

Received & Inspected

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FCC Mail Room

 **Doug Vernier**  
401 Main Street, Suite 213  
Cedar Falls, Iowa 50613  

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**Telecommunication Consultants**  
dvernier@v-soft.com (319)266-8402  
June 10, 2014

**Request for Experimental Authorization  
BMLED-20040623ABY**

The applicant, University of Washington, KUOW requests authorization to operate its station using the IBOC modulation system while operating with asymmetrical sidebands. KUOW is a non-commercial educational radio station. The purpose of this experiment is to determine the effectiveness and interference resistance of increasing the KUOW lower IBOC sideband to -10 dBc while keeping the upper IBOC sideband at the maximum across-the-board level allowed (without special authorization) of -14 dBc.

**KUOW will adhere to the provisions of Section 5.203 of the Experimental rules.**

- 1.) The authorized power of KUOW will not exceed more than 5 percent above the maximum power of its license (100 kW).
- 2.) Emissions outside the authorized bandwidth will be kept attenuated as required under the rules as per Section 73.317 (b), (c), (d), (e).
- 3.) This experiment will be conducted 24 hours per day using KUOW's standard programming.
- 4.) The licensee will transmit regularly scheduled programming concurrent with the experimental transmission
- 5.) As a non-commercial educational radio station, KUOW may not, and does not, charge for regular scheduled programming
- 6.) Upon request from the FCC the applicant will supply a report of the research, experimentation and results.

**Technical description:**

Attached to this request is a channel study showing that the only 1<sup>st</sup> adjacent protected station of concern is KZAL, Manson, Washington (BLH-200070201BRH). The second attachment is contour-to-contour map showing that the proposed 49.5 dBu, IBOC interference contour, does not overlap the KZAL 60 dBu protected contour. The upper KUOW IBOC sideband level will remain at the current -14 dBc providing protection to 1st adjacent KITI-FM, Winlock, Washington (BLH-20041004ADA.)

Prepared by:

Douglas L. Vernier

Doug Vernier, Telecommunications Consultants, 401 Main St., Suite 213, Cedar Falls, IA 50613

**Declaration:**

I, Douglas L. Vernier, declare that I have received training as an engineer from the University of Michigan School of Engineering. That, I have received degrees from the University in the field of Broadcast Telecommunications. That, I have been active in broadcast consulting for over 40 years;

That, I have held a Federal Communications Commission First Class Radiotelephone License continually since 1964. In 1985, this license was reissued by the Commission as a lifetime General Radiotelephone license no. PG-16-16464;

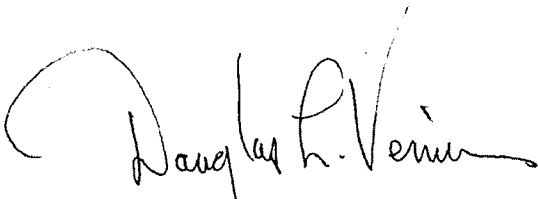
That, I am certified as a Professional Broadcast Engineer (#50258) by the Society of Broadcast Engineers, Indianapolis, Indiana. (Lifetime Certification)

That, my qualifications are a matter of record with the Federal Communications Commission;

That, I have been retained by the University of Washington to prepare the engineering showings appended hereto:

That, I have prepared these broadcast engineering showings, the technical information contained in same and the facts stated within are true of my knowledge;

That, under penalty of perjury, I declare that the foregoing is correct.



Douglas L. Vernier

Executed on June 10, 2014

Doug Vernier - Telecommunications Consultants  
401 Main St., Suite 213, Cedar Falls, IA 50613

KUOW Channel Study Showing Relationships with Adjacent Stations  
The University of Washington  
CH# 235C1 - 94.9 MHz, Pwr= 100 kw, HAAT= 226.0 M, COR= 262 M  
Average Protected F(50-50)= 66.21 km  
Omni-directional

DISPLAY DATES  
DATA 06-09-14  
SEARCH 06-09-14

REFERENCE  
47 36 58.0 N.  
122 18 28.0 W.

CH CITY	CALL STATE	TYPE ANT STATE	AZI <--	DIST FILE #	LAT LNG	PWR(kw) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
235C1 KUOW-FM Seattle	LIC _CX WA		0.0 0.0	0.00 BMLED20040623ABY	47 36 58.0 122 18 28.0	100.000 224	160.2 262	62.5 The University of Washington	-222.7*	-222.7*
234A R29980 Sooke	ADD ____ BC		313.4 132.4	128.60	48 24 09.0 123 34 20.0	6.000 100	59.9 228	38.0	0.4	-33.9
236A KITI-FM Winlock	CP NCX WA		204.5 24.0	130.89 BPH20140422ABT	46 32 36.0 123 01 05.0	0.380 271	40.9 424	25.9 Premier Broadcasters, Inc.	19.2	0.1
236A KITI-FM Winlock	LIC NCX WA		204.6 24.1	131.00 BLH20041004ADA	46 32 35.0 123 01 14.0	0.380 268	41.0 423	25.8 Premier Broadcasters, Inc.	19.1	0.2
233A 1637175« Oak Harbor	APP DCX WA		347.6 167.4	79.44 BMPED20140519AAB	48 18 49.0 122 32 18.0	1.700 140	2.1 158	17.6 Kwpa Whidbey Public Radio	75.0R	4.4M
233A NEWA Oak Harbor	CP DCX WA		339.5 159.2	74.78 BNPED20100226AFN	48 14 43.0 122 39 42.0	6.000 100	2.8 119	25.6 Kwpa Whidbey Public Radio	6.6	38.3
233A KRXY« Shelton	LIC NCX WA		230.0 49.4	82.23 BLH20131112AYX	47 08 20.0 123 08 23.0	0.830 272	1.9 390	32.2 Olympia Broadcasters, Inc.	75.0R	7.2M
235C3 KQCB-FM« Cannon Beach	LIC NEX OR		214.4 33.3	222.92 BLH20060517AAN	45 57 08.0 123 56 14.0	7.000 92	102.1 243	37.6 Calcomm Stations Oregon L	211.0R	11.9M
235A CBUF-8« Port Alberni	OPE ?HN BC		315.6 133.8	257.33	49 14 29.0 124 47 03.0	0.350 -229	25.9 113	11.0 243.0R	243.0R	14.3M
234C3 KZAL« Manson	LIC _CX WA		79.8 261.4	162.79 BLH20070201BRH	47 51 16.0 120 09 59.0	10.300 158	27.0 902	18.3 Icicle Broadcasting, Inc.	144.0R	18.8M
235C KIOK« Richland	LIC _CX WA		124.4 306.6	291.47 BMLH20120420AAW	46 05 47.0 119 11 36.0	100.000 381	179.6 736	77.1 Ingstad Radio Washington,	270.0R	21.5M
235B AL2898« Merritt	AL ____ BC		22.2 203.4	293.34	50 02 52.0 120 45 26.0	50.000 150	153.0 1222	65.0 271.0R	271.0R	22.3M

Terrain database is FCC NGDC 30 Sec , R= 73.215 qualifying spacings or FCC minimum spacings in KM, M= Margin in KM  
In & Out distances between contours are shown at closest points. Reference zone= - Zone 2, Co to 3rd adjacent.  
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, \_= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)  
""affixed to 'IN' or 'OUT' values = site inside protected contour.  
« = Station meets FCC minimum distance spacing for its class.  
^ = Power and antenna height 'Max classed' as per Sec 73.215 protection requirements  
Reference station has protected zone issue:

## HOW TO READ THE FM COMPUTER PRINT-OUT

### Full Service Stations

The computer printout should be self-explanatory for the most part. The parameters of the station being checked, (reference station) are printed in the heading. Contour distances are in kilometers and are predicted using the Commission's TVFMINT FORTRAN subroutine. When interference contour distances are less than 16 kilometers the F(50-50) tables are used. If signal contour distances are less than 1.6 km the free-space equation is used.

The column listed "IN " is the difference in kilometers between of the reference station's protected contour and the data file station's interference contour at the closest point between the contours. (All distances are derived by the method detailed in Sec. 73.208 of the Rules and Regulations as amended in Docket 80-90.) Therefore, "IN" column is a measure of incoming interference. Negative distances in this column indicate the presence of contour overlap. Listed antenna heights and power are those given in the FCC database. The column labeled "OUT " shows the greatest distance in kilometers of overlap or smallest of clearance between the reference station's interference contour and the database station's protected contour. Negative distance figures in this column indicate outgoing contour overlap.

Under the "AZI" column, the first row of numbers indicate the True North bearings from the reference station toward the database stations, while the numbers in the second row indicate the reverse bearings from the database stations to the reference station.

The columns labeled "INT" and "PRO" contain the distance in kilometers of the appropriate interference contour and the protected contour of a data base station.

For I.F. relationships, some channel-six TV relationships and relationships with commercial channel stations providing clearance the minimum spacings values the "IN" and "OUT" columns can change their significance. The letter "R" stands for the minimum **required** distance in kilometers, while the letter "M" in the next column follows the **available clear space** (or lack of it) in kilometers. Minimum separation distances when displayed are taken from Sec 73.207 of the rules as amended. Canadian and Mexican separation distances, U/D ratios and protected contour values are from the US/Mexican Working Agreement and the US/Canada Working Agreement".

The call letters of stations meeting the minimum separation distances under the rules will be flagged by the characters "<<" appended to the right-hand side of the call sign. The "^" character appended to the call sign means the station has been "max-classed" according to the provisions of section 73.525 of the Rules.

The first three letters of the "TYPE" column identify the current FCC status of the stations. The fourth letter will be a "D" if the facility is directional. "Z" indicates a 73.215 directional. An "N" indicates it is a 73.215 station that operates with an omni-directional antenna. The fifth letter will be an E, H or V depending on the type of antenna polarization. The sixth letter will be a "Y" if the antenna uses beam tilt or an "X" if the commission is not sure, otherwise it will be an "N" or left blank.



## Analysis of Lower 1st Adjacent Protected Station for -10 dBc IBOC

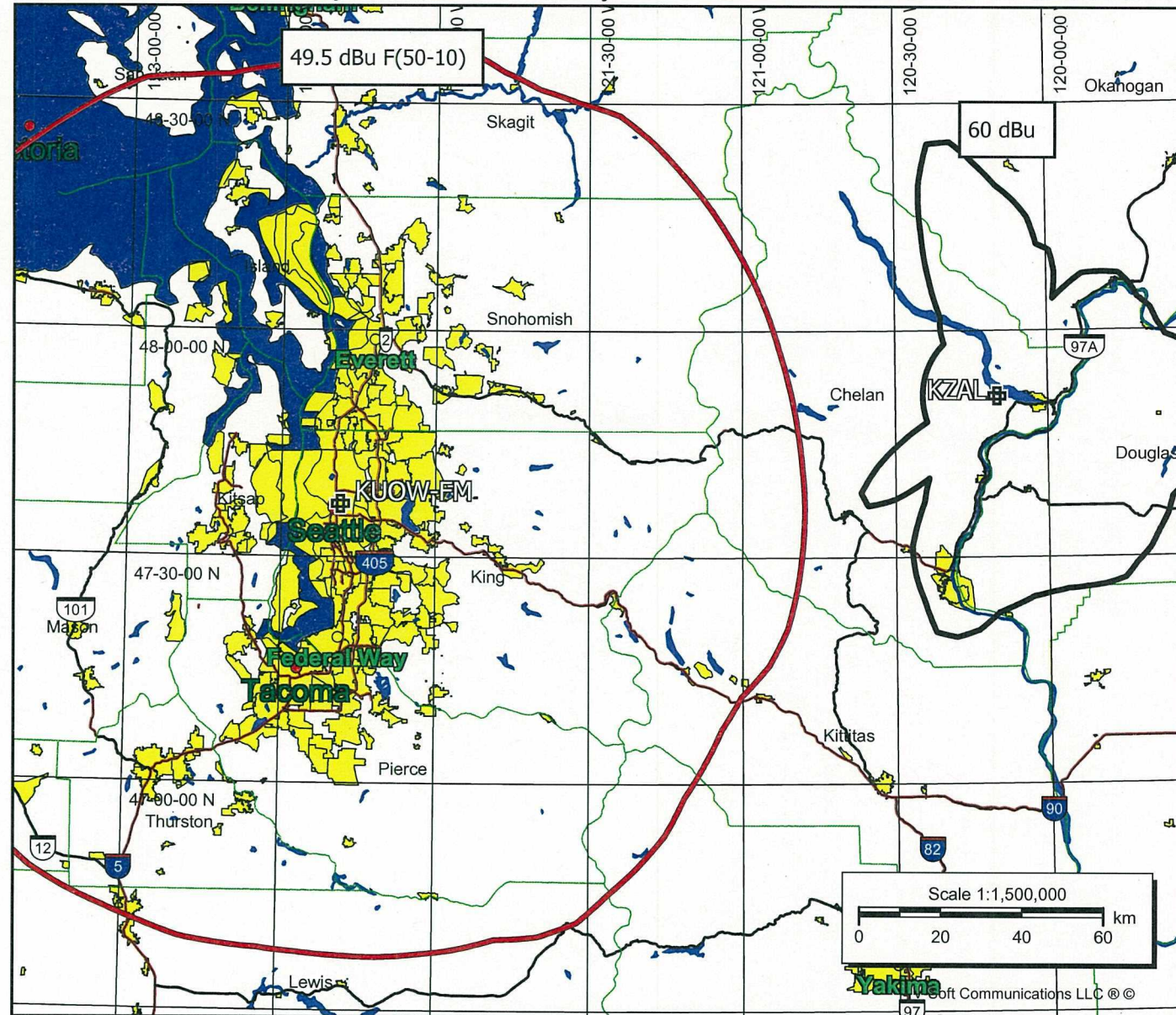
**KUOW-FM**

BMLED20040623ABY  
 Latitude: 47-36-58 N  
 Longitude: 122-18-28 W  
 ERP: 100.00 kW  
 Channel: 235  
 Frequency: 94.9 MHz  
 AMSL Height: 262.0 m  
 Elevation: 125.0 m  
 Horiz. Pattern: Omni  
 Prop Model: FCC Contour

**KZAL**

BLH20070201BRH  
 Latitude: 47-51-16 N  
 Longitude: 120-09-59 W  
 ERP: 10.30 kW  
 Channel: 234  
 Frequency: 94.7 MHz  
 AMSL Height: 902.0 m  
 Elevation: 890.0 m  
 Horiz. Pattern: Omni  
 Prop Model: FCC Contour

**V** Doug Vernier  
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 dvernier@v-coll.com (319) 266-8402



**University of Washington Certification:**

I certify that the statements in this application are true, complete, and correct to the best of my knowledge and belief, and are made in good faith. I acknowledge that all certifications and attached Exhibits are considered material representations. I hereby waive any claim to the use of any particular frequency as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise, and request an authorization in accordance with this application. (See Section 304 of the Communications Act of 1934, as amended.)

**Anti-Drug Abuse Act Certification.** Applicant certifies that neither applicant nor any party to the application is subject to denial of federal benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. Section 862.Y.

Signed, Randy Hodgins  
Title, V-P External Affairs

Date:

6/13/14

Signature

A handwritten signature in blue ink, appearing to read "Randy Hodgins", with a long horizontal flourish extending to the right.