Hardy, Carey, Chautin & Balkin, LLP
ATTORNEYS AT LAW

1080 West Causeway Approach
Mandeville, Louisiana 70471
Telephone 985.629.0777
Facsimile 985.629.0778
www.hardycarey.com

Joseph C. Chautin
Direct Dial 985.629.0752
jchautin@hardycarey.com

2917.004

March 12, 2020

Via UPS Courier Delivery

US Bank
LOCKBOX # 979089
1005 Convention Plaza
SL-MO-C2-GL
St. Louis, MO 63101

Re: KJRB, Spokane, WA
Facility Id. 11235
FCC Form 302-AM Application
FRN: 0028566800

To Whom It May Concern:

Enclosed please find an original and two (2) copies of FCC Form 302-AM filed on behalf of SMG Spokane, LLC for AM station KJRB, Spokane, Washington (Fac. Id. 11235). Form 159 is also provided for remittance of the proper filing fee. We have provided an additional copy of the application for date-stamping, along with a return UPS envelope. Please do not hesitate to contact the undersigned with any questions or requests for additional information.

Respectfully submitted,

Joseph C. Chautin, III

READ INSTRUCTIONS CAREFULLY
BEFORE PROCEEDING

FEDERAL COMMUNICATIONS COMMISSION
REMITTANCE ADVICE
FORM 159

Approved by OMB
3060-0589
Page No 1 of 1

(1) LOCKBOX #	SPECIAL USE ONLY
979089	FCC USE ONLY

SECTION A – PAYER INFORMATION

(2) PAYER NAME (if paying by credit card enter name exactly as it appears on the card)	(3) TOTAL AMOUNT PAID (U.S. Dollars and cents)
SMG-Spokane, LLC	$725.00

(4) STREET ADDRESS LINE NO.1
2448 E. 81st Street

(5) STREET ADDRESS LINE NO. 2
Suite 5500

(6) CITY	(7) STATE	(8) ZIP CODE
Tulsa	OK	74137

(9) DAYTIME TELEPHONE NUMBER (include area code)	(10) COUNTRY CODE (if not in U.S.A.)
918-492-2660	

FCC REGISTRATION NUMBER (FRN) REQUIRED

(11) PAYER (FRN)	(12) FCC USE ONLY
0028566800	

IF MORE THAN ONE APPLICANT, USE CONTINUATION SHEETS (FORM 159-C)
COMPLETE SECTION BELOW FOR EACH SERVICE, IF MORE BOXES ARE NEEDED, USE CONTINUATION SHEET

(13) APPLICANT NAME

(14) STREET ADDRESS LINE NO.1

(15) STREET ADDRESS LINE NO. 2

(16) CITY	(17) STATE	(18) ZIP CODE

(19) DAYTIME TELEPHONE NUMBER (include area code)	(20) COUNTRY CODE (if not in U.S.A.)

FCC REGISTRATION NUMBER (FRN) REQUIRED

(21) APPLICANT(FRN)	(22) FCC USE ONLY

COMPLETE SECTION C FOR EACH SERVICE, IF MORE BOXES ARE NEEDED, USE CONTINUATION SHEET

(23A) CALL SIGN/OTHER ID	(24A) PAYMENT TYPE CODE	(25A) QUANTITY
KJRB	MMR	01

(26A) FEE DUE FOR (PTC)	(27A) TOTAL FEE	FCC USE ONLY
$725.00	$725.00	

(28A) FCC CODE 1	(29A) FCC CODE 2
11235	

(23B) CALL SIGN/OTHER ID	(24B) PAYMENT TYPE CODE	(25B) QUANTITY

(26B) FEE DUE FOR (PTC)	(27B) TOTAL FEE	FCC USE ONLY

(28B)FCC CODE 1	(29B) FCC CODE 2

SECTION D – CERTIFICATION

CERTIFICATION STATEMENT

I, David P. Stephens, certify under penalty of perjury that the foregoing and supporting information is true and correct to the best of my knowledge, information and belief.

SIGNATURE _____ DATE 3/10/2020

SECTION E - CREDIT CARD PAYMENT INFORMATION

MASTERCARD ____ VISA X AMEX ____ DISCOVER ____

ACCOUNT NUMBER 4266 8413 9755 0912 EXPIRATION DATE 12/2023

I hereby authorize the FCC to charge my credit card for the service(s)/authorization herein described.

SIGNATURE _____ DATE 3/10/2020

Federal Communications Commission
Washington, D. C. 20554

Approved by OMB
3060-0627
Expires 01/31/98

FOR FCC USE ONLY

FCC 302-AM
APPLICATION FOR AM BROADCAST STATION LICENSE

(Please read instructions before filling out form.

FOR COMMISSION USE ONLY

FILE NO.

SECTION I - APPLICANT FEE INFORMATION

1. PAYOR NAME (Last, First, Middle Initial)

SMG-Spokane, LLC

MAILING ADDRESS (Line 1) (Maximum 35 characters)
2448 E. 81st Street

MAILING ADDRESS (Line 2) (Maximum 35 characters)
Suite 5500

CITY	STATE OR COUNTRY (if foreign address)	ZIP CODE
Tulsa	OK	74137

TELEPHONE NUMBER (include area code)	CALL LETTERS	OTHER FCC IDENTIFIER (If applicable)
918-492-2660	KJRB	11235

2. A. Is a fee submitted with this application? [✓] Yes [ ] No

B. If No, indicate reason for fee exemption (see 47 C.F.R. Section

[ ] Governmental Entity [ ] Noncommercial educational licensee [ ] Other (Please explain):

C. If Yes, provide the following information:

Enter in Column (A) the correct Fee Type Code for the service you are applying for. Fee Type Codes may be found in the "Mass Media Services Fee Filing Guide." Column (B) lists the Fee Multiple applicable for this application. Enter fee amount due in Column (C).

(A) FEE TYPE CODE	(B) FEE MULTIPLE	(C) FEE DUE FOR FEE TYPE CODE IN COLUMN (A)	FOR FCC USE ONLY
M M R	0 0 0 1	$ 725.00	

To be used only when you are requesting concurrent actions which result in a requirement to list more than one Fee Type Code.

(A)	(B)	(C)	FOR FCC USE ONLY
	0 0 0 1	$	

	TOTAL AMOUNT REMITTED WITH THIS APPLICATION	FOR FCC USE ONLY
ADD ALL AMOUNTS SHOWN IN COLUMN C, AND ENTER THE TOTAL HERE. THIS AMOUNT SHOULD EQUAL YOUR ENCLOSED REMITTANCE.	$ 725.00	

SECTION II - APPLICANT INFORMATION		
1. NAME OF APPLICANT SMG-Spokane, LLC		
MAILING ADDRESS 2448 E. 81st Street, Suite 5500		
CITY Tulsa	STATE OK	ZIP CODE 74137

2. This application is for:

☑ Commercial ☐ Noncommercial

☐ AM Directional ☑ AM Non-Directional

Call letters	Community of License	Construction Permit File No.	Modification of Construction Permit File No(s).	Expiration Date of Last Construction Permit
KJRB	Spokane, WA	BP-20180308AAC	N/A	N/A

3. Is the station now operating pursuant to automatic program test authority in accordance with 47 C.F.R. Section 73.1620?

☐ Yes ☑ No

If No, explain in an Exhibit. The Permit conditions program test authority upon the submission of partial proof measurements or (per the staff, a method of moments analysis (provided; see eng exhibit)

Exhibit No. See Explanation

4. Have all the terms, conditions, and obligations set forth in the above described construction permit been fully met?

☑ Yes ☐ No

If No, state exceptions in an Exhibit.

Exhibit No.

5. Apart from the changes already reported, has any cause or circumstance arisen since the grant of the underlying construction permit which would result in any statement or representation contained in the construction permit application to be now incorrect?

☐ Yes ☑ No

If Yes, explain in an Exhibit.

Exhibit No.

6. Has the permittee filed its Ownership Report (FCC Form 323) or ownership certification in accordance with 47 C.F.R. Section 73.3615(b)?

☐ Yes ☐ No

☑ Does not apply

If No, explain in an Exhibit.

Exhibit No.

7. Has an adverse finding been made or an adverse final action been taken by any court or administrative body with respect to the applicant or parties to the application in a civil or criminal proceeding, brought under the provisions of any law relating to the following: any felony; mass media related antitrust or unfair competition; fraudulent statements to another governmental unit; or discrimination?

☐ Yes ☑ No

If the answer is Yes, attach as an Exhibit a full disclosure of the persons and matters involved, including an identification of the court or administrative body and the proceeding (by dates and file numbers), and the disposition of the litigation. Where the requisite information has been earlier disclosed in connection with another application or as required by 47 U.S.C. Section 1.65(c), the applicant need only provide: (i) an identification of that previous submission by reference to the file number in the case of an application, the call letters of the station regarding which the application or Section 1.65 information was filed, and the date of filing; and (ii) the disposition of the previously reported matter.

Exhibit No. N/A

8. Does the applicant, or any party to the application, have a petition on file to migrate to the expanded band (1605-1705 kHz) or a permit or license either in the existing band or expanded band that is held in combination (pursuant to the 5 year holding period allowed) with the AM facility proposed to be modified herein?

☐ Yes ☑ No

If Yes, provide particulars as an Exhibit.

Exhibit No.

The APPLICANT hereby waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because use of the same, whether by license or otherwise, and requests and authorization in accordance with this application. (See Section 304 of the Communications Act of 1934, as amended).

The APPLICANT acknowledges that all the statements made in this application and attached exhibits are considered material representations and that all the exhibits are a material part hereof and are incorporated herein as set out in full in

CERTIFICATION

1. By checking Yes, the applicant certifies, that, in the case of an individual applicant, he or she is not subject to a denial of federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. Section 862, or, in the case of a non-individual applicant (e.g., corporation, partnership or other unincorporated association), no party to the application is subject to a denial of federal benefits that includes FCC benefits pursuant to that section. For the definition of a "party" for these purposes, see 47 C.F.R. Section 1.2002(b).

☑ Yes ☐ No

2. 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.

Name	Signature	
David P. Stephens		
Title	Date	Telephone Number
Manager	3/10/2020	918-492-2660

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

FCC NOTICE TO INDIVIDUALS REQUIRED BY THE PRIVACY ACT AND THE PAPERWORK REDUCTION ACT

The solicitation of personal information requested in this application is authorized by the Communications Act of 1934, as amended. The Commission will use the information provided in this form to determine whether grant of the application is in the public interest. In reaching that determination, or for law enforcement purposes, it may become necessary to refer personal information contained in this form to another government agency. In addition, all information provided in this form will be available for public inspection. If information requested on the form is not provided, the application may be returned without action having been taken upon it or its processing may be delayed while a request is made to provide the missing information. Your response is required to obtain the requested authorization.

Public reporting burden for this collection of information is estimated to average 639 hours and 53 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, can be sent to the Federal Communications Commission, Records Management Branch, Paperwork Reduction Project (3060-0627), Washington, D. C. 20554. Do NOT send completed forms to this address.

THE FOREGOING NOTICE IS REQUIRED BY THE PRIVACY ACT OF 1974, P.L. 93-579, DECEMBER 31, 1974, 5 U.S.C. 552a(e)(3), AND THE PAPERWORK REDUCTION ACT OF 1980, P.L. 96-511, DECEMBER 11, 1980, 44 U.S.C. 3507.

SECTION III - LICENSE APPLICATION ENGINEERING DATA

Name of Applicant

SMG-SPOKANE, LLC

PURPOSE OF AUTHORIZATION APPLIED FOR: (check one)

[X] Station License [ ] Direct Measurement of Power

1. Facilities authorized in construction permit

Call Sign	File No. of Construction Permit (if applicable)	Frequency (kHz)	Hours of Operation	Power in kilowatts	
				Night	Day
KJRB	BP-20180308AAC	790	Unlimited	0.034	4.4

2. Station location

State	City or Town
Washington	Spokane

3. Transmitter location

State	County	City or Town	Street address (or other identification)
WA	Spokane	Spokane	Stutler Rd E of US195

4. Main studio location

State	County	City or Town	Street address (or other identification)
WA	Spokane	Spokane	1601 E. 57th Ave

5. Remote control point location (specify only if authorized directional antenna)

State	County	City or Town	Street address (or other identification)

6. Has type-approved stereo generating equipment been installed? [ ] Yes [X] No

7. Does the sampling system meet the requirements of 47 C.F.R. Section 73.68? [ ] Yes [ ] No [X] Not Applicable

Attach as an Exhibit a detailed description of the sampling system as installed. Exhibit No.

8. Operating constants:

RF common point or antenna current (in amperes) without modulation for night system	RF common point or antenna current (in amperes) without modulation for day system
0.69	7.81

Measured antenna or common point resistance (in ohms) at operating frequency		Measured antenna or common point reactance (in ohms) at operating frequency	
Night	Day	Night	Day
78	78	-j166	-j166

Antenna indications for directional operation

Towers	Antenna monitor Phase reading(s) in degrees		Antenna monitor sample current ratio(s)		Antenna base currents	
	Night	Day	Night	Day	Night	Day

Manufacturer and type of antenna monitor:

SECTION III - Page 2

9. Description of antenna system ((f directional antenna is used, the information requested below should be given for each element of the array. Use separate sheets if necessary.)

Type Radiator	Overall height in meters of radiator above base insulator, or above base, if grounded.	Overall height in meters above ground (without obstruction lighting)	Overall height in meters above ground (include obstruction lighting)	If antenna is either top loaded or sectionalized, describe fully in an Exhibit.
Uniform cross-section guyed steel tower	124	125.4	126.3	Exhibit No. N/A

Excitation [X] Series [ ] Shunt

Geographic coordinates to nearest second. For directional antenna give coordinates of center of array. For single vertical radiator give tower location.

North Latitude	West Longitude
47° 30' 08"	117° 23' 07"

If not fully described above, attach as an Exhibit further details and dimensions including any other antenna mounted on tower and associated isolation circuits. Exhibit No. See Below

Also, if necessary for a complete description, attach as an Exhibit a sketch of the details and dimensions of ground system. Exhibit No.

10. In what respect, if any, does the apparatus constructed differ from that described in the application for construction permit or in the permit?

None. Ground system is as described in CP.
STL antenna mounted at 47 meters AGL, isocoupler across base insulator.

11. Give reasons for the change in antenna or common point resistance.

Change from DA to ND operation.

I certify that I represent the applicant in the capacity indicated below and that I have examined the foregoing statement of technical information and that it is true to the best of my knowledge and belief.

Name (Please Print or Type)	Signature (check appropriate box below)
Thomas S. Gorton	
Address (include ZIP Code)	Date
Hatfield & Dawson Consulting Engineers 9500 Greenwood Ave N Seattle, WA 98103-3012	March 3, 2020
	Telephone No. (Include Area Code) (206) 783-9151

[ ] Technical Director

[X] Registered Professional Engineer

[ ] Chief Operator

[ ] Technical Consultant

[ ] Other (specify)

Spurious Emissions Measurements

A computer program was used to generate a list (Exhibit 1) of all first through fourth order intermodulation products generated by the combination of KJRB (790 kHz) and KGA (1510 kHz) from 500-5000 kHz.

While KJRB was operating at 4.4kW and KGA was operating at 50kW (their respective daytime modes), each of these frequencies was measured utilizing a Delta Electronics TCT-1-HV toroid transformer mounted at the output of the KGA/KJRB diplexer connected to a Potomac Instruments FIM-41 field strength meter. Attenuation was inserted between the TCT-1-HV and the FIM-41 to establish a suitable reference level for KJRB (2.75V), the lower of the two stations at the measurement points. The levels of each of these were compared to the level of 790 kHz. Attenuation of all listed frequencies was > -80db of the operating level of KJRB (Exhibit 2).

Tower Impedance Measurements

J12 of the KJRB ATU and J22 of the KGA ATU (Exhibit 3) were removed. An HP 8753C network analyzer was connected to the input of the diplexer at J12 to measure the tower impedance at 790kHz, then connected to the input of the diplexer at J22 to measure the tower impedance at 1510 kHz.
Values were recorded in Exhibit 2.

Equipment used for measurements:

Potomac Instruments FIM-41
S/N: 536
Calibration Date: 9/19/2012

HP 8753C Network Analyzer
S/N: 2901A00130
Calibration Date: 7/12/2012

Delta Electronics
TCT-1-HV toroid transformer
S/N: 1646

Attested to by Keith Harvey on March 1, 2020 by:

Signature: 

Title: Chief Engineer, Stephens Media Group of Spokane

Exhibit 1

#	Mult	x	Freq.	Sum/Dif	Mult	x	Freq.	=	Product
1.	1	x	790	+	1	x	1510	=	2300
2.	1	x	1510	+	1	x	790	=	2300
3.	1	x	1510	-	1	x	790	=	720
4.	1	x	790	+	2	x	1510	=	3810
5.	1	x	1510	+	2	x	790	=	3090
6.	1	x	1510	+	3	x	790	=	3880
7.	1	x	1510	+	4	x	790	=	4670
8.	2	x	790	=				=	1580
9.	2	x	790	+	1	x	1510	=	3090
10.	2	x	1510	=				=	3020
11.	2	x	1510	+	1	x	790	=	3810
12.	2	x	1510	-	1	x	790	=	2230
13.	2	x	790	+	2	x	1510	=	4600
14.	2	x	1510	+	2	x	790	=	4600
15.	2	x	1510	-	2	x	790	=	1440
16.	2	x	1510	-	3	x	790	=	650
17.	3	x	790	=				=	2370
18.	3	x	790	+	1	x	1510	=	3880

#	Mult	x	Freq.	Sum/Dif	Mult	x	Freq.	=	Product
19.	3	x	790	-	1	x	1510	=	860
20.	3	x	1510	=				=	4530
21.	3	x	1510	-	1	x	790	=	3740
22.	3	x	1510	-	2	x	790	=	2950
23.	3	x	1510	-	3	x	790	=	2160
24.	3	x	1510	-	4	x	790	=	1370
25.	4	x	790	=				=	3160
26.	4	x	790	+	1	x	1510	=	4670
27.	4	x	790	-	1	x	1510	=	1650
28.	4	x	1510	-	2	x	790	=	4460
29.	4	x	1510	-	3	x	790	=	3670
30.	4	x	1510	-	4	x	790	=	2880

#	Mult	x Freq.	Plus	Mult	x Freq.	Minus	Mult	x Freq.	= Product

No More Frequency Products Within Desired Range

Exhibit 2

IM Product Measurements

KJRB Reference Level: 2.75V (8.787 dBV)

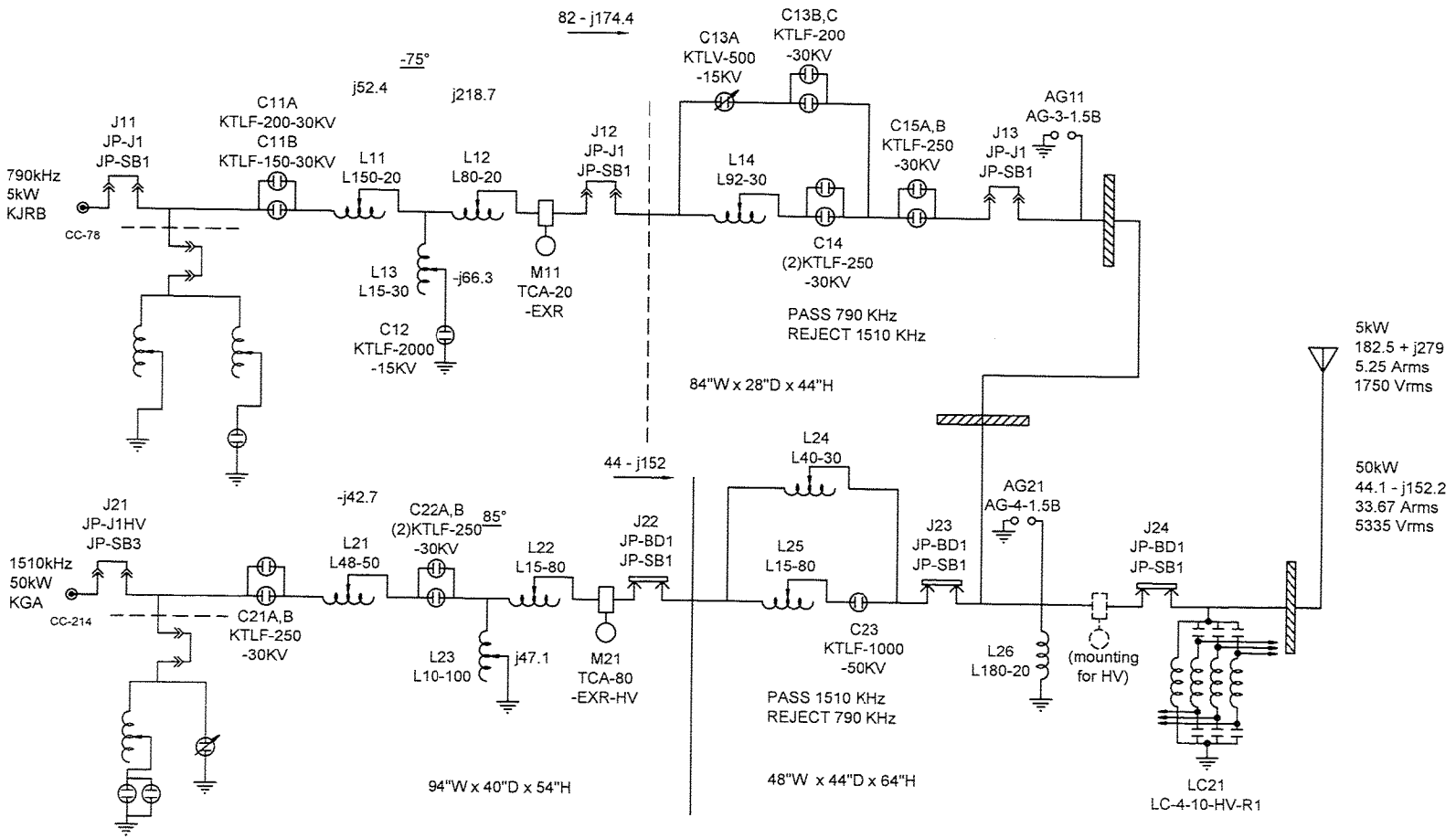
Freq.(kHz)	Min	Measured	Attenuation(dB)
650	-80	*	> -80
720	-65	24 µV	> -80
860	-80	*	> -80
1370	-80	*	> -80
1440	-65	*	> -80
1580	-80	23 µV	> -80
1650	-80	23 µV	> -80
2160	-80	*	> -80
2230	-80	*	> -80
2300	-80	*	> -80
2370	-80	*	> -80
2880	-80	*	> -80
2950	-80	*	> -80
3020	-80	*	> -80
3090	-80	*	> -80
3160	-80	*	> -80
3670	-80	*	> -80
3740	-80	*	> -80
3810	-80	96 µV	> -80
3880	-80	*	> -80
4460	-80	*	> -80
4530	-80	*	> -80
4600	-80	*	> -80
4670	-80	*	> -80

* = Unmeasureable @ highest sensitivity (100 µV)

Base Measurements

Station	R	X
KGA	44	-j115
KJRB	78	-j166

- CABINETS UNPAINTED



KINTRONIC LABORATORIES INC.
BLUFF CITY, TN.

FREQ: 790kHz 1510kHz
POWER: 5kW 50kW

KGA KJRB DIPLEXER
MAPLETON COMMUNICATIONS, LLC
SPOKANE, WASHINGTON

REV.	REV. DESCRIPTION:	REV. DATE:	JOB NO:	DESIGNED:
02		23-AUG-19	116637	B.Cox
DWG NO:	REF DWG.	DATE:	DRAWN:	APPROVED:
12224-RFS-01		23-Aug-19	GLKING	

THOMAS M. ECKELS, PE
STEPHEN S. LOCKWOOD, PE
DAVID J. PINION, PE
ERIK C. SWANSON, PE

THOMAS S. GORTON, PE

JAMES B. HATFIELD, PE
BENJAMIN F. DAWSON III, PE
CONSULTANTS

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

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

MAURY L. HATFIELD, PE
(1942-2009)
PAUL W. LEONARD, PE
(1925-2011)

Method of Moments Analysis to Demonstrate the Detuning of Unused Towers

KJRB(AM)

Facility ID 11235

Prepared for

Mapleton License of Spokane, LLC

June 2019

This Engineering Report has been prepared on behalf of Mapleton License of Spokane, LLC ("Mapleton"). It contains a method of moments analysis of the effect of the unused towers at the KJRB antenna site on the non-directional operation of KJRB. Mapleton holds a construction permit (File No. BP-20180308AAC) to modify the currently licensed DA-2 operation of KJRB to unlimited time omnidirectional operation. The construction permit contains a condition requiring Mapleton to "...submit a partial proof of performance to establish that the proposed radiation pattern is essentially omnidirectional." if the unused towers are to be left in place. Engineering staff in the AM branch have indicated that a method of moments analysis would be acceptable in lieu of a measurement based partial proof.

A model of the KJRB directional antenna array has been made using Expert Mininec Broadcast Professional Ver 14.0, assuming a lossless environment. The tower heights, spacing and orientation of the towers in the KJRB array contained in the CDBS (the FCC broadcast database) were used in this model, with the tower heights used in the recent method of moments proof for KJRB (File No BMML-20130820ACI). The bases of the unused towers were then grounded through inductive "lumped loads", the values of which were chosen to minimize the current moment in each of the unused towers. The model was then used to predict the field strength of KJRB at a distance of 1 km on each of 360 evenly spaced radials. These field strength values were then compared with the field strength predicted by the model with the unused towers removed. This predicted field strength is 695.7 mV/m/km at 4.4 kW.

As the construction permit does not define what is considered "essentially omnidirectional", the standard of 2dB specified in §1.30002(a) is used in this analysis. As none of the predicted radials differs from the single tower IDF by more than 0.01 dB, the operation of KJRB is assumed to be "essentially omnidirectional".

Mininec Model - KJRB

KJRB Model

GEOMETRY
Wire coordinates in degrees; other dimensions in meters
Environment: perfect ground

wire	caps	Distance	Angle	Z	radius	segs
1	none	80.5	15.2	0	.29	20
		80.5	15.2	91.		
2	none	0	0	0	.29	20
		0	0	124.7		
3	none	93.4	194.5	0	.29	20
		93.4	194.5	91.		
4	none	175.	194.5	0	.29	20
		175.	194.5	80.		
5	none	48.5	126.	0	.29	20
		48.5	126.	100.7		

Number of wires = 5
current nodes = 100

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	4	4.	2	6.235
radius	1	.29	1	.29

ELECTRICAL DESCRIPTION
Frequencies (KHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	790.	0	1	.0111111	.0173194

Sources

source	node	sector	magnitude	phase	type
1	21	1	1,053.07	70.6	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	535.	0	0	0
2	41	0	535.	0	0	0
3	61	0	593.	0	0	0
4	81	0	500.	0	0	0

CURRENT MOMENTS(amp-degrees) rms

Frequency = 790 KHz
Input power = 4,400. watts

wire	magnitude	phase (deg)	vertical current moment magnitude	phase (deg)
1	.713677	161.5	.713677	161.5
2	994.125	359.9	994.125	359.9
3	.50533	151.3	.50533	151.3
4	.272593	89.	.272593	89.
5	3.40204	180.3	3.40204	180.3

RADIATION PATTERN rms
geographic coordinate system

Radial distance (meters) = 1,000.
Frequency = 790. KHz
Input power = 4,400. watts
Efficiency = 100. %

elevation angle	azimuth angle	E-theta mag (mv/m)	phase (deg)	E-phi mag (mv/m)	phase
0	0	695.676	90.	0	0
0	1.	695.666	90.	0	0
0	2.	695.654	90.	0	0
0	3.	695.644	90.	0	0
0	4.	695.633	90.	0	0
0	5.	695.622	90.	0	0
0	6.	695.611	90.	0	0
0	7.	695.6	90.	0	0
0	8.	695.588	90.	0	0
0	9.	695.578	90.	0	0
0	10.	695.567	90.	0	0
0	11.	695.557	90.	0	0
0	12.	695.546	90.	0	0
0	13.	695.537	90.	0	0
0	14.	695.527	90.	0	0
0	15.	695.518	90.	0	0
0	16.	695.507	90.	0	0
0	17.	695.498	90.	0	0
0	18.	695.489	90.	0	0
0	19.	695.481	89.9	0	0
0	20.	695.472	89.9	0	0
0	21.	695.463	89.9	0	0
0	22.	695.456	89.9	0	0
0	23.	695.448	89.9	0	0
0	24.	695.441	89.9	0	0
0	25.	695.434	89.9	0	0
0	26.	695.427	89.9	0	0
0	27.	695.42	89.9	0	0
0	28.	695.415	89.9	0	0
0	29.	695.408	89.9	0	0
0	30.	695.403	89.9	0	0
0	31.	695.398	89.9	0	0
0	32.	695.393	89.9	0	0
0	33.	695.389	89.9	0	0
0	34.	695.385	89.9	0	0

0	35.	695.381	89.9	0	0
0	36.	695.378	89.9	0	0
0	37.	695.375	89.9	0	0
0	38.	695.372	89.9	0	0
0	39.	695.37	89.9	0	0
0	40.	695.367	89.9	0	0
0	41.	695.367	89.9	0	0
0	42.	695.365	89.9	0	0
0	43.	695.364	89.9	0	0
0	44.	695.363	89.9	0	0
0	45.	695.363	89.9	0	0
0	46.	695.363	89.9	0	0
0	47.	695.364	89.9	0	0
0	48.	695.364	89.9	0	0
0	49.	695.365	89.9	0	0
0	50.	695.365	89.9	0	0
0	51.	695.366	89.9	0	0
0	52.	695.367	89.9	0	0
0	53.	695.369	89.9	0	0
0	54.	695.372	89.9	0	0
0	55.	695.373	89.9	0	0
0	56.	695.375	89.9	0	0
0	57.	695.377	89.9	0	0
0	58.	695.38	89.9	0	0
0	59.	695.382	89.9	0	0
0	60.	695.385	89.9	0	0
0	61.	695.388	89.9	0	0
0	62.	695.39	89.9	0	0
0	63.	695.393	89.9	0	0
0	64.	695.395	89.9	0	0
0	65.	695.398	89.9	0	0
0	66.	695.4	89.8	0	0
0	67.	695.403	89.8	0	0
0	68.	695.405	89.8	0	0
0	69.	695.407	89.8	0	0
0	70.	695.409	89.8	0	0
0	71.	695.411	89.8	0	0
0	72.	695.412	89.8	0	0
0	73.	695.415	89.8	0	0
0	74.	695.416	89.8	0	0
0	75.	695.417	89.8	0	0
0	76.	695.418	89.8	0	0
0	77.	695.419	89.8	0	0
0	78.	695.419	89.8	0	0
0	79.	695.42	89.8	0	0
0	80.	695.42	89.8	0	0
0	81.	695.42	89.8	0	0
0	82.	695.42	89.8	0	0
0	83.	695.42	89.8	0	0
0	84.	695.419	89.8	0	0
0	85.	695.418	89.8	0	0
0	86.	695.416	89.8	0	0
0	87.	695.415	89.8	0	0
0	88.	695.414	89.8	0	0
0	89.	695.412	89.8	0	0
0	90.	695.41	89.8	0	0
0	91.	695.408	89.8	0	0
0	92.	695.405	89.8	0	0
0	93.	695.403	89.8	0	0

0	94.	695.402	89.8	0	0
0	95.	695.398	89.8	0	0
0	96.	695.395	89.8	0	0
0	97.	695.393	89.8	0	0
0	98.	695.39	89.8	0	0
0	99.	695.388	89.8	0	0
0	100.	695.384	89.8	0	0
0	101.	695.382	89.8	0	0
0	102.	695.379	89.8	0	0
0	103.	695.377	89.8	0	0
0	104.	695.374	89.8	0	0
0	105.	695.373	89.8	0	0
0	106.	695.37	89.8	0	0
0	107.	695.369	89.8	0	0
0	108.	695.368	89.8	0	0
0	109.	695.366	89.8	0	0
0	110.	695.365	89.8	0	0
0	111.	695.365	89.8	0	0
0	112.	695.364	89.8	0	0
0	113.	695.363	89.8	0	0
0	114.	695.365	89.8	0	0
0	115.	695.365	89.8	0	0
0	116.	695.366	89.8	0	0
0	117.	695.367	89.8	0	0
0	118.	695.369	89.8	0	0
0	119.	695.371	89.8	0	0
0	120.	695.374	89.8	0	0
0	121.	695.377	89.8	0	0
0	122.	695.38	89.8	0	0
0	123.	695.384	89.8	0	0
0	124.	695.389	89.8	0	0
0	125.	695.393	89.8	0	0
0	126.	695.398	89.8	0	0
0	127.	695.404	89.8	0	0
0	128.	695.409	89.8	0	0
0	129.	695.415	89.8	0	0
0	130.	695.42	89.8	0	0
0	131.	695.427	89.8	0	0
0	132.	695.434	89.8	0	0
0	133.	695.441	89.8	0	0
0	134.	695.447	89.8	0	0
0	135.	695.456	89.8	0	0
0	136.	695.463	89.8	0	0
0	137.	695.471	89.8	0	0
0	138.	695.479	89.8	0	0
0	139.	695.486	89.8	0	0
0	140.	695.494	89.8	0	0
0	141.	695.502	89.8	0	0
0	142.	695.51	89.8	0	0
0	143.	695.518	89.8	0	0
0	144.	695.526	89.8	0	0
0	145.	695.533	89.8	0	0
0	146.	695.542	89.8	0	0
0	147.	695.548	89.8	0	0
0	148.	695.555	89.8	0	0
0	149.	695.563	89.8	0	0
0	150.	695.57	89.8	0	0
0	151.	695.577	89.8	0	0
0	152.	695.582	89.8	0	0

0	153.	695.589	89.8	0	0
0	154.	695.594	89.8	0	0
0	155.	695.599	89.8	0	0
0	156.	695.604	89.8	0	0
0	157.	695.61	89.8	0	0
0	158.	695.614	89.8	0	0
0	159.	695.617	89.8	0	0
0	160.	695.62	89.8	0	0
0	161.	695.623	89.8	0	0
0	162.	695.625	89.8	0	0
0	163.	695.628	89.8	0	0
0	164.	695.629	89.8	0	0
0	165.	695.63	89.8	0	0
0	166.	695.63	89.8	0	0
0	167.	695.631	89.8	0	0
0	168.	695.631	89.8	0	0
0	169.	695.63	89.8	0	0
0	170.	695.628	89.8	0	0
0	171.	695.625	89.8	0	0
0	172.	695.624	89.8	0	0
0	173.	695.622	89.8	0	0
0	174.	695.619	89.8	0	0
0	175.	695.614	89.8	0	0
0	176.	695.611	89.8	0	0
0	177.	695.606	89.8	0	0
0	178.	695.602	89.8	0	0
0	179.	695.597	89.8	0	0
0	180.	695.59	89.8	0	0
0	181.	695.584	89.8	0	0
0	182.	695.578	89.8	0	0
0	183.	695.571	89.8	0	0
0	184.	695.563	89.8	0	0
0	185.	695.557	89.8	0	0
0	186.	695.548	89.8	0	0
0	187.	695.541	89.8	0	0
0	188.	695.532	89.9	0	0
0	189.	695.523	89.9	0	0
0	190.	695.514	89.9	0	0
0	191.	695.505	89.9	0	0
0	192.	695.495	89.9	0	0
0	193.	695.487	89.9	0	0
0	194.	695.476	89.9	0	0
0	195.	695.466	89.9	0	0
0	196.	695.456	89.9	0	0
0	197.	695.445	89.9	0	0
0	198.	695.435	89.9	0	0
0	199.	695.424	89.9	0	0
0	200.	695.413	89.9	0	0
0	201.	695.402	89.9	0	0
0	202.	695.391	89.9	0	0
0	203.	695.38	89.9	0	0
0	204.	695.369	89.9	0	0
0	205.	695.357	89.9	0	0
0	206.	695.346	89.9	0	0
0	207.	695.335	89.9	0	0
0	208.	695.323	89.9	0	0
0	209.	695.312	89.9	0	0
0	210.	695.3	89.9	0	0
0	211.	695.289	89.9	0	0

0	212.	695.277	89.9	0	0
0	213.	695.266	89.9	0	0
0	214.	695.254	89.9	0	0
0	215.	695.243	89.9	0	0
0	216.	695.232	89.9	0	0
0	217.	695.22	89.9	0	0
0	218.	695.208	89.9	0	0
0	219.	695.198	89.9	0	0
0	220.	695.187	89.9	0	0
0	221.	695.176	89.9	0	0
0	222.	695.166	89.9	0	0
0	223.	695.155	90.	0	0
0	224.	695.145	90.	0	0
0	225.	695.134	90.	0	0
0	226.	695.124	90.	0	0
0	227.	695.114	90.	0	0
0	228.	695.105	90.	0	0
0	229.	695.095	90.	0	0
0	230.	695.085	90.	0	0
0	231.	695.077	90.	0	0
0	232.	695.069	90.	0	0
0	233.	695.06	90.	0	0
0	234.	695.051	90.	0	0
0	235.	695.044	90.	0	0
0	236.	695.036	90.	0	0
0	237.	695.029	90.	0	0
0	238.	695.023	90.	0	0
0	239.	695.016	90.	0	0
0	240.	695.01	90.	0	0
0	241.	695.004	90.	0	0
0	242.	694.998	90.	0	0
0	243.	694.995	90.	0	0
0	244.	694.99	90.	0	0
0	245.	694.987	90.	0	0
0	246.	694.983	90.	0	0
0	247.	694.981	90.	0	0
0	248.	694.979	90.	0	0
0	249.	694.978	90.	0	0
0	250.	694.977	90.	0	0
0	251.	694.977	90.	0	0
0	252.	694.977	90.	0	0
0	253.	694.978	90.1	0	0
0	254.	694.98	90.1	0	0
0	255.	694.983	90.1	0	0
0	256.	694.987	90.1	0	0
0	257.	694.99	90.1	0	0
0	258.	694.994	90.1	0	0
0	259.	695.	90.1	0	0
0	260.	695.006	90.1	0	0
0	261.	695.013	90.1	0	0
0	262.	695.02	90.1	0	0
0	263.	695.029	90.1	0	0
0	264.	695.038	90.1	0	0
0	265.	695.048	90.1	0	0
0	266.	695.058	90.1	0	0
0	267.	695.07	90.1	0	0
0	268.	695.082	90.1	0	0
0	269.	695.094	90.1	0	0
0	270.	695.107	90.1	0	0

0	271.	695.121	90.1	0	0
0	272.	695.136	90.1	0	0
0	273.	695.151	90.1	0	0
0	274.	695.167	90.1	0	0
0	275.	695.184	90.1	0	0
0	276.	695.2	90.1	0	0
0	277.	695.218	90.1	0	0
0	278.	695.236	90.1	0	0
0	279.	695.255	90.1	0	0
0	280.	695.273	90.1	0	0
0	281.	695.292	90.1	0	0
0	282.	695.312	90.1	0	0
0	283.	695.331	90.1	0	0
0	284.	695.351	90.1	0	0
0	285.	695.37	90.1	0	0
0	286.	695.392	90.1	0	0
0	287.	695.412	90.1	0	0
0	288.	695.432	90.1	0	0
0	289.	695.452	90.1	0	0
0	290.	695.473	90.1	0	0
0	291.	695.492	90.1	0	0
0	292.	695.514	90.1	0	0
0	293.	695.533	90.1	0	0
0	294.	695.553	90.1	0	0
0	295.	695.573	90.1	0	0
0	296.	695.591	90.1	0	0
0	297.	695.61	90.1	0	0
0	298.	695.63	90.1	0	0
0	299.	695.648	90.1	0	0
0	300.	695.665	90.1	0	0
0	301.	695.683	90.1	0	0
0	302.	695.699	90.1	0	0
0	303.	695.716	90.1	0	0
0	304.	695.732	90.1	0	0
0	305.	695.747	90.1	0	0
0	306.	695.762	90.1	0	0
0	307.	695.776	90.1	0	0
0	308.	695.789	90.1	0	0
0	309.	695.802	90.1	0	0
0	310.	695.814	90.1	0	0
0	311.	695.825	90.1	0	0
0	312.	695.836	90.1	0	0
0	313.	695.846	90.1	0	0
0	314.	695.855	90.1	0	0
0	315.	695.864	90.1	0	0
0	316.	695.872	90.1	0	0
0	317.	695.879	90.1	0	0
0	318.	695.886	90.1	0	0
0	319.	695.891	90.1	0	0
0	320.	695.897	90.1	0	0
0	321.	695.901	90.1	0	0
0	322.	695.905	90.1	0	0
0	323.	695.907	90.1	0	0
0	324.	695.911	90.1	0	0
0	325.	695.912	90.1	0	0
0	326.	695.913	90.1	0	0
0	327.	695.914	90.1	0	0
0	328.	695.913	90.1	0	0
0	329.	695.912	90.1	0	0

0	330.	695.911	90.1	0	0
0	331.	695.909	90.1	0	0
0	332.	695.906	90.1	0	0
0	333.	695.903	90.1	0	0
0	334.	695.899	90.1	0	0
0	335.	695.895	90.1	0	0
0	336.	695.89	90.	0	0
0	337.	695.885	90.	0	0
0	338.	695.88	90.	0	0
0	339.	695.874	90.	0	0
0	340.	695.867	90.	0	0
0	341.	695.86	90.	0	0
0	342.	695.853	90.	0	0
0	343.	695.845	90.	0	0
0	344.	695.837	90.	0	0
0	345.	695.828	90.	0	0
0	346.	695.82	90.	0	0
0	347.	695.812	90.	0	0
0	348.	695.802	90.	0	0
0	349.	695.792	90.	0	0
0	350.	695.783	90.	0	0
0	351.	695.772	90.	0	0
0	352.	695.763	90.	0	0
0	353.	695.752	90.	0	0
0	354.	695.741	90.	0	0
0	355.	695.731	90.	0	0
0	356.	695.721	90.	0	0
0	357.	695.71	90.	0	0
0	358.	695.698	90.	0	0
0	359.	695.687	90.	0	0

KJRB(AM) Moment Method Analysis of Omnidirectional Operation

Azimuth	Mininec KJRB IDF W/O unused Towers (mv/m@1km)	Mininec KJRB IDF WITH Detuned Towers (mv/m@1km)	Ratio W to W/O	Ratio dB
0	695.70	695.68	1.000	0.00
1	695.70	695.67	1.000	0.00
2	695.70	695.65	1.000	0.00
3	695.70	695.64	1.000	0.00
4	695.70	695.63	1.000	0.00
5	695.70	695.62	1.000	0.00
6	695.70	695.61	1.000	0.00
7	695.70	695.60	1.000	0.00
8	695.70	695.59	1.000	0.00
9	695.70	695.58	1.000	0.00
10	695.70	695.57	1.000	0.00
11	695.70	695.56	1.000	0.00
12	695.70	695.55	1.000	0.00
13	695.70	695.54	1.000	0.00
14	695.70	695.53	1.000	0.00
15	695.70	695.52	1.000	0.00
16	695.70	695.51	1.000	0.00
17	695.70	695.50	1.000	0.00
18	695.70	695.49	1.000	0.00
19	695.70	695.48	1.000	0.00
20	695.70	695.47	1.000	0.00
21	695.70	695.46	1.000	0.00
22	695.70	695.46	1.000	0.00
23	695.70	695.45	1.000	0.00
24	695.70	695.44	1.000	0.00
25	695.70	695.43	1.000	0.00
26	695.70	695.43	1.000	0.00
27	695.70	695.42	1.000	0.00
28	695.70	695.42	1.000	0.00
29	695.70	695.41	1.000	0.00
30	695.70	695.40	1.000	0.00
31	695.70	695.40	1.000	0.00
32	695.70	695.39	1.000	0.00
33	695.70	695.39	1.000	0.00
34	695.70	695.39	1.000	0.00
35	695.70	695.38	1.000	0.00
36	695.70	695.38	1.000	0.00
37	695.70	695.38	1.000	0.00
38	695.70	695.37	1.000	0.00
39	695.70	695.37	1.000	0.00
40	695.70	695.37	1.000	0.00
41	695.70	695.37	1.000	0.00
42	695.70	695.37	1.000	0.00
43	695.70	695.36	1.000	0.00
44	695.70	695.36	1.000	0.00
45	695.70	695.36	1.000	0.00

46	695.70	695.36	1.000	0.00
47	695.70	695.36	1.000	0.00
48	695.70	695.36	1.000	0.00
49	695.70	695.37	1.000	0.00
50	695.70	695.37	1.000	0.00
51	695.70	695.37	1.000	0.00
52	695.70	695.37	1.000	0.00
53	695.70	695.37	1.000	0.00
54	695.70	695.37	1.000	0.00
55	695.70	695.37	1.000	0.00
56	695.70	695.38	1.000	0.00
57	695.70	695.38	1.000	0.00
58	695.70	695.38	1.000	0.00
59	695.70	695.38	1.000	0.00
60	695.70	695.39	1.000	0.00
61	695.70	695.39	1.000	0.00
62	695.70	695.39	1.000	0.00
63	695.70	695.39	1.000	0.00
64	695.70	695.40	1.000	0.00
65	695.70	695.40	1.000	0.00
66	695.70	695.40	1.000	0.00
67	695.70	695.40	1.000	0.00
68	695.70	695.41	1.000	0.00
69	695.70	695.41	1.000	0.00
70	695.70	695.41	1.000	0.00
71	695.70	695.41	1.000	0.00
72	695.70	695.41	1.000	0.00
73	695.70	695.42	1.000	0.00
74	695.70	695.42	1.000	0.00
75	695.70	695.42	1.000	0.00
76	695.70	695.42	1.000	0.00
77	695.70	695.42	1.000	0.00
78	695.70	695.42	1.000	0.00
79	695.70	695.42	1.000	0.00
80	695.70	695.42	1.000	0.00
81	695.70	695.42	1.000	0.00
82	695.70	695.42	1.000	0.00
83	695.70	695.42	1.000	0.00
84	695.70	695.42	1.000	0.00
85	695.70	695.42	1.000	0.00
86	695.70	695.42	1.000	0.00
87	695.70	695.42	1.000	0.00
88	695.70	695.41	1.000	0.00
89	695.70	695.41	1.000	0.00
90	695.70	695.41	1.000	0.00
91	695.70	695.41	1.000	0.00
92	695.70	695.41	1.000	0.00
93	695.70	695.40	1.000	0.00
94	695.70	695.40	1.000	0.00
95	695.70	695.40	1.000	0.00
96	695.70	695.40	1.000	0.00
97	695.70	695.39	1.000	0.00

98	695.70	695.39	1.000	0.00
99	695.70	695.39	1.000	0.00
100	695.70	695.38	1.000	0.00
101	695.70	695.38	1.000	0.00
102	695.70	695.38	1.000	0.00
103	695.70	695.38	1.000	0.00
104	695.70	695.37	1.000	0.00
105	695.70	695.37	1.000	0.00
106	695.70	695.37	1.000	0.00
107	695.70	695.37	1.000	0.00
108	695.70	695.37	1.000	0.00
109	695.70	695.37	1.000	0.00
110	695.70	695.37	1.000	0.00
111	695.70	695.37	1.000	0.00
112	695.70	695.36	1.000	0.00
113	695.70	695.36	1.000	0.00
114	695.70	695.37	1.000	0.00
115	695.70	695.37	1.000	0.00
116	695.70	695.37	1.000	0.00
117	695.70	695.37	1.000	0.00
118	695.70	695.37	1.000	0.00
119	695.70	695.37	1.000	0.00
120	695.70	695.37	1.000	0.00
121	695.70	695.38	1.000	0.00
122	695.70	695.38	1.000	0.00
123	695.70	695.38	1.000	0.00
124	695.70	695.39	1.000	0.00
125	695.70	695.39	1.000	0.00
126	695.70	695.40	1.000	0.00
127	695.70	695.40	1.000	0.00
128	695.70	695.41	1.000	0.00
129	695.70	695.42	1.000	0.00
130	695.70	695.42	1.000	0.00
131	695.70	695.43	1.000	0.00
132	695.70	695.43	1.000	0.00
133	695.70	695.44	1.000	0.00
134	695.70	695.45	1.000	0.00
135	695.70	695.46	1.000	0.00
136	695.70	695.46	1.000	0.00
137	695.70	695.47	1.000	0.00
138	695.70	695.48	1.000	0.00
139	695.70	695.49	1.000	0.00
140	695.70	695.49	1.000	0.00
141	695.70	695.50	1.000	0.00
142	695.70	695.51	1.000	0.00
143	695.70	695.52	1.000	0.00
144	695.70	695.53	1.000	0.00
145	695.70	695.53	1.000	0.00
146	695.70	695.54	1.000	0.00
147	695.70	695.55	1.000	0.00
148	695.70	695.56	1.000	0.00
149	695.70	695.56	1.000	0.00

150	695.70	695.57	1.000	0.00
151	695.70	695.58	1.000	0.00
152	695.70	695.58	1.000	0.00
153	695.70	695.59	1.000	0.00
154	695.70	695.59	1.000	0.00
155	695.70	695.60	1.000	0.00
156	695.70	695.60	1.000	0.00
157	695.70	695.61	1.000	0.00
158	695.70	695.61	1.000	0.00
159	695.70	695.62	1.000	0.00
160	695.70	695.62	1.000	0.00
161	695.70	695.62	1.000	0.00
162	695.70	695.63	1.000	0.00
163	695.70	695.63	1.000	0.00
164	695.70	695.63	1.000	0.00
165	695.70	695.63	1.000	0.00
166	695.70	695.63	1.000	0.00
167	695.70	695.63	1.000	0.00
168	695.70	695.63	1.000	0.00
169	695.70	695.63	1.000	0.00
170	695.70	695.63	1.000	0.00
171	695.70	695.63	1.000	0.00
172	695.70	695.62	1.000	0.00
173	695.70	695.62	1.000	0.00
174	695.70	695.62	1.000	0.00
175	695.70	695.61	1.000	0.00
176	695.70	695.61	1.000	0.00
177	695.70	695.61	1.000	0.00
178	695.70	695.60	1.000	0.00
179	695.70	695.60	1.000	0.00
180	695.70	695.59	1.000	0.00
181	695.70	695.58	1.000	0.00
182	695.70	695.58	1.000	0.00
183	695.70	695.57	1.000	0.00
184	695.70	695.56	1.000	0.00
185	695.70	695.56	1.000	0.00
186	695.70	695.55	1.000	0.00
187	695.70	695.54	1.000	0.00
188	695.70	695.53	1.000	0.00
189	695.70	695.52	1.000	0.00
190	695.70	695.51	1.000	0.00
191	695.70	695.51	1.000	0.00
192	695.70	695.50	1.000	0.00
193	695.70	695.49	1.000	0.00
194	695.70	695.48	1.000	0.00
195	695.70	695.47	1.000	0.00
196	695.70	695.46	1.000	0.00
197	695.70	695.45	1.000	0.00
198	695.70	695.44	1.000	0.00
199	695.70	695.42	1.000	0.00
200	695.70	695.41	1.000	0.00
201	695.70	695.40	1.000	0.00

202	695.70	695.39	1.000	0.00
203	695.70	695.38	1.000	0.00
204	695.70	695.37	1.000	0.00
205	695.70	695.36	1.000	0.00
206	695.70	695.35	0.999	0.00
207	695.70	695.34	0.999	0.00
208	695.70	695.32	0.999	0.00
209	695.70	695.31	0.999	0.00
210	695.70	695.30	0.999	0.00
211	695.70	695.29	0.999	-0.01
212	695.70	695.28	0.999	-0.01
213	695.70	695.27	0.999	-0.01
214	695.70	695.25	0.999	-0.01
215	695.70	695.24	0.999	-0.01
216	695.70	695.23	0.999	-0.01
217	695.70	695.22	0.999	-0.01
218	695.70	695.21	0.999	-0.01
219	695.70	695.20	0.999	-0.01
220	695.70	695.19	0.999	-0.01
221	695.70	695.18	0.999	-0.01
222	695.70	695.17	0.999	-0.01
223	695.70	695.16	0.999	-0.01
224	695.70	695.15	0.999	-0.01
225	695.70	695.13	0.999	-0.01
226	695.70	695.12	0.999	-0.01
227	695.70	695.11	0.999	-0.01
228	695.70	695.11	0.999	-0.01
229	695.70	695.10	0.999	-0.01
230	695.70	695.09	0.999	-0.01
231	695.70	695.08	0.999	-0.01
232	695.70	695.07	0.999	-0.01
233	695.70	695.06	0.999	-0.01
234	695.70	695.05	0.999	-0.01
235	695.70	695.04	0.999	-0.01
236	695.70	695.04	0.999	-0.01
237	695.70	695.03	0.999	-0.01
238	695.70	695.02	0.999	-0.01
239	695.70	695.02	0.999	-0.01
240	695.70	695.01	0.999	-0.01
241	695.70	695.00	0.999	-0.01
242	695.70	695.00	0.999	-0.01
243	695.70	695.00	0.999	-0.01
244	695.70	694.99	0.999	-0.01
245	695.70	694.99	0.999	-0.01
246	695.70	694.98	0.999	-0.01
247	695.70	694.98	0.999	-0.01
248	695.70	694.98	0.999	-0.01
249	695.70	694.98	0.999	-0.01
250	695.70	694.98	0.999	-0.01
251	695.70	694.98	0.999	-0.01
252	695.70	694.98	0.999	-0.01
253	695.70	694.98	0.999	-0.01

254	695.70	694.98	0.999	-0.01
255	695.70	694.98	0.999	-0.01
256	695.70	694.99	0.999	-0.01
257	695.70	694.99	0.999	-0.01
258	695.70	694.99	0.999	-0.01
259	695.70	695.00	0.999	-0.01
260	695.70	695.01	0.999	-0.01
261	695.70	695.01	0.999	-0.01
262	695.70	695.02	0.999	-0.01
263	695.70	695.03	0.999	-0.01
264	695.70	695.04	0.999	-0.01
265	695.70	695.05	0.999	-0.01
266	695.70	695.06	0.999	-0.01
267	695.70	695.07	0.999	-0.01
268	695.70	695.08	0.999	-0.01
269	695.70	695.09	0.999	-0.01
270	695.70	695.11	0.999	-0.01
271	695.70	695.12	0.999	-0.01
272	695.70	695.14	0.999	-0.01
273	695.70	695.15	0.999	-0.01
274	695.70	695.17	0.999	-0.01
275	695.70	695.18	0.999	-0.01
276	695.70	695.20	0.999	-0.01
277	695.70	695.22	0.999	-0.01
278	695.70	695.24	0.999	-0.01
279	695.70	695.26	0.999	-0.01
280	695.70	695.27	0.999	-0.01
281	695.70	695.29	0.999	-0.01
282	695.70	695.31	0.999	0.00
283	695.70	695.33	0.999	0.00
284	695.70	695.35	0.999	0.00
285	695.70	695.37	1.000	0.00
286	695.70	695.39	1.000	0.00
287	695.70	695.41	1.000	0.00
288	695.70	695.43	1.000	0.00
289	695.70	695.45	1.000	0.00
290	695.70	695.47	1.000	0.00
291	695.70	695.49	1.000	0.00
292	695.70	695.51	1.000	0.00
293	695.70	695.53	1.000	0.00
294	695.70	695.55	1.000	0.00
295	695.70	695.57	1.000	0.00
296	695.70	695.59	1.000	0.00
297	695.70	695.61	1.000	0.00
298	695.70	695.63	1.000	0.00
299	695.70	695.65	1.000	0.00
300	695.70	695.67	1.000	0.00
301	695.70	695.68	1.000	0.00
302	695.70	695.70	1.000	0.00
303	695.70	695.72	1.000	0.00
304	695.70	695.73	1.000	0.00
305	695.70	695.75	1.000	0.00

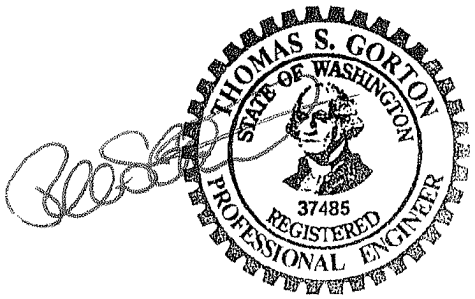
306	695.70	695.76	1.000	0.00
307	695.70	695.78	1.000	0.00
308	695.70	695.79	1.000	0.00
309	695.70	695.80	1.000	0.00
310	695.70	695.81	1.000	0.00
311	695.70	695.83	1.000	0.00
312	695.70	695.84	1.000	0.00
313	695.70	695.85	1.000	0.00
314	695.70	695.86	1.000	0.00
315	695.70	695.86	1.000	0.00
316	695.70	695.87	1.000	0.00
317	695.70	695.88	1.000	0.00
318	695.70	695.89	1.000	0.00
319	695.70	695.89	1.000	0.00
320	695.70	695.90	1.000	0.00
321	695.70	695.90	1.000	0.00
322	695.70	695.91	1.000	0.00
323	695.70	695.91	1.000	0.00
324	695.70	695.91	1.000	0.00
325	695.70	695.91	1.000	0.00
326	695.70	695.91	1.000	0.00
327	695.70	695.91	1.000	0.00
328	695.70	695.91	1.000	0.00
329	695.70	695.91	1.000	0.00
330	695.70	695.91	1.000	0.00
331	695.70	695.91	1.000	0.00
332	695.70	695.91	1.000	0.00
333	695.70	695.90	1.000	0.00
334	695.70	695.90	1.000	0.00
335	695.70	695.90	1.000	0.00
336	695.70	695.89	1.000	0.00
337	695.70	695.89	1.000	0.00
338	695.70	695.88	1.000	0.00
339	695.70	695.87	1.000	0.00
340	695.70	695.87	1.000	0.00
341	695.70	695.86	1.000	0.00
342	695.70	695.85	1.000	0.00
343	695.70	695.85	1.000	0.00
344	695.70	695.84	1.000	0.00
345	695.70	695.83	1.000	0.00
346	695.70	695.82	1.000	0.00
347	695.70	695.81	1.000	0.00
348	695.70	695.80	1.000	0.00
349	695.70	695.79	1.000	0.00
350	695.70	695.78	1.000	0.00
351	695.70	695.77	1.000	0.00
352	695.70	695.76	1.000	0.00
353	695.70	695.75	1.000	0.00
354	695.70	695.74	1.000	0.00
355	695.70	695.73	1.000	0.00
356	695.70	695.72	1.000	0.00
357	695.70	695.71	1.000	0.00

358	695.70	695.70	1.000	0.00
359	695.70	695.69	1.000	0.00

Certification

This Engineering Report has been prepared personally by the undersigned or under my immediate supervision, and all representations are true and correct to the best of my knowledge. I am an experienced radio engineer whose qualifications are a matter of record with the Federal Communications Commission. I am an engineer in the firm of Hatfield & Dawson Consulting Engineers, LLC, and I am Registered as a Professional Engineer in the States of Oregon and Washington.

June 28, 2019



Thomas S. Gorton P.E.

Hatfield & Dawson Consulting Engineers