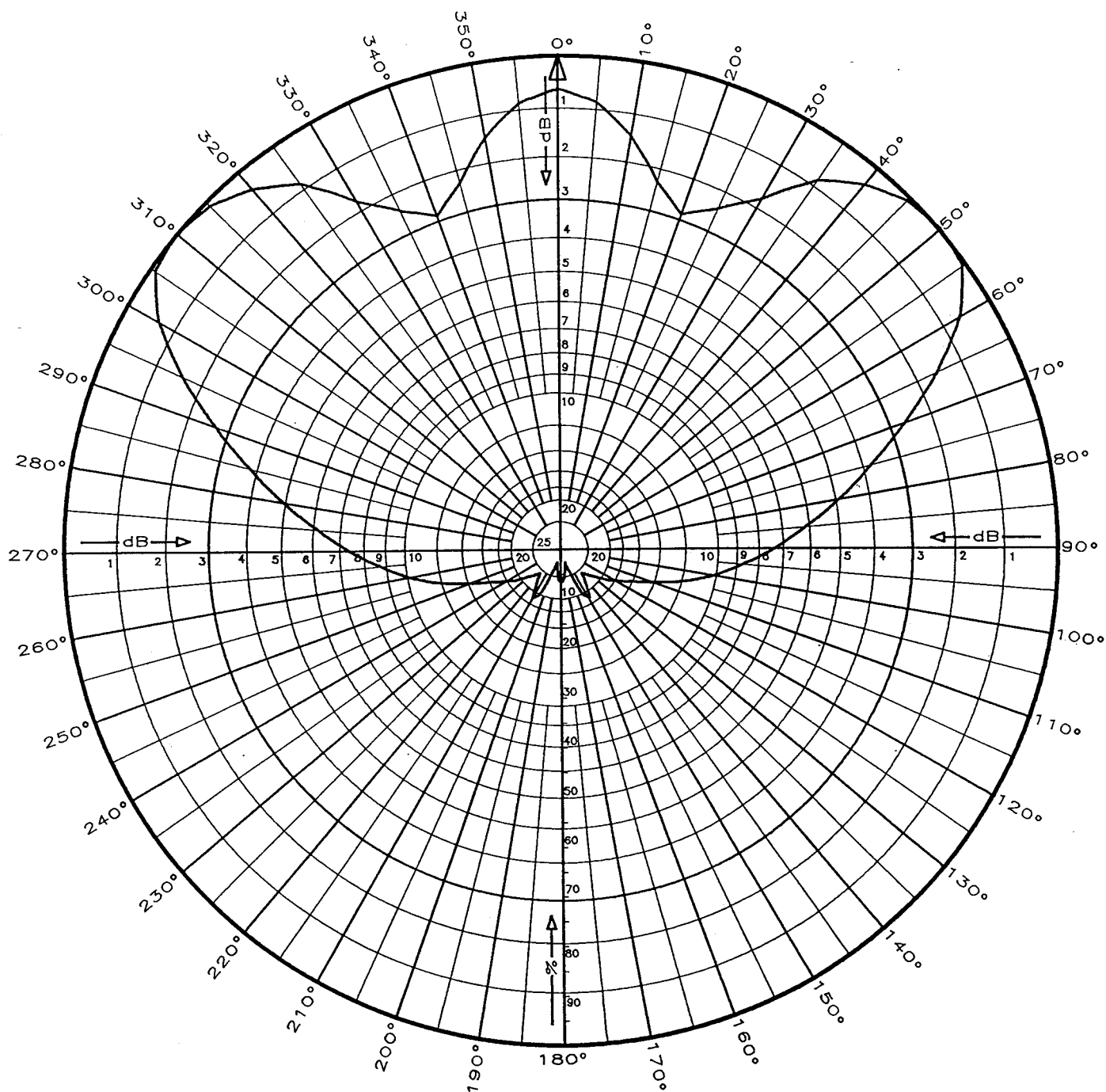


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EXHIBIT E-2

ANTENNA MANUFACTURER DATA

K53EI, HOOD RIVER, OREGON



SCALA MODEL 2X2KBBU

BROADBAND UHF-TV PANEL ARRAY

FOUR K-723141 (OR K-723147) PANELS
TWO PANELS PER BAY
TWO BAYS VERTICALLY STACKED

MAXIMUM ARRAY GAIN: 11.5 dBd
HORIZONTAL POLARIZATION
HORIZONTAL PLANE PATTERN

SCALA

ELECTRONIC CORPORATION

MEDFORD, OREGON (USA)

(503) 779-6500

FAX: (503) 779-3991

FORM: E-100-01 REV: 15/FEB/91

2X2KBBU

AZIMUTH	RELATIVE VOLTAGE	RELATIVE dB	DBD	POWER GAIN
0	0.931	-0.6	10.9	12.303
10	0.846	-1.5	10.0	10.000
20	0.717	-2.9	8.6	7.244
30	0.813	-1.8	9.7	9.333
40	0.955	-0.4	11.1	12.882
50	1.000	0.0	11.5	14.125
60	0.931	-0.6	10.9	12.303
70	0.738	-2.6	8.9	7.762
80	0.570	-4.9	6.6	4.571
90	0.432	-7.3	4.2	2.630
100	0.316	-10.0	1.5	1.413
110	0.202	-13.9	-2.4	0.575
120	0.131	-17.7	-6.2	0.240
130	0.089	-21.0	-9.5	0.112
140	0.065	-23.7	-12.2	0.060
150	0.116	-18.7	-7.2	0.191
160	0.051	-25.8	-14.3	0.037
170	0.043	-27.3	-15.8	0.026
180	0.069	-23.2	-11.7	0.068
190	0.043	-27.3	-15.8	0.026
200	0.051	-25.8	-14.3	0.037
210	0.116	-18.7	-7.2	0.191
220	0.065	-23.7	-12.2	0.060
230	0.089	-21.0	-9.5	0.112
240	0.131	-17.7	-6.2	0.240
250	0.202	-13.9	-2.4	0.575
260	0.316	-10.0	1.5	1.413
270	0.432	-7.3	4.2	2.630
280	0.570	-4.9	6.6	4.571
290	0.738	-2.6	8.9	7.762
300	0.931	-0.6	10.9	12.303
310	1.000	0.0	11.5	14.125
320	0.955	-0.4	11.1	12.882
330	0.813	-1.8	9.7	9.333
340	0.717	-2.9	8.6	7.244
350	0.846	-1.5	10.0	10.000

2X2KBBU

Minima / Maxima Tabulation

Min/Max	Rel. Field	Starting Azimuth		Ending Azimuth
Max	1.000	50	-	50
Min	0.030	165	-	165
Min	0.030	195	-	195
Max	1.000	310	-	310

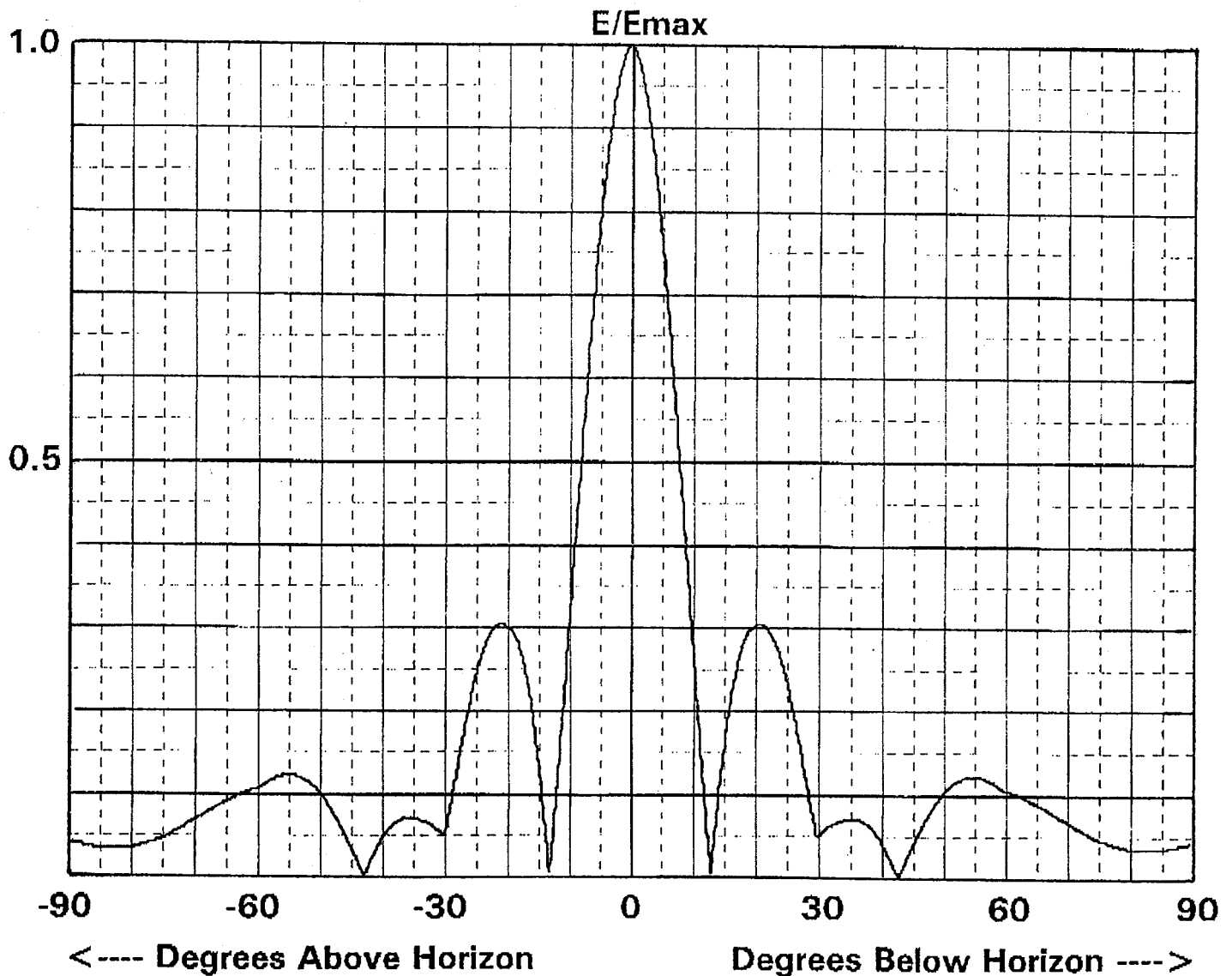
VERTICAL RADIATION PATTERN

PROJECT :

GAIN : 7.0461 dB

FREQUENCY : 600.00 MHz

NUMBER OF BAYS : 2



ANTENNA TYPE NUMBER :

RADIATOR TYPE : KATHREIN UHF 4 Dipole Antenna - Type K72 31 47

SCALA Electronic Corp.

MM

28 Mar 1994

COHEN, DIPPELL AND EVERIST, P.C.

TABLE I
LONGLEY-RICE INTERFERENCE
FOR THE OPERATION FOR
K53EI, HOOD RIVER, OREGON
CHANNEL 38 564 W MAX ERP 799 METERS RCAMSL
APRIL 2010

<u>Channel</u>	<u>Call</u>	<u>City/State</u>	<u>Dist(km)</u>	<u>Status</u>	<u>FCC File No.</u>	<u>Result</u>
24	KKEI-CA	PORTLAND OR	93.9	APP	BDISTTA-20090102ACF	0.00%
24	NEW	WARM SPRINGS OR	98.9	APP	BNPTTL-20000831BZN	0.00%
31	K31HK	RAINIER OR	108.9	LIC	BLTT-20070502ABR	0.00%
34	K40AM	HOOD RIVER OR	0	CP	BDISTT-20070815ABG	No interference
34	K40AM	HOOD RIVER, ETC. OR	0.5	APP	BSTA-20070815ABP	No interference
34	K34HK	LONGVIEW WA	116.8	APP	BSTA-20061109ADS	0.00%
34	K34HK	LONGVIEW WA	116.7	LIC	BLTTL-20080509AAL	0.00%
35	KORK-CA	PORTLAND OR	93.9	LIC	BLTTA-20070831ACZ	0.00%
36	K36FG	HOOD RIVER, ETC. OR	0	LIC	BLTT-20080528AAS	No interference
36	KEVE-LP	LONGVIEW WA	108.7	LIC	BLTT-19931202IF	0.00%
38	BC-PT-42	HOPE BC	404.9	AL	CANADA-1367255NULL	0.00%
38	VACANT	HOPE BC	404.9	LIC	BPFS-20081119ABH	0.00%
38		MATSQUI BC	372.2	APP	NULL-304093NULL	0.00%
38	NEW	ASTORIA OR	200.8	APP	BNPDTL-20100324ACC	No interference
38	K38JK-D	EUGENE OR	212.5	CP MO	BMPDTL-20100111AEI	No interference
38	K38JK-D	EUGENE OR	212.5	LIC	BLDTL-20091217AFG	No interference
38	K38CZ	LINCOLN CITY-NEWPORT OR	222	LIC	BLTT-19940131JG	No interference
38	K38DT	NORTH LA PINE OR	207.8	APP	BDFCDTL-20100326ACH	No interference
38	K38DT	NORTH LAPINE OR	207.8	LIC	BLTT-19930401JG	No interference
38	K38AH	PENDLETON, ETC. OR	187.4	LIC	BLTT-19950612II	No interference
38	KKEI-CA	PORTLAND OR	93.9	LIC	BLTTA-20070831ADB	No interference
38	K38LQ-D	ROSEBURG OR	316.6	CP	BDCCDTT-20091120AGD	No interference
38	K38KU-D	SWEET HOME OR	175.1	CP	BDFCDTL-20090608AAI	No interference
38	K38JH	BELLINGHAM WA	345.9	LIC	BLTTL-20081103ADS	0.00%
38	K38KL-D	ELLENSBURG WA	154.4	LIC	BLDTT-20100104ADM	No interference
38	K38GS	GRAYS RIVER, LEBAM WA	171.6	LIC	BLTT-20040412ACX	No interference
38	K34HK	LONGVIEW WA	116.7	APP	BDISDTL-20100315ACF	No interference
38	K38KM-D	LONGVIEW WA	116.7	CP MO	BMPDTL-20080318ABQ	No interference
38	K38KK-D	PULLMAN WA	360.4	CP	BDCCDTT-20061030AGU	No interference
38	KTNW	RICHLAND WA	193.7	CP	BPEDT-20090312AAB	No interference

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TABLE I
LONGLEY-RICE INTERFERENCE
FOR THE OPERATION FOR
K53EI, HOOD RIVER, OREGON
CHANNEL 38 564 W MAX ERP 799 METERS RCAMSL
APRIL 2010

<u>Channel</u>	<u>Call</u>	<u>City/State</u>	<u>Dist(km)</u>	<u>Status</u>	<u>FCC File No.</u>	<u>Result</u>
38	KTNW	RICHLAND WA	193.7	LIC	BLEDT-20030429AAW	No interference
38	KOMO-TV	SEATTLE WA	218.2	APP	BPCDT-20080620AHD	No interference
38	KOMO-TV	SEATTLE WA	218.2	CP	BPCDT-20090527AAF	No interference
38	KOMO-TV	SEATTLE WA	218.2	LIC	BLCDDT-19991221AAQ	No interference
38	K38IT	STEMILT, ETC. WA	192.5	LIC	BLTT-20091217AAO	No interference
39	K39ES	HEPPNER, ETC. OR	79.5	LIC	BLTT-19980803JH	No interference
39	K25KS	THE DALLES OR	36	CP	BDISTT-20071120AET	No interference
39	K39DM	ELLENSBURG WA	154.5	APP	BSTA-20090724AEE	0.00%
39	K39DM	ELLENSBURG WA	154.5	LIC	BLTTL-19930628IE	0.00%
39	K39DL	MOSES LAKE WA	195.2	CP	BDFCDTL-20090810ACW	0.00%
39	K39DL	MOSES LAKE WA	195.2	LIC	BLTTL-19980107JB	0.00%
39	K39FU	YAKIMA WA	121.2	CP	BDFCDTL-20080709AKQ	No interference
39	K39FU	YAKIMA WA	121.1	LIC	BLTTL-20040616AAS	No interference
40	K40AM	HOOD RIVER, ETC. OR	0.5	LIC	BLTT-19940505JE	No interference
41	K41IP	RAINIER OR	108.9	LIC	BLTT-20070209ABP	0.00%
41	K41CL	WASCO-HEPPNER OR	79.5	LIC	BLTTL-19980903JG	0.00%
42	K42IO	ODELL WA	10.8	CP	BNPTTL-20000831CLQ	No interference

Section III - Engineering (Digital)

TECHNICAL SPECIFICATIONS

Ensure that the specifications below are accurate. Contradicting data found elsewhere in this application will be disregarded. All items must be completed. The response "on file" is not acceptable.

TECH BOX

1. Channel: _____
2. Translator Input Channel No. _____
3. Station proposed to be rebroadcast:

Call Sign	City	State	Channel
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4. Antenna Location Coordinates: (NAD 27)

_____ ° _____ ' _____ " ☐ N ☐ S Latitude
_____ ° _____ ' _____ " ☐ E ☐ W Longitude

5. Antenna Structure Registration Number: _____

☐ Not applicable ☐ See Explanation in Exhibit No. ☐ FAA Notification Filed with FAA

6. Antenna Location Site Elevation Above Mean Sea Level: _____ meters
7. Overall Tower Height Above Ground Level: _____ meters
8. Height of Radiation Center Above Ground Level: _____ meters
9. Maximum Effective Radiated Power (ERP): _____ kW
10. Transmitter Output Power: _____ kW

11. a. Transmitting Antenna: ☐ Nondirectional ☐ Directional ☐ Directional composite

Manufacturer	Model
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- b. Electrical Beam Tilt: _____ degrees ☐ Not applicable

c. Directional Antenna Relative Field Values:

Rotation: _____ ° ☐ No rotation ☐ N/A (Nondirectional)

Degree	Value	Degree	Value	Degree	Value	Degree	Value	Degree	Value	Degree	Value
0		60		120		180		240		300	
10		70		130		190		250		310	
20		80		140		200		260		320	
30		90		150		210		270		330	
40		100		160		220		280		340	
50		110		170		230		290		350	
Additional Azimuths											

NOTE: In addition to the information called for in this section, an explanatory exhibit providing full particulars must be submitted for each question for which a "No" response is provided.

12. **Out-of-Channel Emission Mask:** Simple ☐ Stringent ☐

CERTIFICATION

13. **Interference.** The proposed facility complies with all of the following applicable rule sections. 47 C.F.R. Sections 74.709, 74.793(e), 74.793(f), 74.793(g), 74.793(h), 74.794(b) and 73.1030. ☐ Yes ☐ No

See Explanation in Exhibit No.

14. **Environmental Protection Act.** The proposed facility is excluded from environmental processing under 47 C.F.R. Section 1.1306 (*i.e.*, the facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). Unless the applicant can determine RF compliance. An **Exhibit is required.** ☐ Yes ☐ No

See Explanation in Exhibit No.

Exhibit No.

By checking "Yes" above, the applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic exposure in excess of FCC guidelines.

15. **Channels 52-59.** If the proposed channel is within channels 52-59, the applicant certifies compliance with the following requirements, as applicable:

☐ The applicant is applying for a digital companion channel for which no suitable channel from channel 2-51 is available.


☐ Pursuant to Section 74.786(d), the applicant has notified, within 30 days of filing this application, all commercial wireless licensees of the spectrum comprising the proposed TV channel and the first adjacent channels thereto, for which the proposed digital LPTV or TV translator antenna site lies inside the licensed geographic boundaries of the wireless licensees or within 75 miles and 50 miles, respectively, of the geographic boundaries of co-channel and adjacent-channel wireless licensees.

PREPARER'S CERTIFICATION ON PAGE 8 MUST BE COMPLETED AND SIGNED.

16. **Channels 60-69.** If the proposed channel is within channels 60-69, the applicant certifies compliance with the following requirements, as applicable:

- ☐ Pursuant to Section 74.786(e), the applicant has notified, within 30 days of filing this application, all commercial wireless licensees of the spectrum comprising the proposed TV channel and the first adjacent channels thereto, for which the proposed digital LPTV or TV translator antenna site lies inside the licensed geographic boundaries of the wireless licensees or within 75 miles and 50 miles, respectively, of the geographic boundaries of co-channel and adjacent-channel wireless licensees,
- ☐ Pursuant to Section 74.786(e), the applicant proposing operation on channel 63, 64, 68 and 69 ("public safety channels") has secured a coordinated spectrum use agreement(s) with 700 MHz public safety regional planning committee(s) and state frequency administrator(s) of the region(s) and state(s) within which the antenna site of the digital LPTV or TV translator station is proposed to locate, and those adjoining regions and states with boundaries within 75 miles of the proposed station location.
- ☐ Pursuant to Section 74.786(e), an applicant for a channel adjacent to channel 63, 64, 68 or 69 has notified, within 30 days of filing this application, the 700 MHz public safety regional planning committee(s) and state administrator(s) of the region and state containing the proposed digital LPTV or TV translator antenna site and regions and states whose geographic boundaries lie within 50 miles of the proposed LPTV or TV translator antenna site.

I certify that I have prepared Section III (Engineering Data) on behalf of the applicant, and that after such preparation, I have examined and found it to be accurate and true to the best of my knowledge and belief.

Name Ross J. Heide		Relationship to Applicant (e.g., Consulting Engineer) Consulting Engineer	
Signature 		Date April 9, 2010	
Mailing Address Cohen, Dippell and Everist, P.C., 1300 L Street, NW, Suite 1100			
City Washington	State or Country (if foreign address) DC		ZIP Code 20005
Telephone Number (include area code) (202) 898-0111		E-Mail Address (if available) cde@attglobal.net	

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. CODE, TITLE 47, SECTION 312(a)(1)), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503).